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.Q6
(December 2011 to February 2012)

PREPARED FOR
LEADER CIVIL ENGINEERING CORPORATION LIMITED

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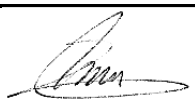
17 April 2012	TCS00512/09/600/R0451v\2		
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1	21 March 2012	First submission
2	17 April 2012	Amended against IEC's comments on 11 April 2012

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18 April 2012

By Post and Email

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Your Ref:

Our Ref: EB000586-F/THW12-5810

For attention of: Mr. T. W. Tam

Dear Mr. Tam,

Contract No.: DC/2009/08
Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station
Monthly EM&A Report for Designated Project, March 2012 – IEC Verification

With reference to ET's captioned report (ET's ref.: TCS00491/09/600/R0361v2 dated 17 April 2012) received on 17 April 2012, we have no comment and hereby verify the captioned report excluding the Landscape and Visual Impact section of the report.

We request the ET to submit the separate submission of Landscape and Visual Impact section of the report as soon as possible, for the completion of the captioned report.

Should there be any queries, please feel free to contact the undersigned on 2911 2744.

Yours sincerely

F.C. TSANG
Independent Environmental Checker
HYDER CONSULTING LIMITED

FCT/AC/ri

EXECUTIVE SUMMARY

ES.01 This is the **6th** Quarterly Environmental Monitoring and Audit (EM&A) Summary Report for Yung Shue Wan Portion Area under the Project, covering the construction period from **1 December 2011 to 29 February 2012** (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	28
Construction Noise	Leq (30min) Daytime	13
Water Quality	Marine Water Sampling	25
Ecology	Coral Monitoring	4
Inspection / Audit	ET Regular Environmental Site Inspection	12

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

ES.04 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 and ecology monitoring was suspended from 6 February 2012 until further notice of the commencement of dredging works which tentatively scheduled on 10 April 2012. The relevant letter ref.: TCS00512/10/300/L0425 has been submitted to EPD on 3 February 2012.

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.05 No exceedance in construction noise, water quality and ecology monitoring were recorded in this Reporting Period. For air quality monitoring, 2 Active Level exceedance of 24-hour TSP were recorded on 13 December 2011. 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	2	0	2	Pile of unmitigated dusty materials which did not belong to the Project	Not Project related and no corrective measure is required.
Construction Noise	Leq_{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

ENVIRONMENTAL COMPLAINT

ES.06 No environmental complaint was recorded or received in this Reporting Period. The statistics of environmental complaint are summarized in the following table.

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 31 December 2011	0	0	NA
1 - 31 January 2012	0	0	NA
1 – 29 February2012	0	0	NA

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.07 No environmental summons or successful prosecutions were recorded in this Reporting Period. The statistics of environmental complaint are summarized in the following tables.

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 31 December 2011	0	0	NA
1 - 31 January 2012	0	0	NA
1 – 29 February2012	0	0	NA

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 31 December 2011	0	0	NA
1 - 31 January 2012	0	0	NA
1 – 29 February2012	0	0	NA

REPORTING CHANGE

ES.08 As agreed by the IEC and RE, the marine water quality and ecology monitoring was suspended from 6 February 2012 until further notice of the commencement of dredging works which tentatively scheduled on 10 April 2012.

SITE INSPECTION BY EXTERNAL PARTIES

ES.09 No site inspection was undertaken by external parties i.e. Environmental Protection Department (EPD) or Agriculture, Fisheries and Conservation Department (AFCD) within the Reporting Period.

FUTURE KEY ISSUES

ES.10 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.

ES.11 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 also.

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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 **6th** Quarterly EM&A Summary report for Yung Shue Wan Portion Area presenting the monitoring results and inspection findings for the Reporting Period from **1 December 2011** to **29 February 2012**.

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 2011	• Construction of Sewage Treatment Works • Horizontal directional drilling (HDD) works
January 2012	• Construction of Sewage Treatment Works • Construction of Submarine Outfall
February 2012	• Construction of Sewage Treatment Works

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-RS0624-11)	Issued on 8 July 2011 Valid from 8 July 2011 until 24 December 2011
6	Construction Noise Permit (no. GW-RS0045-12)	Issued on 20 January 2012 Valid from 20 January 2012 until 19 July 2012

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 (ºC). ***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 3-5, 3-6, 3-7 and 3-8*** as below.

Table 3-5 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 3-6 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 3-7 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 3-8 Action and Limit Levels for Coral Monitoring

Step	Action
1	Commence tagged coral monitoring at the impact site. If no increase in sedimentation cover/bleaching/partial mortality is observed on the hard corals or partial mortality no the soft/black corals, no action is required. The coral survey specialist should present this information to the IC(E) at the end of each survey day

Step	Action
	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.
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 **28** events of 24-hour TSP measurements were performed.

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

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	124	68	87	***202****	38	111
Record Date	24-Feb-12	19-Jan-12	48 events	13-Dec-11	27-Jan-12	14 events
AC04c	118	72	89	***249****	34	104
Record Date	24-Feb-12	3-Jan-12 27-Jan-12	48 events	13-Dec-11	27-Jan-12	14 events

** Action Level exceedance*

4.04 In this Reporting Period, the 1-hour TSP monitoring values fluctuated well below the Action Level. For 24-hour TSP monitoring, Action Level exceedance was triggered at Locations AC02b and AC04c on 13 December 2011. Notification of Exceedance (NOE) has been issued to relevant parties upon confirmation of the monitoring result. The investigation report for the cause of exceedance has been conducted.

4.05 According to the construction information provided by the Contractor, major construction activities undertaken during exceedance day included concrete repairing work; preparation works for concreting; formwork erection; rebar bending and fixing; removal of scaffolding; plastering work and general site tidying. With full implementation of the required environmental mitigation measures, in particular construction dust suppression measures including water sprays for haul roads as well as wheel washing facilities provided at the exit/entrance of the site, these construction activities are not anticipated to create adverse construction dust impacts as shown by the TSP monitoring results of the previous construction period.

4.06 Our investigation revealed that the sources of the exceedance was a pile of unmitigated dusty materials which did not belong to the Project. The dusty materials had been uncovered and stock piled since 12 December 2011 at the open area near the public pier which was about 30m from the High Volume Samplers under the Project. As a result, considerable fugitive dust and TSP caused the recorded exceedance during dry and windy conditions of the dry season.

4.07 Since the exceedance was confirmed after the monitoring due to the time required for the laboratory analysis of TSP, no increase of monitoring frequency was possible to be implemented by the ET, as the no exceedance was recorded in the subsequent monitoring event

on 19 December 2011. In addition, no complaint was received during the exceedance, indicating the occasional exceedance bore only short term impacts. It is concluded that the exceedances were not related to the work under the Project and no remedial actions are required.

4.08 The detailed investigation report for the cause of exceedance and photo record are enclosed in the relevant Monthly EM&A Report – December 2011.

4.2 RESULTS OF CONSTRUCTION NOISE MONITORING

4.09 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 **13** 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	63.4	47.7
Record Date	20-Feb-12	3-Jan-12

4.3 RESULTS OF MARINE WATER QUALITY MONITORING

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

4.11 In this reporting period, **25** monitoring events have been carried out at the designated locations.

4.12 The statistical analysis result for the parameters of DO, turbidity and suspended solids in this Reporting Period 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	7.22	7.19	7.18	7.21	7.20
Min	5.45	5.27	5.38	5.35	5.33
Max	8.33	8.38	8.27	8.54	8.41

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

Station	WY1	WY2	WY3	CY1(F)	CY2(E)
Average	7.07	6.93	7.04	7.03	6.99
Min	5.09	5.09	5.13	5.03	4.92
Max	8.29	8.27	8.22	8.37	8.41

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

Station	WY1	WY2	WY3	CY1(F)	CY2(E)
Average	5.19	5.35	5.20	5.26	5.22
Min	4.12	4.30	3.71	4.03	3.65
Max	8.48	8.35	5.93	6.25	6.32

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

Station	WY1	WY2	WY3	CY1(F)	CY2(E)
Average	6.02	5.85	6.56	5.06	5.24
Min	1.25	1.07	1.15	1.07	1.03
Max	13.45	12.40	13.80	13.40	11.60

4.13 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

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4.14 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

4.15 Impact coral monitoring is required to perform since commencement of construction of marine outfall works (HDD and dredging) on 9 May 2011.

4.16 According to the EM&A Manual [*Appendix D of the Review Report on EIA Study – Yung Shue Wan (Final) in January 2007*] *Section 7.3.1*, if no exceedances are reported during first three month, then the frequency may be reduced to twice every month for the remainder of the marine works. In view of the monitoring results at the first three month and additional monitoring in September and October 2011, no adverse deterioration of the coral community was observed and identified by the marine ecologist. As agreed by the ER and IEC, the coral impact monitoring would be reduced to twice every month for the reminding marine works.

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

4.18 In this Reporting Period, **4** events of coral monitoring were performed on **15 and 30**

December 2011 and 12 and 30 January 2012 at Yung Shue Wan and Sham Wan where 20 hard coral colonies were monitored at each sites. The detailed monitoring report has been presented in the relevant monthly EM&A report (December 2011 and January 2012).

4.19 Overall, no exceedance of Action/Limit level was recorded in coral monitoring in this Reporting Period.

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 11	Jan 12	Feb 12	
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	0	0.17	Tuen Mun Area 38

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

Type of Waste	Quantity			Disposal Location
	Dec 11	Jan 12	Feb 12	
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)	57.14	22.530	14.86	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, site inspection was carried out on **6, 13, 20, and 28 December 2011, 6, 10, 17, 31 January and 7, 14, 21, 28 February 2012.** Besides, routine joint-site visit by IEC, RE, the Contractor (Leader) and ET was carried out on **6 December 2011, 6 January 2012** and **7 February 2012**.

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
6 December 2011	• No environmental issue was observed during the site inspection.	N.A.
13 December 2011	• No environmental issue was observed during the site inspection. • Since dry season is coming, dust mitigation measures is reminded to maintain to prevent dust emission.	No follow up for reminder.
20 December 2011	• No environmental issue was observed during the site inspection.	N.A.
28 December 2011	• No environmental issue was observed during the site inspection.	N.A
6 January 2012	• Preparation work for mixing pre-mixed mortar was observed within the site (the north of transformer substation). Construction dust suppression measures are required to avoid adverse construction dust impacts. • Construction activities were observed within the site. Full implementation of the required environmental mitigation measures is reminded.	• The situation was rectified on site by providing wind screen for enclosing the preparation work for mixing the mortar. • Not required for reminders.
10 January 2012	• No environmental issue was observed during the site inspection.	N.A.
17 January 2012	• Larvicial oil to be placed to stagnant water and notice to be displayed.	• It has been inspected and rectified on 31 January 2012.
31 January 2012	• Chemical waste inside desilting tank to be removed.	To be followed.
7 February 2012	• Chemical waste inside desilting tank should be removed.	• The deficiency has been rectified on 14 February 2012.
14 February 2012	• No environmental issue was observed during the site inspection.	N.A.
21 February 2012	• No environmental issue was observed during the site inspection.	N.A.
28 February 2012	• The stagnant water in the sedimentation tank should be covered and larvicial oil should be applied.	• The deficiency has been rectified on 6 March 2012.

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
1 – 31 December 2011	0	0	NA
1 - 31 January 2012	0	0	NA
1 – 29 February2012	0	0	NA

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 31 December 2011	0	0	NA
1 - 31 January 2012	0	0	NA
1 – 29 February2012	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 31 December 2011	0	0	NA
1 - 31 January 2012	0	0	NA
1 – 29 February2012	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 (eg. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Any unused chemicals or those with remaining functional capacity should be recycled. Spent chemicals should be properly stored on site within suitably designed containers, and should be collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licenced facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordinance.

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 **6th** Quarterly EM&A Summary Report for Yung Shue Wan Portion Area under the Project covering the construction period from **1 December 2011 to 29 February 2012.**

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

9.03 In this Reporting Period, no 1-hour TSP result was found to be triggered the Action or Limit Level. However, 2 Active Level exceedance of 24-hour TSP were recorded on 13 December 2011. Investigation revealed that the source of the exceedance was a pile of unmitigated dusty materials which did not belong to the Project. It is concluded that the exceedances were not related to the work under the Project and no remedial actions are required.

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

9.05 No exceedance of Action/Limit level was recorded in coral monitoring in this Reporting Period.

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

9.07 **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.

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

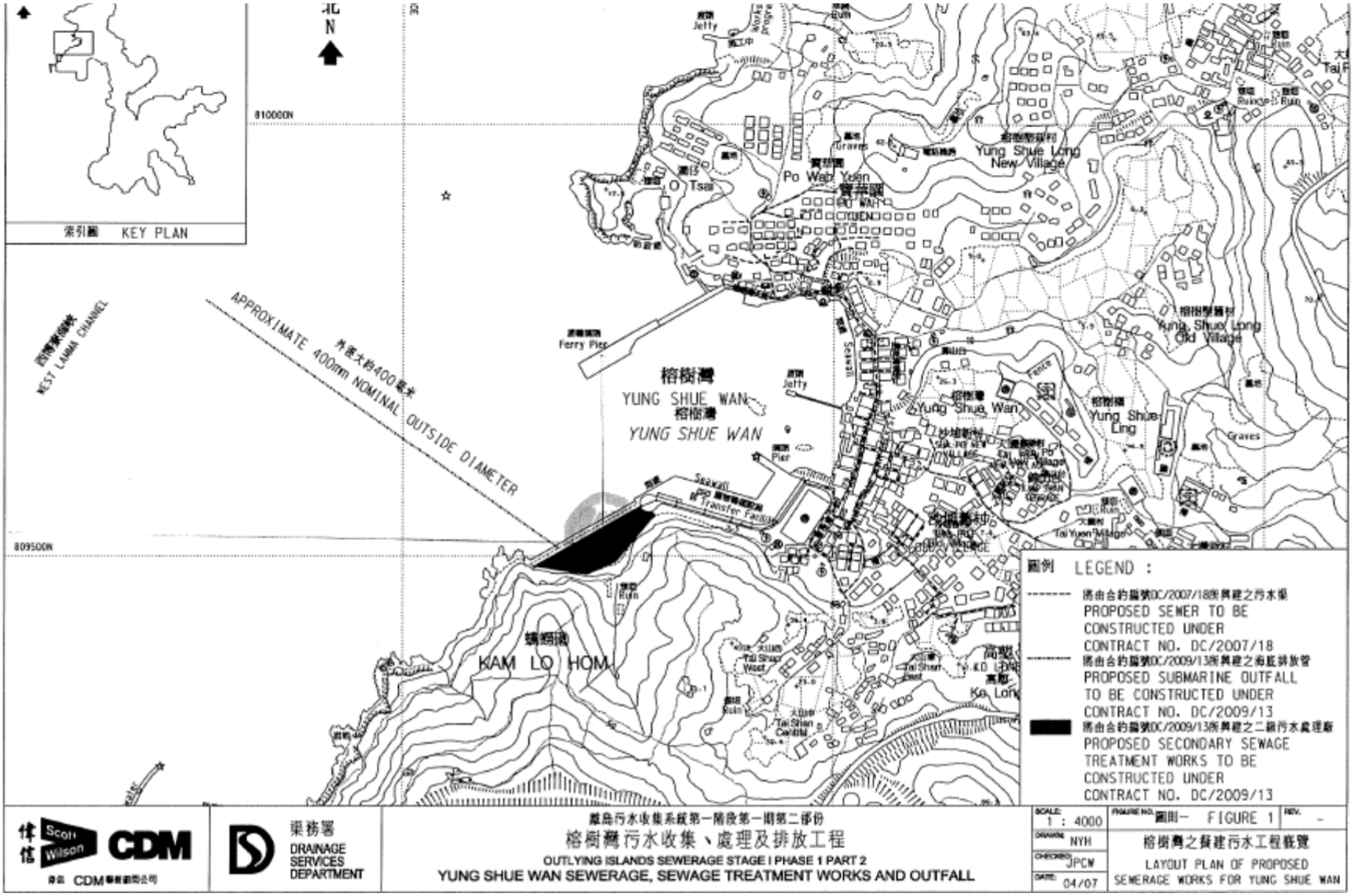
9.2 RECOMMENDATIONS

9.09 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.

9.10 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 also.

Appendix A

Site Layout Plan – Yung Shue Wan Portion Area


索引圖 KEY PLAN
北 N
810000N
809500N
APPROXIMATE 400mm NOMINAL OUTSIDE DIAMETER
榕樹灣 YUNG SHUE WAN
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
Tai Yuen Village
Ko Long
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. -
榕樹灣之發建污水工程概覽
LAYOUT PLAN OF PROPOSED SEWERAGE WORKS FOR YUNG SHUE WAN

Appendix B

Organization Structure and Contact Details of Relevant Parties

Contact Details of Key Personnel

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

Legend:

DSD (Employer) – Drainage Services Department

CDM (Engineer) – Scott Wilson CDM Joint Venture

Leader (Main Contractor) – Leader Civil Engineering Corporation Limited

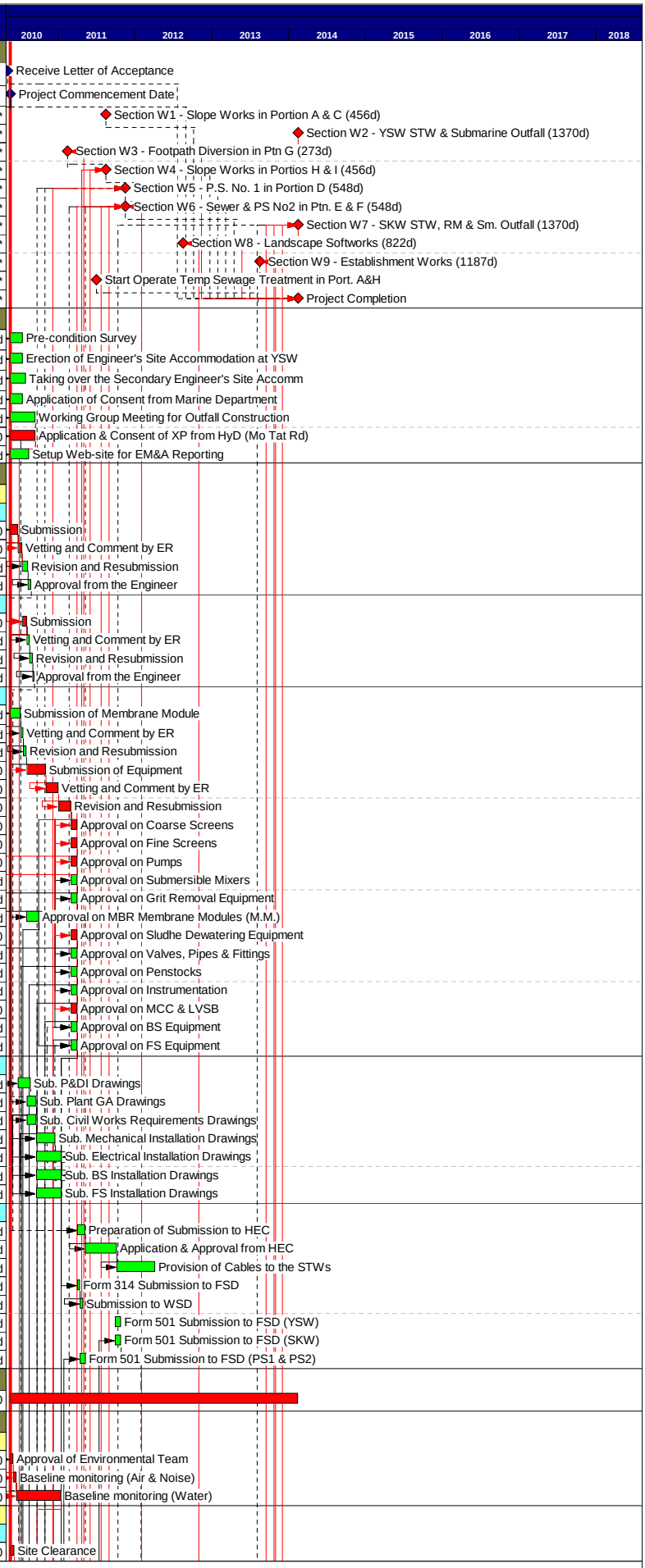
Scott Wilson (IEC) – Scott Wilson Limited

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

Appendix C

Master and Three Months Rolling Construction Programs

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float
Project Key Date						
KD0010	0		05/05/10 A		05/05/10 A	
KD0020	0		17/05/10 A		17/05/10 A	
KD0030	0		15/08/11 *		15/08/11	0 *
KD0040	0		14/02/14 *		14/02/14	0 *
KD0050	0		13/02/11 *		13/02/11	0 *
KD0060	0		15/08/11 *		15/08/11	0 *
KD0070	0		15/11/11 *		15/11/11	0 *
KD0080	0		15/11/11 *		15/11/11	0 *
KD0090	0		14/02/14 *		14/02/14	0 *
KD0100	0		15/08/12 *		15/08/12	0 *
KD0110	0		15/08/13 *		15/08/13	0 *
KD0115	0		30/06/11 *		30/06/11	0 *
KD0125	0		14/02/14 *		14/02/14	0 *
Preliminary (Civil)						
PRE0020	60	17/05/10	15/07/10	19/05/10	17/07/10 *	2d
PRE0040	60	17/05/10 *	15/07/10	19/05/10	17/07/10 *	2d
PRE0050	75	17/05/10	30/07/10	18/05/10	31/07/10 *	1d
PRE0060	60	17/05/10	15/07/10	18/05/10	16/07/10 *	1d
PRE0090	120	17/05/10	13/09/10	17/09/10	14/01/11	123d
PRE0100	120	17/05/10	13/09/10	17/05/10	13/09/10	0
PRE0130	90	17/05/10	14/08/10	18/05/10	15/08/10 *	1d
Preliminary (E&M)						
Technical Submission						
Process Design of SKWSTW & YSWSTW						
E&M0010	38	17/05/10	23/06/10	17/05/10	23/06/10	0
E&M0020	21	24/06/10	14/07/10	24/06/10	14/07/10	0
E&M0030	28	15/07/10	11/08/10	20/05/11	16/06/11	309d
E&M0080	14	12/08/10	25/08/10	17/06/11	30/06/11	309d
Hydraulic Design						
E&M0040	21	15/07/10	04/08/10	15/07/10	04/08/10	0
E&M0050	14	05/08/10	18/08/10	27/05/11	09/06/11	295d
E&M0060	14	19/08/10	01/09/10	10/06/11	23/06/11	295d
E&M0430	7	02/09/10	08/09/10	24/06/11	30/06/11	295d
Equipment Submission & Approval						
E&M0070	50	17/05/10	05/07/10	08/06/10	27/07/10	22d
E&M0090	14	06/07/10	19/07/10	28/07/10	10/08/10	22d
E&M0100	14	20/07/10	02/08/10	11/08/10	24/08/10	22d
E&M0101	90	05/08/10	02/11/10	05/08/10	02/11/10	0
E&M0102	60	03/11/10	01/01/11	03/11/10	01/01/11	0
E&M0103	60	02/01/11	02/03/11	02/01/11	02/03/11	0
E&M0110	30	03/03/11	01/04/11	03/03/11	01/04/11	0
E&M0120	30	03/03/11	01/04/11	03/03/11	01/04/11	0
E&M0130	30	03/03/11	01/04/11	03/03/11	01/04/11	0
E&M0140	30	03/03/11	01/04/11	03/04/11	02/05/11	31d
E&M0150	30	03/03/11	01/04/11	19/03/11	17/04/11	16d
E&M0160	60	03/08/10	01/10/10	25/08/10	23/10/10	22d
E&M0170	30	03/03/11	01/04/11	03/03/11	01/04/11	0
E&M0180	30	03/03/11	01/04/11	18/05/11	16/06/11	76d
E&M0190	30	03/03/11	01/04/11	18/05/11	16/06/11	76d
E&M0200	30	03/03/11	01/04/11	01/08/11	30/08/11	151d
E&M0210	30	03/03/11	01/04/11	03/03/11	01/04/11	0
E&M0220	30	03/03/11	01/04/11	11/06/11	10/07/11	100d
E&M0230	30	03/03/11	01/04/11	01/06/11	30/06/11	90d
Drawings Submission & Approval						
E&M0235	60	24/06/10	22/08/10	12/01/11	12/03/11	202d
E&M0240	45	05/08/10	18/09/10	18/12/10	31/01/11	135d
E&M0250	45	05/08/10	18/09/10	18/12/10	31/01/11	135d
E&M0260	90	19/09/10	17/12/10	13/03/11	10/06/11	175d
E&M0270	120	19/09/10	16/01/11	11/02/11	10/06/11	145d
E&M0280	120	19/09/10	16/01/11	11/02/11	10/06/11	145d
E&M0290	120	19/09/10	16/01/11	01/02/11	31/05/11	135d
Statutory Submission						
E&M0295	39	02/04/11	10/05/11	01/07/11	08/08/11	90d
E&M0300	150	11/05/11	07/10/11	09/08/11	05/01/12	90d
E&M0305	180	08/10/11	04/04/12	06/01/12	03/07/12	90d
E&M0320	14	02/04/11	15/04/11	15/04/12	28/04/12	379d
E&M0325	14	16/04/11	29/04/11	29/04/12	12/05/12	379d
E&M0330	28	29/09/11	26/10/11	12/07/12	08/08/12	287d
E&M0340	28	29/09/11	26/10/11	12/07/12	08/08/12	287d
E&M0350	28	15/04/11	12/05/11	18/01/14	14/02/14	1009d
+Yung Shue Wan						
	1370	17/05/10	14/02/14	17/05/10	14/02/14	0
Sok Kwu Wan						
Preliminary						
SKW0250	16	17/05/10	01/06/10	17/05/10	01/06/10	0
SKW0260	14	02/06/10	15/06/10	02/06/10	15/06/10	0
SKW0270	213	16/06/10	14/01/11	16/06/10	14/01/11	0
Section W3 - Footpath Diversion in Portion G						
Civil & Geotechnical Works						
SKW0240	21	17/05/10	06/06/10	17/05/10	06/06/10	0



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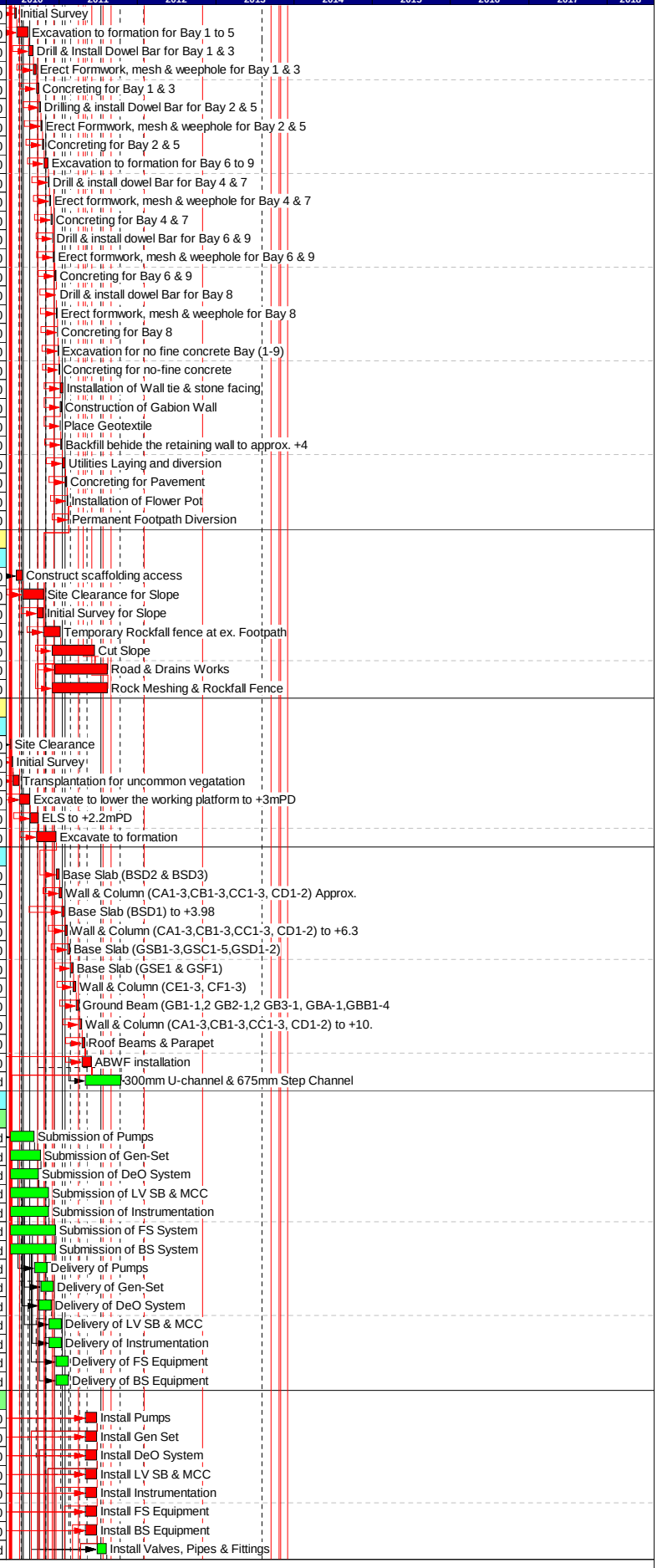
Finish date	14/02/14
Data date	17/05/10
Run date	11/08/10
Page number	1A
c Primavera Systems, Inc.	

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
Works Programme (Rev. 1)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float
SKW0241	9	07/06/10	15/06/10	07/06/10	15/06/10	0
SKW0242	57	16/06/10	11/08/10	16/06/10	11/08/10	0
SKW0251	21	12/08/10	01/09/10	12/08/10	01/09/10	0
SKW0301	14	02/09/10	15/09/10	02/09/10	15/09/10	0
SKW0311	14	16/09/10	29/09/10	16/09/10	29/09/10	0
SKW0321	7	30/09/10	06/10/10	30/09/10	06/10/10	0
SKW0331	7	07/10/10	13/10/10	07/10/10	13/10/10	0
SKW0341	7	14/10/10	20/10/10	14/10/10	20/10/10	0
SKW0351	21	21/10/10	10/11/10	21/10/10	10/11/10	0
SKW0361	6	11/11/10	16/11/10	11/11/10	16/11/10	0
SKW0371	7	17/11/10	23/11/10	17/11/10	23/11/10	0
SKW0381	7	24/11/10	30/11/10	24/11/10	30/11/10	0
SKW0391	3	01/12/10	03/12/10	01/12/10	03/12/10	0
SKW0401	7	04/12/10	10/12/10	04/12/10	10/12/10	0
SKW0411	7	11/12/10	17/12/10	11/12/10	17/12/10	0
SKW0421	1	18/12/10	18/12/10	18/12/10	18/12/10	0
SKW0431	4	19/12/10	22/12/10	19/12/10	22/12/10	0
SKW0441	4	23/12/10	26/12/10	23/12/10	26/12/10	0
SKW0461	3	27/12/10	29/12/10	27/12/10	29/12/10	0
SKW0471	7	30/12/10	05/01/11	30/12/10	05/01/11	0
SKW0481	14	06/01/11	19/01/11	06/01/11	19/01/11	0
SKW0491	7	06/01/11	12/01/11	06/01/11	12/01/11	0
SKW0501	3	06/01/11	08/01/11	06/01/11	08/01/11	0
SKW0511	7	09/01/11	15/01/11	09/01/11	15/01/11	0
SKW0521	14	16/01/11	29/01/11	16/01/11	29/01/11	0
SKW0531	7	30/01/11	05/02/11	30/01/11	05/02/11	0
SKW0541	7	06/02/11	12/02/11	06/02/11	12/02/11	0
SKW0551	1	13/02/11	13/02/11	13/02/11	13/02/11	0
Section W4 - Slope Works in Portions H & I						
Geotechnical Works						
SKW0588	30	15/06/10	14/07/10	15/06/10	14/07/10	0
SKW0590	100	15/07/10	22/10/10	15/07/10	22/10/10	0
SKW0591	28	21/09/10	18/10/10	21/09/10	18/10/10	0
SKW0592	80	19/10/10	06/01/11	19/10/10	06/01/11	0
SKW0593	200	28/11/10	15/06/11	28/11/10	15/06/11	0
SKW0594	248	11/12/10	15/08/11	11/12/10	15/08/11	0
SKW0595	260	29/11/10	15/08/11	29/11/10	15/08/11	0
Section W5 - P.S. No. 1 in Portion D						
Civil & Geotechnical Works						
SKW0651	7	17/05/10	23/05/10	17/05/10	23/05/10	0
SKW0652	7	24/05/10	30/05/10	24/05/10	30/05/10	0
SKW0661	30	31/05/10	29/06/10	31/05/10	29/06/10	0
SKW0681	49	30/06/10	17/08/10	30/06/10	17/08/10	0
SKW0691	40	18/08/10	26/09/10	18/08/10	26/09/10	0
SKW0721	92	17/09/10	17/12/10	17/09/10	17/12/10	0
Structural Works						
SKW0741	15	18/12/10	01/01/11	18/12/10	01/01/11	0
SKW0751	14	01/01/11	14/01/11	01/01/11	14/01/11	0
SKW0761	14	14/01/11	27/01/11	14/01/11	27/01/11	0
SKW0771	14	27/01/11	09/02/11	27/01/11	09/02/11	0
SKW0781	14	09/02/11	22/02/11	09/02/11	22/02/11	0
SKW0791	14	22/02/11	07/03/11	22/02/11	07/03/11	0
SKW0801	14	07/03/11	20/03/11	07/03/11	20/03/11	0
SKW0811	14	21/03/11	03/04/11	21/03/11	03/04/11	0
SKW0821	14	04/04/11	17/04/11	04/04/11	17/04/11	0
SKW0831	14	18/04/11	01/05/11	18/04/11	01/05/11	0
SKW0841	45	18/04/11	01/06/11	18/04/11	01/06/11	0
SKW0861	168	02/05/11	16/10/11	01/06/11	15/11/11	30d
E&M Works (PS1)						
Submission & Delivery						
E&M1001	113	17/05/10	06/09/10	10/11/10	02/03/11	177d
E&M1002	143	17/05/10	06/10/10	11/10/10	02/03/11	147d
E&M1003	133	17/05/10	26/09/10	21/10/10	02/03/11	157d
E&M1004	180	17/05/10	12/11/10	04/09/10	02/03/11	110d
E&M1005	180	17/05/10	12/11/10	04/09/10	02/03/11	110d
E&M1006	213	17/05/10	15/12/10	02/08/10	02/03/11	77d
E&M1007	213	17/05/10	15/12/10	02/08/10	02/03/11	77d
E&M1011	60	07/09/10	05/11/10	03/03/11	01/05/11	177d
E&M1012	60	07/10/10	05/12/10	03/03/11	01/05/11	147d
E&M1013	60	27/09/10	25/11/10	03/03/11	01/05/11	157d
E&M1014	60	13/11/10	11/01/11	03/03/11	01/05/11	110d
E&M1015	60	13/11/10	11/01/11	03/03/11	01/05/11	110d
E&M1016	60	16/12/10	13/02/11	03/03/11	01/05/11	77d
E&M1017	60	16/12/10	13/02/11	03/03/11	01/05/11	77d
Installation, T&C						
E&M1101	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1102	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1103	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1104	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1105	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1106	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1107	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1110	46	26/06/11	10/08/11	27/08/11	11/10/11	62d



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Early bar
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Critical bar
Summary bar
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Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float
E&M1120	7	11/08/11	17/08/11	12/10/11	18/10/11	62d
E&M1130	28	18/08/11	14/09/11	19/10/11	15/11/11	62d
E&M1140	43	26/06/11	07/08/11	26/06/11	07/08/11	0
E&M1150	7	08/08/11	14/08/11	08/08/11	14/08/11	0
E&M1160	3	15/08/11	17/08/11	15/08/11	17/08/11	0
E&M1170	30	18/08/11	16/09/11	18/08/11	16/09/11	0
E&M11800	60	17/09/11	15/11/11	17/09/11	15/11/11	0
Section W6 - Sewer and PS No.2 in Portions E&H						
Civil & Geotechnical Works						
SKW0881	7	17/05/10	23/05/10	17/05/10	23/05/10	0
SKW0891	7	17/05/10	23/05/10	17/05/10	23/05/10	0
SKW0892	30	24/05/10	22/06/10	24/05/10	22/06/10	0
SKW0901	30	23/06/10	22/07/10	23/06/10	22/07/10	0
SKW0921	14	23/07/10	05/08/10	23/07/10	05/08/10	0
SKW0931	14	06/08/10	19/08/10	06/08/10	19/08/10	0
SKW0951	106	20/08/10	03/12/10	20/08/10	03/12/10	0
SKW0961	257	04/12/10	17/08/11	04/03/11	15/11/11	90d
SKW1491	180	14/09/10	12/03/11	14/09/10	12/03/11	0
SKW1511	180	13/03/11	08/09/11	13/03/11	08/09/11	0
SKW1531	34	09/09/11	12/10/11	09/09/11	12/10/11	0
SKW1581	34	13/10/11	15/11/11	13/10/11	15/11/11	0
Structural Works						
SKW0971	14	04/12/10	17/12/10	04/12/10	17/12/10	0
SKW0981	14	18/12/10	31/12/10	18/12/10	31/12/10	0
SKW0991	14	01/01/11	14/01/11	01/01/11	14/01/11	0
SKW1001	14	15/01/11	28/01/11	15/01/11	28/01/11	0
SKW1011	14	29/01/11	11/02/11	29/01/11	11/02/11	0
SKW1021	20	12/02/11	03/03/11	12/02/11	03/03/11	0
SKW1031	14	04/03/11	17/03/11	04/03/11	17/03/11	0
SKW1041	14	18/03/11	31/03/11	18/03/11	31/03/11	0
SKW1051	14	01/04/11	14/04/11	01/04/11	14/04/11	0
SKW1061	90	01/04/11	29/06/11	01/04/11	29/06/11	0
SKW1081	215	15/04/11	15/11/11	15/04/11	15/11/11	0
E&M Works (PS2)						
Submission & Delivery						
E&M2001	113	17/05/10	06/09/10	17/05/10	06/09/10	0
E&M2002	143	17/05/10	06/10/10	17/05/10	06/10/10	0
E&M2003	133	17/05/10	26/09/10	17/05/10	26/09/10	0
E&M2004	271	17/05/10	11/02/11	17/05/10	11/02/11	0
E&M2005	243	17/05/10	14/01/11	17/05/10	14/01/11	0
E&M2006	213	17/05/10	15/12/10	17/05/10	15/12/10	0
E&M2007	213	17/05/10	15/12/10	17/05/10	15/12/10	0
E&M2011	282	07/09/10	15/06/11	07/09/10	15/06/11	0
E&M2012	252	07/10/10	15/06/11	07/10/10	15/06/11	0
E&M2013	262	27/09/10	15/06/11	27/09/10	15/06/11	0
E&M2014	62	12/02/11	14/04/11	12/02/11	14/04/11	0
E&M2015	90	15/01/11	14/04/11	15/01/11	14/04/11	0
E&M2016	120	16/12/10	14/04/11	16/12/10	14/04/11	0
E&M2017	120	16/12/10	14/04/11	16/12/10	14/04/11	0
Installation, T&C						
E&M2101	60	16/06/11	14/08/11	16/06/11	14/08/11	0
E&M2102	60	16/06/11	14/08/11	16/06/11	14/08/11	0
E&M2103	60	16/06/11	14/08/11	16/06/11	14/08/11	0
E&M2104	60	15/04/11	13/06/11	15/04/11	13/06/11	0
E&M2105	60	15/04/11	13/06/11	15/04/11	13/06/11	0
E&M2106	60	15/04/11	13/06/11	15/04/11	13/06/11	0
E&M2107	60	15/04/11	13/06/11	15/04/11	13/06/11	0
E&M2110	58	15/08/11	11/10/11	15/08/11	11/10/11	0
E&M2120	7	12/10/11	18/10/11	12/10/11	18/10/11	0
E&M2130	28	19/10/11	15/11/11	19/10/11	15/11/11	0
E&M2140	55	14/06/11	07/08/11	14/06/11	07/08/11	0
E&M2150	7	08/08/11	14/08/11	08/08/11	14/08/11	0
E&M2160	3	15/08/11	17/08/11	15/08/11	17/08/11	0
E&M2170	30	18/08/11	16/09/11	18/08/11	16/09/11	0
E&M2180	60	17/09/11	15/11/11	17/09/11	15/11/11	0
Section W7 - SKW STW,Sewer and Submarine Outfall						
Submarine Outfall						
SKW1131	60	17/05/10	15/07/10	17/05/10	15/07/10	0
SKW1141	183	16/07/10	14/01/11	16/07/10	14/01/11	0
SKW1151	185	15/01/11	18/07/11	15/01/11	18/07/11	0
SKW1161	90	19/07/11	16/10/11	19/07/11	16/10/11	0
SKW1171	120	17/10/11	13/02/12	17/10/11	13/02/12	0
SKW1181	60	14/02/12	13/04/12	14/02/12	13/04/12	0
SKW1191	30	14/04/12	13/05/12	14/04/12	13/05/12	0
SKW1201	210	14/05/12	09/12/12	14/05/12	09/12/12	0
SKW1211	180	10/12/12	07/06/13	10/12/12	07/06/13	0
SKW1221	57	08/06/13	03/08/13	08/06/13	03/08/13	0
SKW1231	60	04/08/13	02/10/13	04/08/13	02/10/13	0
SKW1241	60	03/10/13	01/12/13	03/10/13	01/12/13	0
SKW1251	45	02/12/13	15/01/14	02/12/13	15/01/14	0
SKW1431	30	16/01/14	14/02/14	16/01/14	14/02/14	0
SKW STW						
Submission & Delivery (E&M)						

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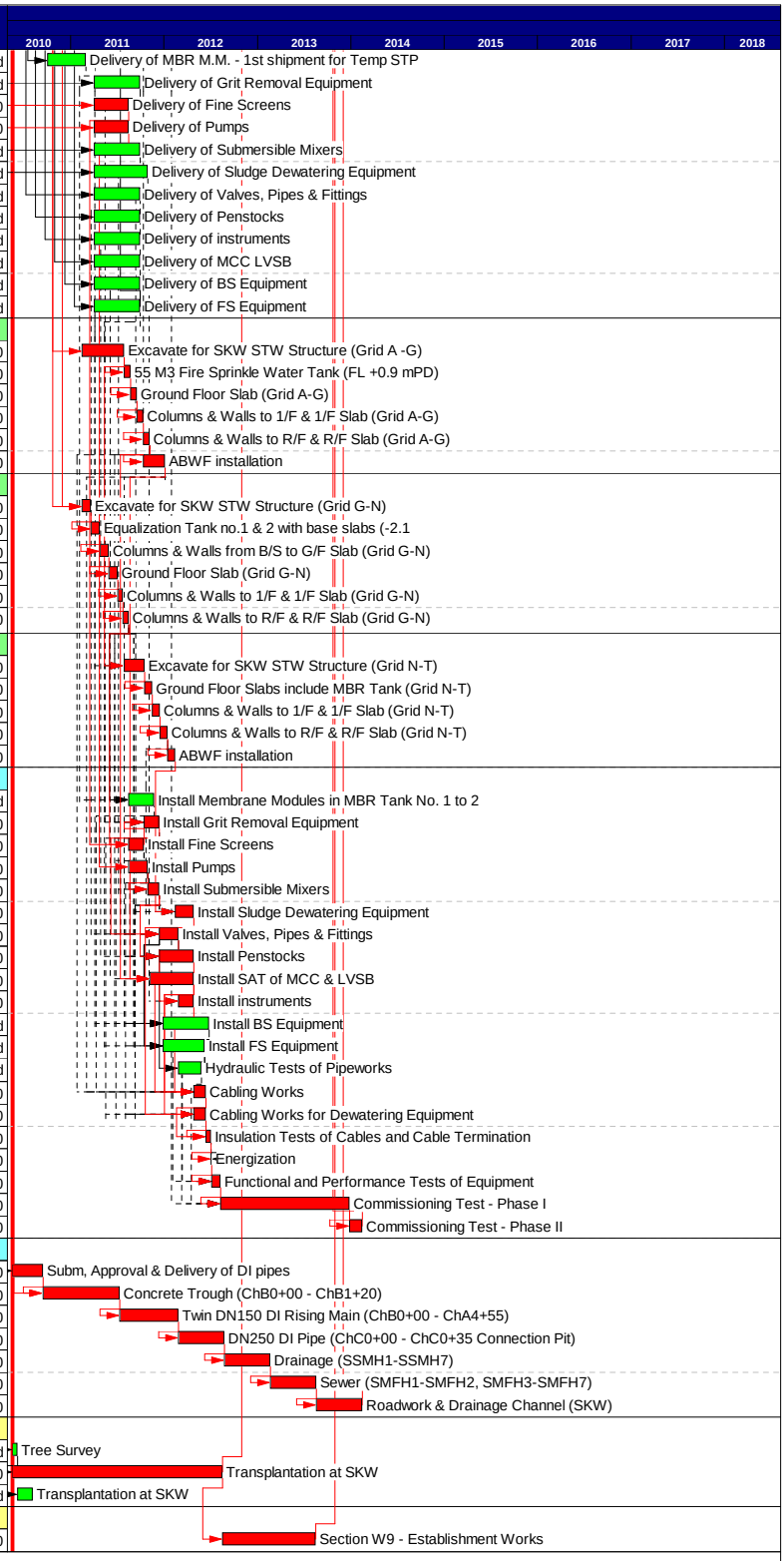
Critical bar
Summary bar
Progress point
Critical point
Summary point
Start milestone point
Finish milestone point

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 1)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float
E&M3010	150	02/10/10	28/02/11	21/08/11	17/01/12	323d
E&M3030	180	02/04/11	28/09/11	18/04/11	14/10/11	16d
E&M3060	136	02/04/11	15/08/11	02/04/11	15/08/11	0
E&M3070	136	02/04/11	15/08/11	02/04/11	15/08/11	0
E&M3080	180	02/04/11	28/09/11	03/05/11	29/10/11	31d
E&M3090	210	02/04/11	28/10/11	18/07/11	12/02/12	107d
E&M3100	180	02/04/11	28/09/11	17/06/11	13/12/11	76d
E&M3110	180	02/04/11	28/09/11	17/06/11	13/12/11	76d
E&M3130	180	02/04/11	28/09/11	31/08/11	26/02/12	151d
E&M3140	180	02/04/11	28/09/11	09/05/11	04/11/11	37d
E&M3150	180	02/04/11	28/09/11	11/07/11	06/01/12	100d
E&M3160	180	02/04/11	28/09/11	30/07/11	25/01/12	119d
Construction of Grid A-G						
SKW1261	164	14/02/11	27/07/11	14/02/11	27/07/11	0
SKW1271	25	28/07/11	21/08/11	28/07/11	21/08/11	0
SKW1281	25	22/08/11	15/09/11	22/08/11	15/09/11	0
SKW1291	25	16/09/11	10/10/11	16/09/11	10/10/11	0
SKW1301	25	11/10/11	04/11/11	11/10/11	04/11/11	0
SKW1411	85	11/10/11	03/01/12	11/10/11	03/01/12	0
Construction of Grid G-N						
SKW1311	36	14/02/11	21/03/11	14/02/11	21/03/11	0
SKW1321	35	22/03/11	25/04/11	22/03/11	25/04/11	0
SKW1331	35	26/04/11	30/05/11	26/04/11	30/05/11	0
SKW1341	35	31/05/11	04/07/11	31/05/11	04/07/11	0
SKW1351	18	05/07/11	22/07/11	05/07/11	22/07/11	0
SKW1361	24	23/07/11	15/08/11	23/07/11	15/08/11	0
Construction of Grid N-T						
SKW1371	80	28/07/11	15/10/11	28/07/11	15/10/11	0
SKW1381	30	16/10/11	14/11/11	16/10/11	14/11/11	0
SKW1391	30	15/11/11	14/12/11	15/11/11	14/12/11	0
SKW1401	30	15/12/11	13/01/12	15/12/11	13/01/12	0
SKW1421	30	14/01/12	12/02/12	14/01/12	12/02/12	0
SKW STP - E&M Works						
E&M3170	100	16/08/11	23/11/11	18/01/12	26/04/12	155d
E&M3190	60	15/10/11	13/12/11	15/10/11	13/12/11	0
E&M3210	60	16/08/11	14/10/11	16/08/11	14/10/11	0
E&M3220	75	16/08/11	29/10/11	16/08/11	29/10/11	0
E&M3230	45	30/10/11	13/12/11	30/10/11	13/12/11	0
E&M3240	74	13/02/12	26/04/12	13/02/12	26/04/12	0
E&M3250	75	14/12/11	26/02/12	14/12/11	26/02/12	0
E&M3260	135	14/12/11	26/04/12	14/12/11	26/04/12	0
E&M3261	174	05/11/11	26/04/12	05/11/11	26/04/12	0
E&M3270	60	27/02/12	26/04/12	27/02/12	26/04/12	0
E&M3291	180	29/12/11	25/06/12	07/01/12	04/07/12	9d
E&M3300	161	29/12/11	06/06/12	26/01/12	04/07/12	28d
E&M3310	90	27/02/12	26/05/12	11/05/12	08/08/12	74d
E&M3311	47	27/04/12	12/06/12	27/04/12	12/06/12	0
E&M3320	47	27/04/12	12/06/12	27/04/12	12/06/12	0
E&M3321	21	13/06/12	03/07/12	13/06/12	03/07/12	0
E&M3331	1	04/07/12	04/07/12	04/07/12	04/07/12	0
E&M3359	35	05/07/12	08/08/12	05/07/12	08/08/12	0
E&M3360	505	09/08/12	26/12/13	09/08/12	26/12/13	0
E&M3370	50	27/12/13	14/02/14	27/12/13	14/02/14	0
Rising Main						
SKW1481	120	17/05/10	13/09/10	17/05/10	13/09/10	0
SKW1501	300	14/09/10	10/07/11	14/09/10	10/07/11	0
SKW1521	230	11/07/11	25/02/12	11/07/11	25/02/12	0
SKW1541	180	26/02/12	23/08/12	26/02/12	23/08/12	0
SKW1551	180	24/08/12	19/02/13	24/08/12	19/02/13	0
SKW1561	180	20/02/13	18/08/13	20/02/13	18/08/13	0
SKW1571	180	19/08/13	14/02/14	19/08/13	14/02/14	0
Section W8 - Landscape Softworks in All Portions						
SKW1591	21	17/05/10	06/06/10	26/11/13	16/12/13	1289d
SKW1611	822	17/05/10	15/08/12	17/05/10	15/08/12	0
SKW1621	60	07/06/10	05/08/10	17/12/13	14/02/14	1289d
Section W9 - Establishment Works in All Portions						
SKW1631	365	16/08/12	15/08/13	16/08/12	15/08/13	0



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Early bar
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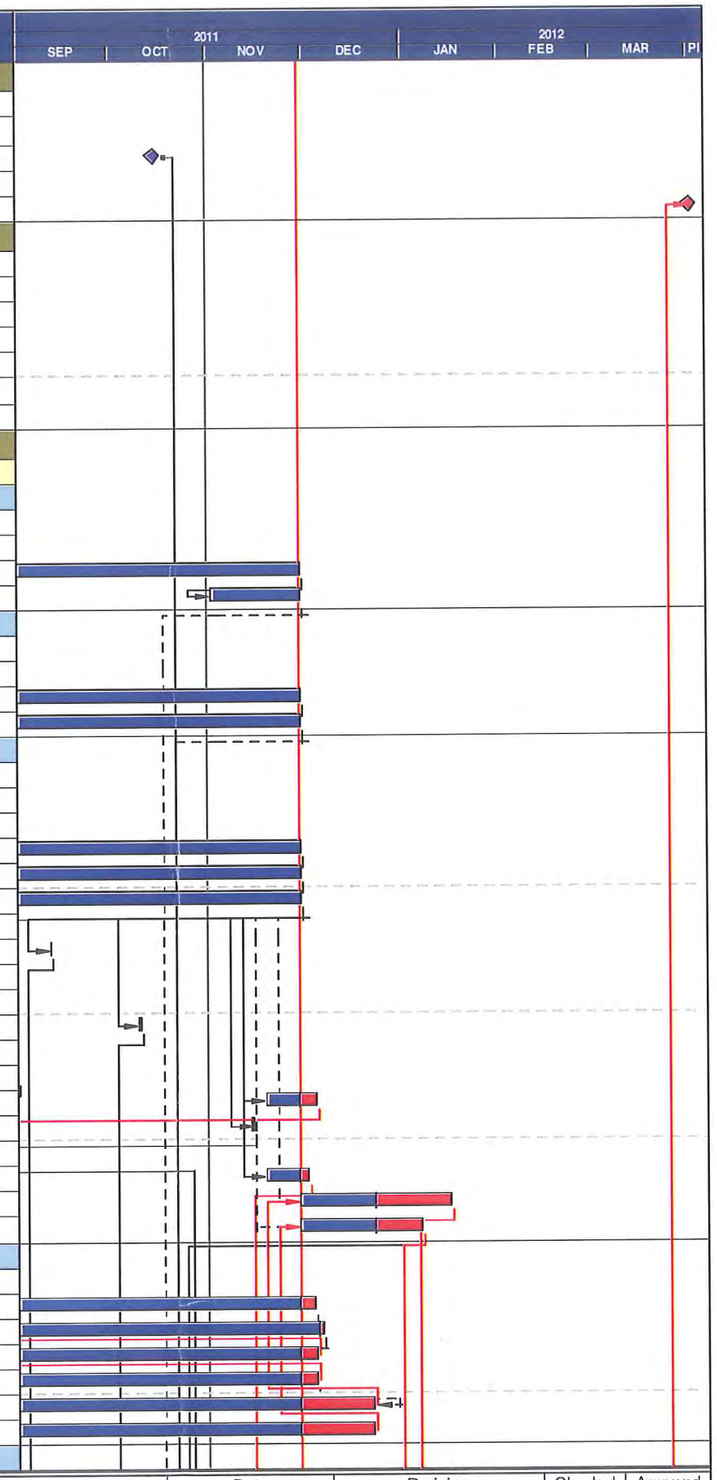
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 1)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
Project Key Date										
KD0010	Receive Letter of Acceptance	0	100		05/05/10 A		05/05/10 A			KD0125
KD0020	Project Commencement Date	0	100		17/05/10 A		17/05/10 A			E&M0010, E&M0070, E&M1001,
KD0030	Section W1 - Slope Works in Portion A & C (456d)	0	100		14/10/11 A		14/10/11 A		YSW0150	KD0125
KD0050	Section W3 - Footpath Diversion in Ptn G (273d)	0	100		24/03/11 A		24/03/11 A		SKW0551	KD0125
KD0115	Start Operate Temp Sewage Treatment in Port. A&H	0	0		01/04/12		30/06/11 *	-276d *	E&M0510	KD0125
Preliminary (Civil)										
PRE0020	Pre-condition Survey	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020	
PRE0040	Erection of Engineer's Site Accommodation at YSW	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020	
PRE0050	Taking over the Secondary Engineer's Site Accomm	75	100	17/05/10 A	30/07/10 A	17/05/10 A	30/07/10 A		KD0020	
PRE0060	Application of Consent from Marine Department	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020	
PRE0090	Working Group Meeting for Outfall Construction	120	100	17/05/10 A	23/11/10 A	17/05/10 A	23/11/10 A		KD0020	SKW1151
PRE0100	Application & Consent of XP from HyD (Mo Tat Rd)	120	100	17/05/10 A	13/10/10 A	17/05/10 A	13/10/10 A		KD0020	SKW1491, SKW1501
PRE0130	Setup Web-site for EM&A Reporting	90	100	17/05/10 A	31/08/10 A	17/05/10 A	31/08/10 A		KD0020	
Preliminary (E&M)										
Technical Submission										
Process Design of SKWSTW & YSWSTW										
E&M0010	Submission	38	100	17/05/10 A	23/06/10 A	17/05/10 A	23/06/10 A		KD0020	E&M0020, E&M0040, E&M0235
E&M0020	Vetting and Comment by ER	21	100	24/06/10 A	14/07/10 A	24/06/10 A	14/07/10 A		E&M0010	E&M0030, E&M0040
E&M0030	Revision and Resubmission	125	100	17/05/10 A	30/11/11 A	17/05/10 A	30/11/11 A		E&M0020	E&M0080
E&M0080	Approval from the Engineer	14	100	02/11/11 A	30/11/11 A	02/11/11 A	30/11/11 A		E&M0030	E&M0295
Hydraulic Design										
E&M0040	Submission	21	100	17/05/10 A	16/09/10 A	17/05/10 A	16/09/10 A		E&M0010, E&M0020	E&M0050, E&M0101, E&M0240,
E&M0050	Vetting and Comment by ER	14	100	17/09/10 A	09/11/10 A	17/09/10 A	09/11/10 A		E&M0040	E&M0060
E&M0060	Revision and Resubmission	97	100	19/08/10 A	30/11/11 A	19/08/10 A	30/11/11 A		E&M0050	E&M0430
E&M0430	Approval from the Engineer	7	100	29/03/11 A	30/11/11 A	29/03/11 A	30/11/11 A		E&M0060	E&M0295
Equipment Submission & Approval										
E&M0070	Submission of Membrane Module	50	100	17/05/10 A	05/07/10 A	17/05/10 A	05/07/10 A		KD0020	E&M0090
E&M0090	Vetting and Comment by ER	14	100	06/07/10 A	19/07/10 A	06/07/10 A	19/07/10 A		E&M0070	E&M0100
E&M0100	Revision and Resubmission	14	100	20/07/10 A	24/02/11 A	20/07/10 A	24/02/11 A		E&M0090	E&M0160
E&M0101	Submission of Equipment	90	100	04/08/10 A	30/11/11 A	04/08/10 A	30/11/11 A		E&M0040	E&M0102
E&M0102	Vetting and Comment by ER	60	100	18/11/10 A	30/11/11 A	18/11/10 A	30/11/11 A		E&M0101	E&M0103
E&M0103	Revision and Resubmission	60	100	01/02/11 A	30/11/11 A	01/02/11 A	30/11/11 A		E&M0102	E&M0110, E&M0120, E&M0130,
E&M0110	Approval on Coarse Screens	30	100	25/05/11 A	25/05/11 A	25/05/11 A	25/05/11 A		E&M0103	E&M0390
E&M0120	Approval on Fine Screens	30	100	12/09/11 A	12/09/11 A	12/09/11 A	12/09/11 A		E&M0103	E&M0400, E&M3060
E&M0130	Approval on Pumps	30	100	23/06/11 A	23/06/11 A	23/06/11 A	23/06/11 A		E&M0103	E&M0410, E&M3070
E&M0140	Approval on Submersible Mixers	30	100	23/03/11 A	23/03/11 A	23/03/11 A	23/03/11 A		E&M0103	E&M0420, E&M3080
E&M0150	Approval on Grit Removal Equipment	30	100	10/10/11 A	10/10/11 A	10/10/11 A	10/10/11 A		E&M0103	E&M0380, E&M3030
E&M0160	Approval on MBR Membrane Modules (M.M.)	105	100	02/08/10 A	24/02/11 A	02/08/10 A	24/02/11 A		E&M0100	E&M0360, E&M0370, E&M3010
E&M0170	Approval on Sludge Dewatering Equipment	30	100	01/09/11 A	01/09/11 A	01/09/11 A	01/09/11 A		E&M0103	E&M0440, E&M3090
E&M0180	Approval on Valves, Pipes & Fittings	30	80	19/11/11 A	05/12/11	19/11/11 A	30/11/11	-5d	E&M0103	E&M0450, E&M3100
E&M0190	Approval on Penstocks	30	100	15/11/11 A	15/11/11 A	15/11/11 A	15/11/11 A		E&M0103	E&M0460, E&M3110
E&M0200	Approval on Instrumentation	30	100	21/06/11 A	21/06/11 A	21/06/11 A	21/06/11 A		E&M0103	E&M0470, E&M3130
E&M0210	Approval on MCC & LVSB	30	90	19/11/11 A	02/12/11	19/11/11 A	01/04/11	-245d	E&M0103	E&M0480, E&M3140
E&M0220	Approval on BS Equipment	30	20	30/11/11 A	16/01/12	30/11/11 A	29/08/11	-140d	E&M0103, E&M0280	E&M0490, E&M3150
E&M0230	Approval on FS Equipment	30	50	30/11/11 A	07/01/12	30/11/11 A	26/09/11	-103d	E&M0103, E&M0290	E&M0295, E&M0320, E&M0500,
Drawings Submission & Approval										
E&M0235	Sub. P&ID Drawings	100	100	24/06/10 A	22/08/10 A	24/06/10 A	22/08/10 A		E&M0010	
E&M0240	Sub. Plant GA Drawings	45	90	04/08/10 A	04/12/11	04/08/10 A	10/09/11	-85d	E&M0040	E&M0250, E&M0280, E&M0290
E&M0250	Sub. Builder's Works Requirements Drawings	15	90	04/08/10 A	07/12/11	04/08/10 A	11/09/11	-87d	E&M0240, E&M0260, E&M0270	E&M0280, E&M0290
E&M0260	Sub. Mechanical Installation Drawings	60	90	27/09/10 A	05/12/11	27/09/10 A	10/09/11	-87d	E&M0040	E&M0250
E&M0270	Sub. Electrical Installation Drawings	60	90	27/09/10 A	05/12/11	27/09/10 A	10/09/11	-87d	E&M0040	E&M0250, E&M0280
E&M0280	Sub. BS Installation Drawings	120	80	27/09/10 A	23/12/11	27/09/10 A	05/08/11	-140d	E&M0240, E&M0250, E&M0270	E&M0220
E&M0290	Sub. FS Installation Drawings	120	80	13/11/10 A	23/12/11	13/11/10 A	11/09/11	-103d	E&M0240, E&M0250	E&M0230
Statutory Submission										



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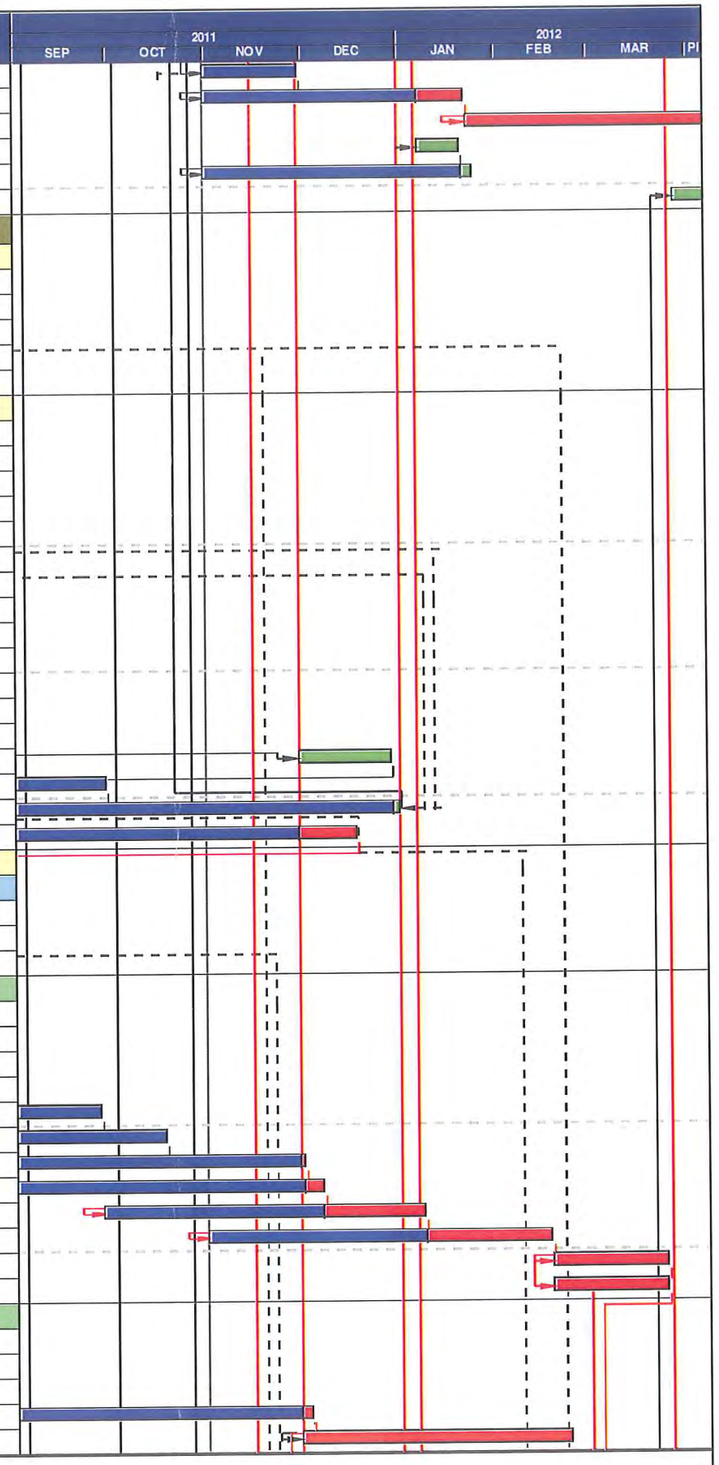
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Dec 2011 - Feb 2011)

(Marked on 30 Nov 2011)

Date	Revision	Checked	Approved
30/11/10	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	22/01/12	01/11/11 A	05/01/12	-17d	E&M0295	E&M0305
E&M0305	Provision of Cables to the STWs	180	0	23/01/12	20/07/12	06/01/12	03/07/12	-17d	E&M0300	E&M0680
E&M0320	Form 314 Submission to FSD	14	0	08/01/12	21/01/12	25/04/12	08/05/12	108d	E&M0230	E&M0325, E&M0670
E&M0325	Submission to WSD	14	70	01/11/11 A	25/01/12	01/11/11 A	12/05/12	108d	E&M0320	E&M0670, E&M0680
E&M0350	Form 501 Submission to FSD (PS1 & PS2)	28	0	28/03/12	25/04/12	27/11/14	06/01/15	932d	E&M2016	
Yung Shue Wan										
Preliminary										
YSW0020	Approval of Environmental Team	16	100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A		KD0020	YSW0030, YSW0040
YSW0030	Baseline monitoring (Air & Noise)	14	100	31/07/10 A	22/08/10 A	31/07/10 A	22/08/10 A		YSW0020	YSW0035
YSW0035	Baseline Monitoring Report Submission (A & N)	14	100	23/08/10 A	07/09/10 A	23/08/10 A	07/09/10 A		YSW0030	YSW0120, YSW0152, YSW0500,
YSW0040	Baseline monitoring (Water)	213	100	30/07/10 A	31/12/10 A	30/07/10 A	31/12/10 A		YSW0020	YSW0350
YSW0050	Erect Hoarding and Fencing	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A			
Section W 1 - Slope W orks 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	YSW0100
YSW0080	Site Clearance	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A			YSW0085, YSW0120
YSW0085	Initial Survey	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A		YSW0080	YSW0120
YSW0090	Verify the Rock Boulder required Stablization Wk	30	100	19/07/10 A	21/03/11 A	19/07/10 A	21/03/11 A			YSW0100, YSW0110
YSW0100	Removal of Rock Boulder	280	100	20/09/10 A	03/06/11 A	20/09/10 A	03/06/11 A		YSW0075, YSW0090	YSW0150
YSW0110	Stablizing work for rock boulder	280	100	16/07/11 A	19/08/11 A	16/07/11 A	19/08/11 A		YSW0090	YSW0150
YSW0120	Cut the slope to design profile	100	100	13/09/10 A	14/09/10 A	13/09/10 A	14/09/10 A		YSW0035, YSW0080, YSW0085	YSW0131, YSW0165
YSW0131	Mobilization of Plant and Material of Soil Nails	20	100	01/09/10 A	14/09/10 A	01/09/10 A	14/09/10 A		YSW0120	YSW0132
YSW0132	Erect Scaffold and Working Platform	20	100	15/09/10 A	16/09/10 A	15/09/10 A	16/09/10 A		YSW0131	YSW0133
YSW0133	Setting out and Verify Locations of Soil Nails	10	100	14/09/10 A	31/10/10 A	14/09/10 A	31/10/10 A		YSW0132	YSW0134
YSW0134	Drilling and Soil Nails Installation	20	100	08/10/10 A	19/11/10 A	08/10/10 A	19/11/10 A		YSW0133	YSW0135
YSW0135	Construction of Nail Heads	10	100	24/11/10 A	01/12/10 A	24/11/10 A	01/12/10 A		YSW0134	YSW0136
YSW0136	Mesh Installation on Cut Slope	10	100	04/12/10 A	04/12/10 A	04/12/10 A	04/12/10 A		YSW0135	YSW0137
YSW0137	Hydroseeding	30	0	30/11/11	29/12/11	13/01/14	11/02/14	775d	YSW0136	YSW0140
YSW0140	Construct U-channels & Step Channel on Cut Slope	116	100	02/04/11 A	30/09/11 A	02/04/11 A	30/09/11 A		YSW0137	YSW0150
YSW0150	Construction of access, u-channels and catch pit	76	96	10/01/11 A	01/01/12	10/01/11 A	14/02/14	775d	YSW0100, YSW0110, YSW0140,	KD0030
YSW0165	Construction of Barrier Wall (below Ground Lev)	226	92	10/09/10 A	18/12/11	10/09/10 A	03/11/11	-44d	YSW0120	YSW0150, YSW0154, YSW0155
Section W 2 - YSW STW & Submarine Outfall										
Civil & Structural Work										
YSW0412	Mobilization	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A		KD0020	YSW0422
YSW0422	Site Clearance	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A		KD0020, YSW0412	YSW0432, YSW0500, YSW0610,
YSW0432	Initial Survey	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A		YSW0422	YSW0510
YSW STP - GL H - T										
YSW0500	ELS & Excavation for Inlet Pumping Station	62	100	17/09/10 A	16/12/10 A	17/09/10 A	16/12/10 A		YSW0035, YSW0422	YSW0510
YSW0510	Sub-structure construction (Inlet Pumping Stn)	30	100	17/12/10 A	04/04/11 A	17/12/10 A	04/04/11 A		YSW0432, YSW0500	YSW0520
YSW0520	Backfill & Remove ELS (Inlet Pumping Stn)	30	100	03/01/11 A	05/05/11 A	03/01/11 A	05/05/11 A		YSW0510	YSW0530, YSW0610
YSW0530	ELS & Excavation for Equalization Tank	40	100	11/01/11 A	08/06/11 A	11/01/11 A	08/06/11 A		YSW0520	YSW0540
YSW0540	Sub-structure construction (Equalization Tank)	40	100	13/06/11 A	28/09/11 A	13/06/11 A	28/09/11 A		YSW0530	YSW0550
YSW0550	Backfilling & Remove ELS (Equalization Tank)	40	100	15/08/11 A	18/10/11 A	15/08/11 A	18/10/11 A		YSW0540	YSW0570
YSW0570	Excavate to formation by open cut	30	95	02/07/11 A	01/12/11	02/07/11 A	19/05/11	-196d	YSW0550	YSW0580
YSW0580	Base slab construction	30	80	06/07/11 A	07/12/11	06/07/11 A	25/05/11	-196d	YSW0570	YSW0590
YSW0590	G/F to 1/F construction	50	35	29/09/11 A	08/01/12	29/09/11 A	26/06/11	-196d	YSW0580	YSW0600
YSW0600	1/F to Roof construction	50	20	01/11/11 A	17/02/12	01/11/11 A	05/08/11	-196d	YSW0590	YSW0720, YSW0800
YSW0720	Water Test	36	0	18/02/12	24/03/12	06/08/11	10/09/11	-196d	YSW0600	E&M0530, E&M0540, E&M0550,
YSW0800	ABWF installation	36	0	18/02/12	24/03/12	06/08/11	10/09/11	-196d	YSW0600	E&M0530, E&M0540, E&M0550,
YSW STP - GL T - X										
YSW0610	Excavate to formation	50	100	08/09/10 A	17/09/10 A	08/09/10 A	17/09/10 A		YSW0035, YSW0422, YSW0520	YSW0620
YSW0620	Base slab construction	60	100	18/09/10 A	23/05/11 A	18/09/10 A	23/05/11 A		YSW0610	YSW0630
YSW0630	G/F to 1/F construction	95	100	27/12/10 A	19/07/11 A	27/12/10 A	19/07/11 A		YSW0620	YSW0640
YSW0640	1/F to Roof Construction	91	96	20/07/11 A	03/12/11	20/07/11 A	21/08/11	-104d	YSW0630	YSW0810, YSW0840
YSW0810	ABWF installation	86	0	30/11/11	23/02/12	02/07/11	25/09/11	-151d	YSW0640	E&M0610, E&M0620, E&M0630,



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Run date	12/12/11
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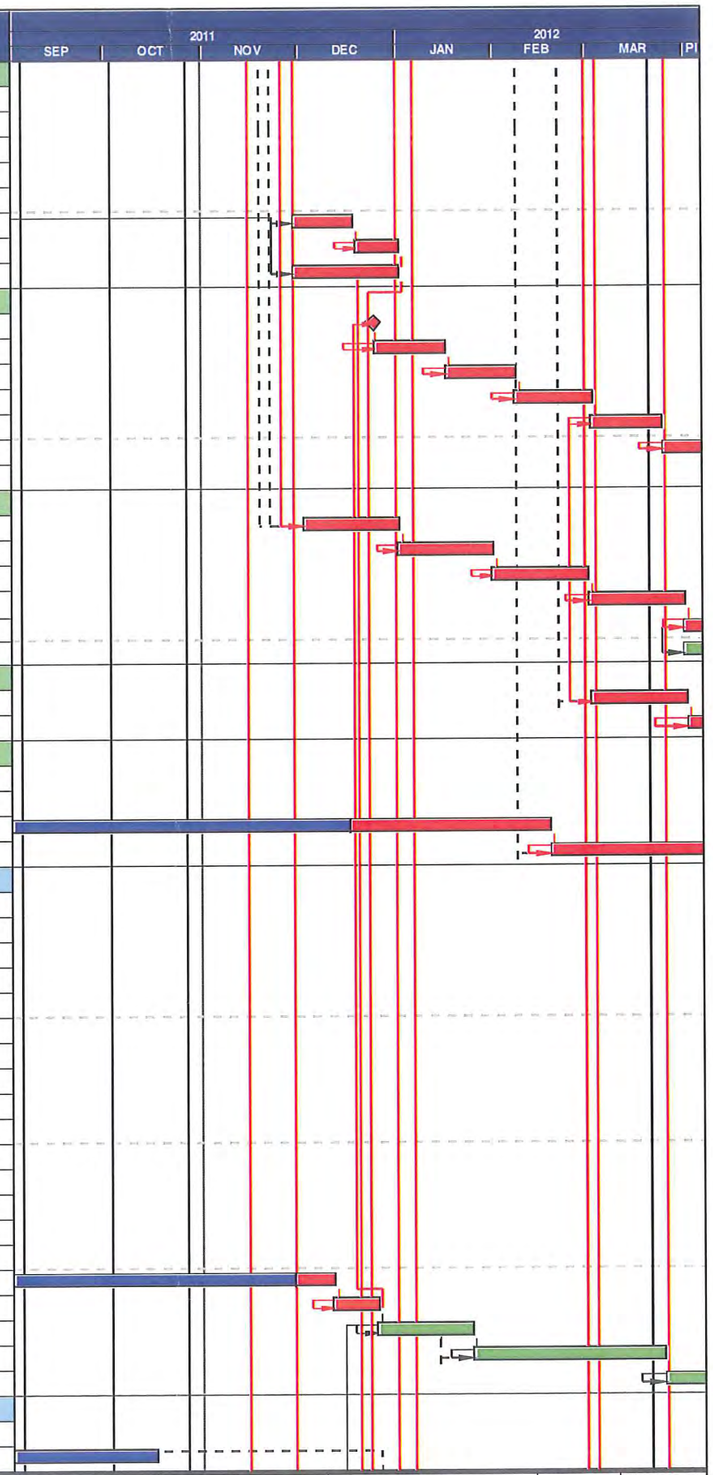
Early bar
Progress bar
Critical bar
Summary bar
Progress point
Critical point
Summary point
Start milestone point
Finish milestone point

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment W orks at YSW & SKW
3-month Rolling Programme (Dec 2011 - Feb 2011)

(Marked on 30 Nov 2011)

Date	Revision	Checked	Approved
30/11/10	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
YSW STP - GL F - H & DN Tanks										
YSW0650	ELS & Excavation for DN Tanks	70	100	21/08/10 A	14/10/10 A	21/08/10 A	14/10/10 A		YSW0035, YSW0422	YSW0660
YSW0660	Sub-struction construction (DN Tanks)	40	100	15/10/10 A	31/12/10 A	15/10/10 A	31/12/10 A		YSW0650	YSW0670
YSW0670	Backfill & Remove ELS (DN Tanks)	32	100	08/01/11 A	15/03/11 A	08/01/11 A	15/03/11 A		YSW0660	YSW0680
YSW0680	Base slab construction	30	100	16/03/11 A	28/03/11 A	16/03/11 A	28/03/11 A		YSW0670	YSW0690
YSW0690	Superstructure construction upto +10.5mPD	60	100	30/03/11 A	18/06/11 A	30/03/11 A	18/06/11 A		YSW0680	YSW0700, YSW0820
YSW0700	Apply protective paint	20	0	30/11/11	19/12/11	27/02/11	18/03/11	-276d	YSW0690	YSW0710
YSW0710	Water test	14	0	20/12/11	02/01/12	19/03/11	01/04/11	-276d	YSW0700	E&M0510, E&M0630, E&M0640
YSW0820	ABWF installation	34	0	30/11/11	02/01/12	27/02/11	01/04/11	-276d	YSW0690	E&M0510, E&M0630, E&M0640
YSW STP - GL A - F										
YSW0730	Completion of HDD	0	0	26/12/11		01/07/11		-178d	YSW0360	YSW0740
YSW0740	ELS & excavate for Outfall Shaft	22	0	26/12/11	17/01/12	01/07/11	22/07/11	-178d	YSW0730	YSW0750
YSW0750	Sub-structure construction (outfall shaft)	22	0	17/01/12	08/02/12	23/07/11	13/08/11	-178d	YSW0740	YSW0760
YSW0760	Backfill & remove ELS (outfall shaft)	24	0	08/02/12	03/03/12	14/08/11	06/09/11	-178d	YSW0750	YSW0770, YSW1470
YSW0770	Excavate to formation by open cut	22	0	03/03/12	25/03/12	07/09/11	28/09/11	-178d	YSW0760	YSW0780
YSW0780	Base slab construction	21	0	25/03/12	15/04/12	29/09/11	19/10/11	-178d	YSW0770	YSW0790
YSW0790	Superstructure construction upto +10.5mPD	30	0	15/04/12	15/05/12	20/10/11	18/11/11	-178d	YSW0780	YSW0795, YSW0870
Fire Hose Reel / Sprinkler Pump Rm										
YSW0840	ELS & excavate to formation (+0 mPD approx.)	30	0	03/12/11	02/01/12	01/09/11	30/09/11	-94d	YSW0035, YSW0422, YSW0640	YSW0860
YSW0860	Sub-structure construction	30	0	02/01/12	01/02/12	01/10/11	30/10/11	-94d	YSW0840	YSW0880
YSW0880	Backfill & remove ELS	30	0	01/02/12	02/03/12	31/10/11	29/11/11	-94d	YSW0860	YSW0890
YSW0890	Construction Ground Slab at +5.2mPD	30	0	02/03/12	01/04/12	30/11/11	29/12/11	-94d	YSW0880	YSW0900, YSW0930
YSW0900	Superstructure construction upto +8.2mPD	35	0	01/04/12	06/05/12	30/12/11	02/02/12	-94d	YSW0890	YSW0910, YSW0925
YSW0930	Construction of Gurad House	60	0	01/04/12	31/05/12	06/05/12	04/07/12	34d	YSW0890	E&M0690, KD0040
Emergency Storage Tank										
YSW1470	ELS & excavate to formation (-1.5mPD Approx.)	30	0	03/03/12	02/04/12	07/11/11	06/12/11	-117d	YSW0035, YSW0760	YSW1480
YSW1480	Sub-structure construction	40	0	02/04/12	12/05/12	07/12/11	15/01/12	-117d	YSW1470	YSW1490
Road, Drain, Cable Draw Pits & Ducting										
YSW0152	Temporary Diversion of Drainage	92	100	02/12/10 A	09/05/11 A	02/12/10 A	09/05/11 A		YSW0035	YSW0153
YSW0153	Removal of Ex U-Channel where clash with B. Wall	50	100	20/11/10 A	20/04/11 A	20/11/10 A	20/04/11 A		YSW0152	YSW0154
YSW0154	Construction of Subsoil Drain	90	30	24/08/11 A	19/02/12	24/08/11 A	05/01/12	-44d	YSW0153, YSW0165	YSW0155
YSW0155	RC Concrete Barrier (above Ground Level)	120	0	19/02/12	18/06/12	06/01/12	04/05/12	-44d	YSW0154, YSW0165	YSW1640, YSW1660
Submarine Outfall										
YSW0180	Coordination of HEC	53	100	17/05/10 A	08/07/10 A	17/05/10 A	08/07/10 A			YSW0350
YSW0200	Submission and Approval of Ecologist	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A			YSW0210
YSW0210	Ecology Survey	90	100	16/07/10 A	11/02/11 A	16/07/10 A	11/02/11 A		YSW0200	YSW0350
YSW0220	Submission and Approval of In. Hydro Survey	90	100	17/05/10 A	27/08/10 A	17/05/10 A	27/08/10 A			YSW0230
YSW0230	Hydrogrophical Survey (YSW)	45	100	31/08/10 A	31/01/11 A	31/08/10 A	31/01/11 A		YSW0220	YSW0350
YSW0240	Material Submission, Approval of HDPE pipe	93	100	17/05/10 A	31/03/11 A	17/05/10 A	31/03/11 A			YSW0250
YSW0250	Submit and Approval of Method Statement for HDD	120	100	24/09/10 A	25/03/11 A	24/09/10 A	25/03/11 A		YSW0240	YSW0260, YSW0270, YSW0340
YSW0260	Submission of HDD Method Statement to HEC	14	100	26/01/11 A	24/03/11 A	26/01/11 A	24/03/11 A		YSW0250	YSW0320, YSW0340
YSW0270	Additional G.I. Boreholes (YSW)	62	100	06/11/10 A	19/01/11 A	06/11/10 A	19/01/11 A		YSW0250	YSW0280, YSW0320
YSW0280	Submission of propose alignment to the Eng	14	100	02/02/11 A	04/03/11 A	02/02/11 A	04/03/11 A		YSW0270	YSW0290, YSW0310, YSW0340
YSW0290	Submission of Marine Notice	60	100	31/01/11 A	29/03/11 A	31/01/11 A	29/03/11 A		YSW0280	YSW0350
YSW0310	Construction of Entry Pit and Preparation Work	39	100	15/03/11 A	31/03/11 A	15/03/11 A	31/03/11 A		YSW0280	YSW0320, YSW0330
YSW0320	Prepare of HDD Drill Rig Set-up (YSW)	39	100	02/04/11 A	28/04/11 A	02/04/11 A	28/04/11 A		YSW0260, YSW0270, YSW0310	YSW0330, YSW0350
YSW0330	Establishment of HDD plant & equipment	14	100	09/04/11 A	14/04/11 A	09/04/11 A	14/04/11 A		YSW0310, YSW0320	YSW0340
YSW0340	Setting up at drillhole location	7	100	19/04/11 A	28/04/11 A	19/04/11 A	28/04/11 A		YSW0250, YSW0260, YSW0280,	YSW0350
YSW0350	Drill pilot hole and reaming hole - NS400 - 530m	123	90	29/04/11 A	12/12/11	29/04/11 A	16/06/11	-178d	YSW0040, YSW0180, YSW0210,	YSW0360
YSW0360	Installation of NS400 HDPE 530m	14	0	12/12/11	26/12/11	17/06/11	30/06/11	-178d	YSW0350	SKW1181, YSW0365, YSW0370,
YSW0365	Set up of Silt Curtain as per EP	30	0	26/12/11	25/01/12	20/07/13	18/08/13	572d	YSW0360	YSW0370
YSW0370	Dredging of Marine Deposit for Diffuser (YSW)	60	0	25/01/12	25/03/12	19/08/13	17/10/13	572d	YSW0360, YSW0365	YSW0380
YSW0380	Diffuser Construction (YSW)	60	0	25/03/12	24/05/12	18/10/13	16/12/13	572d	YSW0370	YSW0390
E&M Works - YSW STP										
E&M0360	Delivery of MBR Memb. Mod. (MBR Tk4)	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



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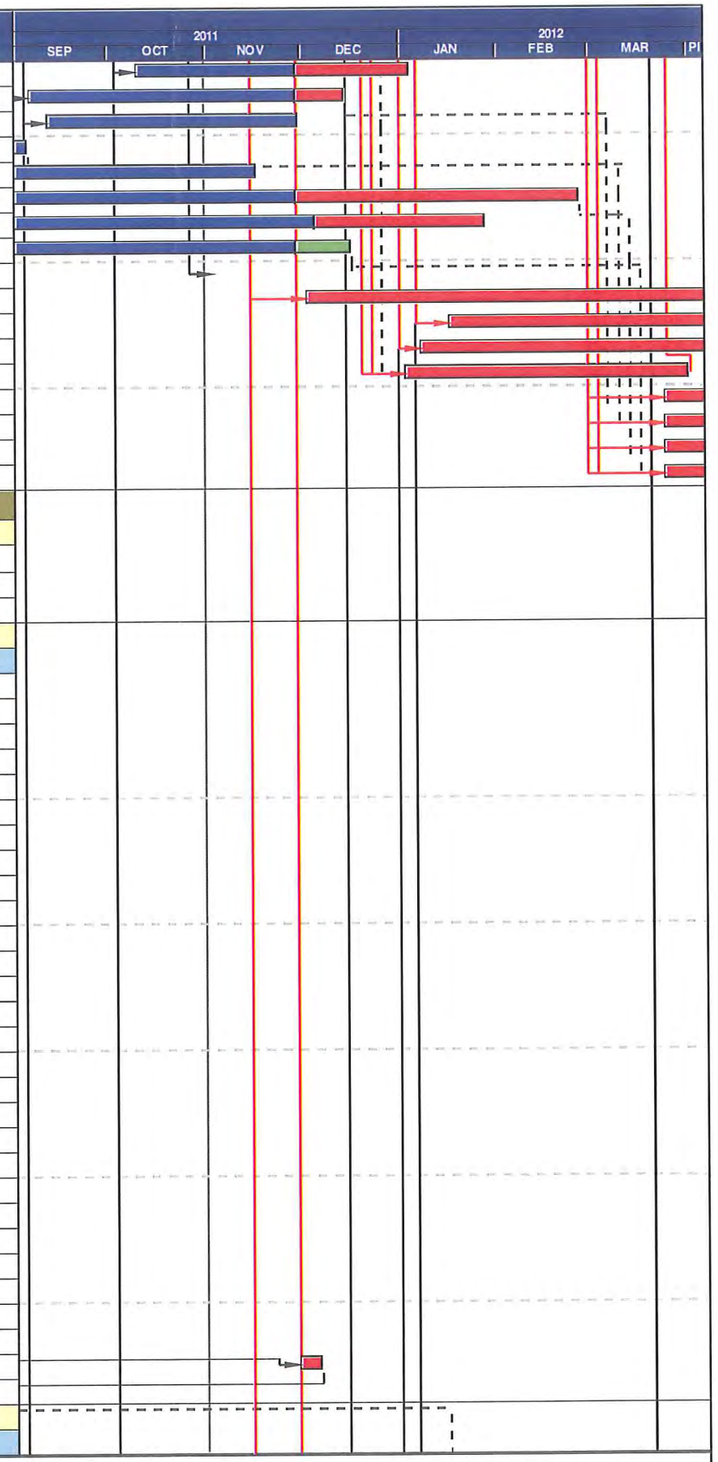
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment W orks at YSW & SKW
3-month Rolling Programme (Dec 2011 - Feb 2011)

(Marked on 30 Nov 2011)

Date	Revision	Checked	Approved
30/11/10	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M0380	Delivery of Grit Removal Equipment	180	80	10/10/11 A	04/01/12	10/10/11 A	24/11/11	-41d	E&M0150	E&M0530
E&M0390	Delivery of Coarse Screens	162	90	06/09/11 A	15/12/11	06/09/11 A	10/09/11	-96d	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	27/02/12	01/09/11 A	28/09/11	-152d	E&M0170	E&M0580
E&M0450	Delivery of Valves, Pipes & Fittings	180	70	30/08/11 A	28/01/12	30/08/11 A	23/01/12	-5d	E&M0180	E&M0590, E&M0605
E&M0460	Delivery of Penstocks	180	90	12/08/11 A	17/12/11	12/08/11 A	06/01/12	20d	E&M0190	E&M0600
E&M0470	Delivery of Instruments	180	100	03/11/11 A	21/06/11 A	03/11/11 A	21/06/11 A		E&M0200	E&M0610
E&M0480	Delivery of MCC LVSB	177	0	03/12/11	27/05/12	02/04/11	25/09/11	-245d	E&M0210	E&M0620
E&M0490	Delivery of BS Equipment	180	0	17/01/12	14/07/12	30/08/11	25/02/12	-140d	E&M0220	E&M0630
E&M0500	Delivery FS Equipment	180	0	08/01/12	05/07/12	27/09/11	24/03/12	-103d	E&M0230	E&M0330, E&M0640
E&M0510	Install Membrane Modules in MBR Tank no. 4	90	0	03/01/12	01/04/12	02/04/11	30/06/11	-276d	E&M0360, YSW0710, YSW0820	KD0115
E&M0540	Install Coarse Screens	75	0	25/03/12	07/06/12	11/09/11	24/11/11	-196d	E&M0390, YSW0720, YSW0800	E&M0530, E&M0550, E&M0570,
E&M0560	Install Pumps	90	0	25/03/12	22/06/12	11/09/11	09/12/11	-196d	E&M0410, YSW0720, YSW0800	E&M0570, E&M0590, E&M0660
E&M0580	Install Sludge Dewatering Equipment	280	0	25/03/12	29/12/12	29/09/11	04/07/12	-178d	E&M0440, YSW0720, YSW0800	E&M0690
E&M0600	Install Penstocks (Batch 1, GL H - T)	180	0	25/03/12	20/09/12	07/01/12	04/07/12	-78d	E&M0460, YSW0720, YSW0800	E&M0690
Sok Kwu Wan										
Preliminary										
SKW0250	Approval of Environmental Team	16	100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A		KD0020	SKW0260
SKW0260	Baseline monitoring (Air & Noise)	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A		SKW0250	SKW0242, SKW0265, SKW0592,
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,
Section W 3 - 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	Excavation to formation for Bay 1 to 5	50	100	16/06/10 A	11/08/10 A	16/06/10 A	11/08/10 A		SKW0241, SKW0260, SKW0265	SKW0251
SKW0251	Drill & Install Dowel Bar for Bay 1 & 3	20	100	02/08/10 A	01/09/10 A	02/08/10 A	01/09/10 A		SKW0242	SKW0301
SKW0301	Erect Formwork, mesh & weephole for Bay 1 & 3	12	100	02/09/10 A	15/09/10 A	02/09/10 A	15/09/10 A		SKW0251	SKW0311
SKW0311	Concreting for Bay 1 & 3	12	100	19/06/10 A	29/09/10 A	19/06/10 A	29/09/10 A		SKW0301	SKW0321
SKW0321	Drilling & install Dowel Bar for Bay 2 & 5	6	100	30/09/10 A	06/10/10 A	30/09/10 A	06/10/10 A		SKW0311	SKW0331
SKW0331	Erect Formwork, mesh & weephole for Bay 2 & 5	7	100	07/10/10 A	13/10/10 A	07/10/10 A	13/10/10 A		SKW0321	SKW0341
SKW0341	Concreting for Bay 2 & 5	7	100	14/10/10 A	20/10/10 A	14/10/10 A	20/10/10 A		SKW0331	SKW0351
SKW0351	Excavation to formation for Bay 6 to 9	20	100	21/10/10 A	10/11/10 A	21/10/10 A	10/11/10 A		SKW0341	SKW0361
SKW0361	Drill & install dowel Bar for Bay 4 & 7	6	100	11/11/10 A	16/11/10 A	11/11/10 A	16/11/10 A		SKW0351	SKW0371
SKW0371	Erect formwork, mesh & weephole for Bay 4 & 7	7	100	11/11/10 A	16/11/10 A	11/11/10 A	16/11/10 A		SKW0361	SKW0381
SKW0381	Concreting for Bay 4 & 7	7	100	17/11/10 A	23/11/10 A	17/11/10 A	23/11/10 A		SKW0371	SKW0391
SKW0391	Drill & install dowel Bar for Bay 6 & 9	3	100	24/11/10 A	27/11/10 A	24/11/10 A	27/11/10 A		SKW0381	SKW0401
SKW0401	Erect formwork, mesh & weephole for Bay 6 & 9	7	100	28/11/10 A	05/12/10 A	28/11/10 A	05/12/10 A		SKW0391	SKW0411
SKW0411	Concreting for Bay 6 & 9	7	100	06/12/10 A	12/12/10 A	06/12/10 A	12/12/10 A		SKW0401	SKW0421
SKW0421	Drill & install dowel Bar for Bay 8	1	100	13/12/10 A	13/12/10 A	13/12/10 A	13/12/10 A		SKW0411	SKW0431
SKW0431	Erect formwork, mesh & weephole for Bay 8	4	100	15/12/10 A	21/12/10 A	15/12/10 A	21/12/10 A		SKW0421	SKW0441
SKW0441	Concreting for Bay 8	4	100	22/12/10 A	27/12/10 A	22/12/10 A	27/12/10 A		SKW0431	SKW0461
SKW0461	Excavation for no fine concrete Bay (1-9)	3	100	26/07/11 A	28/07/11 A	26/07/11 A	28/07/11 A		SKW0441	SKW0471
SKW0471	Concreting for no-fine concrete	7	100	01/02/11 A	07/02/11 A	01/02/11 A	07/02/11 A		SKW0461	SKW0481
SKW0481	Installation of Wall tie & stone facing	14	100	08/02/11 A	11/02/11 A	08/02/11 A	11/02/11 A		SKW0471	SKW0491
SKW0491	Construction of Gabion Wall	7	100	08/02/11 A	14/02/11 A	08/02/11 A	14/02/11 A		SKW0481	SKW0501
SKW0501	Place Geotextile	3	100	08/01/11 A	28/02/11 A	08/01/11 A	28/02/11 A		SKW0491	SKW0511
SKW0511	Backfill behide the retaining wall to approx. +4	7	100	11/01/11 A	28/02/11 A	11/01/11 A	28/02/11 A		SKW0501	SKW0521
SKW0521	Watermain Laying and Diversion	14	100	01/04/11 A	10/05/11 A	01/04/11 A	10/05/11 A		SKW0511	SKW0531
SKW0531	Concreting for Pavement	7	100	02/06/11 A	30/07/11 A	02/06/11 A	30/07/11 A		SKW0521	SKW0541
SKW0541	Installation of Flower Pot	7	0	30/11/11	06/12/11	03/03/11	10/03/11	-271d	SKW0531	SKW0551
SKW0551	Permanent Footpath Diversion	1	100	30/07/11 A	30/07/11 A	30/07/11 A	30/07/11 A		SKW0541	KD0050, SKW1261, SKW1311
Section W 4 - Slope Works in Portions H & I										
Geotechnical Works										



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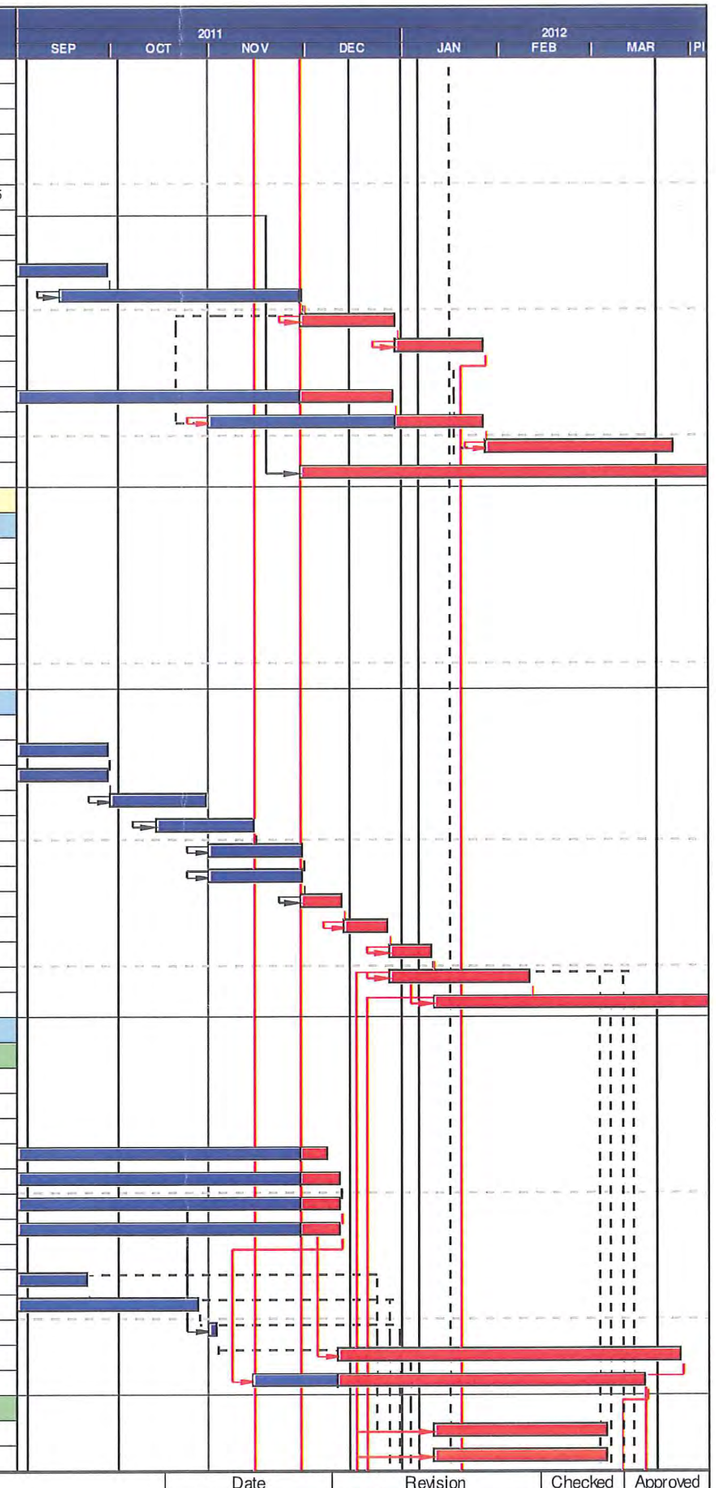
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Dec 2011 - Feb 2011)

(Marked on 30 Nov 2011)

Date	Revision	Checked	Approved
30/11/10	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
SKW0588	Construct scaffolding access	30	100	15/06/10 A	14/07/10 A	15/06/10 A	14/07/10 A		KD0020	SKW0590
SKW0590	Site Clearance for Slope	100	100	15/07/10 A	22/10/10 A	15/07/10 A	22/10/10 A		SKW0588	SKW0591
SKW0591	Initial Survey for Slope	28	100	21/09/10 A	18/10/10 A	21/09/10 A	18/10/10 A		SKW0590	SKW0592
SKW0592	Temporary Rockfall fence at ex. Footpath	43	100	19/10/10 A	06/01/11 A	19/10/10 A	06/01/11 A		SKW0260, SKW0265, SKW0591	SKW05931
SKW05931	Construction of Haul Road (To +21mPD)	50	100	28/11/10 A	30/12/10 A	28/11/10 A	30/12/10 A		SKW0592	SKW05932
SKW05932	Construction of Haul Road (To +42mPD)	60	100	15/12/10 A	31/01/11 A	15/12/10 A	31/01/11 A		SKW05931	SKW05933, SKW05940, SKW0595
SKW05933	Excavation of Rock Berm (+50mPD to +42.5mPD)	30	100	01/03/11 A	03/05/11 A	01/03/11 A	03/05/11 A		SKW05932	SKW05934
SKW05934	Excavation of Rock Berm (+42.5mPD to +35mPD)	30	100	04/05/11 A	31/05/11 A	04/05/11 A	31/05/11 A		SKW05933	SKW05935, SKW05941
SKW05935	Excavation of Rock Berm (+35mPD to +27.5mPD)	30	100	02/07/11 A	30/09/11 A	02/07/11 A	30/09/11 A		SKW05934	SKW05936
SKW05936	Excavation of Rock Berm (+27.5mPD to +20mPD)	30	98	15/09/11 A	30/11/11	15/09/11 A	20/04/11	-224d	SKW05935	SKW05937, SKW05942
SKW05937	Excavation of Rock Berm (+20mPD to +12.5mPD)	30	0	30/11/11	30/12/11	21/04/11	20/05/11	-224d	SKW05936	SKW05938
SKW05938	Excavation of Rock Berm (+12.5mPD to +5mPD)	28	0	30/12/11	27/01/12	21/05/11	17/06/11	-224d	SKW05937	SKW05943, SKW1311, SKW1371
SKW05940	Slope Drainage & Misc. at 50mPD	60	100	01/04/11 A	03/05/11 A	01/04/11 A	03/05/11 A		SKW05932	SKW05941
SKW05941	Slope Drainage & Misc. (+50 to +35mPD)	60	50	04/05/11 A	29/12/11	04/05/11 A	19/05/11	-224d	SKW05934, SKW05940	SKW05942
SKW05942	Slope Drainage & Misc. (+35 to +20mPD)	58	50	01/11/11 A	27/01/12	01/11/11 A	17/06/11	-224d	SKW05936, SKW05941	SKW05943
SKW05943	Slope Drainage & Misc. (+20 to +5mPD)	59	0	28/01/12	26/03/12	18/06/11	15/08/11	-224d	SKW05938, SKW05942	KD0060
SKW0595	Rock Meshing & Rockfall Fence	260	0	30/11/11	15/08/12	29/11/10	15/08/11	-366d	SKW05932	KD0060
Section W 5 - P.S. No. 1 in Portion D										
Civil & Geotechnical Works										
SKW0651	Site Clearance	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A		KD0020	SKW0652
SKW0652	Initial Survey	7	100	24/05/10 A	30/05/10 A	24/05/10 A	30/05/10 A		SKW0651	SKW0661, SKW0681
SKW0661	Transplantation for uncommon vegatation	30	100	31/05/10 A	29/06/10 A	31/05/10 A	29/06/10 A		SKW0652	SKW0681
SKW0681	Excavate to lower the working platform to +3mPD	49	100	30/06/10 A	17/08/10 A	30/06/10 A	17/08/10 A		SKW0260, SKW0265, SKW0652,	SKW0691
SKW0691	ELS to +2.2mPD	40	100	18/08/10 A	26/09/10 A	18/08/10 A	26/09/10 A		SKW0681	SKW0721
SKW0721	Excavate to formation	92	100	17/09/10 A	31/03/11 A	17/09/10 A	31/03/11 A		SKW0691	SKW0741
Structural Works										
SKW0741	Base Slab (BSD2 & BSD3)	15	100	20/04/11 A	28/07/11 A	20/04/11 A	28/07/11 A		SKW0721	SKW0751
SKW0751	Wall & Column (CA1-3,CB1-3,CC1-3, CD1-2) Approx.	14	100	01/09/11 A	30/09/11 A	01/09/11 A	30/09/11 A		SKW0741	SKW0761
SKW0761	Base Slab (BSD1) to +3.98	14	100	01/09/11 A	30/09/11 A	01/09/11 A	30/09/11 A		SKW0751	SKW0771
SKW0771	Wall & Column (CA1-3,CB1-3,CC1-3, CD1-2) to +6.3	14	100	01/10/11 A	31/10/11 A	01/10/11 A	31/10/11 A		SKW0761	SKW0781
SKW0781	Base Slab (GSB1-3,GSC1-5,GSD1-2)	14	100	15/10/11 A	15/11/11 A	15/10/11 A	15/11/11 A		SKW0771	SKW0791
SKW0791	Base Slab (GSE1 & GSF1)	14	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A		SKW0781	SKW0801
SKW0801	Wall & Column (CE1-3, CF1-3)	14	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A		SKW0791	SKW0811
SKW0811	Ground Beam (GB1-1,2 GB2-1,2 GB3-1, GBA-1,GBB1-4	14	0	30/11/11 A	13/12/11	30/11/11 A	03/04/11	-254d	SKW0801	SKW0821
SKW0821	Wall & Column (CA1-3,CB1-3,CC1-3, CD1-2) to +10.	14	0	14/12/11	27/12/11	04/04/11	17/04/11	-254d	SKW0811	SKW0831
SKW0831	Roof Beams & Parapet	14	0	28/12/11	10/01/12	18/04/11	01/05/11	-254d	SKW0821	E&M1101, E&M1102, E&M1103,
SKW0841	ABWF installation	45	0	28/12/11	10/02/12	18/04/11	01/06/11	-254d	SKW0831	E&M1101, E&M1102, E&M1103,
SKW0861	300mm U-channel & 675mm Step Channel	168	0	11/01/12	26/06/12	01/06/11	15/11/11	-224d	SKW0831, SKW0841	KD0070
E&M Works (PS1)										
Submission & Delivery										
E&M1001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A		KD0020	E&M1011
E&M1002	Submission of Gen-Set	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A			E&M1012
E&M1003	Submission of DeO System	198	100	17/05/10 A	11/07/11 A	17/05/10 A	11/07/11 A			E&M1013
E&M1004	Submission of LV SB & MCC	180	95	17/05/10 A	08/12/11	17/05/10 A	02/12/10	-371d		E&M1014
E&M1005	Submission of Instrumentation	243	95	17/05/10 A	12/12/11	17/05/10 A	01/05/11	-224d		E&M1015
E&M1006	Submission of FS System	243	95	17/05/10 A	12/12/11	17/05/10 A	14/01/11	-331d		E&M1016
E&M1007	Submission of BS System	243	95	17/05/10 A	12/12/11	17/05/10 A	25/01/11	-320d		E&M1017
E&M1011	Delivery of Pumps	150	100	24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A		E&M1001	E&M1101
E&M1012	Delivery of Gen-Set	150	100	24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A		E&M1002	E&M1102
E&M1013	Delivery of DeO System	150	100	11/07/11 A	28/10/11 A	11/07/11 A	28/10/11 A		E&M1003	E&M1103
E&M1015	Delivery of Instrumentation	90	100	01/11/11 A	03/11/11 A	01/11/11 A	03/11/11 A		E&M1005	E&M1105
E&M1016	Delivery of FS Equipment	107	0	12/12/11	28/03/12	15/01/11	01/05/11	-331d	E&M1006	E&M1106
E&M1017	Delivery of BS Equipment	107	10	15/11/11 A	17/03/12	15/11/11 A	01/05/11	-320d	E&M1007	E&M1107
Installation, T&C										
E&M1101	Install Pumps	55	0	11/01/12	05/03/12	02/05/11	25/06/11	-254d	E&M1011, SKW0831, SKW0841	E&M1110, E&M1140
E&M1102	Install Gen Set	55	0	11/01/12	05/03/12	02/05/11	25/06/11	-254d	E&M1012, SKW0831, SKW0841	E&M1110, E&M1140



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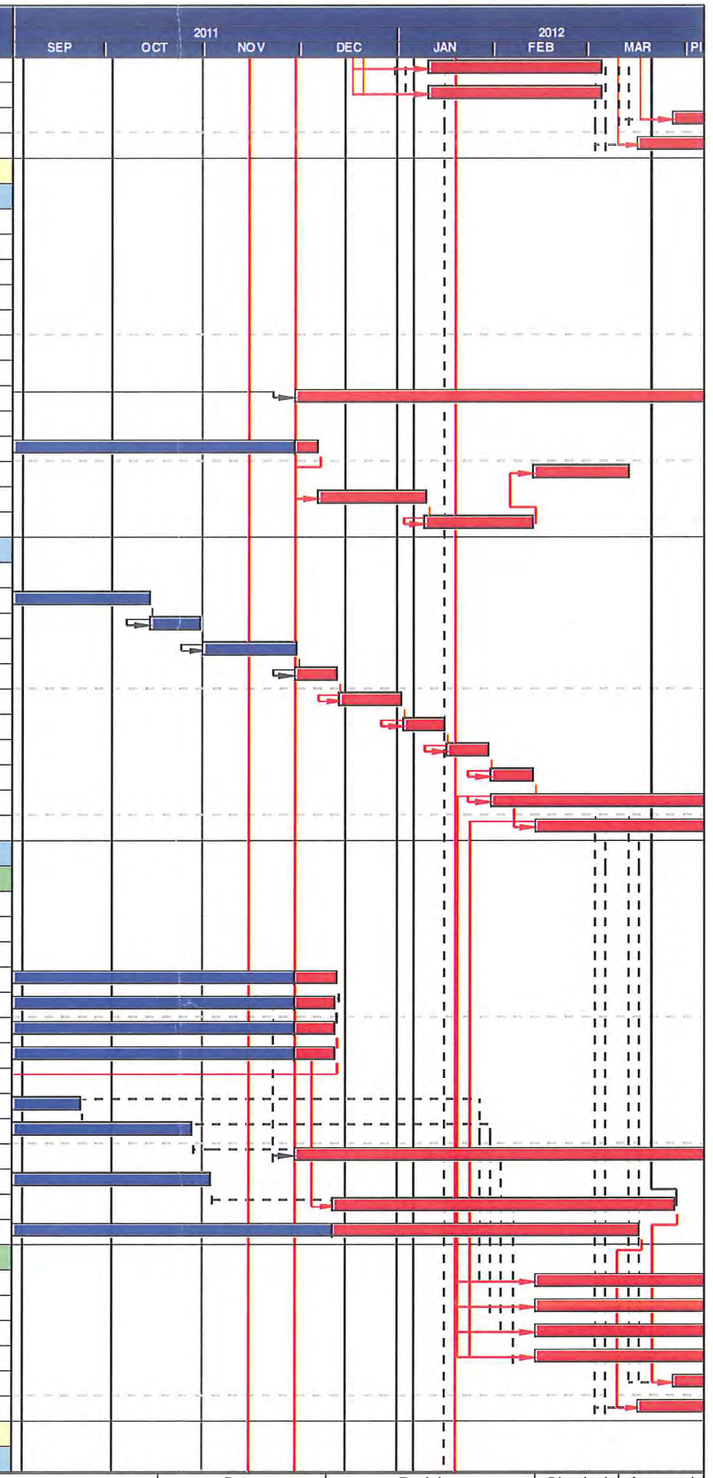
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment W orks at YSW & SKW
3-month Rolling Programme (Dec 2011 - Feb 2011)

(Marked on 30 Nov 2011)

Date	Revision	Checked	Approved
30/11/10	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M1103	Install DeO System	55	0	11/01/12	05/03/12	02/05/11	25/06/11	-254d	E&M1013, SKW0831, SKW0841	E&M1110, E&M1140
E&M1105	Install Instrumentation	55	0	11/01/12	05/03/12	02/05/11	25/06/11	-254d	E&M1015, SKW0831, SKW0841	E&M1140
E&M1106	Install FS Equipment	55	0	28/03/12	22/05/12	02/05/11	25/06/11	-331d	E&M1016, SKW0831, SKW0841	E&M1130, E&M1140
E&M1107	Install BS Equipment	55	0	17/03/12	11/05/12	02/05/11	25/06/11	-320d	E&M1017, SKW0831, SKW0841	E&M1110, E&M1140
Section W 6 - Sewer and PS No.2 in Portions E&H										
Civil & Geotechnical Works										
SKW0881	Site Clearance	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A		KD0020	SKW0891
SKW0891	Plant mobilization	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A		SKW0881	SKW0892
SKW0892	Initial Survey	30	100	24/05/10 A	22/06/10 A	24/05/10 A	22/06/10 A		SKW0891	SKW0901
SKW0901	Tree Transplantation	30	100	23/06/10 A	22/07/10 A	23/06/10 A	22/07/10 A		SKW0892	SKW0921
SKW0921	Cut Slope & U-Channel	14	100	23/07/10 A	31/01/11 A	23/07/10 A	31/01/11 A		SKW0260, SKW0265, SKW0901	SKW0931, SKW0951
SKW0931	Hoarding & Fencing	14	100	15/09/10 A	07/10/10 A	15/09/10 A	07/10/10 A		SKW0921	SKW0951
SKW0951	Excavate to formation	106	100	04/10/10 A	13/06/11 A	04/10/10 A	13/06/11 A		SKW0921, SKW0931	SKW0961, SKW0971
SKW0961	Mass Conc. Retaining Wall	257	0	30/11/11	12/08/12	04/03/11	15/11/11	-271d	SKW0951	KD0080
SKW1491	Concrete Trough (ChA0+45 - ChA1+75)	180	100	01/03/11 A	31/08/11 A	01/03/11 A	31/08/11 A		PRE0100	SKW15111
SKW15111	Twin DN150 DI Rising Main (ChA0+45 - ChA5+79)	150	95	16/05/11 A	07/12/11	16/05/11 A	09/08/11	-120d	SKW1491	SKW1531
SKW15112	Twin DN150 DI Rising Main (ChA0+00 - ChA0+45)	30	0	13/02/12	14/03/12	17/10/11	15/11/11	-120d	SKW1581	KD0080
SKW1531	Extent village sewers S163.1 & S164.1	34	0	07/12/11	10/01/12	10/08/11	12/09/11	-120d	SKW15111	SKW1581
SKW1581	Construct Manhole no. S163 & S164	34	0	10/01/12	13/02/12	13/09/11	16/10/11	-120d	SKW1531	KD0080, SKW15112
Structural Works										
SKW0971	Base Slab to -3.2mPD	14	100	02/05/11 A	31/08/11 A	02/05/11 A	31/08/11 A		SKW0951	SKW0981
SKW0981	Basement Beam (BBB-1,BBC-1,BBD-1)	14	100	01/09/11 A	15/10/11 A	01/09/11 A	15/10/11 A		SKW0971	SKW0991
SKW0991	Wall & Column to +1.5mPD	14	100	15/10/11 A	31/10/11 A	15/10/11 A	31/10/11 A		SKW0981	SKW1001
SKW1001	Base Slab (BSC-4) to +3mPD	14	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A		SKW0991	SKW1011
SKW1011	Wall & Column to +5.35mPD	14	0	30/11/11	13/12/11	29/01/11	11/02/11	-305d	SKW1001	SKW1021
SKW1021	Ground Slab	20	0	14/12/11	02/01/12	12/02/11	03/03/11	-305d	SKW1011	SKW1031
SKW1031	Ground Beam	14	0	03/01/12	16/01/12	04/03/11	17/03/11	-305d	SKW1021	SKW1041
SKW1041	Wall & Column to +9.35mPD	14	0	17/01/12	30/01/12	18/03/11	31/03/11	-305d	SKW1031	SKW1051
SKW1051	Roof Beams & Parapet	14	0	31/01/12	13/02/12	01/04/11	14/04/11	-305d	SKW1041	E&M2101, E&M2102, E&M2103,
SKW1061	ABWF installation (wet tray/dry tray)	90	0	31/01/12	29/04/12	18/04/11	16/07/11	-288d	SKW1051	E&M2101, E&M2102, E&M2103,
SKW1081	375mm U-channel with catchpits	215	0	14/02/12	15/09/12	15/04/11	15/11/11	-305d	SKW1051	KD0080
E&M Works (PS2)										
Submission & Delivery										
E&M2001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A		KD0020	E&M2011
E&M2002	Submission of Gen-Set	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A			E&M2012
E&M2003	Submission of DeO System	198	100	17/05/10 A	11/07/11 A	17/05/10 A	11/07/11 A			E&M2013
E&M2004	Submission of LV SB & MCC	271	95	17/05/10 A	13/12/11	17/05/10 A	13/02/11	-303d		E&M2014
E&M2005	Submission of Instrumentation	243	95	17/05/10 A	12/12/11	17/05/10 A	01/05/11	-224d		E&M2015
E&M2006	Submission of FS System	243	95	17/05/10 A	12/12/11	17/05/10 A	14/01/11	-331d		E&M2016
E&M2007	Submission of BS System	243	95	17/05/10 A	12/12/11	17/05/10 A	25/01/11	-320d		E&M2017
E&M2011	Delivery of Pumps	150	100	24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A		E&M2001	E&M2101
E&M2012	Delivery of Gen-Set	150	100	24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A		E&M2002	E&M2102
E&M2013	Delivery of DeO System	150	100	11/07/11 A	28/10/11 A	11/07/11 A	28/10/11 A		E&M2003	E&M2103
E&M2014	Delivery of LV SB & MCC	150	0	30/11/11	27/04/12	03/12/10	01/05/11	-362d	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	0	12/12/11	28/03/12	15/01/11	01/05/11	-331d	E&M2006	E&M0350, E&M2106
E&M2017	Delivery of BS Equipment	107	10	15/01/11 A	17/03/12	15/01/11 A	01/05/11	-320d	E&M2007	E&M2107
Installation, T&C										
E&M2101	Install Pumps	55	0	14/02/12	08/04/12	03/07/11	26/08/11	-226d	E&M2011, SKW1051, SKW1061	E&M2110
E&M2102	Install Gen Set	55	0	14/02/12	08/04/12	03/07/11	26/08/11	-226d	E&M2012, SKW1051, SKW1061	E&M2110
E&M2103	Install DeO System	55	0	14/02/12	08/04/12	03/07/11	26/08/11	-226d	E&M2013, SKW1051, SKW1061	E&M2110
E&M2105	Install Instrumentation	55	0	14/02/12	08/04/12	02/05/11	25/06/11	-288d	E&M2015, SKW1051, SKW1061	E&M2140
E&M2106	Install FS Equipment	55	0	28/03/12	22/05/12	02/05/11	25/06/11	-331d	E&M2016, SKW1051, SKW1061	E&M2140
E&M2107	Install BS Equipment	55	0	17/03/12	11/05/12	02/05/11	25/06/11	-320d	E&M2017, SKW1051, SKW1061	E&M2110, E&M2140
Section W 7 - SKW STW ,Sewer and Submarine Outfall										
Submarine Outfall										



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c Primavera Systems, Inc.	

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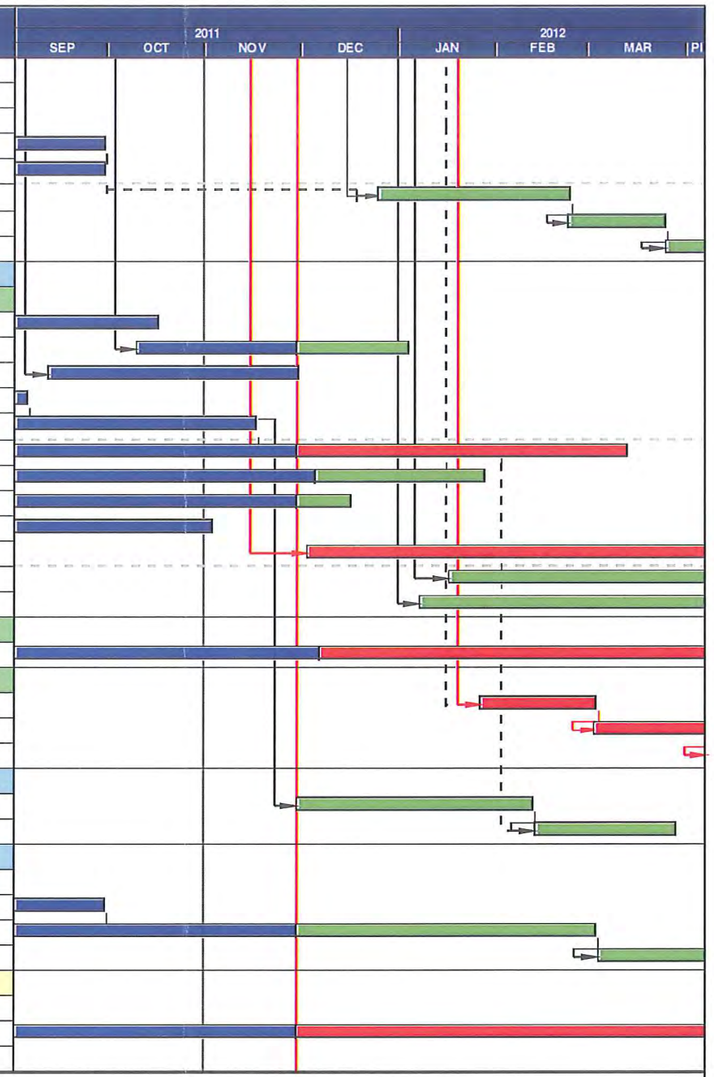
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment W orks at YSW & SKW
3-month Rolling Programme (Dec 2011 - Feb 2011)

(Marked on 30 Nov 2011)

Date	Revision	Checked	Approved
30/11/10	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
SKW1130	Approval of IHS Consultant	180	100	17/05/10 A	27/08/10 A	17/05/10 A	27/08/10 A			SKW1131
SKW1131	Hydrographical Survey (SKW)	300	100	01/02/11 A	28/02/11 A	01/02/11 A	28/02/11 A		KD0020, SKW1130	SKW1231
SKW1141	Baseline Monitoring (Water)	213	100	27/07/10 A	31/12/10 A	27/07/10 A	31/12/10 A		SKW0260, SKW0265	SKW1151
SKW1151	Set up Temporary Working Platform	185	100	15/06/11 A	30/09/11 A	15/06/11 A	30/09/11 A		PRE0090, SKW1141	SKW1171
SKW1171	ELS for HDD Set-up (SKW)	120	100	01/09/11 A	30/09/11 A	01/09/11 A	30/09/11 A		SKW1151	SKW1181
SKW1181	Mobilization of HDD plant & equipment to SKW	60	0	26/12/11	24/02/12	14/01/12	13/03/12	19d	SKW1171, YSW0360	SKW1191
SKW1191	Setting up at drillhole location	30	0	24/02/12	25/03/12	14/03/12	12/04/12	19d	SKW1181	SKW1201
SKW1201	Drill pilot hole and reaming hole - NS280 - 750m	196	0	25/03/12	07/10/12	13/04/12	25/10/12	19d	SKW1191	SKW1211
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	80	10/10/11 A	04/01/12	10/10/11 A	26/02/12	53d	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	13/03/12	01/09/11 A	12/02/12	-30d	E&M0170	E&M3240
E&M3100	Delivery of Valves, Pipes & Fittings	180	70	30/08/11 A	28/01/12	30/08/11 A	02/05/14	824d	E&M0180	E&M3250
E&M3110	Delivery of Penstocks	180	90	12/08/11 A	17/12/11	12/08/11 A	15/05/14	879d	E&M0190	E&M3260
E&M3130	Delivery of instruments	180	100	21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A		E&M0200	E&M3270
E&M3140	Delivery of MCC LVSB	180	0	03/12/11	30/05/12	09/05/11	04/11/11	-208d	E&M0210	E&M3261
E&M3150	Delivery of BS Equipment	180	0	17/01/12	14/07/12	18/11/13	17/05/14	671d	E&M0220	E&M3291
E&M3160	Delivery of FS Equipment	180	0	08/01/12	05/07/12	14/01/12	11/07/12	6d	E&M0230	E&M0340, E&M3300
Construction of Grid A-G										
SKW1261	Excavate for SKW STW Structure (Grid A -G)	164	15	30/07/11 A	24/04/12	30/07/11 A	27/07/11	-271d	SKW0551	SKW1271, SKW1371
Construction of Grid G-N										
SKW1311	Excavate for SKW STW Structure (Grid G-N)	36	0	27/01/12	03/03/12	29/06/11	03/08/11	-213d	SKW0551, SKW05938	SKW1321
SKW1321	Equalization Tank no.1 & 2 with base slabs (-2.1	35	0	03/03/12	07/04/12	04/08/11	07/09/11	-213d	SKW1311	SKW1331
SKW1331	Columns & Walls from B/S to G/F Slab (Grid G-N)	35	0	07/04/12	12/05/12	08/09/11	12/10/11	-213d	SKW1321	SKW1341
SKW STP - E&M Works										
E&M3220	Install Pumps	75	0	30/11/11	12/02/12	29/12/11	12/03/12	29d	E&M3070	E&M3230, E&M3250, E&M3260,
E&M3230	Install Submersible Mixers	45	0	13/02/12	28/03/12	13/03/12	26/04/12	29d	E&M3080, E&M3220	E&M3250, E&M3260, E&M3311,
Rising Main										
SKW1481	Subm, Approval & Delivery of DI pipes	120	100	17/05/10 A	28/02/11 A	17/05/10 A	28/02/11 A		KD0020	SKW1501
SKW1501	Concrete Trough (ChB0+00 - ChB1+20)	300	100	15/08/11 A	30/09/11 A	15/08/11 A	30/09/11 A		PRE0100, SKW1481	SKW1521
SKW1521	Twin DN150 DI Rising Main (ChB0+00 - ChA4+55)	250	62	15/08/11 A	03/03/12	15/08/11 A	16/03/12	13d	SKW1501	SKW1541
SKW1541	DN250 DI Pipe (ChC0+00 - ChC0+35 Connection Pit)	208	0	04/03/12	27/09/12	17/03/12	10/10/12	13d	SKW1521	SKW1561
Section W 8 - Landscape Softworks in All Portions										
SKW1591	Tree Survey	21	100	17/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A		KD0020	SKW1621
SKW1611	Preservation & Protection of Trees	822	66	17/05/10 A	04/09/12	17/05/10 A	15/08/12	-20d	KD0020	KD0100, SKW1631
SKW1621	Transplantation at SKW	60	100	07/06/10 A	05/10/10 A	07/06/10 A	05/10/10 A		SKW1591	



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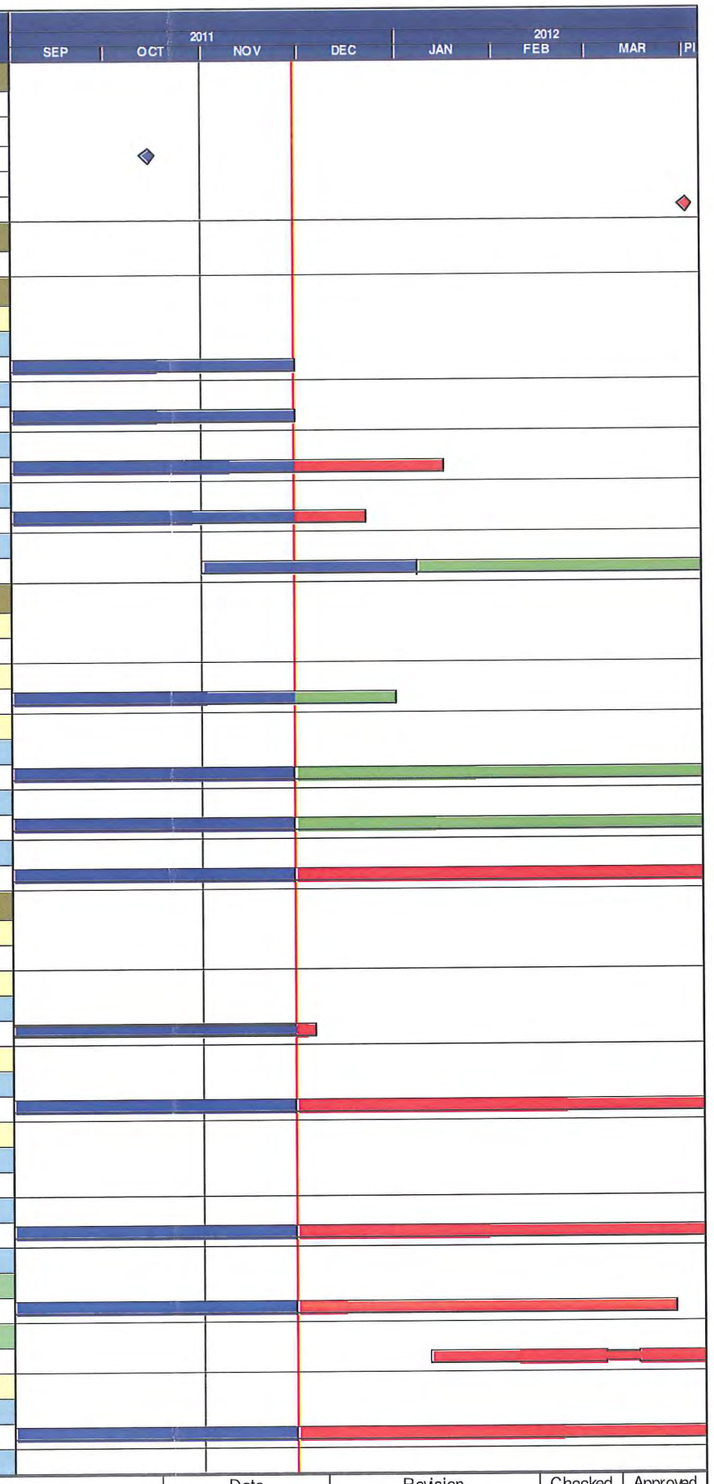
Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
Project Key Date										
KD0010	Receive Letter of Acceptance	0	100		05/05/10 A		05/05/10 A			KD0125
KD0020	Project Commencement Date	0	100		17/05/10 A		17/05/10 A			E&M0010, E&M0070, E&M1001,
KD0030	Section W1 - Slope Works in Portion A & C (456d)	0	100		14/10/11 A		14/10/11 A		YSW0150	KD0125
KD0050	Section W3 - Footpath Diversion in Ptn G (273d)	0	100		24/03/11 A		24/03/11 A		SKW0551	KD0125
KD0115	Start Operate Temp Sewage Treatment in Port. A&H	0	0		01/04/12		30/06/11 *	-276d *	E&M0510	KD0125
+Preliminary (Civil)										
		191	100	17/05/10 A	23/11/10 A	17/05/10 A	23/11/10 A		KD0020	
Preliminary (E&M)										
Technical Submission										
+Process Design of SKWSTW & YSWSTW										
		563	100	17/05/10 A	30/11/11 A	17/05/10 A	30/11/11 A			
+Hydraulic Design										
		563	100	17/05/10 A	30/11/11 A	17/05/10 A	30/11/11 A			
+Equipment Submission & Approval										
		610	94	17/05/10 A	16/01/12	17/05/10 A	30/11/11	-47d		
+Drawings Submission & Approval										
		548	87	24/06/10 A	23/12/11	24/06/10 A	11/09/11	-103d		
+Statutory Submission										
		224	43	01/11/11 A	20/07/12	01/11/11 A	06/01/15	845d		
Yung Shue Wan										
+Preliminary										
		229	100	17/05/10 A	31/12/10 A	17/05/10 A	31/12/10 A			
+Section W 1 - Slope W orks in Portion A & C										
		595	96	17/05/10 A	01/01/12	17/05/10 A	14/02/14	775d		
Section W 2 - YSW STW & Submarine Outfall										
+Civil & Structural Work										
		763	54	17/05/10 A	18/06/12	17/05/10 A	04/07/12	17d		
+Submarine Outfall										
		738	84	17/05/10 A	24/05/12	17/05/10 A	16/12/13	572d		
+E&M Works - YSW STP										
		675	53	24/02/11 A	29/12/12	24/02/11 A	04/07/12	-178d		
Sok Kwu Wan										
+Preliminary										
		53	100	17/05/10 A	08/07/10 A	17/05/10 A	08/07/10 A			
Section W 3 - Footpath Diversion in Portion G										
+Civil & Geotechnical Works										
		569	98	17/05/10 A	06/12/11	17/05/10 A	30/07/11	-271d		
Section W 4 - Slope W orks in Portions H & I										
+Geotechnical Works										
		793	56	15/06/10 A	15/08/12	15/06/10 A	30/09/11	-366d		
Section W 5 - P.S. No. 1 in Portion D										
+Civil & Geotechnical Works										
		319	100	17/05/10 A	31/03/11 A	17/05/10 A	31/03/11 A			
+Structural Works										
		434	28	20/04/11 A	26/06/12	04/04/11 A	30/11/11	-224d		
E&M Works (PS1)										
+Submission & Delivery										
		681	89	17/05/10 A	28/03/12	17/05/10 A	03/11/11	-331d		
+Installation, T&C										
		132	0	11/01/12	22/05/12	02/05/11	25/06/11	-331d		
Section W 6 - Sewer and PS No.2 in Portions E&H										
+Civil & Geotechnical Works										
		819	59	17/05/10 A	12/08/12	17/05/10 A	15/11/11	-271d		
+Structural Works										



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<< Outline >>

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Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
		503	13	02/05/11 A	15/09/12	29/01/11 A	30/11/11	-305d		
E&M Works (PS2)										
+Submission & Delivery										
		712	84	17/05/10 A	27/04/12	17/05/10 A	03/11/11	-362d		
+Installation, T&C										
		98	0	14/02/12	22/05/12	02/05/11	26/08/11	-269d		
Section W 7 - SKW STW ,Sewer and Submarine Outfall										
+Submarine Outfall										
		848	78	17/05/10 A	07/10/12	17/05/10 A	25/10/12	19d		
SKW STW										
+Submission & Delivery (E&M)										
		507	64	24/02/11 A	14/07/12	24/02/11 A	17/05/14	671d		
+Construction of Grid A-G										
		164	15	30/07/11 A	24/04/12	30/07/11 A	27/07/11	-271d		
+Construction of Grid G-N										
		106	0	27/01/12	12/05/12	29/06/11	12/10/11	-213d		
+SKW STP - E&M Works										
		120	0	30/11/11	28/03/12	29/12/11	26/04/12	29d		
+Rising Main										
		865	66	17/05/10 A	27/09/12	17/05/10 A	10/10/12	13d		
+Section W 8 - Landscape Softworks in All Portions										
		842	69	17/05/10 A	04/09/12	17/05/10 A	15/08/12	-20d		

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Construction of Sewage Treatment Works at YSW & SKW
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<< Outline >> P. 2/2

(Marked on 30 Nov 2011)

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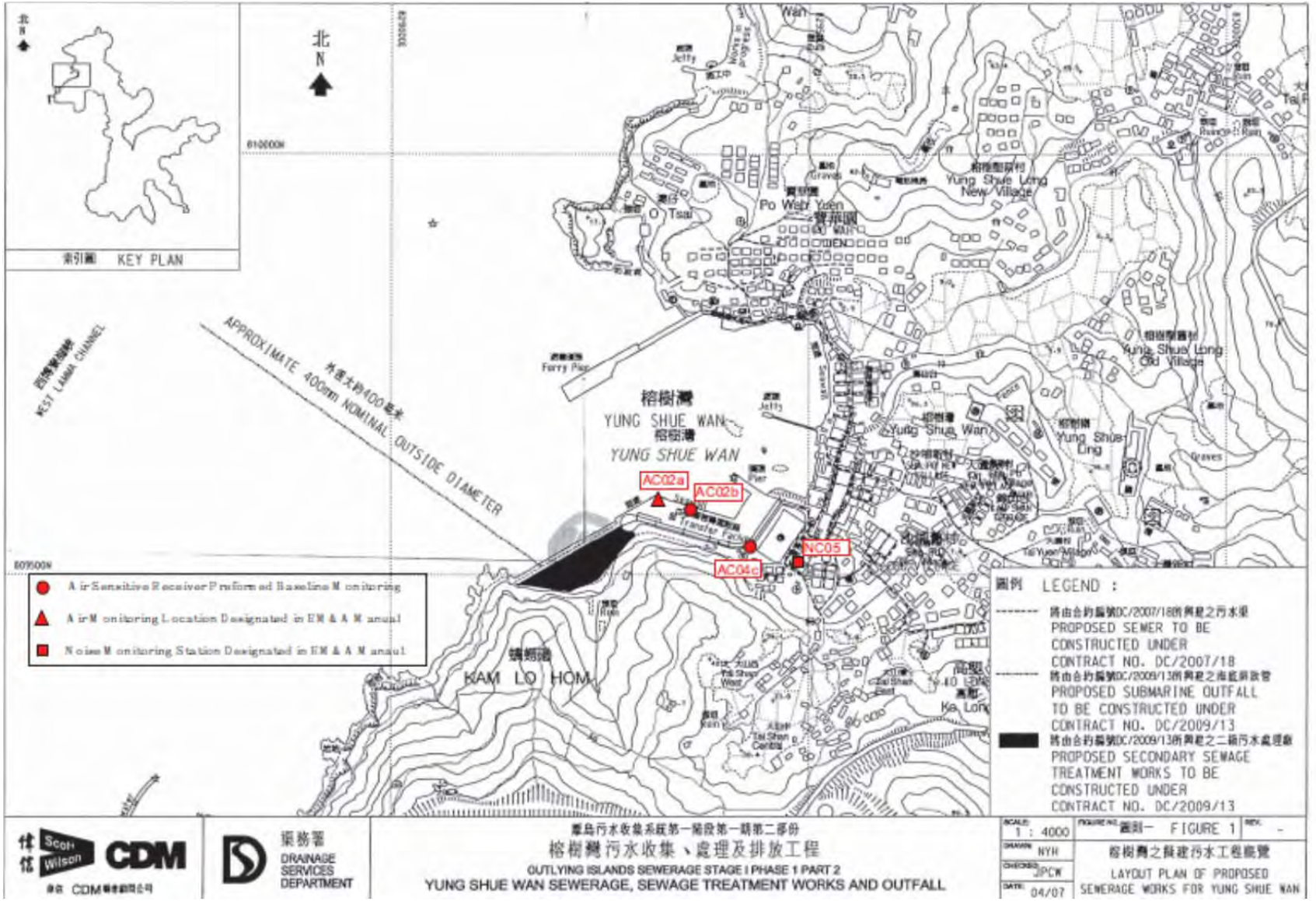
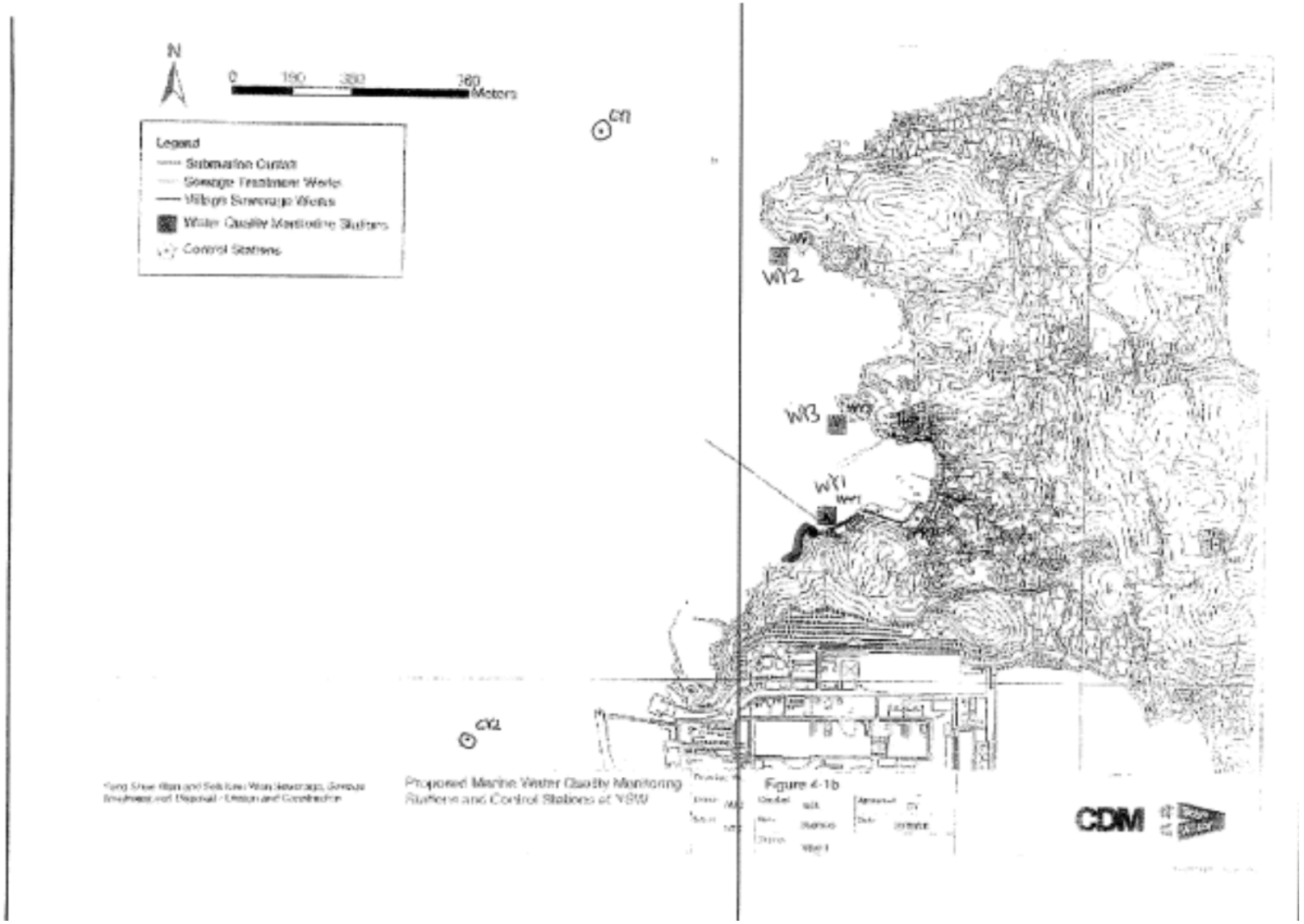
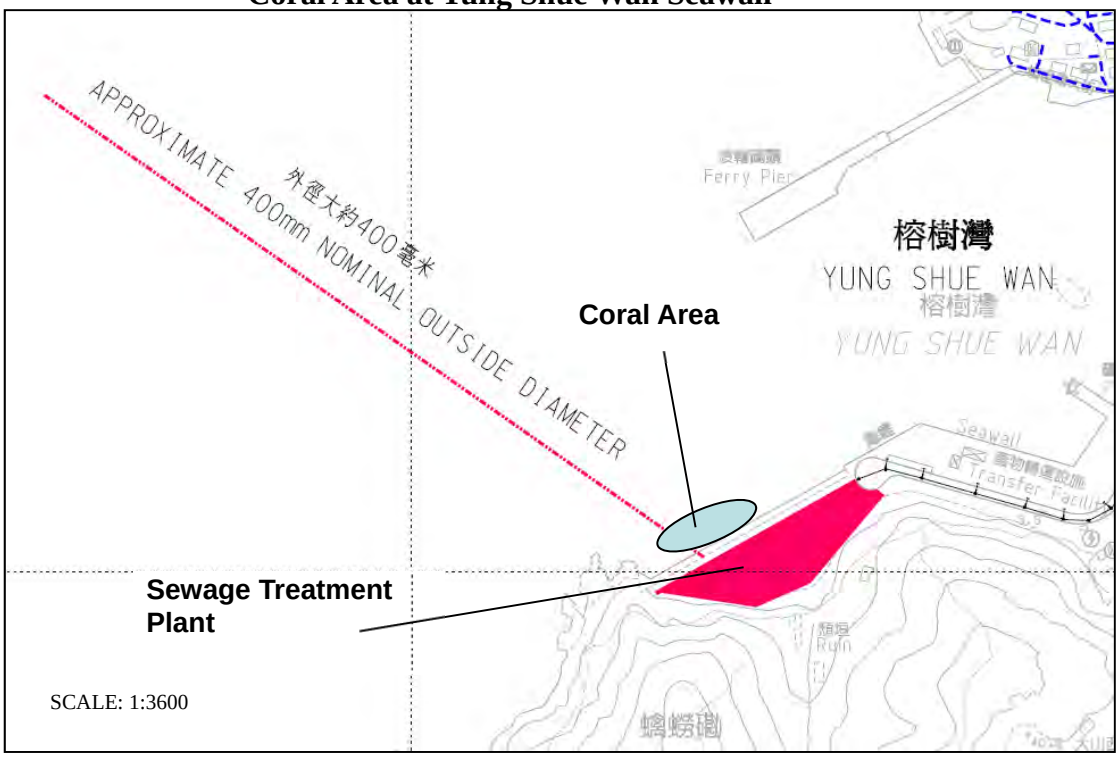
Appendix D

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

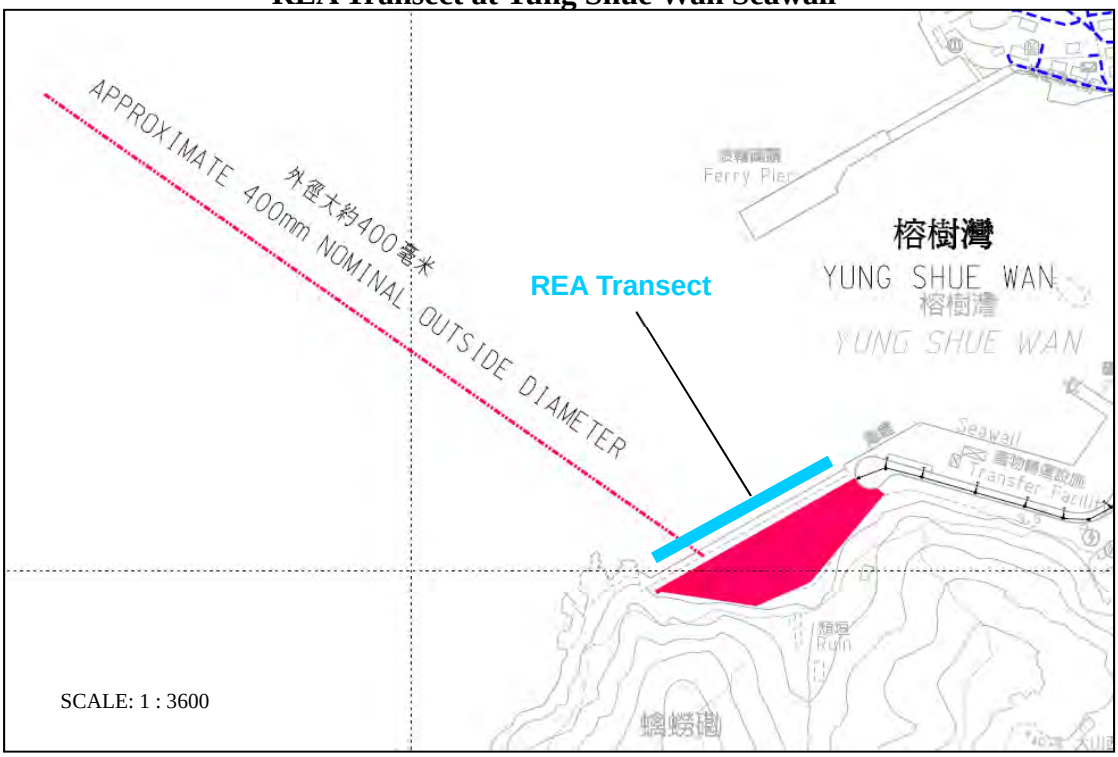

索引圖 KEY PLAN
北 N
APPROXIMATE 400mm NOMINAL OUTSIDE DIAMETER
榕樹灣 YUNG SHUE WAN
YUNG SHUE WAN
AC02a
AC02b
NC05
AC04c
KAM LO HOM
Air Sensitive Receiver Proformed Baseline Monitoring
Air Monitoring Location Designated in EM & A Manual
Noise Monitoring Station Designated in EM & A Manual
圖例 LEGEND :
PROPOSED 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
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
FIGURE NO. 圖則一 FIGURE 1
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
WY1
WY2
WY3
Proposed Marine Water Quality Monitoring Stations and Control Stations at YSW
Figure 4-1b
CDM

Coral Area at Yung Shue Wan Seawall



REA Transect at Yung Shue Wan Seawall



Coral Area at Sham Wan

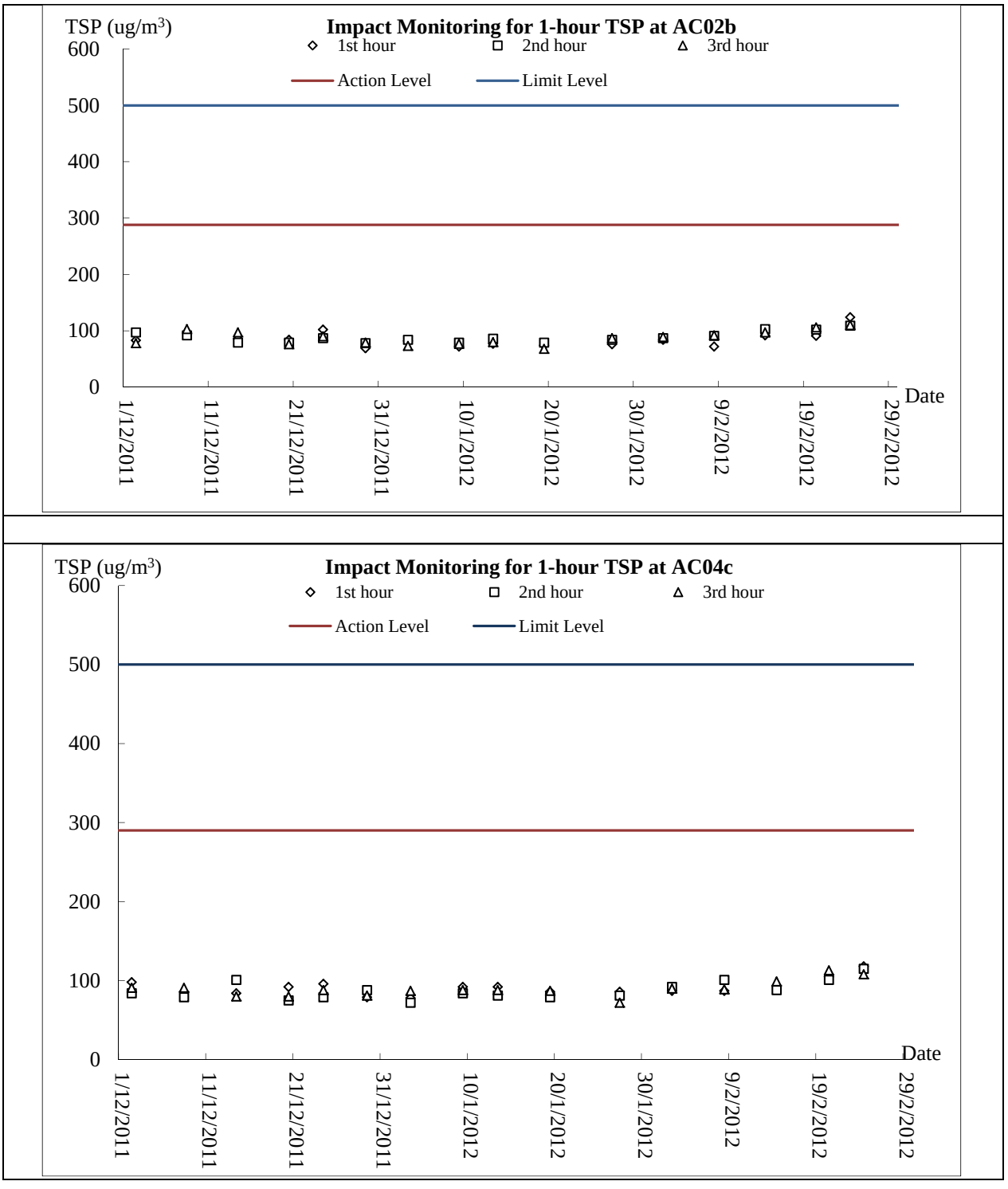
REA Transect at Sham Wan

Appendix E

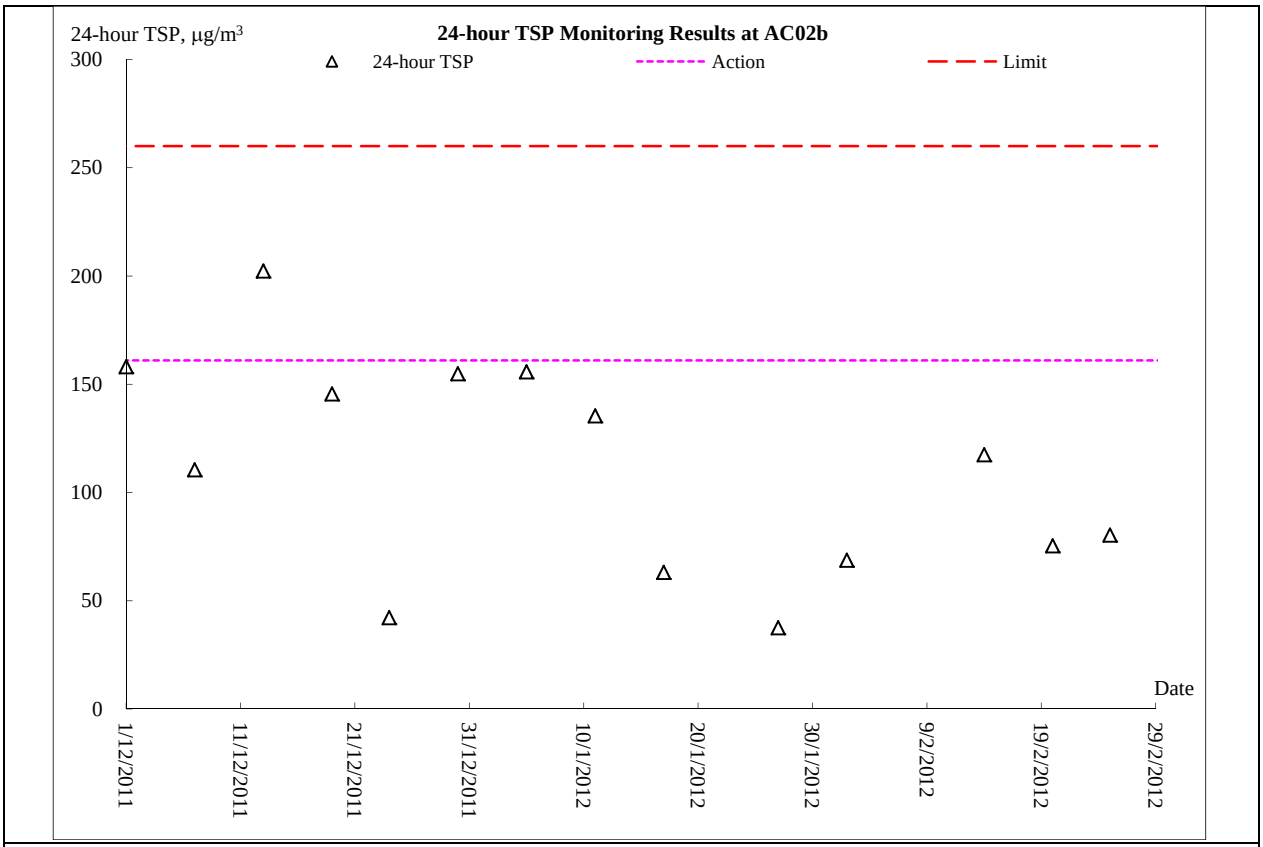
Graphical Plots of Impact Monitoring

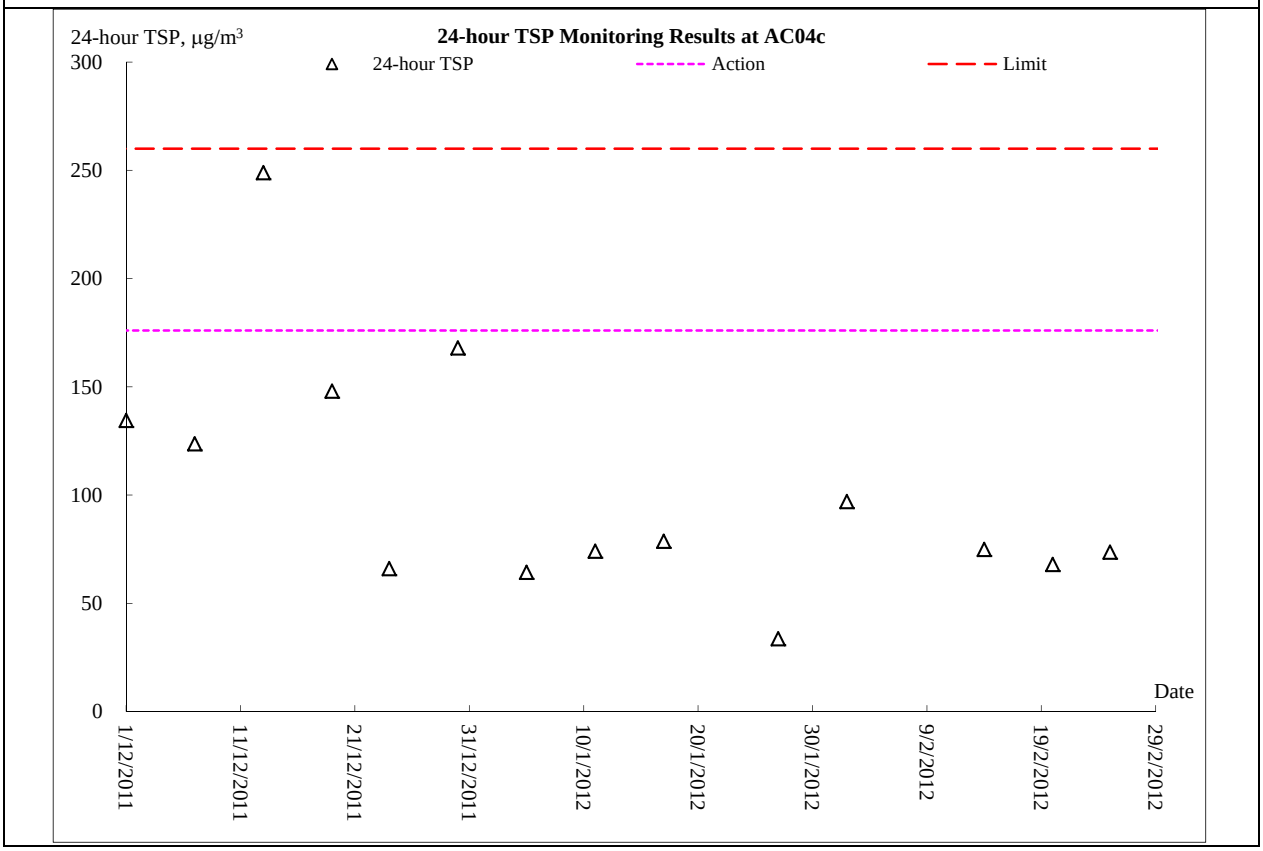
1. **Air Quality**
2. **Construction Noise**
3. **Marine Water Quality**

Air Quality – 1-hour TSP Monitoring

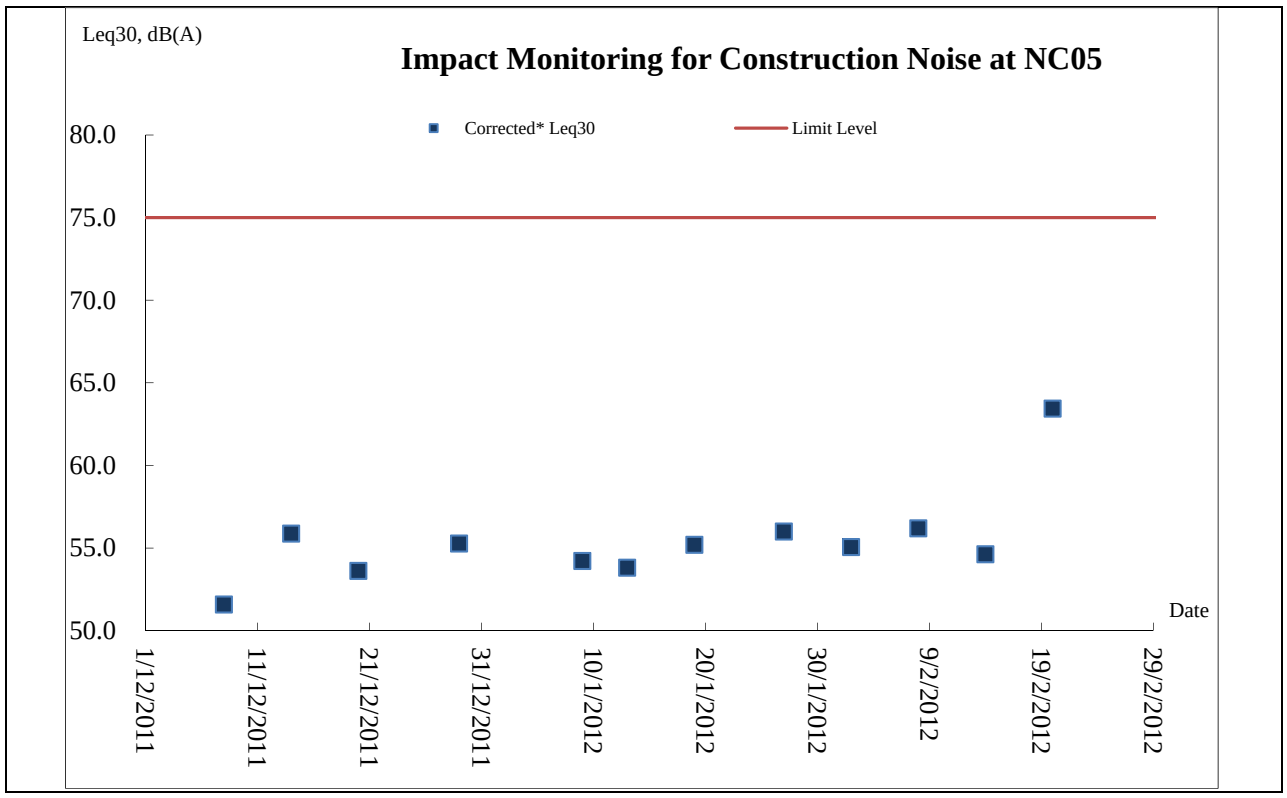


Air Quality – 24-hour TSP Monitoring

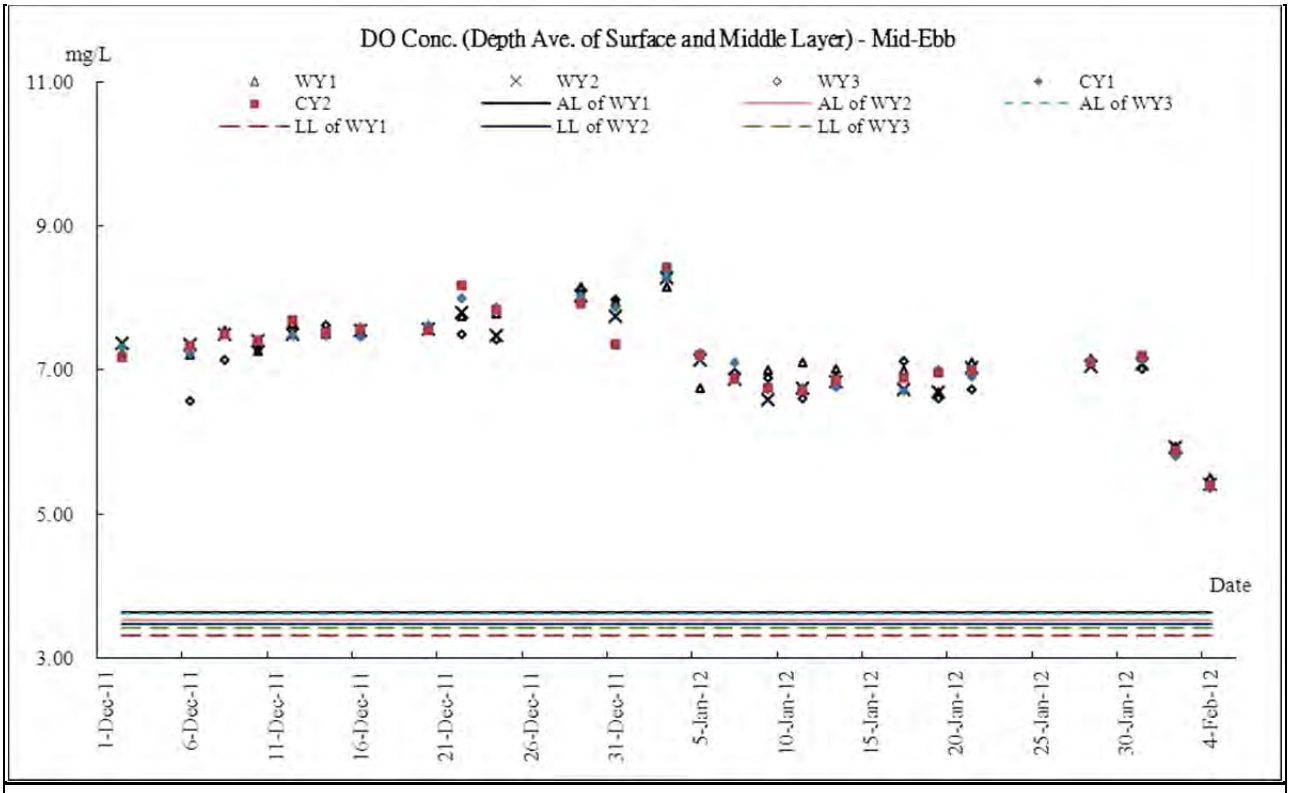


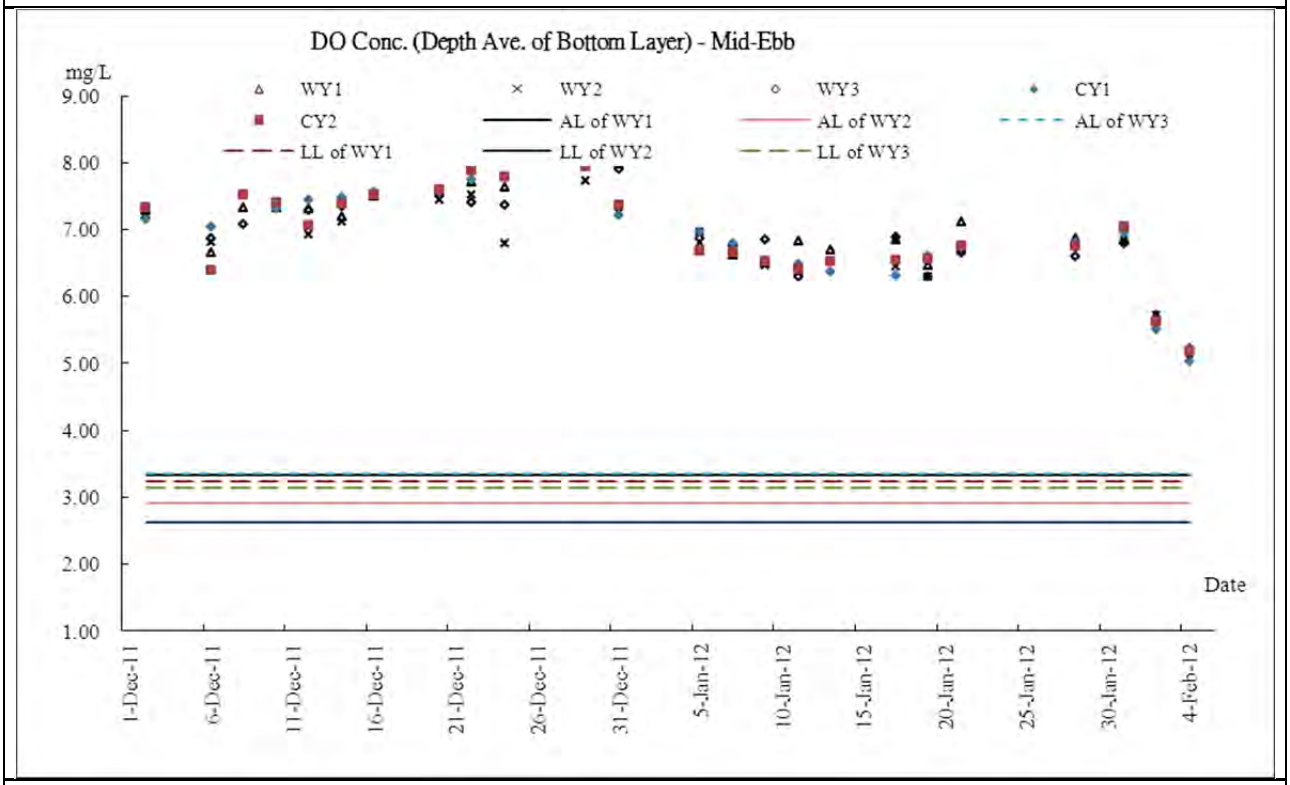


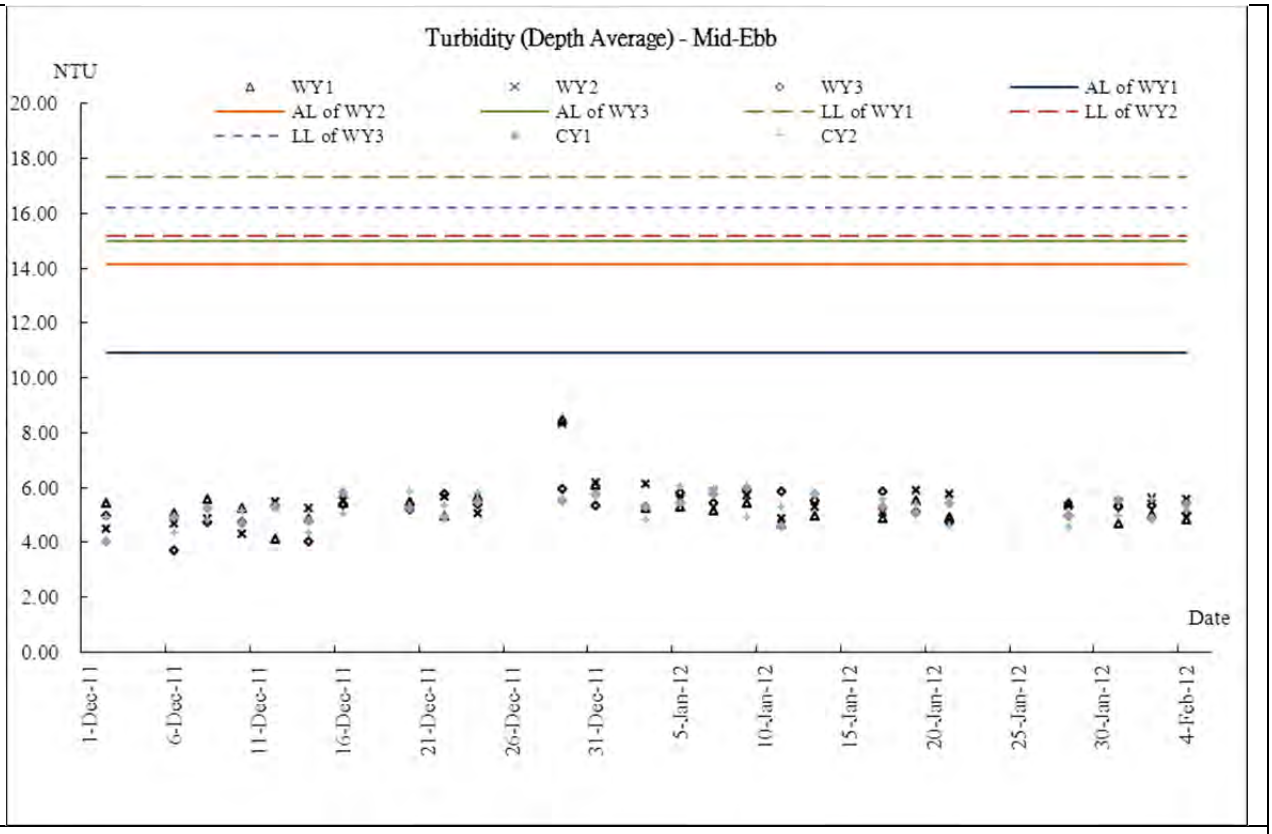
Construction Noise

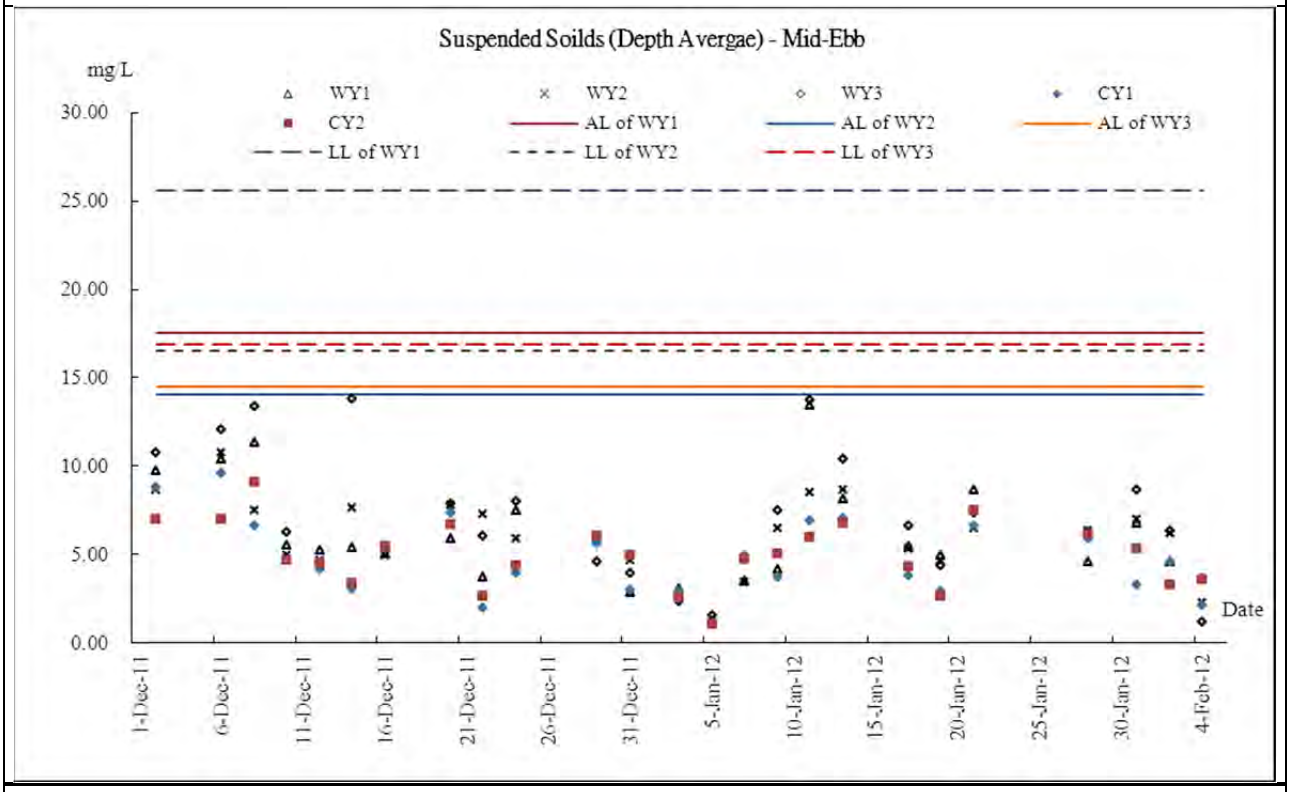


Marine Water Quality – Mid-Ebb

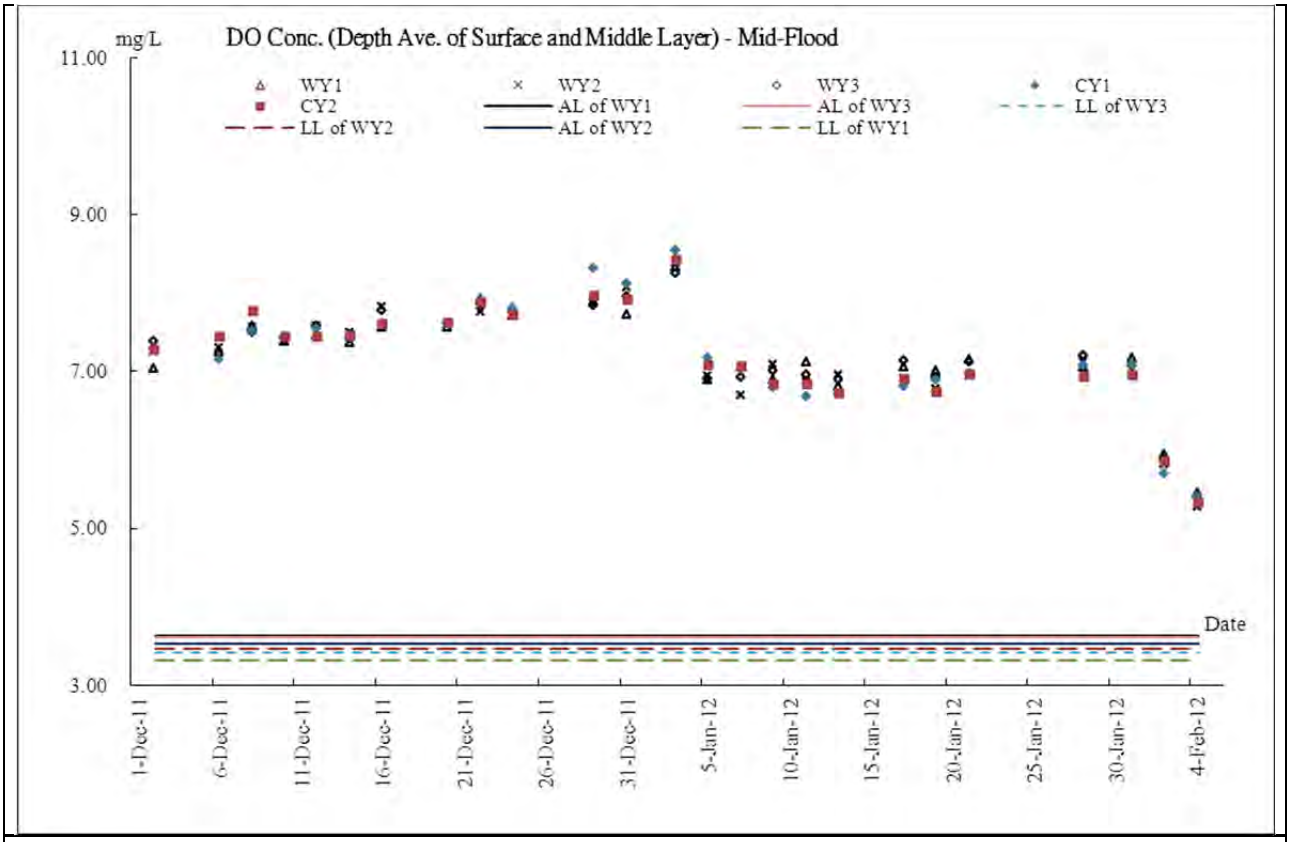


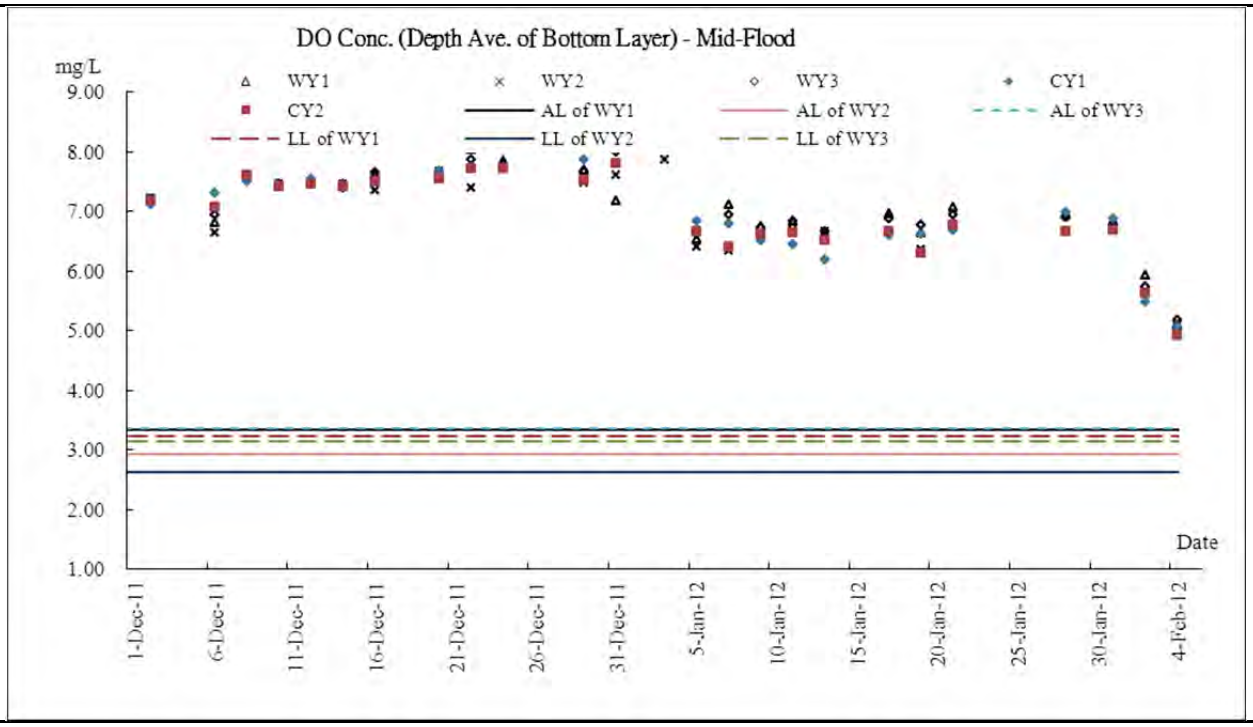


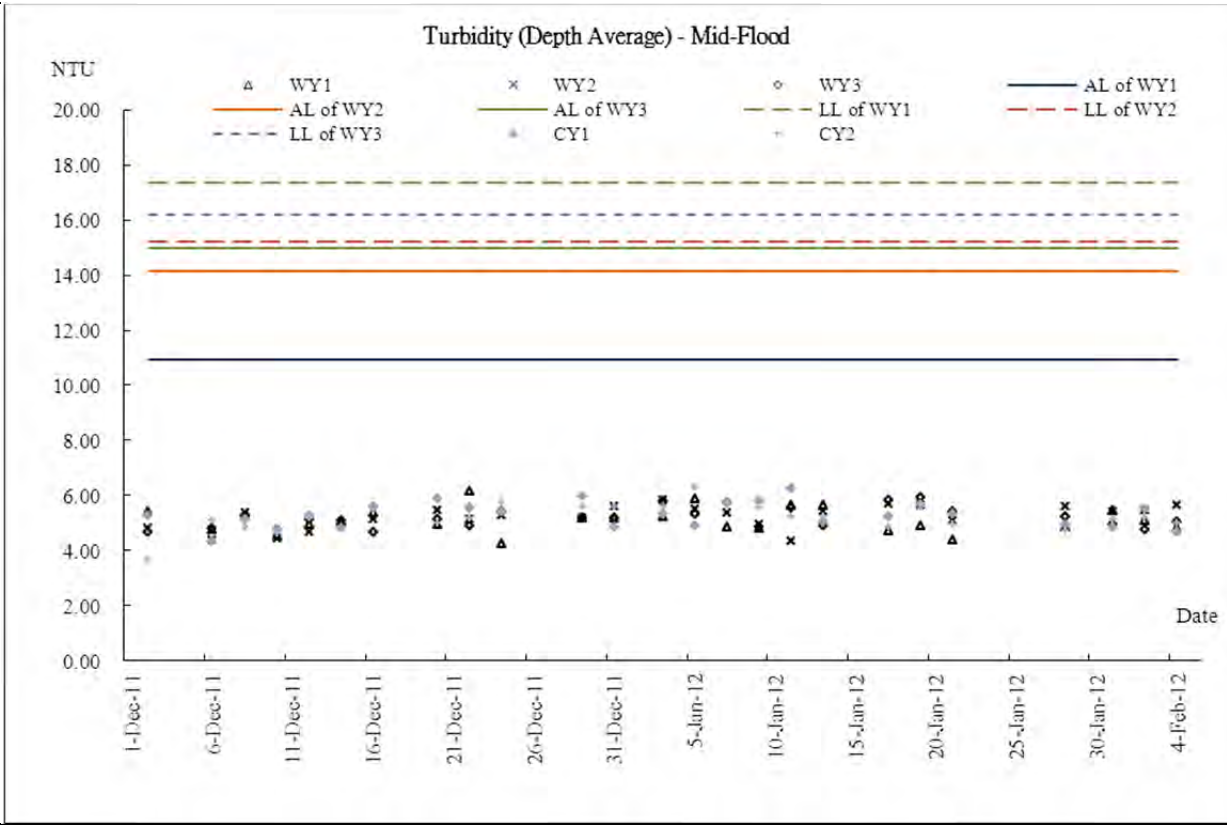

Turbidity (Depth Average) - Mid-Ebb
NTU
WY1
WY2
WY3
AL of WY1
AL of WY2
AL of WY3
LL of WY1
LL of WY2
LL of WY3
CY1
CY2
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
1-Dec-11
6-Dec-11
11-Dec-11
16-Dec-11
21-Dec-11
26-Dec-11
31-Dec-11
5-Jan-12
10-Jan-12
15-Jan-12
20-Jan-12
25-Jan-12
30-Jan-12
4-Feb-12

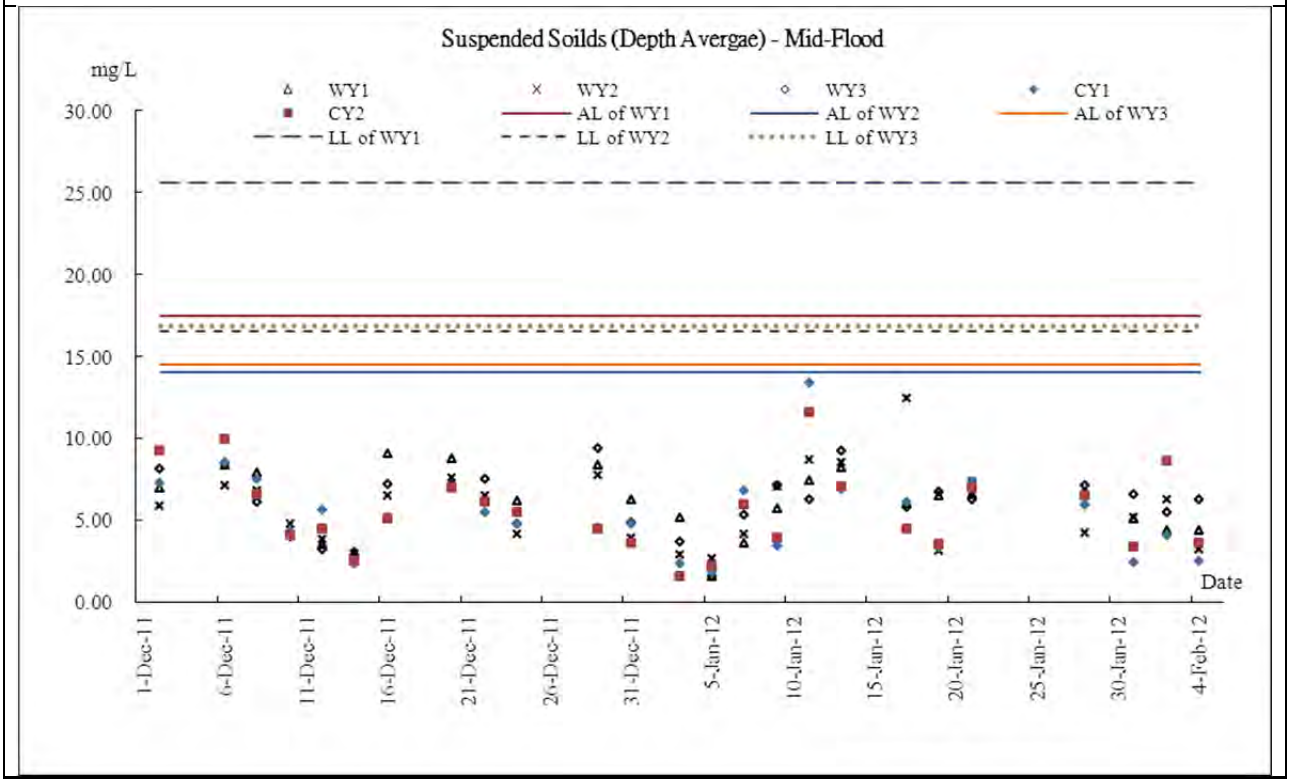

Suspended Soilds (Depth Avergae) - Mid-Ebb
mg/L
WY1
WY2
WY3
CY1
CY2
AL of WY1
AL of WY2
AL of WY3
LL of WY1
LL of WY2
LL of WY3
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Date
1-Dec-11
6-Dec-11
11-Dec-11
16-Dec-11
21-Dec-11
26-Dec-11
31-Dec-11
5-Jan-12
10-Jan-12
15-Jan-12
20-Jan-12
25-Jan-12
30-Jan-12
4-Feb-12

Marine Water Quality – 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
1-Dec-11
6-Dec-11
11-Dec-11
16-Dec-11
21-Dec-11
26-Dec-11
31-Dec-11
5-Jan-12
10-Jan-12
15-Jan-12
20-Jan-12
25-Jan-12
30-Jan-12
4-Feb-12


Suspended Soilds (Depth Avergae) - Mid-Flood
mg/L
WY1
WY2
WY3
CY1
CY2
AL of WY1
AL of WY2
AL of WY3
LL of WY1
LL of WY2
LL of WY3
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Date
1-Dec-11
6-Dec-11
11-Dec-11
16-Dec-11
21-Dec-11
26-Dec-11
31-Dec-11
5-Jan-12
10-Jan-12
15-Jan-12
20-Jan-12
25-Jan-12
30-Jan-12
4-Feb-12

Appendix F

Meteorological Information

Meteorological condition – December 2011

Attributed to the frequent replenishment of the winter monsoon, December 2011 was colder than usual with a monthly mean temperature of 16.9 degrees, 0.9 degrees below the normal figure of 17.8 degrees. There were six cold days (daily minimum temperature at 12.0 degrees or below) in the month, about two days more than normal. The prevalence of continental airstream also brought drier than usual weather to the territory in December 2011. The total rainfall recorded in the month was 2.8 millimetres, less than a tenth of the monthly normal. The annual rainfall for 2011 was 1476.7 millimetres, a deficit of about 38 percent compared to the annual normal of 2382.7 millimetres.

Meteorological condition– January 2012

Under the dominance of the winter monsoon, January 2012 was colder than usual. The mean temperature of the month was 15.1 degrees, 1.2 degrees below the normal figure of 16.3 degrees. The month was also wetter and gloomier than usual. The monthly rainfall of 42.1 millimetres was 17.4 millimetres above normal. The monthly total duration of bright sunshine was 86.0 hours, a deficit of 40 percent against to the normal figure of 143.0 hours.

Meteorological condition– February 2012

With frequent interchange of the northeast monsoon and the humid maritime airstream over the south China coast, February 2012 was marked by gloomy and humid weather with a few foggy episodes in Hong Kong. The total duration of bright sunshine in the month was 38.1 hours, only about 40 percent of the normal and the monthly mean relative humidity was 85 percent, 5 percent above normal.

The month was also cooler with less rainfall than usual. The mean temperature of the month was 15.8 degrees, 1.0 degree below the normal figure of 16.8 degrees. The total rainfall in the month was 29.5 millimetres, 24.9 millimetres below the normal figure of 54.4 millimetres.

Note: please refer to the monthly EM&A report (Dec 2011 -Feb 2012) 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 December 2011

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
2010	4.522	0.030	0.068	0.104	0.488	0.000	0.000	0.000	4.033	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.460
Jan	0.985	3.045	0.003	0.013	0.120	0.419	0.000	2.626	0.865	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.240
Feb	0.377	0.000	0.000	0.043	0.000	0.000	0.000	0.000	0.377	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.350
Mar	0.758	1.175	0.002	0.106	0.006	0.000	0.000	1.175	0.752	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.360
Apr	1.135	1.339	0.017	0.025	0.112	0.180	0.000	1.159	1.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.830	5.160
May	0.614	1.362	0.030	0.036	0.014	0.400	0.000	0.962	0.600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.150	0.860
Jun	0.505	1.014	0.000	0.022	0.000	0.060	0.000	0.954	0.505	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.610	1.510
Sub-total	8.8954	7.9653	0.1184	0.3497	0.7397	1.0590	0.0000	6.8760	8.1558	0.0303	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	15.5900	28.9400
Jul	0.824	1.077	0.000	0.004	0.000	0.000	0.000	1.077	0.824	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.000	0.510
Aug	0.491	3.519	0.004	0.006	0.000	0.000	0.000	3.519	0.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.990	1.830
Sep	0.074	1.473	0.037	0.004	0.000	0.000	0.000	1.473	0.074	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	23.030	2.420
Oct	0.145	1.674	0.000	0.007	0.000	0.000	0.000	1.674	0.145	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.330	6.850
Nov	0.000	5.176	0.000	0.017	0.000	0.000	0.000	5.176	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	81.790	4.590
Dec	0.000	12.659	0.000	0.019	0.000	0.000	0.000	12.659	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	57.140	1.550
Total	10.4296	33.5433	0.1596	0.4070	0.740	1.059	0.000	32.454	9.6899	0.0303	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	206.87	46.69
	43.973		0.567		1.799		32.454		9.720		0.000		0.000		0.000		0.000		0.000		253.56	

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 2012

Month	Actual Quantities of Inert C&D Materials Generated Monthly												Actual Quantities of C&D Wastes Generated Monthly									
	Total Quantity Generated (a) = (c)+(d)+(e)		Hard Rock and Large Broken Concrete (b)		Reused in the Contract (c)		Reused in other Projects (d)		Disposed as Public Fill (e)		Imported Fill (f)		Metals		Paper/ cardboard packaging		Plastics		Chemical Waste		Others, e.g. rubbish	
	(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in tonne)	
	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW
2011	10.430	33.543	0.160	0.407	0.740	1.059	0.000	32.454	9.690	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	206.870	46.690
Jan	0.000	3.311	0.000	0.000	0.000	0.000	0.000	3.311	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.530	5.090
Feb	0.170	6.271	0.000	0.000	0.000	0.000	0.000	6.271	0.170	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.860	5.660
Mar																						
Apr																						
May																						
Jun																						
Sub-total	10.599	43.125	0.160	0.407	0.740	1.059	0.000	42.036	9.860	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	244.260	57.440
Jul																						
Aug																						
Sep																						
Oct																						
Nov																						
Dec																						
Total	10.599	43.125	0.160	0.407	0.740	1.059	0.000	42.036	9.860	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	244.260	57.440
	53.724		0.567		1.799		42.036		9.890		0.000		0.000		0.000		0.000		0.000		301.700	

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

YSW: Yung Shue Wan

SKW: Sok Kwu Wan

Appendix 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	Marine works site and at the identified water sensitive receivers/ During construction	Contractor		√		

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

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

* 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	<u>General Site Wastes</u> • A collection area for construction site waste should be provided where waste can be stored prior to removal from site • An enclosed and covered area for the collection of the waste is recommended to reduce 'wind blow' of light material	Work sites/During construction	Contractor		√		Public Health and Municipal Services Ordinance (Cap. 132)
2.9.19	6.2.6 and 6.2.7	<u>Chemical Wastes</u> • After use, chemical waste should be handled according to the Code of Practice on the Package, Labelling and Storage of Chemical Wastes • Any unused chemicals or those with remaining functional capacity should be recycled • Waste should be properly stored on site within suitably designed containers and should be collected by an approved licensed waste collectors for disposal at the Chemical Waste Treatment Facility or other licenced facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordance.	Work sites/During construction	Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Wastes

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

* 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