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
QUARTERLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) SUMMARY REPORT NO.Q10
(DECEMBER 2012 TO FEBRUARY 2013)

PREPARED FOR
LEADER CIVIL ENGINEERING CORPORATION LIMITED

Quality Index Date	Reference No.	Prepared By	Certified By
15 May 2013	TCS00512/09/600/R0634v2	Nicola Hon Environmental Consultant	T.W. Tam Environmental Team Leader

Version	Date	Description
1	23 April 2013	First submission
2	15 May 2013	Amended against IEC's comments on 8 May 2013

URS 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: 05117/6/16/412974

Date: 15 May 2013

Attention: Ms Jacky C M Wong

BY FAX ONLY

Dear Madam

Contract No. DC/2009/13
Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan
Yung Shue Wan Portion Area
Quarterly EM&A Summary Report No. Q10 (December 2012 to February 2013)

We refer to the Environmental Permit (EP-282/2007/A) and the email from the Environmental Team, Action-United Environmental Services and Consulting (AUES), with the revised report for the captioned project, dated 15 May 2013. We have no comment and have verified the captioned report.

Yours faithfully
URS CDM JOINT VENTURE

Rodney Ip
Independent Environmental Checker

ICWR/SYSL/ycky

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

EXECUTIVE SUMMARY

ES.01 This is the **10th** Quarterly Environmental Monitoring and Audit (EM&A) Summary Report for Yung Shue Wan Portion Area under the Project, covering the construction period from **26 November 2012 to 25 January 2013** (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	96
	24-hour TSP	30
Construction Noise	$L_{eq(30min)}$ Daytime	14
Water Quality	Marine Water Sampling	36
Ecology	Coral Monitoring	5
Inspection / Audit	ET Regular Environmental Site Inspection	12

ES.03 The remaining marine work in Yung Shuen Wan has been resumed 23 November 2012. Therefore, impact marine water quality and coral monitoring were carried out in this Reporting Period.

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.04 No exceedance in construction noise monitoring was recorded in this Reporting Period. For 24-hour TSP monitoring, 1 Action Level exceedance at AC04c on 28 January 2013 and 2 Limit Level exceedances at both AC04c and AC02b on 10 January 2013 of 24-hour TSP result were recorded. 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	**1**	**2**	**3**	Not works related	N.A.
Construction Noise	$L_{eq(30min)}$ Daytime	0	0	0	--	--
Water Quality	DO	0	0	0	--	--
	Turbidity	0	0	0	--	--
	SS	0	0	0	--	--
Ecology (Coral)	Sediment Cover (%)	0	0	0	--	--
	Bleaching (%)	0	0	0	--	--
	Mortality (%)	0	0	0	--	--

Note: NOE – Notification of Exceedance

ES.05 **12** events of site inspection were carried out by ET in this Reporting Period and no non-compliance was observed during the inspection. In general, all the observation has been rectified during the next week site inspection. The environmental performance of the Project was therefore considered as satisfactory.

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 No reporting changes were made in this Reporting Period.

FUTURE KEY ISSUES

ES.08 During dry and windy season, construction dust would be the key environmental issue to concern in the upcoming months. The construction dust mitigation measures identified at the EM&A Manual such as watering at haul road and covering of dusty material should be implemented and properly maintained.

ES.09 Nevertheless, the Contractor shall keep paying 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 sea body within Fish culture zone at Picnic Bay and the Secondary recreation contact subzone at Mo Tat Wan should be avoided. Therefore, mitigation measures for water quality should be fully implemented.

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1 INTRODUCTION

1.1 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 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 She Wan with a capacity of 1,430m^3/day and 2,850m^3/day to provide secondary treatment. The majority of works include construction of pumping stations, 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 to implement the environmental monitoring and auditing works to fulfill the requirements as stipulated in the Environmental Monitoring and Audit (EM&A) Manuals.

1.04 Action-United Environmental Services and Consulting (AUES) has been commissioned by Leader as the ET to implement the relevant EM&A program. 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 two copies:

(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 According to the EM&A Manuals of Sok Kwu Wan and Yung Shue Wan, baseline water quality monitoring should be carried out for consecutive six months before commencement of the marine work. Therefore, the baseline reports of Sok Kwu Wan and Yung Shue Wan are divided to two volumes, i.e. the Volume 1 for air quality and noise monitoring; and the Volume II for water quality monitoring for separate submission.

1.06 This is the **10th** Quarterly EM&A Summary report for Yung Shue Wan Portion Area presenting the monitoring results and inspection findings for the Reporting Period from **26 November 2012** to **25 February 2013**.

1.2 REPORT STRUCTURE

The Quarterly Environmental Monitoring and Audit (EM&A) Summary Report is structured by following sections:-

SECTION 1	**INTRODUCTION**
SECTION 2	**PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS**
SECTION 3	**SUMMARY OF MONITORING REQUIREMENTS**
SECTION 4	**IMPACT MONITORING RESULTS**
SECTION 5	**WASTE MANAGEMENT**
SECTION 6	**SITE INSPECTION**
SECTION 7	**ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE**
SECTION 8	**IMPLEMENTATION STATUS OF MITIGATION MEASURES**
SECTION 9	**CONCLUSIONS AND RECOMMENTATIONS**

2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

2.1 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***.

2.2 CONSTRUCTION PROGRESS

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

Reporting Period	Major Construction Activities
December 2012	Construction of YSWSTW: Excavation, Soil Compaction, Concreting, Steel Fixing, Formwork Erection, Formwork Removal, Backfilling, pipe laying, Painting and E&M Works Installation. Backfilling foam concrete of Submarine Outfall
January 2013	Construction of YSWSTW and yard plan: Excavation, Soil Compaction, Concreting, Steel Fixing, Formwork Erection, Formwork Removal, Backfilling, pipe laying, Painting and E&M Works Installation.
February 2013	Construction of YSWSTW and yard plan: Excavation, Soil Compaction, Concreting, Steel Fixing, Formwork Erection, Formwork Removal, Backfilling, pipe laying, Painting and E&M Works Installation.

2.3 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-RS0772-12)	Issued on 30 July 2012 Valid from 30 July 2012 until 19 January 2013
6#	Construction Noise Permit (no. GW-RS0074-13)	Issued on 29 January 2013 Valid from 29 January 2013 until 25 July2013

 # No CNP was covered the period between 20 to 28 January 2013 and no nighttime construction activities were carried out during that period.

3 SUMMARY OF MONITORING REQUIREMENTS

3.1 ENVIRONMENTAL ASPECT

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

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

3.02 The ET implements the EM&A programme in accordance with the aforementioned requirements. Detailed air quality, construction noise, water quality and ecology monitoring of the EM&A program 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 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	• $L_{eq(30min)}$ during normal working hours; and • $L_{eq(15min)}$ during Restricted Hours.
Marine Water Quality	***In-situ Measurements*** • Dissolved Oxygen Concentration (mg/L); • Dissolved Oxygen Saturation (%); • Turbidity (NTU); • pH unit; • Salinity (ppt); • Water depth (m); and • Temperature (°C). ***Laboratory Analysis*** • Suspended Solids (mg/L)
Ecology	• Coral Monitoring

3.2 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 the Contractor 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. Therefore, an 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 was accepted by the ER and IEC, and EPD endorsed. Details of renewal air monitoring stations are described in ***Table 3-2***. The graphical of air monitoring stations is shown in ***Appendix D***.

Table 3-2 Locations 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 Locations 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 One control station at North Beaufort Island and one impact stations at boulder seawall at YSW STW site were recommended in the *EM&A Manual Section 7.2*. These sites represent the coral site where uncommon coral species were recorded from the coral surveys carried out as part of the Review Report on the EIA Study. However, change of Monitoring Location was recommended by the Ecologist based on the experience. The rationale for the re-location is summarised as below:-

- Sham Wan is located at the southeast part of Lamma Island which is less exposed and more transition water than that in Beaufort Island in which it is quite similar to Yung Shue Wan;
- Recent EIA surveys showed that the coral diversity is higher in Sham Wan;
- Same coral monitoring had been carried out at both Yung Shue Wan and Sham Wan in 2007 for the project of "Construction of Helipads at Peng Chau and Yung Shu Wan, Lamma Island, Agreement No. CE 18/2002).

3.09 It is concluded that Sham Wan is more suitable as a control site than Beaufort Island. The proposal for relocation of control station was submitted to IEC and AFCD and both parties have no comment on the proposal. The coral monitoring stations to be performed under the Project is described in ***Table 3-5*** and shown in ***Appendix D.***

Table 3-5 Location of Coral Monitoring

Dive Site	Number	Coordinates	
		Easting	Northing
Yung Shu Wan, Lamma Island	1	829180.06E	809555.76N
Sham Wan, Lamma Island	2	832160.86E	805738.31N

3.3 MONITORING FREQUENCY AND PERIOD

3.10 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: $L_{eq(30min)}$ & $L_{eq(5min)}$, L10 and L90.

$L_{eq(15min)}$ & $L_{eq(5min)}$, L10 and L90 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. The monitoring parameters are categorized in (1) percentage sediment cover; (2) percentage bleached tissue; and (3) percentage dead of each tagged coral

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. Monitoring frequency shall be increase if

there is indication/trend of increase in the monitoring parameters, upon the decision of Inspecting Officer

Duration: During the course of marine works

Post-Construction Monitoring – Marine Water

3.11 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.

3.4 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^{-1}.

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 SS 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 equipment used for the coral monitoring are listed below:-

Equipment	Model
A4 size underwater slates	Handmade A4 size underwater slates
Coral Photos	Laminated Tagged Coral Photos
Quadrat	50 cm x 50 cm plastic quadrat (with 10 cm x 10 cm grid)
Underwater Camera	Canon G10 digital camera
Scuba Diving Equipment	Scubapro regulator, BCD and fins
Diving Boat	33 feet long diving boat with two 200hp outboard engines, registration #128328

3.5 EQUIPMENT CALIBRATION

3.24 Calibration of the 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 equipment such as Dissolved Oxygen 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 program in the relevant Monthly EM&A Report.

3.6 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) which near the Project site. The meteorological information in this Reporting Period is presented in ***Appendix F***.

3.7 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 program.

3.31 The monitoring data recorded in the equipment e.g. 1-hour TSP meter, noise 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.

3.8 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 3-6, 3-7, 3-8 and 3-9*** as below.

Table 3-6 Action and Limit Levels for Air Quality Monitoring

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 3-7 Action and Limit Levels for Construction Noise Monitoring

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 3-8 Action and Limit Levels for Marine Water Quality Monitoring

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
Suspended Solids (Depth-Average) (mg/L)	Action Level	17.52	14.04	14.52
	Limit Level	25.62	16.51	16.88

Table 3-9 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. The coral survey specialist should present this information to the IC(E) at the end of each survey day for verification. 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.

Step	Action
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.

4 IMPACT MONITORING RESULTS

4.01 The environmental monitoring results will be compared against the Action and Limit Levels established based on the baseline monitoring results and statutory criteria. In case the measured data exceed the environmental quality criteria, remedial actions will be triggered according to the Event and Action Plan. In the Reporting Period, the graphical plots of the trends of monitored parameter over the past four months are presented in ***Appendix E***.

4.1 RESULTS OF AIR QUALITY MONITORING

4.02 The monitoring results of air quality monitoring at the identified locations during the Reporting Period are summarized in ***Tables 4-1***. In this Reporting Period, a total of **96** events of 1-hour TSP and **30** events of 24-hour TSP measurements were therefore performed.

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

Monitoring Location	1-hour TSP (μg/m^3)			24-hour TSP (μg/m^3)		
	Max	Min	Mean	Max	Min	Mean
AC02b	185	66	185	312	27	122
Record Date	21-Jan-13	14-Feb-13	48 events	10-Jan-13	12-Dec-12	15 events
AC04c	201	64	201	438	26	127
Record Date	3-Jan-13	14-Feb-13	48 events	10-Jan-13	12-Dec-12	15 events

4.03 The 1-hour TSP monitoring values fluctuated below the Action Level during the Reporting Period. For 24-hour TSP monitoring, 1 Action Level exceedance was recorded at AC04c on 28 January 2013 and 2 Limit Level exceedances were recorded at both AC02b and AC4c on 10 January 2013. Notification of Exceedance (NOE) has been issued to relevant parties upon confirmation of the monitoring result

4.04 According to the construction information provided by the Contractor for the site environmental conditions, investigation of the cause exceedance concludes that the exceedances were not related to the works under the Project. As no consecutive exceedances were recorded on the next monitoring date, no remedial actions are required. The investigation result is summarized as follows:

- The construction activities conducted on 10 January 2013 included precast concrete pipe installation; formwork erection for U-Channel; excavation for 2 no. of 750mm depth drain pits and indoor E&M equipment installation. The construction activities conducted on 28 January 2013 included plastering for parapet on roof, formwork erection for boundary wall, meter works modification in Transformer Substation, exaction for drain pits, installation of underground fire service water main and indoor E&M equipment installation.
- The majority of works were carried out inside building or small scale excavation. With the implementation of the required construction dust suppression measures such as watering of haul roads and wheel washing prior to exit the site, major construction activities undertaken during the captioned exceedance i.e. indoor works etc., were not dusty as shown by the TSP results before.
- It was recorded that some sand and aggregate which not related to the project were delivered to the stockpile next to Yung Shue Wan playground in early of January 2013. The unmitigated sand stockpile created fugitive dust over the playground and access road during dry and windy season.
- Other the other hand, it was recorded that superstructure construction for new police station in the Architectural Service Department's (ASD) work site was in progress which is about 10m and 25m adjacent to monitoring location AC04c and AC02b respectively. It was considered as one of the source attributable to the 24-hour TSP exceedance.
- It is concluded that the exceedance was not related to the works under the Project. As no consecutive exceedances were recorded on the next monitoring, no remedial actions are

required. Nevertheless, full implementation of the recommended environmental mitigation measures, in particular construction dust suppression measures during dusty construction activities including vehicle and construction plant movement, is strongly recommended under dry and windy conditions.

4.2 RESULTS OF CONSTRUCTION NOISE MONITORING

4.05 Summary of construction noise monitoring at the identified locations during the Reporting Period are summarized in ***Table 4-2***. In this reporting quarter, a total of **15** events of construction noise measurement were conducted while no documented construction complaint was received and all the construction noise results were below the Limit level. No NOE or corrective action was recommended for this parameter.

Table 4-2 Summary of Construction Noise Monitoring Results

Station	Leq, 30min (dB((A))	
	Max	Min
NC05	70.0	56.5
Record Date	14-Dec-12	20-Dec-12

4.3 RESULTS OF MARINE WATER QUALITY MONITORING

4.06 Marine water quality monitoring is required upon the construction of marine outfall works commenced on 9 May 2011. As informed 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. The relevant letter ref.: TCS00512/10/300/L0425 has been submitted to EPD on 3 February 2012.

4.07 It is noticed that the remaining mariner work, i.e., dredging work in Yung Shuen Wan has been resumed on 23 November 2012. Impact water quality monitoring was carried out in this Reporting Period. Furthermore, monitoring at both tides of 26 November and flood tides of 22 December were only carried out at impact stations (WY1 – WY3) as the working boat unable to travel far from the coast of Yung Shun Wan due to high surge of the sea.

4.08 The statistical analysis result for the parameters of DO, turbidity and suspended solids in this reporting quarter are shown in ***Tables 4-3 to 4-6***.

Table 4-3 Statistic of Monitoring Result for DO concentration (mg/L) (Surface & Mid-layers)

Station	WY1	WY2	WY3	CY1(F)	CY2(E)
Average	7.58	7.53	7.43	7.45	7.25
Min	5.91	5.35	5.71	5.88	5.34
Max	10.02	9.80	9.89	10.01	10.55

Table 4-4 Statistic of Monitoring Result for DO concentration (mg/L) (Bottom layers)

Station	WY1	WY2	WY3	CY1(F)	CY2(E)
Average	7.58	7.50	7.53	7.39	7.15
Min	5.79	5.57	5.99	4.14	5.23
Max	9.47	9.72	9.63	9.50	9.60

Table 4-5 Statistic of Monitoring Result for Turbidity (NTU)

Station	WY1	WY2	WY3	CY1(F)	CY2(E)
Average	2.83	2.23	2.51	2.03	2.22
Min	0.93	0.52	0.65	0.43	0.58
Max	9.20	5.48	6.08	4.38	6.62

Table 4-6 Statistic of Monitoring Result for Suspended Solids (mg/L)

Station	WY1	WY2	WY3	CY1(F)	CY2(E)
Average	5.77	4.72	5.55	4.22	4.27
Min	0.95	0.70	0.70	0.50	0.73
Max	14.90	11.67	12.95	15.07	15.07

4.09 A summary of exceedances for the three parameters: dissolved oxygen (DO), turbidity and suspended solids are shown in ***Table 4-7.***

Table 4-7 Summary of Exceedances in 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
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

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

4.4 RESULTS OF ECOLOGY MONITORING

4.11 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.

4.12 Since, the remaining marine work in Yung Shuen Wan has been resumed in 23 November 2012, impact coral monitoring were conducted on **29 November 2012, 21 December 2012, 4, 17 January 2013 and 6 February 2013** by the marine ecologist.

5 WASTE MANAGEMENT

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

5.1 RECORDS OF WASTE QUANTITIES

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

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

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

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

Type of Waste	Quantity			Disposal Location
	Dec 12	Jan 13	Feb 13	
C&D Materials (Inert) ('000m^3)	0	0	0	-
Reused in this Contract (Inert) ('000m^3)	0	0	0	-
Reused in other Projects (Inert) ('000m^3)	0	0	0	-
Disposal as Public Fill (Inert) ('000m^3)	0.153	0.332	0.082	Tuen Mun Area 38

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

Type of Waste	Quantity			Disposal Location
	Dec 12	Jan 13	Feb 13	
Metal (kg)	0	0	0	-
Paper / Cardboard Packing (kg)	0	0	0	-
Plastic (kg)	0	0	0	-
Chemical Wastes (kg)	0	0	0	
General Refuses (tonne)	21.43	9.04	7.53	Yung Shue Wan RTS

5.04 There was no site effluent discharged but the estimated volume of surface runoff was less than 50m^3 in this reporting quarter.

6 SITE INSPECTION

6.01 According to the Final Report 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 joint-site visit by RE, the Contractor and ET was carried out on **27 November 2012, 4, 11, 18, 27 December 2012, 2, 8, 15, 22, 29 January 2013 and 5, 19 February 2013**.

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

Table 6-1 Site Observations

Date	Findings / Deficiencies	Follow-Up Status
27 November 2012	• Overloaded rubbish bins were observed at left entrance. Regular clearance is required.	Rubbish bins have been cleared on 4 December 2012.
4 December 2012	• No environmental issue was observed during the site inspection. However, full implementation of the required environmental mitigation measures is reminded in particular water quality mitigation measures to avoid adverse impacts on the receiving water bodies	Not required for general reminder.
11 December 2012	• No environmental issue was observed during the site inspection. However, full implementation of the required environmental mitigation measures is reminded in particular water quality mitigation measures to avoid adverse impacts on the receiving water bodies	Not required for general reminder.
18 December 2012	• Stagnant water was observed in a concrete structure. Mosquito control measures are reminded, preferably drying off the stagnant water.	Not required for general reminder.
27 December 2012	• Cumulated stagnant water was observed indie the chemical storage room, the Contractor should clean the cumulated water regularly.	Stagnant water in the chemical storage room was cleared on 2 January 2013.
2 January 2013	• No environmental issue was observed during the site inspection. However, full implementation of the required environmental mitigation measures is reminded in particular water quality mitigation measures to avoid adverse impacts on the receiving water bodies	Not required for general reminder.
8 January 2013	• No environmental issue was observed during the site inspection. However, full implementation of the required environmental mitigation measures is reminded in particular water quality mitigation measures to avoid adverse impacts on the receiving water bodies	Not required for general reminder.
15 January 2013	• No environmental issue was observed during the site inspection. However, full implementation of the required environmental mitigation measures is reminded in particular water quality mitigation measures to avoid adverse impacts on the receiving water bodies	Not required for general reminder.

22 January 2013	• No environmental issue was observed during the site inspection. However, full implementation of the required environmental mitigation measures is reminded in particular water quality mitigation measures to avoid adverse impacts on the receiving water bodies	Not required for general reminder.
29 January 2013	• Free standing chemical container were observed, the Contactor should provide drip tray underneath and place them in proper area.	Free standing chemical containers were removed on 5 February 2013.
5 February 2013	• Two unlabeled liquid drums were observed on 1/F of the Sewage Treatment Plant. Labeling and proper storage of the chemicals/ liquid is required or removal from the site is recommended.	The chemical drums were removed from the site and situation rectified on site on 5 February 2013.
19 February 2013	• No environmental issue was observed during the site inspection. However, full implementation of the required environmental mitigation measures is reminded in particular water quality mitigation measures to avoid adverse impacts on the receiving water bodies	Not required for general reminder.

7 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

7.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

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

Table 7-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
December 2012	0	0	NA
January 2013	0	0	NA
February 2013	0	0	NA

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
December 2012	0	0	NA
January 2013	0	0	NA
February 2013	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
December 2012	0	0	NA
January 2013	0	0	NA
February 2013	0	0	NA

8 IMPLEMENTATION STATUS OF MITIGATION MEASURES

8.01 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

8.02 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:

(a) Stockpiles of imported material kept on site should be contained within hoardings, dampened and / or covered during dry and windy weather;

(b) Material stockpiled alongside trenches should be covered with tarpaulins whenever works are close to village houses;

(c) Water sprays should be used during the delivery and handling of cement, sands, aggregates and the like.

(d) 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

8.03 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 program.
- 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

8.04 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.

8.05 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

8.06 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

8.07 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

8.08 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

8.09 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).

8.10 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.

8.11 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

8.12 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.

8.13 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.

8.14 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

8.15 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

8.16 After use, chemical waste (e.g. 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.

8.17 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

8.18 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.

8.19 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

8.20 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.

8.21 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

8.22 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

8.23 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

8.24 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

8.25 The implementation schedule of mitigation measures is presented in ***Appendix H***.

8.26 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 Month are summarized in ***Table 8-1***.

Table 8-1 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.
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.

9 CONCLUSIONS AND RECOMMENTATIONS

9.1 CONCLUSIONS

9.01 This is the **10th** Quarterly EM&A Summary Report for Yung Shue Wan Portion Area under the Project covering the construction period from **26 November 2012 to 25 February 2013.**

9.02 No 1-hour TSP result was found to be triggered the Action or Limit Level in this Reporting Period. For 24-hour TSP monitoring, 1 Action Level exceedance at AC04c on 28 January 2013 and 2 Limit Level exceedances at both AC04c and AC02b on 10 January 2013 of 24-hour TSP result were recorded. Investigation report for the cause of exceedances has been completed and it is concluded that the exceedance was not related to the works under the Project.

9.03 No exceedance in marine water monitoring was recorded in this Reporting Period.

9.04 No exceedance in coral monitoring was recorded in this Reporting Period.

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

9.06 **12** events of site inspection were carried out by ET in this Reporting Period and no non-compliance was observed during the inspection. In general, all the observation has been rectified during the next week site inspection. The environmental performance of the Project was therefore considered as satisfactory.

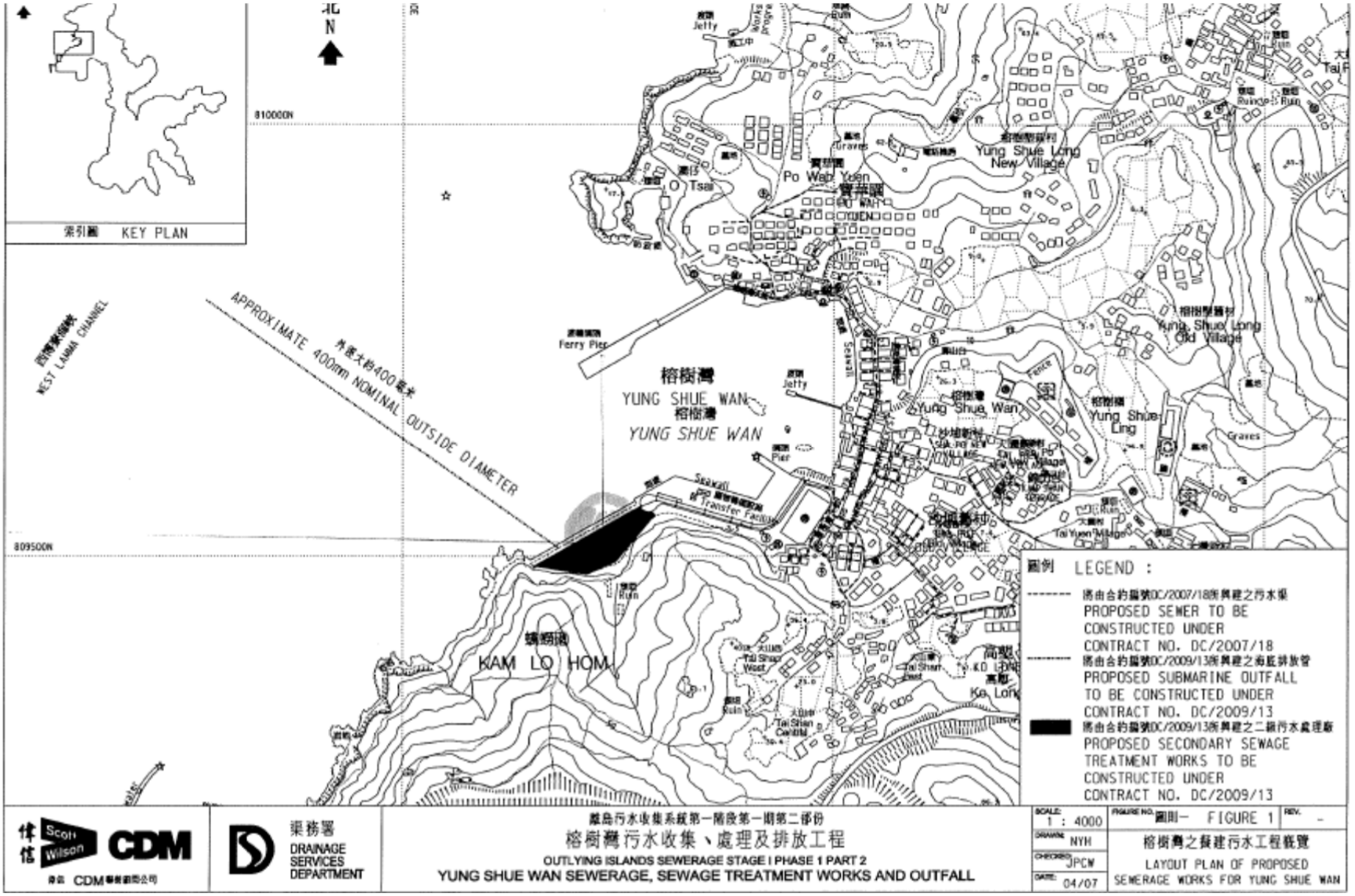
9.2 RECOMMENDATIONS

9.07 During dry and windy season, construction dust would be the key environmental issue to concern. The construction dust mitigation measures identified at the EM&A Manual such as watering at haul road and covering of dusty material should be implemented and properly maintained.

9.08 Nevertheless, the Contractor shall keep paying 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 sea body within Fish culture zone at Picnic Bay and the Secondary recreation contact subzone at Mo Tat Wan should be avoided. Therefore, mitigation measures for water quality should be fully implemented.

Appendix A

Site Layout Plan – Yung Shue Wan Portion Area


索引圖 KEY PLAN
北 N
810000N
809500N
APPROXIMATE 400mm NOMINAL OUTSIDE DIAMETER
外徑大約400毫米
榕樹灣
YUNG SHUE WAN
KAM LO HOM
Yung Shue Long New Village
Yung Shue Long Old Village
Yung Shue Wan
Yung Shue Ling
Po Wah Yuen
Ferry Pier
Jetty
Seawall
Transfer Facility
Graves
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
Scott Wilson
CDM
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
DRAWING NYH
CHECKED JPCW
DATE 04/07
FIGURE NO. 圖則一 FIGURE 1
REV. -
榕樹灣之污水工程總覽
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	Ms. Jacky C.M. Wong	2159-3413	2833-9162
SCJV	Engineer's Representative	Mr. Ian Jones	2982 0240	2982 4129
SCJV	Resident Engineer	Mr. Alfred Cheung	2982 0240	2982 4129
Scott Wilson	Independent Environmental Checker	Mr. Rodney Ip	2410 3750	2428 9922
Leader	Director	Mr. Wilfred So	2982 1750	2982 1163
Leader	Project Manager	Mr. Vincent Chan	2982 1750	2982 1163
Leader	Construction Manager	Mr. K. Y. So	2982 1750	2982 1163
Leader	Assistant Construction Manager	Mr. Ron Hung	2982 1750	2982 1163
Leader	Environmental Officer	Mr. K. Y. So	2982 8652	2982 8650
Leader	Environmental Supervisor	Mr. Chan Shut Man	2982 8652	2982 8650
Leader	Sub-Agent	Mr. Burgess Yip	2982 1750	2982 1163
Leader	Senior 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	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

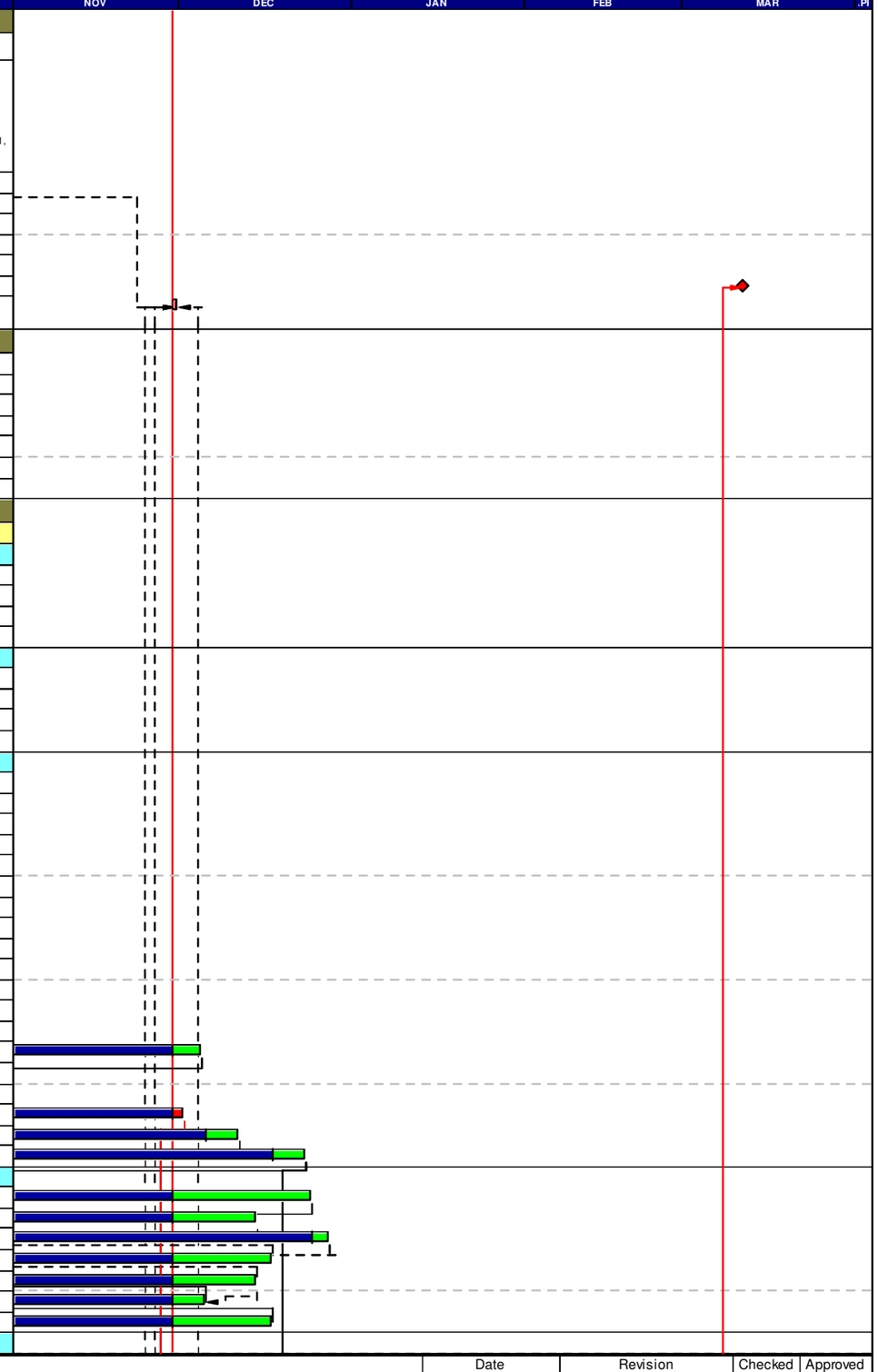
Scott Wilson (IEC) – Scott Wilson Limited

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

Appendix C

Master and Three Months Rolling Construction Programs

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,E&M2001, KD0125,PRE0020,PRE0040,PRE0050, PRE0060,PRE0090,PRE0100,PRE0130, SKW0250,SKW0588,SKW0651,SKW0881, SKW1131,SKW1481,SKW1591,SKW1611, YSW0020,YSW0050,YSW0075,YSW0180, YSW0200,YSW0220,YSW0240,YSW02401, YSW0412,YSW0422
KD0030	Section W1 - Slope Works in Portion A & C	0	100		14/10/11 A		14/10/11 A		YSW0100,YSW0110,YSW0140,	KD0125,KD0130
KD0050	Section W3 - Footpath Diversion in Ptn G	0	100		24/03/11 A		24/03/11 A		SKW0481	KD0125
KD0060	Section W4 - Slope Works in Portios H & I	0	100		27/03/12 A		27/03/12 A		SKW05938,SKW059416	KD0125,KD0135,SKW05941
KD0070	Section W5 - P.S. No. 1 in Portion D	0	100		10/02/12 A		10/02/12 A		SKW0741	KD0125
KD0080	Section W6 - Sewer & PS No2 in Ptn. E & F	0	100		10/02/12 A		10/02/12 A		SKW0971	KD0125
KD0115	Start Operate Temp Sewage Treatment in Port. A&H	0	0		11/03/13		11/03/13	0 *	E&M0510	KD0125
KD0130	Completion of Maintenance Period of W1	1	0	30/11/12	30/11/12 *	13/10/12	13/10/12 *	-48d	KD0030,YSW01755,YSW01805, YSW01810	
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	13/09/10 A	17/05/10 A	13/09/10 A		KD0020	SKW1151
PRE0100	Application & Consent of XP from HyD (Mo Tat Rd)	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A		KD0020	SKW1491,SKW1501
PRE0130	Setup Web-site for EM&A Reporting	90	100	17/05/10 A	14/08/10 A	17/05/10 A	14/08/10 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	15/07/10 A	16/11/10 A	15/07/10 A	16/11/10 A		E&M0020	E&M0080
E&M0080	Approval from the Engineer	14	100	17/11/10 A	30/11/10 A	17/11/10 A	30/11/10 A		E&M0030	E&M0295
Hydraulic Design										
E&M0040	Submission	21	100	15/07/10 A	04/08/10 A	15/07/10 A	04/08/10 A		E&M0010,E&M0020	E&M0050,E&M0101,E&M0240,E&M0260,
E&M0050	Vetting and Comment by ER	14	100	05/08/10 A	18/08/10 A	05/08/10 A	18/08/10 A		E&M0040	E&M0060
E&M0060	Revision and Resubmission	97	100	19/08/10 A	10/11/10 A	19/08/10 A	10/11/10 A		E&M0050	E&M0430
E&M0430	Approval from the Engineer	7	100	24/11/10 A	30/11/10 A	24/11/10 A	30/11/10 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	05/08/10 A	30/11/11 A	05/08/10 A	30/11/11 A		E&M0040	E&M0102
E&M0102	Vetting and Comment by ER	60	100	03/11/10 A	30/11/11 A	03/11/10 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&M0140,
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	03/08/10 A	24/02/11 A	03/08/10 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	85	19/11/11 A	04/12/12	19/11/11 A	15/04/13	133d	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	08/03/12 A	21/06/11 A	08/03/12 A		E&M0103	E&M0470,E&M3130
E&M0210	Approval on MCC & LVSB	30	95	19/11/11 A	01/12/12	19/11/11 A	10/07/12	-144d	E&M0103	E&M0480,E&M3140
E&M0220	Approval on BS Equipment	30	80	30/11/11 A	11/12/12	30/11/11 A	03/02/13	54d	E&M0103,E&M0280	E&M0490,E&M3150
E&M0230	Approval on FS Equipment	30	81	30/11/11 A	23/12/12	30/11/11 A	18/02/13	57d	E&M0103,E&M0290	E&M0295,E&M0320,E&M0500,E&M3160
Drawings Submission & Approval										
E&M0235	Sub. P&ID Drawings	100	75	24/06/10 A	24/12/12	24/06/10 A	22/03/13	87d	E&M0010	E&M0250
E&M0240	Sub. Plant GA Drawings	45	68	04/08/10 A	14/12/12	04/08/10 A	22/03/13	98d	E&M0040	E&M0250,E&M0280,E&M0290
E&M0250	Sub. Builder's Works Requirements Drawings	15	85	04/08/10 A	27/12/12	04/08/10 A	24/03/13	87d	E&M0235,E&M0240,E&M0260,E&M0270	E&M0280,E&M0290
E&M0260	Sub. Mechanical Installation Drawings	60	70	27/09/10 A	17/12/12	27/09/10 A	22/03/13	94d	E&M0040	E&M0250
E&M0270	Sub. Electrical Installation Drawings	60	75	27/09/10 A	14/12/12	27/09/10 A	22/03/13	97d	E&M0040	E&M0250,E&M0280
E&M0280	Sub. BS Installation Drawings	120	95	27/09/10 A	05/12/12	27/09/10 A	28/01/13	54d	E&M0240,E&M0250,E&M0270	E&M0220
E&M0290	Sub. FS Installation Drawings	120	85	13/11/10 A	17/12/12	13/11/10 A	13/02/13	57d	E&M0240,E&M0250	E&M0230
Statutory Submission										



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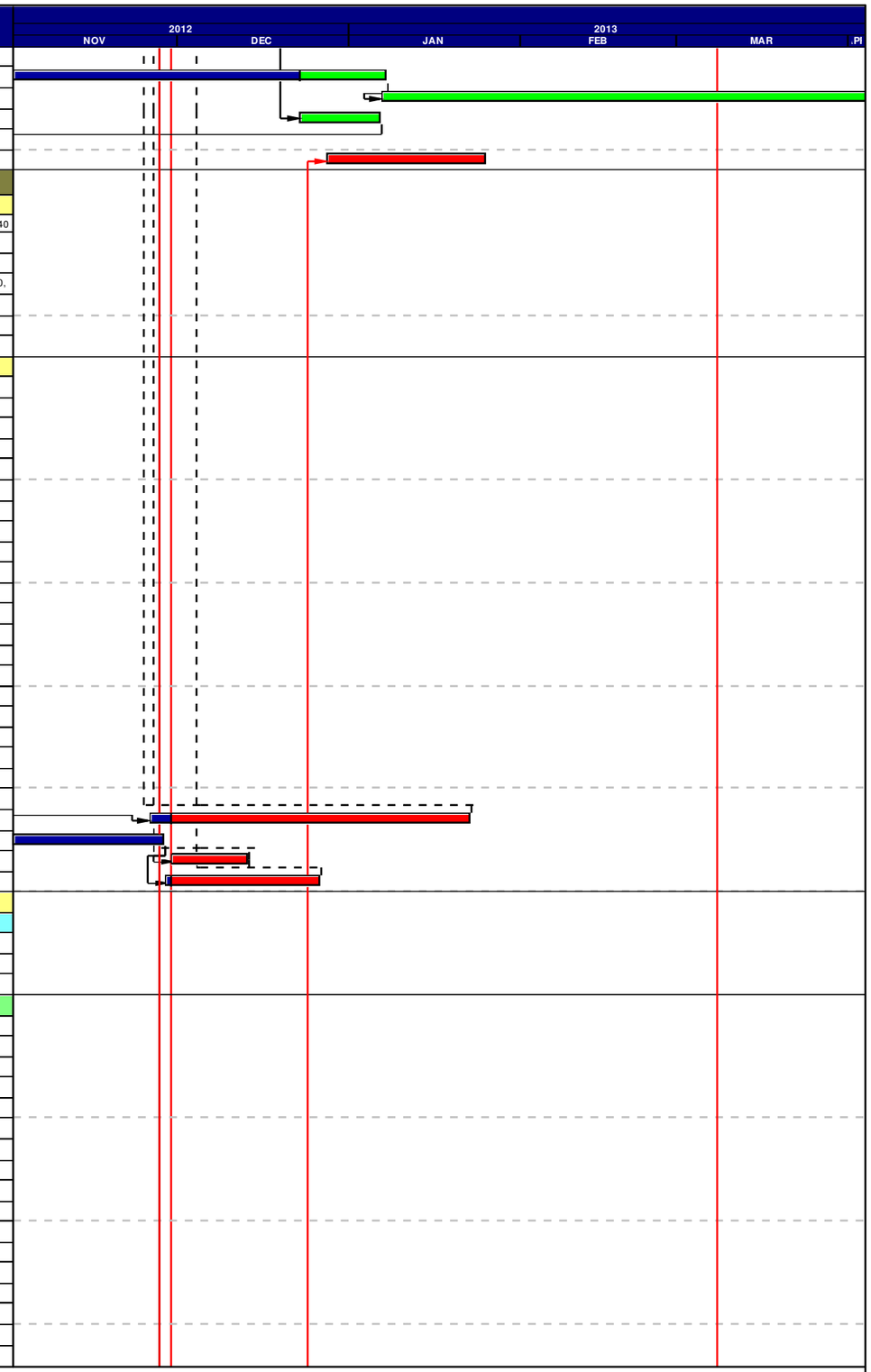
Start milestone point
Finish milestone point

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Dec 2012 - Feb 2013)

(Marked on 30 November 2012)

Date	Revision	Checked	Approved
30/11/12	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	07/01/13	01/11/11 A	15/04/13	98d	E&M0295	E&M0305
E&M0305	Provision of Cables to the STWs	180	0	07/01/13	06/07/13	16/04/13	12/10/13	98d	E&M0300	E&M0680
E&M0320	Form 314 Submission to FSD	14	0	23/12/12	06/01/13	08/08/13	21/08/13	227d	E&M0230	E&M0325, E&M0670
E&M0325	Submission to WSD	14	100	01/11/11 A	29/02/12 A	01/11/11 A	29/02/12 A		E&M0320	E&M0670, E&M0680
E&M0350	Form 501 Submission to FSD (PS1 & PS2)	28	0	28/12/12	25/01/13	14/11/12	11/12/12	-45d	E&M2016	E&M11800, E&M2180
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	YSW00201, YSW0030, YSW00351, YSW0040
YSW00201	Change Baseline Monitoring Location (Air&Noise)	59	100	02/06/10 A	30/07/10 A	02/06/10 A	30/07/10 A		YSW0020	YSW0030
YSW0030	Baseline monitoring (Air & Noise)	23	100	31/07/10 A	22/08/10 A	31/07/10 A	22/08/10 A		YSW0020, YSW00201	YSW0035
YSW0035	Baseline Monitoring Report Submission (A & N)	16	100	23/08/10 A	07/09/10 A	23/08/10 A	07/09/10 A		YSW0030	YSW0120, YSW01545, YSW0500, YSW0610,
YSW00351	Submission & Approval for Monitoring Method (W)	58	100	02/06/10 A	29/07/10 A	02/06/10 A	29/07/10 A		YSW0020	YSW0040
YSW0040	Baseline monitoring (Water)	155	100	30/07/10 A	31/12/10 A	30/07/10 A	31/12/10 A		YSW0020, YSW00351	YSW0350
YSW0050	Erect Hoarding and Fencing	60	100	19/05/10 A	17/07/10 A	19/05/10 A	17/07/10 A		KD0020	YSW0155
Section W1 - Slope Works in Portion A & C										
YSW0075	Mobilization	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A		KD0020	YSW0080, YSW0100
YSW0080	Site Clearance	30	100	16/06/10 A	15/07/10 A	16/06/10 A	15/07/10 A		YSW0075	YSW0085, YSW0090, YSW0120
YSW0085	Initial Survey	14	100	02/07/10 A	15/07/10 A	02/07/10 A	15/07/10 A		YSW0080	YSW0120
YSW0090	Verify the Rock Boulder required Stablization Wk	249	100	16/07/10 A	21/03/11 A	16/07/10 A	21/03/11 A		YSW0080	YSW0100, YSW0110
YSW0100	Removal of Rock Boulder	257	100	20/09/10 A	03/06/11 A	20/09/10 A	03/06/11 A		YSW0075, YSW0090	KD0030
YSW0110	Stablizing work for rock boulder	35	100	16/07/11 A	19/08/11 A	16/07/11 A	19/08/11 A		YSW0090	KD0030
YSW0120	Cut the slope to design profile	2	100	24/09/10 A	25/09/10 A	24/09/10 A	25/09/10 A		YSW0035, YSW0080, YSW0085	YSW0131, YSW0155, YSW0170
YSW0131	Mobilization of Plant and Material of Soil Nails	14	100	12/09/10 A	25/09/10 A	12/09/10 A	25/09/10 A		YSW0120	YSW0132
YSW0132	Erect Scaffold and Working Platform	2	100	26/09/10 A	27/09/10 A	26/09/10 A	27/09/10 A		YSW0131	YSW0133
YSW0133	Setting out and Verify Locations of Soil Nails	45	100	28/09/10 A	11/11/10 A	28/09/10 A	11/11/10 A		YSW0132	YSW0134
YSW0134	Drilling and Soil Nails Installation	43	100	19/10/10 A	30/11/10 A	19/10/10 A	30/11/10 A		YSW0133	YSW0135
YSW0135	Construction of Nail Heads	12	100	01/12/10 A	12/12/10 A	01/12/10 A	12/12/10 A		YSW0134	YSW0136
YSW0136	Mesh Installation on Cut Slope	3	100	13/12/10 A	15/12/10 A	13/12/10 A	15/12/10 A		YSW0135	YSW01361
YSW01361	Verify alignment of access & channels on slope	118	100	16/12/10 A	12/04/11 A	16/12/10 A	12/04/11 A		YSW0136	YSW0140
YSW0140	Construct U-channels & Step Channel on Cut Slope	182	100	13/04/11 A	11/10/11 A	13/04/11 A	11/10/11 A		YSW01361	KD0030
YSW0153	Removal of Ex U-Channel where clash with B. Wall	151	100	10/05/11 A	07/10/11 A	10/05/11 A	07/10/11 A		YSW01545	YSW01750
YSW01545	Temporary Diversion of Drainage	244	100	08/09/10 A	09/05/11 A	08/09/10 A	09/05/11 A		YSW0035	YSW0153
YSW0155	RC Barrier Wall Bay 1-13 (below Ground Level)	256	100	26/09/10 A	08/06/11 A	26/09/10 A	08/06/11 A		YSW0050, YSW0120	KD0030, YSW0170, YSW0175
YSW0170	RC Barrier Wall Bay 1-13 (above Ground Level)	125	100	09/06/11 A	11/10/11 A	09/06/11 A	11/10/11 A		YSW0120, YSW0155	KD0030, YSW01750
YSW0175	Construct U-channels and Catchpits (Phase 1)	76	100	09/06/11 A	23/08/11 A	09/06/11 A	23/08/11 A		YSW0155	KD0030
YSW01750	Construction of subsoil drain (phase 1)	120	100	12/10/11 A	08/02/12 A	12/10/11 A	08/02/12 A		YSW0153, YSW0170	YSW01755
YSW01755	Construct subsoil drain (phase 2)	60	10	26/11/12 A	22/01/13	26/11/12 A	12/10/12	-102d	YSW01750	KD0130
YSW01800	RC Barrier Wall Bay 14 (below & above Ground)	30	100	03/09/12 A	28/11/12 A	03/09/12 A	28/11/12 A		YSW0760	YSW01805, YSW01810
YSW01805	Hydroseeding	14	0	30/11/12	13/12/12	29/09/12	12/10/12	-62d	YSW01800	KD0130
YSW01810	Construct U-channels and Catchpits (Phase 2)	30	10	29/11/12 A	26/12/12	29/11/12 A	13/10/12	-74d	YSW01800	KD0130
Section W2 - 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, YSW0650
YSW0432	Initial Survey	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A		YSW0422	YSW0510
YSW STW - GL H - T										
YSW0500	ELS & Excavation for Inlet Pumping Station	105	100	08/09/10 A	21/12/10 A	08/09/10 A	21/12/10 A		YSW0035, YSW0422	YSW0510
YSW0510	Sub-structure construction (Inlet Pumping Stn)	129	100	22/12/10 A	29/04/11 A	22/12/10 A	29/04/11 A		YSW0432, YSW0500	YSW0520
YSW0520	Backfill & Remove ELS (Inlet Pumping Stn)	40	100	30/04/11 A	08/06/11 A	30/04/11 A	08/06/11 A		YSW0510	YSW05701
YSW0530	ELS & Excavation for Equalization Tank	159	100	01/01/11 A	08/06/11 A	01/01/11 A	08/06/11 A		YSW0660	YSW0540, YSW05701
YSW0540	Sub-structure construction (Equalization Tank)	112	100	09/06/11 A	28/09/11 A	09/06/11 A	28/09/11 A		YSW0530	YSW0550, YSW05901
YSW0550	Backfilling & Remove ELS (Equalization Tank)	20	100	29/09/11 A	18/10/11 A	29/09/11 A	18/10/11 A		YSW0540	YSW05901
YSW05701	ELS & Excavation for Grit Chambers	28	100	09/06/11 A	06/07/11 A	09/06/11 A	06/07/11 A		YSW0520, YSW0530	YSW05711, YSW05731
YSW05711	Construct sub-structure for Grit Chambers	106	100	07/07/11 A	20/10/11 A	07/07/11 A	20/10/11 A		YSW05701	YSW05721, YSW05911
YSW05721	Backfill & Remove ELS for Grit Chambers	12	100	21/10/11 A	01/11/11 A	21/10/11 A	01/11/11 A		YSW05711	YSW05911
YSW05731	ELS & Excavation for Grease Separators (GS)	34	100	07/07/11 A	09/08/11 A	07/07/11 A	09/08/11 A		YSW05701	YSW05741
YSW05741	Construct sub-structure for Grease Separators	52	100	10/08/11 A	30/09/11 A	10/08/11 A	30/09/11 A		YSW05731	YSW05751
YSW05751	Install Dia.400 Puddles in Grease Separators	27	100	01/10/11 A	27/10/11 A	01/10/11 A	27/10/11 A		YSW05741	YSW05752
YSW05752	Construct sub-structure for GS (above puddles)	48	100	28/10/11 A	14/12/11 A	28/10/11 A	14/12/11 A		YSW05751	YSW05761
YSW05761	Backfill & remove ELS for Grease Separators	10	100	15/12/11 A	24/12/11 A	15/12/11 A	24/12/11 A		YSW05752	YSW0580, YSW05921
YSW0580	Excavate to Formation for Deodorizer Room	10	100	25/12/11 A	03/01/12 A	25/12/11 A	03/01/12 A		YSW05761	YSW05801, YSW05922
YSW05801	Excavate to formation - Grid J-N/5-7	40	100	04/01/12 A	12/02/12 A	04/01/12 A	12/02/12 A		YSW0580	YSW05802, YSW05923
YSW05802	Excavate to formation - Grid GA-H/5-7	10	100	13/02/12 A	22/02/12 A	13/02/12 A	22/02/12 A		YSW05801	YSW05924



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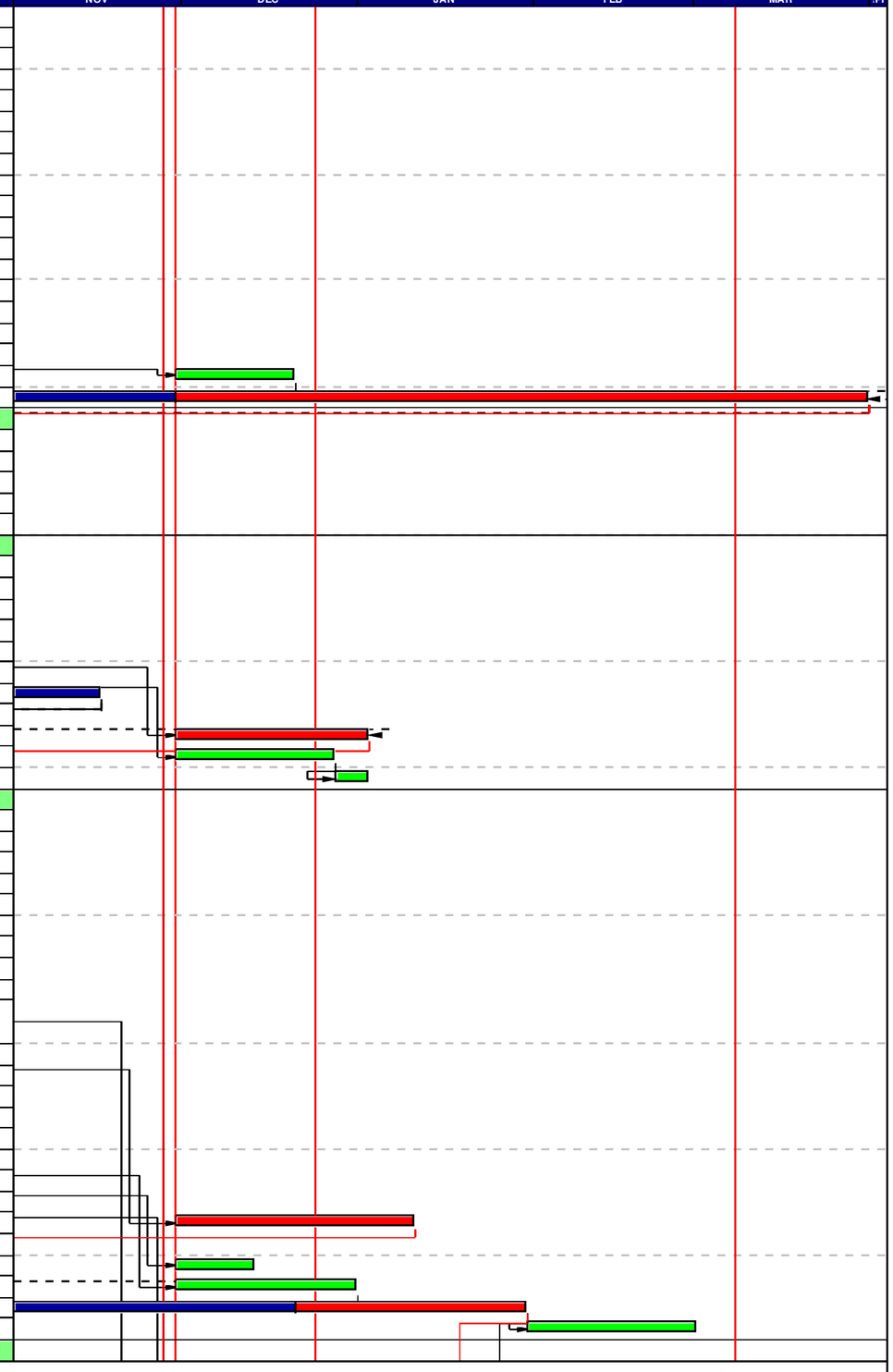
Progress bar
Critical bar
Summary bar
Progress point
Critical point
Summary point
Start milestone point
Finish milestone point

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Dec 2012 - Feb 2013)

(Marked on 30 November 2012)

Date	Revision	Checked	Approved
30/11/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
YSW05901	G/F to 1/F Construction Grid GA-K/1-5	90	100	29/09/11 A	27/12/11 A	29/09/11 A	27/12/11 A		YSW0540,YSW0550	YSW06001
YSW05911	G/F to 1/F Construction Grid N-S/1-5	80	100	21/10/11 A	08/01/12 A	21/10/11 A	08/01/12 A		YSW05711,YSW05721	YSW06011,YSW06035
YSW05921	G/F to 1/F Construction Grid K-N/1-5	45	100	25/12/11 A	07/02/12 A	25/12/11 A	07/02/12 A		YSW05761	YSW06021
YSW05922	G/F to 1/F Construction for Deodorizer Room	80	100	04/01/12 A	23/03/12 A	04/01/12 A	23/03/12 A		YSW0580	YSW06022
YSW05923	G/F to 1/F Construction for Grid J-N/5-7	60	100	13/02/12 A	12/04/12 A	13/02/12 A	12/04/12 A		YSW05801	YSW06023
YSW05924	G/F to 1/F Construction for Grid GA-H/5-7	60	100	28/05/12 A	16/07/12 A	28/05/12 A	16/07/12 A		YSW05802,YSW06023	YSW06034
YSW06001	1/F to Roof Constuction for Grid GA-K/1-5	87	100	28/12/11 A	23/03/12 A	28/12/11 A	23/03/12 A		YSW05901	YSW0800
YSW06011	1/F to Roof Constuction for Grid N-S/1-5	75	100	09/01/12 A	23/03/12 A	09/01/12 A	23/03/12 A		YSW05911	YSW0800
YSW06021	1/F to Roof Constuction for Grid K-N/1-5	44	100	08/02/12 A	22/03/12 A	08/02/12 A	22/03/12 A		YSW05921	YSW07201
YSW06022	1/F to Roof Constuction for Deodorizer Room	60	100	24/03/12 A	22/05/12 A	24/03/12 A	22/05/12 A		YSW05922	YSW0800
YSW06023	1/F to Roof Constuction for Grid J-N/5-7	45	100	13/04/12 A	27/05/12 A	13/04/12 A	27/05/12 A		YSW05923	YSW05924
YSW06034	1/F to Roof Constuction for Grid GA-H/5-7	45	100	27/07/12 A	13/08/12 A	27/07/12 A	13/08/12 A		YSW05924	YSW0800
YSW06035	Construct buffle walls in Grease Separators	118	100	18/04/12 A	16/07/12 A	18/04/12 A	16/07/12 A		YSW05911	YSW07204
YSW07201	Water tightness test for Inlet Pumping Station	60	100	23/03/12 A	21/05/12 A	23/03/12 A	21/05/12 A		YSW06021	YSW07202,YSW0800
YSW07202	Water tightness test for Equalization Tanks	42	100	22/05/12 A	02/07/12 A	22/05/12 A	02/07/12 A		YSW07201	YSW07203,YSW0800
YSW07203	Water tightness test for Grit Chambers	42	100	17/09/12 A	29/09/12 A	17/09/12 A	29/09/12 A		YSW07202	YSW07204,YSW0800
YSW07204	Water tightness test for Grease Separators	42	100	03/10/12 A	31/10/12 A	03/10/12 A	31/10/12 A		YSW06035,YSW07203	YSW07205,YSW0800
YSW07205	Water tightness test for water channels	21	0	30/11/12	20/12/12	18/01/13	07/02/13	49d	YSW07204	YSW0800
YSW0800	ABWF installation	271	55	03/07/12 A	31/03/13	03/07/12 A	24/01/13	-66d	YSW06001,YSW06011,YSW06022,	E&M0530,E&M0540,E&M0550,E&M0560,
YSW STW - GL T - X										
YSW0610	Excavate to formation	10	100	08/09/10 A	17/09/10 A	08/09/10 A	17/09/10 A		YSW0035,YSW0422	YSW0620
YSW0620	Base slab construction	248	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	205	100	24/05/11 A	14/12/11 A	24/05/11 A	14/12/11 A		YSW0620	YSW0640
YSW0640	1/F to Roof Construction	64	100	15/12/11 A	16/02/12 A	15/12/11 A	16/02/12 A		YSW0630	YSW0810
YSW0810	ABWF installation	80	100	28/12/11 A	16/03/12 A	28/12/11 A	16/03/12 A		YSW0640	E&M0610,E&M0620,E&M0630,E&M0640
YSW STW - GL F - H & DN Tanks										
YSW0650	ELS & Excavation for DN Tanks	37	100	08/09/10 A	14/10/10 A	08/09/10 A	14/10/10 A		YSW0035,YSW0422	YSW0660
YSW0660	Sub-struction construction (DN Tanks)	78	100	15/10/10 A	31/12/10 A	15/10/10 A	31/12/10 A		YSW0650	YSW0530,YSW0670
YSW0670	Backfill & Remove ELS (DN Tanks)	70	100	01/01/11 A	11/03/11 A	01/01/11 A	11/03/11 A		YSW0660	YSW0680
YSW0680	Base slab construction (SD1, SD2 & MBR4)	17	100	12/03/11 A	28/03/11 A	12/03/11 A	28/03/11 A		YSW0670	YSW0690
YSW0690	Construct Superstructure SD1, SD2 & MBR4	82	100	29/03/11 A	18/06/11 A	29/03/11 A	18/06/11 A		YSW0680	YSW0705,YSW0820
YSW06901	Construct Superstructure of DN Tanks	28	100	15/05/12 A	11/06/12 A	15/05/12 A	11/06/12 A		YSW0735	YSW0830
YSW0705	Water test for MBR 4, SD 1&2	14	100	01/10/12 A	16/11/12 A	01/10/12 A	16/11/12 A		YSW0690	E&M0510,E&M0630,E&M0640,YSW0710
YSW0710	Apply protective paint for MBR 4, SD 1&2	20	100	24/09/12 A	05/10/12 A	24/09/12 A	05/10/12 A		YSW0705	YSW0820
YSW0820	ABWF installation	34	0	30/11/12	02/01/13	30/11/12	02/01/13	0	YSW0690,YSW0710	E&M0510,E&M0630,E&M0640
YSW0830	Water test for DN Tanks	28	0	30/11/12	27/12/12	12/07/13	08/08/13	224d	YSW06901	YSW0850
YSW0850	Apply protecitve paint for DN Tanks	6	0	28/12/12	02/01/13	09/08/13	14/08/13	224d	YSW0830	E&M0610
YSW STW - GL A - F										
YSW0730	Completion of HDD	0	100	21/01/12 A		21/01/12 A			YSW03601,YSW03605	YSW0732
YSW0732	Excavate for MBR 2 & 3	20	100	21/01/12 A	09/02/12 A	21/01/12 A	09/02/12 A		YSW0730	YSW0733
YSW0733	Construct basement of MBR 2 & 3	20	100	10/02/12 A	29/02/12 A	10/02/12 A	29/02/12 A		YSW0732	YSW0735,YSW0740
YSW0735	Construct superstructure of MBR 2	75	100	01/03/12 A	14/05/12 A	01/03/12 A	14/05/12 A		YSW0733	YSW06901,YSW0736,YSW08302
YSW0736	Construct superstructure of MBR 3	100	100	15/05/12 A	14/05/12 A	15/05/12 A	14/05/12 A		YSW0735	YSW08302
YSW0740	ELS & excavate for Outfall Shaft	75	100	01/03/12 A	14/05/12 A	01/03/12 A	14/05/12 A		YSW0733	YSW0750
YSW0750	Construct basement of Outfall Shaft	19	100	15/05/12 A	02/06/12 A	15/05/12 A	02/06/12 A		YSW0740	YSW07501
YSW07501	Connect additional flange to HDPE pipe (VO 042)	5	100	03/06/12 A	07/06/12 A	03/06/12 A	07/06/12 A		YSW0750	YSW07502
YSW07502	Construct sub-structure of Outfall Shaft	16	100	08/06/12 A	23/06/12 A	08/06/12 A	23/06/12 A		YSW07501	YSW0760
YSW0760	Backfill & remove ELS (outfall shaft)	8	100	24/06/12 A	01/07/12 A	24/06/12 A	01/07/12 A		YSW07502	YSW01800,YSW07601,YSW07603, YSW1470,YSW16601,YSW16606
YSW07601	Construct superstructure for Outfall Shaft	80	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		YSW0760	YSW08301
YSW07603	ELS & excavate for FSH Water Supply Tank	21	100	01/06/12 A	25/06/12 A	01/06/12 A	25/06/12 A		YSW0760	YSW07604
YSW07604	Construct substructure for FSH Water Supply Tank	23	100	26/06/12 A	19/07/12 A	26/06/12 A	19/07/12 A		YSW07603	YSW07605
YSW07605	Backfill & remove ELS for FSH Water Supply Tank	21	100	20/07/12 A	31/07/12 A	20/07/12 A	31/07/12 A		YSW07604	YSW07607
YSW07607	Construct basement of MBR 1 & Workshop	28	100	01/08/12 A	24/08/12 A	01/08/12 A	24/08/12 A		YSW07605	YSW07608
YSW07608	Construct superstructure for FSH Water Supply Tk	28	100	25/08/12 A	30/09/12 A	25/08/12 A	30/09/12 A		YSW07607	YSW07609,YSW08304
YSW07609	Construct superstructure for MBR 1	28	100	25/08/12 A	30/09/12 A	25/08/12 A	30/09/12 A		YSW07608	YSW07610,YSW08303
YSW07610	Construct Workshop, FSSH Pump Rm, PW Pump Rm	28	100	03/10/12 A	31/10/12 A	03/10/12 A	31/10/12 A		YSW07609	YSW0840
YSW08301	Water tightness test for Outfall Shaft	42	0	30/11/12	10/01/13	31/10/12	11/12/12	-30d	YSW07601	YSW08305
YSW08302	Water tightness test for MBR 2 & 3	49	100	03/07/12 A	05/10/12 A	03/07/12 A	05/10/12 A		YSW0735,YSW0736	YSW08305
YSW08303	Water tightness test for MBR 1	14	5	30/11/12 A	13/12/12	30/11/12 A	21/01/13	40d	YSW07609	YSW08305
YSW08304	Water tightness test for FSH Water Supply Tank	32	0	30/11/12	31/12/12	11/12/12	11/01/13	11d	YSW07608	YSW08305
YSW08305	Apply protective paint	82	50	02/10/12 A	30/01/13	02/10/12 A	31/12/12	-30d	YSW08301,YSW08302,YSW08303,	E&M0520,E&M0590,E&M0605,YSW0870
YSW0870	ABWF installation	30	0	31/01/13	01/03/13	07/05/13	05/06/13	96d	YSW08305	E&M0630,E&M0640,E&M0650
Fire Hose Reel / Sprinkler Pump Rm										



Start date	05/05/10
Finish date	19/10/15
Data date	30/11/12
Run date	12/12/12
Page number	3A
c Primavera Systems, Inc.	

Early bar
Progress bar
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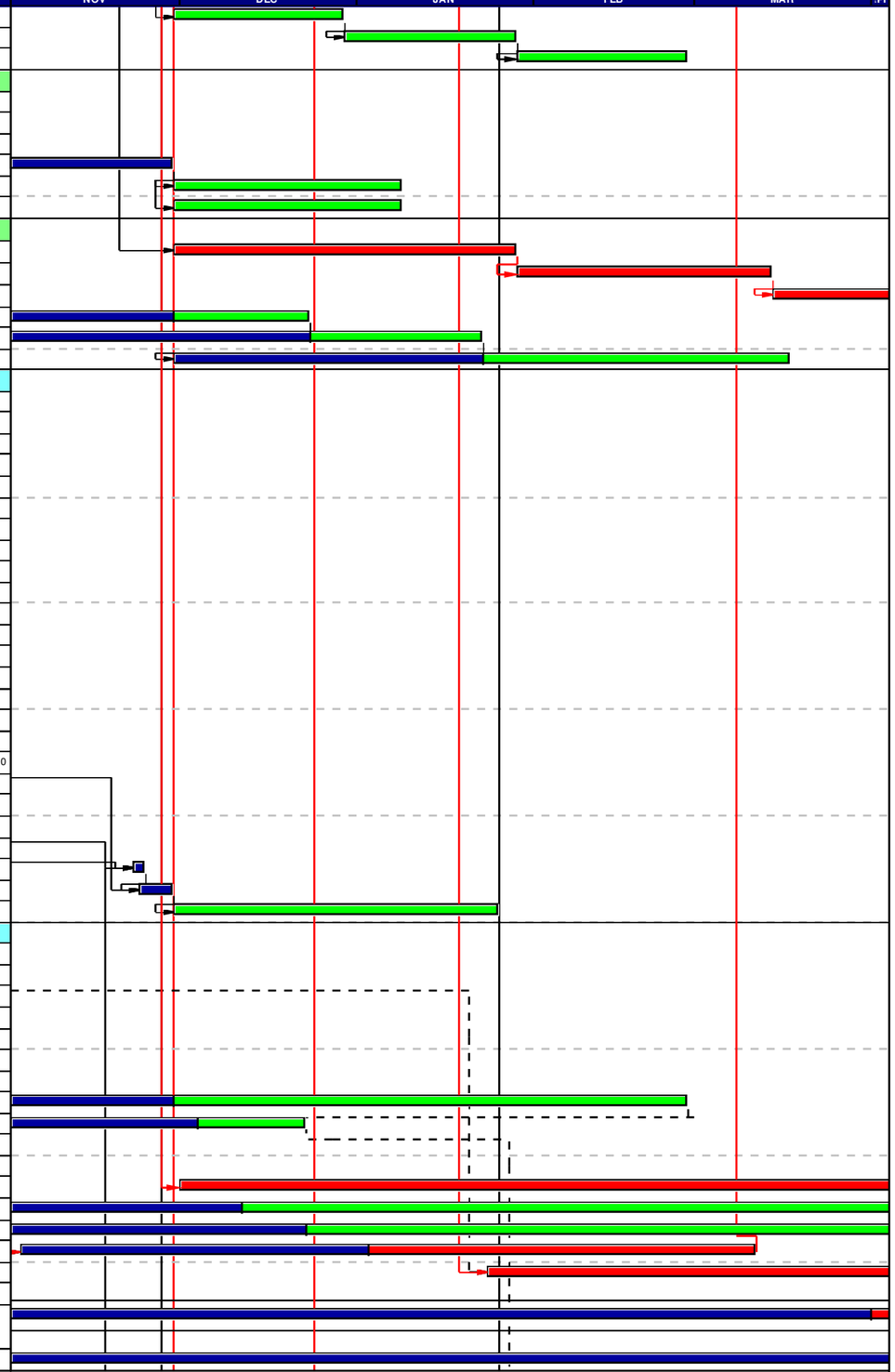
30/11/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
YSW0840	ELS & excavate to formation (+0 mPD approx.)	30	0	30/11/12	29/12/12	26/12/12	24/01/13	26d	YSW07610	YSW0860
YSW0860	Sub-structure construction	30	0	30/12/12	28/01/13	25/01/13	23/02/13	26d	YSW0840	YSW0880
YSW0880	Backfill & remove ELS	30	0	29/01/13	27/02/13	24/02/13	25/03/13	26d	YSW0860	YSW0890
Emergency Storage Tank										
YSW1470	ELS & excavate to formation (+3.5mPD Approx.)	30	100	17/09/12 A	02/10/12 A	17/09/12 A	02/10/12 A		YSW0760	YSW1480
YSW1480	Sub-structure construction	40	100	03/10/12 A	16/10/12 A	03/10/12 A	16/10/12 A		YSW1470	YSW1490
YSW1490	Backfill & extract sheetpile	30	100	17/10/12 A	19/10/12 A	17/10/12 A	19/10/12 A		YSW1480	YSW1500
YSW1500	Superstructure construction upto +10.5mPD	40	100	20/10/12 A	29/11/12 A	20/10/12 A	29/11/12 A		YSW1490	YSW1530,YSW1536
YSW1530	Underground pipeline works	40	0	30/11/12	08/01/13	18/02/13	29/03/13	80d	YSW1500	E&M0690,YSW1680
YSW1536	Water tightness test	40	0	30/11/12	08/01/13	26/06/13	04/08/13	208d	YSW1500	YSW1538
Road, Drain, Cable Draw Pits & Ducting										
YSW16601	Construct 6m deep sewer YFMH5-YFMH6 (Grid Q-X)	60	0	30/11/12	28/01/13	16/10/12	14/12/12	-45d	YSW0760	YSW16602
YSW16602	Connect 6m deep sewer to existing manhole FM1	45	0	29/01/13	14/03/13	15/12/12	28/01/13	-45d	YSW16601	YSW16603
YSW16603	Construct UU & pipes along sea side (Grid Q-X)	60	0	15/03/13	13/05/13	29/01/13	29/03/13	-45d	YSW16602	YSW16604,YSW16703
YSW16606	Construct UU & pipes along hill side (Grid D-Q)	60	60	10/10/12 A	23/12/12	10/10/12 A	04/05/13	132d	YSW0760	YSW16607
YSW16607	Construct UU & pipes along hill side (Grid Q-X)	60	50	20/08/12 A	22/01/13	20/08/12 A	03/06/13	132d	YSW16606	YSW16608
YSW16608	Construct UU & pipes along hill side (Grid XA-D)	60	10	30/11/12 A	17/03/13	30/11/12 A	27/07/13	132d	YSW16607	YSW1690
Submarine Outfall										
YSW0180	Coordination of HEC	53	100	17/05/10 A	08/07/10 A	17/05/10 A	08/07/10 A		KD0020	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		KD0020	YSW0210
YSW0210	Ecology Survey	211	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	103	100	17/05/10 A	27/08/10 A	17/05/10 A	27/08/10 A		KD0020	YSW0230
YSW0230	Hydrogrophical Survey (YSW)	157	100	28/08/10 A	31/01/11 A	28/08/10 A	31/01/11 A		YSW0220	YSW0350
YSW0240	Material Submission, Approval of HDPE pipe	319	100	17/05/10 A	31/03/11 A	17/05/10 A	31/03/11 A		KD0020	YSW0360
YSW02401	Clarify Coordinate of Point Y (Reply of RFI 010)	83	100	28/06/10 A	18/09/10 A	28/06/10 A	18/09/10 A		KD0020	YSW0250
YSW0250	Submit and Approval of Method Statement for HDD	188	100	19/09/10 A	25/03/11 A	19/09/10 A	25/03/11 A		YSW02401	YSW0260,YSW0270,YSW0340
YSW0260	Submission of HDD Method Statement to HEC	14	100	26/03/11 A	08/04/11 A	26/03/11 A	08/04/11 A		YSW0250	YSW0340
YSW0270	Additional G.I. Boreholes (YSW)	123	100	19/09/10 A	19/01/11 A	19/09/10 A	19/01/11 A		YSW0250	YSW0280,YSW0290
YSW0280	Submission of propose alignment	44	100	20/01/11 A	04/03/11 A	20/01/11 A	04/03/11 A		YSW0270	YSW0310,YSW0340
YSW0290	Submission of Marine Notice	69	100	20/01/11 A	29/03/11 A	20/01/11 A	29/03/11 A		YSW0270	YSW0350
YSW0310	Construction of Entry Pit and Preparation Work	27	100	05/03/11 A	31/03/11 A	05/03/11 A	31/03/11 A		YSW0280	YSW0320
YSW0320	Prepare of HDD Drill Rig Set-up (YSW)	28	100	01/04/11 A	28/04/11 A	01/04/11 A	28/04/11 A		YSW0310	YSW0330,YSW0350
YSW0330	Establishment of HDD plant & equipment	6	100	09/04/11 A	14/04/11 A	09/04/11 A	14/04/11 A		YSW0320	YSW0340
YSW0340	Setting up at drillhole location	14	100	15/04/11 A	28/04/11 A	15/04/11 A	28/04/11 A		YSW0250,YSW0260,YSW0280,	YSW0350
YSW0350	Drill pilot hole and reaming hole - NS400 - 530m	229	100	29/04/11 A	13/12/11 A	29/04/11 A	13/12/11 A		YSW0040,YSW0180,YSW0210,	YSW0360
YSW0360	Installation of NS400 HDPE 530m	17	100	14/12/11 A	30/12/11 A	14/12/11 A	30/12/11 A		YSW0240,YSW0350	SKW1181,YSW03601,YSW03620,YSW0370
YSW03601	Demobilization of HDD plant & equipment	7	100	31/12/11 A	06/01/12 A	31/12/11 A	06/01/12 A		YSW0360	YSW03605,YSW03641,YSW0730
YSW03605	Remove Entry pit of HDD	14	100	07/01/12 A	20/01/12 A	07/01/12 A	20/01/12 A		YSW03601	YSW0730
YSW03620	Removal of Receiving Pit	14	100	31/12/11 A	13/01/12 A	31/12/11 A	13/01/12 A		YSW0360	YSW0365
YSW03641	Prepare backfilling material under VO 046A	120	100	07/01/12 A	05/05/12 A	07/01/12 A	05/05/12 A		YSW03601	YSW0365
YSW0365	Set up of Silt Curtain as per EP	30	100	23/11/12 A	24/11/12 A	23/11/12 A	24/11/12 A		SKW1431,YSW03620,YSW03641	YSW0370
YSW0370	Dredging of Marine Deposit for Diffuser (YSW)	14	100	24/11/12 A	29/11/12 A	24/11/12 A	29/11/12 A		YSW0360,YSW0365	YSW0380
YSW0380	Diffuser Construction (YSW)	60	5	30/11/12 A	25/01/13	30/11/12 A	13/10/13	261d	YSW0370	E&M0690,YSW0400
E&M Works - YSW STW										
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	27/02/13	01/09/11 A	03/03/13	4d	E&M0170	E&M0580
E&M0450	Delivery of Valves, Pipes & Fittings	180	90	30/08/11 A	22/12/12	30/08/11 A	03/05/13	133d	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	01/12/12	27/05/13	11/07/12	03/01/13	-144d	E&M0210	E&M0620
E&M0490	Delivery of BS Equipment	180	32	11/12/11 A	13/04/13	11/12/11 A	05/06/13	54d	E&M0220	E&M0630
E&M0500	Delivery FS Equipment	180	25	11/12/11 A	07/05/13	11/12/11 A	03/07/13	57d	E&M0230	E&M0330,E&M0640
E&M0510	Install Membrane Modules in MBR Tank no. 4	90	25	03/11/12 A	11/03/13	03/11/12 A	11/03/13	0	E&M0360,YSW0705,YSW0820	KD0115
E&M0520	Install Membrane Modules in MBR Tank No. 1 to 3	130	0	24/01/13	02/06/13	25/12/12	03/05/13	-30d	E&M0370,YSW08305	E&M0590,E&M0690
E&M0530	Install Grit Removal Equipment	60	100	01/06/12 A	30/09/12 A	01/06/12 A	30/09/12 A		E&M0380,E&M0540,YSW0800	E&M0590,E&M0660
E&M0540	Install Coarse Screens	75	90	23/04/12 A	08/04/13	23/04/12 A	19/03/13	-20d	E&M0390,YSW0800	E&M0530,E&M0550,E&M0570,E&M0590,E&M0660
E&M0550	Install Fine Screens	60	80	01/06/12 A	20/04/13	01/06/12 A	03/05/13	14d	E&M0400,E&M0540,YSW0800	E&M0590,E&M0660



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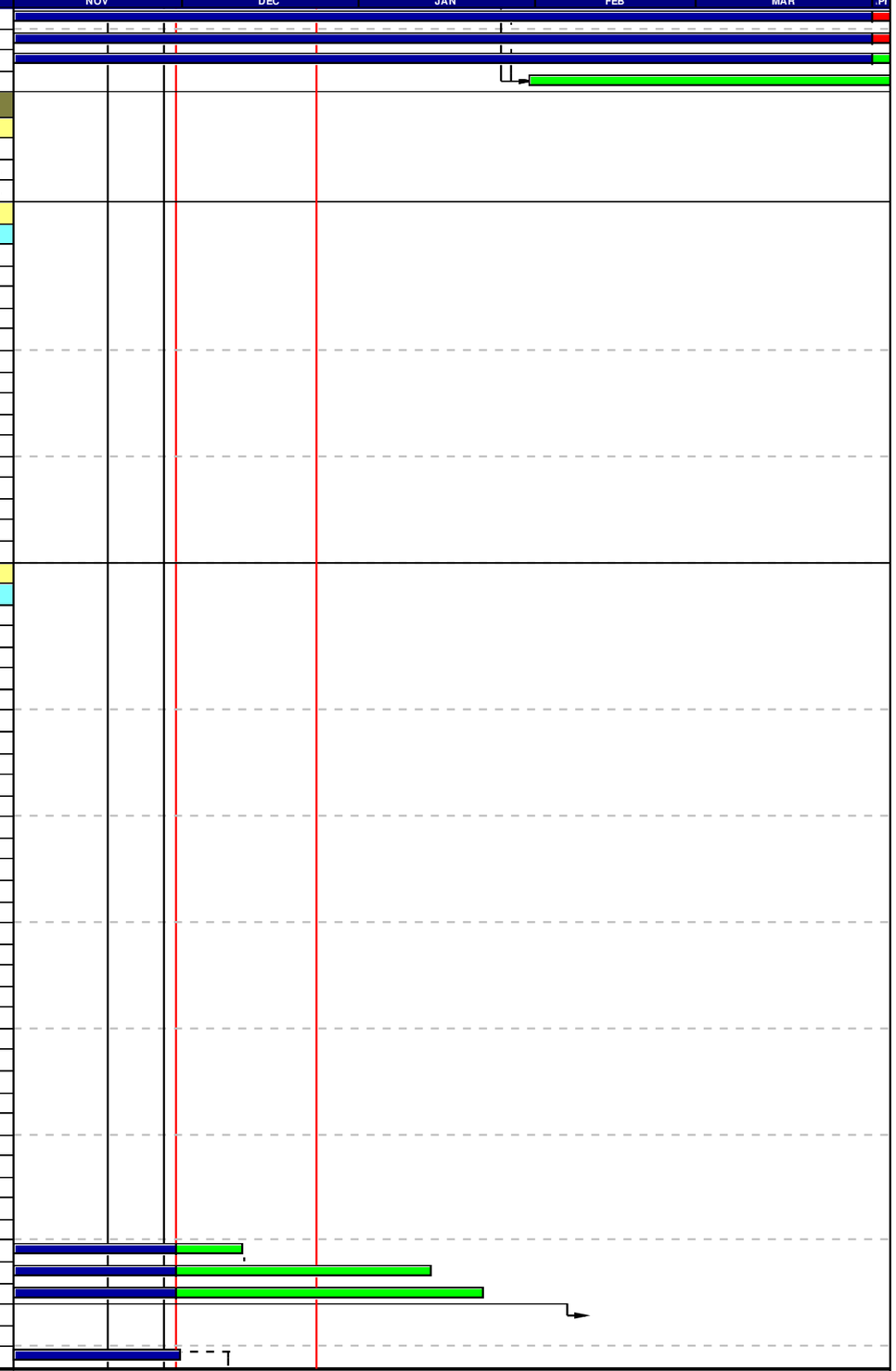
Finish milestone point

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Dec 2012 - Feb 2013)

(Marked on 30 November 2012)

Date	Revision	Checked	Approved
30/11/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M0560	Install Pumps	90	40	23/04/12 A	24/05/13	23/04/12 A	19/03/13	-66d	E&M0410,YSW0800	E&M0570,E&M0590,E&M0660
E&M0580	Install Sludge Dewatering Equipment	280	20	29/05/12 A	10/11/13	29/05/12 A	13/10/13	-28d	E&M0440,YSW0800	E&M0690
E&M0600	Install Penstocks (Batch 1, GL H - T)	180	65	23/04/12 A	02/06/13	23/04/12 A	13/10/13	133d	E&M0460,YSW0800	E&M0690
E&M0605	Install Penstocks (Batch 2, GL A - F)	120	0	31/01/13	30/05/13	16/06/13	13/10/13	136d	E&M0450,YSW08305	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	SKW0242,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	SKW0242,SKW0592,SKW0681,SKW0921,
Section W3 - Footpath Diversion in Portion G										
Civil & Geotechnical Works										
SKW0240	Site Clearance	21	100	17/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A			SKW0241
SKW0241	Initial Survey	9	100	07/06/10 A	15/06/10 A	07/06/10 A	15/06/10 A		SKW0240	SKW0242
SKW0242	Retaining Wall Bay 0-10 (Incl. VO. 001A)	177	100	30/06/10 A	23/12/10 A	30/06/10 A	23/12/10 A		SKW0241,SKW0260,SKW0265	SKW0461
SKW0461	Utilities Laying and Diversion	70	100	24/12/10 A	03/03/11 A	24/12/10 A	03/03/11 A		SKW0242	SKW0471
SKW0471	Concreting for Pavement	7	100	04/03/11 A	10/03/11 A	04/03/11 A	10/03/11 A		SKW0461	SKW0481
SKW0481	Footpath Diversion - Stage 1	14	100	11/03/11 A	24/03/11 A	11/03/11 A	24/03/11 A		SKW0471	KD0050,SKW04811,SKW0491
SKW04811	Excavate for FP transition at CH0-35 &CH130-141	37	100	25/03/11 A	30/04/11 A	25/03/11 A	30/04/11 A		SKW0481	SKW04821
SKW04821	Construction of Drainage outfall near bay 10	3	100	01/05/11 A	03/05/11 A	01/05/11 A	03/05/11 A		SKW04811	SKW04831
SKW04831	Cable diversion by HEC	26	100	04/05/11 A	29/05/11 A	04/05/11 A	29/05/11 A		SKW04821	SKW04841
SKW04841	Diversion of Ducting and Drawpit by PCCW	12	100	20/05/11 A	31/05/11 A	20/05/11 A	31/05/11 A		SKW04831	SKW04851
SKW04851	Soil backfilling behind FP retaining wall	14	100	01/06/11 A	14/06/11 A	01/06/11 A	14/06/11 A		SKW04841	SKW04861
SKW04861	Concreting for footpath pavement	7	100	15/06/11 A	21/06/11 A	15/06/11 A	21/06/11 A		SKW04851	SKW04871
SKW04871	Relocation of Temp Safety Fence at SKW STW A-G	57	100	22/06/11 A	17/08/11 A	22/06/11 A	17/08/11 A		SKW04861	SKW04881
SKW04881	Disposal of excavation material at A-G SKW STW	138	100	18/08/11 A	02/01/12 A	18/08/11 A	02/01/12 A		SKW04871	SKW04885
SKW04885	Footpath Diversion - Stage 2	7	100	03/01/12 A	09/01/12 A	03/01/12 A	09/01/12 A		SKW04881	SKW1261
Section W4 - 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	31/08/10 A	12/10/10 A	31/08/10 A	12/10/10 A		SKW0260,SKW0265,SKW0591	SKW05931
SKW05931	Construction of Haul Road (To +30mPD)	50	100	03/09/10 A	22/10/10 A	03/09/10 A	22/10/10 A		SKW0592	SKW05932
SKW05932	Construction of Haul Road (To +42.5mPD)	68	100	23/10/10 A	29/12/10 A	23/10/10 A	29/12/10 A		SKW05931	SKW059322
SKW059321	Removal of Boulders (IBG 1 - 119, SI No. 11B)	121	100	03/11/10 A	03/03/11 A	03/11/10 A	03/03/11 A			SKW059411
SKW059322	Add. Site Invest. Works (VO. No. 9,12 &16)	174	100	11/01/11 A	03/07/11 A	11/01/11 A	03/07/11 A		SKW05932	SKW059341
SKW059323	Revised Profile at West Slope (+56 to +42.5mPD)	1	100	17/03/11 A	17/03/11 A	17/03/11 A	17/03/11 A			SKW059324
SKW059324	Construction of Haul Road (+42.5 to +56mPD)	12	100	18/03/11 A	29/03/11 A	18/03/11 A	29/03/11 A		SKW059323	SKW059325
SKW059325	Removal of Boulders (IBG 120-139, SI No. 11C)	17	100	30/03/11 A	15/04/11 A	30/03/11 A	15/04/11 A		SKW059324	SKW05933
SKW05933	West Slope Cutting (+56mPD to +42.5mPD)	2	100	16/04/11 A	17/04/11 A	16/04/11 A	17/04/11 A		SKW059325	SKW059331
SKW059331	Removal of Boulders (IBG 140-189, SI No. 11D)	45	100	18/04/11 A	01/06/11 A	18/04/11 A	01/06/11 A		SKW05933	SKW05934
SKW05934	West Slope Cutting (+42.5mPD to +35mPD)	32	100	02/06/11 A	03/07/11 A	02/06/11 A	03/07/11 A		SKW059331	SKW059341
SKW059341	Revised Profile at West Slope (+20 to +4.8mPD)	1	100	04/07/11 A	04/07/11 A	04/07/11 A	04/07/11 A		SKW059322,SKW05934	SKW05935
SKW05935	West Slope Cutting (+35mPD to +27.5mPD)	83	100	08/07/11 A	28/09/11 A	08/07/11 A	28/09/11 A		SKW059341	SKW05936
SKW05936	West Slope Cutting (+27.5mPD to +20mPD)	61	100	29/09/11 A	28/11/11 A	29/09/11 A	28/11/11 A		SKW05935	SKW05937
SKW05937	West Slope Cutting (+20mPD to +12.5mPD)	39	100	29/11/11 A	06/01/12 A	29/11/11 A	06/01/12 A		SKW05936	SKW05938
SKW05938	West Slope Cutting (+12.5mPD to +4.8mPD)	90	100	07/01/12 A	27/03/12 A	07/01/12 A	27/03/12 A		SKW05937	KD0060,SKW1261,SKW1311,SKW1371
SKW05941	Slope Stormwater Drainage	300	100	28/03/12 A	25/05/12 A	28/03/12 A	25/05/12 A		KD0060	SKW05942
SKW059411	East Slope Cutting (+50mPD to +42.5mPD)	72	100	04/03/11 A	14/05/11 A	04/03/11 A	14/05/11 A		SKW059321	SKW059412
SKW059412	East Slope Cutting (+42.5mPD to +35mPD)	82	100	15/05/11 A	04/08/11 A	15/05/11 A	04/08/11 A		SKW059411	SKW059413
SKW059413	East Slope Cutting (+35mPD to +27.5mPD)	55	100	05/08/11 A	28/09/11 A	05/08/11 A	28/09/11 A		SKW059412	SKW059414
SKW059414	East Slope Cutting (+27.5mPD to +20mPD)	61	100	29/09/11 A	28/11/11 A	29/09/11 A	28/11/11 A		SKW059413	SKW059415
SKW059415	East Slope Cutting (+20mPD to +12.5mPD)	39	100	29/11/11 A	06/01/12 A	29/11/11 A	06/01/12 A		SKW059414	SKW059416
SKW059416	East Slope Cutting (+12.5mPD to +4.8mPD)	81	100	07/01/12 A	27/03/12 A	07/01/12 A	27/03/12 A		SKW059415	KD0060,SKW1311,SKW1371
SKW05942	Slope Miscellaneous Works	61	100	26/05/12 A	31/07/12 A	26/05/12 A	31/07/12 A		SKW05941	SKW05943,SKW0595
SKW05943	Buttress & surface Protection (SI No. 31)	60	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW05942	SKW05944
SKW05944	Slope Treatment (SI. No. 36)	60	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW05943	SKW05945
SKW05945	Rock Slope Treatment (SI. No. 68)	60	100	01/08/12 A	30/09/12 A	01/08/12 A	30/09/12 A		SKW05944	SKW05946
SKW05946	Rock Slope Treatment (SI. No. 98)	60	80	10/09/12 A	11/12/12	10/09/12 A	23/02/13	74d	SKW05945	SKW05947
SKW05947	Rock Slope Treatment (SI. No. 115)	60	25	01/11/12 A	13/01/13	01/11/12 A	26/03/13	72d	SKW05946	KD0135
SKW05948	Soil Nailing Works (VO. No. 52)	300	82	10/02/12 A	22/01/13	10/02/12 A	29/04/14	462d		SKW05963
SKW05963	Determine Alignment & Foundation Design of RFB	120	100	10/02/13 A	08/06/12 A	10/02/13 A	08/06/12 A		SKW05948	SKW059631,SKW05964,SKW05965
SKW059631	GEO Approval of Foundation Design	70	100	09/06/12 A	31/07/12 A	09/06/12 A	31/07/12 A		SKW05963	SKW05968
SKW05964	Fabrication & Shipping of RFB Material	180	100	09/06/12 A	30/11/12 A	09/06/12 A	30/11/12 A		SKW05963	SKW05972



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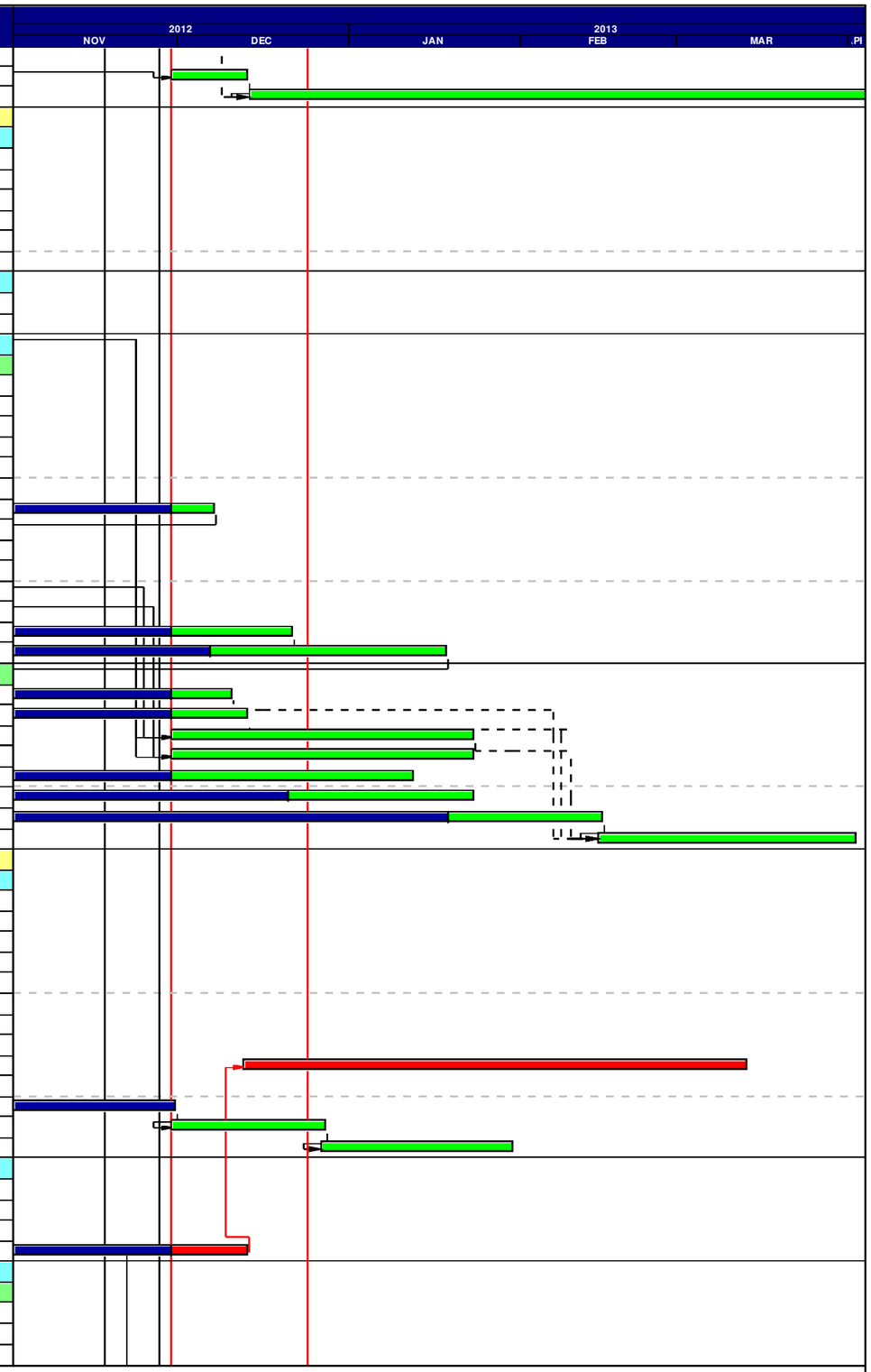
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Dec 2012 - Feb 2013)

(Marked on 30 November 2012)

Date	Revision	Checked	Approved
30/11/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
SKW05965	Site clearance & Formation of access	62	100	09/06/12 A	31/07/12 A	09/06/12 A	31/07/12 A		SKW05963	SKW05967
SKW05967	Plant mobilization	14	0	30/11/12	13/12/12	07/03/14	20/03/14	462d	SKW05965	SKW05968
SKW05968	Construction of anchors & pull out test	180	0	14/12/12	11/06/13	21/03/14	16/09/14	462d	SKW059631,SKW05967	SKW05969
Section W5 - 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	270	100	17/09/10 A	13/06/11 A	17/09/10 A	13/06/11 A		SKW0691	SKW0741
Structural Works										
SKW0741	RC Works for Structure	240	100	14/06/11 A	08/02/12 A	14/06/11 A	08/02/12 A		SKW0721	KD0070,SKW0841
SKW0841	ABWF works	60	100	09/02/12 A	08/04/12 A	09/02/12 A	08/04/12 A		SKW0741	E&M1101,E&M1102,E&M1103,E&M1104,
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	100	17/05/10 A	09/01/12 A	17/05/10 A	09/01/12 A			E&M1014
E&M1005	Submission of Instrumentation	243	100	17/05/10 A	12/03/12 A	17/05/10 A	12/03/12 A			E&M1015
E&M1006	Submission of FS System	243	100	17/05/10 A	30/09/12 A	17/05/10 A	30/09/12 A			E&M1016
E&M1007	Submission of BS System	243	97	17/05/10 A	07/12/12	17/05/10 A	04/06/13	179d		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&M1014	Delivery of LV SB & MCC	150	100	01/06/12 A	31/07/12 A	01/06/12 A	31/07/12 A		E&M1004	E&M1104
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	80	01/12/11 A	21/12/12	01/12/11 A	11/07/13	202d	E&M1006	E&M1106
E&M1017	Delivery of BS Equipment	107	60	15/11/11 A	18/01/13	15/11/11 A	17/07/13	179d	E&M1007	E&M1107
Installation, T&C										
E&M1101	Install Pumps	55	80	02/10/12 A	10/12/12	02/10/12 A	13/08/13	246d	E&M1011,SKW0841	E&M1110,E&M1140
E&M1102	Install Gen Set	55	75	02/10/12 A	13/12/12	02/10/12 A	13/08/13	243d	E&M1012,SKW0841	E&M1110,E&M1140
E&M1103	Install DeO System	55	0	30/11/12	23/01/13	19/06/13	13/08/13	202d	E&M1013,SKW0841	E&M1110,E&M1140
E&M1104	Install LV SB & MCC	55	0	30/11/12	23/01/13	19/06/13	13/08/13	202d	E&M1014,SKW0841	E&M1140
E&M1105	Install Instrumentation	55	20	01/11/12 A	12/01/13	01/11/12 A	13/08/13	213d	E&M1015,SKW0841	E&M1140
E&M1106	Install FS Equipment	55	40	02/10/12 A	23/01/13	02/10/12 A	13/08/13	202d	E&M1016,SKW0841	E&M1130,E&M1140
E&M1107	Install BS Equipment	55	50	02/10/12 A	15/02/13	02/10/12 A	13/08/13	179d	E&M1017,SKW0841	E&M1110,E&M1140
E&M1110	Install Valves, Pipes & Fittings	46	0	15/02/13	02/04/13	12/09/13	28/10/13	209d	E&M1101,E&M1102,E&M1103,E&M1107	E&M1120
Section W6 - 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	90	100	23/06/10 A	20/09/10 A	23/06/10 A	20/09/10 A		SKW0892	SKW0921
SKW0921	Cut Slope & U-Channel	14	100	21/09/10 A	04/10/10 A	21/09/10 A	04/10/10 A		SKW0260,SKW0265,SKW0901	SKW0931,SKW0951
SKW0931	Hoarding & Fencing	14	100	05/10/10 A	18/10/10 A	05/10/10 A	18/10/10 A		SKW0921	SKW0950,SKW0951
SKW0950	Removal of Rock Boulders before ELS	66	100	19/10/10 A	23/12/10 A	19/10/10 A	23/12/10 A		SKW0931	SKW0951
SKW0951	ELS & Excavate to formation	169	100	24/12/10 A	10/06/11 A	24/12/10 A	10/06/11 A		SKW0921,SKW0931,SKW0950	SKW0971
SKW0961	Mass Conc. Retaining Wall	90	0	13/12/12	13/03/13	12/11/12	09/02/13	-32d	SKW1081	KD0155
SKW1491	LCS (ChA0+45 to 1+75) VO.7	90	100	24/03/12 A	21/06/12 A	24/03/12 A	21/06/12 A		PRE0100,SKW1021	SKW15111
SKW15111	Twin DN150 DI Rising Main (ChA1+75 - ChA5+79)	180	100	22/06/12 A	30/11/12 A	22/06/12 A	30/11/12 A		SKW1491	SKW1531
SKW1531	Extent village sewers S163.1 & S164.1	34	20	30/11/12 A	27/12/12	30/11/12 A	20/02/13	56d	SKW15111	SKW1581
SKW1581	Construct Manhole no. S163 & S164	34	0	27/12/12	30/01/13	21/02/13	26/03/13	56d	SKW1531	KD0135,SKW15112
Structural Works										
SKW0971	Structural Works (Phase 1)	245	100	11/06/11 A	10/02/12 A	11/06/11 A	10/02/12 A		SKW0951	KD0080,SKW1021
SKW1021	Structural Works (Phase 2)	42	100	11/02/12 A	23/03/12 A	11/02/12 A	23/03/12 A		SKW0971	SKW1061,SKW1081,SKW1491
SKW1061	ABWF Works	90	100	24/03/12 A	21/06/12 A	24/03/12 A	21/06/12 A		SKW1021	E&M2101,E&M2102,E&M2103,E&M2104,
SKW1081	375mm U-channel/catchpits/outfall	30	55	22/06/12 A	13/12/12	22/06/12 A	11/11/12	-32d	SKW1021,SKW1061	KD0155,SKW0961
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



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Contract No. DC/2009/13
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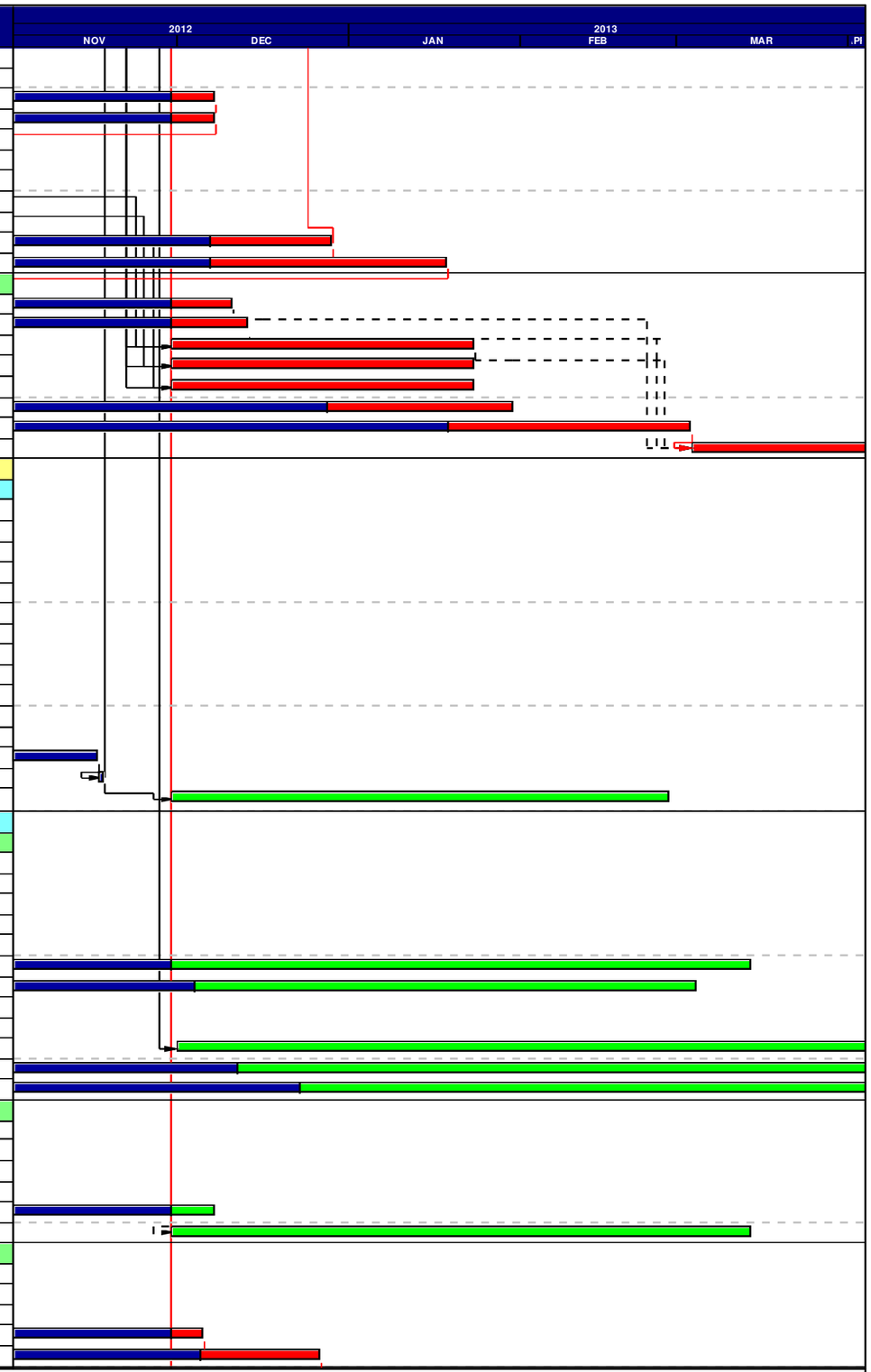
3-month Rolling Programme (Dec 2012 - Feb 2013)

(Marked on 30 November 2012)

Date	Revision	Checked	Approved
30/11/12	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M2004	Submission of LV SB & MCC	271	100	17/05/10 A	30/06/12 A	17/05/10 A	30/06/12 A			E&M2014
E&M2005	Submission of Instrumentation	243	100	17/05/10 A	30/06/12 A	17/05/10 A	30/06/12 A			E&M2015
E&M2006	Submission of FS System	243	97	17/05/10 A	07/12/12	17/05/10 A	27/07/12	-133d		E&M2016
E&M2007	Submission of BS System	243	97	17/05/10 A	07/12/12	17/05/10 A	25/06/12	-165d		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	100	29/02/12 A	31/07/12 A	29/02/12 A	31/07/12 A		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	80	01/12/11 A	28/12/12	01/12/11 A	17/08/12	-133d	E&M2006	E&M0350,E&M2106
E&M2017	Delivery of BS Equipment	107	60	15/01/11 A	18/01/13	15/01/11 A	06/08/12	-165d	E&M2007	E&M2107
Installation, T&C										
E&M2101	Install Pumps	55	80	02/10/12 A	10/12/12	02/10/12 A	20/11/12	-20d	E&M2011,SKW1061	E&M2110
E&M2102	Install Gen Set	55	75	01/09/12 A	13/12/12	01/09/12 A	20/11/12	-23d	E&M2012,SKW1061	E&M2110
E&M2103	Install DeO System	55	0	30/11/12	23/01/13	27/09/12	20/11/12	-64d	E&M2013,SKW1061	E&M2110
E&M2104	Install LV SB & MCC	55	0	30/11/12	23/01/13	27/07/12	19/09/12	-126d	E&M2014,SKW1061	E&M2140
E&M2105	Install Instrumentation	55	0	30/11/12	23/01/13	27/07/12	19/09/12	-126d	E&M2015,SKW1061	E&M2140
E&M2106	Install FS Equipment	55	40	02/10/12 A	30/01/13	02/10/12 A	19/09/12	-133d	E&M2016,SKW1061	E&M2140
E&M2107	Install BS Equipment	55	20	01/09/12 A	03/03/13	01/09/12 A	19/09/12	-165d	E&M2017,SKW1061	E&M2110,E&M2140
E&M2110	Install Valves, Pipes & Fittings	46	0	04/03/13	18/04/13	21/11/12	05/01/13	-103d	E&M2101,E&M2102,E&M2103,E&M2107	E&M2120
Section W7 - 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	90	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)	90	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	33	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	45	100	16/01/12 A	16/02/12 A	16/01/12 A	16/02/12 A		SKW1191	SKW1211
SKW1211	Receiving Pit for HDD (SKW)	60	100	16/01/12 A	29/02/12 A	16/01/12 A	29/02/12 A		SKW1201	SKW1221
SKW1221	Installaiton of NS280 HDPE 450mm dia. pipe	30	100	31/03/12 A	30/04/12 A	31/03/12 A	30/04/12 A		SKW1211	KD0090,SKW1231,SKW1441
SKW1231	Removal of Receiving Platform	60	100	01/05/12 A	19/06/12 A	01/05/12 A	19/06/12 A		SKW1131,SKW1221	SKW1241
SKW1241	Dredging of MD for Diffuser (PS CL 1.122(3))	60	100	20/06/12 A	05/07/12 A	20/06/12 A	05/07/12 A		SKW1231	E&M3359,SKW1251
SKW1251	Diffuser Construction	45	100	01/09/12 A	16/11/12 A	01/09/12 A	16/11/12 A		SKW1241	SKW1431
SKW1431	Removal of silt curtain	30	100	17/11/12 A	17/11/12 A	17/11/12 A	17/11/12 A		SKW1251	KD0090,SKW1440,YSW0365
SKW1440	Sewer of Outfall Chamber to connection pit VO37A	90	0	30/11/12 *	27/02/13	22/06/13	20/09/13	205d	SKW1431	SKW1441
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	14/03/13	01/09/11 A	24/10/13	224d	E&M0170	E&M3240
E&M3100	Delivery of Valves, Pipes & Fittings	180	50	30/08/11 A	04/03/13	30/08/11 A	01/09/13	181d	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	01/12/12	30/05/13	17/01/13	16/07/13	47d	E&M0210	E&M3261
E&M3150	Delivery of BS Equipment	180	8	03/07/12 A	26/05/13	03/07/12 A	16/09/13	113d	E&M0220	E&M3291
E&M3160	Delivery of FS Equipment	180	5	30/06/12 A	12/06/13	30/06/12 A	05/10/13	115d	E&M0230	E&M0340,E&M3300
Construction of Grid A-G										
SKW1261	Excavate for SKW STW Structure (Grid A -G)	164	100	28/03/12 A	31/08/12 A	28/03/12 A	31/08/12 A		SKW04885,SKW05938	SKW1271,SKW1371
SKW1271	55 M3 Fire Sprinkle Water Tank (FL +0.9 mPD)	36	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW1261	SKW1281
SKW1281	Ground Floor Slab (Grid A-G)	46	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW1271	SKW1291
SKW1291	Columns & Walls to 1/F & 1/F Slab (Grid A-G)	50	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW1281	KD0090,SKW1301
SKW1301	Columns & Walls to R/F & R/F Slab (Grid A-G)	50	85	01/09/12 A	07/12/12	01/09/12 A	08/03/13	92d	SKW1291	E&M3261,E&M3291,E&M3311,SKW1411
SKW1411	ABWF Works	105	0	30/11/12	14/03/13	12/02/13	27/05/13	74d	SKW1301	E&M3261,E&M3291,E&M3311,SKW1551
Construction of Grid G-N										
SKW1311	Excavate for SKW STW Structure (Grid G-N)	90	100	28/03/12 A	25/06/12 A	28/03/12 A	25/06/12 A		SKW05938,SKW059416	SKW1321,SKW1371
SKW1321	Equalization Tank no.1 & 2 with base slabs (-2.1	42	100	26/06/12 A	30/09/12 A	26/06/12 A	30/09/12 A		SKW1311	SKW1331
SKW1331	Columns & Walls from B/S to G/F Slab (Grid G-N)	35	100	01/09/12 A	30/09/12 A	01/09/12 A	30/09/12 A		SKW1321	SKW1341
SKW1341	Ground Floor Slab (Grid G-N)	35	85	01/09/12 A	05/12/12	01/09/12 A	29/10/12	-37d	SKW1331	SKW1351
SKW1351	Columns & Walls to 1/F & 1/F Slab (Grid G-N)	28	25	01/11/12 A	26/12/12	01/11/12 A	19/11/12	-37d	SKW1341	SKW1361



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Finish date	19/10/15
Data date	30/11/12
Run date	12/12/12
Page number	7A
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 (Dec 2012 - Feb 2013)

(Marked on 30 November 2012)

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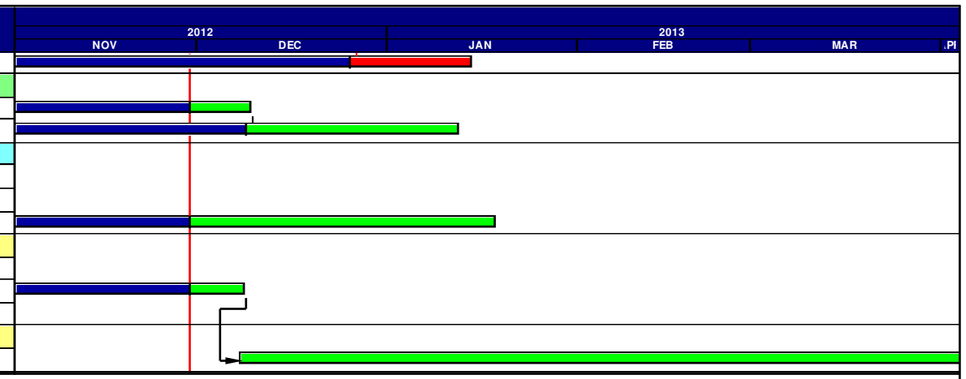
Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
SKW1361	Columns & Walls to R/F & R/F Slab (Grid G-N)	26	25	01/11/12 A	14/01/13	01/11/12 A	08/12/12	-37d	SKW1351	SKW1451
Construction of Grid N-T										
SKW1371	Excavate for SKW STW Structure (Grid N-T)	97	90	03/07/12 A	09/12/12	03/07/12 A	25/12/12	16d	SKW05938,SKW059416,SKW1261,	SKW1381
SKW1381	Ground Floor Slabs include MBR Tank (Grid N-T)	45	25	02/10/12 A	12/01/13	02/10/12 A	27/01/13	16d	SKW1371	SKW1391
Rising Main										
SKW1481	Subm, Approval & Delivery of DI pipes	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A		KD0020	SKW1501
SKW1501	LCS (ChB0+00 - ChB1+20)	300	100	14/09/10 A	10/07/11 A	14/09/10 A	10/07/11 A		PRE0100,SKW1481	SKW1521
SKW1521	Twin DN150 DI Rising Main (ChB0+00 - ChA4+55)	250	80	11/07/11 A	18/01/13	11/07/11 A	12/09/14	602d	SKW1501	KD0090
Section W8 - 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	99	17/05/10 A	08/12/12	17/05/10 A	08/03/13	91d	KD0020	KD0100,SKW1631
SKW1621	Transplantation at SKW	90	100	07/06/10 A	04/09/10 A	07/06/10 A	04/09/10 A		SKW1591	KD0100
Section W9 - Establishment Works in All Portions										
SKW1631	Section W9 - Establishment Works	365	0	08/12/12	08/12/13	12/03/13	11/03/14	94d	SKW1611	KD0110



Start date	05/05/10
Finish date	19/10/15
Data date	30/11/12
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Page number	8A
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
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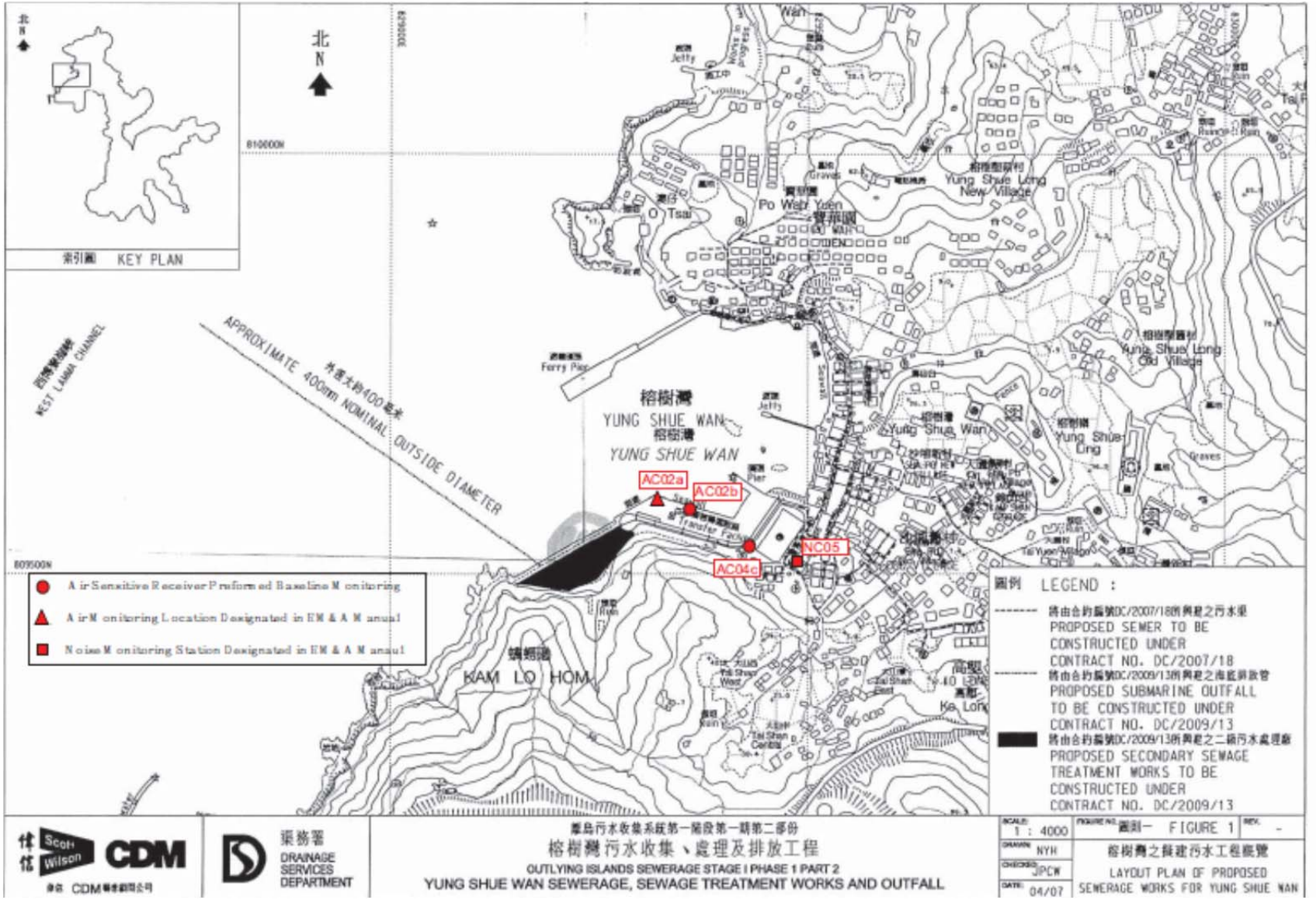
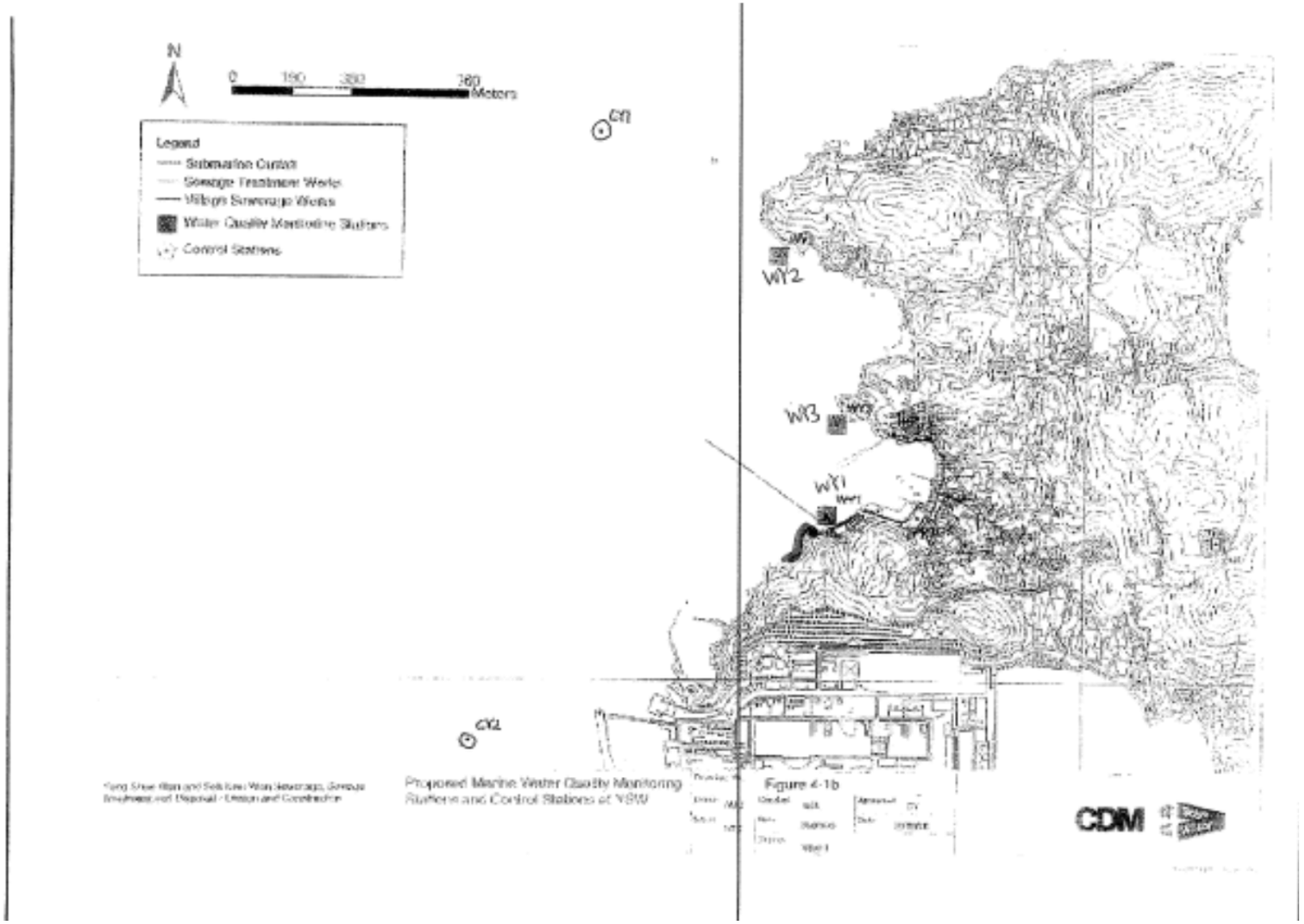
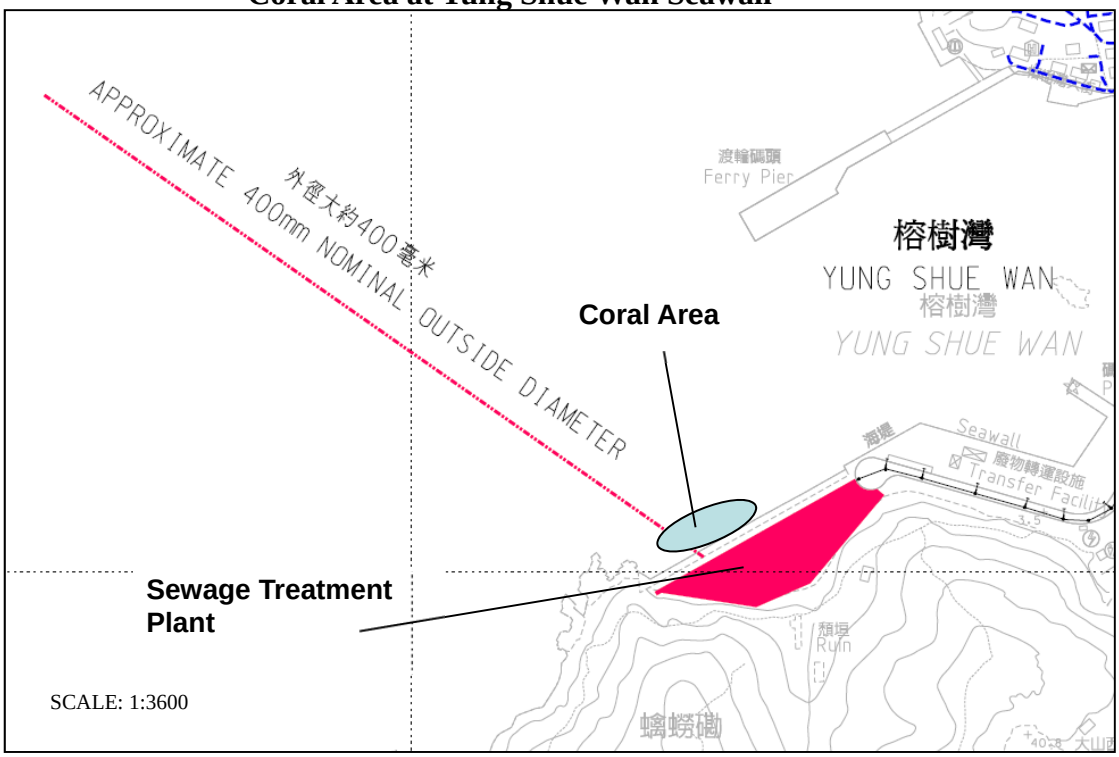
Appendix D

Location of Monitoring Stations (Air Quality / Construction Noise / Marine Water Quality / Ecology)

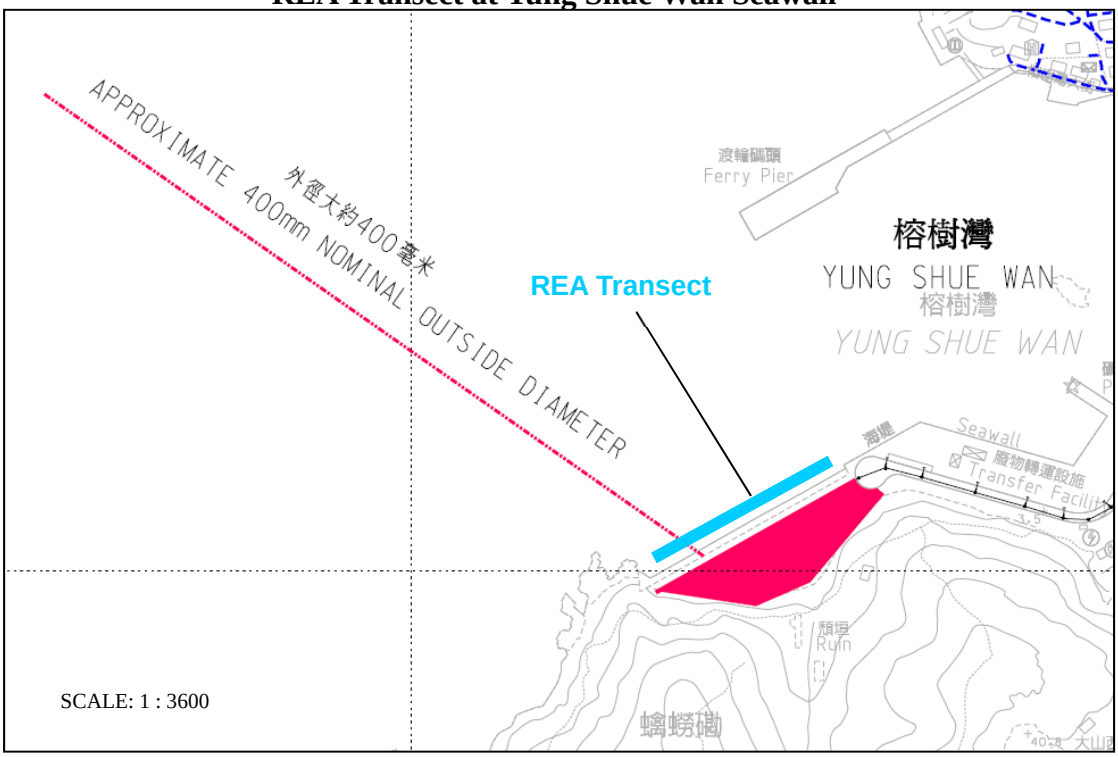

索引圖 KEY PLAN
北 N
810000N
807500N
APPROXIMATE 400mm NOMINAL OUTSIDE DIAMETER
榕樹灣 YUNG SHUE WAN
YUNG SHUE WAN
KAM LO HOM
AC02a
AC02b
AC04c
NC05
Air Sensitive Receiver Preformed Baseline Monitoring
Air Monitoring Location Designated in EM & A Manual
Noise Monitoring Station Designated in EM & A Manual
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
Scott Wilson
CDM
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
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總覽
LAYOUT PLAN OF PROPOSED SEWERAGE WORKS FOR YUNG SHUE WAN


N
0
190
380
760
Meters
Legend
Submarine Outfall
Sewage Treatment Works
Village Sewerage Works
Water Quality Monitoring Stations
Control Stations
CR1
CR2
WY2
WY3
WY1
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

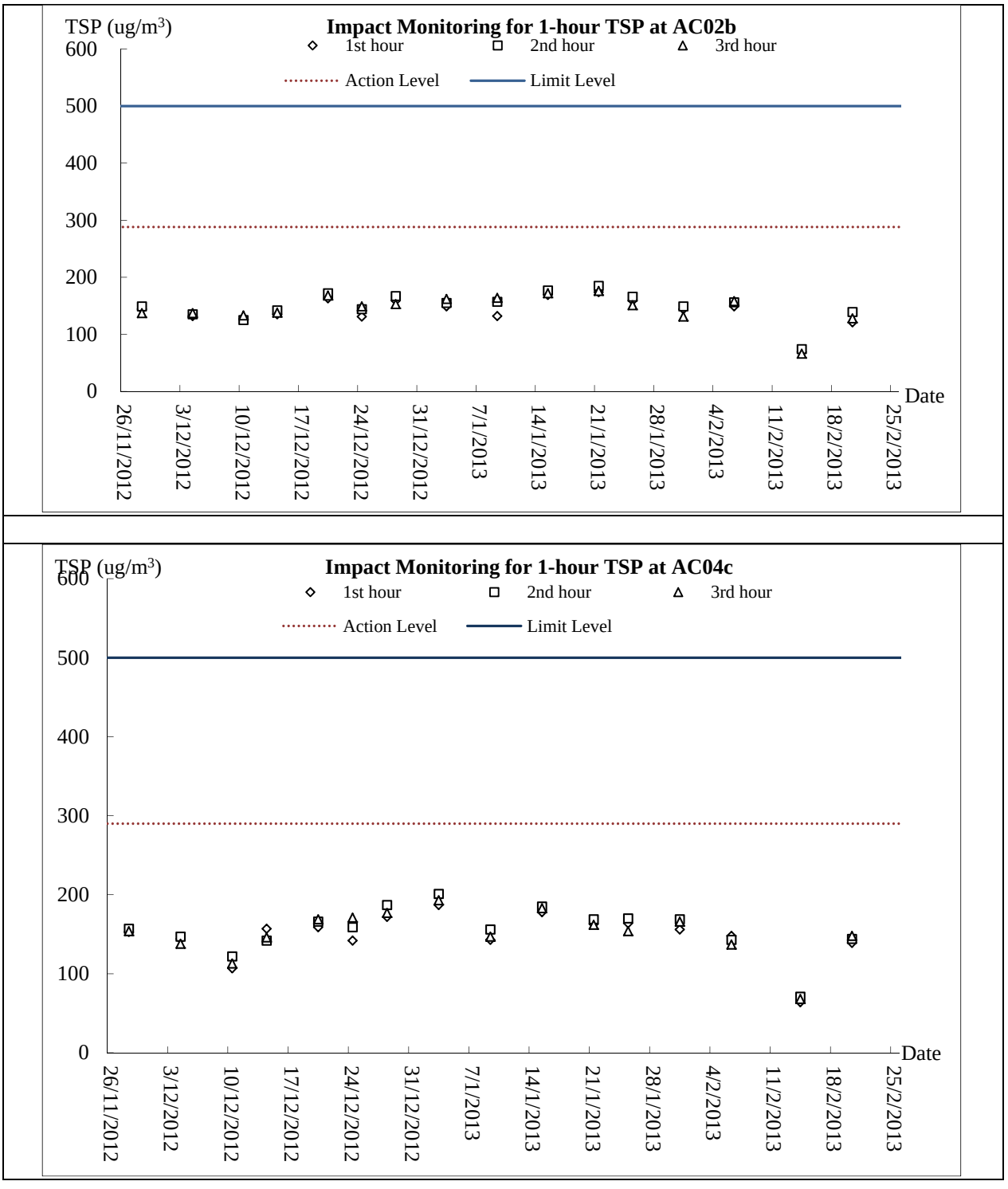
REA Transect at Sham Wan

Appendix E

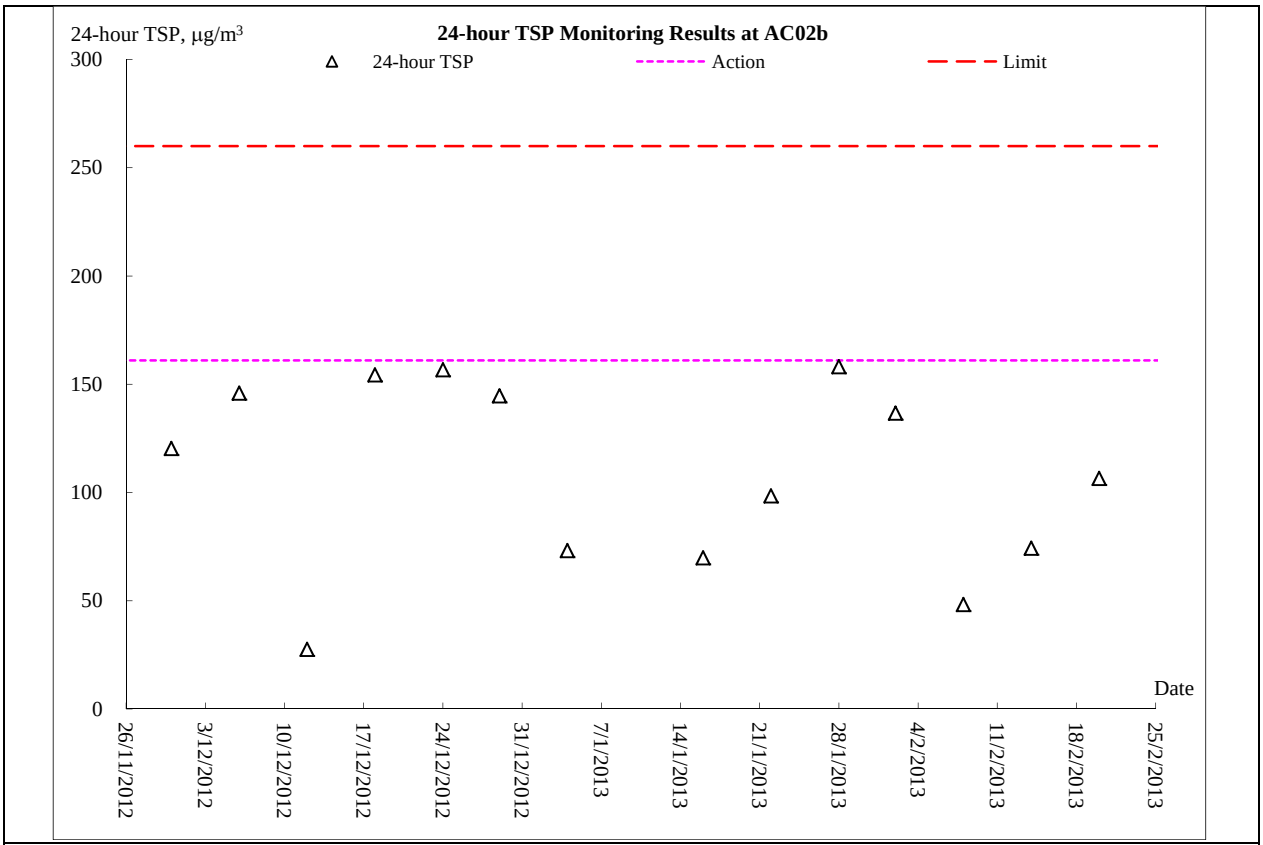
Graphical Plots of Impact Monitoring

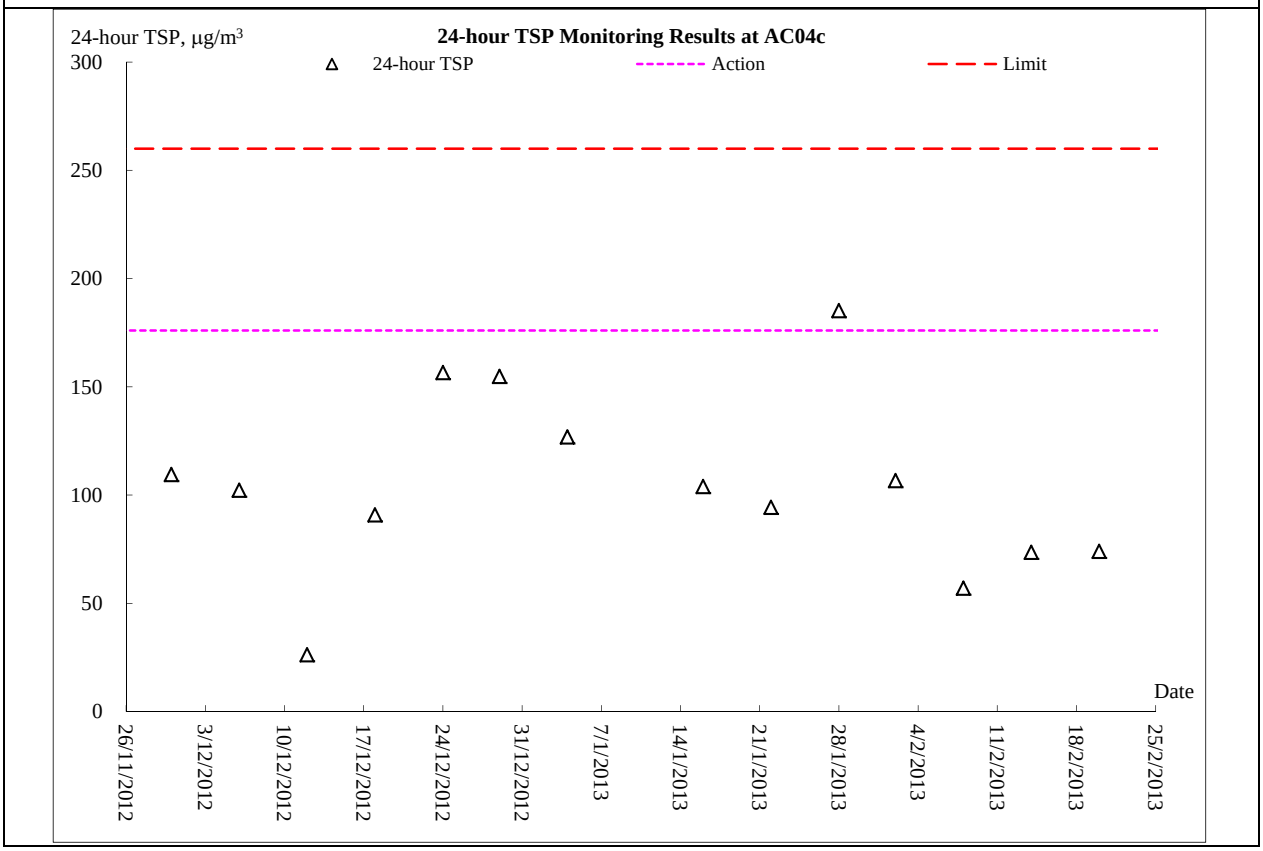
1. **Air Quality**
2. **Construction Noise**
3. **Marine Water Quality**

Air Quality – 1-hour TSP Monitoring

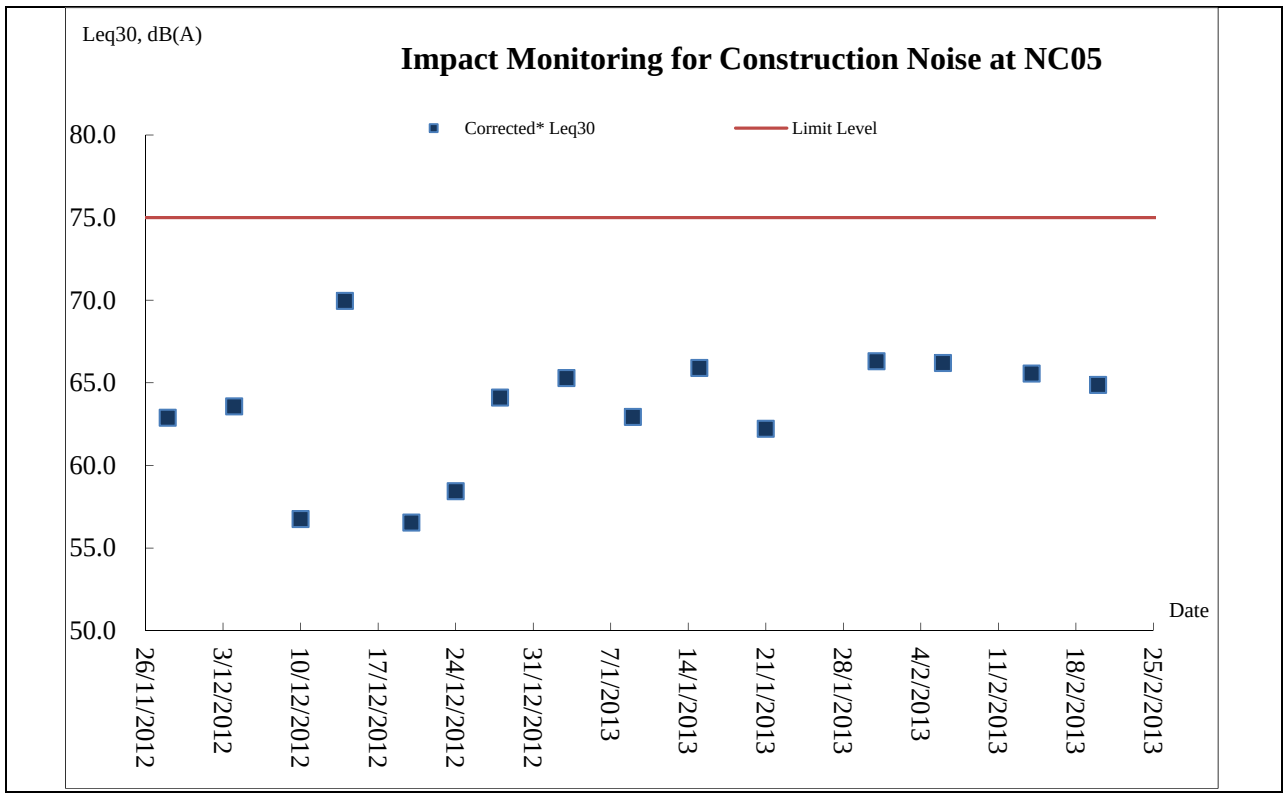


Air Quality – 24-hour TSP Monitoring

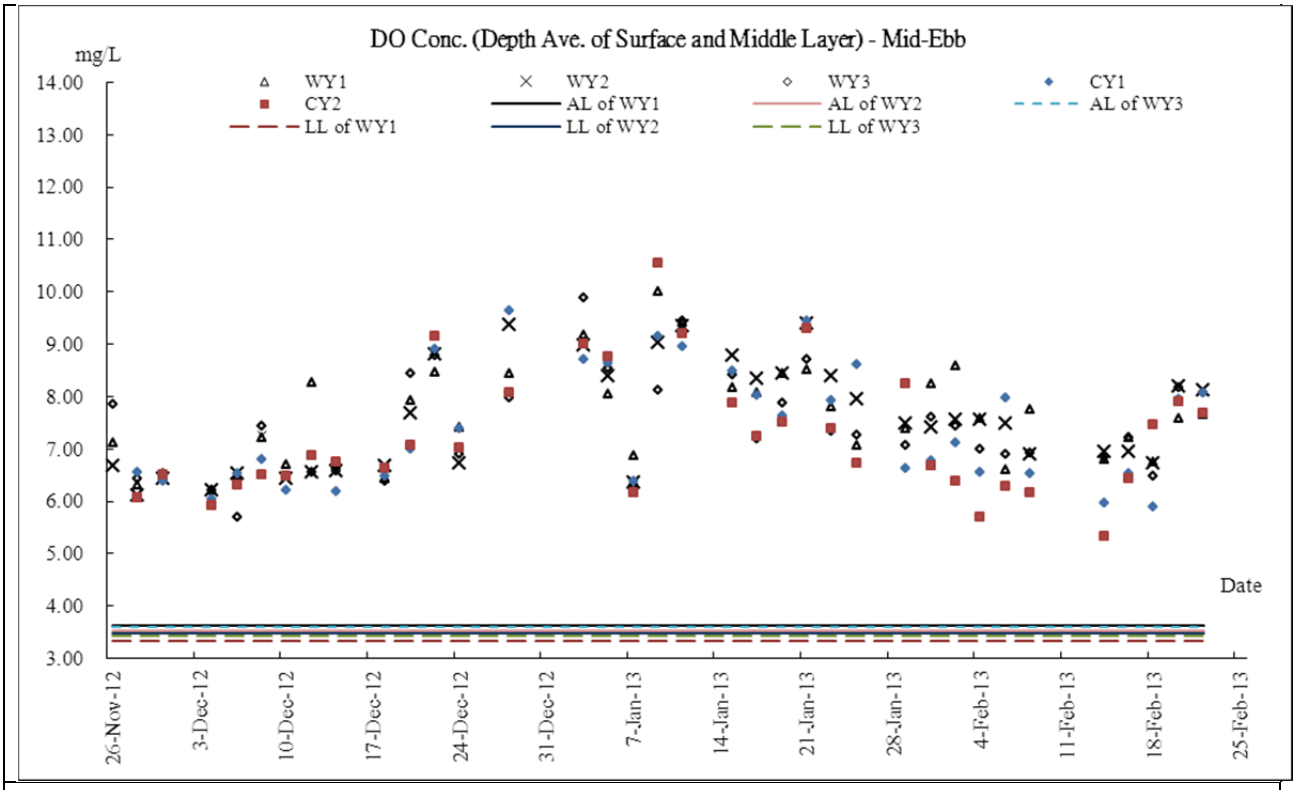


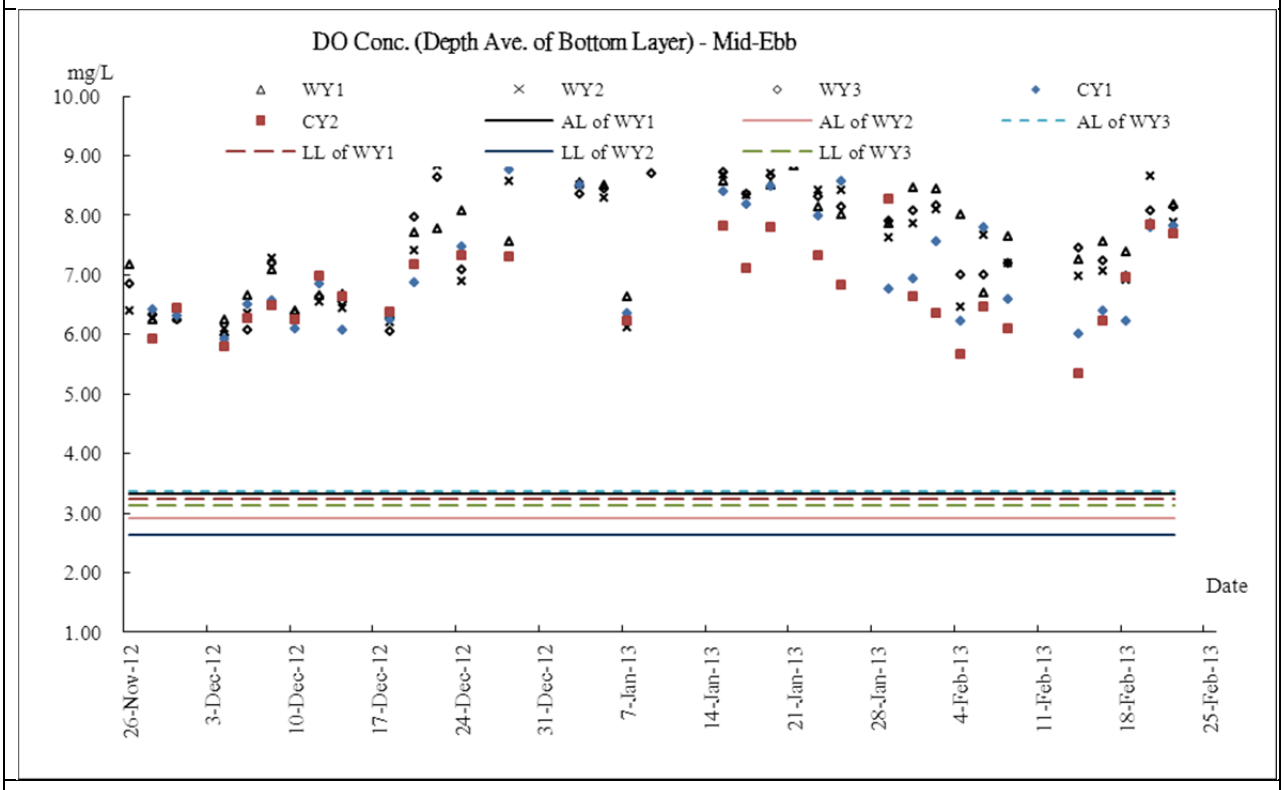


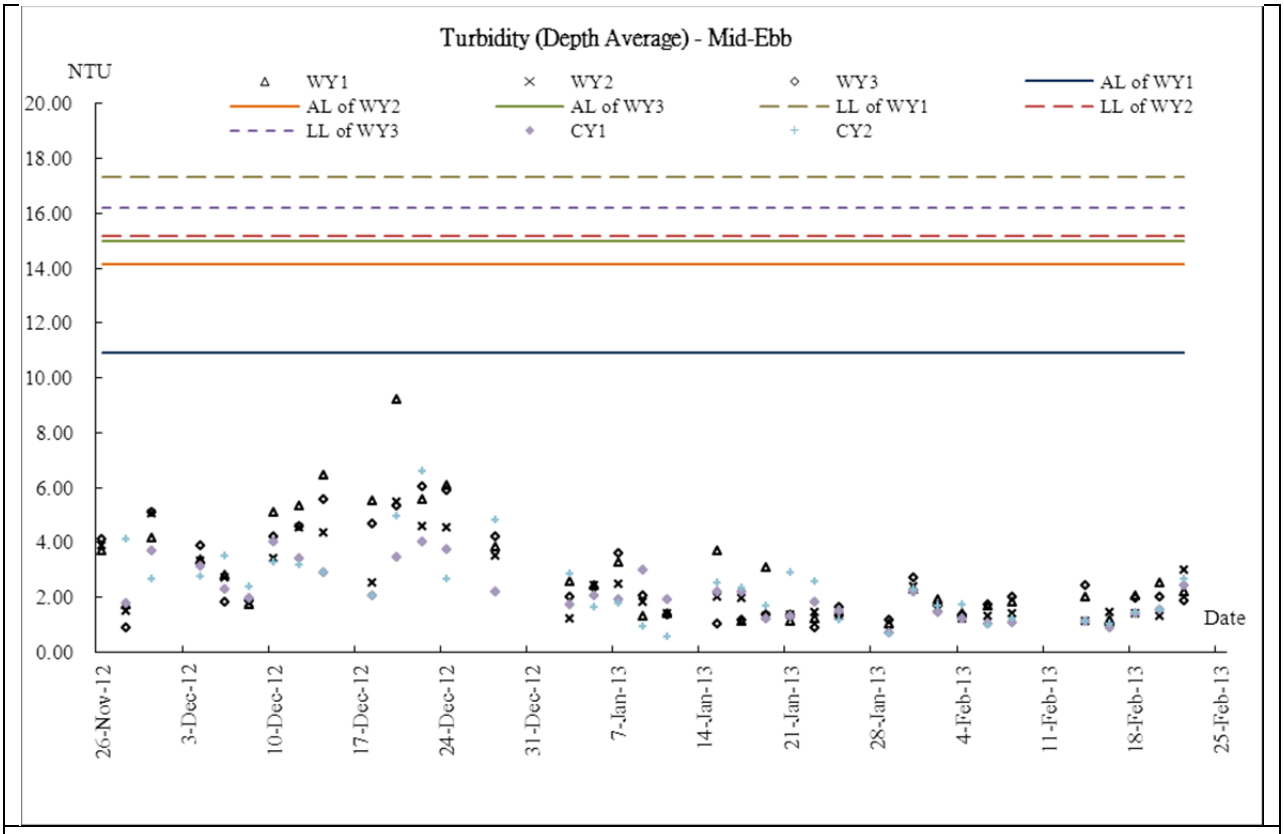
Construction Noise

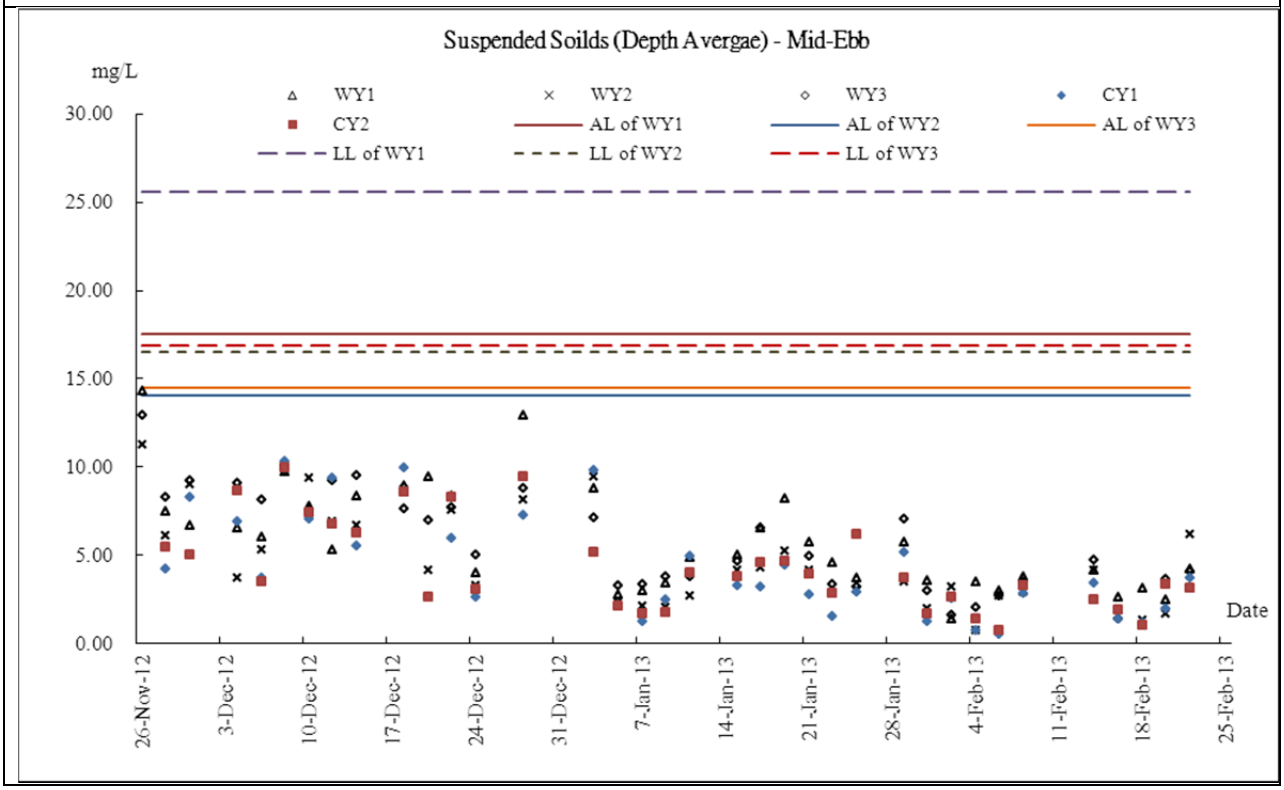


Marine Water Monitoring – Mid Ebb

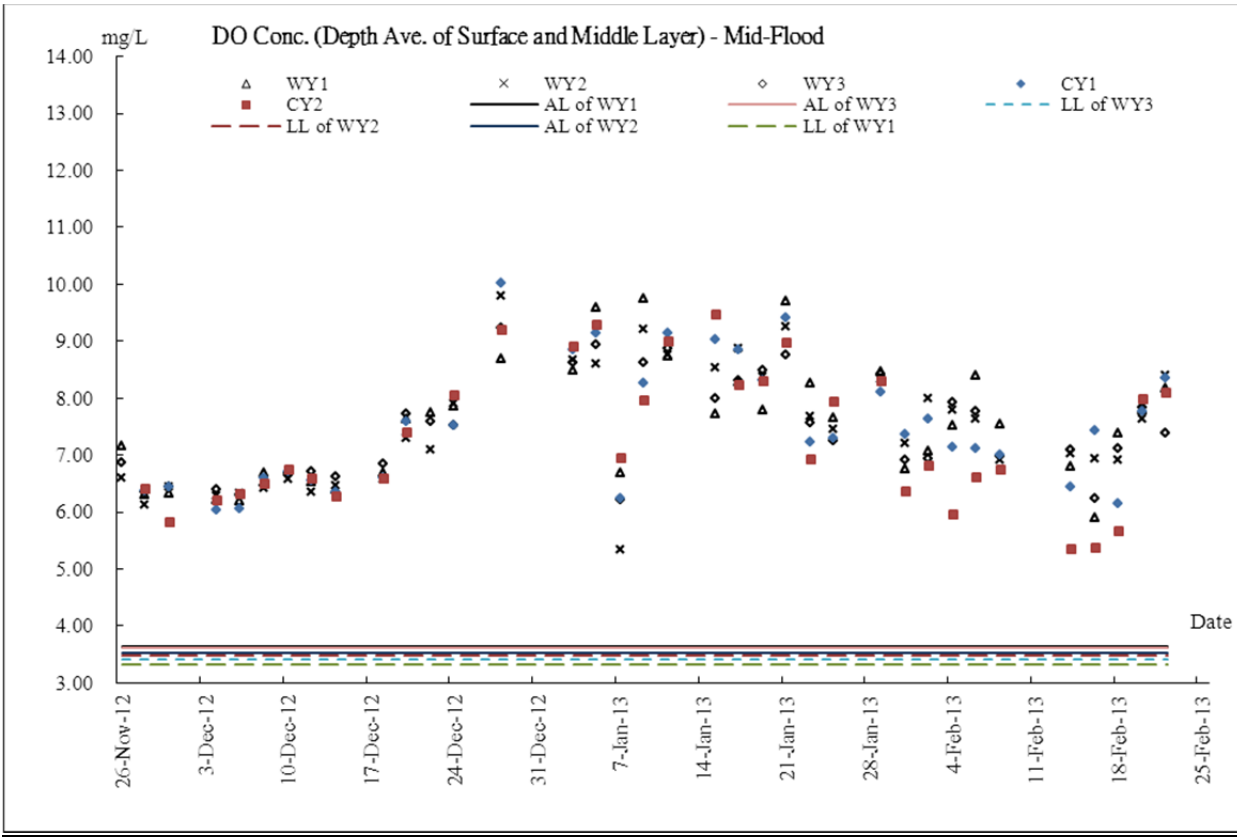


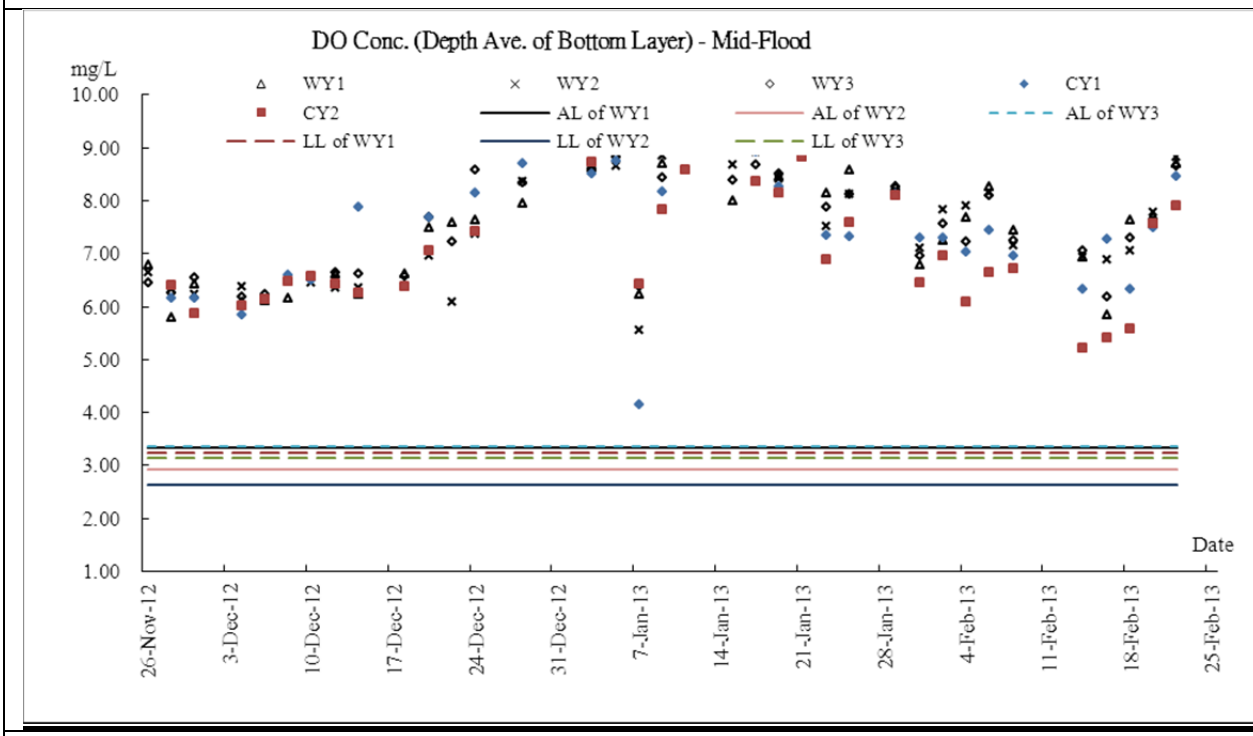


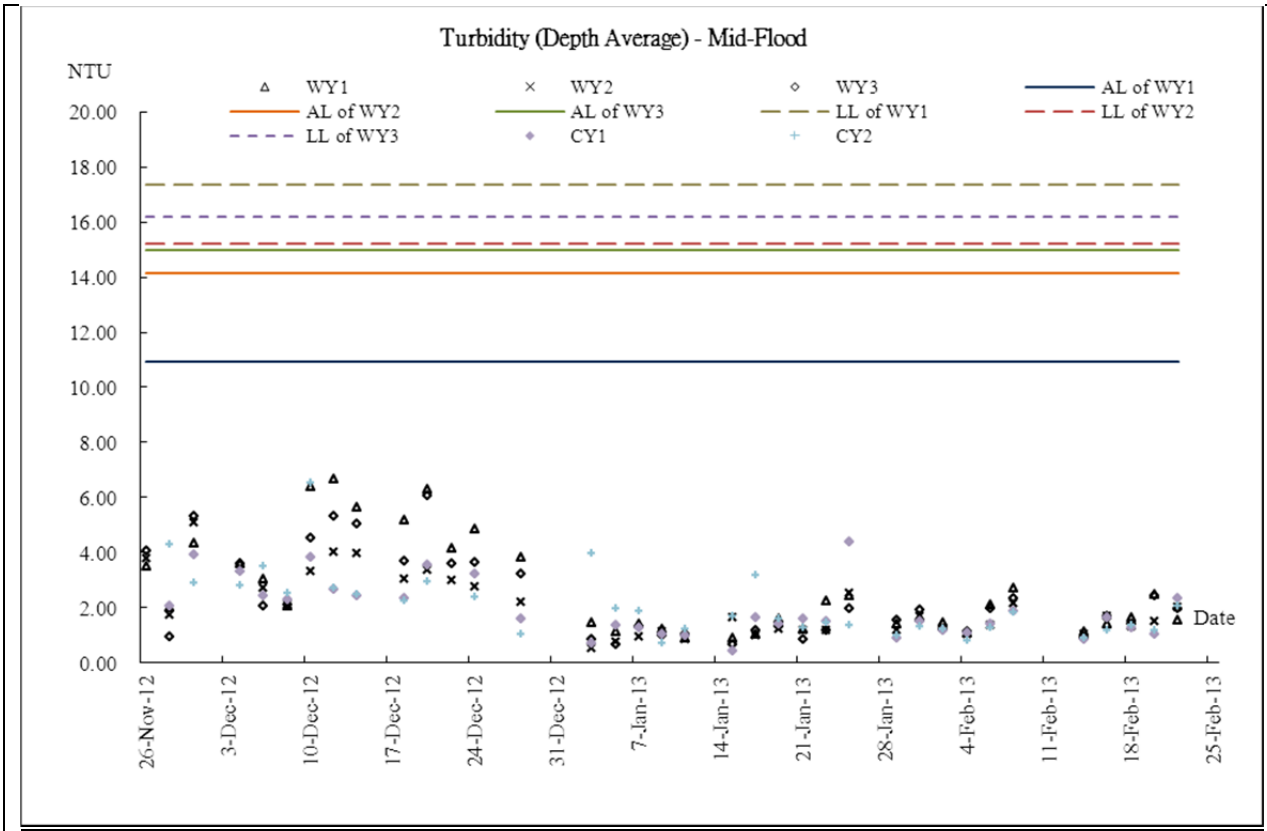

Turbidity (Depth Average) - Mid-Ebb
NTU
WY1
WY2
WY3
AL of WY1
AL of WY2
AL of WY3
LL of WY1
LL of WY2
LL of WY3
CY1
CY2
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
26-Nov-12
3-Dec-12
10-Dec-12
17-Dec-12
24-Dec-12
31-Dec-12
7-Jan-13
14-Jan-13
21-Jan-13
28-Jan-13
4-Feb-13
11-Feb-13
18-Feb-13
25-Feb-13

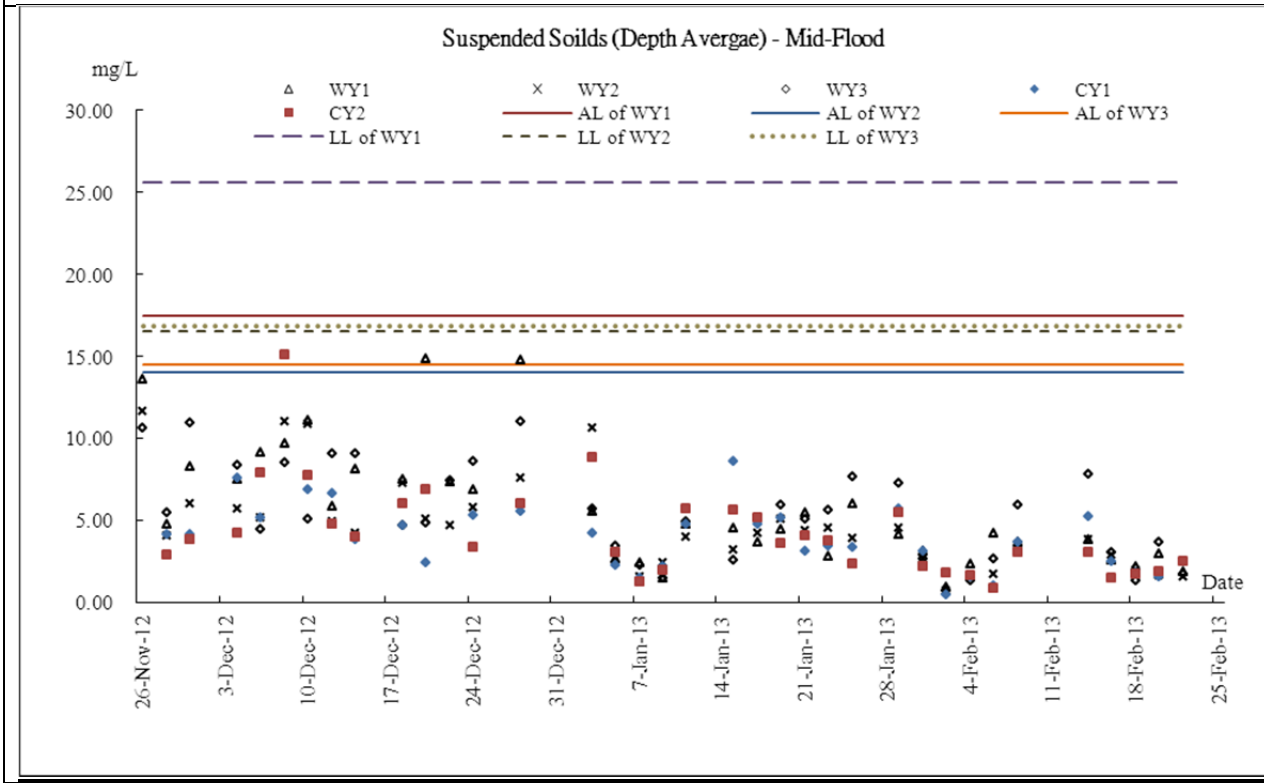

Suspended Soilds (Depth Avergae) - Mid-Ebb
mg/L
WY1
WY2
WY3
CY1
CY2
AL of WY1
AL of WY2
AL of WY3
LL of WY1
LL of WY2
LL of WY3
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Date
26-Nov-12
3-Dec-12
10-Dec-12
17-Dec-12
24-Dec-12
31-Dec-12
7-Jan-13
14-Jan-13
21-Jan-13
28-Jan-13
4-Feb-13
11-Feb-13
18-Feb-13
25-Feb-13

Marine Water Monitoring – Mid Flood






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
0.00
Date
26-Nov-12
3-Dec-12
10-Dec-12
17-Dec-12
24-Dec-12
31-Dec-12
7-Jan-13
14-Jan-13
21-Jan-13
28-Jan-13
4-Feb-13
11-Feb-13
18-Feb-13
25-Feb-13


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
26-Nov-12
3-Dec-12
10-Dec-12
17-Dec-12
24-Dec-12
31-Dec-12
7-Jan-13
14-Jan-13
21-Jan-13
28-Jan-13
4-Feb-13
11-Feb-13
18-Feb-13
25-Feb-13

Appendix F

Meteorological Information

Meteorological condition – December 2012

Affected by rain-bearing cloud band associated with the northeast monsoon during the first and last part of the month, December 2012 was gloomier and wetter than usual. The total duration of bright sunshine in the month was 101.0 hours, 41 percent below the normal figure of 172.2 hours and ranking the fifth lowest on record for December. The monthly total rainfall was 56.0 millimetres, more than double the normal figure of 26.8 millimetres. The annual rainfall for 2012 was 1924.7 millimetres, a deficit of about 20 percent compared with the annual normal of 2398.4 millimetres. Overall, the monthly mean temperature was close to normal, being 0.1 degree lower than the normal figure of 17.9 degrees.

Meteorological condition– January 2013

The weather of the first month in 2013 was characterized by plenty of sunshine and dry condition which were attributed to the prevalence of the relatively dry winter monsoon for most of the month. The total duration of sunshine in January 2013 was 184.0 hours, 41.0 hours above the normal figure of 143.0 hours. The total rainfall recorded in the month was only 3.4 millimetres, 21.3 millimetres below the normal figure of 24.7 millimetres. The month was also warmer than usual. The monthly mean temperature of 16.7 degrees was 0.4 degrees above the normal figure of 16.3 degrees.

Meteorological condition– February 2013

Under the influence of mild easterly airstreams during most part of the month, Hong Kong experienced unseasonably warm weather in February 2013. The monthly mean maximum temperature of 22.1 degrees and the mean temperature of 19.1 degrees were more than 2 degrees above normal and respectively the second and fourth highest on record for February. The monthly rainfall was only 1.5 millimetres, much below the normal figure of 54.4 millimetres and ranking the tenth lowest on record for February. The accumulated rainfall in the first two months of the year amounted to 4.9 millimetres, only about 6 percent of the normal figure of 79.1 millimetres for the same period.

Note: please refer to the monthly EM&A report (Dec 2012 - Feb 2013) for the weather details on each successive day.

Appendix G

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 November 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
2012	10.430	33.543	0.160	0.407	0.740	1.059	0.000	0.000	9.690	32.484	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	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	22.530	5.090
Feb	0.170	6.271	0.000	0.000	0.000	0.000	0.000	0.000	0.170	6.271	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	0.619	4.543	0.000	0.000	0.000	0.000	0.000	0.000	0.619	4.543	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.940	9.500
Apr	0.157	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.157	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.520	1.700
May	0.353	0.916	0.000	0.000	0.000	0.000	0.000	0.000	0.353	0.916	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.750	5.090
Jun	0.091	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	26.710	6.400
Sub-total	11.820	48.585	0.160	0.410	0.740	1.059	0.000	0.000	11.080	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	294.180	80.130
Jul	0.248	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.248	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.610	2.960
Aug	0.144	0.999	0.000	0.000	0.000	0.999	0.000	0.000	0.144	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.730	3.750
Sep	0.686	0.744	0.000	0.000	0.000	0.744	0.000	0.000	0.686	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	26.820	3.800
Oct	0.160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.970	3.470
Nov	0.131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13.670	4.410
Dec	0.153	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.153	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.430	4.920
Total	13.341	50.328	0.160	0.410	0.740	2.802	0.000	0.000	12.601	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	400.410	103.440
	63.669		0.569		3.542		0.000		60.127		0.000		0.000		0.000		0.000		0.000		503.850	

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

YSW: Yung Shue Wan

SKW: Sok Kwu Wan

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

Monthly Summary Waste Flow Table for February 2013

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
2013	13.341	50.328	0.160	0.410	0.740	2.802	0.000	0.000	12.601	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	400.410	103.440
Jan	0.332	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.332	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.040	9.840
Feb	0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.530	6.530
Mar																						
Apr																						
May																						
Jun																						
Sub-total	13.756	50.328	0.160	0.415	0.740	2.802	0.000	0.000	13.016	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	416.980	119.810
Jul																						
Aug																						
Sep																						
Oct																						
Nov																						
Dec																						
Total	13.756	50.328	0.160	0.415	0.740	2.802	0.000	0.000	13.016	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	416.980	119.810
	64.084		0.574		3.542		0.000		60.542		0.000		0.000		0.000		0.000		0.000		536.790	

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

YSW: Yung Shue Wan

SKW: Sok Kwu Wan

Appendix H

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

* 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 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 • the decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard.	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	
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. • 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	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	
		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

* 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 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		√		

* 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 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	General Site Wastes • 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	Chemical Wastes • 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	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	
		Ordance. • 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

* 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 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		√		

* 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 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