



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. Q5  
(September to November 2011)**

PREPARED FOR  
**LEADER CIVIL ENGINEERING CORPORATION  
LIMITED**

| Quality Index<br>Date | Reference No.          | Prepared By  | Certified By  |
|-----------------------|------------------------|--|---|
| 9 January 2012        | TCS00512/09/600/R389v2 |  |  |
|                       |                        | Nicola Hon<br>Environmental Consultant   | T.W. Tam<br>Environmental Team Leader   |

| Version | Date             | Description   |
|---------|------------------|---|
| 1       | 14 December 2011 | First submission  |
| 2       | 9 January 2012   | Amended against IEC's comments IEC's comments on 4 January 2012 |
|         |                  |   |

# Scott Wilson CDM Joint Venture

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

Your reference:

Our reference: 05117/6/16/384977

Date: 9 January 2011

Attention: Mr. Kenley C K Kwok

**BY FAX ONLY**

Dear Sirs,

**Contract No. DC/2009/13**

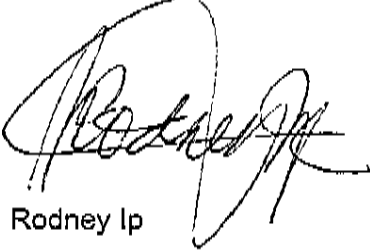
**Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan  
Yung Shue Wan Portion Area**

**Quarterly EM&A Summary Report No. Q5 (September to November 2011)**

We refer to the Environmental Permit (EP-282/2007/A) and the email from the Environmental Team, Action-United Environmental Services and Consulting (AUES), with the revised report for the captioned project, dated 9 January 2011. We have no comment and have verified the captioned report.

Yours faithfully

SCOTT WILSON CDM JOINT VENTURE



Rodney Ip

ICWR/SYSL/ecwc

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

## EXECUTIVE SUMMARY

ES.01 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.

ES.02 This is the 5<sup>th</sup> Quarterly Environmental Monitoring and Audit (EM&A) Summary Report for Yung Shue Wan Portion Area under the Project, covering the construction period from **1 September to 30 November 2011** (the Reporting Period).

### ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.03 Environmental monitoring activities under the EM&A programme in this Reporting Period are summarized in the following table.

| Issues             | Environmental Monitoring Parameters / Inspection | Occasions |
|--------------------|--|-----------|
| Air Quality        | 1-hour TSP                                       | 96        |
|                    | 24-hour TSP                                      | 30        |
| Construction Noise | Leq (30min) Daytime                              | 15        |
| Water Quality      | Marine Water Sampling                            | 39        |
| Ecology            | Coral Monitoring                                 | 11        |
| Inspection / Audit | ET Regular Environmental Site Inspection         | 13        |

### BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.04 In this Reporting Period, no exceedance was recorded in construction noise, air quality, marine water quality and ecology monitoring. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

| Environmental Issues | Monitoring Parameters        | Action Level | Limit Level | Event & Action |               |                    |
|----------------------|------------------------------|--------------|-------------|----------------|---------------|--------------------|
|                      |                              |              |             | NOE Issued     | Investigation | Corrective Actions |
| Air Quality          | 1-hour TSP                   | 0            | 0           | 0              | --            | --                 |
|                      | 24-hour TSP                  | 0            | 0           | 0              | --            | --                 |
| Construction Noise   | Leq <sub>30min</sub> 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.05 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 - 30 September 2011 | 0                                  | 0          | NA               |
| 1 - 31 October 2011   | 0                                  | 0          | NA               |
| 1 - 30 November 2011  | 0                                  | 0          | NA               |

### NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.06 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 - 30 September 2011 | 0                                | 0          | NA               |
| 1 - 31 October 2011   | 0                                | 0          | NA               |
| 1 - 30 November 2011  | 0                                | 0          | NA               |

| Reporting Period      | Environmental Prosecution Statistics |            |                  |
|-----------------------|--------------------------------------|------------|------------------|
|                       | Frequency                            | Cumulative | Complaint Nature |
| 1 - 30 September 2011 | 0                                    | 0          | NA               |
| 1 - 31 October 2011   | 0                                    | 0          | NA               |
| 1 - 30 November 2011  | 0                                    | 0          | NA               |

#### REPORTING CHANGE

ES.07 There are no reporting changes in this Reporting Period.

#### SITE INSPECTION BY EXTERNAL PARTIES

ES.01. There was a site visit carried out by the Environmental Protection Department (EPD) with the representative of Contactor and RE on 30 November 2011. During the site visit, leakage of chemical liquid from the containers was observed inside the chemical storage shelter, the Contractor was requested to clean up the chemical spillage promptly and enhance the chemical storage management on the site. The follow-up action has been taken by the Contractor and the interim report has been sent to EPD on 10 December 2011.

#### FUTURE KEY ISSUES

ES.08 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.09 Nevertheless, the Contractor shall keep paying attention on the potential water impact as the construction site is adjacent to the coastline. Muddy water and other water quality pollutants via site surface water runoff into the sea body within Fish culture zone at Picnic Bay and the Secondary recreation contact subzone at Mo Tat Wan should be avoided. Therefore, mitigation measures for water quality should be fully implemented 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 instead 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<sup>3</sup>/day and 2,850m<sup>3</sup>/day to provide secondary treatment. The majority of works include construction of pumping stations, construction of submarine outfall from the coastline and laying 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 split 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 5<sup>th</sup> Quarterly EM&A Summary report for Yung Shue Wan Portion Area presenting the monitoring results and inspection findings for the Reporting Period from **1 September to 30 November 2011**.

### 1.2 REPORT STRUCTURE

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

|                  |   |
|------------------|---|
| <b>SECTION 1</b> | <b>INTRODUCTION</b>                                   |
| <b>SECTION 2</b> | <b>PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS</b> |
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| <b>SECTION 9</b> | <b>CONCLUSIONS AND RECOMMENDATIONS</b>                |

## 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   |
|------------------|---|
| September 2011   | <ul style="list-style-type: none"> <li>• Construction of Control Room &amp; Offices</li> <li>• Grit chambers</li> <li>• Grease separators</li> <li>• Subsoil drain</li> <li>• Slope stabilization works</li> <li>• Horizontal directional drilling (HDD) works</li> </ul> |
| October 2011     | <ul style="list-style-type: none"> <li>• Construction of grit chambers</li> <li>• Grease separators</li> <li>• EQ Tanks(G/F)</li> <li>• Inlet Pumping Station (G/F)</li> <li>• Metal works on cut-slope</li> <li>• Horizontal directional drilling (HDD) works</li> </ul> |
| November 2011    | <ul style="list-style-type: none"> <li>• Construction of Sewage Treatment Works</li> <li>• Horizontal directional drilling (HDD) work</li> </ul>  |

### 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<br>Case No: 317486                                     |
| 2    | Chemical Waste Producer Registration                 | Issued on 8/6/2010<br>WPN 5213-912-L2720-01                               |
| 3    | Water Pollution Control Ordinance                    | Issued on 22/9/2010<br>WT00007566-2010                                    |
| 4    | Billing Account for Disposal of Construction Waste   | Issued on 26 May 2010<br>A/C No: 7010815                                  |
| 5    | Construction Noise Permit (no. GW-RS0624-11)         | Issued on 8 July 2011<br>Valid from 8 July 2011 until 24<br>December 2011 |



### 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          | <ul style="list-style-type: none"> <li>• 1-hour TSP Monitoring by Real-Time Portable Dust Meter; and</li> <li>• 24-hour TSP Monitoring by High Volume Air Sampler.</li> </ul>   |
| Noise                | <ul style="list-style-type: none"> <li>• Leq (30min) during normal working hours; and</li> <li>• Leq (15min) during Restricted Hours.</li> </ul>  |
| Marine Water Quality | <p><b><i>In-situ Measurements</i></b></p> <ul style="list-style-type: none"> <li>• Dissolved Oxygen Concentration (mg/L);</li> <li>• Dissolved Oxygen Saturation ( % );</li> <li>• Turbidity (NTU);</li> <li>• pH unit;</li> <li>• Salinity (ppt);</li> <li>• Water depth (m); and</li> <li>• Temperature (°C).</li> </ul> <p><b><i>Laboratory Analysis</i></b></p> <ul style="list-style-type: none"> <li>• Suspended Solids (mg/L)</li> </ul> |
| Ecology              | <ul style="list-style-type: none"> <li>• Coral Monitoring</li> </ul>  |

#### 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: Leq (30min) & Leq (5min), L10 and L90.  
Leq (15min) & Leq (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<sup>-1</sup>.

#### **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<sup>-1</sup> 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 ( $\mu\text{g}/\text{m}^3$ ) |             | Limit Level ( $\mu\text{g}/\text{m}^3$ ) |             |
|--------------------|---|-------------|--|-------------|
|                    | 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 on 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 discuss 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.<br>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).<br>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 quarterly period, a total of **96** events of 1-hour TSP and **30** events of 24-hour TSP measurements were performed.

4.01 The 1-hour and 24-hour TSP monitoring values fluctuated well below the Action Level during the Reporting Period. No Notification of Exceedance (NOE) of air quality criteria or corrective action was therefore required.

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

| Monitoring Location | 1-hour TSP ( $\mu\text{g}/\text{m}^3$ ) |           |           | 24-hour TSP ( $\mu\text{g}/\text{m}^3$ ) |           |           |
|---------------------|---|-----------|-----------|--|-----------|-----------|
|                     | Max                                     | Min       | Mean      | Max                                      | Min       | Mean      |
| AC02b               | 108                                     | 42        | 74        | 158                                      | 26        | 80        |
| Record Date         | 25-Oct-11                               | 13-Oct-11 | 48 events | 21-Oct-11                                | 4-Oct-11  | 15 events |
| AC04c               | 114                                     | 47        | 75        | 159                                      | 25        | 82        |
| Record Date         | 25-Oct-11                               | 13-Oct-11 | 48 events | 25-Oct-11                                | 17-Sep-11 | 15 events |

##### 4.2 RESULTS OF CONSTRUCTION NOISE MONITORING

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

**Table 4-2 Summary of Construction Noise Monitoring Results**

| Station     | Leq, 30min (dB(A)) |           |
|-------------|--------------------|-----------|
|             | Max                | Min       |
| NC05        | 66.8               | 55.0      |
| Record Date | 26-Sep-11          | 16 Nov 11 |

##### 4.3 RESULTS OF MARINE WATER QUALITY MONITORING

4.04 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. In this reporting period, one (1) event of marine water quality monitoring on 3 October 2011 were cancelled due to inclement weather and marine condition. Therefore, **39** monitoring events have been carried out at the designated locations in this Reporting Period.

4.05 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) |
|----------------|------|------|------|--------|--------|
| <b>Average</b> | 6.36 | 6.33 | 6.35 | 6.25   | 6.31   |
| <b>Min</b>     | 4.98 | 5.00 | 4.29 | 4.50   | 4.62   |
| <b>Max</b>     | 7.31 | 7.25 | 7.22 | 7.06   | 7.23   |

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

| Station        | WY1  | WY2   | WY3  | CY1(F) | CY2(E) |
|----------------|------|-------|------|--------|--------|
| <b>Average</b> | 6.18 | 6.47  | 6.15 | 5.99   | 6.09   |
| <b>Min</b>     | 4.33 | 4.58  | 3.66 | 3.65   | 4.14   |
| <b>Max</b>     | 7.24 | 35.42 | 7.06 | 6.85   | 7.28   |

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

| Station        | WY1  | WY2  | WY3   | CY1(F) | CY2(E) |
|----------------|------|------|-------|--------|--------|
| <b>Average</b> | 4.31 | 4.28 | 4.52  | 4.77   | 4.67   |
| <b>Min</b>     | 2.86 | 2.75 | 2.85  | 2.88   | 2.68   |
| <b>Max</b>     | 7.91 | 8.55 | 10.77 | 14.94  | 12.77  |

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

| Station        | WY1   | WY2   | WY3   | CY1(F) | CY2(E) |
|----------------|-------|-------|-------|--------|--------|
| <b>Average</b> | 9.01  | 7.97  | 8.54  | 7.70   | 7.56   |
| <b>Min</b>     | 4.15  | 2.57  | 3.00  | 2.70   | 2.83   |
| <b>Max</b>     | 17.40 | 13.93 | 14.35 | 20.87  | 21.17  |

4.06 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<br>(Ave of Surf.<br>& mid-depth) |       | DO (Ave. of<br>Bottom<br>Layer) |       | Turbidity<br>(Depth Ave.) |       | SS<br>(Depth Ave) |       | Total<br>Exceedance |       |
|---------------------|-------------------------------------|-------|---------------------------------|-------|---------------------------|-------|-------------------|-------|---------------------|-------|
|                     | Action                              | Limit | Action                          | Limit | Action                    | Limit | Action            | Limit | Action              | Limit |
| <b>Mid-Ebb</b>      |                                     |       |                                 |       |                           |       |                   |       |                     |       |
| 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     |
| <b>Mid-Flood</b>    |                                     |       |                                 |       |                           |       |                   |       |                     |       |
| 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<br>Exceedance | 0                                   | 0     | 0                               | 0     | 0                         | 0     | 0                 | 0     | 0                   | 0     |

4.07 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

- 4.08 Impact coral monitoring is required to perform since commencement of construction of marine outfall works (HDD and dredging) on 9 May 2011.
- 4.09 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 months (since marine work commenced on 9 May 2011), no adverse deterioration of the coral community was observed and identified by the marine ecologist. However, coral partial mortality which no related to the Project was occasionally reported. As advised by the ER and IEC, the coral impact monitoring would be remain at once per week in **September** and **October** to closely monitor the condition of the coral.
- 4.10 In this Reporting Period, **11** events of coral monitoring were performed on **9, 15, 22 and 28 September 2011, 12, 14, 18, 25 and 31 October 2011 and 15 and 29 November 2011** at Yung Shue Wan and Sham Wan where 20 hard coral colonies were monitored at each sites.
- 4.11 During the coral monitoring in **September**, no sediment cover / bleaching / mortality on coral was recorded during the surveys in both sites. In general, no deterioration in the general condition of the coral fauna was observed. No adverse deterioration of the coral community was observed in the ecological monitoring results when compared with the baseline ecological monitoring results.
- 4.12 During the coral monitoring in **October**, no bleaching / mortality on coral was recorded during the surveys in both sites. However, in Yung Shue Wan, coral colonies #15 and #17 were recorded to have 5% and 2% sediment cover respectively on 18 October; coral colonies #15, #17 and #18 were recorded to have 2%, 3% and 5% sediment respectively on 25 October; coral colonies #15, #17 and #18 were recorded to have 3%, 2% and 5% sediment respectively on 31 October. In Sham Wan, the tagged coral of No. 17 (*Favia fava*) was found 30% missing during the monitoring on 12 October. Investigation for the damage coral was made and it was suspected that the 30% missing coral was caused by the typhoon Nesat which affecting Hong Kong in late September. It is concluded that the damage of coral is not related to the construction activities under the Project. Since the size of the remaining coral is still suitable for monitoring, no re-tagging of another new coral is required. No sediment was recorded during the survey in Sham Wan. In general, no deterioration in the general condition of the coral fauna was observed. No adverse deterioration of the coral community was observed in the ecological monitoring results when compared with the baseline ecological monitoring results.
- 4.13 During the coral monitoring in **November**, no bleaching / mortality on coral was recorded during the surveys in both sites. However, in Yung Shue Wan, coral colonies #14 and #15 were recorded to have 3% and 3% sediment respectively on 15 November; coral colonies #15, #16 and #17 were recorded to have 2%, 3% and 1% sediment respectively on 29 November. No sediment was recorded during the survey in Sham Wan. In general, no deterioration in the general condition of the coral fauna was observed. No adverse deterioration of the coral community was observed in the ecological monitoring results when compared with the baseline ecological monitoring results.
- 4.14 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 |
|--|----------|--------|--------|-------------------|
|  | Sep 11   | Oct 11 | Aug 11 |                   |
| C&D Materials (Inert) ('000m <sup>3</sup> )            | 0.037    | 0      | 0      | Tuen Mun Area 38  |
| Reused in this Contract (Inert) ('000m <sup>3</sup> )  | 0        | 0      | 0      | -                 |
| Reused in other Projects (Inert) ('000m <sup>3</sup> ) | 0        | 0      | 0      | -                 |
| Disposal as Public Fill (Inert) ('000m <sup>3</sup> )  | 0.074    | 0.145  | 0      | Tuen Mun Area 38  |

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

| Type of Waste                  | Quantity |        |        | Disposal Location |
|--------------------------------|----------|--------|--------|-------------------|
|                                | Sep 11   | Oct 11 | Aug 11 |                   |
| 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)        | 23.03    | 16.33  | 81.79  | Yung Shue Wan RTS |

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

## 6 SITE INSPECTION

- 6.01 According to the Final Report Environmental Monitoring and Audit Manual, the environmental site inspection should be formulated 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, 14, 20, 27 September 2011, 4, 11, 18, 25 October 2011 and 1, 8, 15, 22, 29 November 2011**. Besides, routine joint-site visit by IEC, RE, the Contractor (Leader) and ET was carried out on **20 September 2011, 11 October 2011 and 8 November 2011**.
- 6.02 Also, there was a site visit carried out by the Environmental Protection Department (EPD) with the representative of Contractor and RE on 30 November 2011. During the site visit, leakage of chemical liquid from the containers was observed inside the chemical storage shelter, the Contractor was requested to clean up the chemical spillage promptly and enhance the chemical storage management on the site. The follow-up action has been taken by the Contractor and the interim report has been sent to EPD on 10 December 2011.
- 6.03 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 September 2011  | • There is no geotextile sheets installed in the sedimentation tank. The contractor should install them to restore desilting functioning.                              | Geotextile sheets were installed on 14 September 2011.                      |
| 14 September 2011 | • No environmental issue was observed during the site inspection.  | N.A.  |
| 20 September 2011 | • No environmental issue was observed during the site inspection.  | N.A.  |
| 27 September 2011 | • No environmental issue was observed during the site inspection.  | N.A.  |
| 4 October 2011    | • No environmental issue was observed during the site inspection.  | N.A.  |
| 11 October 2011   | • No environmental issue was observed during the site inspection.  | N.A.  |
| 18 October 2011   | • No environmental issue was observed during the site inspection.  | N.A.  |
| 25 October 2011   | • Larvicidal oil should be applied to the stagnant water inside the sedimentation tank near storage yard of concrete batching plant.                                   | Larvicidal oil have been applied during site inspection on 1 November 2011. |
| 1 November 2011   | • No environmental issue was observed during the site inspection.  | N.A.  |
| 8 November 2011   | • As a reminder, the Contractor should regularly maintain the housekeeping of the site.<br>• As a reminder, PME on site should be switched off when it is not in used. | No follow up for reminder.  |
| 15 November 2011  | • No environmental issue was observed during the site inspection.  | N.A.  |
| 22 November 2011  | • No environmental issue was observed during the site inspection.  | N.A.  |
| 29 November 2011  | • No environmental issue was observed during the site inspection.  | N.A.  |

## 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 – 30 September 2011 | 0                                  | 0          | NA               |
| 1 - 31 October 2011   | 0                                  | 0          | NA               |
| 1 - 30 November 2011  | 0                                  | 0          | NA               |

**Table 7-2 Statistical Summary of Environmental Summons**

| Reporting Period      | Environmental Summons Statistics |            |                  |
|-----------------------|----------------------------------|------------|------------------|
|                       | Frequency                        | Cumulative | Complaint Nature |
| 1 – 30 September 2011 | 0                                | 0          | NA               |
| 1 - 31 October 2011   | 0                                | 0          | NA               |
| 1 - 30 November 2011  | 0                                | 0          | NA               |

**Table 7-3 Statistical Summary of Environmental Prosecution**

| Reporting Period      | Environmental Prosecution Statistics |            |                  |
|-----------------------|--------------------------------------|------------|------------------|
|                       | Frequency                            | Cumulative | Complaint Nature |
| 1 – 30 September 2011 | 0                                    | 0          | NA               |
| 1 - 31 October 2011   | 0                                    | 0          | NA               |
| 1 - 30 November 2011  | 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<sup>3</sup>/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 barges and other vessels should maintain adequate clearance between vessels and the seabed at all states 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                 | <ul style="list-style-type: none"> <li>• Drainage channels were provided to convey run-off into the treatment facilities; and</li> <li>• Drainage systems were regularly and adequately maintained.</li> </ul>  |
| Air Quality                   | <ul style="list-style-type: none"> <li>• Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet;</li> <li>• Public roads around the site entrance/exit had been kept clean and free from dust; and</li> <li>• Tarpaulin covering of any dusty materials on a vehicle leaving the site.</li> </ul>   |
| Noise                         | <ul style="list-style-type: none"> <li>• Good site practices to limit noise emissions at the sources;</li> <li>• Use of quiet plant and working methods;</li> <li>• Use of site hoarding or other mass materials as noise barrier to screen noise at ground level of NSRs; and</li> <li>• To minimize plant number use at the worksite.</li> </ul>  |
| Waste and Chemical Management | <ul style="list-style-type: none"> <li>• 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;</li> <li>• Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner;</li> <li>• The Contractor should adopt a trip ticket system for the disposal of C&amp;D materials to any designed public filling facility and/or landfill; and</li> <li>• Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.</li> </ul> |
| General                       | <ul style="list-style-type: none"> <li>• The site was generally kept tidy and clean.</li> </ul>   |

## 9 CONCLUSIONS AND RECOMMENTATIONS

### 9.1 CONCLUSIONS

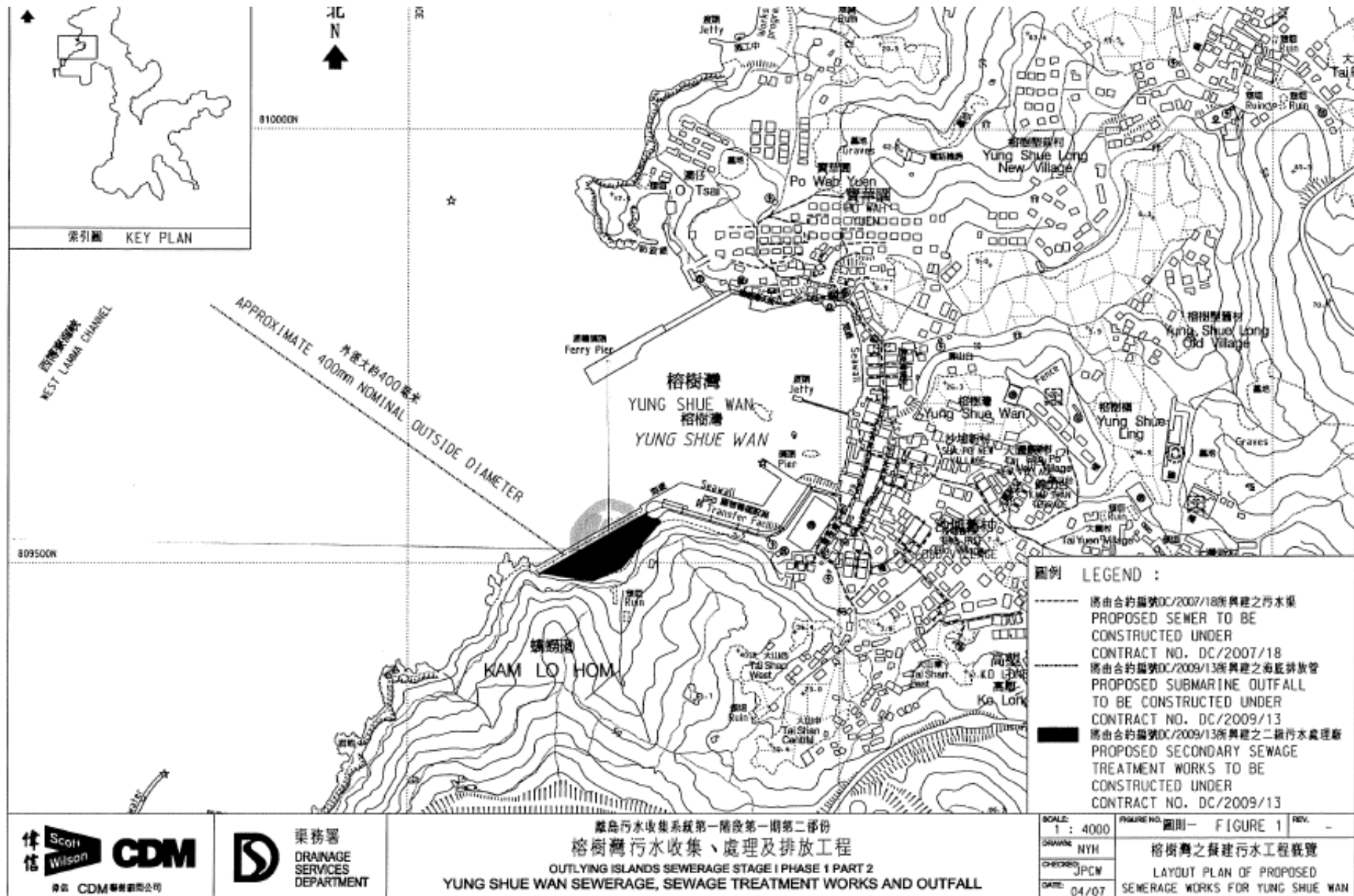
- 9.01 This is the 5<sup>th</sup> Quarterly EM&A Summary Report for Yung Shue Wan Portion Area under the Project covering the construction period from **1 September to 30 November 2011**.
- 9.02 No noise complaint (an Action Level exceedance) was received and no construction noise measurement results 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 monitoring result of 1-hour and 24-hour TSP was found to be triggered the Action or Limit Level.
- 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 **13** 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 There was a site visit carried out by the Environmental Protection Department (EPD) with the representative of Contactor and RE on 30 November 2011. During the site visit, leakage of chemical liquid from the containers was observed inside the chemical storage shelter, the Contractor was requested to clean up the chemical spillage promptly and enhance the chemical storage management on the site. The follow-up action has been taken by the Contractor and the interim report has been sent to EPD on 10 December 2011.

### 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**



## **Appendix B**

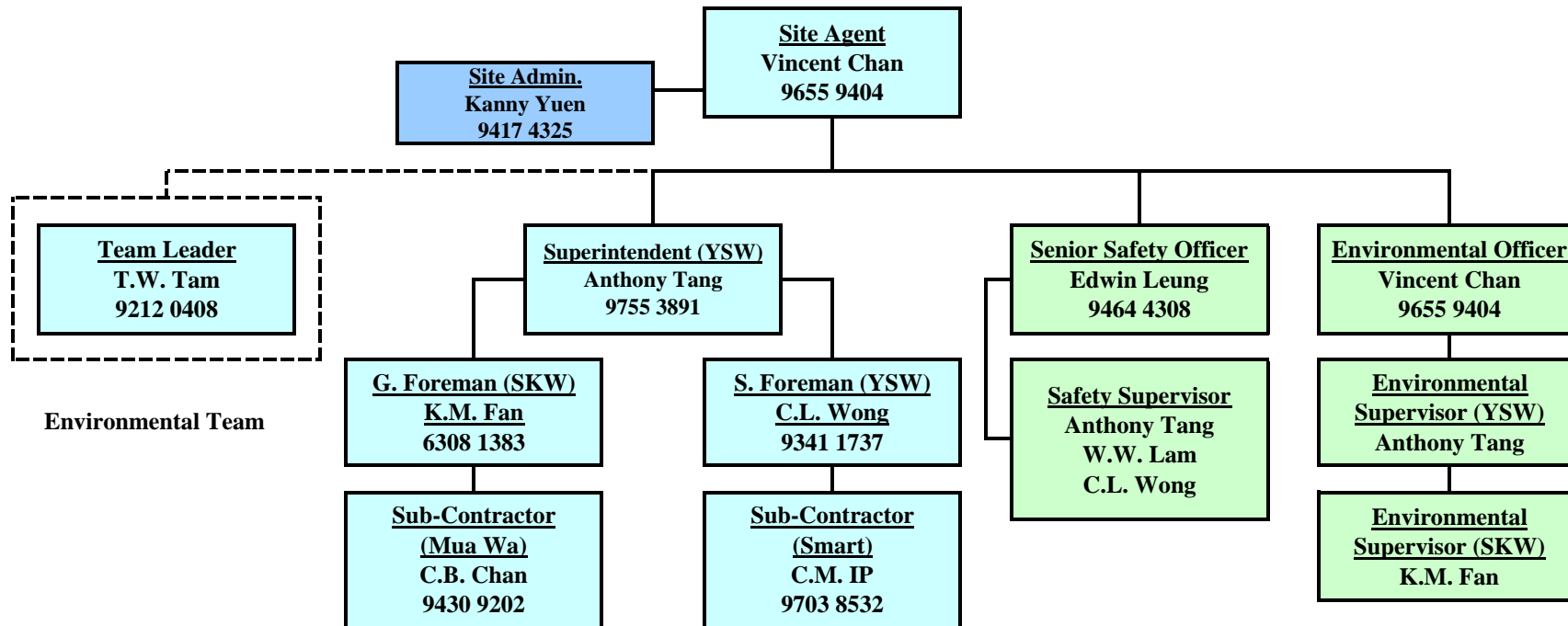
### **Organization Structure and Contact Details of Relevant Parties**

# Leader Civil Engineering Corporation LTD

Contract No. DC/2009/13

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

## Organization Structure for Environmental Management (EMP Rev. 1.00)





Contact Details of Key Personnel

| Organization | Project Role                                      | Name of Key Staff | Tel No.   | Fax No.   |
|--------------|---|-------------------|-----------|-----------|
| DSD          | Employer  | Mr. AU Chi Kwong  | -         | -         |
| SCJV         | Engineer's Representative                         | Mr. Neil Wong     | 2982 0240 | 2982 4129 |
| SCJV         | Resident Engineer<br>(Yung Shue Wan Portion Area) | Mr. Alfred Cheung | 2982 0240 | 2982 4129 |
| Scott Wilson | Independent Environmental<br>Checker              | Mr. Rodney Ip     | 2410 3750 | 2428 9922 |
| Leader       | Project Manager                                   | Mr. Vincent Chan  | 2982 1750 | 2982 1163 |
| Leader       | Site Agent  | Mr. Stephen Leung | 2982 1750 | 2982 1163 |
| Leader       | Site Agent (effective from<br>November 2011)      | Mr. Ron Hung      | 2982 1750 | 2982 1163 |
| Leader       | Environmental Officer                             | Mr. K.Y. So       | 2982 8652 | 2982 8650 |
| Leader       | Section Engineer<br>(Yung Shue Wan)               | Mr. Burgess Yip   | 2982 1750 | 2982 1163 |
| Leader       | Site Engineer<br>(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<br>Consultant            | Mr. Ray Cheung    | 2959 6059 | 2959 6079 |
| AUES         | Team Supervisor                                   | Mr. Ben Tam       | 2959 6059 | 2959 6079 |

Legend:

*DSD (Employer) – Drainage Services Department*

*CDM (Engineer) – Scott Wilson CDM Joint Venture*

*Leader (Main Contractor) – Leader Civil Engineering Corporation Limited*

*Scott Wilson (IEC) – Scott Wilson Limited*

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

## Appendix C

### Master and Three Months Rolling Construction Programs















| Activity ID                            | Description                                      | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors               | Successors                 | 2011 |     |     |     |     |     |     |  |
|--|--|-------------------|------------------|-------------|--------------|------------|-------------|-------------|----------------------------|----------------------------|------|-----|-----|-----|-----|-----|-----|--|
|  |  |                   |                  |             |              |            |             |             |                            |                            | MAY  | JUN | JUL | AUG | SEP | OCT | NOV |  |
| YSW0690                                | Superstructure construction upto +10.5mPD        | 60                | 100              | 30/03/11 A  | 18/06/11 A   | 30/03/11 A | 18/06/11 A  |             | YSW0690                    | YSW0700, YSW0820           |      |     |     |     |     |     |     |  |
| YSW0700                                | Apply protective paint                           | 20                | 0                | 31/07/11    | 19/08/11     | 27/02/11   | 18/03/11    | -154d       | YSW0690                    | YSW0710                    |      |     |     |     |     |     |     |  |
| YSW0710                                | Water test                                       | 14                | 0                | 20/08/11    | 02/09/11     | 19/03/11   | 01/04/11    | -154d       | YSW0700                    | E&M0510, E&M0630, E&M0640  |      |     |     |     |     |     |     |  |
| YSW0820                                | ABWF installation                                | 34                | 0                | 31/07/11    | 02/09/11     | 27/02/11   | 01/04/11    | -154d       | YSW0690                    | E&M0510, E&M0630, E&M0640  |      |     |     |     |     |     |     |  |
| YSW STP - GL A - F                     |  |                   |                  |             |              |            |             |             |                            |                            |      |     |     |     |     |     |     |  |
| YSW0730                                | Completion of HDD                                | 0                 | 0                | 20/10/11    |              | 01/07/11   |             | -112d       | YSW0360                    | YSW0740                    |      |     |     |     |     |     |     |  |
| YSW0740                                | ELS & excavate for Outfall Shaft                 | 22                | 0                | 20/10/11    | 11/11/11     | 01/07/11   | 22/07/11    | -112d       | YSW0730                    | YSW0750                    |      |     |     |     |     |     |     |  |
| YSW0750                                | Sub-structure construction (outfall shaft)       | 22                | 0                | 11/11/11    | 03/12/11     | 23/07/11   | 13/08/11    | -112d       | YSW0740                    | YSW0760                    |      |     |     |     |     |     |     |  |
| YSW0760                                | Backfill & remove ELS (outfall shaft)            | 24                | 0                | 03/12/11    | 27/12/11     | 14/08/11   | 06/09/11    | -112d       | YSW0750                    | YSW0770, YSW1470           |      |     |     |     |     |     |     |  |
| Fire Hose Reel / Sprinkler Pump Rm     |  |                   |                  |             |              |            |             |             |                            |                            |      |     |     |     |     |     |     |  |
| YSW0840                                | ELS & excavate to formation (+0 mPD approx.)     | 30                | 0                | 20/10/11    | 19/11/11     | 01/09/11   | 30/09/11    | -50d        | YSW0035, YSW0422, YSW0640  | YSW0860                    |      |     |     |     |     |     |     |  |
| YSW0860                                | Sub-structure construction                       | 30                | 0                | 19/11/11    | 19/12/11     | 01/10/11   | 30/10/11    | -50d        | YSW0840                    | YSW0880                    |      |     |     |     |     |     |     |  |
| 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                | 0                | 18/08/11    | 16/11/11     | 08/10/11   | 05/01/12    | 51d         | YSW0153, YSW0165           | YSW0155                    |      |     |     |     |     |     |     |  |
| YSW0155                                | RC Concrete Barrier (above Ground Level)         | 120               | 0                | 16/11/11    | 15/03/12     | 06/01/12   | 04/05/12    | 51d         | 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                                | Hydrographical 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               | 45               | 29/04/11 A  | 06/10/11     | 29/04/11 A | 16/06/11    | -112d       | YSW0040, YSW0180, YSW0210, | YSW0360                    |      |     |     |     |     |     |     |  |
| YSW0360                                | Installation of NS400 HDPE 530m                  | 14                | 0                | 06/10/11    | 20/10/11     | 17/06/11   | 30/06/11    | -112d       | YSW0350                    | SKW1181, YSW0365, YSW0370, |      |     |     |     |     |     |     |  |
| YSW0365                                | Set up of Silt Curtain as per EP                 | 30                | 0                | 20/10/11    | 19/11/11     | 20/07/13   | 18/08/13    | 638d        | YSW0360                    | YSW0370                    |      |     |     |     |     |     |     |  |
| YSW0370                                | Dredging of Marine Deposit for Diffuser (YSW)    | 60                | 0                | 19/11/11    | 18/01/12     | 19/08/13   | 17/10/13    | 638d        | YSW0360, YSW0365           | YSW0380                    |      |     |     |     |     |     |     |  |
| E&M Works - YSW STP                    |  |                   |                  |             |              |            |             |             |                            |                            |      |     |     |     |     |     |     |  |
| E&M0360                                | Delivery of MBR Memb. Mod. (MBR Tk4)             | 137               | 100              | 18/06/11 A  | 21/06/11 A   | 18/06/11 A | 21/06/11 A  |             | E&M0160                    | E&M0510                    |      |     |     |     |     |     |     |  |
| E&M0370                                | Delivery of MBR Membrane Modules - 2nd Shipment  | 150               | 0                | 31/07/11    | 27/12/11     | 29/09/11   | 25/02/12    | 60d         | E&M0160                    | E&M0520                    |      |     |     |     |     |     |     |  |
| E&M0380                                | Delivery of Grit Removal Equipment               | 180               | 0                | 18/09/11    | 16/03/12     | 29/05/11   | 24/11/11    | -113d       | E&M0150                    | E&M0530                    |      |     |     |     |     |     |     |  |
| E&M0390                                | Delivery of Coarse Screens                       | 162               | 0                | 19/08/11    | 28/01/12     | 02/04/11   | 10/09/11    | -140d       | E&M0110                    | E&M0540                    |      |     |     |     |     |     |     |  |
| E&M0400                                | Delivery of Fine Screens                         | 180               | 0                | 18/09/11    | 16/03/12     | 29/05/11   | 24/11/11    | -113d       | E&M0120                    | E&M0550                    |      |     |     |     |     |     |     |  |
| E&M0410                                | Delivery of Pumps                                | 162               | 0                | 18/09/11    | 27/02/12     | 02/04/11   | 10/09/11    | -170d       | E&M0130                    | E&M0560                    |      |     |     |     |     |     |     |  |
| E&M0420                                | Delivery of Submersible Mixers                   | 162               | 0                | 19/08/11    | 28/01/12     | 01/07/11   | 09/12/11    | -50d        | E&M0140                    | E&M0570                    |      |     |     |     |     |     |     |  |
| E&M0440                                | Delivery of Sludge Dewatering Equipment          | 180               | 0                | 18/09/11    | 16/03/12     | 02/04/11   | 28/09/11    | -170d       | E&M0170                    | E&M0580                    |      |     |     |     |     |     |     |  |
| E&M0450                                | Delivery of Valves, Pipes & Fittings             | 180               | 0                | 18/09/11    | 16/03/12     | 28/07/11   | 23/01/12    | -53d        | E&M0180                    | E&M0590, E&M0605           |      |     |     |     |     |     |     |  |
| E&M0460                                | Delivery of Penstocks                            | 180               | 0                | 18/09/11    | 16/03/12     | 11/07/11   | 06/01/12    | -70d        | E&M0190                    | E&M0600                    |      |     |     |     |     |     |     |  |
| E&M0470                                | Delivery of Instruments                          | 180               | 0                | 18/09/11    | 16/03/12     | 08/11/11   | 05/05/12    | 51d         | E&M0200                    | E&M0610                    |      |     |     |     |     |     |     |  |
| E&M0480                                | Delivery of MCC LVSB                             | 177               | 0                | 18/09/11    | 13/03/12     | 02/04/11   | 25/09/11    | -170d       | E&M0210                    | E&M0620                    |      |     |     |     |     |     |     |  |
| E&M0490                                | Delivery of BS Equipment                         | 180               | 0                | 29/09/11    | 26/03/12     | 30/08/11   | 25/02/12    | -30d        | E&M0220                    | E&M0630                    |      |     |     |     |     |     |     |  |
| E&M0500                                | Delivery FS Equipment                            | 180               | 0                | 29/09/11    | 26/03/12     | 27/09/11   | 24/03/12    | -2d         | E&M0230                    | E&M0330, E&M0640           |      |     |     |     |     |     |     |  |
| E&M0510                                | Install Membrane Modules in MBR Tank no. 4       | 90                | 0                | 03/09/11    | 01/12/11     | 02/04/11   | 30/06/11    | -154d       | E&M0360, YSW0710, YSW0820  | KD0115                     |      |     |     |     |     |     |     |  |
| Sok Kwu Wan                            |  |                   |                  |             |              |            |             |             |                            |                            |      |     |     |     |     |     |     |  |
| Preliminary                            |  |                   |                  |             |              |            |             |             |                            |                            |      |     |     |     |     |     |     |  |

|             |          |
|-------------|----------|
| Start date  | 05/05/10 |
| Finish date | 13/03/15 |
| Data date   | 31/07/11 |
| Run date    | 08/08/11 |
| Page number | 3A       |

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

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

|          |            |         |          |
|----------|------------|---------|----------|
| Date     | Revision   | Checked | Approved |
| 31/07/10 | Revision 0 | STL     | VC       |
|          |            |         |          |
|          |            |         |          |

(Marked on 31 Jul 2011)

| Activity ID   | Description                                      | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors              | Successors                  | 2011 |     |     |     |     |     |     |
|---|--|-------------------|------------------|-------------|--------------|------------|-------------|-------------|---------------------------|-----------------------------|------|-----|-----|-----|-----|-----|-----|
|   |  |                   |                  |             |              |            |             |             |                           |                             | MAY  | JUN | JUL | AUG | SEP | OCT | NOV |
| 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,  |      |     |     |     |     |     |     |
| <b>Section W3 - Footpath Diversion in Portion G</b>   |  |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |
| 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 behind 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                | 31/07/11    | 06/08/11     | 15/02/11   | 22/02/11    | -166d       | 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    |      |     |     |     |     |     |     |
| <b>Section W4 - Slope Works in Portions H &amp; I</b> |  |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |
| Geotechnical Works                                    |  |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |
| SKW0588   | Construct scaffolding access                     | 30                | 100              | 15/06/10 A  | 14/07/10 A   | 15/06/10 A | 14/07/10 A  |             | KD0020                    | SKW0590                     |      |     |     |     |     |     |     |
| SKW0590   | Site Clearance for Slope                         | 100               | 100              | 15/07/10 A  | 22/10/10 A   | 15/07/10 A | 22/10/10 A  |             | SKW0588                   | SKW0591                     |      |     |     |     |     |     |     |
| SKW0591   | Initial Survey for Slope                         | 28                | 100              | 21/09/10 A  | 18/10/10 A   | 21/09/10 A | 18/10/10 A  |             | SKW0590                   | SKW0592                     |      |     |     |     |     |     |     |
| SKW0592   | Temporary Rockfall fence at ex. Footpath         | 43                | 100              | 19/10/10 A  | 06/01/11 A   | 19/10/10 A | 06/01/11 A  |             | SKW0260, SKW0265, SKW0591 | SKW05931                    |      |     |     |     |     |     |     |
| SKW05931  | Construction of Haul Road (To +21mPD)            | 50                | 100              | 28/11/10 A  | 30/12/10 A   | 28/11/10 A | 30/12/10 A  |             | SKW0592                   | SKW05932                    |      |     |     |     |     |     |     |
| SKW05932  | Construction of Haul Road (To +42mPD)            | 60                | 100              | 15/12/10 A  | 31/01/11 A   | 15/12/10 A | 31/01/11 A  |             | SKW05931                  | SKW05933, SKW05940, SKW0595 |      |     |     |     |     |     |     |
| SKW05933  | Excavation of Rock Berm (+50mPD to +42.5mPD)     | 30                | 100              | 01/03/11 A  | 03/05/11 A   | 01/03/11 A | 03/05/11 A  |             | SKW05932                  | SKW05934                    |      |     |     |     |     |     |     |
| SKW05934  | Excavation of Rock Berm (+42.5mPD to +35mPD)     | 30                | 100              | 04/05/11 A  | 31/05/11 A   | 04/05/11 A | 31/05/11 A  |             | SKW05933                  | SKW05935, SKW05941          |      |     |     |     |     |     |     |
| SKW05935  | Excavation of Rock Berm (+35mPD to +27.5mPD)     | 30                | 20               | 02/07/11 A  | 23/08/11     | 02/07/11 A | 21/03/11    | -155d       | SKW05934                  | SKW05936                    |      |     |     |     |     |     |     |
| SKW05936  | Excavation of Rock Berm (+27.5mPD to +20mPD)     | 30                | 0                | 24/08/11    | 22/09/11     | 22/03/11   | 20/04/11    | -155d       | SKW05935                  | SKW05937, SKW05942          |      |     |     |     |     |     |     |
| SKW05937  | Excavation of Rock Berm (+20mPD to +12.5mPD)     | 30                | 0                | 23/09/11    | 22/10/11     | 21/04/11   | 20/05/11    | -155d       | SKW05936                  | SKW05938                    |      |     |     |     |     |     |     |
| SKW05938  | Excavation of Rock Berm (+12.5mPD to +5mPD)      | 28                | 0                | 23/10/11    | 19/11/11     | 21/05/11   | 17/06/11    | -155d       | 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                | 40               | 04/05/11 A  | 04/09/11     | 04/05/11 A | 20/04/11    | -137d       | SKW05934, SKW05940        | SKW05942                    |      |     |     |     |     |     |     |
| SKW05942  | Slope Drainage & Misc. (+35 to +20mPD)           | 58                | 0                | 23/09/11    | 19/11/11     | 21/04/11   | 17/06/11    | -155d       | SKW05936, SKW05941        | SKW05943                    |      |     |     |     |     |     |     |
| SKW0595   | Rock Meshing & Rockfall Fence                    | 260               | 0                | 31/07/11    | 15/04/12     | 29/11/10   | 15/08/11    | -244d       | SKW05932                  | KD0060                      |      |     |     |     |     |     |     |
| <b>Section W5 - P.S. No. 1 in Portion D</b>           |  |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |
| 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            |      |     |     |     |     |     |     |

|             |          |                        |
|-------------|----------|------------------------|
| Start date  | 05/05/10 | Early bar              |
| Finish date | 13/03/15 | Progress bar           |
| Data date   | 31/07/11 | Critical bar           |
| Run date    | 08/08/11 | Summary bar            |
| Page number | 4A       | Progress point         |
|             |          | Critical point         |
|             |          | Summary point          |
|             |          | Start milestone point  |
|             |          | Finish milestone point |

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

| Date     | Revision   | Checked | Approved |
|----------|------------|---------|----------|
| 31/07/10 | Revision 0 | STL     | VC       |
|          |            |         |          |
|          |            |         |          |

(Marked on 31 Jul 2011)

| Activity ID                                     | Description  | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors              | Successors                 | 2011 |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|--|-------------------|------------------|-------------|--------------|------------|-------------|-------------|---------------------------|----------------------------|------|-----|-----|-----|-----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|   |  |                   |                  |             |              |            |             |             |                           |                            | MAY  | JUN | JUL | AUG | SEP | OCT | NOV | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0661   | Transplantation for uncommon vegetation              | 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                | 0                | 31/07/11    | 13/08/11     | 01/01/11   | 14/01/11    | -211d       | SKW0741                   | SKW0761                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0761   | Base Slab (BSD1) to +3.98                            | 14                | 0                | 13/08/11    | 26/08/11     | 14/01/11   | 27/01/11    | -211d       | SKW0751                   | SKW0771                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0771   | Wall & Column (CA1-3, CB1-3, CC1-3, CD1-2) to +6.3   | 14                | 0                | 26/08/11    | 08/09/11     | 27/01/11   | 09/02/11    | -211d       | SKW0761                   | SKW0781                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0781   | Base Slab (GSB1-3, GSC1-5, GSD1-2)                   | 14                | 0                | 08/09/11    | 21/09/11     | 09/02/11   | 22/02/11    | -211d       | SKW0771                   | SKW0791                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0791   | Base Slab (GSE1 & GSF1)                              | 14                | 0                | 21/09/11    | 04/10/11     | 22/02/11   | 07/03/11    | -211d       | SKW0781                   | SKW0801                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0801   | Wall & Column (CE1-3, CF1-3)                         | 14                | 0                | 04/10/11    | 17/10/11     | 07/03/11   | 20/03/11    | -211d       | SKW0791                   | SKW0811                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0811   | Ground Beam (GB1-1, 2 GB2-1, 2 GB3-1, GBA-1, GBB1-4) | 14                | 0                | 18/10/11    | 31/10/11     | 21/03/11   | 03/04/11    | -211d       | SKW0801                   | SKW0821                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0821   | Wall & Column (CA1-3, CB1-3, CC1-3, CD1-2) to +10.   | 14                | 0                | 01/11/11    | 14/11/11     | 04/04/11   | 17/04/11    | -211d       | SKW0811                   | SKW0831                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0831   | Roof Beams & Parapet                                 | 14                | 0                | 15/11/11    | 28/11/11     | 18/04/11   | 01/05/11    | -211d       | SKW0821                   | E&M1101, E&M1102, E&M1103, |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0841   | ABWF Installation                                    | 45                | 0                | 15/11/11    | 29/12/11     | 18/04/11   | 01/06/11    | -211d       | SKW0831                   | E&M1101, E&M1102, E&M1103, |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0861   | 300mm U-channel & 675mm Step Channel                 | 168               | 0                | 29/11/11    | 14/05/12     | 01/06/11   | 15/11/11    | -181d       | SKW0831, SKW0841          | KD0070                     |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Section W 6 - Sewer and PS No.2 in Portions E&H |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Civil & Geotechnical Works                      |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0881   | Site Clearance                                       | 7                 | 100              | 17/05/10 A  | 23/05/10 A   | 17/05/10 A | 23/05/10 A  |             | KD0020                    | SKW0891                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0891   | Plant mobilization                                   | 7                 | 100              | 17/05/10 A  | 23/05/10 A   | 17/05/10 A | 23/05/10 A  |             | SKW0881                   | SKW0892                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0892   | Initial Survey                                       | 30                | 100              | 24/05/10 A  | 22/06/10 A   | 24/05/10 A | 22/06/10 A  |             | SKW0891                   | SKW0901                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0901   | Tree Transplantation                                 | 30                | 100              | 23/06/10 A  | 22/07/10 A   | 23/06/10 A | 22/07/10 A  |             | SKW0892                   | SKW0921                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0921   | Cut Slope & U-Channel                                | 14                | 100              | 23/07/10 A  | 31/01/11 A   | 23/07/10 A | 31/01/11 A  |             | SKW0260, SKW0265, SKW0901 | SKW0931, SKW0951           |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0931   | Hoarding & Fencing                                   | 14                | 100              | 15/09/10 A  | 07/10/10 A   | 15/09/10 A | 07/10/10 A  |             | SKW0921                   | SKW0951                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0951   | Excavate to formation                                | 106               | 100              | 04/10/10 A  | 13/06/11 A   | 04/10/10 A | 13/06/11 A  |             | SKW0921, SKW0931          | SKW0961, SKW0971           |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0961   | Mass Conc. Retaining Wall                            | 257               | 0                | 31/07/11    | 12/04/12     | 04/03/11   | 15/11/11    | -149d       | SKW0951                   | KD0080                     |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1491   | Concrete Trough (ChA0+45 - ChA1+75)                  | 180               | 97               | 01/03/11 A  | 05/08/11     | 01/03/11 A | 19/04/11    | -108d       | PFE0100                   | SKW1511                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1511   | Twin DN150 DI Rising Main (ChA0+45 - ChA5+79)        | 150               | 25               | 16/05/11 A  | 25/11/11     | 16/05/11 A | 09/08/11    | -108d       | SKW1491                   | SKW1531                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1531   | Extent village sewers S163.1 & S164.1                | 34                | 0                | 25/11/11    | 29/12/11     | 10/08/11   | 12/09/11    | -108d       | SKW1511                   | SKW1581                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Structural Works                                |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0971   | Base Slab to -3.2mPD                                 | 14                | 40               | 02/05/11 A  | 08/08/11     | 02/05/11 A | 17/12/10    | -233d       | SKW0951                   | SKW0981                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0981   | Basement Beam (BBB-1, BBC-1, BBD-1)                  | 14                | 0                | 08/08/11    | 22/08/11     | 18/12/10   | 31/12/10    | -233d       | SKW0971                   | SKW0991                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW0991   | Wall & Column to +1.5mPD                             | 14                | 0                | 22/08/11    | 05/09/11     | 01/01/11   | 14/01/11    | -233d       | SKW0981                   | SKW1001                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1001   | Base Slab (BSC-4) to +3mPD                           | 14                | 0                | 05/09/11    | 19/09/11     | 15/01/11   | 28/01/11    | -233d       | SKW0991                   | SKW1011                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1011   | Wall & Column to +5.35mPD                            | 14                | 0                | 19/09/11    | 03/10/11     | 29/01/11   | 11/02/11    | -233d       | SKW1001                   | SKW1021                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1021   | Ground Slab  | 20                | 0                | 03/10/11    | 23/10/11     | 12/02/11   | 03/03/11    | -233d       | SKW1011                   | SKW1031                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1031   | Ground Beam  | 14                | 0                | 23/10/11    | 06/11/11     | 04/03/11   | 17/03/11    | -233d       | SKW1021                   | SKW1041                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1041   | Wall & Column to +9.35mPD                            | 14                | 0                | 06/11/11    | 20/11/11     | 18/03/11   | 31/03/11    | -233d       | SKW1031                   | SKW1051                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1051   | Roof Beams & Parapet                                 | 14                | 0                | 20/11/11    | 04/12/11     | 01/04/11   | 14/04/11    | -233d       | SKW1041                   | E&M2101, E&M2102, E&M2103, |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1061   | ABWF Installation (wet tray/dry tray)                | 90                | 0                | 20/11/11    | 18/02/12     | 18/04/11   | 16/07/11    | -216d       | SKW1051                   | E&M2101, E&M2102, E&M2103, |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1081   | 375mm U-channel with catchpits                       | 215               | 0                | 04/12/11    | 06/07/12     | 15/04/11   | 15/11/11    | -233d       | SKW1051                   | KD0080                     |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M Works (PS2)                                 |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Submission & Delivery                           |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2001   | Submission of Pumps                                  | 198               | 95               | 17/05/10 A  | 09/08/11     | 17/05/10 A | 02/02/11    | -188d       | KD0020                    | E&M2011                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2002   | Submission of Gen-Set                                | 198               | 95               | 17/05/10 A  | 09/08/11     | 17/05/10 A | 02/02/11    | -188d       |                           | E&M2012                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2003   | Submission of DeO System                             | 198               | 95               | 17/05/10 A  | 09/08/11     | 17/05/10 A | 02/02/11    | -188d       |                           | E&M2013                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2004   | Submission of LV SB & MCC                            | 271               | 95               | 17/05/10 A  | 13/08/11     | 17/05/10 A | 13/02/11    | -181d       |                           | E&M2014                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2005   | Submission of Instrumentation                        | 243               | 95               | 17/05/10 A  | 12/08/11     | 17/05/10 A | 31/01/11    | -192d       |                           | E&M2015                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2006   | Submission of FS System                              | 243               | 95               | 17/05/10 A  | 12/08/11     | 17/05/10 A | 14/01/11    | -209d       |                           | E&M2016                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2007   | Submission of BS System                              | 243               | 95               | 17/05/10 A  | 12/08/11     | 17/05/10 A | 14/01/11    | -209d       |                           | E&M2017                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2011   | Delivery of Pumps                                    | 150               | 0                | 09/08/11    | 06/01/12     | 03/02/11   | 02/07/11    | -188d       | E&M2001                   | E&M2101                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2012   | Delivery of Gen-Set                                  | 150               | 0                | 09/08/11    | 06/01/12     | 03/02/11   | 02/07/11    | -188d       | E&M2002                   | E&M2102                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2013   | Delivery of DeO System                               | 150               | 0                | 09/08/11    | 06/01/12     | 03/02/11   | 02/07/11    | -188d       | E&M2003                   | E&M2103                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2014   | Delivery of LV SB & MCC                              | 150               | 0                | 31/07/11    | 27/12/11     | 03/12/10   | 01/05/11    | -240d       | E&M2004                   | E&M2104                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2015   | Delivery of Instrumentation                          | 90                | 0                | 12/08/11    | 10/11/11     | 01/02/11   | 01/05/11    | -192d       | E&M2005                   | E&M2105                    |      |     |     |     |     |     |     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Start date 05/05/10  
 Finish date 13/03/15  
 Data date 31/07/11  
 Run date 08/08/11  
 Page number 5A

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

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

| Date     | Revision   | Checked | Approved |
|----------|------------|---------|----------|
| 31/07/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |

(Marked on 31 Jul 2011)

| Activity ID  | Description                                      | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors              | Successors       | 2011 |     |     |     |     |     |     |  |  |  |  |  |  |
|--|--|-------------------|------------------|-------------|--------------|------------|-------------|-------------|---------------------------|------------------|------|-----|-----|-----|-----|-----|-----|--|--|--|--|--|--|
|  |  |                   |                  |             |              |            |             |             |                           |                  | MAY  | JUN | JUL | AUG | SEP | OCT | NOV |  |  |  |  |  |  |
| E&M2016  | Delivery of FS Equipment                         | 107               | 0                | 12/08/11    | 27/11/11     | 15/01/11   | 01/05/11    | -209d       | E&M2006                   | E&M0350, E&M2106 |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M2017  | Delivery of BS Equipment                         | 107               | 0                | 12/08/11    | 27/11/11     | 15/01/11   | 01/05/11    | -209d       | E&M2007                   | E&M2107          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| Installation, T&C  |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M2105  | Install Instrumentation                          | 55                | 0                | 04/12/11    | 28/01/12     | 02/05/11   | 25/06/11    | -216d       | E&M2015, SKW1051, SKW1061 | E&M2140          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M2106  | Install FS Equipment                             | 55                | 0                | 04/12/11    | 28/01/12     | 02/05/11   | 25/06/11    | -216d       | E&M2016, SKW1051, SKW1061 | E&M2140          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M2107  | Install BS Equipment                             | 55                | 0                | 04/12/11    | 28/01/12     | 02/05/11   | 25/06/11    | -216d       | E&M2017, SKW1051, SKW1061 | E&M2110, E&M2140 |      |     |     |     |     |     |     |  |  |  |  |  |  |
| <b>Section W7 - SKW STW, Sewer and Submarine Outfall</b> |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |     |  |  |  |  |  |  |
| Submarine Outfall  |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |     |  |  |  |  |  |  |
| SKW1130  | Approval of IHS Consultant                       | 180               | 100              | 17/05/10 A  | 27/08/10 A   | 17/05/10 A | 27/08/10 A  |             |                           | SKW1131          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| SKW1131  | Hydrographical Survey (SKW)                      | 300               | 100              | 01/02/11 A  | 28/02/11 A   | 01/02/11 A | 28/02/11 A  |             | KD0020, SKW1130           | SKW1231          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| SKW1141  | Baseline Monitoring (Water)                      | 213               | 100              | 27/07/10 A  | 31/12/10 A   | 27/07/10 A | 31/12/10 A  |             | SKW0260, SKW0265          | SKW1151          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| SKW1151  | Set up Temporary Working Platform                | 185               | 80               | 15/06/11 A  | 05/09/11     | 15/06/11 A | 15/09/11    | 10d         | PRE0090, SKW1141          | SKW1171          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| SKW STW  |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |     |  |  |  |  |  |  |
| Submission & Delivery (E&M)                              |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3010  | Delivery of MBR M.M. - 1st shipment for Temp STP | 150               | 0                | 31/07/11    | 27/12/11     | 10/03/14   | 20/08/14    | 953d        | E&M0160                   | E&M3170          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3030  | Delivery of Grit Removal Equipment               | 180               | 0                | 18/09/11    | 16/03/12     | 31/08/11   | 26/02/12    | -19d        | E&M0150                   | E&M3190          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3060  | Delivery of Fine Screens                         | 136               | 0                | 18/09/11    | 01/02/12     | 15/08/11   | 28/12/11    | -35d        | E&M0120                   | E&M3210          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3070  | Delivery of Pumps                                | 136               | 0                | 18/09/11    | 01/02/12     | 15/08/11   | 28/12/11    | -35d        | E&M0130                   | E&M3220          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3080  | Delivery of Submersible Mixers                   | 180               | 0                | 19/08/11    | 15/02/12     | 15/09/11   | 12/03/12    | 27d         | E&M0140                   | E&M3230          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3090  | Delivery of Sludge Dewatering Equipment          | 210               | 0                | 18/09/11    | 15/04/12     | 18/07/11   | 12/02/12    | -63d        | E&M0170                   | E&M3240          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3100  | Delivery of Valves, Pipes & Fittings             | 180               | 0                | 18/09/11    | 16/03/12     | 22/12/13   | 19/06/14    | 826d        | E&M0180                   | E&M3250          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3110  | Delivery of Penstocks                            | 180               | 0                | 18/09/11    | 16/03/12     | 04/01/14   | 02/07/14    | 839d        | E&M0190                   | E&M3260          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3130  | Delivery of Instruments                          | 180               | 0                | 18/09/11    | 16/03/12     | 20/03/14   | 15/10/14    | 914d        | E&M0200                   | E&M3270          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3140  | Delivery of MCC LVSB                             | 180               | 0                | 18/09/11    | 16/03/12     | 09/05/11   | 04/11/11    | -133d       | E&M0210                   | E&M3261          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3150  | Delivery of BS Equipment                         | 180               | 0                | 29/09/11    | 26/03/12     | 06/01/14   | 04/07/14    | 830d        | E&M0220                   | E&M3291          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| E&M3160  | Delivery of FS Equipment                         | 180               | 0                | 29/09/11    | 26/03/12     | 14/01/12   | 11/07/12    | 107d        | E&M0230                   | E&M0340, E&M3300 |      |     |     |     |     |     |     |  |  |  |  |  |  |
| Construction of Grid A-G                                 |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |     |  |  |  |  |  |  |
| SKW1261  | Excavate for SKW STW Structure (Grid A -G)       | 164               | 5                | 30/07/11 A  | 09/01/12     | 30/07/11 A | 27/07/11    | -166d       | SKW0551                   | SKW1271, SKW1371 |      |     |     |     |     |     |     |  |  |  |  |  |  |
| Construction of Grid G-N                                 |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |     |  |  |  |  |  |  |
| SKW1311  | Excavate for SKW STW Structure (Grid G-N)        | 36                | 0                | 20/11/11    | 25/12/11     | 29/06/11   | 03/08/11    | -144d       | SKW0551, SKW0598          | SKW1321          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| 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               | 0                | 31/07/11    | 25/05/12     | 14/09/10   | 10/07/11    | -320d       | PRE0100, SKW1481          | SKW1521          |      |     |     |     |     |     |     |  |  |  |  |  |  |
| <b>Section W8 - Landscape Softworks in All Portions</b>  |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |     |  |  |  |  |  |  |
| 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               | 55               | 17/05/10 A  | 03/08/12     | 17/05/10 A | 03/08/12    | 0           | 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                   |                  |      |     |     |     |     |     |     |  |  |  |  |  |  |

Start date 05/05/10  
 Finish date 13/03/15  
 Data date 31/07/11  
 Run date 08/08/11  
 Page number 6A  
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- Early bar
- Progress bar
- Critical bar
- Summary bar
- Progress point
- Critical point
- Summary point
- Start milestone point
- Finish milestone point










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

(Marked on 31 Jul 2011)

| Date     | Revision   | Checked | Approved |
|----------|------------|---------|----------|
| 31/07/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |

| Activity ID  | Description | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors | Successors | 2011 |     |     |     |     |     |     |  |
|--|-------------|-------------------|------------------|-------------|--------------|------------|-------------|-------------|--------------|------------|------|-----|-----|-----|-----|-----|-----|--|
|  |             |                   |                  |             |              |            |             |             |              |            | MAY  | JUN | JUL | AUG | SEP | OCT | NOV |  |
| <b>+Project Key Date</b>                                   |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 451               | 0                | 05/05/10 A  | 01/12/11     | 05/05/10 A | 30/06/11    | -154d       |              |            |      |     |     |     |     |     |     |  |
| <b>+Preliminary (Civil)</b>                                |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 191               | 100              | 17/05/10 A  | 23/11/10 A   | 17/05/10 A | 23/11/10 A  |             | KD0020       |            |      |     |     |     |     |     |     |  |
| <b>Preliminary (E&amp;M)</b>                               |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>Technical Submission</b>                                |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Process Design of SKWSTW &amp; YSWSTW</b>              |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 457               | 92               | 17/05/10 A  | 16/08/11     | 17/05/10 A | 30/06/11    | -47d        |              |            |      |     |     |     |     |     |     |  |
| <b>+Hydraulic Design</b>                                   |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 448               | 95               | 17/05/10 A  | 07/08/11     | 17/05/10 A | 30/06/11    | -38d        |              |            |      |     |     |     |     |     |     |  |
| <b>+Equipment Submission &amp; Approval</b>                |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 500               | 58               | 17/05/10 A  | 28/09/11     | 17/05/10 A | 07/11/11    | 40d         |              |            |      |     |     |     |     |     |     |  |
| <b>+Drawings Submission &amp; Approval</b>                 |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 432               | 84               | 24/06/10 A  | 29/08/11     | 24/06/10 A | 30/07/11    | -30d        |              |            |      |     |     |     |     |     |     |  |
| <b>+Statutory Submission</b>                               |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 189               | 0                | 29/09/11    | 04/04/12     | 01/07/11   | 13/03/15    | 1001d       |              |            |      |     |     |     |     |     |     |  |
| <b>Yung Shue Wan</b>                                       |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Preliminary</b>  |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 229               | 100              | 17/05/10 A  | 31/12/10 A   | 17/05/10 A | 31/12/10 A  |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Section W 1 - Slope Works in Portion A &amp; C</b>     |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 580               | 84               | 17/05/10 A  | 17/12/11     | 17/05/10 A | 15/08/11    | -124d       |              |            |      |     |     |     |     |     |     |  |
| <b>Section W 2 - YSW STW &amp; Submarine Outfall</b>       |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Civil &amp; Structural Work</b>                        |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 668               | 56               | 17/05/10 A  | 15/03/12     | 17/05/10 A | 04/05/12    | 51d         |              |            |      |     |     |     |     |     |     |  |
| <b>+Submarine Outfall</b>                                  |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 612               | 83               | 17/05/10 A  | 18/01/12     | 17/05/10 A | 17/10/13    | 638d        |              |            |      |     |     |     |     |     |     |  |
| <b>+E&amp;M Works - YSW STP</b>                            |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 283               | 6                | 18/06/11 A  | 26/03/12     | 02/04/11 A | 05/05/12    | 40d         |              |            |      |     |     |     |     |     |     |  |
| <b>Sok Kwu Wan</b>   |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Preliminary</b>  |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 53                | 100              | 17/05/10 A  | 08/07/10 A   | 17/05/10 A | 08/07/10 A  |             |              |            |      |     |     |     |     |     |     |  |
| <b>Section W 3 - Footpath Diversion in Portion G</b>       |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Civil &amp; Geotechnical Works</b>                     |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 447               | 98               | 17/05/10 A  | 06/08/11     | 17/05/10 A | 30/07/11    | -166d       |              |            |      |     |     |     |     |     |     |  |
| <b>Section W 4 - Slope Works in Portions H &amp; I</b>     |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Geotechnical Works</b>                                 |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 671               | 50               | 15/06/10 A  | 15/04/12     | 15/06/10 A | 15/08/11    | -244d       |              |            |      |     |     |     |     |     |     |  |
| <b>Section W 5 - P.S. No. 1 in Portion D</b>               |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Civil &amp; Geotechnical Works</b>                     |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 319               | 100              | 17/05/10 A  | 31/03/11 A   | 17/05/10 A | 31/03/11 A  |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Structural Works</b>                                   |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 391               | 4                | 20/04/11 A  | 14/05/12     | 01/01/11 A | 15/11/11    | -181d       |              |            |      |     |     |     |     |     |     |  |
| <b>Section W 6 - Sewer and PS No.2 in Portions E&amp;H</b> |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Civil &amp; Geotechnical Works</b>                     |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 697               | 51               | 17/05/10 A  | 12/04/12     | 17/05/10 A | 15/11/11    | -149d       |              |            |      |     |     |     |     |     |     |  |
| <b>+Structural Works</b>                                   |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 431               | 1                | 02/05/11 A  | 06/07/12     | 18/12/10 A | 15/11/11    | -233d       |              |            |      |     |     |     |     |     |     |  |
| <b>E&amp;M Works (PS2)</b>                                 |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Submission &amp; Delivery</b>                          |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 600               | 61               | 17/05/10 A  | 06/01/12     | 17/05/10 A | 02/07/11    | -188d       |              |            |      |     |     |     |     |     |     |  |
| <b>+Installation, T&amp;C</b>                              |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 55                | 0                | 04/12/11    | 28/01/12     | 02/05/11   | 25/06/11    | -216d       |              |            |      |     |     |     |     |     |     |  |
| <b>Section W 7 - SKW STW, Sewer and Submarine Outfall</b>  |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
| <b>+Submarine Outfall</b>                                  |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |  |
|  |             | 477               | 96               | 17/05/10 A  | 05/09/11     | 17/05/10 A | 15/09/11    | 10d         |              |            |      |     |     |     |     |     |     |  |

|                           |          |
|---------------------------|----------|
| Start date                | 05/05/10 |
| Finish date               | 13/03/15 |
| Data date                 | 31/07/11 |
| Run date                  | 08/08/11 |
| Page number               | 1A       |
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-  Early bar
-  Progress bar
-  Critical bar
-  Summary bar
-  Progress point
-  Critical point
-  Summary point
-  Start milestone point
-  Finish milestone point

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










*(Outline page 1 of 2)*

(Marked on 31 Jul 2011)

| Date     | Revision   | Checked | Approved |
|----------|------------|---------|----------|
| 31/07/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |

| Activity ID  | Description | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors | Successors | 2011 |     |     |     |     |     |     |
|--|-------------|-------------------|------------------|-------------|--------------|------------|-------------|-------------|--------------|------------|------|-----|-----|-----|-----|-----|-----|
|  |             |                   |                  |             |              |            |             |             |              |            | MAY  | JUN | JUL | AUG | SEP | OCT | NOV |
| SKW STW  |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |
| +Submission & Delivery (E&M)                       |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |
|  |             | 260               | 0                | 31/07/11    | 15/04/12     | 09/05/11   | 15/10/14    | 884d        |              |            |      |     |     |     |     |     |     |
| +Construction of Grid A-G                          |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |
|  |             | 164               | 5                | 30/07/11 A  | 09/01/12     | 30/07/11 A | 27/07/11    | -166d       |              |            |      |     |     |     |     |     |     |
| +Construction of Grid G-N                          |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |
|  |             | 36                | 0                | 20/11/11    | 25/12/11     | 29/06/11   | 03/08/11    | -144d       |              |            |      |     |     |     |     |     |     |
| +Rising Main                                       |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |
|  |             | 740               | 29               | 17/05/10 A  | 25/05/12     | 17/05/10 A | 10/07/11    | -320d       |              |            |      |     |     |     |     |     |     |
| +Section W 8 - Landscape Softworks in All Portions |             |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |     |     |
|  |             | 810               | 59               | 17/05/10 A  | 03/08/12     | 17/05/10 A | 03/08/12    | 0           |              |            |      |     |     |     |     |     |     |

Start date 05/05/10  
 Finish date 13/03/15  
 Data date 31/07/11  
 Run date 08/08/11  
 Page number 2A

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

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

*(Outline page 2 of 2)*

(Marked on 31 Jul 2011)

| Date     | Revision   | Checked | Approved |
|----------|------------|---------|----------|
| 31/07/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |

| Activity ID                                  | Description   | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors              | Successors                 | 2011 |     |     |     |     | 2012 |     |     |  |  |  |  |  |  |  |  |
|--|---|-------------------|------------------|-------------|--------------|------------|-------------|-------------|---------------------------|----------------------------|------|-----|-----|-----|-----|------|-----|-----|--|--|--|--|--|--|--|--|
|  |   |                   |                  |             |              |            |             |             |                           |                            | JUL  | AUG | SEP | OCT | NOV | DEC  | JAN | FEB |  |  |  |  |  |  |  |  |
| <b>Project Key Date</b>                      |   |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| 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                 | 0                |             | 01/11/11     |            | 15/08/11 *  | -78d *      | 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                |             | 31/01/12     |            | 30/06/11 *  | -215d *     | E&M0510                   | KD0125                     |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| <b>Preliminary (Civil)</b>                   |   |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| 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 Accommodation | 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                    |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| <b>Preliminary (E&amp;M)</b>                 |   |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| <b>Technical Submission</b>                  |   |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| <b>Process Design of SKWSTW &amp; YSWSTW</b> |   |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| 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               | 98               | 17/05/10 A  | 02/10/11     | 17/05/10 A | 16/06/11    | -108d       | E&M0020                   | E&M0080                    |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0080                                      | Approval from the Engineer                              | 14                | 0                | 02/10/11    | 16/10/11     | 17/06/11   | 30/06/11    | -108d       | E&M0030                   | E&M0295                    |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| <b>Hydraulic Design</b>                      |   |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| 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                | 95               | 19/08/10 A  | 04/10/11     | 19/08/10 A | 28/06/11    | -99d        | E&M0050                   | E&M0430                    |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0430                                      | Approval from the Engineer                              | 7                 | 60               | 29/03/11 A  | 07/10/11     | 29/03/11 A | 30/06/11    | -99d        | E&M0060                   | E&M0295                    |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| <b>Equipment Submission &amp; Approval</b>   |   |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| 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                | 95               | 04/08/10 A  | 04/10/11     | 04/08/10 A | 15/02/11    | -231d       | E&M0040                   | E&M0102                    |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0102                                      | Vetting and Comment by ER                               | 60                | 95               | 18/11/10 A  | 07/10/11     | 18/11/10 A | 18/02/11    | -231d       | E&M0101                   | E&M0103                    |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0103                                      | Revision and Resubmission                               | 60                | 80               | 01/02/11 A  | 19/10/11     | 01/02/11 A | 02/03/11    | -231d       | 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                | 0                | 19/10/11    | 18/11/11     | 29/04/11   | 28/05/11    | -174d       | E&M0103                   | E&M0400, E&M3060           |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0130                                      | Approval on Pumps                                       | 30                | 0                | 19/10/11    | 18/11/11     | 03/03/11   | 01/04/11    | -231d       | 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                | 0                | 19/10/11    | 18/11/11     | 29/04/11   | 28/05/11    | -174d       | 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                | 0                | 19/10/11    | 18/11/11     | 03/03/11   | 01/04/11    | -231d       | E&M0103                   | E&M0440, E&M3090           |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0180                                      | Approval on Valves, Pipes & Fittings                    | 30                | 0                | 19/10/11    | 18/11/11     | 28/06/11   | 27/07/11    | -114d       | E&M0103                   | E&M0450, E&M3100           |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0190                                      | Approval on Penstocks                                   | 30                | 0                | 19/10/11    | 18/11/11     | 11/06/11   | 10/07/11    | -131d       | E&M0103                   | E&M0460, E&M3110           |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0200                                      | Approval on Instrumentation                             | 30                | 0                | 19/10/11    | 18/11/11     | 09/10/11   | 07/11/11    | -11d        | E&M0103                   | E&M0470, E&M3130           |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0210                                      | Approval on MCC & LVSB                                  | 30                | 0                | 19/10/11    | 18/11/11     | 03/03/11   | 01/04/11    | -231d       | E&M0103                   | E&M0480, E&M3140           |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0220                                      | Approval on BS Equipment                                | 30                | 0                | 30/10/11    | 28/11/11     | 31/07/11   | 29/08/11    | -91d        | E&M0103, E&M0280          | E&M0490, E&M3150           |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0230                                      | Approval on FS Equipment                                | 30                | 0                | 30/10/11    | 28/11/11     | 01/06/11   | 30/06/11    | -151d       | E&M0103, E&M0290          | E&M0295, E&M0320, E&M0500, |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| <b>Drawings Submission &amp; Approval</b>    |   |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| 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  | 04/10/11     | 04/08/10 A | 30/06/11    | -96d        | E&M0040                   | E&M0250, E&M0280, E&M0290  |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0250                                      | Sub. Builder's Works Requirements Drawings              | 15                | 90               | 04/08/10 A  | 10/10/11     | 04/08/10 A | 01/07/11    | -101d       | E&M0240, E&M0260, E&M0270 | E&M0280, E&M0290           |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0260                                      | Sub. Mechanical Installation Drawings                   | 60                | 85               | 27/09/10 A  | 08/10/11     | 27/09/10 A | 30/06/11    | -101d       | E&M0040                   | E&M0250                    |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0270                                      | Sub. Electrical Installation Drawings                   | 60                | 85               | 27/09/10 A  | 08/10/11     | 27/09/10 A | 30/06/11    | -101d       | E&M0040                   | E&M0250, E&M0280           |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0280                                      | Sub. BS Installation Drawings                           | 120               | 75               | 27/09/10 A  | 29/10/11     | 27/09/10 A | 30/07/11    | -91d        | E&M0240, E&M0250, E&M0270 | E&M0220                    |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| E&M0290                                      | Sub. FS Installation Drawings                           | 120               | 75               | 13/11/10 A  | 29/10/11     | 13/11/10 A | 31/05/11    | -151d       | E&M0240, E&M0250          | E&M0230                    |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |
| <b>Statutory Submission</b>                  |   |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |

|                           |          |
|---------------------------|----------|
| Start date                | 05/05/10 |
| Finish date               | 10/11/14 |
| Data date                 | 30/09/11 |
| Run date                  | 16/10/11 |
| Page number               | 1A       |
| c Primavera Systems, Inc. |          |

|               |                        |
|---------------|------------------------|
| Green bar     | Early bar              |
| Blue bar      | Progress bar           |
| Red bar       | Critical bar           |
| Dark blue bar | Summary bar            |
| Triangle up   | Progress point         |
| Triangle down | Critical point         |
| Circle        | Summary point          |
| Diamond       | Start milestone point  |
| Diamond       | Finish milestone point |

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

(Marked on 30 Sep 2011)

|          |            |         |          |
|----------|------------|---------|----------|
| Date     | Revision   | Checked | Approved |
| 30/09/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |





| Activity ID                            | Description                                      | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors               | Successors                 | 2011 |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|-------------------|------------------|-------------|--------------|------------|-------------|-------------|----------------------------|----------------------------|------|-----|-----|-----|-----|-----|------|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|  |  |                   |                  |             |              |            |             |             |                            |                            | JUL  | AUG | SEP | OCT | NOV | DEC | 2012 | JAN |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 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-structure 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                | 30/09/11    | 19/10/11     | 27/02/11   | 18/03/11    | -215d       | YSW0690                    | YSW0710                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0710                                | Water test                                       | 14                | 0                | 20/10/11    | 02/11/11     | 19/03/11   | 01/04/11    | -215d       | YSW0700                    | E&M0510, E&M0630, E&M0640  |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0820                                | ABWF installation                                | 34                | 0                | 30/09/11    | 02/11/11     | 27/02/11   | 01/04/11    | -215d       | YSW0690                    | E&M0510, E&M0630, E&M0640  |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW STP - GL A - F                     |  |                   |                  |             |              |            |             |             |                            |                            |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0730                                | Completion of HDD                                | 0                 | 0                | 08/12/11    |              | 01/07/11   |             | -160d       | YSW0350                    | YSW0740                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0740                                | ELS & excavate for Outfall Shaft                 | 22                | 0                | 08/12/11    | 30/12/11     | 01/07/11   | 22/07/11    | -160d       | YSW0730                    | YSW0750                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0750                                | Sub-structure construction (outfall shaft)       | 22                | 0                | 30/12/11    | 21/01/12     | 23/07/11   | 13/08/11    | -160d       | YSW0740                    | YSW0760                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0760                                | Backfill & remove ELS (outfall shaft)            | 24                | 0                | 21/01/12    | 14/02/12     | 14/08/11   | 06/09/11    | -160d       | YSW0750                    | YSW0770, YSW1470           |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fire Hose Reel / Sprinkler Pump Rm     |  |                   |                  |             |              |            |             |             |                            |                            |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0840                                | ELS & excavate to formation (+0 mPD approx)      | 30                | 0                | 04/10/11    | 03/11/11     | 01/09/11   | 30/09/11    | -34d        | YSW0035, YSW0422, YSW0640  | YSW0860                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0860                                | Sub-structure construction                       | 30                | 0                | 03/11/11    | 03/12/11     | 01/10/11   | 30/10/11    | -34d        | YSW0840                    | YSW0880                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0880                                | Backfill & remove ELS                            | 30                | 0                | 03/12/11    | 02/01/12     | 31/10/11   | 29/11/11    | -34d        | YSW0860                    | YSW0890                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0890                                | Construction Ground Slab at +5.2mPD              | 30                | 0                | 02/01/12    | 01/02/12     | 30/11/11   | 29/12/11    | -34d        | YSW0880                    | YSW0900, YSW0930           |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0900                                | Superstructure construction upto +8.2mPD         | 35                | 0                | 01/02/12    | 07/03/12     | 30/12/11   | 02/02/12    | -34d        | YSW0890                    | YSW0910, YSW0925           |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0930                                | Construction of Gurad House                      | 60                | 0                | 01/02/12    | 01/04/12     | 06/05/12   | 04/07/12    | 95d         | YSW0890                    | E&M0690, KD0040            |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 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  | 20/12/11     | 24/08/11 A | 05/01/12    | 17d         | YSW0153, YSW0165           | YSW0155                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0155                                | RC Concrete Barrier (above Ground Level)         | 120               | 0                | 20/12/11    | 18/04/12     | 06/01/12   | 04/05/12    | 17d         | 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                                | Hydrographical 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               | 55               | 29/04/11 A  | 24/11/11     | 29/04/11 A | 16/06/11    | -160d       | YSW0040, YSW0180, YSW0210, | YSW0360                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0360                                | Installation of NS400 HDPE 530m                  | 14                | 0                | 24/11/11    | 08/12/11     | 17/06/11   | 30/06/11    | -160d       | YSW0350                    | SKW1181, YSW0365, YSW0370, |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0365                                | Set up of Silt Curtain as per EP                 | 30                | 0                | 08/12/11    | 07/01/12     | 20/07/13   | 18/08/13    | 590d        | YSW0360                    | YSW0370                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| YSW0370                                | Dredging of Marine Deposit for Diffuser (YSW)    | 60                | 0                | 07/01/12    | 07/03/12     | 19/08/13   | 17/10/13    | 590d        | YSW0360, YSW0365           | YSW0380                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M Works - YSW STP                    |  |                   |                  |             |              |            |             |             |                            |                            |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0360                                | Delivery of MBR Memb. Mod. (MBR Tk4)             | 137               | 100              | 18/06/11 A  | 21/06/11 A   | 18/06/11 A | 21/06/11 A  |             | E&M0160                    | E&M0510                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0370                                | Delivery of MBR Membrane Modules - 2nd Shipment  | 150               | 0                | 30/09/11    | 26/02/12     | 29/09/11   | 25/02/12    | -1d         | E&M0160                    | E&M0520                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0380                                | Delivery of Grit Removal Equipment               | 180               | 0                | 18/11/11    | 16/05/12     | 29/05/11   | 24/11/11    | -174d       | E&M0150                    | E&M0530                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0390                                | Delivery of Coarse Screens                       | 162               | 0                | 19/10/11    | 29/03/12     | 02/04/11   | 10/09/11    | -201d       | E&M0110                    | E&M0540                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0400                                | Delivery of Fine Screens                         | 180               | 0                | 18/11/11    | 16/05/12     | 29/05/11   | 24/11/11    | -174d       | E&M0120                    | E&M0550                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0410                                | Delivery of Pumps                                | 162               | 0                | 18/11/11    | 28/04/12     | 02/04/11   | 10/09/11    | -231d       | E&M0130                    | E&M0560                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0420                                | Delivery of Submersible Mixers                   | 162               | 0                | 19/10/11    | 29/03/12     | 01/07/11   | 09/12/11    | -111d       | E&M0140                    | E&M0570                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0440                                | Delivery of Sludge Dewatering Equipment          | 180               | 0                | 18/11/11    | 16/05/12     | 02/04/11   | 28/09/11    | -231d       | E&M0170                    | E&M0580                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0450                                | Delivery of Valves, Pipes & Fittings             | 180               | 0                | 18/11/11    | 16/05/12     | 28/07/11   | 23/01/12    | -114d       | E&M0180                    | E&M0590, E&M0605           |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M0460                                | Delivery of Penstocks                            | 180               | 0                | 18/11/11    | 16/05/12     | 11/07/11   | 06/01/12    | -131d       | E&M0190                    | E&M0600                    |      |     |     |     |     |     |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|                           |          |
|---------------------------|----------|
| Start date                | 05/05/10 |
| Finish date               | 10/11/14 |
| Data date                 | 30/09/11 |
| Run date                  | 16/10/11 |
| Page number               | 3A       |
| c Primavera Systems, Inc. |          |

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

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

(Marked on 30 Sep 2011)

| Date     | Revision   | Checked | Approved |
|----------|------------|---------|----------|
| 30/09/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |

| Activity ID   | Description                                     | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors              | Successors                  | 2011 |     |     |     |     |     |     | 2012 |  |
|---|---|-------------------|------------------|-------------|--------------|------------|-------------|-------------|---------------------------|-----------------------------|------|-----|-----|-----|-----|-----|-----|------|--|
|   |   |                   |                  |             |              |            |             |             |                           |                             | JUL  | AUG | SEP | OCT | NOV | DEC | JAN |      |  |
| E&M0470   | Delivery of Instruments                         | 180               | 0                | 18/11/11    | 16/05/12     | 08/11/11   | 05/05/12    | -11d        | E&M0200                   | E&M0610                     |      |     |     |     |     |     |     |      |  |
| E&M0480   | Delivery of MCC LVSB                            | 177               | 0                | 18/11/11    | 13/05/12     | 02/04/11   | 25/09/11    | -231d       | E&M0210                   | E&M0620                     |      |     |     |     |     |     |     |      |  |
| E&M0490   | Delivery of BS Equipment                        | 180               | 0                | 29/11/11    | 26/05/12     | 30/08/11   | 25/02/12    | -91d        | E&M0220                   | E&M0630                     |      |     |     |     |     |     |     |      |  |
| E&M0500   | Delivery FS Equipment                           | 180               | 0                | 29/11/11    | 26/05/12     | 27/09/11   | 24/03/12    | -63d        | E&M0230                   | E&M0330, E&M0640            |      |     |     |     |     |     |     |      |  |
| E&M0510   | Install Membrane Modules in MBR Tank no. 4      | 90                | 0                | 03/11/11    | 31/01/12     | 02/04/11   | 30/06/11    | -215d       | E&M0360, YSW0710, YSW0820 | KD0115                      |      |     |     |     |     |     |     |      |  |
| <b>Sok Kwu Wan</b>                                    |   |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |      |  |
| <b>Preliminary</b>                                    |   |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |      |  |
| 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,  |      |     |     |     |     |     |     |      |  |
| <b>Section W3 - Footpath Diversion in Portion G</b>   |   |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |      |  |
| <b>Civil &amp; Geotechnical Works</b>                 |   |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |      |  |
| 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 & weep hole 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 & weep hole 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 & weep hole 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 & weep hole 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 & weep hole 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 behind 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                | 30/09/11    | 06/10/11     | 23/02/11   | 02/03/11    | -219d       | 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    |      |     |     |     |     |     |     |      |  |
| <b>Section W4 - Slope Works in Portions H &amp; I</b> |   |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |      |  |
| <b>Geotechnical Works</b>                             |   |                   |                  |             |              |            |             |             |                           |                             |      |     |     |     |     |     |     |      |  |
| 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                | 40               | 15/09/11 A  | 17/10/11     | 15/09/11 A | 20/04/11    | -180d       | SKW05935                  | SKW05937, SKW05942          |      |     |     |     |     |     |     |      |  |
| SKW05937  | Excavation of Rock Berm (+20mPD to +12.5mPD)    | 30                | 0                | 18/10/11    | 16/11/11     | 21/04/11   | 20/05/11    | -180d       | SKW05936                  | SKW05938                    |      |     |     |     |     |     |     |      |  |
| SKW05938  | Excavation of Rock Berm (+12.5mPD to +5mPD)     | 28                | 0                | 17/11/11    | 14/12/11     | 21/05/11   | 17/06/11    | -180d       | SKW05937                  | SKW05943, SKW1311, SKW1371  |      |     |     |     |     |     |     |      |  |

Start date 05/05/10  
 Finish date 10/11/14  
 Data date 30/09/11  
 Run date 16/10/11  
 Page number 4A

- █ Early bar
- █ Progress bar
- █ Critical bar
- █ Summary bar
- ▲ Progress point
- ▲ Critical point
- ▲ Summary point
- ◆ Start milestone point
- ◆ Finish milestone point

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

| Date     | Revision   | Checked | Approved |
|----------|------------|---------|----------|
| 30/09/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |

(Marked on 30 Sep 2011)

| Activity ID   | Description  | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors              | Successors                 | 2011 |     |     |     |     |     |      |  |  |  |  |  |
|---|--|-------------------|------------------|-------------|--------------|------------|-------------|-------------|---------------------------|----------------------------|------|-----|-----|-----|-----|-----|------|--|--|--|--|--|
|   |  |                   |                  |             |              |            |             |             |                           |                            | JUL  | AUG | SEP | OCT | NOV | DEC | 2012 |  |  |  |  |  |
|   |  |                   |                  |             |              |            |             |             |                           |                            |      | JAN | FEB |     |     |     |      |  |  |  |  |  |
| 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                | 80               | 04/05/11 A  | 11/10/11     | 04/05/11 A | 20/04/11    | -174d       | SKW05934, SKW05940        | SKW05942                   |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW05942  | Slope Drainage & Misc. (+35 to +20mPD)             | 58                | 0                | 18/10/11    | 14/12/11     | 21/04/11   | 17/06/11    | -180d       | SKW05936, SKW05941        | SKW05943                   |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW05943  | Slope Drainage & Misc. (+20 to +5mPD)              | 59                | 0                | 15/12/11    | 11/02/12     | 18/06/11   | 15/08/11    | -180d       | SKW05938, SKW05942        | KD0060                     |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0595   | Rock Meshing & Rockfall Fence                      | 260               | 0                | 30/09/11    | 15/06/12     | 29/11/10   | 15/08/11    | -305d       | SKW05932                  | KD0060                     |      |     |     |     |     |     |      |  |  |  |  |  |
| <b>Section W5 - P.S. No. 1 in Portion D</b>               |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |      |  |  |  |  |  |
| <b>Civil &amp; Geotechnical Works</b>                     |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |      |  |  |  |  |  |
| 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 vegetation            | 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                    |      |     |     |     |     |     |      |  |  |  |  |  |
| <b>Structural Works</b>                                   |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |      |  |  |  |  |  |
| 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                | 0                | 30/09/11    | 13/10/11     | 27/01/11   | 09/02/11    | -246d       | SKW0761                   | SKW0781                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0781   | Base Slab (GSB1-3,GSC1-5,GSD1-2)                   | 14                | 0                | 13/10/11    | 26/10/11     | 09/02/11   | 22/02/11    | -246d       | SKW0771                   | SKW0791                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0791   | Base Slab (GSE1 & GSF1)                            | 14                | 0                | 26/10/11    | 08/11/11     | 22/02/11   | 07/03/11    | -246d       | SKW0781                   | SKW0801                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0801   | Wall & Column (CE1-3, CF1-3)                       | 14                | 0                | 08/11/11    | 21/11/11     | 07/03/11   | 20/03/11    | -246d       | SKW0791                   | SKW0811                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0811   | Ground Beam (GB1-1,2 GB2-1,2 GB3-1, GBA-1, GBB1-4) | 14                | 0                | 22/11/11    | 05/12/11     | 21/03/11   | 03/04/11    | -246d       | SKW0801                   | SKW0821                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0821   | Wall & Column (CA1-3,CB1-3,CC1-3, CD1-2) to +10.   | 14                | 0                | 06/12/11    | 19/12/11     | 04/04/11   | 17/04/11    | -246d       | SKW0811                   | SKW0831                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0831   | Roof Beams & Parapet                               | 14                | 0                | 20/12/11    | 02/01/12     | 18/04/11   | 01/05/11    | -246d       | SKW0821                   | E&M1101, E&M1102, E&M1103, |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0841   | ABWF installation                                  | 45                | 0                | 20/12/11    | 02/02/12     | 18/04/11   | 01/06/11    | -246d       | SKW0831                   | E&M1101, E&M1102, E&M1103, |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0861   | 300mm U-channel & 675mm Step Channel               | 168               | 0                | 03/01/12    | 18/06/12     | 01/06/11   | 15/11/11    | -216d       | SKW0831, SKW0841          | KD0070                     |      |     |     |     |     |     |      |  |  |  |  |  |
| <b>Section W6 - Sewer and PS.No.2 in Portions E&amp;H</b> |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |      |  |  |  |  |  |
| <b>Civil &amp; Geotechnical Works</b>                     |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |      |  |  |  |  |  |
| 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                | 30/09/11    | 12/06/12     | 04/03/11   | 15/11/11    | -210d       | 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                   | SKW1511                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1511   | Twin DN150 DI Rising Main (ChA0+45 - ChA5+79)      | 150               | 70               | 16/05/11 A  | 13/11/11     | 16/05/11 A | 09/08/11    | -96d        | SKW1491                   | SKW1531                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1531   | Extent village sewers S163.1 & S164.1              | 34                | 0                | 14/11/11    | 17/12/11     | 10/08/11   | 12/09/11    | -96d        | SKW1511                   | SKW1581                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1581   | Construct Manhole no. S163 & S164                  | 34                | 0                | 18/12/11    | 20/01/12     | 13/09/11   | 16/10/11    | -96d        | SKW1531                   | KD0080, SKW15112           |      |     |     |     |     |     |      |  |  |  |  |  |
| <b>Structural Works</b>                                   |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |      |  |  |  |  |  |
| 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                | 20               | 01/09/11 A  | 11/10/11     | 01/09/11 A | 31/12/10    | -283d       | SKW0971                   | SKW0991                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW0991   | Wall & Column to +1.5mPD                           | 14                | 0                | 11/10/11    | 25/10/11     | 01/01/11   | 14/01/11    | -283d       | SKW0981                   | SKW1001                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1001   | Base Slab (BSC-4) to +3mPD                         | 14                | 0                | 25/10/11    | 08/11/11     | 15/01/11   | 28/01/11    | -283d       | SKW0991                   | SKW1011                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1011   | Wall & Column to +5.35mPD                          | 14                | 0                | 08/11/11    | 22/11/11     | 29/01/11   | 11/02/11    | -283d       | SKW1001                   | SKW1021                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1021   | Ground Slab  | 20                | 0                | 22/11/11    | 12/12/11     | 12/02/11   | 03/03/11    | -283d       | SKW1011                   | SKW1031                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1031   | Ground Beam  | 14                | 0                | 12/12/11    | 26/12/11     | 04/03/11   | 17/03/11    | -283d       | SKW1021                   | SKW1041                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1041   | Wall & Column to +9.35mPD                          | 14                | 0                | 26/12/11    | 09/01/12     | 18/03/11   | 31/03/11    | -283d       | SKW1031                   | SKW1051                    |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1051   | Roof Beams & Parapet                               | 14                | 0                | 09/01/12    | 23/01/12     | 01/04/11   | 14/04/11    | -283d       | SKW1041                   | E&M2101, E&M2102, E&M2103, |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1061   | ABWF installation (wet tray/dry tray)              | 90                | 0                | 09/01/12    | 08/04/12     | 18/04/11   | 16/07/11    | -266d       | SKW1051                   | E&M2101, E&M2102, E&M2103, |      |     |     |     |     |     |      |  |  |  |  |  |
| SKW1081   | 375mm U-channel with catchpits                     | 215               | 0                | 23/01/12    | 25/08/12     | 15/04/11   | 15/11/11    | -283d       | SKW1051                   | KD0080                     |      |     |     |     |     |     |      |  |  |  |  |  |
| <b>E&amp;M Works (PS2)</b>                                |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |      |  |  |  |  |  |
| <b>Submission &amp; Delivery</b>                          |  |                   |                  |             |              |            |             |             |                           |                            |      |     |     |     |     |     |      |  |  |  |  |  |
| E&M2001   | Submission of Pumps                                | 198               | 95               | 17/05/10 A  | 09/10/11     | 17/05/10 A | 02/02/11    | -249d       | KD0020                    | E&M2011                    |      |     |     |     |     |     |      |  |  |  |  |  |
| E&M2002   | Submission of Gen-Set                              | 198               | 95               | 17/05/10 A  | 09/10/11     | 17/05/10 A | 02/02/11    | -249d       |                           | E&M2012                    |      |     |     |     |     |     |      |  |  |  |  |  |

|             |          |                        |
|-------------|----------|------------------------|
| Start date  | 05/05/10 | Early bar              |
| Finish date | 10/11/14 | Progress bar           |
| Data date   | 30/09/11 | Critical bar           |
| Run date    | 16/10/11 | Summary bar            |
| Page number | 5A       | Progress point         |
|             |          | Critical point         |
|             |          | Summary point          |
|             |          | Start milestone point  |
|             |          | Finish milestone point |

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

(Marked on 30 Sep 2011)

|          |            |         |          |
|----------|------------|---------|----------|
| Date     | Revision   | Checked | Approved |
| 30/09/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |

| Activity ID                                       | Description                                      | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors              | Successors       | 2011 |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|--|-------------------|------------------|-------------|--------------|------------|-------------|-------------|---------------------------|------------------|------|-----|-----|-----|-----|-----|------|-----|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|
|   |  |                   |                  |             |              |            |             |             |                           |                  | JUL  | AUG | SEP | OCT | NOV | DEC | 2012 | JAN | FEB |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2003   | Submission of DeO System                         | 198               | 95               | 17/05/10 A  | 09/10/11     | 17/05/10 A | 02/02/11    | -249d       |                           | E&M2013          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2004   | Submission of LV SB & MCC                        | 271               | 95               | 17/05/10 A  | 13/10/11     | 17/05/10 A | 13/02/11    | -242d       |                           | E&M2014          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2005   | Submission of Instrumentation                    | 243               | 95               | 17/05/10 A  | 12/10/11     | 17/05/10 A | 31/01/11    | -253d       |                           | E&M2015          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2006   | Submission of FS System                          | 243               | 95               | 17/05/10 A  | 12/10/11     | 17/05/10 A | 14/01/11    | -270d       |                           | E&M2016          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2007   | Submission of BS System                          | 243               | 95               | 17/05/10 A  | 12/10/11     | 17/05/10 A | 14/01/11    | -270d       |                           | E&M2017          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2011   | Delivery of Pumps                                | 150               | 0                | 09/10/11    | 07/03/12     | 03/02/11   | 02/07/11    | -249d       | E&M2001                   | E&M2101          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2012   | Delivery of Gen-Set                              | 150               | 0                | 09/10/11    | 07/03/12     | 03/02/11   | 02/07/11    | -249d       | E&M2002                   | E&M2102          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2013   | Delivery of DeO System                           | 150               | 0                | 09/10/11    | 07/03/12     | 03/02/11   | 02/07/11    | -249d       | E&M2003                   | E&M2103          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2014   | Delivery of LV SB & MCC                          | 150               | 0                | 30/09/11    | 26/02/12     | 03/12/10   | 01/05/11    | -301d       | E&M2004                   | E&M2104          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2015   | Delivery of Instrumentation                      | 90                | 0                | 12/10/11    | 10/01/12     | 01/02/11   | 01/05/11    | -253d       | E&M2005                   | E&M2105          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2016   | Delivery of FS Equipment                         | 107               | 0                | 12/10/11    | 27/01/12     | 15/01/11   | 01/05/11    | -270d       | E&M2006                   | E&M0350, E&M2106 |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2017   | Delivery of BS Equipment                         | 107               | 0                | 12/10/11    | 27/01/12     | 15/01/11   | 01/05/11    | -270d       | E&M2007                   | E&M2107          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Installation, T&C                                 |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2105   | Install Instrumentation                          | 55                | 0                | 23/01/12    | 18/03/12     | 02/05/11   | 25/06/11    | -266d       | E&M2015, SKW1051, SKW1061 | E&M2140          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2106   | Install FS Equipment                             | 55                | 0                | 27/01/12    | 22/03/12     | 02/05/11   | 25/06/11    | -270d       | E&M2016, SKW1051, SKW1061 | E&M2140          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M2107   | Install BS Equipment                             | 55                | 0                | 27/01/12    | 22/03/12     | 02/05/11   | 25/06/11    | -270d       | E&M2017, SKW1051, SKW1061 | E&M2110, E&M2140 |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Section W7 - SKW STW, Sewer and Submarine Outfall |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Submarine Outfall                                 |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1130   | Approval of IHS Consultant                       | 180               | 100              | 17/05/10 A  | 27/08/10 A   | 17/05/10 A | 27/08/10 A  |             |                           | SKW1131          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1131   | Hydrographical Survey (SKW)                      | 300               | 100              | 01/02/11 A  | 28/02/11 A   | 01/02/11 A | 28/02/11 A  |             | KD0020, SKW1130           | SKW1231          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1141   | Baseline Monitoring (Water)                      | 213               | 100              | 27/07/10 A  | 31/12/10 A   | 27/07/10 A | 31/12/10 A  |             | SKW0260, SKW0265          | SKW1151          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1151   | Set up Temporary Working Platform                | 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          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW STW   |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Submission & Delivery (E&M)                       |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3010   | Delivery of MBR M.M. - 1st shipment for Temp STP | 150               | 0                | 30/09/11    | 26/02/12     | 10/12/13   | 09/05/14    | 803d        | E&M0160                   | E&M3170          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3030   | Delivery of Grit Removal Equipment               | 180               | 0                | 18/11/11    | 16/05/12     | 31/08/11   | 26/02/12    | -80d        | E&M0150                   | E&M3190          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3060   | Delivery of Fine Screens                         | 136               | 0                | 18/11/11    | 02/04/12     | 15/08/11   | 28/12/11    | -96d        | E&M0120                   | E&M3210          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3070   | Delivery of Pumps                                | 136               | 0                | 18/11/11    | 02/04/12     | 15/08/11   | 28/12/11    | -96d        | E&M0130                   | E&M3220          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3080   | Delivery of Submersible Mixers                   | 180               | 0                | 19/10/11    | 16/04/12     | 15/09/11   | 12/03/12    | -35d        | E&M0140                   | E&M3230          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3090   | Delivery of Sludge Dewatering Equipment          | 210               | 0                | 18/11/11    | 15/06/12     | 18/07/11   | 12/02/12    | -124d       | E&M0170                   | E&M3240          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3100   | Delivery of Valves, Pipes & Fittings             | 180               | 0                | 18/11/11    | 16/05/12     | 23/09/13   | 22/03/14    | 675d        | E&M0180                   | E&M3250          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3110   | Delivery of Penstocks                            | 180               | 0                | 18/11/11    | 16/05/12     | 06/10/13   | 04/04/14    | 688d        | E&M0190                   | E&M3260          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3130   | Delivery of Instruments                          | 180               | 0                | 18/11/11    | 16/05/12     | 20/12/13   | 18/06/14    | 763d        | E&M0200                   | E&M3270          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3140   | Delivery of MCC LVSB                             | 180               | 0                | 18/11/11    | 16/05/12     | 09/05/11   | 04/11/11    | -194d       | E&M0210                   | E&M3261          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3150   | Delivery of BS Equipment                         | 180               | 0                | 29/11/11    | 26/05/12     | 08/10/13   | 06/04/14    | 680d        | E&M0220                   | E&M3291          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E&M3160   | Delivery of FS Equipment                         | 180               | 0                | 29/11/11    | 26/05/12     | 14/01/12   | 11/07/12    | 46d         | E&M0230                   | E&M0340, E&M3300 |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Construction of Grid A-G                          |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1261   | Excavate for SKW STW Structure (Grid A-G)        | 164               | 10               | 30/07/11 A  | 02/03/12     | 30/07/11 A | 27/07/11    | -219d       | SKW0551                   | SKW1271, SKW1371 |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Construction of Grid G-N                          |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1311   | Excavate for SKW STW Structure (Grid G-N)        | 36                | 0                | 15/12/11    | 19/01/12     | 29/06/11   | 03/08/11    | -169d       | SKW0551, SKW05938         | SKW1321          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 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               | 50               | 15/08/11 A  | 01/02/12     | 15/08/11 A | 16/03/12    | 44d         | SKW1501                   | SKW1541          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Section W8 - Landscape Softworks in All Portions  |  |                   |                  |             |              |            |             |             |                           |                  |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1591   | Tree Survey                                      | 21                | 100              | 17/05/10 A  | 06/06/10 A   | 17/05/10 A | 06/06/10 A  |             | KD0020                    | SKW1621          |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SKW1611   | Preservation & Protection of Trees               | 822               | 62               | 17/05/10 A  | 07/08/12     | 17/05/10 A | 07/08/12    | 0           | 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                   |                  |      |     |     |     |     |     |      |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |

|             |          |  |                        |
|-------------|----------|--|------------------------|
| Start date  | 05/05/10 |  | Early bar              |
| Finish date | 10/11/14 |  | Progress bar           |
| Data date   | 30/09/11 |  | Critical bar           |
| Run date    | 16/10/11 |  | Summary bar            |
| Page number | 6A       |  | Progress point         |
|             |          |  | Critical point         |
|             |          |  | Summary point          |
|             |          |  | Start milestone point  |
|             |          |  | Finish milestone point |

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

|          |            |         |          |
|----------|------------|---------|----------|
| Date     | Revision   | Checked | Approved |
| 30/09/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
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(Marked on 30 Sep 2011)

| Activity ID  | Description                                 | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors | Successors | 2011 |     |     |     |     | 2012 |     |  |
|--|---|-------------------|------------------|-------------|--------------|------------|-------------|-------------|--------------|------------|------|-----|-----|-----|-----|------|-----|--|
|  |   |                   |                  |             |              |            |             |             |              |            | JUL  | AUG | SEP | OCT | NOV | DEC  | JAN |  |
| <b>+Project Key Date</b>                                   |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  |   | 603               | 0                | 05/05/10 A  | 31/01/12     | 05/05/10 A | 15/08/11    | -169d       |              |            |      |     |     |     |     |      |     |  |
| <b>+Preliminary (Civil)</b>                                |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  |   | 191               | 100              | 17/05/10 A  | 23/11/10 A   | 17/05/10 A | 23/11/10 A  |             | KD0020       |            |      |     |     |     |     |      |     |  |
| <b>Preliminary (E&amp;M)</b>                               |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
| <b>Technical Submission</b>                                |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Process Design of SKWSTW & YSWSTW          | 518               | 92               | 17/05/10 A  | 16/10/11     | 17/05/10 A | 30/06/11    | -108d       |              |            |      |     |     |     |     |      |     |  |
|  | +Hydraulic Design                           | 509               | 95               | 17/05/10 A  | 07/10/11     | 17/05/10 A | 30/06/11    | -99d        |              |            |      |     |     |     |     |      |     |  |
|  | +Equipment Submission & Approval            | 561               | 58               | 17/05/10 A  | 28/11/11     | 17/05/10 A | 07/11/11    | -21d        |              |            |      |     |     |     |     |      |     |  |
|  | +Drawings Submission & Approval             | 493               | 84               | 24/06/10 A  | 29/10/11     | 24/06/10 A | 30/07/11    | -91d        |              |            |      |     |     |     |     |      |     |  |
|  | +Statutory Submission                       | 189               | 0                | 29/11/11    | 04/06/12     | 01/07/11   | 10/11/14    | 851d        |              |            |      |     |     |     |     |      |     |  |
| <b>Yung Shue Wan</b>                                       |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Preliminary                                | 229               | 100              | 17/05/10 A  | 31/12/10 A   | 17/05/10 A | 31/12/10 A  |             |              |            |      |     |     |     |     |      |     |  |
|  | +Section W 1 - Slope Works in Portion A & C | 534               | 96               | 17/05/10 A  | 01/11/11     | 17/05/10 A | 30/09/11    | -78d        |              |            |      |     |     |     |     |      |     |  |
| <b>Section W 2 - YSW STW &amp; Submarine Outfall</b>       |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Civil & Structural Work                    | 702               | 57               | 17/05/10 A  | 18/04/12     | 17/05/10 A | 04/07/12    | 78d         |              |            |      |     |     |     |     |      |     |  |
|  | +Submarine Outfall                          | 660               | 85               | 17/05/10 A  | 07/03/12     | 17/05/10 A | 17/10/13    | 590d        |              |            |      |     |     |     |     |      |     |  |
|  | +E&M Works - YSW STP                        | 344               | 6                | 18/06/11 A  | 26/05/12     | 02/04/11 A | 05/05/12    | -21d        |              |            |      |     |     |     |     |      |     |  |
| <b>Sok Kwu Wan</b>   |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Preliminary                                | 53                | 100              | 17/05/10 A  | 08/07/10 A   | 17/05/10 A | 08/07/10 A  |             |              |            |      |     |     |     |     |      |     |  |
| <b>Section W 3 - Footpath Diversion in Portion G</b>       |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Civil & Geotechnical Works                 | 508               | 98               | 17/05/10 A  | 06/10/11     | 17/05/10 A | 30/07/11    | -219d       |              |            |      |     |     |     |     |      |     |  |
| <b>Section W 4 - Slope Works in Portions H &amp; I</b>     |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Geotechnical Works                         | 732               | 53               | 15/06/10 A  | 15/06/12     | 15/06/10 A | 30/09/11    | -305d       |              |            |      |     |     |     |     |      |     |  |
| <b>Section W 5 - P.S. No. 1 in Portion D</b>               |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Civil & Geotechnical Works                 | 319               | 100              | 17/05/10 A  | 31/03/11 A   | 17/05/10 A | 31/03/11 A  |             |              |            |      |     |     |     |     |      |     |  |
|  | +Structural Works                           | 426               | 12               | 20/04/11 A  | 18/06/12     | 27/01/11 A | 15/11/11    | -216d       |              |            |      |     |     |     |     |      |     |  |
| <b>Section W 6 - Sewer and PS No.2 in Portions E&amp;H</b> |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Civil & Geotechnical Works                 | 758               | 57               | 17/05/10 A  | 12/06/12     | 17/05/10 A | 15/11/11    | -210d       |              |            |      |     |     |     |     |      |     |  |
|  | +Structural Works                           | 481               | 4                | 02/05/11 A  | 25/08/12     | 01/01/11 A | 15/11/11    | -283d       |              |            |      |     |     |     |     |      |     |  |
| <b>E&amp;M Works (PS2)</b>                                 |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Submission & Delivery                      | 661               | 61               | 17/05/10 A  | 07/03/12     | 17/05/10 A | 02/07/11    | -249d       |              |            |      |     |     |     |     |      |     |  |
|  | +Installation, T&C                          | 59                | 0                | 23/01/12    | 22/03/12     | 02/05/11   | 25/06/11    | -270d       |              |            |      |     |     |     |     |      |     |  |
| <b>Section W 7 - SKW STW, Sewer and Submarine Outfall</b>  |   |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|  | +Submarine Outfall                          | 502               | 100              | 17/05/10 A  | 30/09/11 A   | 17/05/10 A | 30/09/11 A  |             |              |            |      |     |     |     |     |      |     |  |

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|-------------|----------|--|------------------------|
| Start date  | 05/05/10 |  | Early bar              |
| Finish date | 10/11/14 |  | Progress bar           |
| Data date   | 30/09/11 |  | Critical bar           |
| Run date    | 17/10/11 |  | Summary bar            |
| Page number | 1A       |  | Progress point         |
|             |          |  | Critical point         |
|             |          |  | Summary point          |
|             |          |  | Start milestone point  |
|             |          |  | Finish milestone point |

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

(Marked on 30 Sep 2011)

| Date     | Revision   | Checked | Approved |
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| 30/09/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |

| Activity ID | Description  | Original Duration | Percent Complete | Early Start | Early Finish | Late Start | Late Finish | Total Float | Predecessors | Successors | 2011 |     |     |     |     | 2012 |     |  |
|-------------|--|-------------------|------------------|-------------|--------------|------------|-------------|-------------|--------------|------------|------|-----|-----|-----|-----|------|-----|--|
|             |  |                   |                  |             |              |            |             |             |              |            | JUL  | AUG | SEP | OCT | NOV | DEC  | JAN |  |
| SKW STW     |  |                   |                  |             |              |            |             |             |              |            |      |     |     |     |     |      |     |  |
|             | +Submission & Delivery (E&M)                       | 260               | 0                | 30/09/11    | 15/06/12     | 09/05/11   | 18/06/14    | 733d        |              |            |      |     |     |     |     |      |     |  |
|             | +Construction of Grid A-G                          | 164               | 10               | 30/07/11 A  | 02/03/12     | 30/07/11 A | 27/07/11    | -219d       |              |            |      |     |     |     |     |      |     |  |
|             | +Construction of Grid G-N                          | 36                | 0                | 15/12/11    | 19/01/12     | 29/06/11   | 03/08/11    | -169d       |              |            |      |     |     |     |     |      |     |  |
|             | +Rising Main                                       | 626               | 81               | 17/05/10 A  | 01/02/12     | 17/05/10 A | 16/03/12    | 44d         |              |            |      |     |     |     |     |      |     |  |
|             | +Section W 8 - Landscape Softworks in All Portions | 813               | 65               | 17/05/10 A  | 07/08/12     | 17/05/10 A | 07/08/12    | 0           |              |            |      |     |     |     |     |      |     |  |

Start date 05/05/10  
 Finish date 10/11/14  
 Data date 30/09/11  
 Run date 17/10/11  
 Page number 2A

- Early bar
- Progress bar
- Critical bar
- Summary bar
- ▲ Progress point
- ▼ Critical point
- Summary point
- ◆ Start milestone point
- ◆ Finish milestone point

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

(Marked on 30 Sep 2011)

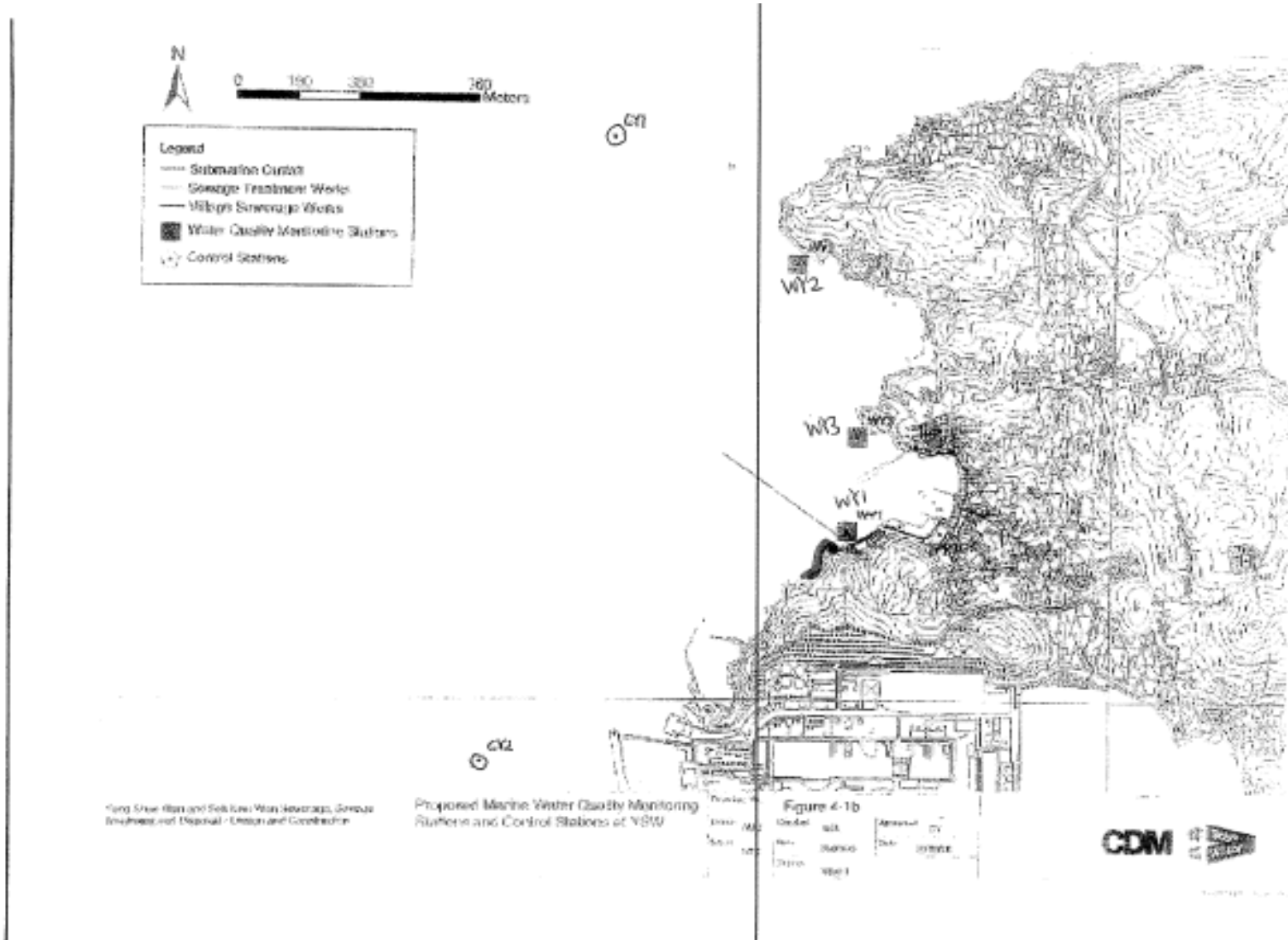
| Date     | Revision   | Checked | Approved |
|----------|------------|---------|----------|
| 30/09/10 | Revision 0 | StL     | VC       |
|          |            |         |          |
|          |            |         |          |
|          |            |         |          |

## **Appendix D**

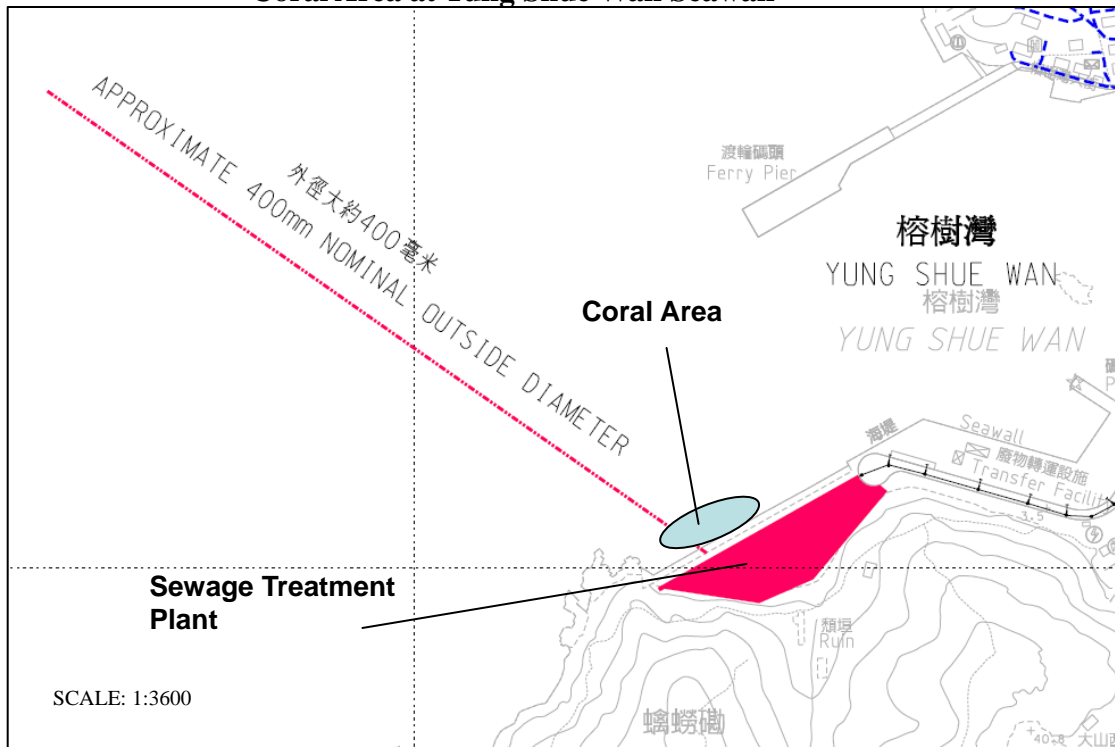
### **Location of Monitoring Stations (Air Quality / Construction Noise / Marine Water Quality / Ecology)**



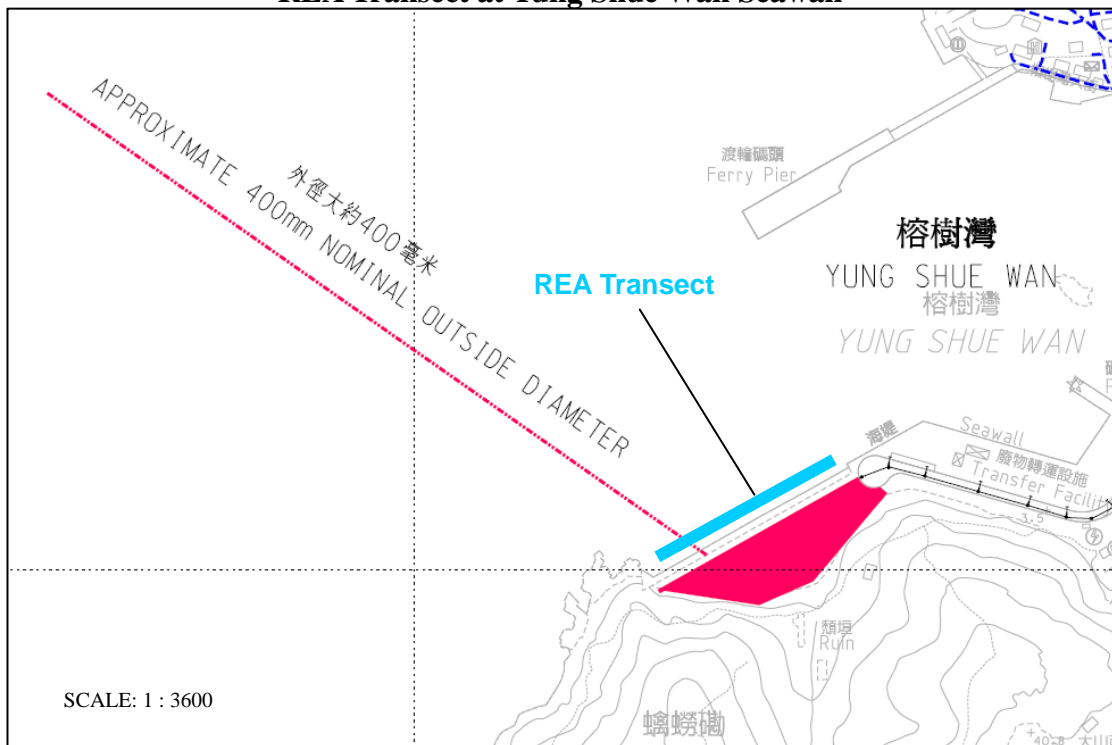




**Coral Area at Yung Shue Wan Seawall**



**REA Transect at Yung Shue Wan Seawall**



### Coral Area at Sham Wan



### REA Transect at Sham Wan

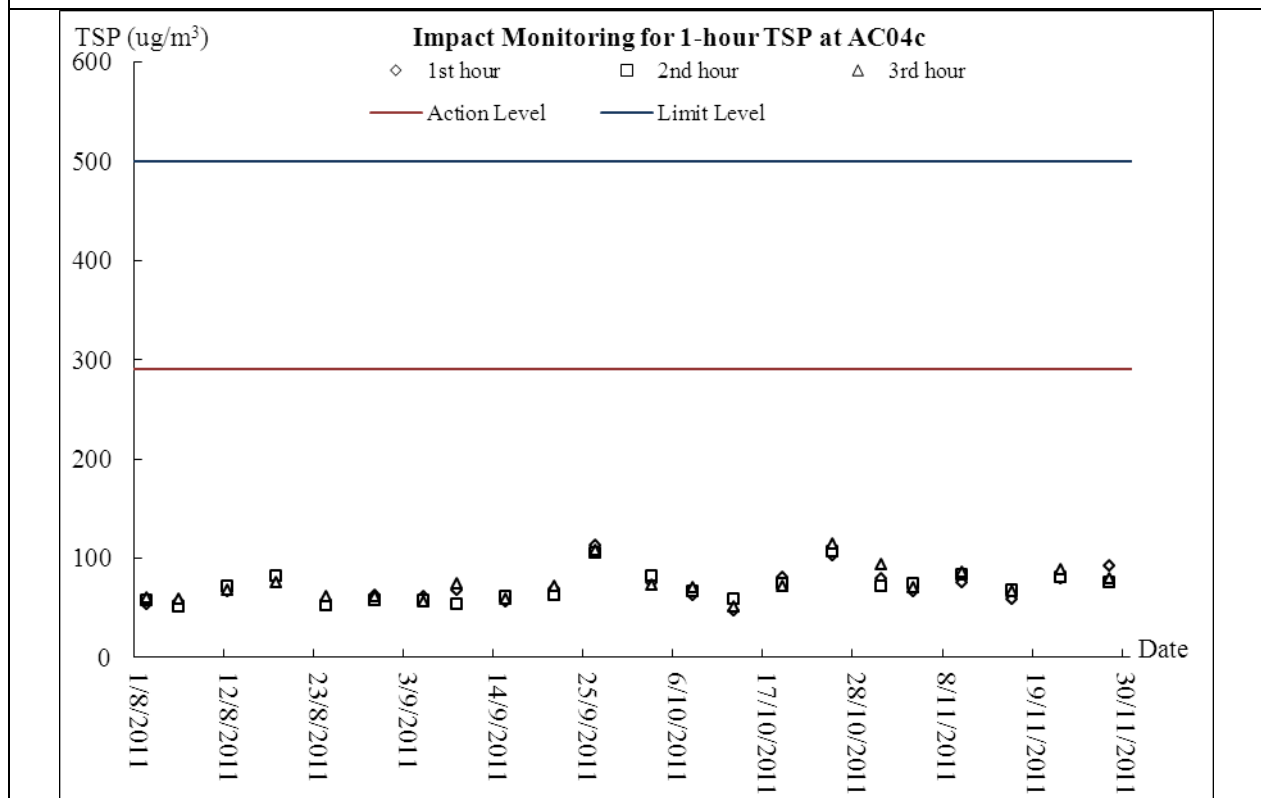
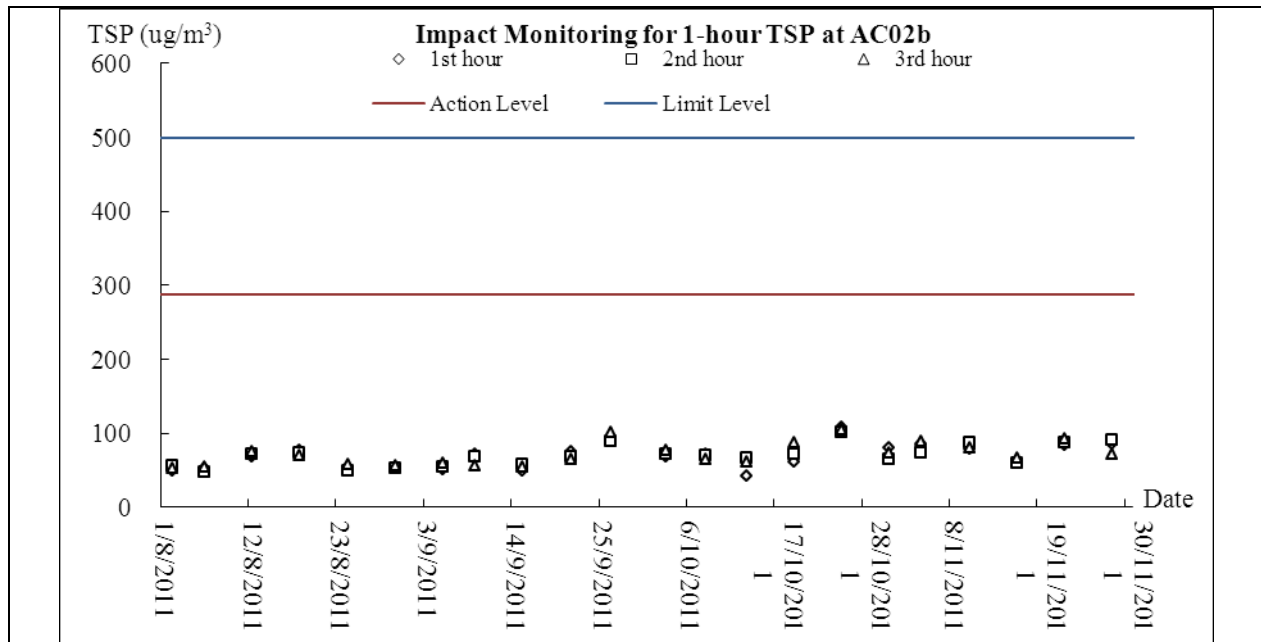


## **Appendix E**

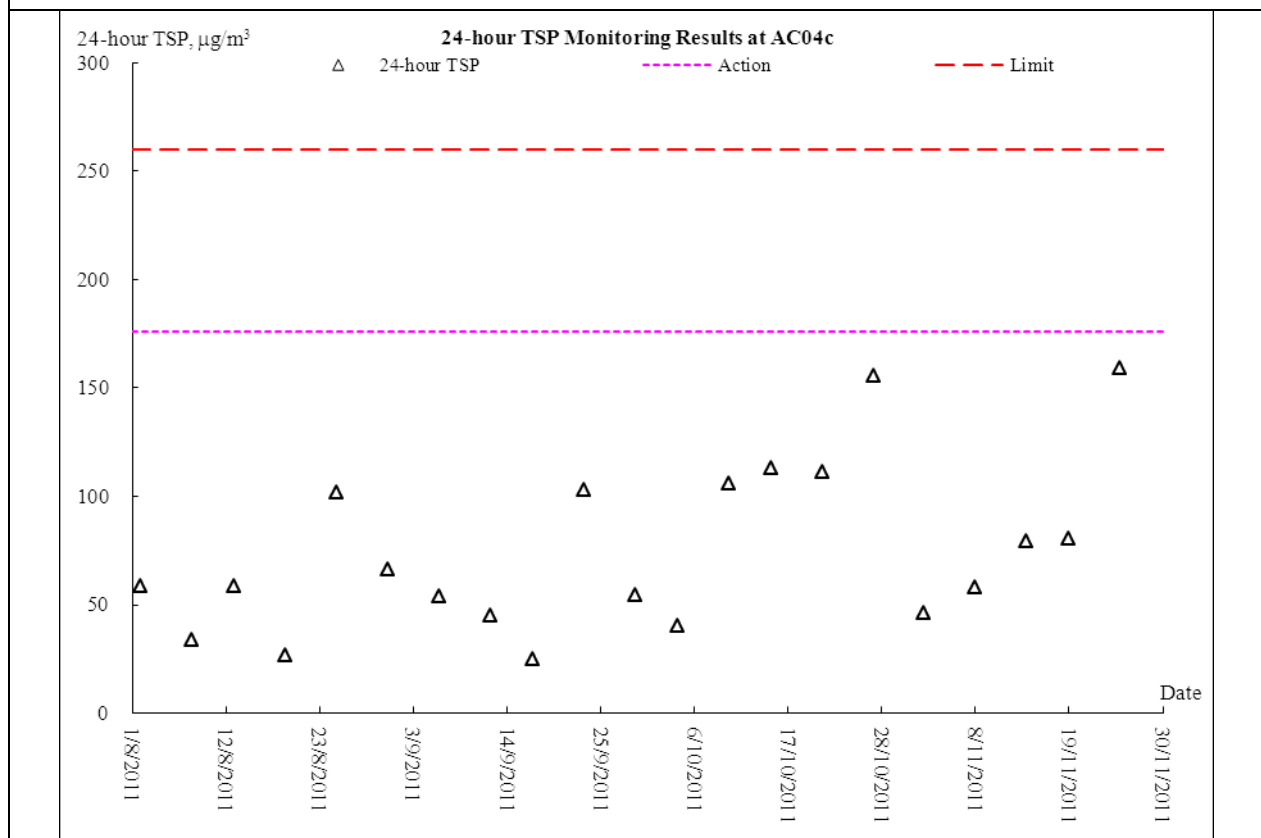
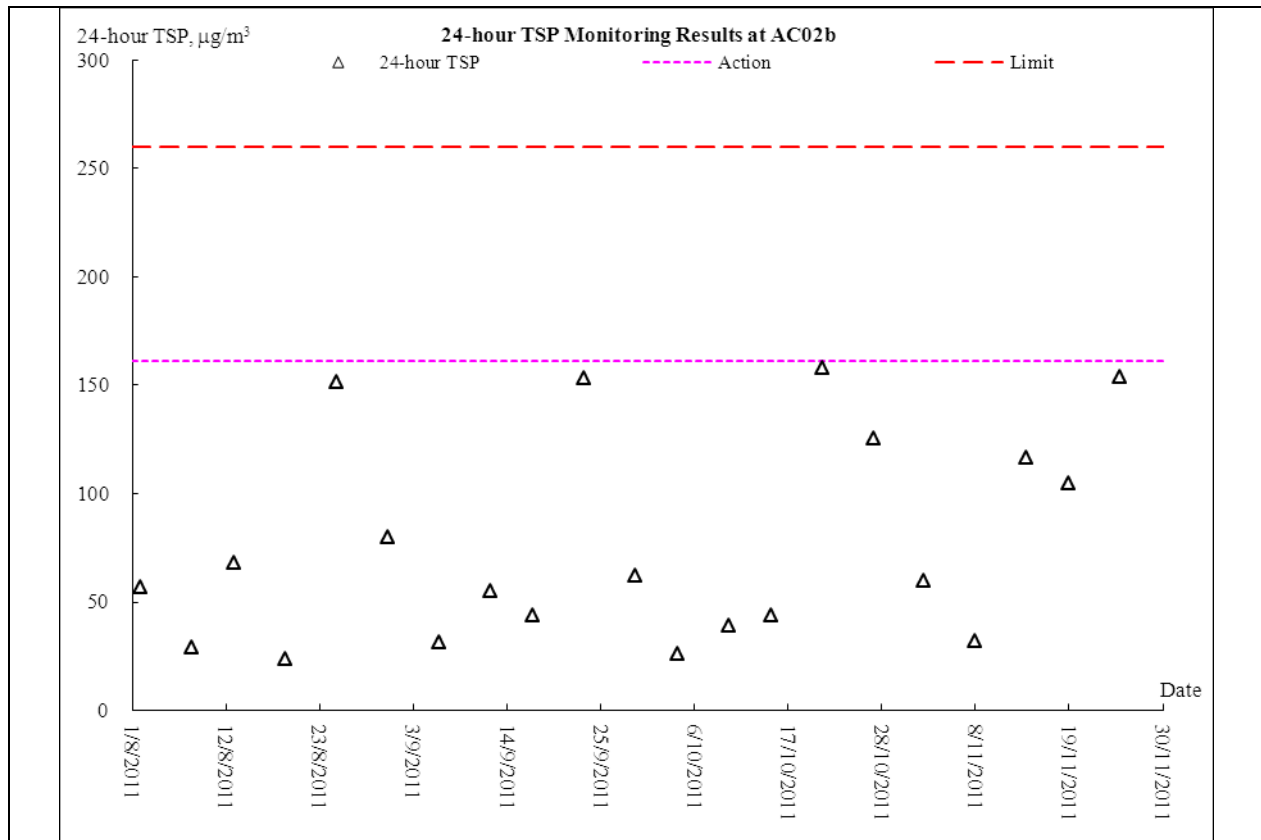
### **Graphical Plots of Impact Monitoring**

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

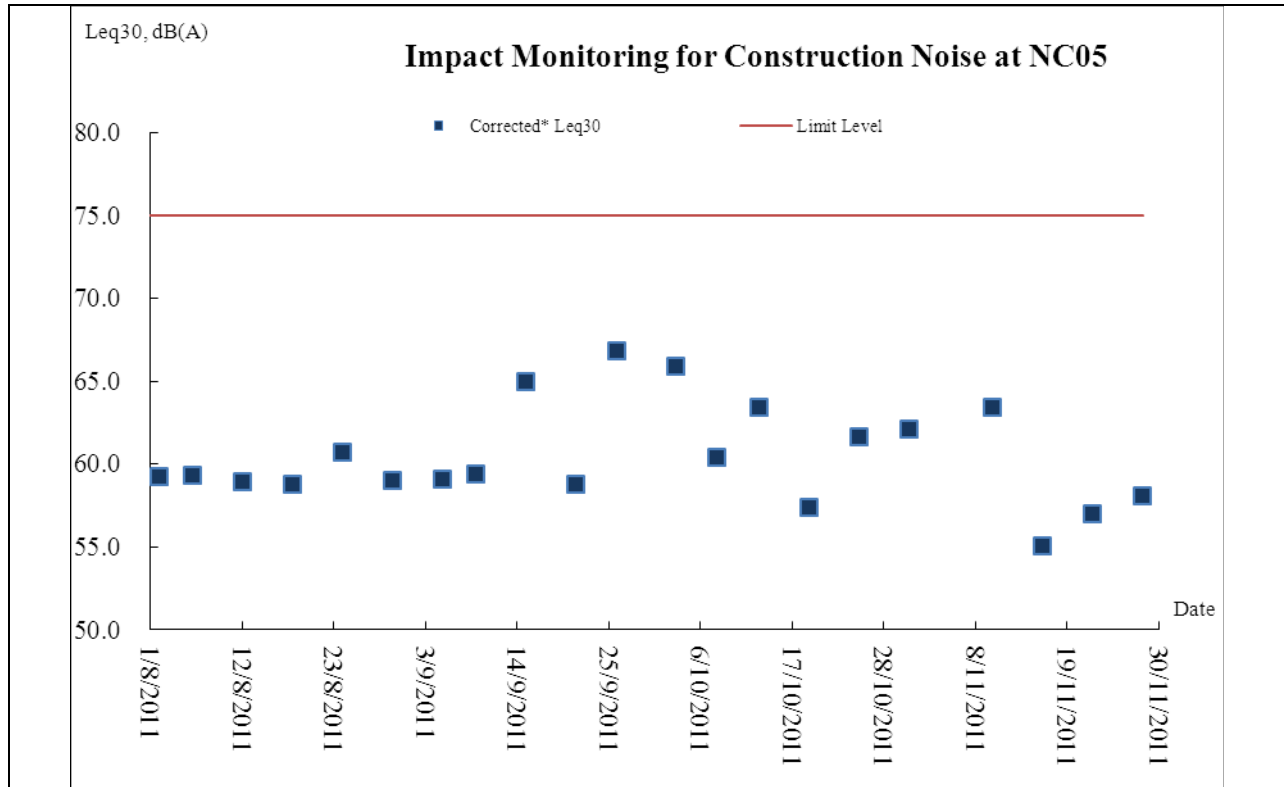
**Air Quality – 1-hour TSP Monitoring**



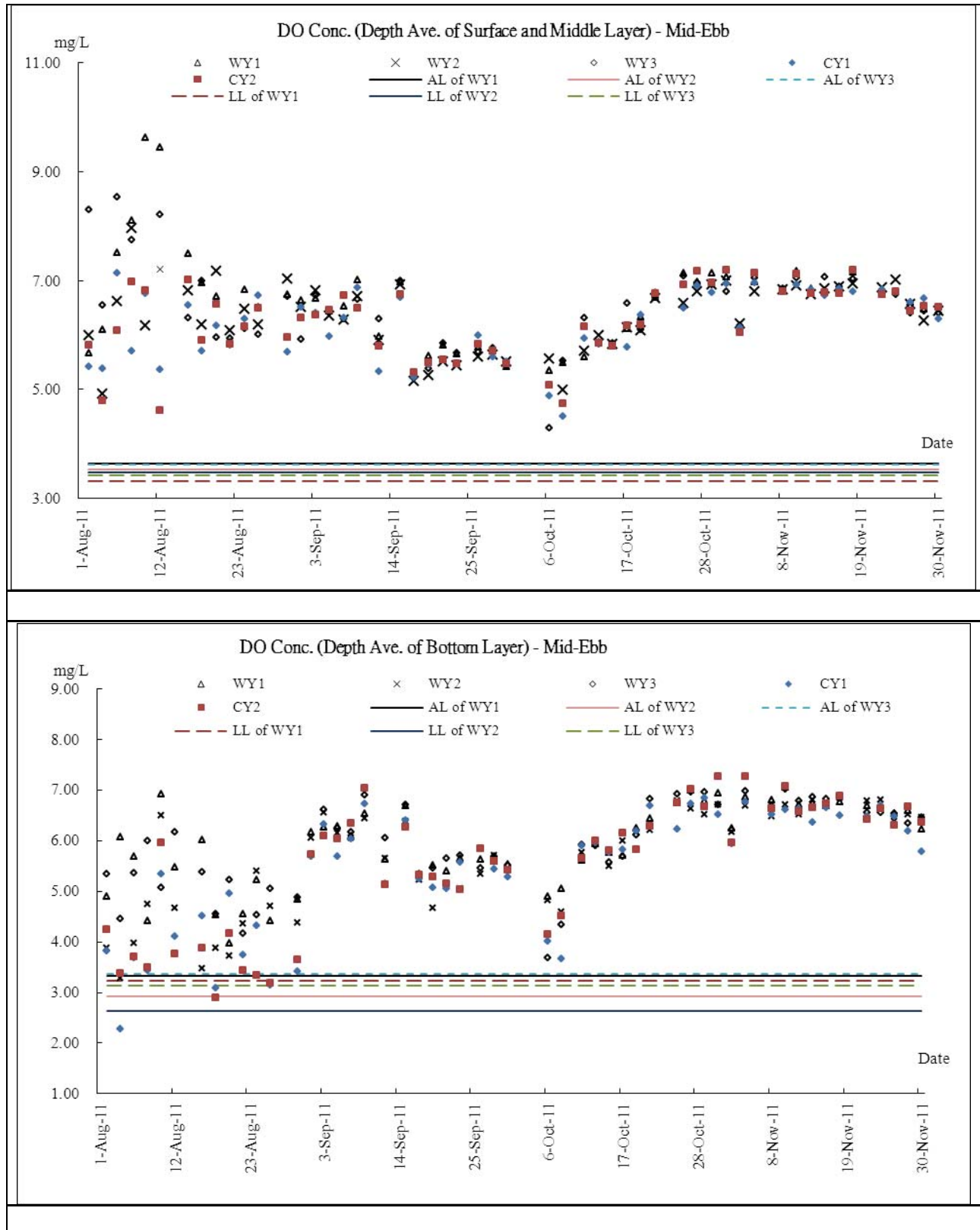
**Air Quality – 24-hour TSP Monitoring**



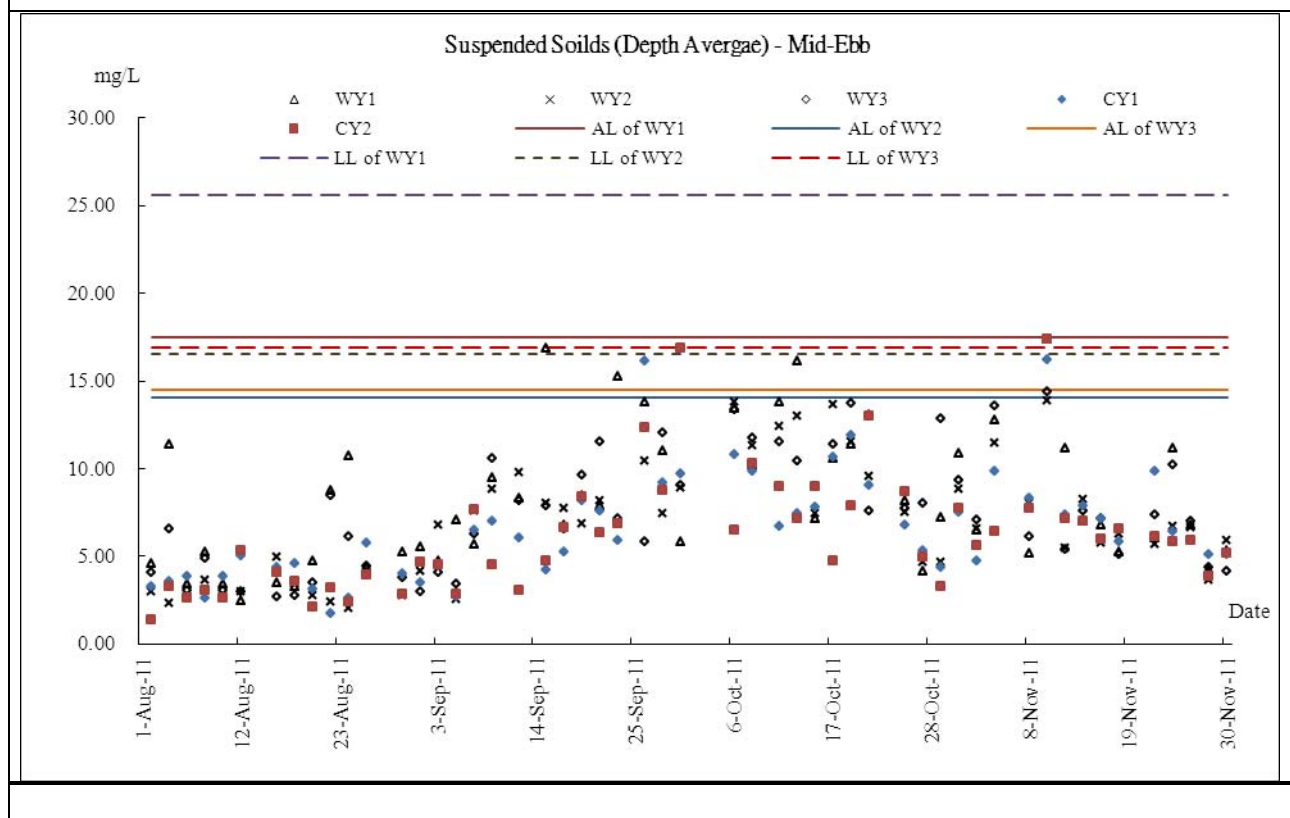
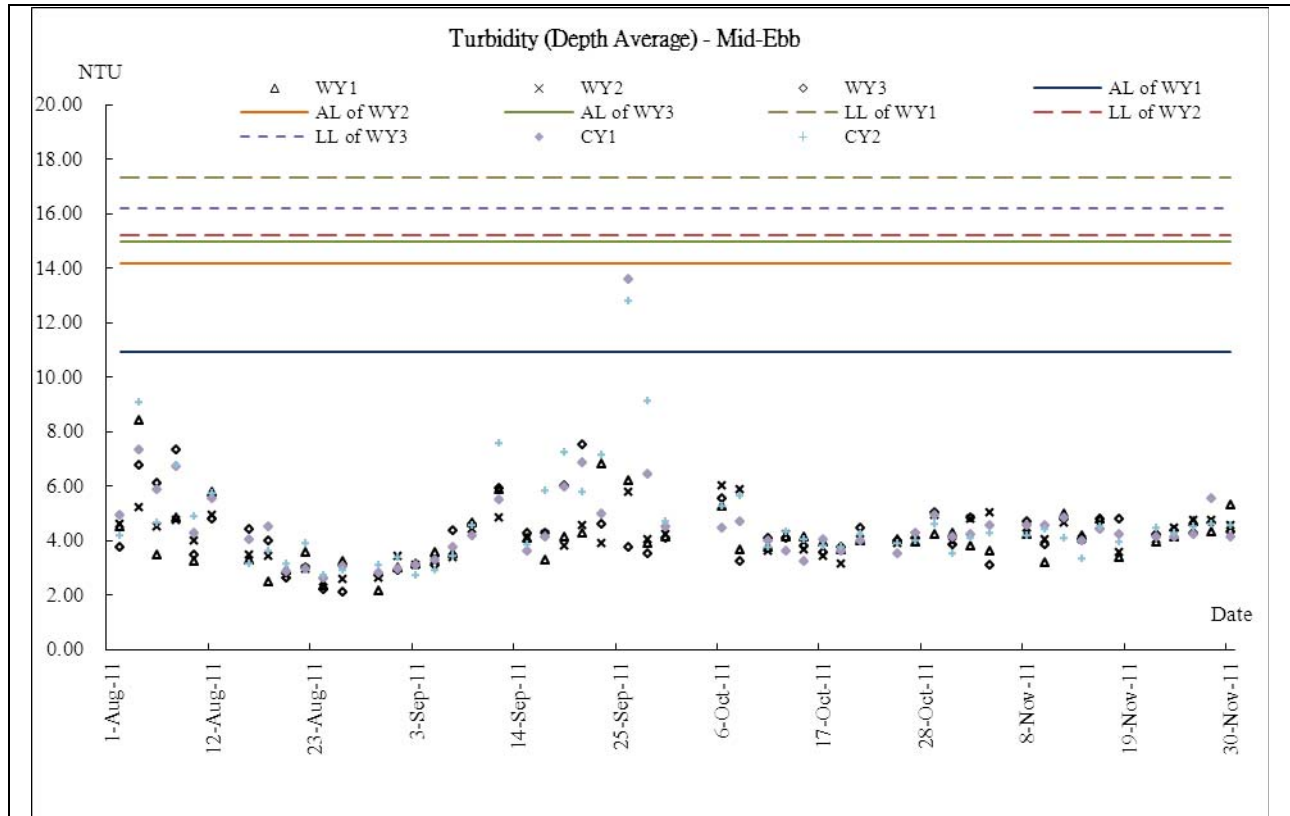
**Construction Noise**



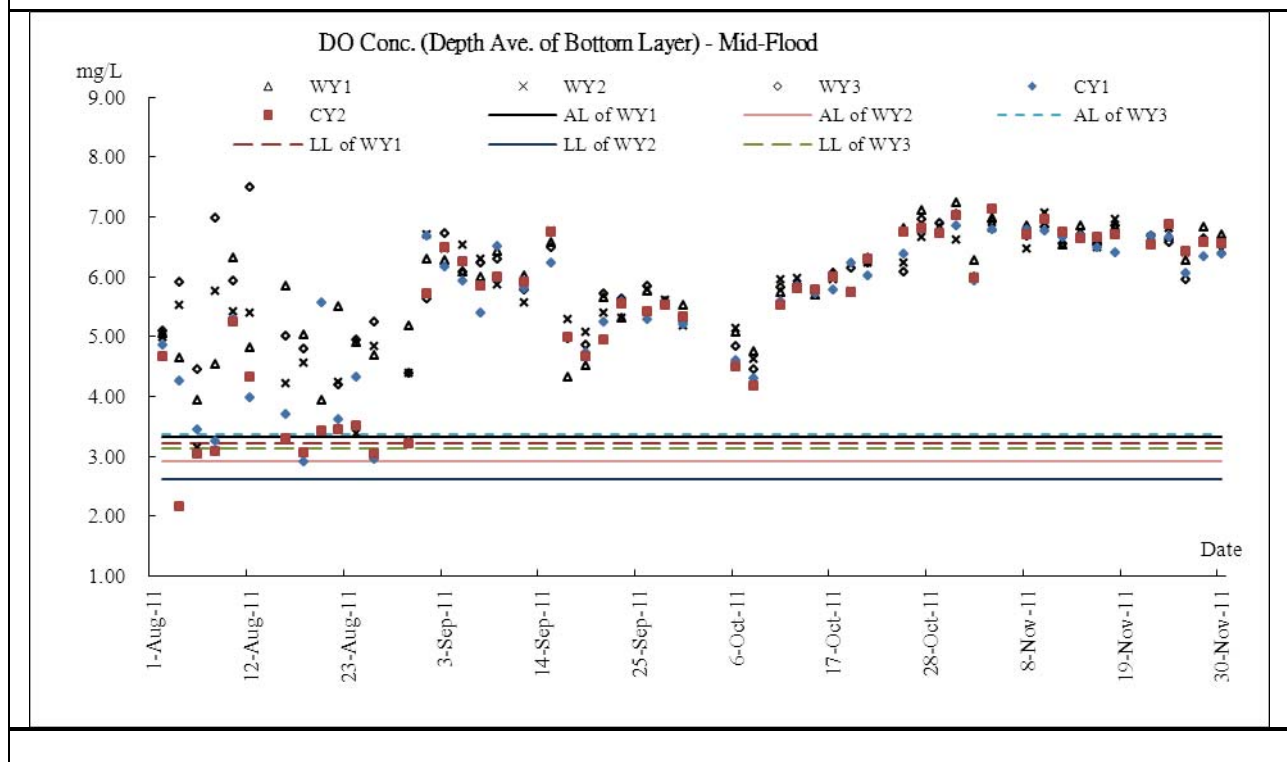
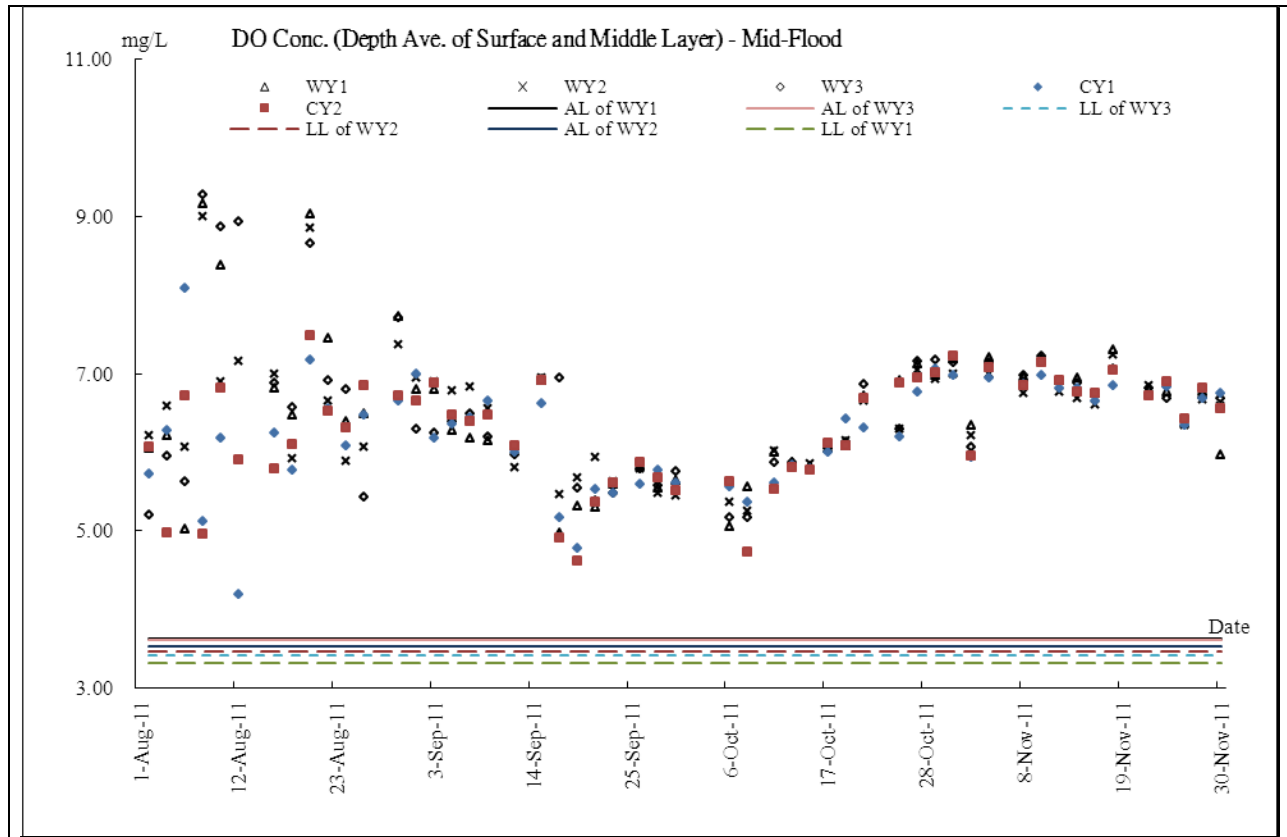
### Marine Water Quality – Mid-Ebb

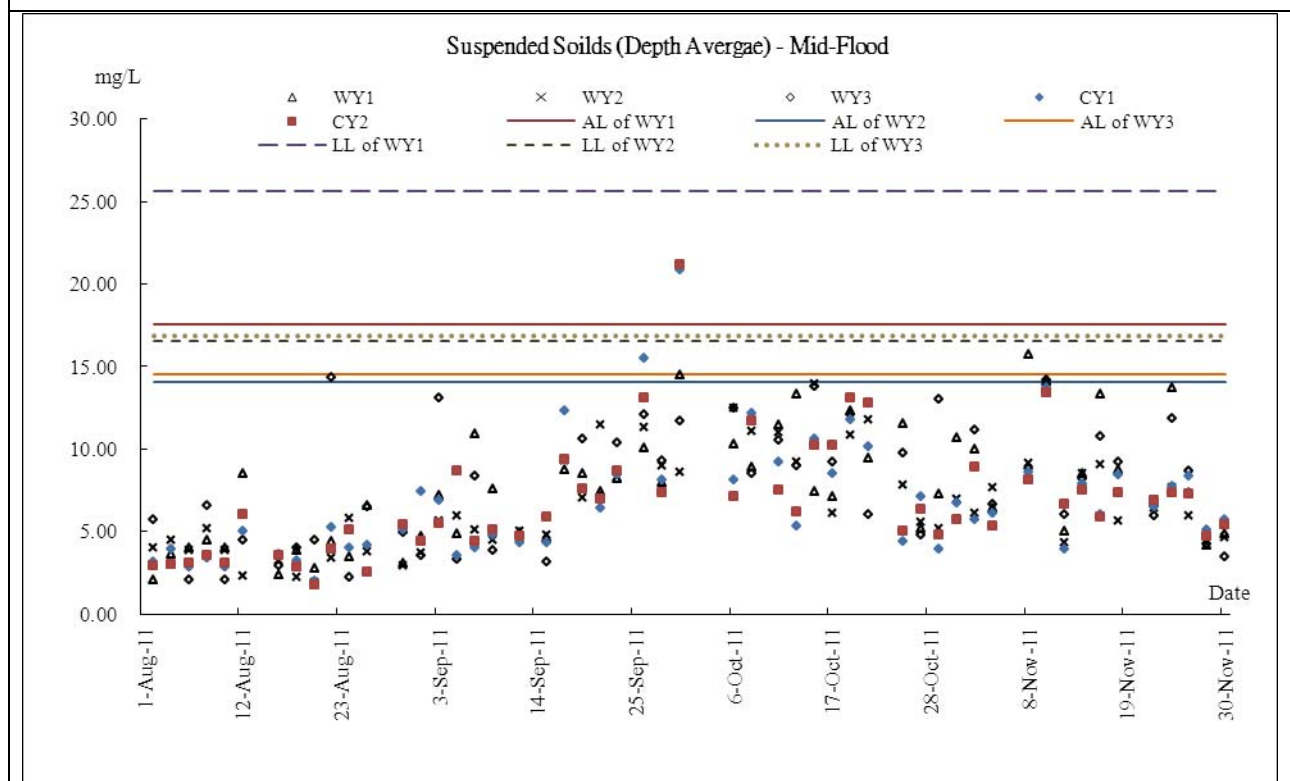
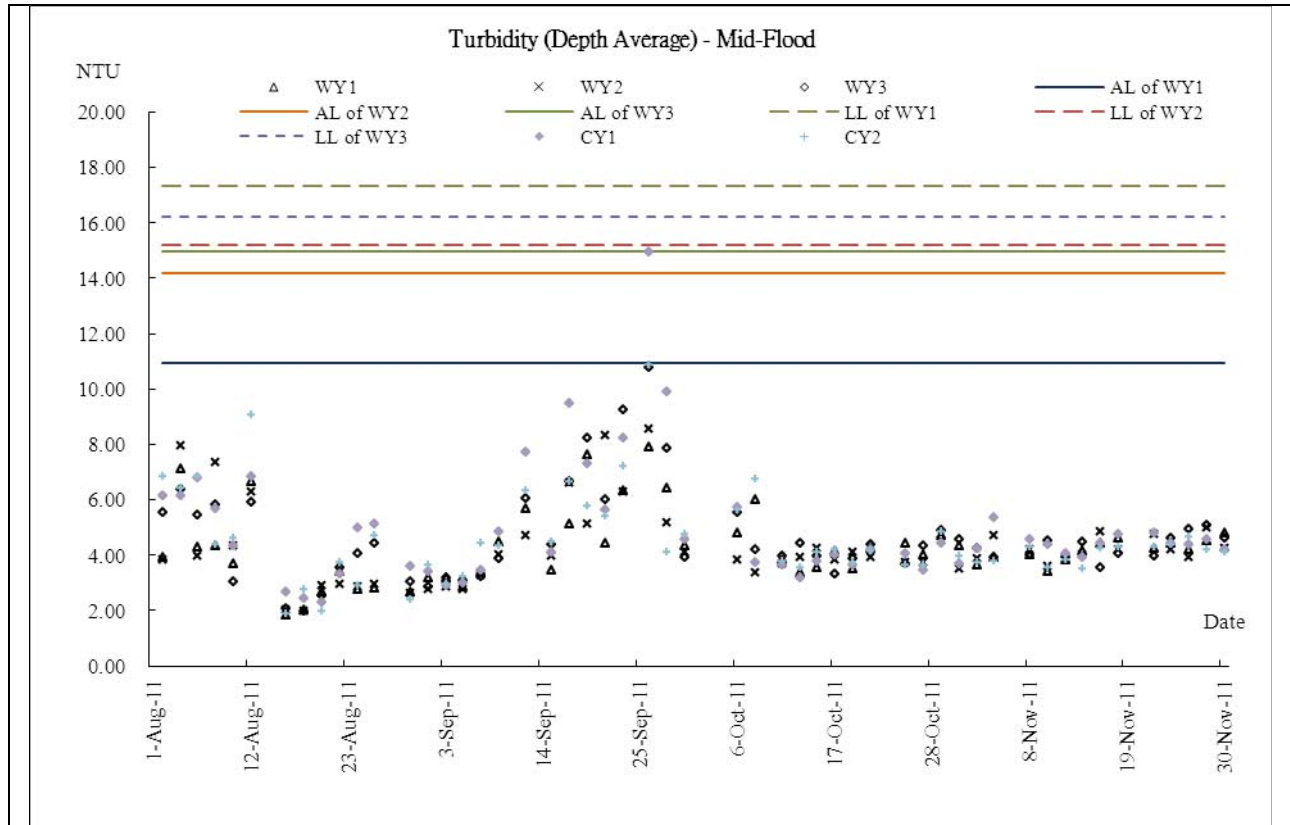






### Marine Water Quality – Mid-Flood





## **Appendix F**

### **Meteorological Information**

### **Meteorological condition – September 2011**

In spite of a major tropical cyclone affecting Hong Kong during September 2011, the total rainfall recorded for the month was only 123.1 millimetres or 43 percent of the normal figure. The accumulated rainfall since 1 January of 1215.4 millimetres still suffers a deficit of 44 percent compared to the normal figure of 2161.2 millimetres for the same period. The month was also warmer than usual with a monthly mean temperature of 28.0 degrees which was 0.4 degrees above normal.

### **Meteorological condition– October 2011**

October 2011 started off gloomy and wet with mostly fine and dry weather prevailing in the latter half of the month. On the whole, the month was cooler and wetter than usual. The mean temperature of the month of 24.8 degree was 0.5 degrees below the normal figure of 25.3 degrees. The total rainfall recorded in the month was 172.4 millimetres, about 13 percent above normal. However, the accumulated rainfall since 1 January of 1387.8 millimetres still suffered a deficit of 40 percent compared to the normal figure of 2313.1 millimetres for the same period.

### **Meteorological condition– November 2011**

As the northeast monsoon affecting southern China was relatively weak, November 2011 was warmer than usual in Hong Kong. The mean temperature of the month was 23.0 degrees, 1.6 degrees above the normal figure of 21.4 degrees. The month was also wetter than usual with the monthly total rainfall of 86.1 millimetres, more than double the normal figure of 35.1 millimetres. However, the accumulated rainfall since 1 January was only 1473.9 millimetres, still a deficit of about 37 percent compared to the normal figure of 2348.2 millimetres for the same period.

*Note: please refer to the monthly EM&A report (Sep-Nov 2011) for the weather details on each successive day.*

## **Appendix G**

### **Monthly Summary Waste Flow Table**

## Monthly Summary Waste Flow Table for November 2011

| Month            | Actual Quantities of Inert C&D Materials Generated Monthly |         |  |        |                               |        |                                 |        |                                |        |                          |        | Actual Quantities of C&D Wastes Generated Monthly |        |                                  |        |             |        |                |        |                         |         |         |
|------------------|--|---------|--|--------|-------------------------------|--------|---------------------------------|--------|--------------------------------|--------|--------------------------|--------|---|--------|----------------------------------|--------|-------------|--------|----------------|--------|-------------------------|---------|---------|
|                  | Total Quantity Generated<br>(a) = (c)+(d)+(e)              |         | Hard Rock and Large Broken Concrete<br>(b) |        | Reused in the Contract<br>(c) |        | Reused in other Projects<br>(d) |        | Disposed as Public Fill<br>(e) |        | Imported Fill<br>(f)     |        | Metals  |        | Paper/<br>cardboard<br>packaging |        | Plastics    |        | Chemical Waste |        | Others,<br>e.g. rubbish |         |         |
|                  | (in '000m <sup>3</sup> )                                   |         | (in '000m <sup>3</sup> )                   |        | (in '000m <sup>3</sup> )      |        | (in '000m <sup>3</sup> )        |        | (in '000m <sup>3</sup> )       |        | (in '000m <sup>3</sup> ) |        | (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     |         |
| <b>2010</b>      | 4.522  | 0.030   | 0.068                                      | 0.104  | 0.488                         | 0.000  | 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                   | 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                   | 0.000   | 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                   | 0.000   | 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  | 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  | 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  | 0.000                   | 9.610   | 1.510   |
| <b>Sub-total</b> | 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 | 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  | 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  | 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  | 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  | 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  | 0.000                   | 81.790  | 4.590   |
| Dec              |  |         |  |        |                               |        |                                 |        |                                |        |                          |        |   |        |                                  |        |             |        |                |        |                         |         |         |
| <b>Total</b>     | 10.4296  | 20.8843 | 0.1596                                     | 0.3880 | 0.740                         | 1.059  | 0.000                           | 19.795 | 9.6899                         | 0.0303 | 0.00                     | 0.00   | 0.00  | 0.00   | 0.00                             | 0.00   | 0.00        | 0.00   | 0.00           | 0.00   | 0.00                    | 149.73  | 45.14   |
|                  | 31.314   |         | 0.548                                      |        | 1.799                         |        | 19.795                          |        | 9.720                          |        | 0.000                    |        | 0.000   |        | 0.000                            |        | 0.000       |        | 0.000          |        | 194.87                  |         |         |

Remark: Assume 1.0 m<sup>3</sup> 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 |  |
| <b>Construction Phase</b> |           |   |  |                                |                         |   |   |  |
| 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: <ul style="list-style-type: none"> <li>• Stockpiles of imported material kept on site should be contained within hoardings, dampened and / or covered during dry and windy weather;</li> <li>• Material stockpiled alongside trenches should be covered with tarpaulins whenever works are close to village houses;</li> <li>• Water sprays should be used during the delivery and handling of cement, sands, aggregates and the like.</li> <li>• 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.</li> </ul> | 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 |                                   |
| <b>Construction Phase</b> |            |   |  |                                |                          |   |   |                                   |
| 2.4.16                    | 3.8.2      | Implementation of following measures during the sewer construction: <ul style="list-style-type: none"> <li>• Use of quiet PME or method;</li> <li>• Restriction on the number plant (1 item for each type of plant); and</li> <li>• Good Site Practices                             <ul style="list-style-type: none"> <li>➤ Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.</li> <li>➤ Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>➤ 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.</li> <li>➤ 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.</li> <li>➤ Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul> </li> </ul> | 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 |                                     |
| <b>Construction Phase</b> |          |  |  |                      |                         |   |   |                                     |
| 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   | <p>Dredging Works</p> <p>Implementation of following measures during the dredging works:</p> <ul style="list-style-type: none"> <li>dredging should be undertaken using closed grab dredgers with a maximum total production rate of 55m<sup>3</sup>/hr;</li> <li>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;</li> <li>dredging operation should be undertaken during ebb tide only;</li> <li>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;</li> <li>all pipe leakages should be repaired promptly and plant should not be operated with leaking pipes;</li> <li>excess material should be cleaned from the decks and exposed fittings of barges before the vessel is moved;</li> <li>adequate freeboard (i.e. minimum of 200mm) should be maintained on barges to ensure that decks are not washed by wave action;</li> <li>all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material;</li> <li>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</li> </ul> | 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 |                                     |
|         |          | <ul style="list-style-type: none"> <li>the decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard.</li> </ul>   |   |                      |                         |   |   |                                     |
| 2.5.39  | 4.12.4   | <p><u>Construction Run-off and Drainage</u></p> <p>Implementation of the following site practices outlined in ProPECC PN 1/94 for “Construction Site Drainage”</p> <ul style="list-style-type: none"> <li>Provision of perimeter channels to intercept storm-runoff from outside the site. These should be constructed in advance of site formation works and earthworks.</li> <li>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.</li> <li>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.</li> <li>Careful programming of the works to minimise soil excavation works during rainy seasons.</li> <li>Exposed soil surface should be protected by paving or hydroseeding as soon as possible to reduce the potential of soil erosion.</li> <li>Trench excavation should be avoided in the wet season, and if necessary, these should be excavated and backfilled in short sections.</li> <li>Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric</li> </ul> | Construction works sites                    | Contractor           |                         | √ |   | ProPECC PN 1/94                     |
| 2.5.39  | 4.12.5   | <p><u>General Construction Activities</u></p> <ul style="list-style-type: none"> <li>Debris and rubbish generated on-site should be collected, handled and disposed of properly to avoid entering the nearby coastal waters and stormwater drains.</li> </ul>  | 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 |                                     |
|         |           | <ul style="list-style-type: none"> <li>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.</li> <li>Open drainage channels and culverts near the works areas should be covered to block the entrance of large debris and refuse.</li> </ul> |   |                      |                         |   |   |                                     |
| 2.5.39  | 4.12.6    | <u>Wastewater Arising from Workforce</u><br>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: <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul> | 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 |   |
| <b>Construction Phase</b> |          |   |                                |                      |                          |   |   |   |
| 2.9.14                    | 6.6.2    | <u>Good site practices</u> <ul style="list-style-type: none"> <li>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</li> <li>Training (proper waste management and chemical handling procedure) should be provided for site staffs</li> <li>Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.</li> <li>Provision of sufficient waste disposal points and regular collection for disposal.</li> <li>Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility.</li> <li>Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> <li>Maintain records of the quantities of wastes generated, recycled and disposed.</li> </ul> | 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: <ul style="list-style-type: none"> <li>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;</li> <li>to encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to</li> </ul>  | 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; <ul style="list-style-type: none"> <li>any unused chemicals or those with remaining functional capacity should be recycled;</li> <li>use of reusable non-timber formwork to reduce the amount of C&amp;D material;</li> <li>prior to disposal of C&amp;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;</li> <li>proper storage and site practices to minimise the potential for damage or contamination of construction materials; and</li> <li>plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> </ul> |                                |                      |                          |   |   |  |
| 2.9.18  | 6.2.5           | <u>General Site Wastes</u> <ul style="list-style-type: none"> <li>A collection area for construction site waste should be provided where waste can be stored prior to removal from site</li> <li>An enclosed and covered area for the collection of the waste is recommended to reduce 'wind blow' of light material</li> </ul>   | 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> <ul style="list-style-type: none"> <li>After use, chemical waste should be handled according to the Code of Practice on the Package, Labelling and Storage of Chemical Wastes</li> <li>Any unused chemicals or those with remaining functional capacity should be recycled</li> <li>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.</li> </ul>   | 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 |  |
|                   |                 | <ul style="list-style-type: none"> <li>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.</li> <li>Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should be undertaken within the designated areas equipped control these discharges</li> </ul>  |                                |                      |                          |   |   |  |
| 2.9.21 and 2.9.22 | 6.2.8 and 6.2.9 | <p><u>Construction and Demolition Material</u></p> <ul style="list-style-type: none"> <li>The C&amp;D waste should be separated on-site into three categories: <ul style="list-style-type: none"> <li>➤ public fill, the inert portion of the C&amp;D material (e.g. concrete and rubble), which should be re-used on-site or disposed of at a public filling area;</li> <li>➤ C&amp;D waste for re-use and / or recycling, the non-inert portion of the C&amp;D material, (e.g. steel and other metals, woods, glass and plastic);</li> <li>➤ C&amp;D waste which cannot be re-used and / or recycled (e.g. wood, glass and plastic)</li> </ul> </li> <li>Where possible, inert material should be re-used on-site</li> <li>Where practicable, steel and other metals should be separated for re-use and/or recycling prior to disposal of C&amp;D material</li> </ul> | During all construction phases | Contractors          |                          | √ |   | WBTC No. 4/98, 5/98, 21/2002, 25/99, 12/2000 |

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\*\* 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 |                                   |
| <b>Construction Phase</b> |             |   |  |                      |                       |   |   |                                   |
| 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 and the second layer at around 50m from the dredging area while dredging works are in progress   | All work sites / during construction phase | Contractor           |                       | √ |   |                                   |
| 2.6.51                    | 7.6.1       | Fence off the slope stabilisation works area from surrounding shrubland and/ woodland, to prevent access to or disturbance of adjacent habitats. The works area should be as small as is possible, consistent with the requirements of the works. | STW/ During construction                   | Contractor           |                       | √ |   |                                   |

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\*\* D=Design, C=Construction, O=Operation

N/A Not applicable

**Implementation Schedule of Fisheries Impact Measures**

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

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 \*\* 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 |                                   |
| <b>Construction Phase</b> |          |   |                   |                      |                          |   |   |                                   |
| 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 <i>Macaranga tanarius</i> 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           |                          | √ |   |                                   |

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