



PROJECT No.: TCS/00512/09

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

**SOK KWU WAN PORTION AREA  
Quarterly Environmental Monitoring and Audit  
(EM&A) Summary Report No. Q12  
(May to July 2013)**

PREPARED FOR  
**LEADER CIVIL ENGINEERING CORPORATION  
LIMITED**

Quality Index Date	Reference No.	Prepared By	Certified By
24 Sep 2013	TCS00512/09/600/R0685v1		
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Version	Date	Description
1	24 September 2013	First submission

# URS CDM Joint Venture

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Hong Kong

Your reference:  
Our reference: 05117/6/16/418200  
Date: 15 October 2013

**BY FAX ONLY**

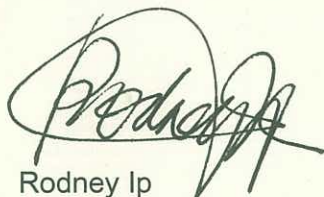
Attention: Ms. Jacky C M Wong

Dear Sirs

**Contract No. DC/2009/13**  
**Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan**  
**Sok Kwu Wan Portion Area**  
**Quarterly EM&A Summary Report No. Q12 (May to July 2013)**

We refer to the Environmental Permit (EP-281/2007/A) and the email from the Environmental Team, Action-United Environmental Services and Consulting (AUES), with the revised report for the captioned project, dated 15 September 2013. We have no comment and have verified the captioned report.

Yours faithfully  
URS CDM JOINT VENTURE



Rodney Ip  
Independent Environmental Checker

ICWR/KKK/lykl

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

## EXECUTIVE SUMMARY

ES.01 This is the 12<sup>th</sup> Quarterly Environmental Monitoring and Audit (EM&A) Summary Report for Sok Kwu Wan (hereinafter ‘this Report’) for the designated works under the Environmental Permit [EP-281/2007/A], covering the construction period from 26 April to 25 July 2013 (hereinafter ‘the Reporting Period’).

### ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

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

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	144
	24-hour TSP	45
Construction Noise	L <sub>eq(30min)</sub> Daytime	64
Water Quality	Marine Water Sampling	36
Inspection / Audit	ET Regular Environmental Site Inspection	13

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

ES.03 No exceedance of air quality, construction noise and marine water quality monitoring were recorded in this Reporting Period. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	--	--
	24-hour TSP	0	0	0	--	--
Construction Noise	L <sub>eq(30min)</sub> Daytime	0	0	0	--	--
Water Quality	DO	0	0	0	--	--
	Turbidity	0	0	0	--	--
	SS	0	0	0	--	--

Note: NOE – Notification of Exceedance

ES.04 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.

### ENVIRONMENTAL COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.05 No written or verbal environmental complaint, summons or successful prosecutions were recorded in this Reporting Period.

### REPORTING CHANGE

ES.06 No reporting change was made in this Reporting Period.

### FUTURE KEY ISSUES

ES.07 During wet season, 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 is the key issue of the Project. Mitigation measures for water quality should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary.

ES.08 Muddy water and other water quality pollutants via site surface water runoff into the sea body within Fish Culture Zone (FCZ) at Picnic Bay and the secondary recreation contact subzone at Mo Tat Wan is the key issue of the Project. Mitigation measures for water quality should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary.

**TABLE OF CONTENTS**

<b>1</b>	<b>INTRODUCTION</b>	<b>3</b>
1.1	PROJECT BACKGROUND	3
1.2	REPORT STRUCTURE	3
<b>2</b>	<b>PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS</b>	<b>4</b>
2.1	PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE	4
2.2	CONSTRUCTION PROGRESS	4
2.3	SUMMARY OF ENVIRONMENTAL SUBMISSIONS	4
<b>3</b>	<b>SUMMARY OF MONITORING REQUIREMENTS</b>	<b>5</b>
3.1	ENVIRONMENTAL ASPECT	5
3.2	MONITORING LOCATIONS	5
3.3	MONITORING FREQUENCY AND PERIOD	6
3.4	MONITORING EQUIPMENT	7
3.5	EQUIPMENT CALIBRATION	8
3.6	METEOROLOGICAL INFORMATION	8
3.7	DATA MANAGEMENT AND DATA QA/QC CONTROL	8
3.8	DETERMINATION OF ACTION/LIMIT (A/L) LEVELS	9
<b>4</b>	<b>IMPACT MONITORING RESULTS</b>	<b>10</b>
4.1	RESULTS OF AIR QUALITY MONITORING	10
4.2	RESULTS OF CONSTRUCTION NOISE MONITORING	10
4.3	RESULTS OF MARINE WATER QUALITY OF MONITORING	10
4.4	ECOLOGICAL MONITORING	12
<b>5</b>	<b>WASTE MANAGEMENT</b>	<b>13</b>
5.1	RECORDS OF WASTE QUANTITIES	13
<b>6</b>	<b>SITE INSPECTION</b>	<b>14</b>
<b>7</b>	<b>ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE</b>	<b>16</b>
7.1	ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION	16
<b>8</b>	<b>IMPLEMENTATION STATUS OF MITIGATION MEASURES</b>	<b>17</b>
<b>9</b>	<b>CONCLUSIONS AND RECOMMENTATIONS</b>	<b>23</b>
9.1	CONCLUSIONS	23
9.2	RECOMMENDATIONS	23

### **LIST OF APPENDIX**

Appendix A	Site Layout Plan – Sok Kwu Wan Portion Area
Appendix B	Organization Structure and Contact Details of Relevant Parties
Appendix C	Master and Three Months Rolling Construction Programs
Appendix D	Location of Monitoring Stations (Air Quality / Construction Noise / Marine Water Quality)
Appendix E	Graphical Plots of Impact Monitoring (Air Quality/ Construction Noise /Marine Water Quality)
Appendix F	Meteorological Information
Appendix G	Monthly Summary Waste Flow Table

### **LIST OF TABLES**

Table 2-1	Status of Environmental Licenses and Permits
Table 3-1	Summary of the Air and Noise monitoring parameters of EM&A Requirements
Table 3-2	Location of Air Quality Monitoring Station
Table 3-3	Location of Construction Noise Monitoring Station
Table 3-4	Location of Marine Water Quality Monitoring Station
Table 3-5	Action and Limit Levels for Air Quality Monitoring
Table 3-6	Action and Limit Levels for Construction Noise
Table 3-7	Action and Limit Levels for Marine Water Quality Monitoring
Table 4-1	Summary of 24-hour and 1-hour TSP Monitoring Results
Table 4-2	Summary of Construction Noise Monitoring Results
Table 4-3	Summary of Water Quality Exceedances
Table 5-1	Summary of Quantities of Inert C&D Materials
Table 5-2	Summary of Quantities of C&D Wastes
Table 6-1	Site Observations
Table 7-1	Statistical Summary of Environmental Complaints
Table 7-2	Statistical Summary of Environmental Summons
Table 7-3	Statistical Summary of Environmental Prosecution
Table 8-1	Environmental Mitigation Measures

## 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 (EP) No. EP-281/2007 and EP-282/2007 for the Project have been obtained by the DSD on 29 June 2007 for the relevant works. After July 2009, EP-281/2007/A stead EP-281/2007 is EP for Sok Kwu Wan relevant Works.
- 1.02 The Project involves construction of sewage treatment works at Sok Kwu Wan and Yung Shue Wan with a capacity of 1,430m<sup>3</sup>/day and 2,850m<sup>3</sup>/day respectively to provide secondary treatment, construction of 2 pumping stations at Sok Kwu Wan and 1 pumping station at Yung Shue Wan, construction of submarine outfall from the coastline and lying of underground sewerage pipeline. The site layout plan for the captioned work under the Project is showing in *Appendix A*.
- 1.03 According to the Particular Specification (PS) and *Appendix 25* of the Project, Leader should establish an Environmental Team to implement the environmental monitoring and auditing works to fulfill the requirements as stipulated in the Environmental Monitoring and Audit (EM&A) Manuals. This EM&A Manual is referred to the Appendix B of the Review Report on EIA Study – Sok Kwu Wan (Final) in January 2007 (Agreement No. CE 20/2005(DS)).
- 1.04 Action-United Environmental Services and Consulting (AUES) has been commissioned by Leader as the ET to implement the relevant EM&A program. Organization chart of the Environmental Team for the Project is shown in *Appendix B*. For ease of reporting, the proposed EM&A programme for baseline and impact monitoring is spilt to following two stand-alone parts:
- (a) Proposed EM&A Programme for Baseline and Impact Monitoring – Sok Kwu Wan (under EP No. 281/2007/A varied on 23 September 2009)
  - (b) Proposed EM&A Programme for Baseline and Impact Monitoring – Yung Shue Wan (under EP No. 282/2007)
- 1.05 This is the 12<sup>th</sup> Quarterly EM&A Summary Report for Sok Kwu Wan Portion Area presenting the monitoring results and inspection findings for the reporting period from 26 April to 25 July 2013.

### 1.2 REPORT STRUCTURE

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

<b>SECTION 1</b>	<b>INTRODUCTION</b>
<b>SECTION 2</b>	<b>SUMMARY OF IMPACT ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS</b>
<b>SECTION 3</b>	<b>MONITORING RESULTS AND BREACHES OF ENVIRONMENTAL QUALITY CRITERIA</b>
<b>SECTION 4</b>	<b>NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS</b>
<b>SECTION 5</b>	<b>CONCLUSION</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:-

#### *May, June and July 2013*

- Construction of SKWSTW: Concreting, Steel Fixing, Formwork Erection, Formwork Removal, Backfilling
- Construction of SKW PS1 & PS2: E&M works installation

### 2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.03 Summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this Reporting Month 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 EPD on 19 May 2010 Ref.: 317486
2	Chemical Waste Producer Registration	Issued on 8/6/2010 WPN 5213-912-L2720-01
3	Water Pollution Control Ordinance	Approved on 29/9/2010 Valid to: 30/09/2015 Licence no.: WT00007567-2010
4	Billing Account for Disposal of Construction Waste	Issued on 26 May 2010 A/C No: 7010815
6	Construction Noise Permit	Permit no. GW-RS0419-13 Valid from: 22 April 2013 Until: 30 September 2013



### 3 SUMMARY OF MONITORING REQUIREMENTS

#### 3.1 ENVIRONMENTAL ASPECT

- 3.01 The EM&A baseline monitoring program cover the following environmental issues:
- Air quality;
  - Construction noise; and
  - Marine water quality
- 3.02 The ET implements the EM&A programme in accordance with the aforementioned requirements. Detailed air quality, construction noise and water quality of the EM&A programme are presented in the following sub-sections.
- 3.03 A summary monitoring parameters for the air quality, noise and marine water monitoring is presented in *Table 3-1*:

**Table 3-1 Summary of the Air and Noise monitoring parameters 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>• <math>L_{eq(30min)}</math> during normal working hours; and</li> <li>• <math>L_{eq(15min)}</math> 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 (DO) (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 (SS) (mg/L)</li> </ul>

#### 3.2 MONITORING LOCATIONS

##### Air Quality

- 3.04 Three air monitoring stations: AM1, AM2 and AM3 were designated in the *EM&A Manual Section 2.5*. The detailed air monitoring stations is described in *Table 3-2* and graphical is shown in *Appendix D*.

**Table 3-2 Location of Air Quality Monitoring Station**

Sensitive Receiver	Location
AM1	Squatter house in Chung Mei Village
AM2	Squatter house in Chung Mei Village
AM3	Football court

##### Construction Noise

- 3.05 According to *EM&A Manual Section 3.4* stipulations, there were four noise sensitive receivers (NM1-NM4) designated for the construction noise monitoring. NM1, NM2 and NM4 of the three designated monitoring stations were identified and are monitored by the current DSD contract DC/2007/18. However, the premises monitoring station NM3 was rejected by the owner of 1B Sok Kwu Wan and an alternative noise monitoring station RNM3 replacement was proposed by the contract DC/2007/18 ET and accepted by the IEC and EPD before the baseline monitoring commencement in April 2008. The location RNM3 is located at Sok Kwu Wan sitting-out area which just 3m width footpath away from the original location house 1B. The detailed construction noise monitoring stations to also under the Project 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
NM1	1, Chung Mei Village
NM2	20, Sok Kwu Wan
RNM3	Sok Kwu Wan Sitting-out Area
NM4	2-storey village house at Ta Shui Wan

### Water Quality

- 3.06 Three control stations (C1-C3) and three impact stations (W1-W3) were recommended in the *EM&A Manual Section 4.5*. Impact stations W1-W3 identified at the sensitive receivers (FCZ and secondary contact recreation subzone) to monitor the impacts from the construction of the submarine outfall as well as the effluent discharge from the proposed STW on water quality. Three control stations: C1, C2 & C3 were specified at locations representative of the project site in its undisturbed condition and located at upstream and downstream of the works area. Detailed and co-ordination of marine water quality monitoring stations is described in *Table 3-4* and the graphical is shown in [Appendix D](#) and would be performed for EM&A programme.

**Table 3-4 Location of Marine Water Quality Monitoring Station**

Station	Description	Co-ordination	
		Easting	Northing
W1	Secondary recreation contact subzone at Mo Tat Wan	832 968	807 732
W2	Fish culture zone at Picnic Bay	832 670	807 985
W3	Fish culture zone at Picnic Bay	832 045	807 893
C1 (flood)	Control Station	833 703	808 172
C2	Control Station	831 467	807 747
C3 (ebb)	Control Station	832 220	808 862

### 3.3 MONITORING FREQUENCY AND PERIOD

- 3.07 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 and 4.8*. The monitoring requirements are listed as follows:

#### Air Quality Monitoring

Parameters: 1-hour TSP and 24-hour TSP.

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

Duration: Throughout the construction period.

#### Noise Monitoring

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

$L_{eq(15min)}$  &  $L_{eq(5min)}$ , L10 and L90 during the construction undertaken during Restricted Hours (19:00 to 07:00 hours next of normal working day and full day of public holiday and Sunday)

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

Duration: Throughout the construction period.

#### Marine Water Quality Monitoring

Parameters: Duplicate in-situ measurements: water depth, temperature, Dissolved Oxygen,

pH, turbidity and salinity;  
HOKLAS-accredited laboratory analysis: Suspended Solids

- Frequency: Three days a week, at mid ebb and mid flood tides. The interval between 2 sets of monitoring will be more than 36 hours.
- Sampling Depth
- (i.) Three depths: 1m below water surface, 1m above sea bottom and at mid-depth when the water depth exceeds 6m.
  - (ii.) If the water depth is between 3m and 6m, two depths: 1m below water surface and 1m above sea bottom.
  - (iii.) If the water depth is less than 3m, 1 sample at mid-depth is taken
- Duration: During the course of marine works

#### **Post-Construction Monitoring – Marine Water**

- 3.08 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**

- 3.09 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**

- 3.10 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**

- 3.11 ***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.
- 3.12 ***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.
- 3.13 ***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.
- 3.14 ***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.

- 3.15 **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.
- 3.16 **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.
- 3.17 **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).
- 3.18 **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.
- 3.19 **Suspended Solids Analysis** – Analysis of suspended solids shall be carried out in a HOKLAS or other international accredited laboratory.

### 3.5 EQUIPMENT CALIBRATION

- 3.20 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.
- 3.21 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.
- 3.22 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.
- 3.23 The Water Quality Monitoring equipments such as Dissolved Oxygen meter, pH meter, Turbidity Measuring Instrument and Salinometer, are calibrated by HOKLAS accredited laboratory of three month intervals.
- 3.24 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

- 3.25 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

- 3.26 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.
- 3.27 The monitoring data recorded in the equipment e.g. 1-hour TSP meter, sound level meter and

Multi-parameter Water Quality Monitoring System, are downloaded directly from the equipments at the end of each monitoring day. The downloaded monitoring data are input into a computerized database properly maintained by the ET. The laboratory results are input directly into the computerized database and QA/QC checked by personnel other than those who input the data. For monitoring activities require laboratory analysis, the local laboratory follows the QA/QC requirements as set out under the HOKLAS scheme for all laboratory testing.

### 3.8 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.28 According to the Sok Kwu Wan Environmental Monitoring and Audit Manual, the air quality, construction noise and marine water quality were set up, namely Action and Limit levels are listed in *Tables 3-5* and *3-7* 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	24-hour	1-hour	24-hour
AM1	343	173	500	260
AM2	331	175	500	260
AM3	353	191	500	260

**Table 3-6 Action and Limit Levels for Construction Noise**

Monitoring Location	Action Level	Limit Level
	0700-1900 hours on normal weekdays	
NM1 NM2 RNM3 NM4	When one or more documented complaints are received	75 dB(A) of $L_{\text{eq}(30\text{min})}$ during normal hours from 0700 to 1900 hours on normal weekdays, reduced to 70 dB(A) of $L_{\text{eq}(30\text{min})}$ for schools and 65 dB(A) during school examination periods

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

Parameter	Performance Criteria	Impact Station		
		W1	W2	W3
DO Concentration (Surface and Middle) (mg/L)	Action Level	5.39	4.64	4.71
	Limit Level	5.29	4.56	4.54
DO Concentration (Bottom) (mg/L)	Action Level	N/A	3.60	3.37
	Limit Level	N/A	3.06	3.18
Turbidity (Depth-Average) (NTU)	Action Level	4.39	4.84	6.48
	Limit Level	6.06	5.99	6.71
Suspended Solids (Depth-Average) (mg/L)	Action Level	12.41	9.24	10.79
	Limit Level	12.68	11.28	12.25

#### 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 three months are presented in [Appendix E](#).

##### 4.1 RESULTS OF AIR QUALITY MONITORING

4.02 In this Reporting Period, a total of 144 events of 1-hour TSP and 45 events of 24-hour TSP measurements were conducted at designated Location AM1, AM2 and AM3. Results of air quality monitoring at the identified locations during the Reporting Period are summarized in [Tables 4-1](#).

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

Station	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )			24-hour TSP ( $\mu\text{g}/\text{m}^3$ )		
	Max	Min	Mean	Max	Min	Mean
AM1	262	30	65	21	3	10
<b>Record Date</b>	2-Jul-13	25-Jul-13	48 events	4-Jul-13	5,11&17-Jun-13	15 events
AM2	188	33	57	27	2	12
<b>Record Date</b>	2-Jul-13	19-Jul-13	48 events	22-Jul-13	30-May-13	15 events
AM3	131	58	92	42	6	17
<b>Record Date</b>	20-Jun-13	19-Jul-13	48 events	28-Jun-13	24-May-13 & 11-Jun-13 & 10-Jul-13	15 events

4.03 1-hour and 24-hour TSP results fluctuated well below the Action Level during the Reporting Period. No NOE was issued and therefore no corrective measures are required.

##### 4.2 RESULTS OF CONSTRUCTION NOISE MONITORING

4.04 Summary of construction noise monitoring at the identified locations during the Reporting Period are summarized in [Table 4-2](#) below. In this Reporting Period, a total of 64 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
NM1	68.4	43.5
<b>Record Date</b>	2-Jul-13	31-May-13
NM2	66.6	54.0
<b>Record Date</b>	20-Jun-13	9-May-13
RNM3	70.7	56.1
<b>Record Date</b>	10-Jun-13	9-May-13
NM4	61.1	48.0
<b>Record Date</b>	25-Jul-13	26-Jun-13

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

4.05 In this Reporting Period, 36 monitoring days have been carried out at the designated locations.



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

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

Station	W1	W2	W3	C1	C2	C3
<b>Average</b>	7.27	7.17	7.26	7.08	7.29	6.88
<b>Min</b>	5.41	5.16	4.84	4.66	4.51	4.50
<b>Max</b>	9.51	10.09	9.97	9.64	10.15	9.30

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

Station	W1	W2	W3	C1	C2	C3
<b>Average</b>	NA	6.13	6.18	6.18	6.30	5.91
<b>Min</b>	NA	4.05	3.49	3.16	3.04	3.65
<b>Max</b>	NA	8.33	8.24	8.64	8.92	8.45

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

Station	W1	W2	W3	C1	C2	C3
<b>Average</b>	1.16	1.34	1.36	1.25	1.34	1.27
<b>Min</b>	0.10	0.37	0.33	0.15	0.35	0.33
<b>Max</b>	3.70	4.61	3.11	4.37	3.98	7.55

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

Station	W1	W2	W3	C1	C2	C3
<b>Average</b>	2.45	2.74	2.88	2.55	2.82	2.87
<b>Min</b>	0.70	0.80	0.87	0.80	0.93	1.10
<b>Max</b>	6.90	7.17	8.23	6.90	7.30	10.53

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

**Table 4-7 Summary of Exceedances in Marine Water Quality**

Station	DO (Ave of Surf. & mid-depth)		DO (Ave. of Bottom Layer)		Turbidity (Depth Ave.)		SS (Depth Ave)		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit	Action	Limit
<b>Mid-Ebb</b>										
<b>W1</b>	0	0	0	0	0	0	0	0	0	0
<b>W2</b>	0	0	0	0	0	0	0	0	0	0
<b>W3</b>	0	0	0	0	0	0	0	0	0	0
<b>Mid-Flood</b>										
<b>W1</b>	0	0	0	0	0	0	0	0	0	0
<b>W2</b>	0	0	0	0	0	0	0	0	0	0
<b>W3</b>	0	0	0	0	0	0	0	0	0	0
<b>No of Exceedance</b>	0	0	0	0	0	0	0	0	0	0

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



#### 4.4 ECOLOGICAL MONITORING

- 4.09 According to Clause 3.7 and Figure 4 in the Environmental Permit No. EP-281/2007/A, a total of 12 numbers *Celtis Timorensis* (uncommon species) in Chung Mei at Sok Kwu Wan, are identified to require labeling, fencing and protection. Out of these, four numbers located in the Pumping Station No.1 area are required to be transplanted in advance of pumping station construction and the transplantation proposal has been submitted to EPD previously.
- 4.10 Since the health condition of CT7 to CT10 are poor, as a contingency measure in case that CT7 to CT10 can no longer be recovered, additional 7 no. of *Celtis Timorensis* were planted adjacent to the under-monitoring *Celtis Timorensis* CT7 to CT10 on 30 April 2011. In April 2012, CT\_1A and CT\_7A were damaged by the fell broken tree trunk due to tree decayed by white ants. Therefore, only 5 no. of additional *Celtis Timorensis*, namely CT\_2A, CT\_3A, CT4A, CT\_5A and CT\_6A were inspected since May 2012. Furthermore, during tree inspection on 30 July, CT4A was disappeared after typhoon No.10 on 24 July and it was certified as dead. Eventually, 4 no. of additional *Celtis Timorensis*, namely CT\_2A, CT\_3A, CT\_5A and CT\_6A were inspected in the remaining period.
- 4.11 Regular inspection of the transplanted tree was carried out by the landscaping sub-Contractor (Melofield Nursery and Landscape Contractor Limited) on **30 April 2013 and 15, 30 May 2013 and 15, 29 June and 15 July 2013**. The copies of the inspection reports were attached in relevant Monthly EM&A Report (**May 2013, June 2013 and July 2013**).

## 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
	May 13	Jun 13	Jul 13	
C&D Materials (Inert) ('000m <sup>3</sup> )	0	0	0.012	-
Reused in the 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	0	0	-

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

Type of Waste	Quantity			Disposal Location
	May 13	Jun 13	Jul 13	
Metal (kg)	0	0	0	-
Paper / Cardboard Packing (kg)	0	0	0	-
Plastic (kg)	0	0	0	-
Chemical Wastes (kg)	0	0	0	-
General Refuses (tonne)	4.650	48.24	33.52	Outlying Islands Transfer Facilities (Sok Kwu Wan)

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 [2095/13.3], 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, routine joint site inspections by RE, Leader and ET were carried out on **30 April, 7, 14, 21 and 28 May, 4, 11, 18 and 25 June 2013, 2, 9, 15 and 23 July 2013**.
- 6.02 Observations for the site inspections and monthly audit within this Reporting Period are summarized in *Table 6-1*.

**Table 6-1 Site Observations**

Date	Findings / Deficiencies	Follow-Up Status
30 April 2013	<ul style="list-style-type: none"> <li>Stagnant water of groundwater was observed discharge from the PS No.1. Pretreatment by sedimentation tank prior to discharge to the sea was observed. Maintenance of the treatment tank is reminded.</li> <li>Waste concrete was dumped near a tree on the site of PS No. 2. Clearance of the waste concrete is required to protect the tree.</li> </ul>	Not requirement for general reminder. <ul style="list-style-type: none"> <li>Waster concrete was cleared on 14 May 2013</li> </ul>
7 May 2013	<ul style="list-style-type: none"> <li>Waste grout/ concrete was dumped around a tree within the site beside PS No.2. as the grout was of high alkalinity and may harden the soil around the tree thus posing potential adverse impacts to the growth of the tree, removal of the waste grout/ concrete from surrounding tree is required/</li> </ul>	Waster concrete was cleared on 14 May 2013
14 May 2013	<ul style="list-style-type: none"> <li>Sedimentation facility was observed operating normally within Portion H beside the sea. Regular clearance of the settled materials is reminded to avoid excessive accumulation.</li> </ul>	Not requirement for general reminder.
21 May 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed. However, full implementation of the required environmental mitigation measures is reminded.</li> </ul>	N.A.
28 May 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed. However, stagnant water due to rains was observed. Mosquito control measures are reminded.</li> </ul>	Not requirement for general reminder.
4 June 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed. However, stagnant water was observed in the concrete walled space within 1/F of the sewage treatment plant. Mosquito control measures, particularly drying off the stagnant water, are reminded.</li> </ul>	Not requirement for general reminder.
11 June 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed</li> </ul>	N.A.
18 June 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed</li> </ul>	N.A.
25 June 2013	<ul style="list-style-type: none"> <li>Silt curtain installed around the seawater near sewage treatment plant was observed broken. Repair of the silt curtain is required to avoid muddy water from construction site entering the sea.</li> </ul>	Broken slit curtain was repaired on 15 July 2013.

2 July 2013	<ul style="list-style-type: none"><li>No adverse environmental impacts were observed. The silt curtain was broken again during typhoon. Repair is required.</li></ul>	N.A.
9 July 2013	<ul style="list-style-type: none"><li>No adverse environmental impacts were observed.</li></ul>	N.A.
15 July 2013	<ul style="list-style-type: none"><li>No adverse environmental impacts were observed.</li></ul>	N.A.
23 July 2013	<ul style="list-style-type: none"><li>No adverse environmental impacts were observed. However, the sedimentation tank at both ends of Portion G was required to regularly clear the excessively accumulated sediment.</li></ul>	The sedimentation tank at both ends of Portion G were cleared on 30 July 2013.

## 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
27 July 2010 – 25 April 2013	1 (Nov 2011)	1 (Nov 2011)	Marine water quality
May 2013	0	1	NA
June 2012	0	1	NA
July 2013	0	1	NA

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

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
27 July 2010 – 25 April 2013	0	0	NA
May 2013	0	0	NA
June 2012	0	0	NA
July 2013	0	0	NA

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

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
27 July 2010 – 25 April 2013	0	0	NA
May 2013	0	0	NA
June 2012	0	0	NA
July 2013	0	0	NA

## 8 IMPLEMENTATION STATUS OF MITIGATION MEASURES

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

### Noise Mitigation Measure

- 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:
- Use of quiet equipment for the construction activities of the Pumping Stations and sewer alignment;
  - Use of temporary noise barrier around the site boundary of Pumping Station P1a;
  - Use of kick ripper (saw and lift) method to replace the breaker for pavement removal during sewer alignment construction;
  - Restriction on the number of plant during sewer alignment construction;
  - 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;
  - 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
  - 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

##### Terrestrial Ecology

- 8.20 The uncommon tree species should be labelled and probably fenced to avoid direct or indirect disturbance during construction. Works areas should avoid woodland habitats, in particular where these trees are located.
- 8.21 Construction and maintenance of site runoff control measures would be required at all work sites

during construction. These should include barriers to direct runoff to sand/silt removal facilities (sand/silt/traps and/or sediment basins); minimisation of earthworks during rainy season (May to September); and coverage of sand/fill piles and exposed earth during storms.

- 8.22 Special attention should be paid during the breeding season of Romer's Tree Frog (March to September) to ensure their habitat landward to Pumping Station P2 site is well protected from site runoff. Barriers should be deployed completely along the landward side of the pumping station site boundary to prevent any site runoff from entering the tree frog habitat. Intactness of the barriers should be frequently inspected.

#### Intertidal and Subtidal Ecology

- 8.23 Construction and maintenance of site runoff control measures would be required at all work sites during construction. These should include barriers to direct runoff to sand/silt removal facilities (sand/silt/traps and/or sediment basins); use of silt curtains along coastline; minimisation of earthworks during rainy season (May to September); and coverage of sand/fill piles and exposed earth during storms.
- 8.24 To reduce impacts of sediment resuspension upon nearby habitats and organisms during dredging, all dredging should be done using a closed-grab dredger, and silt curtains should be deployed around the dredger during all dredging activity

#### Fisheries Mitigation Measure

- 8.25 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

- 8.26 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
- 8.27 Leader had been implementing the required environmental mitigation measures according to the Sok Kwu 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 **12<sup>th</sup>** Quarterly EM&A Summary Report for Sok Kwu Wan Portion Area under the Project covering the construction period from **26 April to 25 July 2013**.
- 9.02 No 1-hour and 24-hour TSP results were found to be triggered the Action or Limit Level in this Reporting Period.
- 9.03 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this Reporting Period. No NOE or the associated corrective actions were therefore issued.
- 9.04 The monitoring result demonstrated no exceedance of Action or Limit Level of marine water quality monitoring in this Reporting Period.
- 9.05 No notification of summons or successful prosecution was received in this Reporting Period.
- 9.06 **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.
- 9.07 No site inspection was undertaken by external parties i.e. Environmental Protection Department (EPD) or Agriculture, Fisheries and Conservation Department (AFCD) within the Reporting Period.

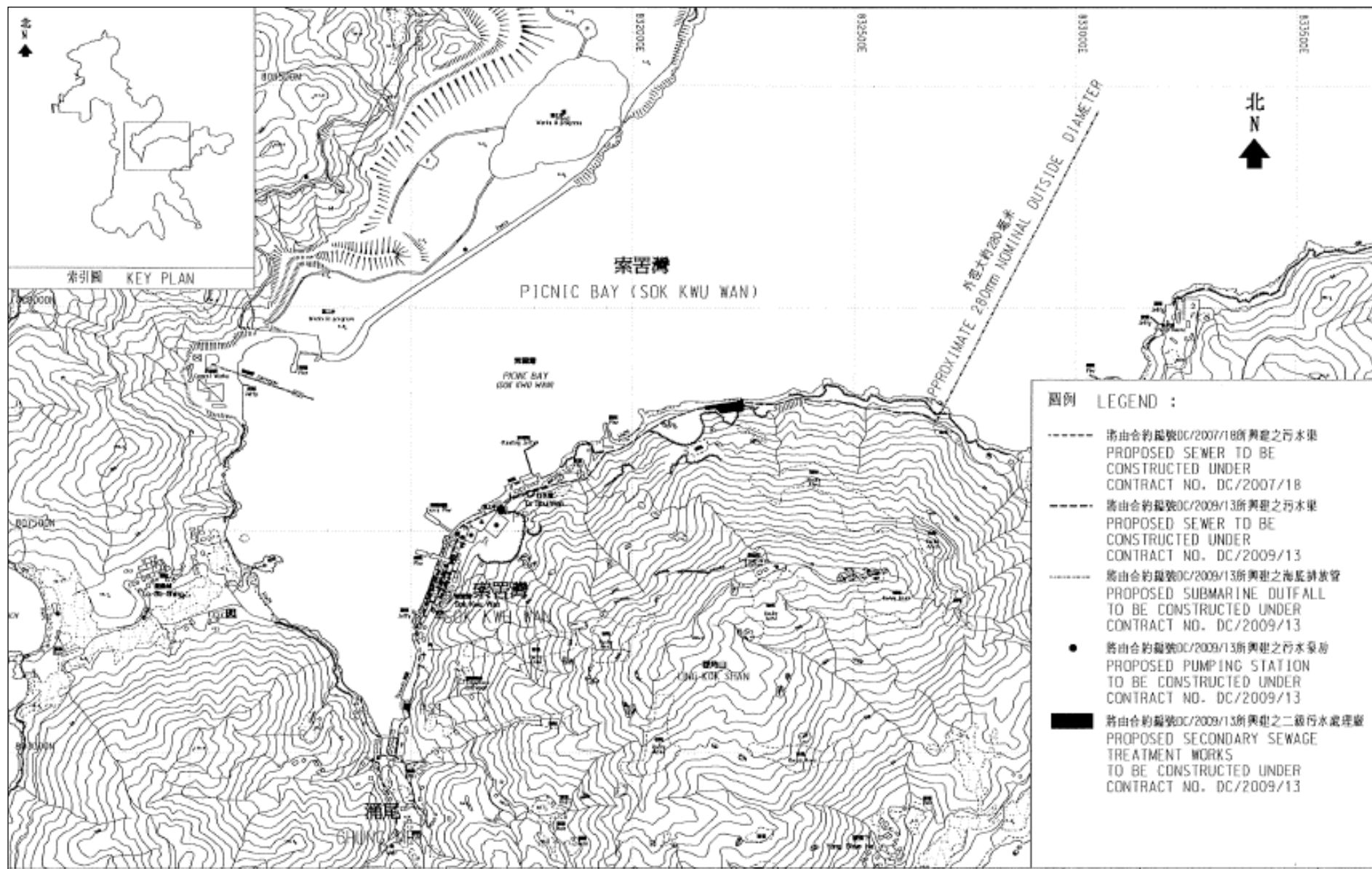
### 9.2 RECOMMENDATIONS

- 9.08 During wet season, 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 is the key issue of the Project. Mitigation measures for water quality should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary.
- 9.09 Muddy water and other water quality pollutants via site surface water runoff into the sea body within Fish Culture Zone (FCZ) at Picnic Bay and the secondary recreation contact subzone at Mo Tat Wan is the key issue of the Project. Mitigation measures for water quality should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary.

## **Appendix A**

### **Site Layout Plan – Sok Kwu Wan Portion Area**







## **Appendix B**

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

Contact Details of Key Personnel

<b>Organization</b>	<b>Project Role</b>	<b>Name of Key Staff</b>	<b>Tel No.</b>	<b>Fax No.</b>
DSD	Employer	Ms. Jacky C.M. Wong	2159-3413	2833-9162
SCJV	Engineer's Representative	Mr. Ian Jones	2982 0240	2982 4129
SCJV	Resident Engineer	Mr. Alfred Cheung	2982 0240	2982 4129
URS	Independent Environmental Checker	Mr. Rodney Ip	2410 3750	2428 9922
Leader	Director	Mr. Wilfred So	2982 1750	2982 1163
Leader	Project Manager	Mr. Vincent Chan	2982 1750	2982 1163
Leader	Construction Manager	Mr. Ron Hung	2982 1750	2982 1163
Leader	Environmental Officer	Mr. Leung Man Kin	2982 8652	2982 8650
Leader	Environmental Supervisor	Mr. Chan Chi Kau	2982 8652	2982 8650
Leader	Sub-Agent	Mr. Leung Man Kin	2982 1750	2982 1163
Leader	Senior Safety Officer	Mr. Edwin Leung	2982 1750	2982 1163
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Team Supervisor	Mr. Ben Tam	2959 6059	2959 6079

Legend:

*DSD (Employer) – Drainage Services Department*

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

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

*URS (IEC) – URS Hong Kong 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	2013			
											APR	MAY	JUN	JUL
<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, E&M2001, KD0125, PRE0020, PRE0040, PRE0050, PRE0060, PRE0090, PRE0100, PRE0130, SKW0250, SKW0588, SKW0651, SKW0681, SKW1131, SKW1481, SKW1591, SKW1611, YSW0020, YSW0050, YSW0075, YSW0180, YSW0200, YSW0220, YSW0240, YSW02401, YSW0412, YSW0422				
KD0030	Section W1 - Slope Works in Portion A & C	0	100		14/10/11 A		14/10/11 A		YSW0100, YSW0110, YSW0140,	KD0125, KD0130, YSW01755				
KD0040	Section W2 - YSW STW & Submarine Outfall (1370d)	0	0		16/06/14 *		16/06/14 *	0 *	E&M0700, YSW0400, YSW0800, YSW0870, YSW0925, YSW16704, YSW1700	KD0125, KD0132				
KD0050	Section W3 - Footpath Diversion in Ptn G	0	0		29/04/13 *		24/03/11 *	-767d *	SKW0481	KD0125				
KD0060	Section W4 - Slope Works in Portios H & I	0	0		29/04/13 *		27/03/12 *	-398d *	SKW05938, SKW059416	KD0125, KD0135, SKW05941				
KD0070	Section W5 - P.S. No. 1 in Portion D	0	0		29/04/13 *		10/02/12 *	-444d *	SKW0741	KD0125				
KD0080	Section W6 - Sewer & PS No2 in Ptn. E & F	0	0		29/04/13 *		10/02/12 *	-444d *	SKW0971	KD0125				
KD0090	Section W7 - SKW STW, RM & Sm. Outfall	0	0		07/10/14 *		07/10/14 *	0 *	E&M3360, SKW1221, SKW1291, SKW1431, SKW1441, SKW1521,	KD0125, KD0165, SKW0491				
KD0100	Section W8 - Landscape Softworks	0	0		29/04/13 *		05/04/13 *	-24d *	SKW1611, SKW1621					
KD0110	Section W9 - Establishment Works	0	0		03/04/14 *		03/04/14 *	0 *	SKW1631	KD0125				
KD0125	Project Completion	0	0		12/09/15 *		12/09/15 *	0 *	KD0010, KD0020, KD0030, KD0040, KD0050, KD0060, KD0070, KD0080, KD0090, KD0110, SKW0541					
KD0130	Completion of Maintenance Period of W1	1	0	30/04/13	30/04/13 *	13/10/12	13/10/12 *	-199d	KD0030, YSW01755, YSW01805, YSW01810					
KD0132	Completion of Maintenance Period of W2	1	0	15/06/15	15/06/15 *	15/06/15	15/06/15 *	0	E&M0730, KD0040					
KD0135	Completion of Maintenance Period of W4	1	0	30/04/13	30/04/13 *	27/03/13	27/03/13 *	-34d	KD0060, SKW05947, SKW1581					
KD0145	Completion of Maintenance Period of W5	1	0	30/04/13	30/04/13 *	10/02/13	10/02/13 *	-79d						
KD0155	Completion of Maintenance Period of W6	1	0	30/04/13	30/04/13 *	10/02/13	10/02/13 *	-79d	E&M2130, E&M2180, SKW0961,					
KD0165	Completion of Maintenance period of W7	1	0	06/10/15	06/10/15 *	06/10/15	06/10/15 *	0 *	KD0090, SKW0595, SKW05972, SKW0861					
<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 Accom	75	100	17/05/10 A	30/07/10 A	17/05/10 A	30/07/10 A		KD0020					
PRE0060	Application of Consent from Marine Department	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020					
PRE0090	Working Group Meeting for Outfall Construction	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A		KD0020	SKW1151				
PRE0100	Application & Consent of XP from HyD (Mo Tat Rd)	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A		KD0020	SKW1491, SKW1501				
PRE0130	Setup Web-site for EM&A Reporting	90	100	17/05/10 A	14/08/10 A	17/05/10 A	14/08/10 A		KD0020					
<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	100	15/07/10 A	16/11/10 A	15/07/10 A	16/11/10 A		E&M0020	E&M0080				
E&M0080	Approval from the Engineer	14	100	17/11/10 A	30/11/10 A	17/11/10 A	30/11/10 A		E&M0030	E&M0295				
<b>Hydraulic Design</b>														
E&M0040	Submission	21	100	15/07/10 A	04/08/10 A	15/07/10 A	04/08/10 A		E&M0010, E&M0020	E&M0050, E&M0101, E&M0240, E&M0260,				
E&M0050	Vetting and Comment by ER	14	100	05/08/10 A	18/08/10 A	05/08/10 A	18/08/10 A		E&M0040	E&M0060				
E&M0060	Revision and Resubmission	97	100	19/08/10 A	10/10/10 A	19/08/10 A	10/10/10 A		E&M0050	E&M0430				
E&M0430	Approval from the Engineer	7	100	24/11/10 A	30/11/10 A	24/11/10 A	30/11/10 A		E&M0060	E&M0295				
<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	100	05/08/10 A	30/11/11 A	05/08/10 A	30/11/11 A		E&M0040	E&M0102				
E&M0102	Vetting and Comment by ER	60	100	03/11/10 A	30/11/11 A	03/11/10 A	30/11/11 A		E&M0101	E&M0103				

Start date	05/05/10		Early bar
Finish date	13/01/17		Progress bar
Data date	30/04/13		Critical bar
Run date	20/05/13		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 (May 2013 - July 2013)**

Date	Revision	Checked	Approved
30/04/13	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013								
											APR	MAY	JUN	JUL					
E&M0103	Revision and Resubmission	60	100	01/02/11 A	30/11/11 A	01/02/11 A	30/11/11 A		E&M0102	E&M0110, E&M0120, E&M0130, E&M0140,									
E&M0110	Approval on Coarse Screens	30	100	25/05/11 A	25/05/11 A	25/05/11 A	25/05/11 A		E&M0103	E&M0390									
E&M0120	Approval on Fine Screens	30	100	12/09/11 A	12/09/11 A	12/09/11 A	12/09/11 A		E&M0103	E&M0400, E&M3060									
E&M0130	Approval on Pumps	30	100	23/06/11 A	23/06/11 A	23/06/11 A	23/06/11 A		E&M0103	E&M0410, E&M3070									
E&M0140	Approval on Submersible Mixers	30	100	23/03/11 A	23/03/11 A	23/03/11 A	23/03/11 A		E&M0103	E&M0420, E&M3080									
E&M0150	Approval on Grit Removal Equipment	30	100	10/10/11 A	10/10/11 A	10/10/11 A	10/10/11 A		E&M0103	E&M0380, E&M3030									
E&M0160	Approval on MBR Membrane Modules (MM)	105	100	03/08/10 A	24/02/11 A	03/08/10 A	24/02/11 A		E&M0100	E&M0360, E&M0370, E&M3010									
E&M0170	Approval on Sludge Dewatering Equipment	30	100	01/09/11 A	01/09/11 A	01/09/11 A	01/09/11 A		E&M0103	E&M0440, E&M3090									
E&M0180	Approval on Valves, Pipes & Fittings	30	85	19/11/11 A	04/05/13	19/11/11 A	15/04/13	-19d	E&M0103	E&M0450, E&M3100									
E&M0190	Approval on Penstocks	30	100	15/11/11 A	15/11/11 A	15/11/11 A	15/11/11 A		E&M0103	E&M0460, E&M3110									
E&M0200	Approval on Instrumentation	30	100	21/06/11 A	08/03/12 A	21/06/11 A	08/03/12 A		E&M0103	E&M0470, E&M3130									
E&M0210	Approval on MCC & LVSB	30	95	19/11/11 A	01/05/13	19/11/11 A	22/08/11	-618d	E&M0103	E&M0480, E&M3140									
E&M0220	Approval on BS Equipment	30	85	30/11/11 A	04/06/13	30/11/11 A	22/04/12	-408d	E&M0103, E&M0280	E&M0490, E&M3150									
E&M0230	Approval on FS Equipment	30	85	30/11/11 A	16/06/13	30/11/11 A	22/08/11	-664d	E&M0103, E&M0290	E&M0295, E&M0320, E&M0500, E&M3160									
<b>Drawings Submission &amp; Approval</b>																			
E&M0235	Sub. P&ID Drawings	100	75	24/06/10 A	24/05/13	24/06/10 A	31/07/11	-664d	E&M0010	E&M0250									
E&M0240	Sub. Plant GA Drawings	45	68	04/08/10 A	14/05/13	04/08/10 A	31/07/11	-653d	E&M0040	E&M0250, E&M0280, E&M0290									
E&M0250	Sub. Builder's Works Requirements Drawings	15	100	04/08/10 A	31/01/13 A	04/08/10 A	31/01/13 A		E&M0235, E&M0240, E&M0260,	E&M0280, E&M0290									
E&M0260	Sub. Mechanical Installation Drawings	60	70	27/09/10 A	17/05/13	27/09/10 A	31/07/11	-657d	E&M0040	E&M0250									
E&M0270	Sub. Electrical Installation Drawings	60	75	27/09/10 A	14/05/13	27/09/10 A	31/07/11	-654d	E&M0040	E&M0250, E&M0280									
E&M0280	Sub. BS Installation Drawings	120	95	27/09/10 A	30/05/13	27/09/10 A	18/04/12	-408d	E&M0240, E&M0250, E&M0270	E&M0220									
E&M0290	Sub. FS Installation Drawings	120	85	13/11/11 A	11/06/13	13/11/11 A	18/08/11	-664d	E&M0240, E&M0250	E&M0230									
<b>Statutory Submission</b>																			
E&M0295	Preparation of Submission to HEC	39	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A		E&M0080, E&M0230, E&M0430	E&M0300									
E&M0300	Application & Approval from HEC	150	90	01/11/11 A	01/07/13	01/11/11 A	04/11/12	-239d	E&M0295	E&M0305									
E&M0305	Provision of Cables to the STWs	180	0	01/07/13	28/12/13	05/11/12	03/05/13	-239d	E&M0300	E&M0680									
E&M0320	Form 314 Submission to FSD	14	0	16/06/13	30/06/13	20/04/13	03/05/13	-58d	E&M0230	E&M0325, E&M0670									
E&M0325	Submission to WSD	14	100	01/11/11 A	29/02/12 A	01/11/11 A	29/02/12 A		E&M0320	E&M0670, E&M0680									
E&M0330	Form 501 Submission to FSD (YSW)	28	0	11/03/15	08/04/15	14/11/13	11/12/13	-483d	E&M0500	E&M0700									
E&M0340	Form 501 Submission to FSD (SKW)	28	0	04/12/13	01/01/14	11/06/14	08/07/14	189d	E&M3160	E&M3360									
E&M0350	Form 501 Submission to FSD (PS1 & PS2)	28	0	28/05/13	25/06/13	14/11/12	11/12/12	-196d	E&M2016	E&M11800, E&M2180									
<b>Yung Shue Wan</b>																			
<b>Preliminary</b>																			
YSW0020	Approval of Environmental Team	16	100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A		KD0020	YSW00201, YSW0030, YSW00351,									
YSW00201	Change Baseline Monitoring Location (Air&Noise)	59	100	02/06/10 A	30/07/10 A	02/06/10 A	30/07/10 A		YSW0020	YSW0030									
YSW0030	Baseline monitoring (Air & Noise)	23	100	31/07/10 A	22/08/10 A	31/07/10 A	22/08/10 A		YSW0020, YSW00201	YSW0035									
YSW0035	Baseline Monitoring Report Submission (A & N)	16	100	23/08/10 A	07/09/10 A	23/08/10 A	07/09/10 A		YSW0030	YSW0120, YSW01545, YSW0500,									
YSW00351	Submission & Approval for Monitoring Method (W)	58	100	02/06/10 A	29/07/10 A	02/06/10 A	29/07/10 A		YSW0020	YSW0040									
YSW0040	Baseline monitoring (Water)	155	100	30/07/10 A	31/12/10 A	30/07/10 A	31/12/10 A		YSW0020, YSW00351	YSW0350									
YSW0050	Erect Hoarding and Fencing	60	100	19/05/10 A	17/07/10 A	19/05/10 A	17/07/10 A		KD0020	YSW0155									
<b>Section W 1 - Slope Works in Portion A &amp; C</b>																			
YSW0075	Mobilization	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A		KD0020	YSW0080, YSW0100									
YSW0080	Site Clearance	30	100	16/06/10 A	15/07/10 A	16/06/10 A	15/07/10 A		YSW0075	YSW0085, YSW0090, YSW0120									
YSW0085	Initial Survey	14	100	02/07/10 A	15/07/10 A	02/07/10 A	15/07/10 A		YSW0080	YSW0120									
YSW0090	Verify the Rock Boulder required Stabilization Wk	249	100	16/07/10 A	21/03/11 A	16/07/10 A	21/03/11 A		YSW0080	YSW0100, YSW0110									
YSW0100	Removal of Rock Boulder	257	100	20/09/10 A	03/06/11 A	20/09/10 A	03/06/11 A		YSW0075, YSW0090	KD0030									
YSW0110	Stablizing work for rock boulder	35	100	16/07/11 A	19/08/11 A	16/07/11 A	19/08/11 A		YSW0090	KD0030									
YSW0120	Cut the slope to design profile	2	100	24/09/10 A	25/09/10 A	24/09/10 A	25/09/10 A		YSW0035, YSW0080, YSW0085	YSW0131, YSW0155, YSW0170									
YSW0131	Mobilization of Plant and Material of Soil Nails	14	100	12/09/10 A	25/09/10 A	12/09/10 A	25/09/10 A		YSW0120	YSW0132									
YSW0132	Erect Scaffold and Working Platform	2	100	26/09/10 A	27/09/10 A	26/09/10 A	27/09/10 A		YSW0131	YSW0133									
YSW0133	Setting out and Verify Locations of Soil Nails	45	100	28/09/10 A	11/11/10 A	28/09/10 A	11/11/10 A		YSW0132	YSW0134									
YSW0134	Drilling and Soil Nails Installation	43	100	19/10/10 A	30/11/10 A	19/10/10 A	30/11/10 A		YSW0133	YSW0135									
YSW0135	Construction of Nail Heads	12	100	01/12/10 A	12/12/10 A	01/12/10 A	12/12/10 A		YSW0134	YSW0136									
YSW0136	Mesh Installation on Cut Slope	3	100	13/12/10 A	15/12/10 A	13/12/10 A	15/12/10 A		YSW0135	YSW01361									
YSW01361	Verify alignment of access & channels on slope	118	100	16/12/10 A	12/04/11 A	16/12/10 A	12/04/11 A		YSW0136	YSW0140									
YSW0140	Construct U-channels & Step Channel on Cut Slope	182	100	13/04/11 A	11/10/11 A	13/04/11 A	11/10/11 A		YSW01361	KD0030									
Start date	05/05/10											Date	30/04/13	Revision	Revision 0	Checked	RH	Approved	VC
Finish date	13/01/17																		
Data date	30/04/13																		
Run date	20/05/13																		
Page number	2A																		
c Primavera Systems, Inc.																			

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

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



Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013				
											APR	MAY	JUN	JUL	
YSW0153	Removal of Ex U-Channel where clash with B. Wall	151	100	10/05/11 A	07/10/11 A	10/05/11 A	07/10/11 A		YSW01545	YSW01750					
YSW01545	Temporary Diversion of Drainage	244	100	08/09/10 A	09/05/11 A	08/09/10 A	09/05/11 A		YSW0035	YSW0153					
YSW0155	RC Barrier Wall Bay 1-13 (below Ground Level)	256	100	26/09/10 A	08/06/11 A	26/09/10 A	08/06/11 A		YSW0050, YSW0120	KD0030, YSW0170, YSW0175, YSW01750					
YSW0170	RC Barrier Wall Bay 1-13 (above Ground Level)	125	100	09/06/11 A	11/10/11 A	09/06/11 A	11/10/11 A		YSW0120, YSW0155	KD0030					
YSW0175	Construct U-channels and Catchpits (Phase 1)	76	100	09/06/11 A	23/08/11 A	09/06/11 A	23/08/11 A		YSW0155	KD0030					
YSW01750	Construction of subsoil drain (phase 1)	7	100	12/10/11 A	08/02/12 A	12/10/11 A	08/02/12 A		YSW0153, YSW0155	KD0030					
YSW01755	Construct subsoil drain (phase 2)	14	100	06/12/12 A	31/12/12 A	06/12/12 A	31/12/12 A		KD0030, YSW01800	KD0130					
YSW01800	RC Barrier Wall Bay 14 (below & above Ground)	87	100	03/09/12 A	28/11/12 A	03/09/12 A	28/11/12 A		YSW0760	YSW01755, YSW01810					
YSW01805	Hydroseeding	14	100	02/03/13 A	02/03/13 A	02/03/13 A	02/03/13 A		YSW01810	KD0130					
YSW01810	Construct U-channels and Catchpits (Phase 2)	30	100	29/11/12 A	22/12/12 A	29/11/12 A	22/12/12 A		YSW01800	KD0130, YSW01805					
<b>Section W2 - YSW STW &amp; Submarine Outfall</b>															
<b>Civil &amp; Structural Work</b>															
YSW0412	Mobilization	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A		KD0020	YSW0422					
YSW0422	Site Clearance	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A		KD0020, YSW0412	YSW0432, YSW0500, YSW0610, YSW0650					
YSW0432	Initial Survey	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A		YSW0422	YSW0510					
<b>YSW STW - GL H - T</b>															
YSW0500	ELS & Excavation for Inlet Pumping Station	105	100	08/09/10 A	21/12/10 A	08/09/10 A	21/12/10 A		YSW0035, YSW0422	YSW0510					
YSW0510	Sub-structure construction (Inlet Pumping Stn)	129	100	22/12/10 A	29/04/11 A	22/12/10 A	29/04/11 A		YSW0432, YSW0500	YSW0520					
YSW0520	Backfill & Remove ELS (Inlet Pumping Stn)	40	100	30/04/11 A	08/06/11 A	30/04/11 A	08/06/11 A		YSW0510	YSW05701					
YSW0530	ELS & Excavation for Equalization Tank	159	100	01/01/11 A	08/06/11 A	01/01/11 A	08/06/11 A		YSW0660	YSW0540, YSW05701					
YSW0540	Sub-structure construction (Equalization Tank)	112	100	09/06/11 A	28/09/11 A	09/06/11 A	28/09/11 A		YSW0530	YSW0550, YSW05901					
YSW0550	Backfilling & Remove ELS (Equalization Tank)	20	100	29/09/11 A	18/10/11 A	29/09/11 A	18/10/11 A		YSW0540	YSW05901					
YSW05701	ELS & Excavation for Grit Chambers	28	100	09/06/11 A	06/07/11 A	09/06/11 A	06/07/11 A		YSW0520, YSW0530	YSW05711, YSW05731					
YSW05711	Construct sub-structure for Grit Chambers	106	100	07/07/11 A	20/10/11 A	07/07/11 A	20/10/11 A		YSW05701	YSW05721, YSW05911					
YSW05721	Backfill & Remove ELS for Grit Chambers	12	100	21/10/11 A	01/11/11 A	21/10/11 A	01/11/11 A		YSW05711	YSW05911					
YSW05731	ELS & Excavation for Grease Separators (GS)	34	100	07/07/11 A	09/08/11 A	07/07/11 A	09/08/11 A		YSW05701	YSW05741					
YSW05741	Construct sub-structure for Grease Separators	52	100	10/08/11 A	30/09/11 A	10/08/11 A	30/09/11 A		YSW05731	YSW05751					
YSW05751	Install Dia.400 Puddles in Grease Separators	27	100	01/10/11 A	27/10/11 A	01/10/11 A	27/10/11 A		YSW05741	YSW05752					
YSW05752	Construct sub-structure for GS (above puddles)	48	100	28/10/11 A	14/12/11 A	28/10/11 A	14/12/11 A		YSW05751	YSW05761					
YSW05761	Backfill & remove ELS for Grease Separators	10	100	15/12/11 A	24/12/11 A	15/12/11 A	24/12/11 A		YSW05752	YSW0580, YSW05921					
YSW0580	Excavate to Formation for Deodorizer Room	10	100	25/12/11 A	03/01/12 A	25/12/11 A	03/01/12 A		YSW05761	YSW05801, YSW05922					
YSW05801	Excavate to formation - Grid J-N/5-7	40	100	04/01/12 A	12/02/12 A	04/01/12 A	12/02/12 A		YSW0580	YSW05802, YSW05923					
YSW05802	Excavate to formation - Grid GA-H/5-7	10	100	13/02/12 A	22/02/12 A	13/02/12 A	22/02/12 A		YSW05801	YSW05924					
YSW05901	G/F to 1/F Construction Grid GA-K/1-5	90	100	29/09/11 A	27/12/11 A	29/09/11 A	27/12/11 A		YSW0540, YSW0550	YSW06001					
YSW05911	G/F to 1/F Construction Grid N-S/1-5	80	100	21/10/11 A	08/01/12 A	21/10/11 A	08/01/12 A		YSW05711, YSW05721	YSW06011, YSW06035					
YSW05921	G/F to 1/F Construction Grid K-N/1-5	45	100	25/12/11 A	07/02/12 A	25/12/11 A	07/02/12 A		YSW05761	YSW06021					
YSW05922	G/F to 1/F Construction for Deodorizer Room	80	100	04/01/12 A	23/03/12 A	04/01/12 A	23/03/12 A		YSW0580	YSW06022					
YSW05923	G/F to 1/F Construction for Grid J-N/5-7	60	100	13/02/12 A	12/04/12 A	13/02/12 A	12/04/12 A		YSW05801	E&M0530, E&M0540, E&M0550, E&M0560,					
YSW05924	G/F to 1/F Construction for Grid GA-H/5-7	50	100	28/05/12 A	16/07/12 A	28/05/12 A	16/07/12 A		YSW05802, YSW06023	YSW06034					
YSW06001	1/F to Roof Constuction for Grid GA-K/1-5	87	100	28/12/11 A	23/03/12 A	28/12/11 A	23/03/12 A		YSW05901	YSW0800					
YSW06011	1/F to Roof Constuction for Grid N-S/1-5	75	100	09/01/12 A	23/03/12 A	09/01/12 A	23/03/12 A		YSW05911	YSW0800					
YSW06021	1/F to Roof Constuction for Grid K-N/1-5	44	100	08/02/12 A	22/03/12 A	08/02/12 A	22/03/12 A		YSW05921	YSW07201					
YSW06022	1/F to Roof Constuction for Deodorizer Room	60	100	24/03/12 A	22/05/12 A	24/03/12 A	22/05/12 A		YSW05922	YSW0800					
YSW06023	1/F to Roof Constuction for Grid J-N/5-7	45	100	13/04/12 A	27/05/12 A	13/04/12 A	27/05/12 A		YSW05923	E&M0580, YSW05924					
YSW06034	1/F to Roof Constuction for Grid GA-H/5-7	28	100	27/07/12 A	13/08/12 A	27/07/12 A	13/08/12 A		YSW05924	YSW0800					
YSW06035	Construct baffle walls in Grease Separators	90	100	18/04/12 A	16/07/12 A	18/04/12 A	16/07/12 A		YSW05911	YSW07204					
YSW07201	Water tightness test for Inlet Pumping Station	60	100	23/03/12 A	21/05/12 A	23/03/12 A	21/05/12 A		YSW06021	YSW07202, YSW0800					
YSW07202	Water tightness test for Equalization Tanks	42	100	22/05/12 A	02/07/12 A	22/05/12 A	02/07/12 A		YSW07201	E&M0600, YSW07203, YSW0800					
YSW07203	Water tightness test for Grit Chambers	42	100	17/09/12 A	29/09/12 A	17/09/12 A	29/09/12 A		YSW07202	YSW07204, YSW0800					
YSW07204	Water tightness test for Grease Separators	32	100	03/10/12 A	31/10/12 A	03/10/12 A	31/10/12 A		YSW06035, YSW07203	E&M0570, YSW07205, YSW0800					
YSW07205	Water tightness test for water channels	21	0	30/04/13	23/05/13	07/06/14	30/06/14	403d	YSW07204	YSW0800					
YSW0800	ABWF installation	271	94	03/07/12 A	16/05/13	03/07/12 A	16/06/14	397d	YSW06001, YSW06011, YSW06022,	KD0040					
<b>YSW STW - GL T - X</b>															
YSW0610	Excavate to formation	10	100	08/09/10 A	17/09/10 A	08/09/10 A	17/09/10 A		YSW0035, YSW0422	YSW0620					
YSW0620	Base slab construction	248	100	18/09/10 A	23/05/11 A	18/09/10 A	23/05/11 A		YSW0610	YSW0630					
YSW0630	G/F to 1/F construction	205	100	24/05/11 A	14/12/11 A	24/05/11 A	14/12/11 A		YSW0620	YSW0640					

Start date	05/05/10		Early bar
Finish date	13/01/17		Progress bar
Data date	30/04/13		Critical bar
Run date	20/05/13		Summary bar
Page number	3A		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 (May 2013 - July 2013)**

Date	Revision	Checked	Approved
30/04/13	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013				
											APR	MAY	JUN	JUL	
YSW0640	1/F to Roof Construction	64	100	15/12/11 A	16/02/12 A	15/12/11 A	16/02/12 A		YSW0630	YSW0810					
YSW0810	ABWF installation	80	100	28/12/11 A	16/03/12 A	28/12/11 A	16/03/12 A		YSW0640	E&M0610, E&M0620, E&M0630, E&M0640					
<b>YSW STW - GL F - H &amp; DN Tanks</b>															
YSW0650	ELS & Excavation for DN Tanks	37	100	08/09/10 A	14/10/10 A	08/09/10 A	14/10/10 A		YSW0035, YSW0422	YSW0660					
YSW0660	Sub-structure construction (DN Tanks)	78	100	15/10/10 A	31/12/10 A	15/10/10 A	31/12/10 A		YSW0650	YSW0530, YSW0670					
YSW0670	Backfill & Remove ELS (DN Tanks)	70	100	01/01/11 A	11/03/11 A	01/01/11 A	11/03/11 A		YSW0660	YSW0680					
YSW0680	Base slab construction (SD1, SD2 & MBR4)	17	100	12/03/11 A	28/03/11 A	12/03/11 A	28/03/11 A		YSW0670	YSW0690					
YSW0690	Construct Superstructure SD1, SD2 & MBR4	82	100	29/03/11 A	18/06/11 A	29/03/11 A	18/06/11 A		YSW0680	YSW0710, YSW0820					
YSW06901	Construct Superstructure of DN Tanks	28	100	15/05/12 A	11/06/12 A	15/05/12 A	11/06/12 A		YSW0735	YSW0830					
YSW0705	Water test for MBR 4	47	100	01/10/12 A	16/11/12 A	01/10/12 A	16/11/12 A		YSW0710	E&M0510, E&M0640, YSW07055, YSW0820					
YSW07055	Water test for SD1 & SD2	54	100	17/11/12 A	10/01/13 A	17/11/12 A	10/01/13 A		YSW0705, YSW07105	E&M0610					
YSW0710	Apply protective paint for MBR 4	7	100	24/09/12 A	30/09/12 A	24/09/12 A	30/09/12 A		YSW0690	YSW0705, YSW07105					
YSW07105	Apply protective paint for SD1 & SD2	7	100	01/10/12 A	07/10/12 A	01/10/12 A	07/10/12 A		YSW0710	YSW07055					
YSW0820	ABWF installation	34	35	15/01/13 A	21/05/13	15/01/13 A	15/01/13	-126d	YSW0690, YSW0705	E&M0630, E&M0640					
YSW0830	Water test for DN Tanks	28	0	30/04/13	27/05/13	18/02/13	18/03/13	-70d	YSW06901	YSW0850					
YSW0850	Apply protective paint for DN Tanks	6	10	27/04/13 A	01/06/13	27/04/13 A	23/03/13	-70d	YSW0830	E&M0610					
<b>YSW STW - GL A - F</b>															
YSW0730	Completion of HDD	0	100	21/01/12 A		21/01/12 A			YSW03601, YSW03605	YSW0732					
YSW0732	Excavate for MBR 2 & 3	20	100	21/01/12 A	09/02/12 A	21/01/12 A	09/02/12 A		YSW0730	YSW0733					
YSW0733	Construct basement of MBR 2 & 3	20	100	10/02/12 A	29/02/12 A	10/02/12 A	29/02/12 A		YSW0732	YSW0735, YSW0740					
YSW0735	Construct superstructure of MBR 2	75	100	01/03/12 A	14/05/12 A	01/03/12 A	14/05/12 A		YSW0733	YSW06901, YSW0736, YSW08302,					
YSW0736	Construct superstructure of MBR 3	100	100	15/05/12 A	14/05/12 A	15/05/12 A	14/05/12 A		YSW0735	YSW08302, YSW08305					
YSW0740	ELS & excavate for Outfall Shaft	75	100	01/03/12 A	14/05/12 A	01/03/12 A	14/05/12 A		YSW0733	YSW0750					
YSW0750	Construct basement of Outfall Shaft	19	100	15/05/12 A	02/06/12 A	15/05/12 A	02/06/12 A		YSW0740	YSW07501					
YSW07501	Connect additional flange to HDPE pipe (VO 042)	5	100	03/06/12 A	07/06/12 A	03/06/12 A	07/06/12 A		YSW0750	YSW07502					
YSW07502	Construct sub-structure of Outfall Shaft	16	100	08/06/12 A	23/06/12 A	08/06/12 A	23/06/12 A		YSW07501	YSW0760					
YSW0760	Backfill & remove ELS (outfall shaft)	8	100	24/06/12 A	01/07/12 A	24/06/12 A	01/07/12 A		YSW07502	YSW01800, YSW07601, YSW07603,					
YSW07601	Construct superstructure for Outfall Shaft	30	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		YSW0760	YSW08301, YSW08305					
YSW07603	ELS & excavate for FSH Water Supply Tank	25	100	01/06/12 A	25/06/12 A	01/06/12 A	25/06/12 A		YSW0760	YSW07604					
YSW07604	Construct substructure for FSH Water Supply Tank	24	100	26/06/12 A	19/07/12 A	26/06/12 A	19/07/12 A		YSW07603	YSW07605					
YSW07605	Backfill & remove ELS for FSH Water Supply Tank	12	100	20/07/12 A	31/07/12 A	20/07/12 A	31/07/12 A		YSW07604	YSW07607					
YSW07607	Construct basement of MBR 1 & Workshop	24	100	01/08/12 A	24/08/12 A	01/08/12 A	24/08/12 A		YSW07605	YSW07608, YSW07609					
YSW07608	Construct superstructure for FSH Water Supply Tk	37	100	25/08/12 A	30/09/12 A	25/08/12 A	30/09/12 A		YSW07607	YSW08304, YSW08305					
YSW07609	Construct superstructure for MBR 1	37	100	25/08/12 A	30/09/12 A	25/08/12 A	30/09/12 A		YSW07607	YSW07610, YSW08303, YSW1470					
YSW07610	Construct Workshop, FSSH Pump Rm, PW Pump Rm	31	100	03/10/12 A	31/10/12 A	03/10/12 A	31/10/12 A		YSW07609	YSW0840, YSW16606, YSW16607,					
YSW08301	Water tightness test for Outfall Shaft	42	100	03/04/13 A	18/04/13 A	03/04/13 A	18/04/13 A		YSW0380, YSW07601	E&M0690					
YSW08302	Water tightness test for MBR 2 & 3	95	100	03/07/12 A	05/10/12 A	03/07/12 A	05/10/12 A		YSW0735, YSW0736	E&M0520, E&M0590, E&M0605, E&M0650					
YSW08303	Water tightness test for MBR 1	19	100	30/11/12 A	18/12/12 A	30/11/12 A	18/12/12 A		YSW07609	E&M0520					
YSW08304	Water tightness test for FSH Water Supply Tank	32	0	30/04/13	31/05/13	19/02/13	23/03/13	-69d	YSW07608	E&M0610					
YSW08305	Apply protective paint	120	80	02/10/12 A	23/05/13	02/10/12 A	23/03/13	-61d	YSW0735, YSW0736, YSW07601,	E&M0610, YSW0870					
YSW0870	ABWF installation	30	0	24/05/13	22/06/13	18/05/14	16/06/14	359d	YSW08305	KD0040					
<b>Fire Hose Reel / Sprinkler Pump Rm</b>															
YSW0840	ELS & excavate to formation (+0 mPD approx.)	40	100	25/02/13 A	18/04/13 A	25/02/13 A	18/04/13 A		YSW07610, YSW16606	YSW0860					
YSW0860	Sub-structure construction	40	80	19/04/13 A	12/05/13	19/04/13 A	18/05/13	7d	YSW0840	YSW0890					
YSW0880	Backfill & remove ELS	35	0	21/06/13	26/07/13	25/11/16	13/01/17	1185d	YSW0890						
YSW0890	Construction Ground Slab at +5.2mPD	40	0	12/05/13	21/06/13	19/05/13	27/06/13	7d	YSW0860	YSW0880, YSW0900					
YSW0900	Superstructure construction upto +9.2mPD	35	0	21/06/13	26/07/13	28/06/13	01/08/13	7d	YSW0890	YSW0910, YSW0925					
YSW0910	Water test	28	0	26/07/13	23/08/13	02/08/13	29/08/13	7d	YSW0900	YSW0915					
YSW0915	Apply protective paint	14	0	23/08/13	06/09/13	30/08/13	12/09/13	7d	YSW0910	E&M0640, YSW0925					
YSW0925	ABWF installation	30	0	07/08/13	06/09/13	18/05/14	16/06/14	284d	YSW0900, YSW0915	KD0040					
<b>Emergency Storage Tank</b>															
YSW1470	ELS & excavate to formation (-1.5mPD Approx.)	16	100	17/09/12 A	02/10/12 A	17/09/12 A	02/10/12 A		YSW07609	YSW1480					
YSW1480	Sub-structure construction	14	100	03/10/12 A	16/10/12 A	03/10/12 A	16/10/12 A		YSW1470	YSW1490					
YSW1490	Backfill & extract sheetpile	3	100	17/10/12 A	19/10/12 A	17/10/12 A	19/10/12 A		YSW1480	YSW1500					
YSW1500	Superstructure construction upto +10.5mPD	41	100	20/10/12 A	29/11/12 A	20/10/12 A	29/11/12 A		YSW1490	YSW1530, YSW1536					

Start date 05/05/10  
 Finish date 13/01/17  
 Data date 30/04/13  
 Run date 20/05/13  
 Page number 4A  
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- Early bar
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- ▲ 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 (May 2013 - July 2013)**

Date	Revision	Checked	Approved
30/04/13	Revision 0	RH	VC



Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013				
											APR	MAY	JUN	JUL	
YSW1530	Underground pipeline works	40	0	30/04/13	08/06/13	21/04/13	30/05/13	-9d	YSW1500	E&M0690, YSW1680	Underground pipeline works				
YSW1536	Water tightness test	40	0	30/04/13	08/06/13	20/03/13	28/04/13	-41d	YSW1500	YSW1538	Water tightness test				
YSW1538	Apply protective paint	30	100	04/03/13 A	05/03/13 A	04/03/13 A	05/03/13 A		YSW1536	YSW1540					
YSW1540	ABWF installation	40	20	03/04/13 A	10/07/13	03/04/13 A	30/05/13	-41d	YSW1538	E&M0690	ABWF installatio				
<b>Road, Drain, Cable Draw Pits &amp; Ducting</b>															
YSW16601	ELS & excavate 6m deep sewer (FM1 - YFMH13)	60	0	04/05/13	03/07/13	19/01/13	19/03/13	-106d	YSW0760, YSW16606, YSW16607,	YSW16602	ELS & excavate 6m dee				
YSW16602	Lay pipe & backfill 6m deep sewer (FM1 - YFMH13)	45	0	03/07/13	17/08/13	20/03/13	03/05/13	-106d	YSW16601	E&M0680, YSW1700					
YSW16603	Construct UU & pipes along sea side (Grid Q-X)	60	0	03/05/13	02/07/13	24/03/13	22/05/13	-41d	YSW16607, YSW16608	YSW16604, YSW16703	Construct UU & pipes				
YSW16604	Construct UU & pipes along sea side (Grid XA-D)	60	0	02/07/13	31/08/13	23/05/13	21/07/13	-41d	YSW16603	YSW16605, YSW16701					
YSW16605	Construct UU & pipes along sea side (Grid D-Q)	60	0	31/08/13	30/10/13	22/07/13	19/09/13	-41d	YSW16604	YSW16702, YSW1700					
YSW16606	Construct UU & pipes along hill side (Grid D-Q)	90	95	10/10/12 A	04/05/13	10/10/12 A	18/01/13	-106d	YSW07610	YSW0840, YSW16601	Construct UU & pipes along hill side (Grid D-Q)				
YSW16607	Construct UU & pipes along hill side (Grid Q-X)	72	95	20/08/12 A	03/05/13	20/08/12 A	18/01/13	-105d	YSW07610	YSW16601, YSW16603	Construct UU & pipes along hill side (Grid Q-X)				
YSW16608	Construct UU & pipes along hill side (Grid XA-D)	72	95	30/11/12 A	03/05/13	30/11/12 A	18/01/13	-105d	YSW07610	YSW16601, YSW16603, YSW1690	Construct UU & pipes along hill side (Grid XA-D)				
YSW16701	Construct Boundary Wall (Grid XA-D)	80	90	10/01/13 A	08/09/13	10/01/13 A	19/09/13	11d	YSW16604	YSW16702					
YSW16702	Construct Boundary Wall (Grid D-Q)	80	0	30/10/13	18/01/14	20/09/13	08/12/13	-41d	YSW16605, YSW16701	YSW16703					
YSW16703	Construct Boundary Wall (Grid Q-X)	80	0	18/01/14	08/04/14	09/12/13	26/02/14	-41d	YSW16603, YSW16702	YSW16704, YSW1700					
YSW16704	ABWF installation for Boundary Wall	240	0	30/10/13	27/06/14	20/10/13	16/06/14	-11d	YSW16703	KD0040					
YSW1680	Fire Hydrant & pipeline installation	120	10	26/01/13 A	24/09/13	26/01/13 A	14/10/13	20d	YSW1530	YSW1690, YSW1700					
YSW1690	Construction of Road Kerbs, Downpipes, U-channel	180	25	02/01/13 A	06/02/14	02/01/13 A	26/02/14	20d	YSW16608, YSW1680	YSW1700					
YSW1700	Road Paving	110	0	08/04/14	27/07/14	27/02/14	16/06/14	-41d	YSW16602, YSW16605, YSW16703, YSW1680, YSW1690	KD0040					
<b>Submarine Outfall</b>															
YSW0180	Coordination of HEC	53	100	17/05/10 A	08/07/10 A	17/05/10 A	08/07/10 A		KD0020	YSW0350					
YSW0200	Submission and Approval of Ecologist	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020	YSW0210					
YSW0210	Ecology Survey	211	100	16/07/10 A	11/02/11 A	16/07/10 A	11/02/11 A		YSW0200	YSW0350					
YSW0220	Submission and Approval of In. Hydro Survey	103	100	17/05/10 A	27/08/10 A	17/05/10 A	27/08/10 A		KD0020	YSW0230					
YSW0230	Hydrographical Survey (YSW)	157	100	28/08/10 A	31/01/11 A	28/08/10 A	31/01/11 A		YSW0220	YSW0350					
YSW0240	Material Submission, Approval of HDPE pipe	319	100	17/05/10 A	31/03/11 A	17/05/10 A	31/03/11 A		KD0020	YSW0360					
YSW02401	Clarify Coordinate of Point Y (Reply of RFI 010)	83	100	28/06/10 A	18/09/10 A	28/06/10 A	18/09/10 A		KD0020	YSW0250					
YSW0250	Submit and Approval of Method Statement for HDD	188	100	19/09/10 A	25/03/11 A	19/09/10 A	25/03/11 A		YSW02401	YSW0260, YSW0270, YSW0340					
YSW0260	Submission of HDD Method Statement to HEC	14	100	26/03/11 A	08/04/11 A	26/03/11 A	08/04/11 A		YSW0250	YSW0340					
YSW0270	Additional G.I. Boreholes (YSW)	123	100	19/09/10 A	19/01/11 A	19/09/10 A	19/01/11 A		YSW0250	YSW0280, YSW0290					
YSW0280	Submission of propose alignment	44	100	20/01/11 A	04/03/11 A	20/01/11 A	04/03/11 A		YSW0270	YSW0310, YSW0340					
YSW0290	Submission of Marine Notice	69	100	20/01/11 A	29/03/11 A	20/01/11 A	29/03/11 A		YSW0270	YSW0350					
YSW0310	Construction of Entry Pit and Preparation Work	27	100	05/03/11 A	31/03/11 A	05/03/11 A	31/03/11 A		YSW0280	YSW0320					
YSW0320	Prepare of HDD Drill Rig Set-up (YSW)	28	100	01/04/11 A	28/04/11 A	01/04/11 A	28/04/11 A		YSW0310	YSW0330, YSW0350					
YSW0330	Establishment of HDD plant & equipment	6	100	09/04/11 A	14/04/11 A	09/04/11 A	14/04/11 A		YSW0320	YSW0340					
YSW0340	Setting up at drillhole location	14	100	15/04/11 A	28/04/11 A	15/04/11 A	28/04/11 A		YSW0250, YSW0260, YSW0280,	YSW0350					
YSW0350	Drill pilot hole and reaming hole - NS400 - 530m	229	100	29/04/11 A	13/12/11 A	29/04/11 A	13/12/11 A		YSW0040, YSW0180, YSW0210,	YSW0360					
YSW0360	Installation of NS400 HDPE 530m	17	100	14/12/11 A	30/12/11 A	14/12/11 A	30/12/11 A		YSW0240, YSW0350	SKW1181, YSW03601, YSW03620,					
YSW03601	Demobilization of HDD plant & equipment	7	100	31/12/11 A	06/01/12 A	31/12/11 A	06/01/12 A		YSW0360	YSW03605, YSW03641, YSW0730					
YSW03605	Remove Entry pit of HDD	14	100	07/01/12 A	20/01/12 A	07/01/12 A	20/01/12 A		YSW03601	YSW0730					
YSW03620	Removal of Receiving Pit	14	100	31/12/11 A	13/01/12 A	31/12/11 A	13/01/12 A		YSW0360	YSW0365					
YSW03641	Prepare backfilling material under VO 046A	120	100	07/01/12 A	05/05/12 A	07/01/12 A	05/05/12 A		YSW03601	YSW0365					
YSW0365	Set up of Silt Curtain as per EP	2	100	23/11/12 A	24/11/12 A	23/11/12 A	24/11/12 A		SKW1431, YSW03620, YSW03641	YSW0370					
YSW0370	Dredging of Marine Deposit for Diffuser (YSW)	5	100	24/11/12 A	29/11/12 A	24/11/12 A	29/11/12 A		YSW0360, YSW0365	YSW0380					
YSW0380	Diffuser Construction (YSW)	60	65	30/11/12 A	20/05/13	30/11/12 A	30/05/13	10d	YSW0370	E&M0690, YSW0400, YSW08301	Diffuser Construction (YSW)				
YSW0400	Removal of silt curtain	30	0	21/05/13	19/06/13	18/05/14	16/06/14	362d	YSW0380	KD0040	Removal of silt curtain				
<b>E&amp;M Works - YSW STW</b>															
E&M0360	Delivery of MBR Memb. Mod. (MBR Tk 4)	118	100	24/02/11 A	21/06/11 A	24/02/11 A	21/06/11 A		E&M0160	E&M0510					
E&M0370	Delivery of MBR Membrane Modules - 2nd Shipment	236	100	24/02/11 A	17/10/11 A	24/02/11 A	17/10/11 A		E&M0160	E&M0520					
E&M0380	Delivery of Grit Removal Equipment	81	100	10/10/11 A	29/12/11 A	10/10/11 A	29/12/11 A		E&M0150	E&M0530					
E&M0390	Delivery of Coarse Screens	129	100	06/09/11 A	12/01/12 A	06/09/11 A	12/01/12 A		E&M0110	E&M0540					
E&M0400	Delivery of Fine Screens	80	100	12/09/11 A	30/11/11 A	12/09/11 A	30/11/11 A		E&M0120	E&M0550					
E&M0410	Delivery of Pumps	75	100	23/06/11 A	05/09/11 A	23/06/11 A	05/09/11 A		E&M0130	E&M0560					
E&M0420	Delivery of Submersible Mixers	230	100	26/02/11 A	26/02/11 A	26/02/11 A	26/02/11 A		E&M0140	E&M0570					

Start date	05/05/10
Finish date	13/01/17
Data date	30/04/13
Run date	20/05/13
Page number	5A
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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 (May 2013 - July 2013)**

Date	Revision	Checked	Approved
30/04/13	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013			
											APR	MAY	JUN	JUL
E&M0440	Delivery of Sludge Dewatering Equipment	558	70	31/08/11 A	14/10/13	31/08/11 A	10/08/13	-65d	E&M0170	E&M0580				
E&M0450	Delivery of Valves, Pipes & Fittings	560	90	30/08/11 A	26/11/13	30/08/11 A	07/11/13	-19d	E&M0180	E&M0590				
E&M0460	Delivery of Penstocks	135	100	12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A		E&M0190	E&M0600, E&M0605				
E&M0470	Delivery of Instruments	232	100	03/11/11 A	21/06/11 A	03/11/11 A	21/06/11 A		E&M0200	E&M0610				
E&M0480	Delivery of MCC LVSB	90	100	03/12/12 A	04/03/15 A	03/12/12 A	04/03/15 A		E&M0210	E&M0620				
E&M0490	Delivery of BS Equipment	446	65	10/12/11 A	18/07/14	10/12/11 A	05/06/13	-408d	E&M0220	E&M0630				
E&M0500	Delivery FS Equipment	507	25	11/12/11 A	11/03/15	11/12/11 A	16/05/13	-664d	E&M0230	E&M0330, E&M0640				
E&M0510	Install Membrane Modules in MBR Tank no. 4	89	100	03/11/12 A	28/02/13 A	03/11/12 A	28/02/13 A		E&M0360, YSW0705	E&M0690				
E&M0520	Install Membrane Modules in MBR Tank No. 1 to 3	57	100	03/12/12 A	28/02/13 A	03/12/12 A	28/02/13 A		E&M0370, YSW08302, YSW08303	E&M0690				
E&M0530	Install Grit Removal Equipment	122	100	01/06/12 A	30/09/12 A	01/06/12 A	30/09/12 A		E&M0380, YSW05923	E&M0590, E&M0660				
E&M0540	Install Coarse Screens	240	90	23/04/12 A	23/05/13	23/04/12 A	22/04/13	-31d	E&M0390, YSW05923	E&M0660				
E&M0550	Install Fine Screens	122	80	01/06/12 A	24/05/13	01/06/12 A	12/03/13	-73d	E&M0400, YSW05923	E&M0590, E&M0660				
E&M0560	Install Pumps	355	60	23/04/12 A	18/09/13	23/04/12 A	22/04/13	-149d	E&M0410, YSW05923	E&M0660				
E&M0570	Install Submersible Mixers	163	50	15/01/13 A	20/07/13	15/01/13 A	22/04/13	-89d	E&M0420, YSW07204	E&M0660, E&M0690				
E&M0580	Install Sludge Dewatering Equipment	361	40	29/05/12 A	02/12/13	29/05/12 A	31/05/13	-185d	E&M0440, YSW06023	E&M0690				
E&M0590	Install Valves, Pipes & Fittings	232	65	15/01/13 A	13/08/13	15/01/13 A	01/06/13	-73d	E&M0450, E&M0530, E&M0550,	E&M0650, E&M0690				
E&M0600	Install Penstocks (Batch 1, GL H - T)	213	100	23/04/12 A	21/05/13 A	23/04/12 A	21/05/13 A		E&M0460, YSW07202	E&M0690				
E&M0605	Install Penstocks (Batch 2, GL A - F)	131	70	02/01/13 A	08/06/13	02/01/13 A	30/05/13	-8d	E&M0460, YSW08302	E&M0690				
E&M0610	Install Instruments	74	5	02/01/13 A	11/08/13	02/01/13 A	01/06/13	-70d	E&M0470, YSW07055, YSW0810,	E&M0690				
E&M0620	Install SAT, MCC & LVSB	8	100	02/01/13 A	02/01/15 A	02/01/13 A	02/01/15 A		E&M0480, YSW0810	E&M0660, E&M0680				
E&M0630	Install BS Equipment	180	50	02/01/13 A	17/08/14	02/01/13 A	05/07/13	-408d	E&M0490, YSW0810, YSW0820	E&M0690				
E&M0640	Install FS Equipment	180	5	02/01/13 A	30/04/15	02/01/13 A	05/07/13	-664d	E&M0500, YSW0705, YSW0810,	E&M0690				
E&M0650	Hydraulic Tests of Pipeworks	153	30	02/01/13 A	15/08/13	02/01/13 A	06/06/13	-69d	E&M0590, YSW08302	E&M0690				
E&M0660	Cabling Works	15	20	04/02/15 A	12/01/15	04/02/15 A	04/05/13	-618d	E&M0530, E&M0540, E&M0550, E&M0560, E&M0570, E&M0620	E&M0670				
E&M0670	Insulation Tests of Cables and Cable Termination	26	0	12/01/15	07/02/15	05/05/13	30/05/13	-618d	E&M0320, E&M0325, E&M0660,	E&M0690				
E&M0680	Energization	1	0	31/12/14 *	01/01/15	04/05/13	04/05/13	-607d	E&M0305, E&M0325, E&M0620,	E&M0670				
E&M0690	Functional and Performance Tests of Equipment	35	20	25/03/15 A	22/04/15	25/03/15 A	27/06/13 *	-664d	E&M0510, E&M0520, E&M0570, E&M0580, E&M0590, E&M0600, E&M0605, E&M0610, E&M0630, E&M0640, E&M0650, E&M0670, YSW0380, YSW08301, YSW1530, YSW1540	E&M0700				
E&M0700	T&C Period	137	0	22/04/15	06/09/15	12/12/13	27/04/14	-497d	E&M0330, E&M0690	E&M0730, KD0040				
E&M0730	Trial Operation Period	413	0	06/09/15	13/01/17	28/04/14	14/06/15	-497d	E&M0700	KD0132				

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Preliminary														
SKW0250	Approval of Environmental Team	16	100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A		KD0020	SKW0260				
SKW0260	Baseline monitoring (Air & Noise)	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A		SKW0250	SKW0242, SKW0265, SKW0592, SKW0681,				
SKW0265	Baseline Monitoring Submission (A & N)	14	100	16/06/10 A	08/07/10 A	16/06/10 A	08/07/10 A		SKW0260	SKW0242, SKW0592, SKW0681, SKW0921,				
Section W3 - Footpath Diversion in Portion G														
Civil & Geotechnical Works														
SKW0240	Site Clearance	21	100	17/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A			SKW0241				
SKW0241	Initial Survey	9	100	07/06/10 A	15/06/10 A	07/06/10 A	15/06/10 A		SKW0240	SKW0242				
SKW0242	Retaining Wall Bay 0-10 (Incl. VO. 001A)	177	100	30/06/10 A	23/12/10 A	30/06/10 A	23/12/10 A		SKW0241, SKW0260, SKW0265	SKW0461				
SKW0461	Utilities Laying and Diversion	70	100	24/12/10 A	03/03/11 A	24/12/10 A	03/03/11 A		SKW0242	SKW0471				
SKW0471	Concreting for Pavement	7	100	04/03/11 A	10/03/11 A	04/03/11 A	10/03/11 A		SKW0461	SKW0481				
SKW0481	Footpath Diversion - Stage 1	14	100	11/03/11 A	24/03/11 A	11/03/11 A	24/03/11 A		SKW0471	KD0050, SKW04811, SKW0491				
SKW04811	Excavate for FP transition at CH0-35 & CH130-141	37	100	25/03/11 A	30/04/11 A	25/03/11 A	30/04/11 A		SKW0481	SKW04821				
SKW04821	Construction of Drainage outfall near bay 10	3	100	01/05/11 A	03/05/11 A	01/05/11 A	03/05/11 A		SKW04811	SKW04831				
SKW04831	Cable diversion by HEC	26	100	04/05/11 A	29/05/11 A	04/05/11 A	29/05/11 A		SKW04821	SKW04841				
SKW04841	Diversion of Ducting and Drawpit by PCCW	12	100	20/05/11 A	31/05/11 A	20/05/11 A	31/05/11 A		SKW04831	SKW04851				
SKW04851	Soil backfilling behind FP retaining wall	14	100	01/06/11 A	14/06/11 A	01/06/11 A	14/06/11 A		SKW04841	SKW04861				
SKW04861	Concreting for footpath pavement	7	100	15/06/11 A	21/06/11 A	15/06/11 A	21/06/11 A		SKW04851	SKW04871				
SKW04871	Relocation of Temp Safety Fence at SKW STW A-G	57	100	22/06/11 A	17/08/11 A	22/06/11 A	17/08/11 A		SKW04861	SKW04881				
SKW04881	Disposal of excavation material at A-G SKW STW	138	100	18/08/11 A	02/01/12 A	18/08/11 A	02/01/12 A		SKW04871	SKW04885				
SKW04885	Footpath Diversion - Stage 2	7	100	03/01/12 A	09/01/12 A	03/01/12 A	09/01/12 A		SKW04881	SKW1261				
SKW0491	Removal of Haul Road after SKW STW	7	0	08/10/14	14/10/14	29/05/15	04/06/15	233d	KD0090, SKW0481, SKW1401	SKW0501				

Start date	05/05/10		Early bar
Finish date	13/01/17		Progress bar
Data date	30/04/13		Critical bar
Run date	20/05/13		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 (May 2013 - July 2013)**

Date	Revision	Checked	Approved
30/04/13	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013				
											APR	MAY	JUN	JUL	
SKW0501	Concreting for no-fine concrete	14	0	08/10/14	21/10/14	29/05/15	11/06/15	233d	SKW0491	SKW0511					
SKW0511	Wall Tie & Stone Facing	14	0	22/10/14	04/11/14	12/06/15	25/06/15	233d	SKW0501	SKW0521					
SKW0521	Gabion Wall & Geotextile	30	0	05/11/14	04/12/14	26/06/15	25/07/15	233d	SKW0511	SKW0531					
SKW0531	Installation of Flower Pot	7	0	05/12/14	11/12/14	26/07/15	01/08/15	233d	SKW0521	SKW0541					
SKW0541	Completion of Outstanding Works	42	0	12/12/14	22/01/15	02/08/15	12/09/15	233d	SKW0531	KD0125					
<b>Section W 4 - 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	31/08/10 A	12/10/10 A	31/08/10 A	12/10/10 A		SKW0260, SKW0265, SKW0591	SKW05931					
SKW05931	Construction of Haul Road (To +30mPD)	50	100	03/09/10 A	22/10/10 A	03/09/10 A	22/10/10 A		SKW0592	SKW05932					
SKW05932	Construction of Haul Road (To +42.5mPD)	68	100	23/10/10 A	29/12/10 A	23/10/10 A	29/12/10 A		SKW05931	SKW059322					
SKW059321	Removal of Boulders (IBG 1 - 119, SI No. 11B)	121	100	03/11/10 A	03/03/11 A	03/11/10 A	03/03/11 A			SKW059411					
SKW059322	Add. Site Invest. Works (VO. No. 9,12 &16)	174	100	11/01/11 A	03/07/11 A	11/01/11 A	03/07/11 A		SKW05932	SKW059341					
SKW059323	Revised Profile at West Slope (+56 to +42.5mPD)	1	100	17/03/11 A	17/03/11 A	17/03/11 A	17/03/11 A			SKW059324					
SKW059324	Construction of Haul Road (+42.5 to +56mPD)	12	100	18/03/11 A	29/03/11 A	18/03/11 A	29/03/11 A		SKW059323	SKW059325					
SKW059325	Removal of Boulders (IBG 120-139, SI No. 11C)	17	100	30/03/11 A	15/04/11 A	30/03/11 A	15/04/11 A		SKW059324	SKW05933					
SKW05933	West Slope Cutting (+56mPD to +42.5mPD)	2	100	16/04/11 A	17/04/11 A	16/04/11 A	17/04/11 A		SKW059325	SKW059331					
SKW059331	Removal of Boulders (IBG 140-189, SI No. 11D)	45	100	18/04/11 A	01/06/11 A	18/04/11 A	01/06/11 A		SKW05933	SKW05934					
SKW05934	West Slope Cutting (+42.5mPD to +35mPD)	32	100	02/06/11 A	03/07/11 A	02/06/11 A	03/07/11 A		SKW059331	SKW059341					
SKW059341	Revised Profile at West Slope (+20 to +4.8mPD)	1	100	04/07/11 A	04/07/11 A	04/07/11 A	04/07/11 A		SKW059322, SKW05934	SKW05935					
SKW05935	West Slope Cutting (+35mPD to +27.5mPD)	83	100	08/07/11 A	28/09/11 A	08/07/11 A	28/09/11 A		SKW059341	SKW05936					
SKW05936	West Slope Cutting (+27.5mPD to +20mPD)	61	100	29/09/11 A	28/11/11 A	29/09/11 A	28/11/11 A		SKW05935	SKW05937					
SKW05937	West Slope Cutting (+20mPD to +12.5mPD)	39	100	29/11/11 A	06/01/12 A	29/11/11 A	06/01/12 A		SKW05936	SKW05938					
SKW05938	West Slope Cutting (+12.5mPD to +4.8mPD)	90	100	07/01/12 A	27/03/12 A	07/01/12 A	27/03/12 A		SKW05937	KD0060, SKW1261, SKW1311, SKW1371					
SKW05941	Slope Stormwater Drainage	300	100	28/03/12 A	25/05/12 A	28/03/12 A	25/05/12 A		KD0060	SKW05942					
SKW059411	East Slope Cutting (+50mPD to +42.5mPD)	72	100	04/03/11 A	14/05/11 A	04/03/11 A	14/05/11 A		SKW059321	SKW059412					
SKW059412	East Slope Cutting (+42.5mPD to +35mPD)	82	100	15/05/11 A	04/08/11 A	15/05/11 A	04/08/11 A		SKW059411	SKW059413					
SKW059413	East Slope Cutting (+35mPD to +27.5mPD)	55	100	05/08/11 A	28/09/11 A	05/08/11 A	28/09/11 A		SKW059412	SKW059414					
SKW059414	East Slope Cutting (+27.5mPD to +20mPD)	61	100	29/09/11 A	28/11/11 A	29/09/11 A	28/11/11 A		SKW059413	SKW059415					
SKW059415	East Slope Cutting (+20mPD to +12.5mPD)	39	100	29/11/11 A	06/01/12 A	29/11/11 A	06/01/12 A		SKW059414	SKW059416					
SKW059416	East Slope Cutting (+12.5mPD to +4.8mPD)	81	100	07/01/12 A	27/03/12 A	07/01/12 A	27/03/12 A		SKW059415	KD0060, SKW1311, SKW1371					
SKW05942	Slope Miscellaneous Works	61	100	26/05/12 A	31/07/12 A	26/05/12 A	31/07/12 A		SKW05941	SKW05943, SKW0595					
SKW05943	Buttress & surface Protection (SI No. 31)	60	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW05942	SKW05944					
SKW05944	Slope Treatment (SI. No. 36)	60	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW05943	SKW05945					
SKW05945	Rock Slope Treatment (SI. No. 68)	60	100	01/08/12 A	30/09/12 A	01/08/12 A	30/09/12 A		SKW05944	SKW05946					
SKW05946	Rock Slope Treatment (SI. No. 98)	60	100	10/09/12 A	28/02/13 A	10/09/12 A	28/02/13 A		SKW05945	SKW05947					
SKW05947	Rock Slope Treatment (SI. No. 115)	60	100	01/11/12 A	28/02/13 A	01/11/12 A	28/02/13 A		SKW05946	KD0135					
SKW05948	Soil Nailing Works (VO. No. 52)	300	100	10/02/12 A	28/02/13 A	10/02/12 A	28/02/13 A			SKW05963					
SKW0595	Rock Meshing	60	0	06/02/14	06/04/14	07/08/15	05/10/15	547d	SKW05942, SKW05972	KD0165					
SKW05963	Determine Alignment & Foundation Design of RFB	120	100	10/02/12 A	08/06/12 A	10/02/12 A	08/06/12 A		SKW05948	SKW059631, SKW05964, SKW05965					
SKW059631	GEO Approval of Foundation Design	70	100	09/06/12 A	31/07/12 A	09/06/12 A	31/07/12 A		SKW05963	SKW05968					
SKW05964	Fabrication & Shipping of RFB Material	180	100	09/06/12 A	30/11/12 A	09/06/12 A	30/11/12 A		SKW05963	SKW05972					
SKW05965	Site clearance & Fomation of access	62	100	09/06/12 A	31/07/12 A	09/06/12 A	31/07/12 A		SKW05963	SKW05967					
SKW05967	Plant mobilization	14	100	02/01/13 A	15/01/13 A	02/01/13 A	15/01/13 A		SKW05965	SKW05968					
SKW05968	Construction of anchors & pull out test	180	70	16/01/13 A	22/06/13	16/01/13 A	21/12/14	547d	SKW059631, SKW05967	SKW05969					
SKW05969	Construction of Foundation	120	60	11/07/13 A	09/08/13	11/07/13 A	07/02/15	547d	SKW05968	SKW05970					
SKW05970	Proof Load Test	60	0	10/08/13	08/10/13	08/02/15	08/04/15	547d	SKW05969	SKW05971					
SKW05971	Transportation of Material (To the slope crest)	30	0	09/10/13	07/11/13	09/04/15	08/05/15	547d	SKW05970	SKW05972					
SKW05972	Installation of Flexible barrier	90	0	08/11/13	05/02/14	09/05/15	06/08/15	547d	SKW05964, SKW05971	KD0165, SKW0595					
<b>Section W 5 - 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					

Start date	05/05/10		Early bar
Finish date	13/01/17		Progress bar
Data date	30/04/13		Critical bar
Run date	20/05/13		Summary bar
Page number	7A		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 (May 2013 - July 2013)**

Date	Revision	Checked	Approved
30/04/13	Revision 0	RH	VC



Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013				
											APR	MAY	JUN	JUL	
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	270	100	17/09/10 A	13/06/11 A	17/09/10 A	13/06/11 A		SKW0691	SKW0741					
SKW0722	Construction of Manholes (VO. No. 21A)	107	20	28/10/13 A	22/12/13	28/10/13 A	08/07/14	198d	E&M11800	E&M3360					
<b>Structural Works</b>															
SKW0741	RC Works for Structure	240	100	14/06/11 A	08/02/12 A	14/06/11 A	08/02/12 A		SKW0721	KD0070, SKW0841					
SKW0841	ABWF works	60	100	09/02/12 A	08/04/12 A	09/02/12 A	08/04/12 A		SKW0741	E&M1101, E&M1102, E&M1103, E&M1104,					
SKW0861	300mm U-channel & 675mm Step Channel	30	0	28/09/13	27/10/13	06/09/15	05/10/15	708d	E&M11800, SKW0841	KD0165					
<b>E&amp;M Works (PS1)</b>															
<b>Submission &amp; Delivery</b>															
E&M1001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A		KD0020	E&M1011					
E&M1002	Submission of Gen-Set	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A			E&M1012					
E&M1003	Submission of DeO System	198	100	17/05/10 A	16/07/13 A	17/05/10 A	16/07/13 A			E&M1013					
E&M1004	Submission of LV SB & MCC	180	100	17/05/10 A	09/01/12 A	17/05/10 A	09/01/12 A			E&M1014					
E&M1005	Submission of Instrumentation	243	100	17/05/10 A	12/03/12 A	17/05/10 A	12/03/12 A			E&M1015					
E&M1006	Submission of FS System	243	100	17/05/10 A	30/09/12 A	17/05/10 A	30/09/12 A			E&M1016					
E&M1007	Submission of BS System	243	97	17/05/10 A	07/05/13	17/05/10 A	06/12/13	213d		E&M1017					
E&M1011	Delivery of Pumps	150	100	24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A		E&M1001	E&M1101					
E&M1012	Delivery of Gen-Set	150	100	24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A		E&M1002	E&M1102					
E&M1013	Delivery of DeO System	150	100	11/07/11 A	28/10/11 A	11/07/11 A	28/10/11 A		E&M1003	E&M1103					
E&M1014	Delivery of LV SB & MCC	150	100	01/06/12 A	31/07/12 A	01/06/12 A	31/07/12 A		E&M1004	E&M1104					
E&M1015	Delivery of Instrumentation	90	100	01/11/11 A	03/11/11 A	01/11/11 A	03/11/11 A		E&M1005	E&M1105					
E&M1016	Delivery of FS Equipment	107	80	01/12/11 A	21/05/13	01/12/11 A	05/12/13	198d	E&M1006	E&M1106					
E&M1017	Delivery of BS Equipment	107	80	15/11/11 A	28/05/13	15/11/11 A	27/12/13	213d	E&M1007	E&M1107					
<b>Installation, T&amp;C</b>															
E&M1101	Install Pumps	55	90	02/10/12 A	05/05/13	02/10/12 A	04/01/14	245d	E&M1011, SKW0841	E&M1110, E&M1140					
E&M1102	Install Gen Set	55	100	02/10/12 A	05/05/13 A	02/10/12 A	05/05/13 A		E&M1012, SKW0841	E&M1110, E&M1140					
E&M1103	Install DeO System	55	90	03/12/12 A	05/05/13	03/12/12 A	04/01/14	245d	E&M1013, SKW0841	E&M1110, E&M1140					
E&M1104	Install LV SB & MCC	55	100	02/01/13 A	26/03/13 A	02/01/13 A	26/03/13 A		E&M1014, SKW0841	E&M1140					
E&M1105	Install Instrumentation	55	40	01/11/12 A	01/06/13	01/11/12 A	04/01/14	217d	E&M1015, SKW0841	E&M1140					
E&M1106	Install FS Equipment	55	45	02/10/12 A	20/06/13	02/10/12 A	04/01/14	198d	E&M1016, SKW0841	E&M1130, E&M1140					
E&M1107	Install BS Equipment	55	85	02/10/12 A	05/06/13	02/10/12 A	04/01/14	213d	E&M1017, SKW0841	E&M1110, E&M1140					
E&M1110	Install Valves, Pipes & Fittings	46	100	02/01/13 A	27/03/13 A	02/01/13 A	27/03/13 A		E&M1101, E&M1102, E&M1103,	E&M1120					
E&M1120	Hydraulic Test of Pipeworks	7	50	09/05/13 A	09/06/13	09/05/13 A	13/02/14	249d	E&M1110	E&M11800					
E&M1130	Form 501 Submission to FSD	28	0	20/06/13	18/07/13	16/01/14	13/02/14	210d	E&M1106	E&M11800					
E&M1140	Cabling Works	43	80	21/05/13 A	29/06/13	21/05/13 A	13/01/14	198d	E&M1101, E&M1102, E&M1103,	E&M1150					
E&M1150	Insulation Tests of Cables and Cable Termination	7	80	25/06/13 A	30/06/13	25/06/13 A	14/01/14	198d	E&M1140	E&M1160					
E&M1160	Energization	3	20	01/07/13 A	02/07/13	01/07/13 A	17/01/14	198d	E&M1150	E&M1170					
E&M1170	Functional and Performance Tests of Equipment	30	10	02/01/13 A	29/07/13	02/01/13 A	13/02/14	198d	E&M1160	E&M11800					
E&M11800	Commissioning Test	60	0	30/07/13	27/09/13	13/02/14	14/04/14	198d	E&M0350, E&M1120, E&M1130,	SKW0722, SKW0861					
<b>Section W 6 - 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	90	100	23/06/10 A	20/09/10 A	23/06/10 A	20/09/10 A		SKW0892	SKW0921					
SKW0921	Cut Slope & U-Channel	14	100	21/09/10 A	04/10/10 A	21/09/10 A	04/10/10 A		SKW0260, SKW0265, SKW0901	SKW0931, SKW0951					
SKW0931	Hoarding & Fencing	14	100	05/10/10 A	18/10/10 A	05/10/10 A	18/10/10 A		SKW0921	SKW0950, SKW0951					
SKW0950	Removal of Rock Boulders before ELS	66	100	19/10/10 A	23/12/10 A	19/10/10 A	23/12/10 A		SKW0931	SKW0951					
SKW0951	ELS & Excavate to formation	169	100	24/12/10 A	10/06/11 A	24/12/10 A	10/06/11 A		SKW0921, SKW0931, SKW0950	SKW0971					
SKW0961	Mass Conc. Retaining Wall	90	80	16/01/13 A	17/05/13	16/01/13 A	09/02/13	-97d	SKW1081	KD0155					
SKW1491	LCS (ChA0+45 to 1+75) VO.7	90	100	24/03/12 A	21/06/12 A	24/03/12 A	21/06/12 A		PRE0100, SKW1021	SKW15111					
SKW15111	Twin DN150 DI Rising Main (ChA1+75 - ChA5+79)	180	100	22/06/12 A	30/11/12 A	22/06/12 A	30/11/12 A		SKW1491	SKW1531					
SKW15112	Twin DN150 DI Rising Main (ChA0+00 - ChA0+45)	30	80	01/02/13 A	05/05/13	01/02/13 A	08/07/14	429d	SKW1581	E&M3360					

Start date	05/05/10
Finish date	13/01/17
Data date	30/04/13
Run date	20/05/13
Page number	8A
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	Start milestone point
	Finish milestone point

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

Date	Revision	Checked	Approved
30/04/13	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013			
											APR	MAY	JUN	JUL
SKW1531	Extent village sewers S163.1 & S164.1	34	100	30/11/12 A	10/01/13 A	30/11/12 A	10/01/13 A		SKW15111	SKW1581				
SKW1581	Construct Manhole no. S163 & S164	34	100	11/01/13 A	28/02/13 A	11/01/13 A	28/02/13 A		SKW1531	KD0135, SKW15112	63 & S164			
<b>Structural Works</b>														
SKW0971	Structural Works (Phase 1)	245	100	11/06/11 A	10/02/12 A	11/06/11 A	10/02/12 A		SKW0951	KD0080, SKW1021				
SKW1021	Structural Works (Phase 2)	42	100	11/02/12 A	23/03/12 A	11/02/12 A	23/03/12 A		SKW0971	SKW1061, SKW1081, SKW1491				
SKW1061	ABWF Works	90	100	24/03/12 A	21/06/12 A	24/03/12 A	21/06/12 A		SKW1021	E&M2101, E&M2102, E&M2103, E&M2104,				
SKW1081	375mm U-channel/catchpits/outfall	30	100	22/06/12 A	31/01/13 A	22/06/12 A	31/01/13 A		SKW1021, SKW1061	KD0155, SKW0961				
<b>E&amp;M Works (PS2)</b>														
<b>Submission &amp; Delivery</b>														
E&M2001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A		KD0020	E&M2011				
E&M2002	Submission of Gen-Set	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A			E&M2012				
E&M2003	Submission of DeO System	198	100	17/05/10 A	11/07/11 A	17/05/10 A	11/07/11 A			E&M2013				
E&M2004	Submission of LV SB & MCC	271	100	17/05/10 A	30/06/12 A	17/05/10 A	30/06/12 A			E&M2014				
E&M2005	Submission of Instrumentation	243	100	17/05/10 A	30/06/12 A	17/05/10 A	30/06/12 A			E&M2015				
E&M2006	Submission of FS System	243	97	17/05/10 A	07/05/13	17/05/10 A	04/09/12	-245d		E&M2016	Submission of FS System			
E&M2007	Submission of BS System	243	97	17/05/10 A	07/05/13	17/05/10 A	26/09/12	-223d		E&M2017	Submission of BS System			
E&M2011	Delivery of Pumps	150	100	24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A		E&M2001	E&M2101				
E&M2012	Delivery of Gen-Set	150	100	24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A		E&M2002	E&M2102				
E&M2013	Delivery of DeO System	150	100	11/07/11 A	28/10/11 A	11/07/11 A	28/10/11 A		E&M2003	E&M2103				
E&M2014	Delivery of LV SB & MCC	150	100	29/02/12 A	31/07/12 A	29/02/12 A	31/07/12 A		E&M2004	E&M2104				
E&M2015	Delivery of Instrumentation	90	100	21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A		E&M2005	E&M2105				
E&M2016	Delivery of FS Equipment	107	80	01/12/11 A	28/05/13	01/12/11 A	25/09/12	-245d	E&M2006	E&M0350, E&M2106	Delivery of FS Equipment			
E&M2017	Delivery of BS Equipment	107	80	15/01/11 A	28/05/13	15/01/11 A	17/10/12	-223d	E&M2007	E&M2107	Delivery of BS Equipment			
<b>Installation, T&amp;C</b>														
E&M2101	Install Pumps	55	80	02/10/12 A	10/05/13	02/10/12 A	12/01/13	-118d	E&M2011, SKW1061	E&M2110	Install Pumps			
E&M2102	Install Gen Set	55	100	01/09/12 A	05/05/13 A	01/09/12 A	05/05/13 A		E&M2012, SKW1061	E&M2110	Install Gen Set			
E&M2103	Install DeO System	55	90	03/12/12 A	05/05/13	03/12/12 A	12/01/13	-113d	E&M2013, SKW1061	E&M2110	Install DeO System			
E&M2104	Install LV SB & MCC	55	100	02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A		E&M2014, SKW1061	E&M2140				
E&M2105	Install Instrumentation	55	0	30/04/13	23/06/13	01/09/12	25/10/12	-241d	E&M2015, SKW1061	E&M2140	Install Instrumentation			
E&M2106	Install FS Equipment	55	45	02/10/12 A	27/06/13	02/10/12 A	25/10/12	-245d	E&M2016, SKW1061	E&M2140	Install FS Equipment			
E&M2107	Install BS Equipment	55	85	01/09/12 A	05/06/13	01/09/12 A	25/10/12	-223d	E&M2017, SKW1061	E&M2110, E&M2140	Install BS Equipment			
E&M2110	Install Valves, Pipes & Fittings	46	100	02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A		E&M2101, E&M2102, E&M2103,	E&M2120				
E&M2120	Hydraulic Test of Pipeworks	7	100	02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A		E&M2110	E&M2130				
E&M2130	Form 501 Submission to FSD	28	0	05/06/13	03/07/13	13/01/13	09/02/13	-144d	E&M2120	KD0155	Form 501 Submission			
E&M2140	Cabling Works	43	60	01/02/13 A	15/07/13	01/02/13 A	12/11/12	-245d	E&M2104, E&M2105, E&M2106,	E&M2150	Cabling Works			
E&M2150	Insulation Tests of Cables and Cable Termination	7	60	01/02/13 A	17/07/13	01/02/13 A	14/11/12	-245d	E&M2140	E&M2160	Insulation			
E&M2160	Engergization	3	100	01/02/13 A	25/03/13 A	01/02/13 A	25/03/13 A		E&M2150	E&M2170				
E&M2170	Functional and Performance Tests of Equipment	30	10	15/01/13 A	13/08/13	15/01/13 A	11/12/12	-245d	E&M2160	E&M2180				
E&M2180	Commissioning Test	60	0	13/08/13	12/10/13	12/12/12	09/02/13	-245d	E&M0350, E&M2170	KD0155				
<b>Section W 7 - SKW STW ,Sewer and Submarine Outfall</b>														
<b>Submarine Outfall</b>														
SKW1130	Approval of IHS Consultant	180	100	17/05/10 A	27/08/10 A	17/05/10 A	27/08/10 A			SKW1131				
SKW1131	Hydrographical Survey (SKW)	300	100	01/02/11 A	28/02/11 A	01/02/11 A	28/02/11 A		KD0020, SKW1130	SKW1231				
SKW1141	Baseline Monitoring (Water)	213	100	27/07/10 A	31/12/10 A	27/07/10 A	31/12/10 A		SKW0260, SKW0265	SKW1151				
SKW1151	Set up Temporary Working Platform	90	100	15/06/11 A	30/09/11 A	15/06/11 A	30/09/11 A		PRE0090, SKW1141	SKW1171				
SKW1171	ELS for HDD Set-up (SKW)	90	100	01/09/11 A	30/09/11 A	01/09/11 A	30/09/11 A		SKW1151	SKW1181				
SKW1181	Mobilization of HDD plant & equipment to SKW	8	100	06/01/12 A	07/01/12 A	06/01/12 A	07/01/12 A		SKW1171, YSW0360	SKW1191				
SKW1191	Setting up at drillhole location	7	100	09/01/12 A	14/01/12 A	09/01/12 A	14/01/12 A		SKW1181	SKW1201				
SKW1201	Drill pilot hole and reaming hole - NS280 - 750m	33	100	16/01/12 A	16/02/12 A	16/01/12 A	16/02/12 A		SKW1191	SKW1211				
SKW1211	Receiving Pit for HDD (SKW)	13	100	16/01/12 A	29/02/12 A	16/01/12 A	29/02/12 A		SKW1201	SKW1221				
SKW1221	Installation of NS280 HDPE 450mm dia. pipe	61	100	31/03/12 A	30/04/12 A	31/03/12 A	30/04/12 A		SKW1211	KD0090, SKW1231, SKW1441				
SKW1231	Removal of Receiving Platform	50	100	01/05/12 A	19/06/12 A	01/05/12 A	19/06/12 A		SKW1131, SKW1221	SKW1241				
SKW1241	Dredging of MD for Diffuser (PS CL 1.122(3))	16	100	20/06/12 A	05/07/12 A	20/06/12 A	05/07/12 A		SKW1231	E&M3359, SKW1251				
SKW1251	Diffuser Construction	77	100	01/09/12 A	16/11/12 A	01/09/12 A	16/11/12 A		SKW1241	SKW1431				
SKW1431	Removal of silt curtain	1	100	17/11/12 A	17/11/12 A	17/11/12 A	17/11/12 A		SKW1251	KD0090, SKW1440, YSW0365				
SKW1440	Sewer of Outfall Chamber to connection pit VO37A	90	60	31/12/12 A	04/06/13	31/12/12 A	07/03/14	276d	SKW1431	SKW1441	Sewer of Outfall Chamber to connection pit VO37A			

Start date	05/05/10
Finish date	13/01/17
Data date	30/04/13
Run date	20/05/13
Page number	9A
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	Early bar
	Progress bar
	Critical bar
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	Progress point
	Critical point
	Summary point
	Start milestone point
	Finish milestone point

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Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013			
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SKW1441	Sewer of Connection Pit to Outfall VO45	177	50	05/06/13 A	01/09/13	05/06/13 A	03/06/14	276d	SKW1221, SKW1440	E&M3359, KD0090				
<b>SKW STW</b>														
<b>Submission &amp; Delivery (E&amp;M)</b>														
E&M3010	Delivery of MBR M.M. - 1st shipment for Temp STP	150	100	24/02/11 A	17/10/11 A	24/02/11 A	17/10/11 A		E&M0160	E&M3170				
E&M3030	Delivery of Grit Removal Equipment	180	100	10/10/11 A	29/12/11 A	10/10/11 A	29/12/11 A		E&M0150	E&M3190				
E&M3060	Delivery of Fine Screens	136	100	12/09/11 A	30/11/11 A	12/09/11 A	30/11/11 A		E&M0120	E&M3210				
E&M3070	Delivery of Pumps	136	100	23/06/11 A	05/09/11 A	23/06/11 A	05/09/11 A		E&M0130	E&M3220				
E&M3080	Delivery of Submersible Mixers	180	100	26/07/11 A	17/11/11 A	26/07/11 A	17/11/11 A		E&M0140	E&M3230				
E&M3090	Delivery of Sludge Dewatering Equipment	210	50	01/09/11 A	12/08/13	01/09/11 A	11/01/14	152d	E&M0170	E&M3240				
E&M3100	Delivery of Valves, Pipes & Fittings	180	50	30/08/11 A	02/08/13	30/08/11 A	19/11/13	110d	E&M0180	E&M3250				
E&M3110	Delivery of Penstocks	180	100	12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A		E&M0190	E&M3260				
E&M3130	Delivery of instruments	180	100	21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A		E&M0200	E&M3270				
E&M3140	Delivery of MCC LVSB	180	0	01/05/13	28/10/13	07/04/13	03/10/13	-25d	E&M0210	E&M3261				
E&M3150	Delivery of BS Equipment	180	8	03/07/12 A	17/11/13	03/07/12 A	04/12/13	18d	E&M0220	E&M3291				
E&M3160	Delivery of FS Equipment	180	5	30/06/12 A	04/12/13	30/06/12 A	23/12/13	20d	E&M0230	E&M0340, E&M3300				
<b>Construction of Grid A-G</b>														
SKW1261	Excavate for SKW STW Structure (Grid A -G)	164	100	28/03/12 A	31/08/12 A	28/03/12 A	31/08/12 A		SKW04885, SKW05938	SKW1271, SKW1371				
SKW1271	55 M3 Fire Sprinkle Water Tank (FL +0.9 mPD)	36	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW1261	SKW1281				
SKW1281	Ground Floor Slab (Grid A-G)	46	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW1271	SKW1291				
SKW1291	Columns & Walls to 1/F & 1/F Slab (Grid A-G)	50	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW1281	KD0090, SKW1301				
SKW1301	Columns & Walls to R/F & R/F Slab (Grid A-G)	50	100	01/09/12 A	31/01/13 A	01/09/12 A	31/01/13 A		SKW1291	E&M3261, E&M3291, E&M3311, SKW1411				
SKW1411	ABWF Works	105	10	01/02/13 A	02/08/13	01/02/13 A	19/06/13	-44d	SKW1301	E&M3261, E&M3291, E&M3311, SKW1551				
<b>Construction of Grid G-N</b>														
SKW1311	Excavate for SKW STW Structure (Grid G-N)	90	100	28/03/12 A	25/06/12 A	28/03/12 A	25/06/12 A		SKW05938, SKW059416	SKW1321, SKW1371				
SKW1321	Equalization Tank no.1 & 2 with base slabs (-2.1	42	100	26/06/12 A	30/09/12 A	26/06/12 A	30/09/12 A		SKW1311	SKW1331				
SKW1331	Columns & Walls from B/S to G/F Slab (Grid G-N)	35	100	01/09/12 A	30/09/12 A	01/09/12 A	30/09/12 A		SKW1321	SKW1341				
SKW1341	Ground Floor Slab (Grid G-N)	35	100	01/09/12 A	17/12/12 A	01/09/12 A	17/12/12 A		SKW1331	SKW1351				
SKW1351	Columns & Walls to 1/F & 1/F Slab (Grid G-N)	28	100	01/11/12 A	15/01/13 A	01/11/12 A	15/01/13 A		SKW1341	SKW1361				
SKW1361	Columns & Walls to R/F & R/F Slab (Grid G-N)	35	70	01/11/12 A	10/05/13	01/11/12 A	01/02/13	-98d	SKW1351	SKW1451				
SKW1451	ABWF Works	54	0	10/05/13	03/07/13	01/02/13	27/03/13	-98d	SKW1361	E&M3170, E&M3190, E&M3210, E&M3291, E&M3300, SKW1391, SKW1551				
<b>Construction of Grid N-T</b>														
SKW1371	Excavate for SKW STW Structure (Grid N-T)	97	100	03/07/12 A	25/01/13 A	03/07/12 A	25/01/13 A		SKW05938, SKW059416, SKW1261,	SKW1381				
SKW1381	Ground Floor Slabs include MBR Tank (Grid N-T)	58	100	02/10/12 A	31/01/13 A	02/10/12 A	31/01/13 A		SKW1371	SKW1391				
SKW1391	Columns & Walls to 1/F & 1/F Slab (Grid N-T)	35	100	31/05/13 A	05/07/13 A	31/05/13 A	05/07/13 A		SKW1381, SKW1451	SKW1401				
SKW1401	Columns & Walls to R/F & R/F Slab (Grid N-T)	35	30	03/07/13 A	27/07/13	03/07/13 A	20/04/13	-98d	SKW1391	E&M3240, SKW0491, SKW1421				
SKW1421	ABWF Works	60	0	28/07/13	25/09/13	21/04/13	19/06/13	-98d	SKW1401	E&M3240, SKW1551				
SKW1551	Drainage (SSMH1-SSMH7)	35	0	26/09/13	30/10/13	20/06/13	24/07/13	-98d	SKW1411, SKW1421, SKW1451	SKW1561				
SKW1561	Sewer (SMFH1-SMFH2, SMFH3-SMFH7)	220	0	31/10/13	07/06/14	25/07/13	01/03/14	-98d	SKW1551	SKW1571				
SKW1571	Roadwork & Drainage Channel (SKW)	220	0	08/06/14	13/01/15	02/03/14	07/10/14	-98d	SKW1561	KD0090				
<b>SKW STW - E&amp;M Works</b>														
E&M3170	Install Membrane Modules in MBR Tank No. 1 to 2	100	0	03/07/13	11/10/13	07/01/14	16/04/14	188d	E&M3010, SKW1451	E&M3311				
E&M3190	Install Grit Removal Equipment	60	0	01/09/13	31/10/13	21/09/13	19/11/13	20d	E&M3030, E&M3210, SKW1451	E&M3250, E&M3320				
E&M3210	Install Fine Screens	60	0	03/07/13	01/09/13	24/05/13	22/07/13	-41d	E&M3060, SKW1451	E&M3190, E&M3220, E&M3250, E&M3260, E&M3320				
E&M3220	Install Pumps	75	0	01/09/13	15/11/13	23/07/13	05/10/13	-41d	E&M3070, E&M3210	E&M3230, E&M3250, E&M3260, E&M3320				
E&M3230	Install Submersible Mixers	45	0	15/11/13	30/12/13	06/10/13	19/11/13	-41d	E&M3080, E&M3220	E&M3250, E&M3260, E&M3311, E&M3320				
E&M3240	Install Sludge Dewatering Equipment	74	0	26/09/13	08/12/13	12/01/14	26/03/14	108d	E&M3090, SKW1401, SKW1421	E&M3320				
E&M3250	Install Valves, Pipes & Fittings	75	0	30/12/13	15/03/14	20/11/13	02/02/14	-41d	E&M3100, E&M3190, E&M3210, E&M3220, E&M3230	E&M3270, E&M3291, E&M3300, E&M3310				
E&M3260	Install Penstocks	135	0	30/12/13	14/05/14	03/12/13	16/04/14	-28d	E&M3110, E&M3210, E&M3220,	E&M3311				
E&M3261	Install SAT of MCC & LVSB	174	0	28/10/13	20/04/14	04/10/13	26/03/14	-25d	E&M3140, SKW1301, SKW1411	E&M3311, E&M3320				
E&M3270	Install instruments	60	0	15/03/14	14/05/14	16/02/14	16/04/14	-28d	E&M3130, E&M3250	E&M3311				
E&M3291	Install BS Equipment	180	0	14/01/14	13/07/14	05/12/13	02/06/14	-41d	E&M3150, E&M3250, SKW1301, SKW1411, SKW1451	E&M3331, E&M3359				










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Data date	30/04/13
Run date	20/05/13
Page number	10A
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- Critical bar
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- ▲ Start milestone point
- ▲ Finish milestone point

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

Date	Revision	Checked	Approved
30/04/13	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013				
											APR	MAY	JUN	JUL	
E&M3300	Install FS Equipment	161	0	14/01/14	24/06/14	24/12/13	02/06/14	-22d	E&M3160, E&M3250, SKW1451	E&M3331, E&M3359					
E&M3310	Hydraulic Tests of Pipeworks	90	0	15/03/14	13/06/14	06/03/14	03/06/14	-10d	E&M3250	E&M3359					
E&M3311	Cabling Works	47	0	14/05/14	30/06/14	17/04/14	02/06/14	-28d	E&M3170, E&M3230, E&M3260, E&M3261, E&M3270, SKW1301,	E&M3331, E&M3359					
E&M3320	Cabling Works for Dewatering Equipment	47	0	20/04/14	06/06/14	27/03/14	12/05/14	-25d	E&M3190, E&M3210, E&M3220, E&M3230, E&M3240, E&M3261	E&M3321					
E&M3321	Insulation Tests of Cables and Cable Termination	21	0	06/06/14	27/06/14	13/05/14	02/06/14	-25d	E&M3320	E&M3331					
E&M3331	Energization	1	0	13/07/14	14/07/14	03/06/14	03/06/14	-41d	E&M3291, E&M3300, E&M3311,	E&M3359					
E&M3359	Functional and Performance Tests of Equipment	35	0	14/07/14	18/08/14	04/06/14	08/07/14	-41d	E&M3291, E&M3300, E&M3310, E&M3311, E&M3331, SKW1241,	E&M3360					
E&M3360	T&C Period	91	0	18/08/14	17/11/14	09/07/14	07/10/14	-41d	E&M0340, E&M3359, SKW0722, SKW15112	E&M3370, KD0090					
E&M3370	Trial Operation Period	456	0	17/11/14	16/02/16	25/07/15	13/01/17	250d	E&M3360						
<b>Rising Main</b>															
SKW1481	Subm, Approval & Delivery of DI pipes	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A		KD0020	SKW1501					
SKW1501	LCS (ChB0+00 - ChB1+20)	300	100	14/09/10 A	10/07/11 A	14/09/10 A	10/07/11 A		PRE0100, SKW1481	SKW1521					
SKW1521	Twin DN150 DI Rising Main (ChB0+00 - ChA4+55)	250	85	11/07/11 A	06/06/13	11/07/11 A	07/10/14	489d	SKW1501	KD0090					
<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	1053	99	17/05/10 A	10/05/13	17/05/10 A	03/04/13	-37d	KD0020	KD0100, SKW1631					
SKW1621	Transplantation at SKW	90	100	07/06/10 A	04/09/10 A	07/06/10 A	04/09/10 A		SKW1591	KD0100					
<b>Section W9 - Establishment Works in All Portions</b>															
SKW1631	Section W9 - Establishment Works	365	0	10/05/13	10/05/14	04/04/13	03/04/14	-37d	SKW1611	KD0110					

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Finish date	13/01/17		Progress bar
Data date	30/04/13		Critical bar
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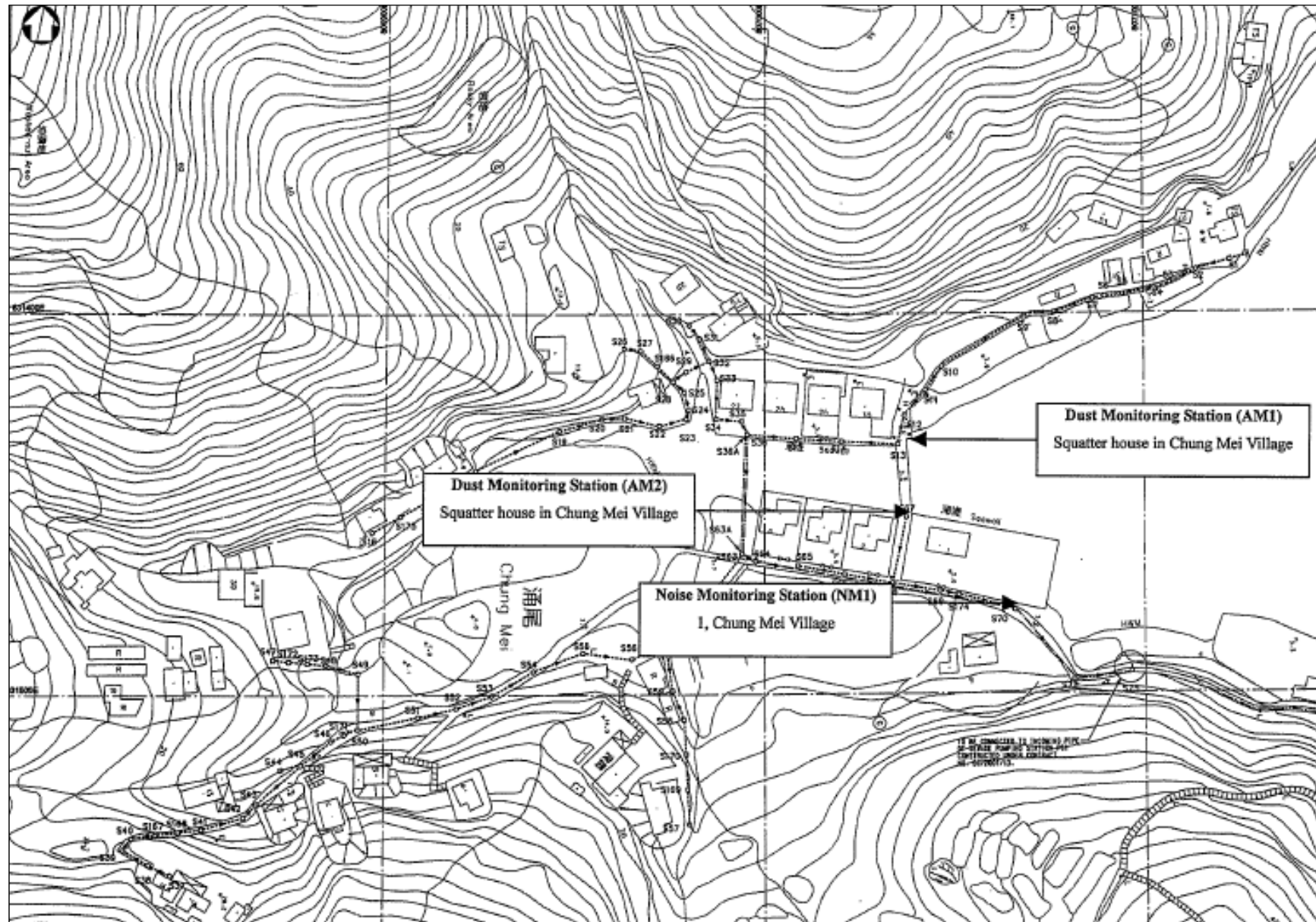
**Leader Civil Engineering Corp. Ltd.**  
**Contract No. DC/2009/13**  
**Construction of Sewage Treatment Works at YSW & SKW**  
**3-month Rolling Programme (May 2013 - July 2013)**

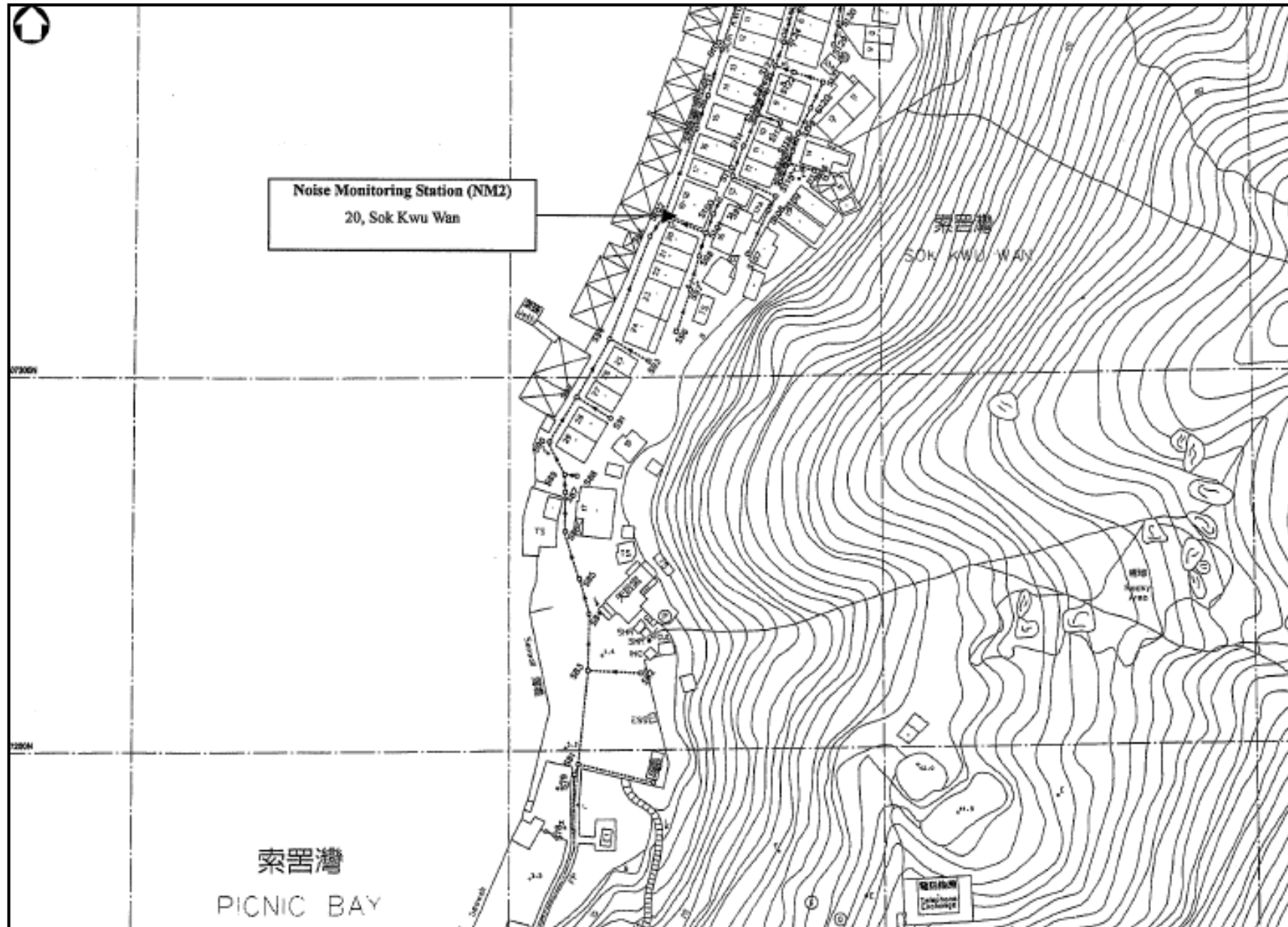
Date	Revision	Checked	Approved
30/04/13	Revision 0	RH	VC



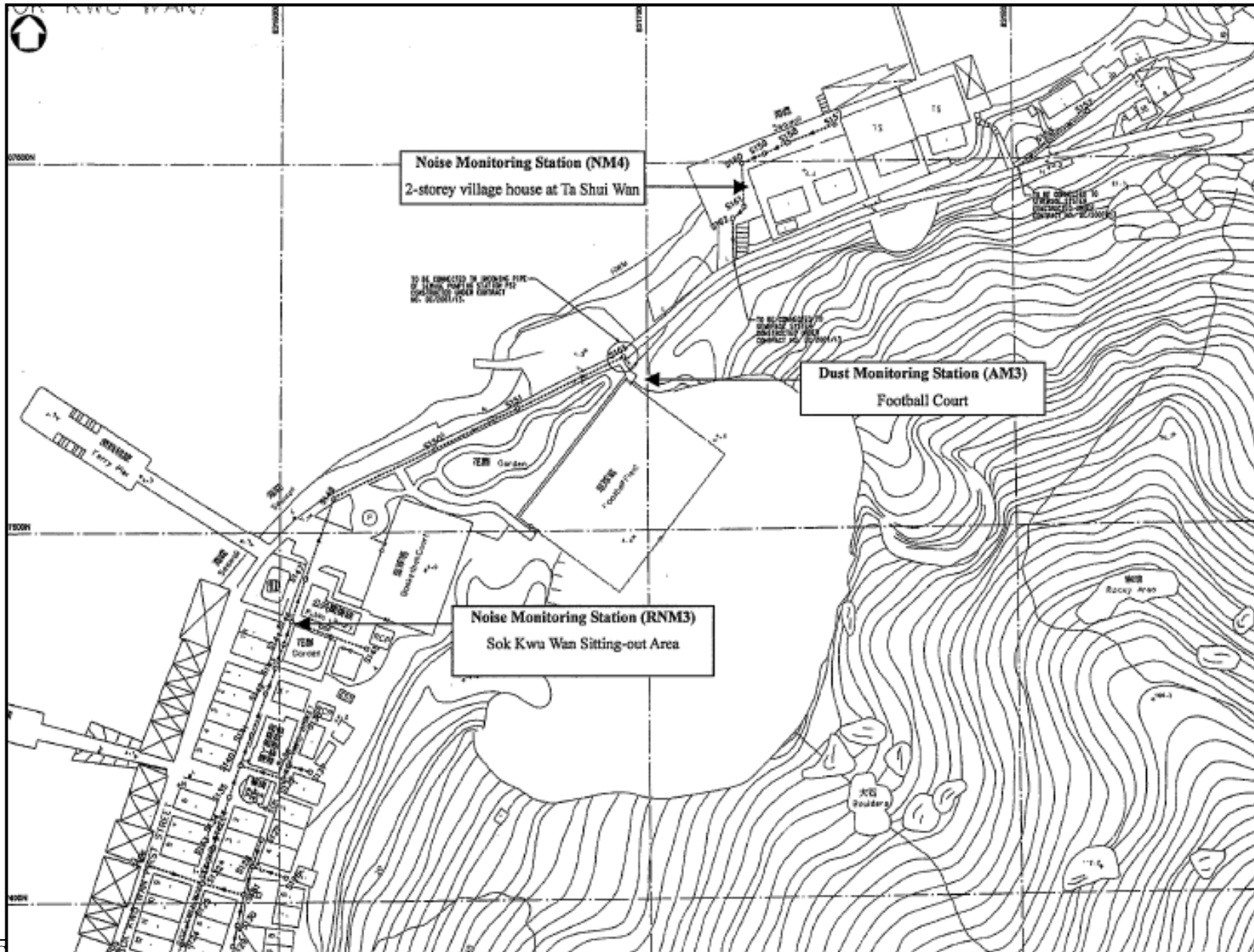
## **Appendix D**

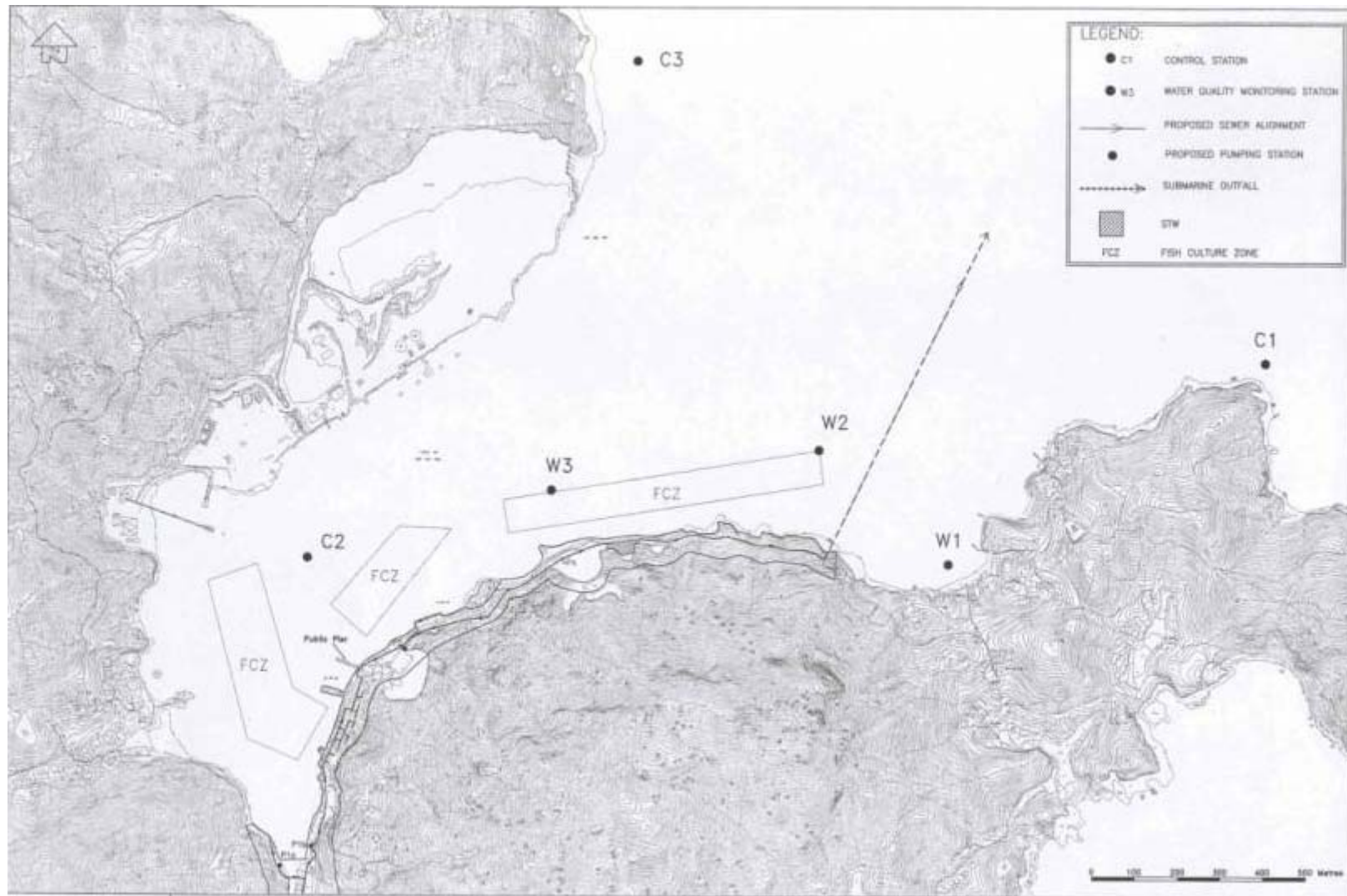
### **Location of Monitoring Stations (Air Quality / Construction Noise / Marine Water Quality)**











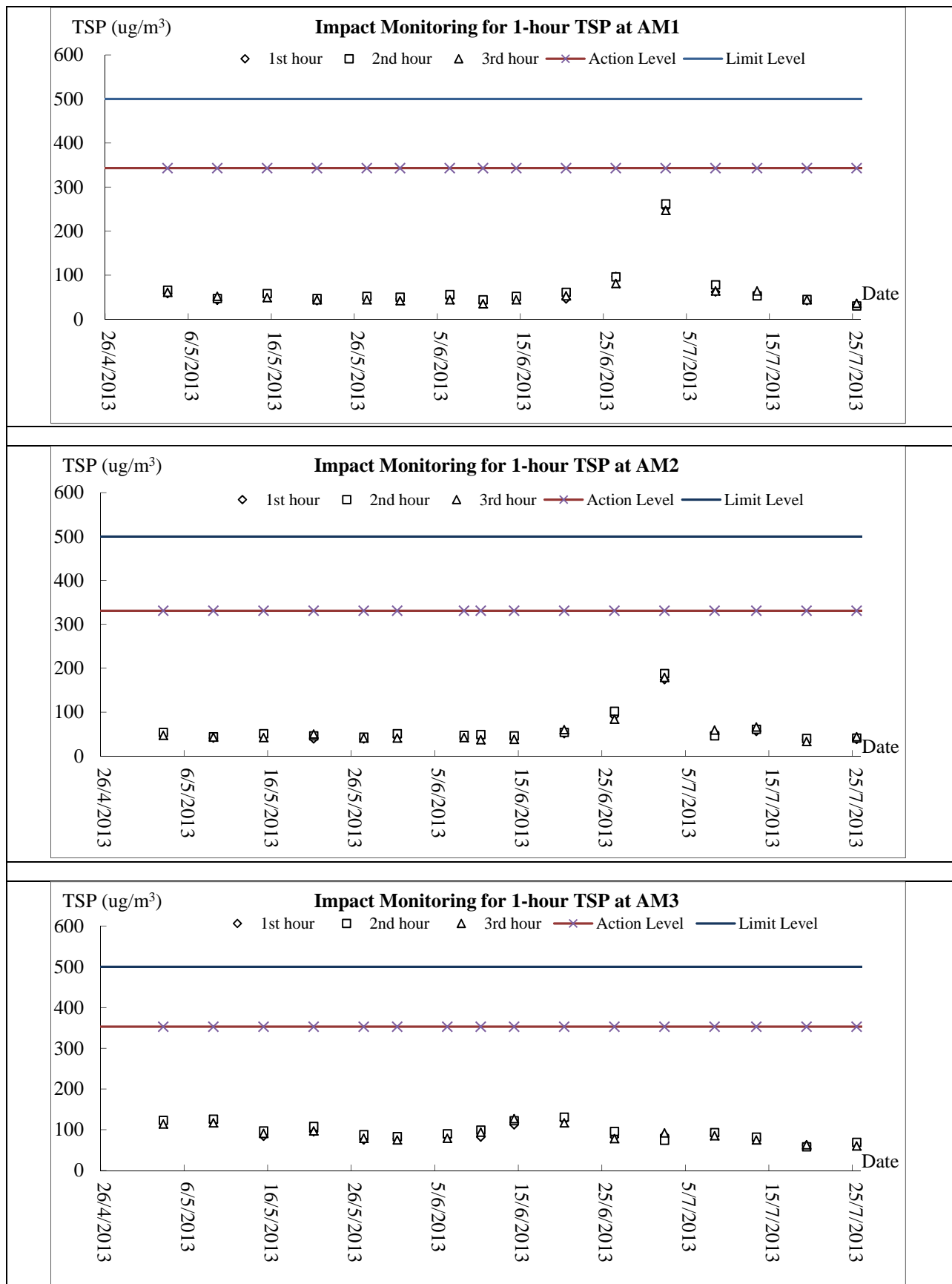
## **Appendix E**

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

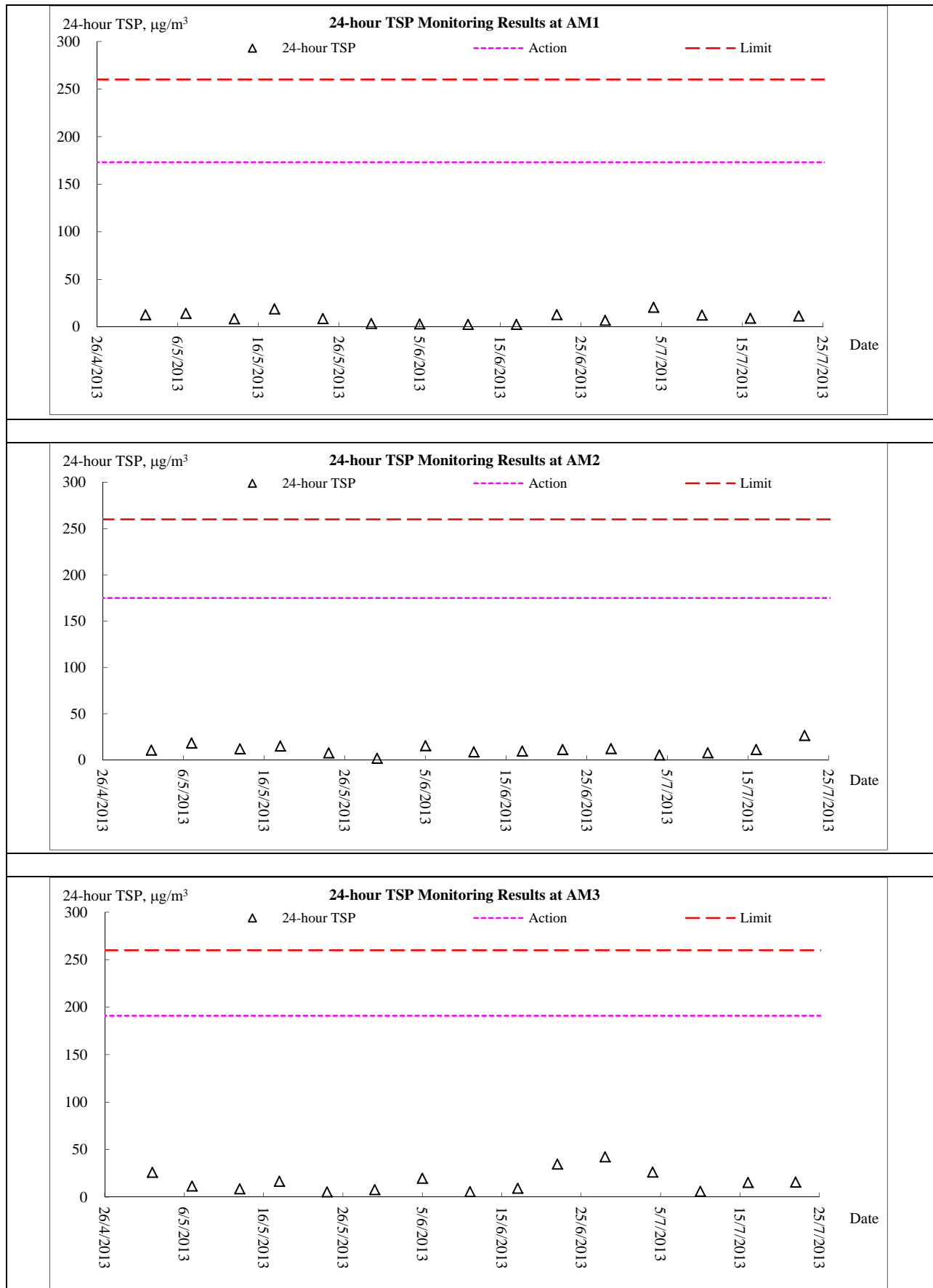
- 1. Air Quality**
- 2. Construction Noise**
- 3. Marine Water Quality**



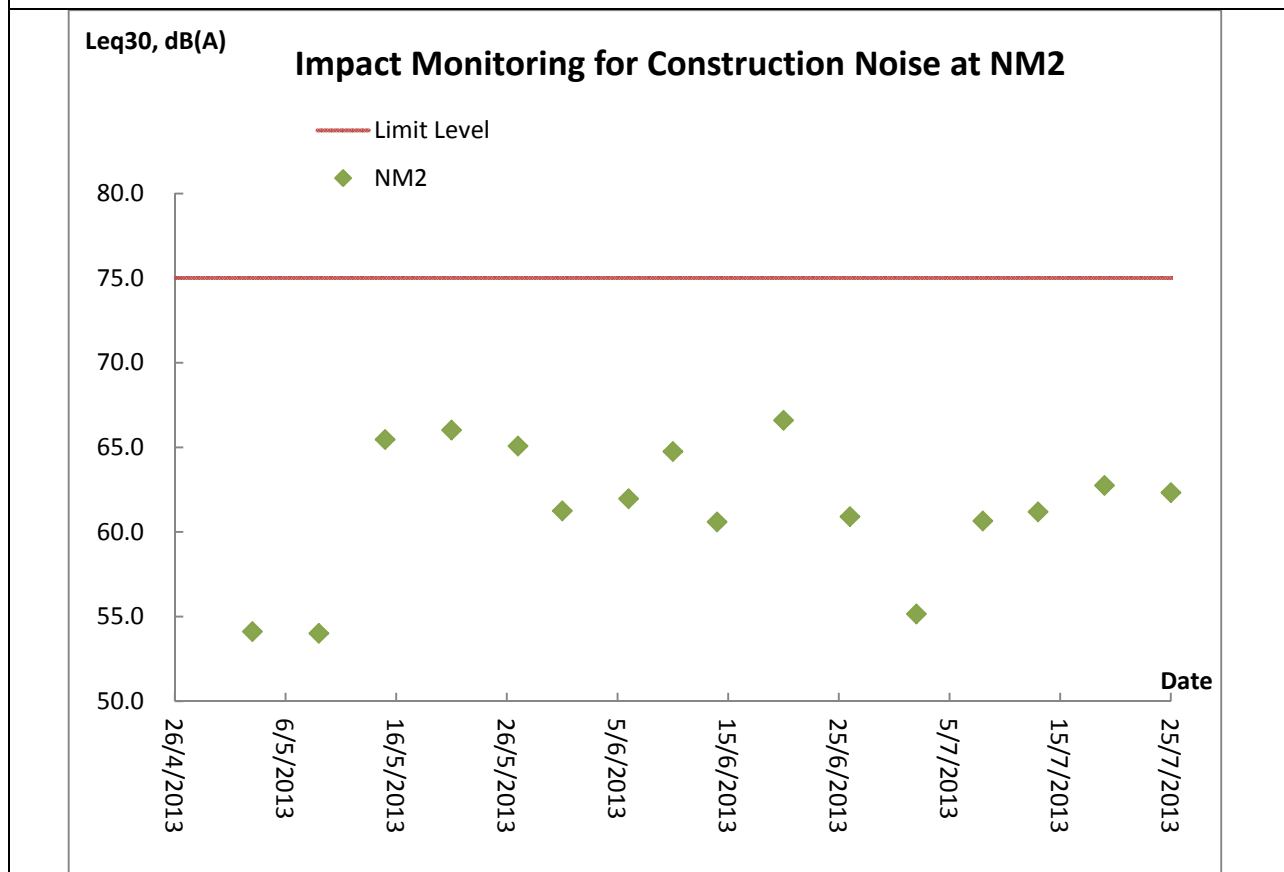
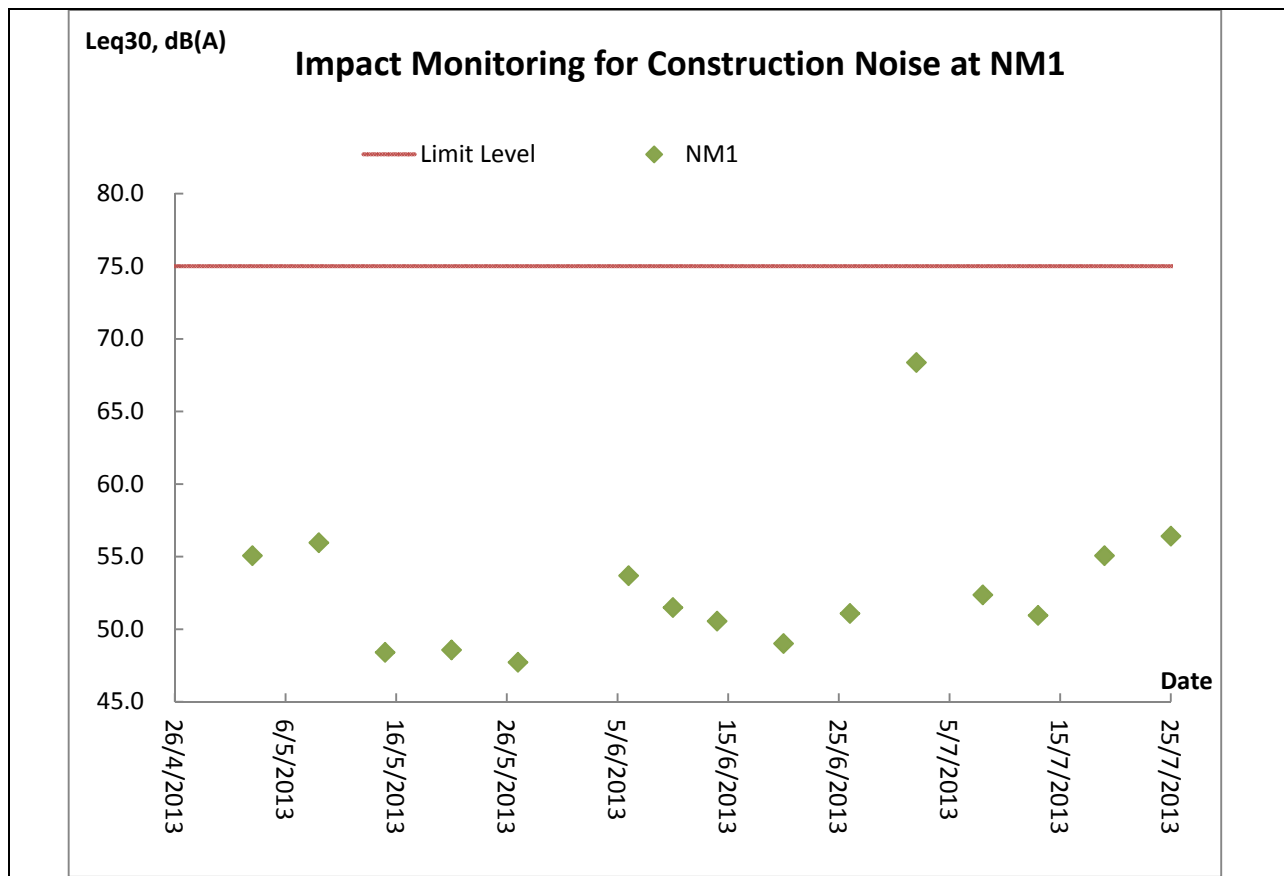
**Air Quality Monitoring – 1 hour TSP Monitoring**

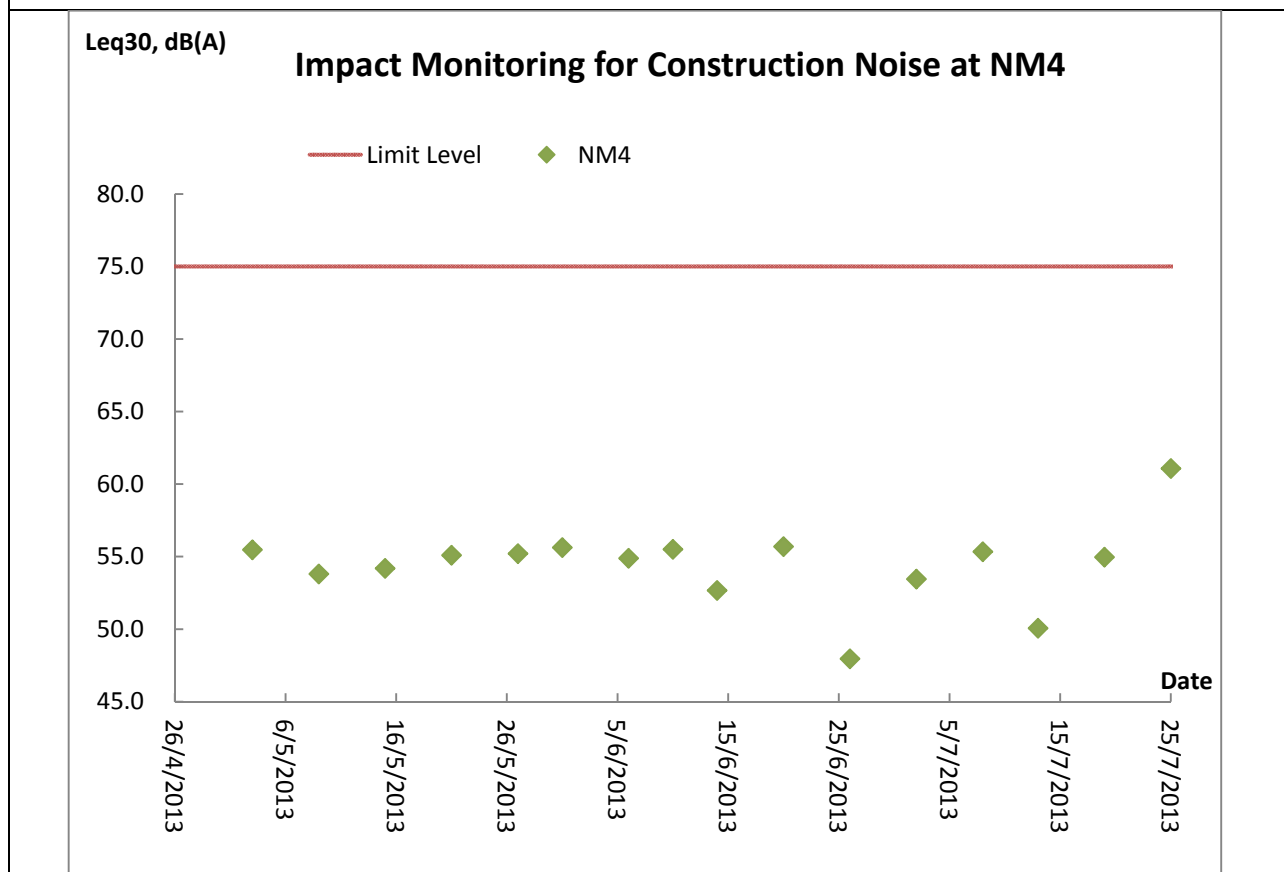
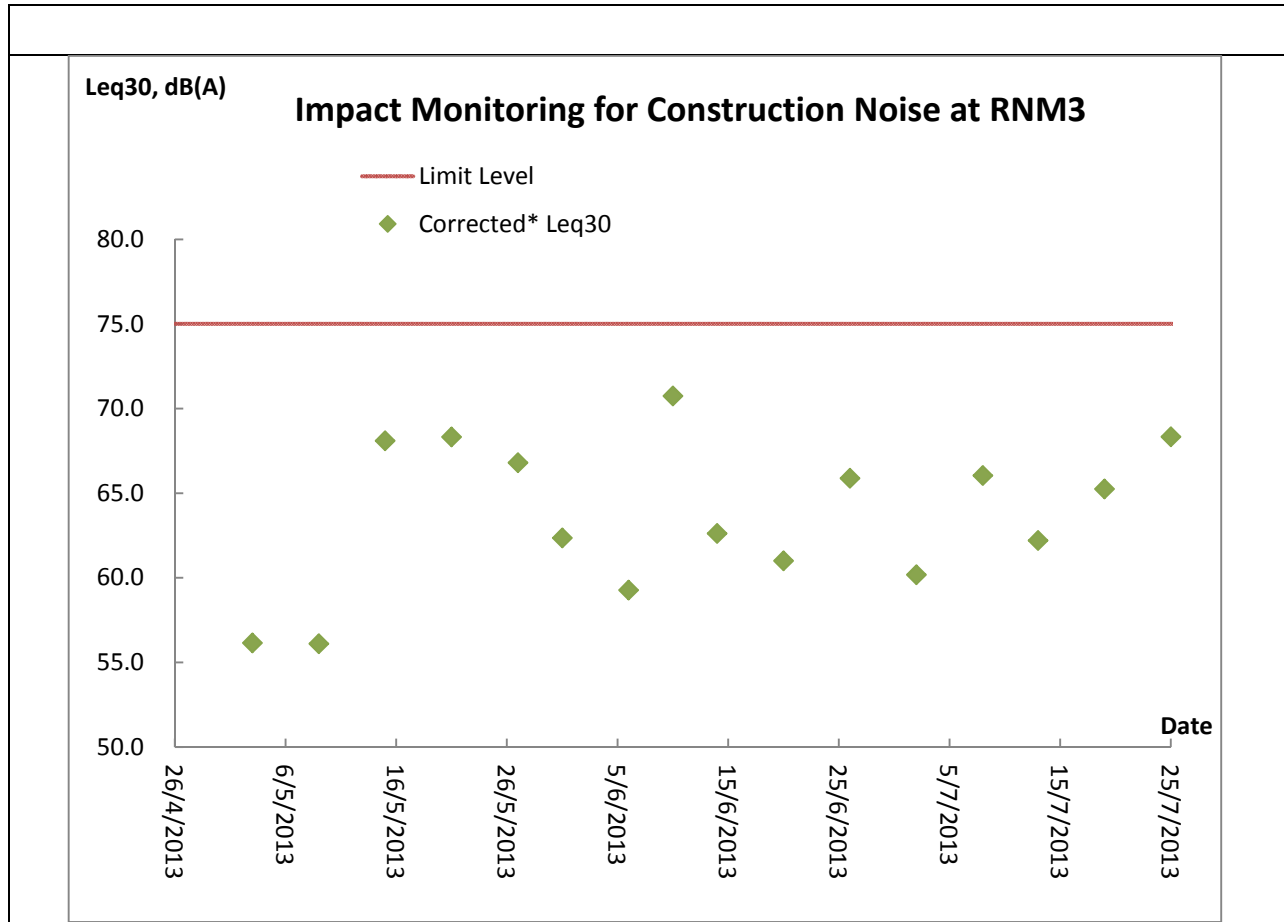


**Air Quality Monitoring – 24 hour TSP Monitoring**

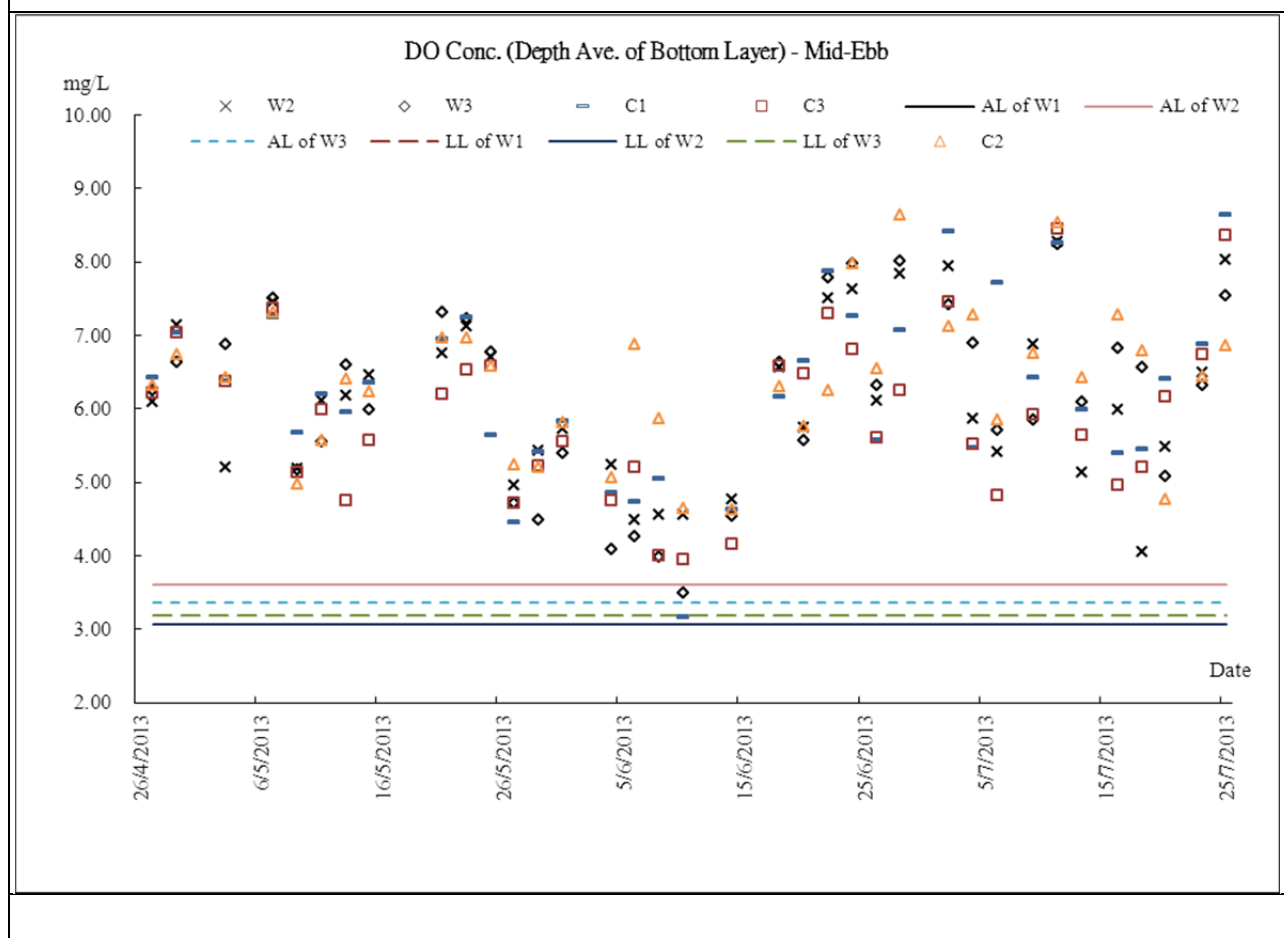
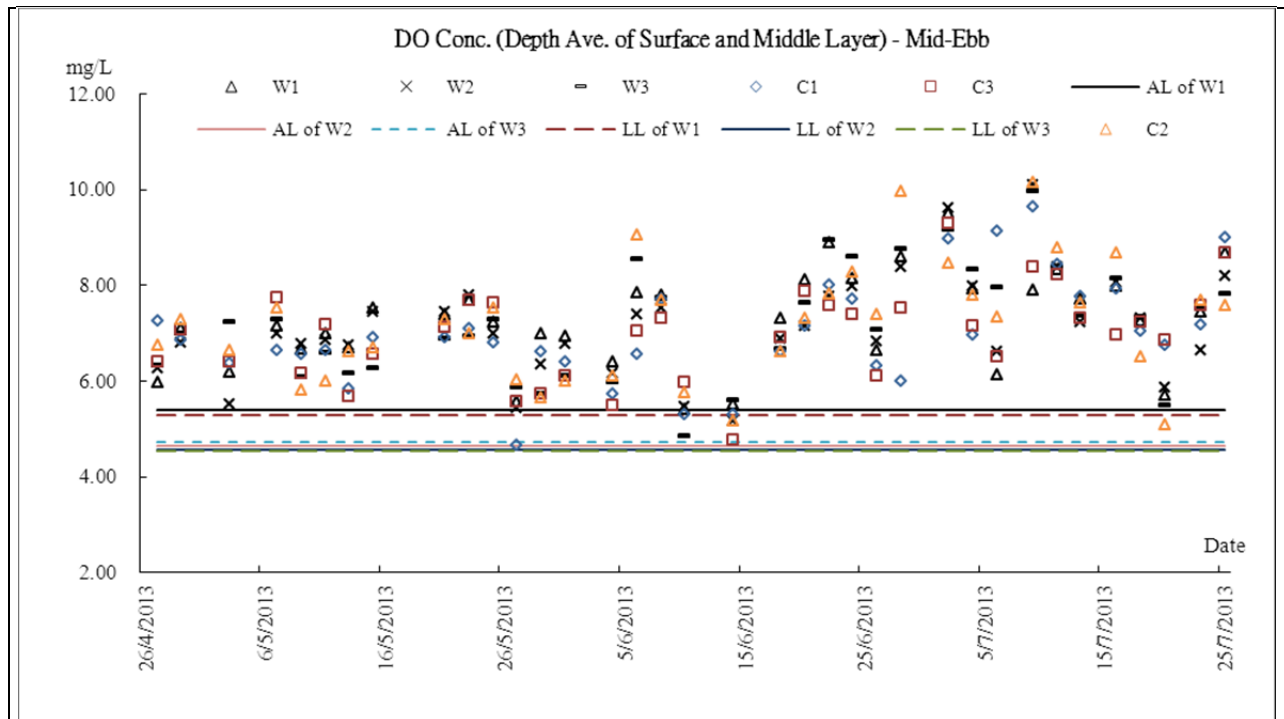


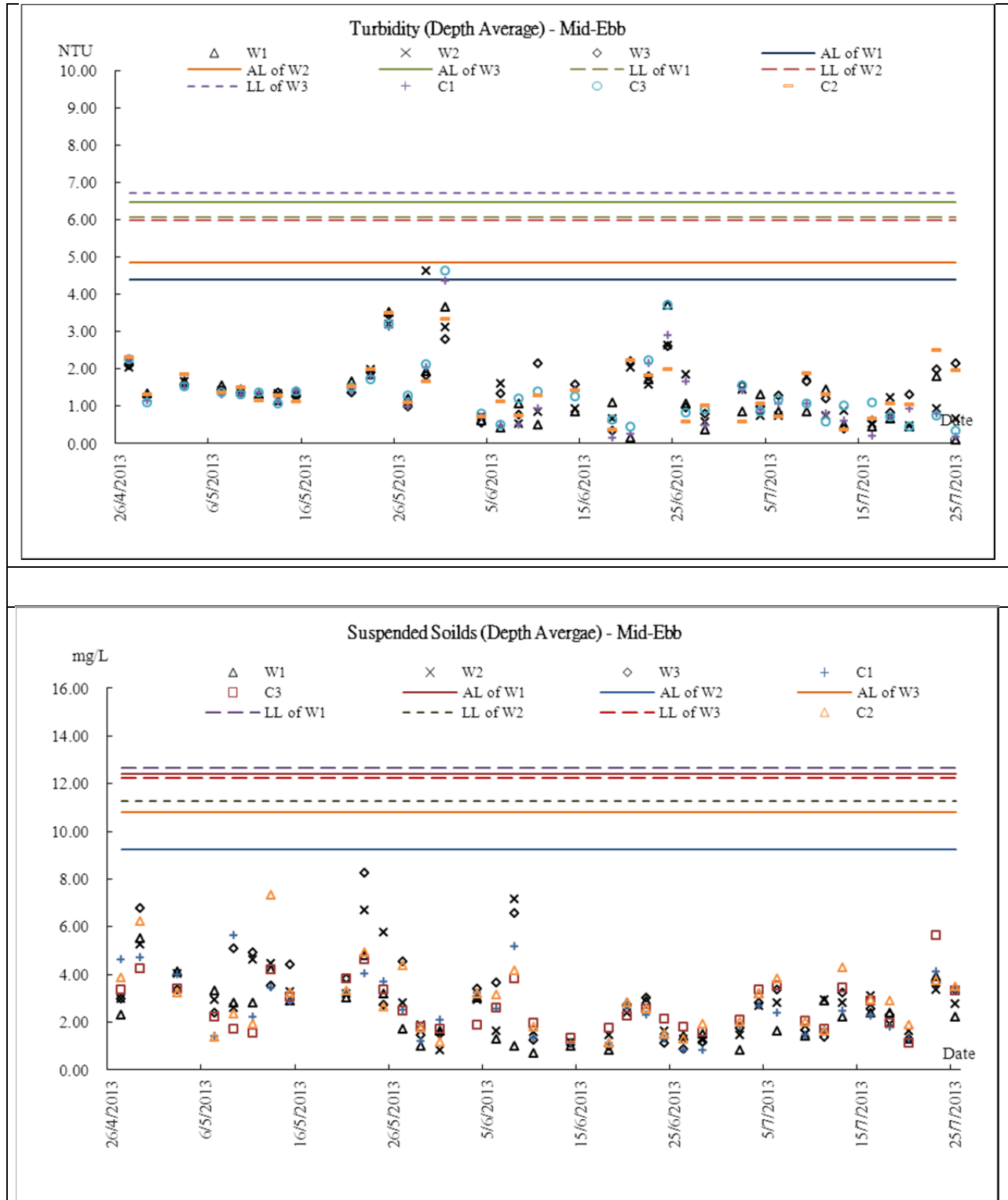
Construction Noise Monitoring





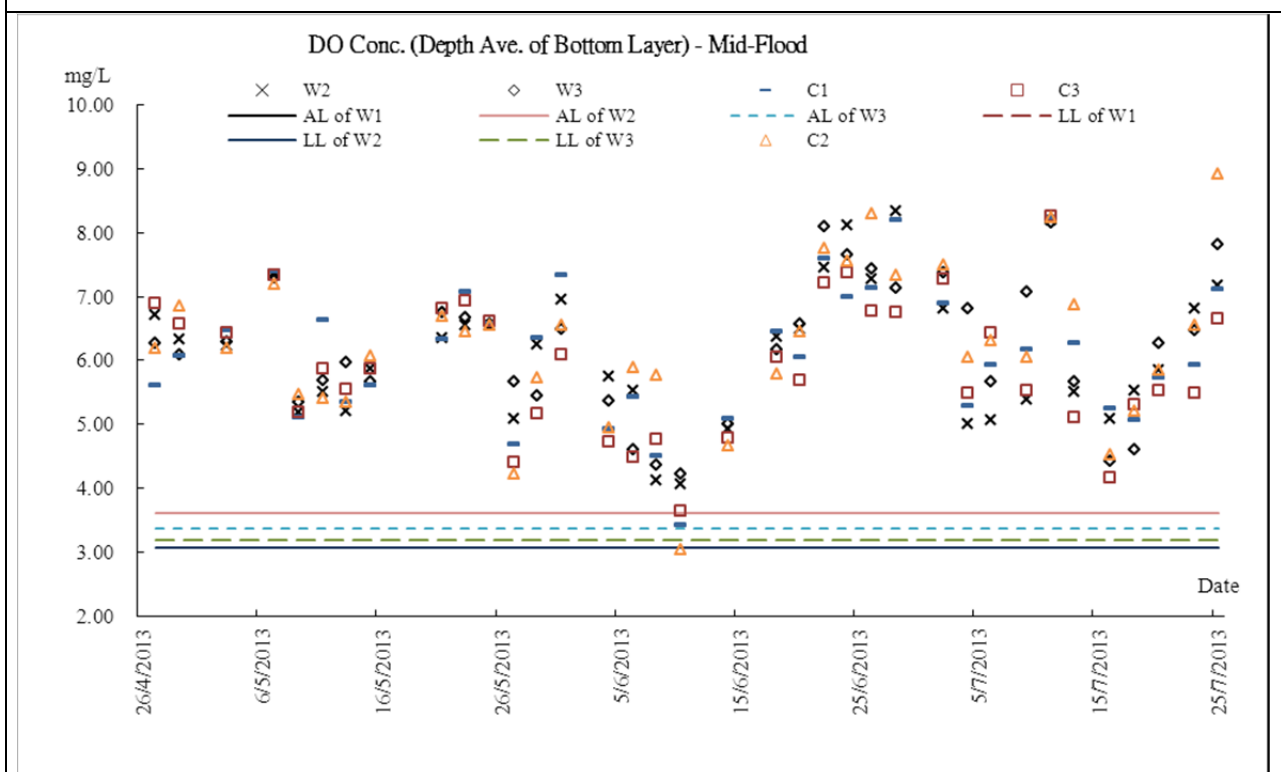
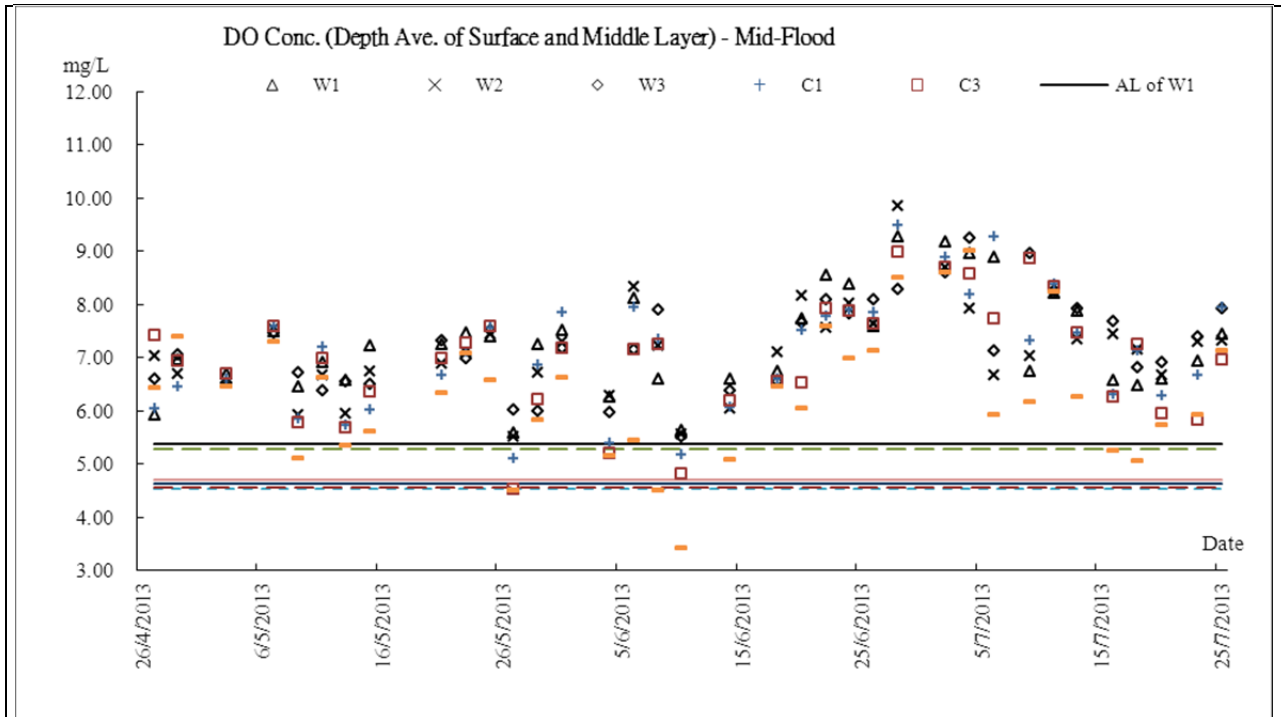
Marine Water Quality Monitoring - Mid-Ebb Tide

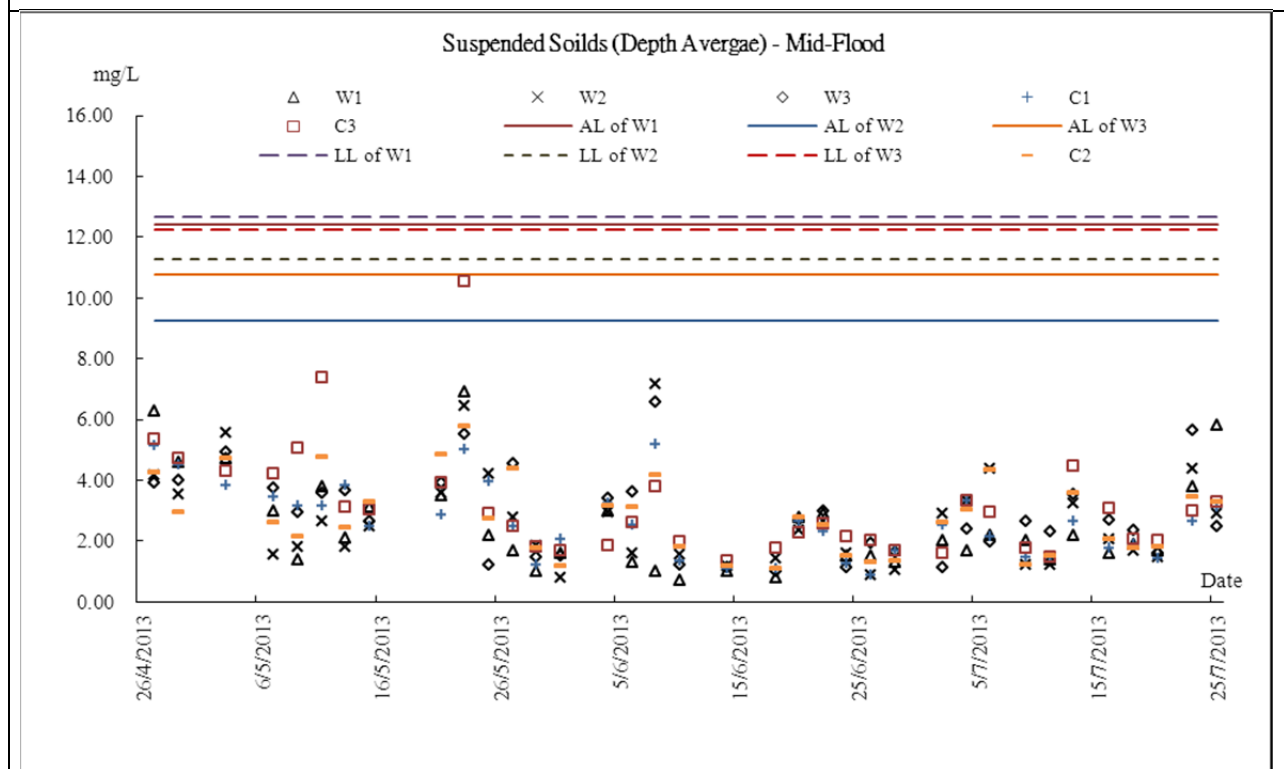
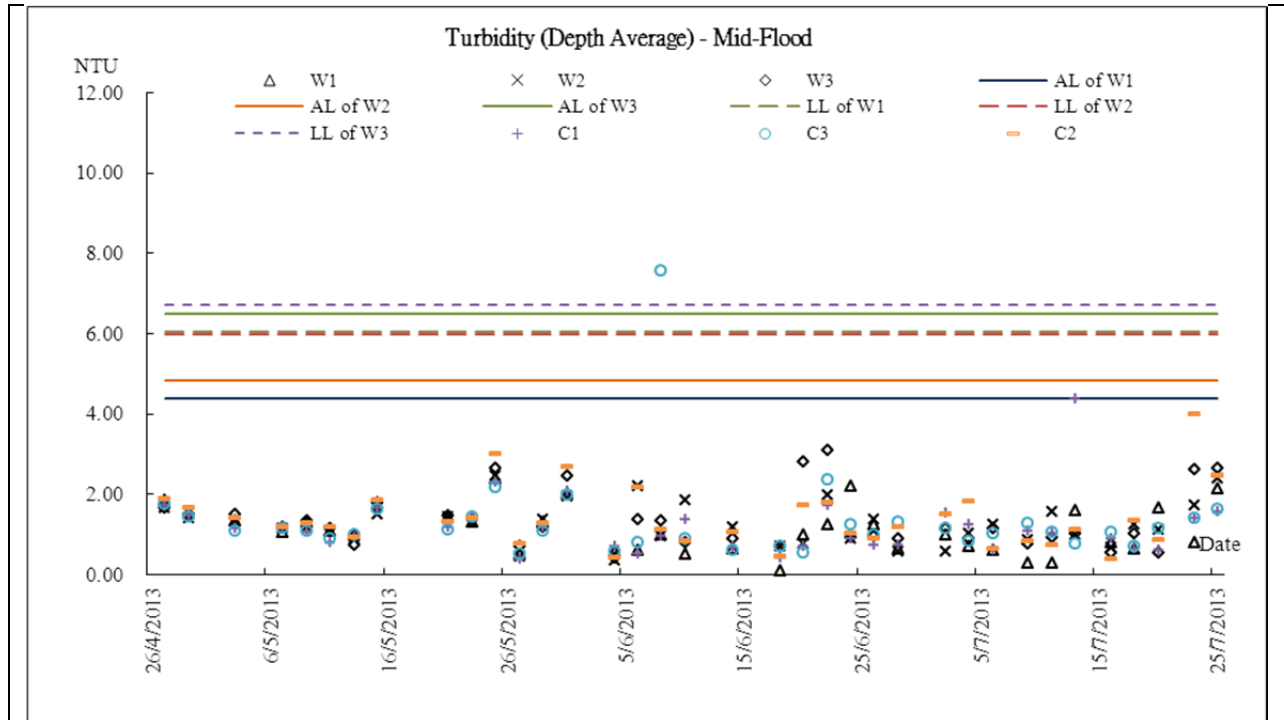






Marine Water Quality Monitoring - Mid-Flood Tide





## **Appendix F**

### **Meteorological Information**

### **Weather Condition – May 2013**

May 2013 was much wetter and gloomier than usual due to the prolonged rainy weather associated with troughs of low pressure and active southwesterly airstream over the South China coastal areas. The total bright sunshine duration in the month was 90.7 hours, only about 65 percent of the normal. The total rainfall of May 2013 was 509.3 millimetres, about 67 percent above the normal figure of 304.7 millimetres. About 45 percent of the rainfall in the month was attributed to the rainstorm event on 22 May. The accumulated rainfall since 1 January was 898.5 millimetres, about 40 percent above the normal figure of 640.7 millimetres.

### **Weather Condition – June 2013**

The weather of June 2013 was hotter than usual. The mean temperature of the month was 28.2 degrees, 0.3 degrees above the normal figure of 27.9 degrees. There were 5 Very Hot Days (daily maximum temperature of 33.0 degrees or above) in the month, about 4 days more than normal. The monthly maximum temperature of 34.2 degrees recorded on 20 June was the fifth highest for June on record. The monthly total rainfall of 438.6 millimetres was slightly below normal. The accumulated rainfall since 1 January was 1337.1 millimetres, about 22 percent above the normal figure of 1096.8 millimetres for the same period.

### **Weather Condition– July 2013**

Under the influence of unsettled weather respectively associated with an active maritime airstream and a trough of low pressure over the South China Sea during the second half of the month, July 2013 was wetter than usual in Hong Kong. The total rainfall of the month was 436.3 millimetres, about 16 percent above the normal figure of 376.5 millimetres. The accumulated rainfall since 1 January was 1773.4 millimetres, about 20 percent above the normal figure of 1473.3 millimetres for the same period. The number of days with thunderstorms observed at the Hong Kong Observatory in the month was 14 days, the highest since 1995. The wet and cloudy weather also made July 2013 gloomier and cooler than usual. The total duration of bright sunshine was only 156.9 hours, about 26 percent below the normal figure of 212.0 hours. The mean temperature of the month was 28.0 degrees, 0.8 degree below the normal figure of 28.8 degrees.

The details meteorological data for each successive day could be referred to the Monthly EM&A Report (May 2013, June 2013 and July 2013).

## **Appendix G**

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

## Monthly Summary Waste Flow Table for July 2013

Month	Actual Quantities of Inert C&D Materials Generated Monthly												Actual Quantities of C&D Wastes Generated Monthly									
	Total Quantity Generated (a) = (c)+(d)+(e)		Hard Rock and Large Broken Concrete (b)		Reused in the Contract (c)		Reused in other Projects (d)		Disposed as Public Fill (e)		Imported Fill (f)		Metals		Paper/ cardboard packaging		Plastics		Chemical Waste		Others, e.g. rubbish	
	(in '000m <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>2013</b>	13.341	50.328	0.160	0.410	0.740	2.802	0.000	0.000	12.601	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	400.410	103.440
Jan	0.332	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.332	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.040	9.840
Feb	0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.530	6.530
Mar	0.056	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.430	4.920
Apr	0.425	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.425	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.800	32.200
May	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.790	4.650
Jun	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.430	48.240
<b>Sub-total</b>	14.236	50.328	0.160	0.417	0.740	2.802	0.000	0.000	13.497	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	443.430	209.820
Jul	0.871	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.871	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.550	33.520
Aug																						
Sep																						
Oct																						
Nov																						
Dec																						
<b>Total</b>	15.108	50.328	0.160	0.429	0.740	2.802	0.000	0.000	14.368	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	451.980	243.340
	65.436		0.589		3.542		0.000		61.894		0.000		0.000		0.000		0.000		0.000		695.320	

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