



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. Q11  
(February to April 2013)**

PREPARED FOR  
**LEADER CIVIL ENGINEERING CORPORATION  
LIMITED**

Quality Index Date	Reference No.	Prepared By	Certified By
18 June 2013	TCS00512/09/600/R0648v2		
		Nicola Hon Environmental Consultant	T.W. Tam Environmental Team Leader

Version	Date	Description
1	30 May 2013	First submission
2	18 June 2013	Amended against IEC's comments on 4 June 2013

# URS CDM Joint Venture

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

Your reference:

Our reference: 05117/6/16/414018

Date: 18 June 2013

**BY FAX ONLY**

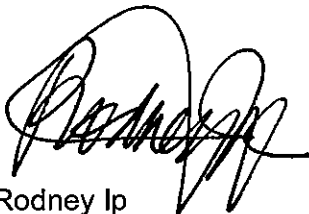
Attention: Ms. Jacky C M Wong

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. Q11 (February to April 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 18 June 2013. We have no comment and have verified the captioned report.

Yours faithfully  
URS CDM JOINT VENTURE



Rodney Ip  
Independent Environmental Checker

ICWR/SYSL/ecwc

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

## EXECUTIVE SUMMARY

ES.01 This is the 11<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 January to 25 April 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	42
Construction Noise	L <sub>eq(30min)</sub> Daytime	64
Water Quality	Marine Water Sampling	35
Inspection / Audit	ET Regular Environmental Site Inspection	12

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

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

ES.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.

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## 1 INTRODUCTION

### 1.1 PROJECT BACKGROUND

- 1.01 The Leader Civil Engineering Corporation Limited (Leader) has been awarded the *Contract DC/2009/13 - Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan* (the Project) by the Drainage Services Department (DSD) on 4 May 2010. The Project is part of an overall plan approved under a statutory EIA for Outlying Islands Sewerage Stage 1 Phase 2 Package J – Sok Kwu Wan Sewage Collection and Treatment (Register No. AEIAR-075/2003) and Disposal Facilities and Outlying Islands Sewerage Stage 1 Phase 1 Package C – Yung Shue Wan Sewage Treatment Works and Outfall (Register No. EIA-124/BC). The Environmental Permit (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 instead EP-281/2007 is EP for Sok Kwu Wan relevant Works.
- 1.02 The Project involves construction of sewage treatment works at Sok Kwu Wan and Yung 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 laying of underground sewerage pipeline. The site layout plan for the captioned work under the Project is showing in [Appendix A](#).
- 1.03 According to the Particular Specification (PS) and [Appendix 25](#) of the Project, Leader should establish an Environmental Team to implement the environmental monitoring and auditing works to fulfill the requirements as stipulated in the Environmental Monitoring and Audit (EM&A) Manuals. 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 split 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 **11<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 January to 25 April 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:-

#### *February, March and April 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
5	Construction Noise Permit#	Permit no. GW-RS1112-12 Valid from: 30 Oct 2012 Until: 29 Mar 2013
6	Construction Noise Permit#	Permit no. GW-RS0419-13 Valid from: 22 April 2013 Until: 30 September 2013

# No CNP covered the period from 30 Mar to 21 Apr and no construction work was conducted during Restrict Hour in that period.



### 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 42 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	107	33	58	96	5	50
<b>Record Date</b>	27-Feb-13	27-Mar-13	48 events	26-Feb-13	25-Apr-13	15 events
AM2	95	31	58	138	7	52
<b>Record Date</b>	30-Jan-13 & 27-Feb-13	11-Mar-13	48 events	21-Mar-13	25-Apr-13	15 events
AM3	166	53	110	99	32	59
<b>Record Date</b>	10-Apr-13	15-Feb-13	48 events	26-Feb-13	2-Feb-13	12 events

4.03 In this Reporting Period, power failure of HVS was occurred at all monitoring locations (AM1 to AM3) on 2 April 2013 after heavy rainstorm in late March 2012. The notification of power failure was issued by ET as require the Leader to rectify. The power supplies at AM1 and AM2 have been rectified before next monitoring event. For AM3, serious power storage was happened for successive weeks and the power was finally rectified on 25 April 2013.

4.04 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

4.05 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	58.7	46.8
<b>Record Date</b>	21-Mar-13	15-Mar-13
NM2	64.2	51.2
<b>Record Date</b>	27-Feb-13	19-Apr-13
RNM3	69.2	55.0
<b>Record Date</b>	21-Mar-13	19-Apr-13
NM4	63.3	48.4

Record Date	27-Mar-13	5-Feb-13
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#### 4.3 RESULTS OF MARINE WATER QUALITY OF MONITORING

4.06 In this Reporting Period, 35 monitoring days have been carried out at the designated locations.

4.07 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
Average	7.33	7.32	7.15	7.31	7.15	7.27
Min	5.43	5.37	4.92	4.53	5.04	3.47
Max	9.41	9.27	8.44	9.50	9.04	9.47

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

Station	W1	W2	W3	C1	C2	C3
Average	NA	7.20	7.04	7.14	6.95	7.12
Min	NA	5.13	4.79	4.40	4.61	3.54
Max	NA	9.04	8.65	9.35	8.74	9.42

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

Station	W1	W2	W3	C1	C2	C3
Average	1.16	1.17	1.23	1.17	1.21	1.24
Min	0.55	0.60	0.46	0.61	0.55	0.67
Max	2.79	2.55	2.81	2.37	2.17	2.41

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

Station	W1	W2	W3	C1	C2	C3
Average	2.61	2.57	2.42	2.67	2.72	2.93
Min	0.50	0.57	0.67	0.73	0.50	0.77
Max	10.40	8.37	6.43	7.00	6.93	14.63

4.08 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>										
W1	0	0	0	0	0	0	0	0	0	0
W2	0	0	0	0	0	0	0	0	0	0
W3	0	0	0	0	0	0	0	0	0	0
<b>Mid-Flood</b>										
W1	0	0	0	0	0	0	0	0	0	0
W2	0	0	0	0	0	0	0	0	0	0
W3	0	0	0	0	0	0	0	0	0	0
No of	0	0	0	0	0	0	0	0	0	0

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
Exceedance										

4.09 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

4.10 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.

4.11 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.

4.12 Regular inspection of the transplanted tree was carried out by the landscaping sub-Contractor (Melofield Nursery and Landscape Contractor Limited) on **30 January 2013 and 15, 28 February and 15, 30 March and 15 April 2013**. The copies of the inspection reports were attached in relevant Monthly EM&A Report (**February 2013, March 2013 and April 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
	Feb 13	Mar 13	Apr 13	
C&D Materials (Inert) ('000m <sup>3</sup> )	0	0.003	0	-
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
	Feb 13	Mar 13	Apr 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)	6.530	4.920	32.20	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 **29 January and 5, 19, 26 February and 5, 12, 19, 26 March 2013 and 2, 9, 16 and 23 April 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
29 January 2013	<ul style="list-style-type: none"> <li>Scattered construction waste was observed, the Contractor should improve the housekeeping of the site.</li> </ul>	The construction waste was cleared on 5 February 2013.
5 February 2013	<ul style="list-style-type: none"> <li>Construction waste was observed stockpiled near Portion of the construction site. Regular removal from the site to avoid excessive accumulation is reminded, or covering with tarpaulin sheeting is required.</li> </ul>	The stockpile was confirmed to be outside of the construction boundary. No action was taken.
19 February 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed during site inspection. However, full implementation of the required environmental mitigation measures, particularly construction dust suppression measures during dusty activities under dry and wind conditions, is reminded.</li> </ul>	Not required for general reminders.
26 February 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed during site inspection. However, full implementation of the required environmental mitigation measures, particularly construction dust suppression measures during dusty activities under dry and wind conditions, is reminded.</li> </ul>	N.A.
5 March 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed during site inspection. However, full implementation of the required environmental mitigation measures, particularly construction dust suppression measures during dusty activities under dry and wind conditions, is reminded.</li> </ul>	N.A.
12 March 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed during site inspection. However, full implementation of the required environmental mitigation measures, particularly construction dust suppression measures during dusty activities under dry and wind conditions, is reminded.</li> </ul>	N.A.
19 March 2013	<ul style="list-style-type: none"> <li>Stagnant water was observed in the sedimentation tank at Portion K. Mosquito control measures are reminded to avoid mosquito breeding in warm condition.</li> </ul>	Stagnant water was removed on 26 Mar 2013

26 March 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed during site inspection. However, full implementation of the required environmental mitigation measures is reminded.</li> </ul>	N.A.
2 April 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed during site inspection. However, full implementation of the required environmental mitigation measures is reminded.</li> </ul>	N.A.
9 April 2013	<ul style="list-style-type: none"> <li>Sedimentation tanks were observed for treatment of site discharge due to rain. Although the water quality discharged was clear, regular clearance of the sediment settled on the bottom is reminded to avoid excessive accumulation.</li> </ul>	Rectified on 16 April 2013.
16 April 2013	<ul style="list-style-type: none"> <li>No adverse environmental impacts were observed during site inspection. However, full implementation of the required environmental mitigation measures, in particularly construction dust suppression measures during dusty activities under dry and wind conditions and water quality measures during heavy rains, is reminded.</li> </ul>	N.A.
23 April 2013	<ul style="list-style-type: none"> <li>Stagnant water was observed beside pumping station No.1 pretreatment of the stagnant water prior to discharge to the sea is reminded.</li> </ul>	To be followed.

## 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 January 2013	1 (Nov 2011)	1 (Nov 2011)	Marine water quality
February 2013	0	1	NA
March 2012	0	1	NA
April 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 January 2013	0	0	NA
February 2013	0	0	NA
March 2012	0	0	NA
April 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 January 2013	0	0	NA
February 2013	0	0	NA
March 2012	0	0	NA
April 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

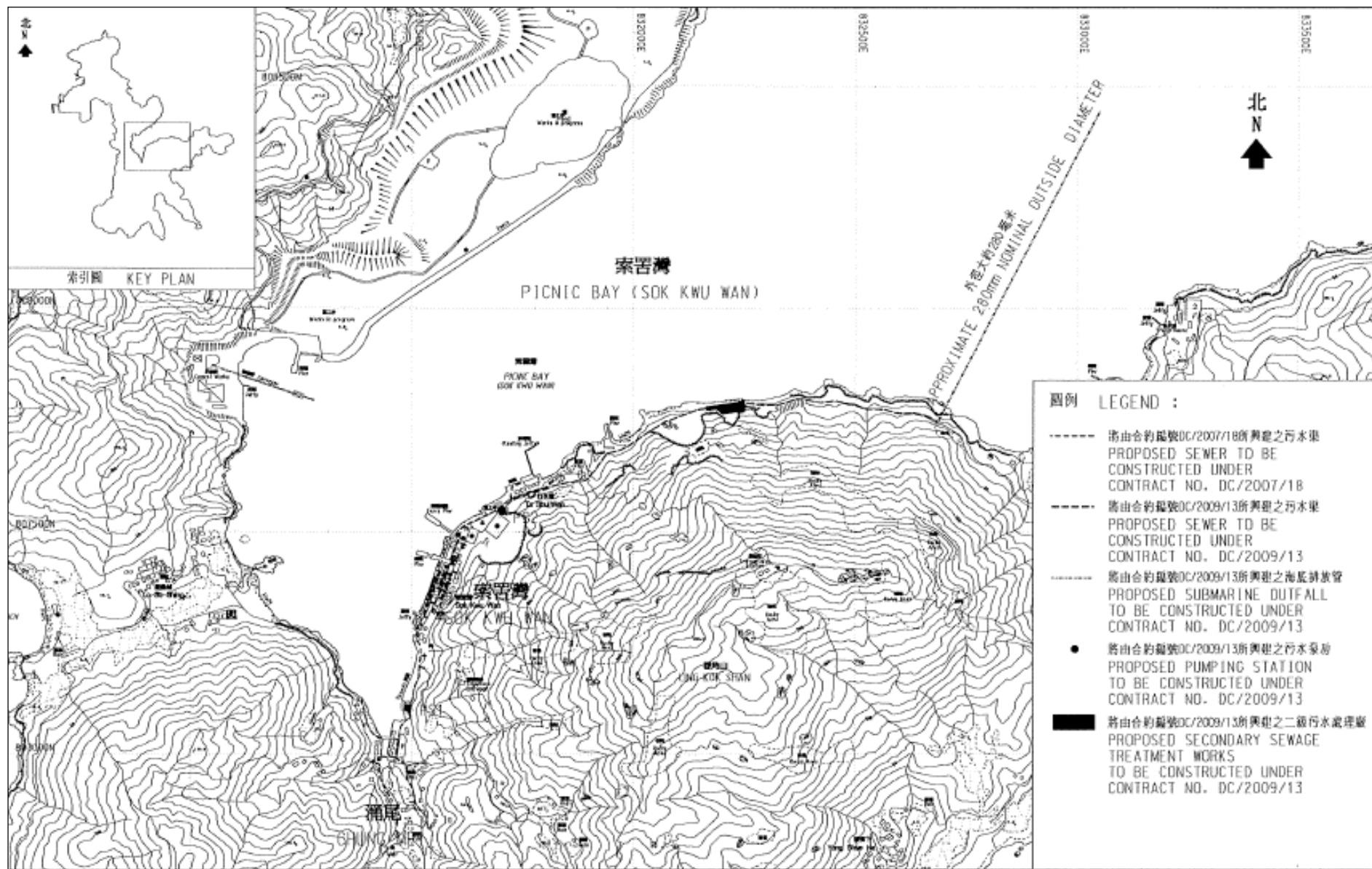
- 9.01 This is the **11<sup>th</sup>** Quarterly EM&A Summary Report for Sok Kwu Wan Portion Area under the Project covering the construction period from **26 January to 25 April 2013**.
- 9.02 No 1-hour and 24-hour TSP results were found to be triggered the Action or Limit Level in this Reporting Period.
- 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 **12** events of site inspection were carried out by ET in this Reporting Period and no non-compliance was observed during the inspection. In general, all the observation has been rectified during the next week site inspection. The environmental performance of the Project was therefore considered as satisfactory.
- 9.07 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
Scott Wilson	Independent Environmental Checker	Mr. Rodney Ip	2410 3750	2428 9922
Leader	Director	Mr. Wilfred So	2982 1750	2982 1163
Leader	Project Manager	Mr. Vincent Chan	2982 1750	2982 1163
Leader	Construction Manager	Mr. K. Y. So	2982 1750	2982 1163
Leader	Assistant Construction Manager	Mr. Ron Hung	2982 1750	2982 1163
Leader	Environmental Officer	Mr. K. Y. So	2982 8652	2982 8650
Leader	Environmental Supervisor	Mr. Chan Chi Kau	2982 8652	2982 8650
Leader	Sub-Agent	Mr. Burgess Yip	2982 1750	2982 1163
Leader	Senior Safety Officer	Mr. Edwin Leung	2982 1750	2982 1163
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Team Supervisor	Mr. Ben Tam	2959 6059	2959 6079

Legend:

*DSD (Employer) – Drainage Services Department*

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

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

*Scott Wilson (IEC) – Scott Wilson Limited*

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

## **Appendix C**

### **Master and Three Months Rolling Construction Programs**



Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013				
											JAN	FEB	MAR	APR	MAY
<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		30/01/13 *		24/03/11 *	-678d *	SKW0481	KD0125					
KD0060	Section W4 - Slope Works in Portios H & I	0	0		30/01/13 *		27/03/12 *	-309d *	SKW05938, SKW059416	KD0125, KD0135, SKW05941					
KD0070	Section W5 - P.S. No. 1 in Portion D	0	0		30/01/13 *		10/02/12 *	-355d *	SKW0741	KD0125					
KD0080	Section W6 - Sewer & PS No2 in Ptn. E & F	0	0		30/01/13 *		10/02/12 *	-355d *	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		05/04/13 *		05/04/13 *	0 *	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	31/01/13	31/01/13 *	13/10/12	13/10/12 *	-110d	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	27/03/13	27/03/13 *	27/03/13	27/03/13 *	0	KD0060, SKW05947, SKW1581						
KD0145	Completion of Maintenance Period of W5	1	0	10/02/13	10/02/13 *	10/02/13	10/02/13 *	0							
KD0155	Completion of Maintenance Period of W6	1	0	10/02/13	10/02/13 *	10/02/13	10/02/13 *	0	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					

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			Summary point
			Start milestone point
			Finish milestone point

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

Date	Revision	Checked	Approved
31/01/13	Revision 0	RH	VC

















Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013				
											JAN	FEB	MAR	APR	MAY
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	Extent village sewers S163.1 & S164.1				
SKW1581	Construct Manhole no. S163 & S164	34	10	11/01/13 A	02/03/13	11/01/13 A	26/03/13	24d	SKW1531	KD0135, SKW15112	Construct Manhole no. S163 & 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	375mm U-channel/catchpits/outfall				
<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	07/02/13	17/05/10 A	02/08/12	-189d		E&M2016	Submission of FS System				
E&M2007	Submission of BS System	243	97	17/05/10 A	07/02/13	17/05/10 A	30/07/12	-192d		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	28/02/13	01/12/11 A	23/08/12	-189d	E&M2006	E&M0350, E&M2106	Delivery of FS Equipment				
E&M2017	Delivery of BS Equipment	107	80	15/01/11 A	28/02/13	15/01/11 A	20/08/12	-192d	E&M2007	E&M2107	Delivery of BS Equipment				
<b>Installation, T&amp;C</b>															
E&M2101	Install Pumps	55	80	02/10/12 A	10/02/13	02/10/12 A	12/01/13	-29d	E&M2011, SKW1061	E&M2110	Install Pumps				
E&M2102	Install Gen Set	55	80	01/09/12 A	10/02/13	01/09/12 A	12/01/13	-29d	E&M2012, SKW1061	E&M2110	Install Gen Set				
E&M2103	Install DeO System	55	90	03/12/12 A	05/02/13	03/12/12 A	12/01/13	-24d	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	Install LV SB & MCC				
E&M2105	Install Instrumentation	55	0	31/01/13	26/03/13	30/07/12	22/09/12	-185d	E&M2015, SKW1061	E&M2140	Install Instrumentation				
E&M2106	Install FS Equipment	55	45	02/10/12 A	30/03/13	02/10/12 A	22/09/12	-189d	E&M2016, SKW1061	E&M2140	Install FS Equipment				
E&M2107	Install BS Equipment	55	40	01/09/12 A	02/04/13	01/09/12 A	22/09/12	-192d	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	Install Valves, Pipes & Fittings				
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	Hydraulic Test of Pipeworks				
E&M2130	Form 501 Submission to FSD	28	0	02/04/13	30/04/13	13/01/13	09/02/13	-80d	E&M2120	KD0155	Form 501 Submission				
E&M2140	Cabling Works	43	0	02/04/13	15/05/13	23/09/12	04/11/12	-192d	E&M2104, E&M2105, E&M2106,	E&M2150	Cabling Works				
E&M2150	Insulation Tests of Cables and Cable Termination	7	0	15/05/13	22/05/13	05/11/12	11/11/12	-192d	E&M2140	E&M2160	Insulation Tests				
E&M2160	Energization	3	0	22/05/13	25/05/13	12/11/12	14/11/12	-192d	E&M2150	E&M2170	Energization				
E&M2170	Functional and Performance Tests of Equipment	30	10	15/01/13 A	21/06/13	15/01/13 A	11/12/12	-192d	E&M2160	E&M2180	Functional and Performance Tests				
E&M2180	Commissioning Test	60	0	21/06/13	20/08/13	12/12/12	09/02/13	-192d	E&M0350, E&M2170	KD0155	Commissioning Test				
<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	35	31/12/12 A	30/03/13	31/12/12 A	08/12/13	254d	SKW1431	SKW1441	Sewer of Outfall Chamber to connection pit				

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c Primavera Systems, Inc.	





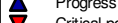
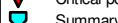
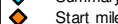


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- ▲ Summary point
- ▲ Start milestone point
- ▲ Finish milestone point

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

Date	Revision	Checked	Approved
31/01/13	Revision 0	RH	VC



Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	2013					
											JAN	FEB	MAR	APR	MAY	
E&M3300	Install FS Equipment	161	0	02/11/13	12/04/14	24/12/13	02/06/14	52d	E&M3160, E&M3250, SKW1451	E&M3331, E&M3359						
E&M3310	Hydraulic Tests of Pipeworks	90	0	01/01/14	01/04/14	06/03/14	03/06/14	64d	E&M3250	E&M3359						
E&M3311	Cabling Works	47	0	02/03/14	18/04/14	17/04/14	02/06/14	46d	E&M3170, E&M3230, E&M3260, E&M3261, E&M3270, SKW1301,	E&M3331, E&M3359						
E&M3320	Cabling Works for Dewatering Equipment	47	0	21/01/14	09/03/14	27/03/14	12/05/14	65d	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	09/03/14	30/03/14	13/05/14	02/06/14	65d	E&M3320	E&M3331						
E&M3331	Energization	1	0	01/05/14	02/05/14	03/06/14	03/06/14	33d	E&M3291, E&M3300, E&M3311,	E&M3359						
E&M3359	Functional and Performance Tests of Equipment	35	0	02/05/14	06/06/14	04/06/14	08/07/14	33d	E&M3291, E&M3300, E&M3310, E&M3311, E&M3331, SKW1241,	E&M3360						
E&M3360	T&C Period	91	0	06/06/14	05/09/14	09/07/14	07/10/14	33d	E&M0340, E&M3359, SKW0722, SKW15112	E&M3370, KD0090						
E&M3370	Trial Operation Period	456	0	05/09/14	05/12/15	31/05/15	28/10/16	269d	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	09/03/13	11/07/11 A	07/10/14	578d	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	10/02/13	17/05/10 A	03/04/13	53d	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	10/02/13	10/02/14	04/04/13	03/04/14	53d	SKW1611	KD0110						

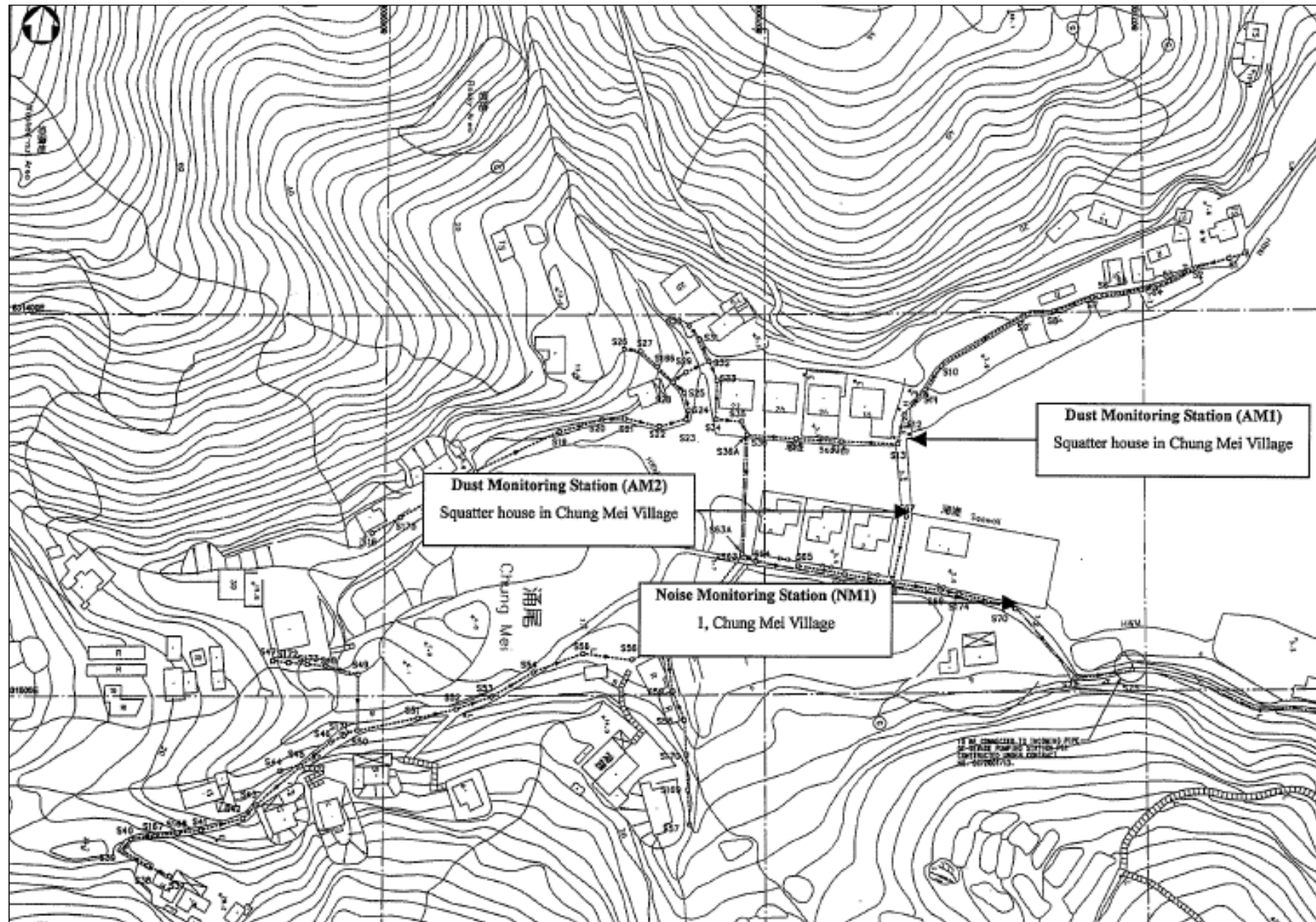
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Finish date	28/10/16		Progress bar
Data date	31/01/13		Critical bar
Run date	05/02/13		Summary bar
Page number	11A		Progress point
			Critical point
			Summary point
			Start milestone point
			Finish milestone point

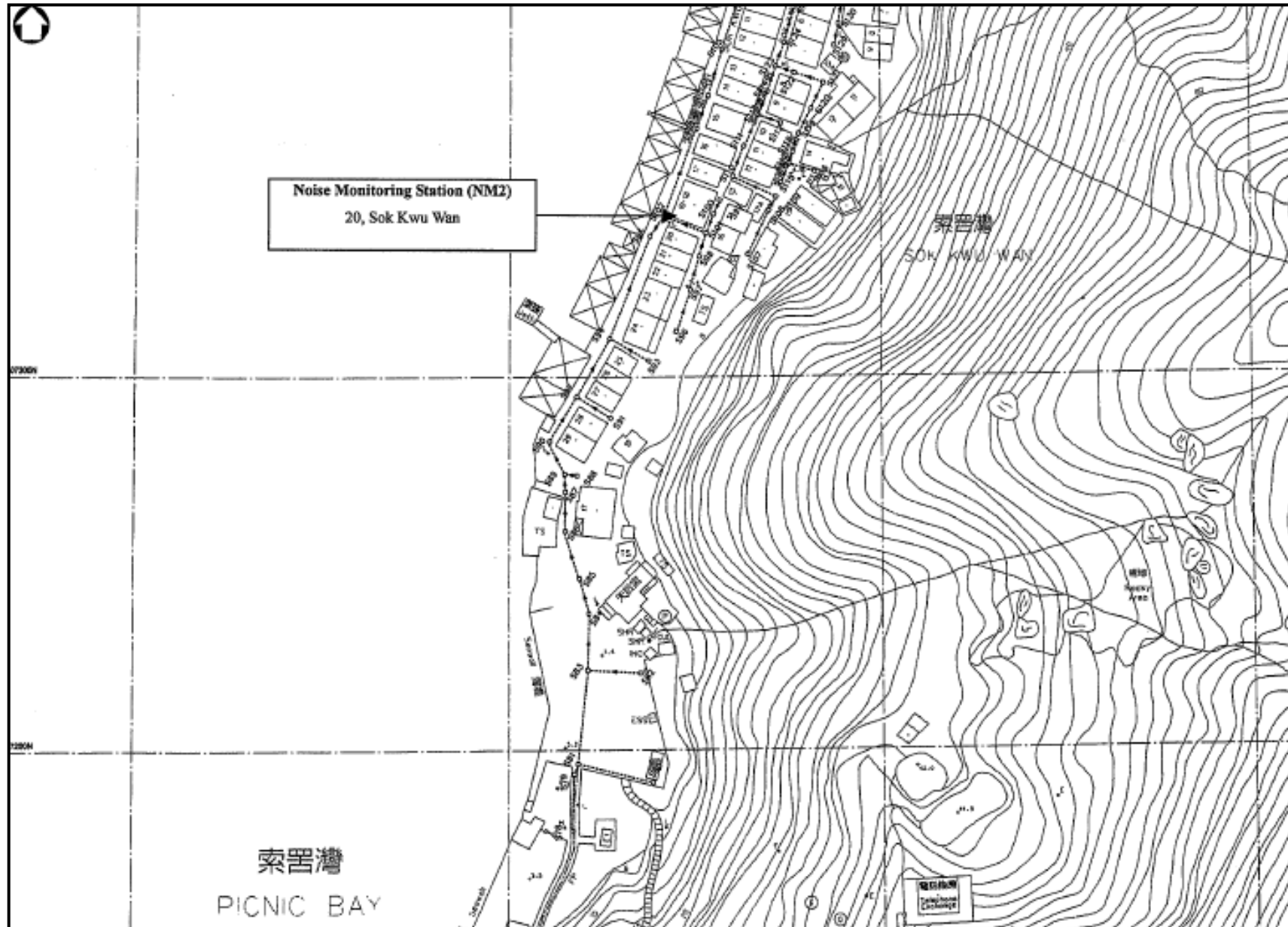
**Leader Civil Engineering Corp. Ltd.**  
**Contract No. DC/2009/13**  
**Construction of Sewage Treatment Works at YSW & SKW**  
**3-month Rolling Programme (Feb 2013 - Apr 2013)**

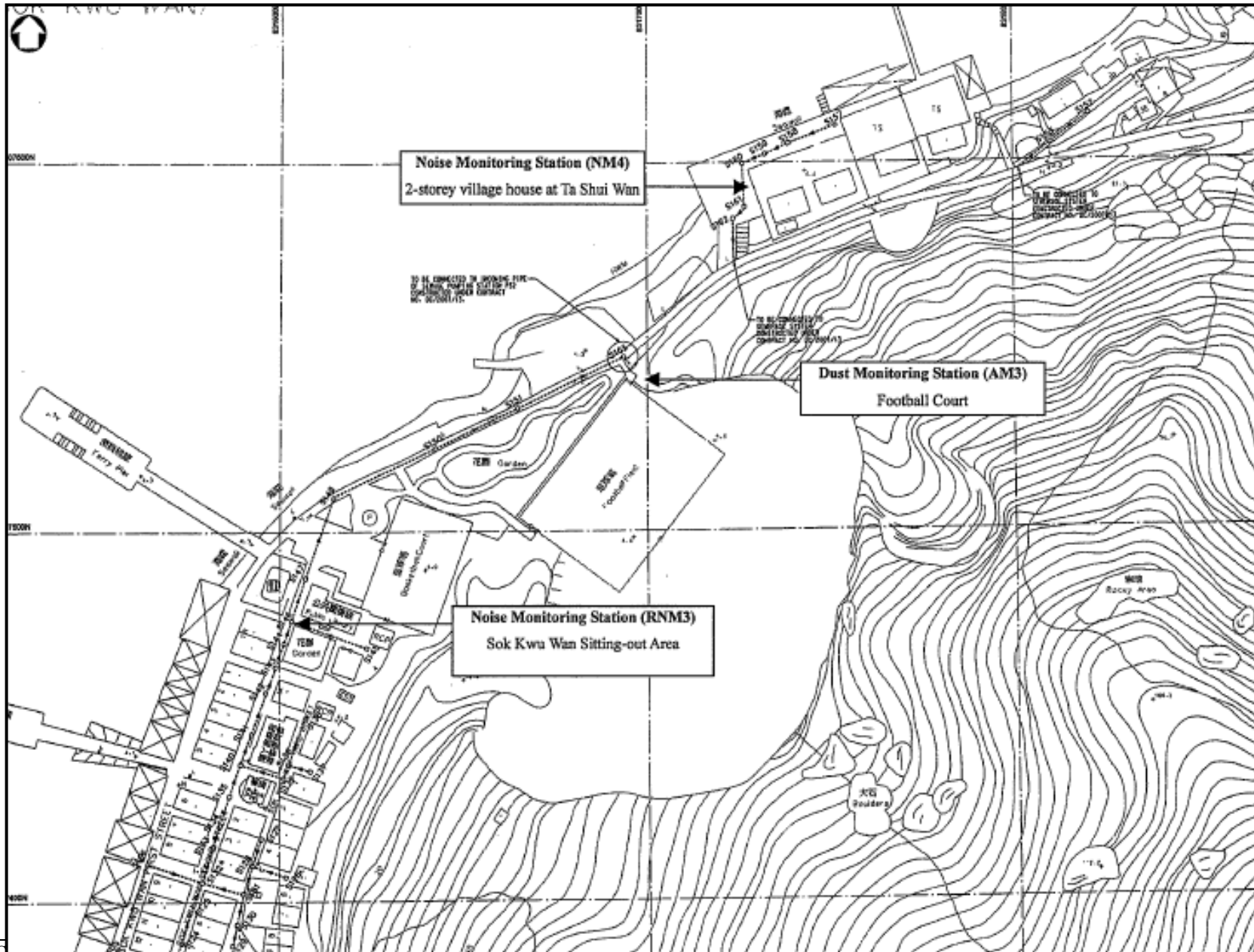
Date	Revision	Checked	Approved
31/01/13	Revision 0	RH	VC

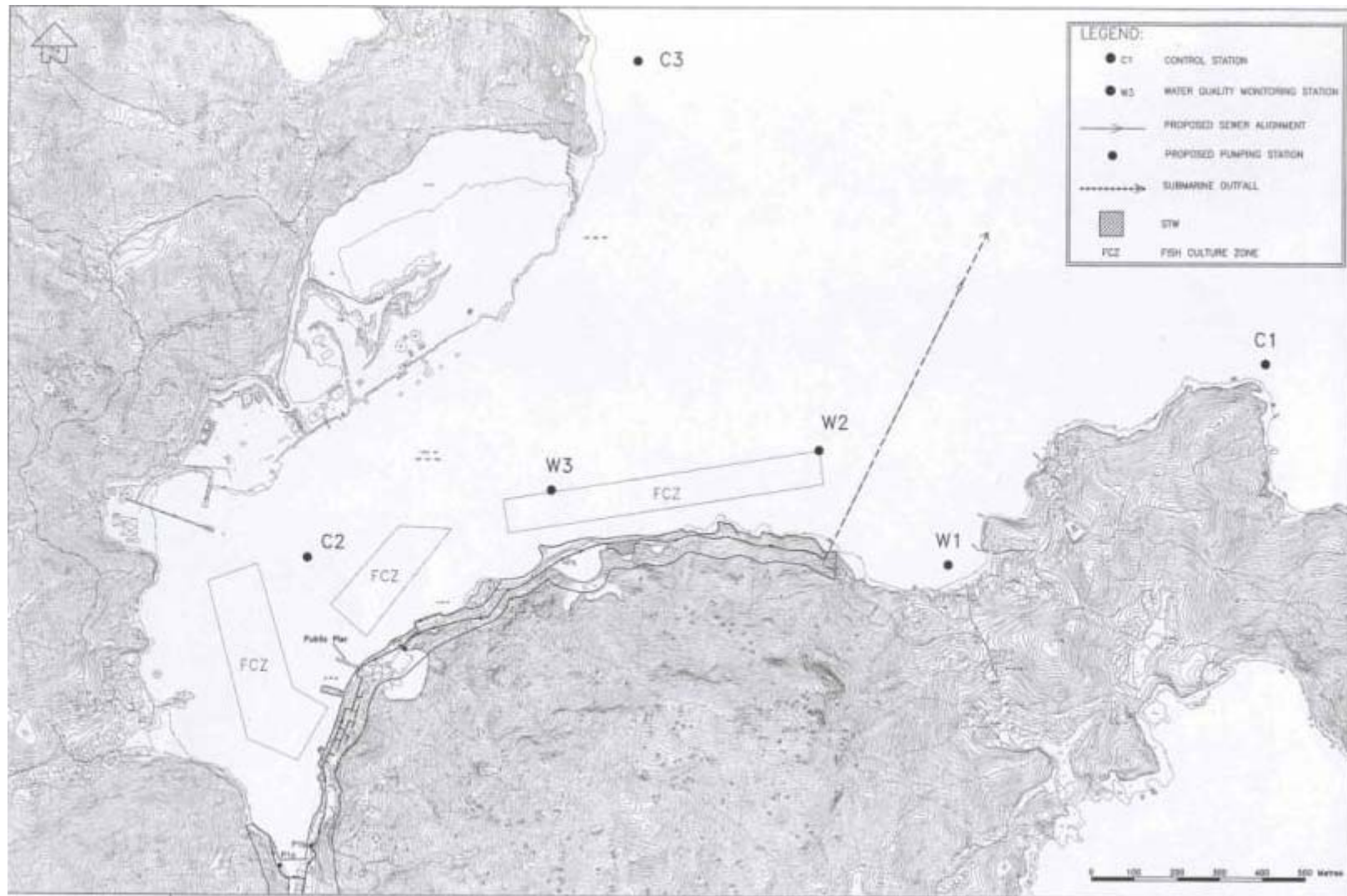
## **Appendix D**

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









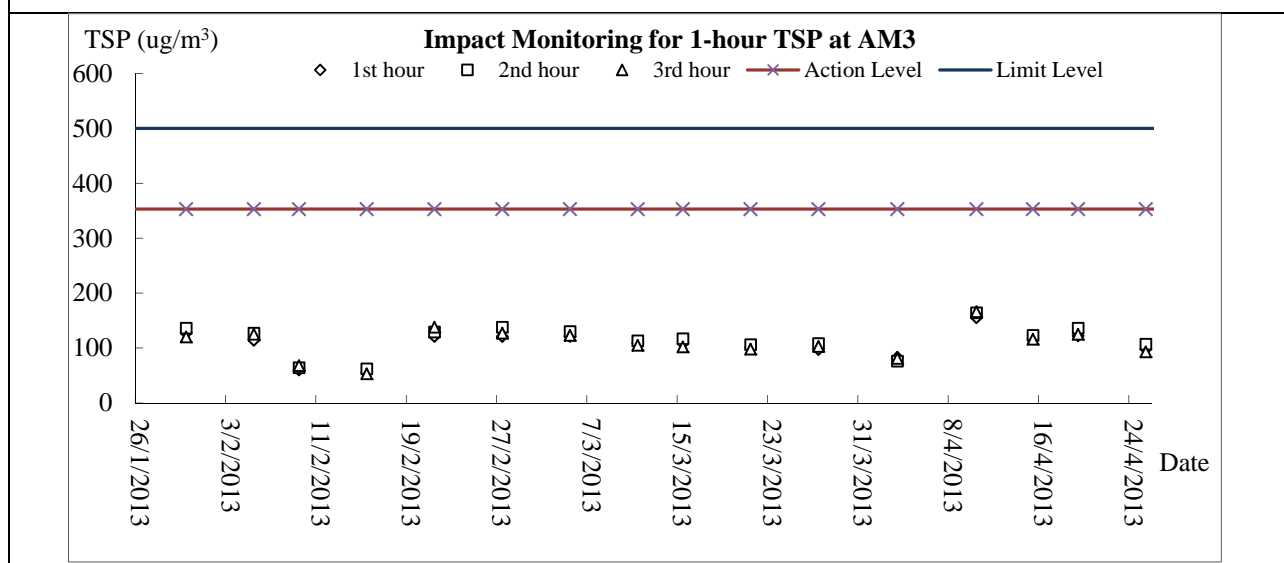
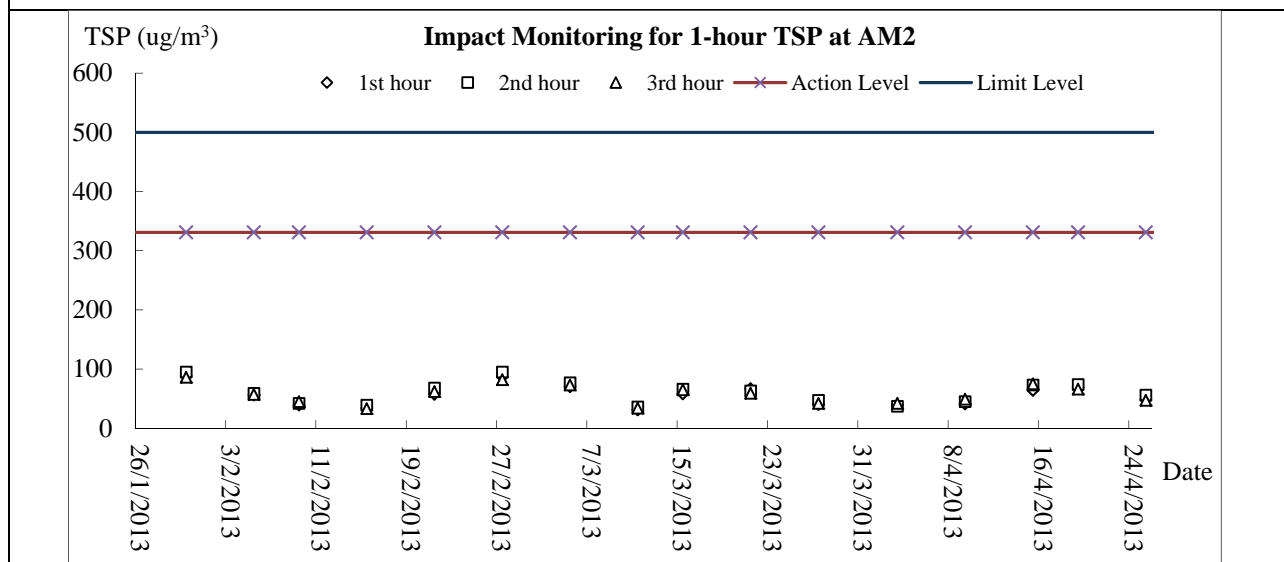
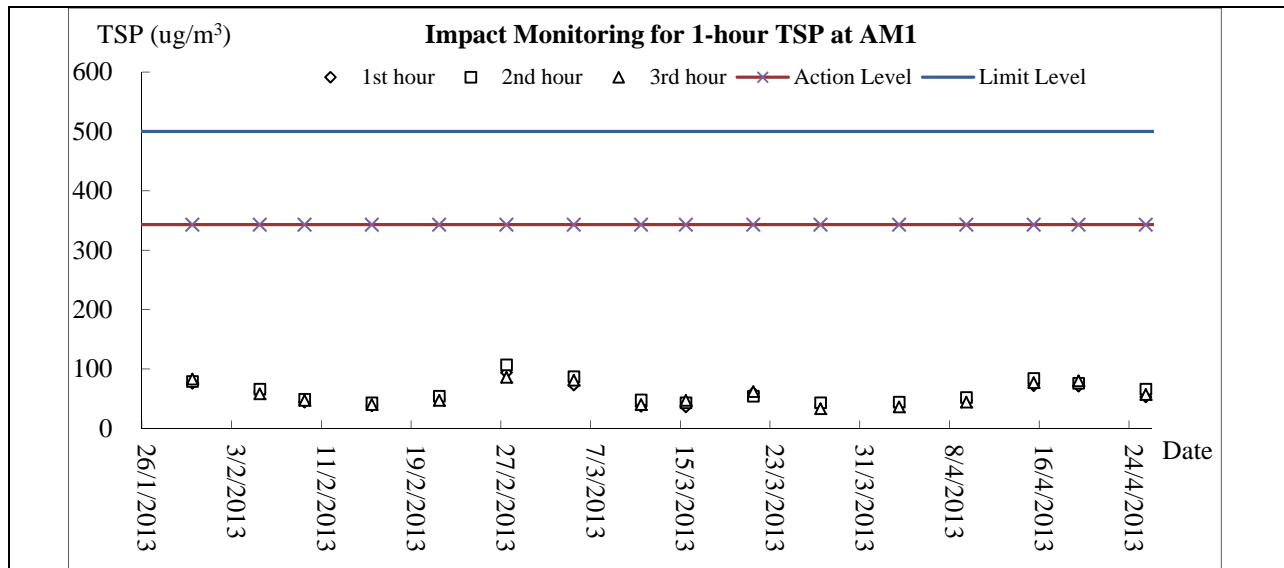


## **Appendix E**

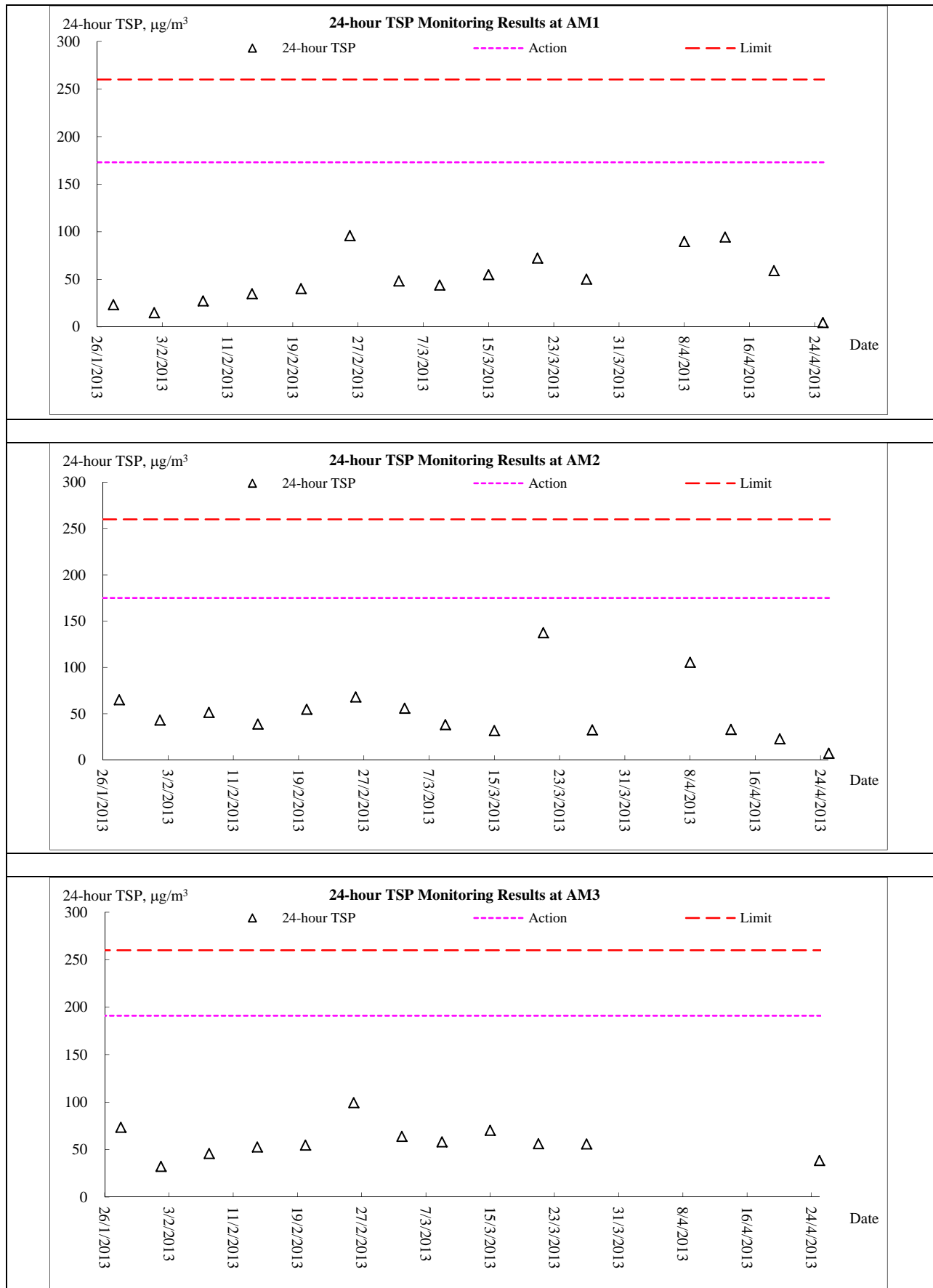
### **Graphical Plots of Impact Monitoring**

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

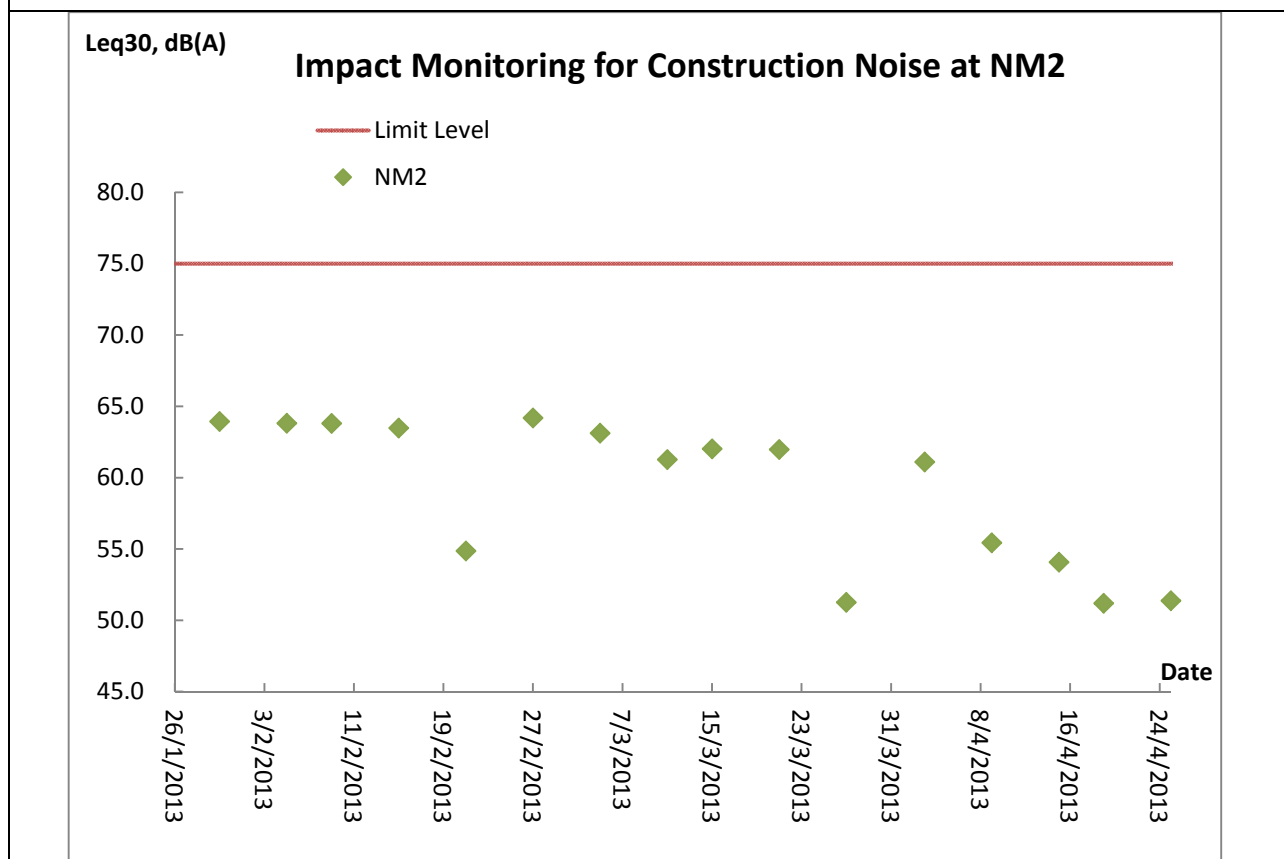
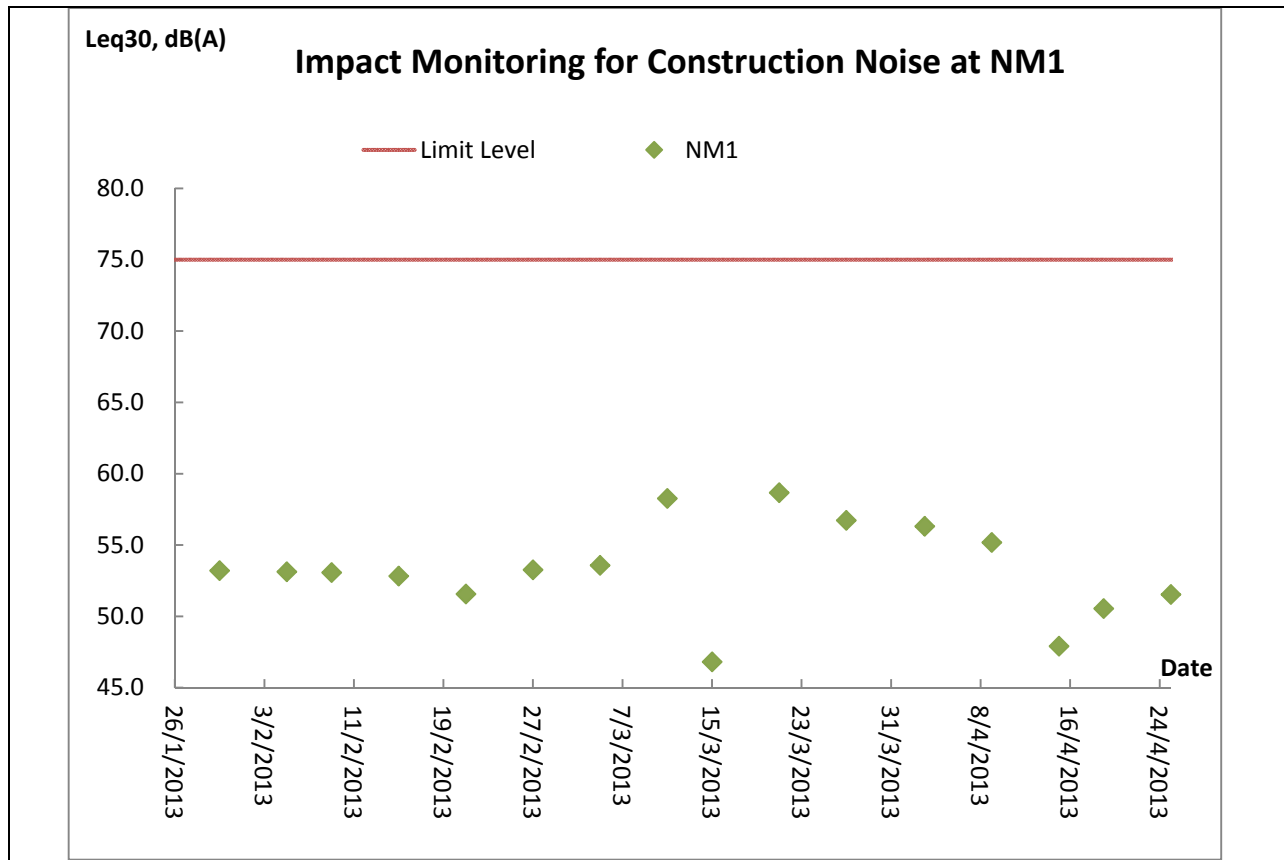
**Air Quality Monitoring – 1 hour TSP Monitoring**

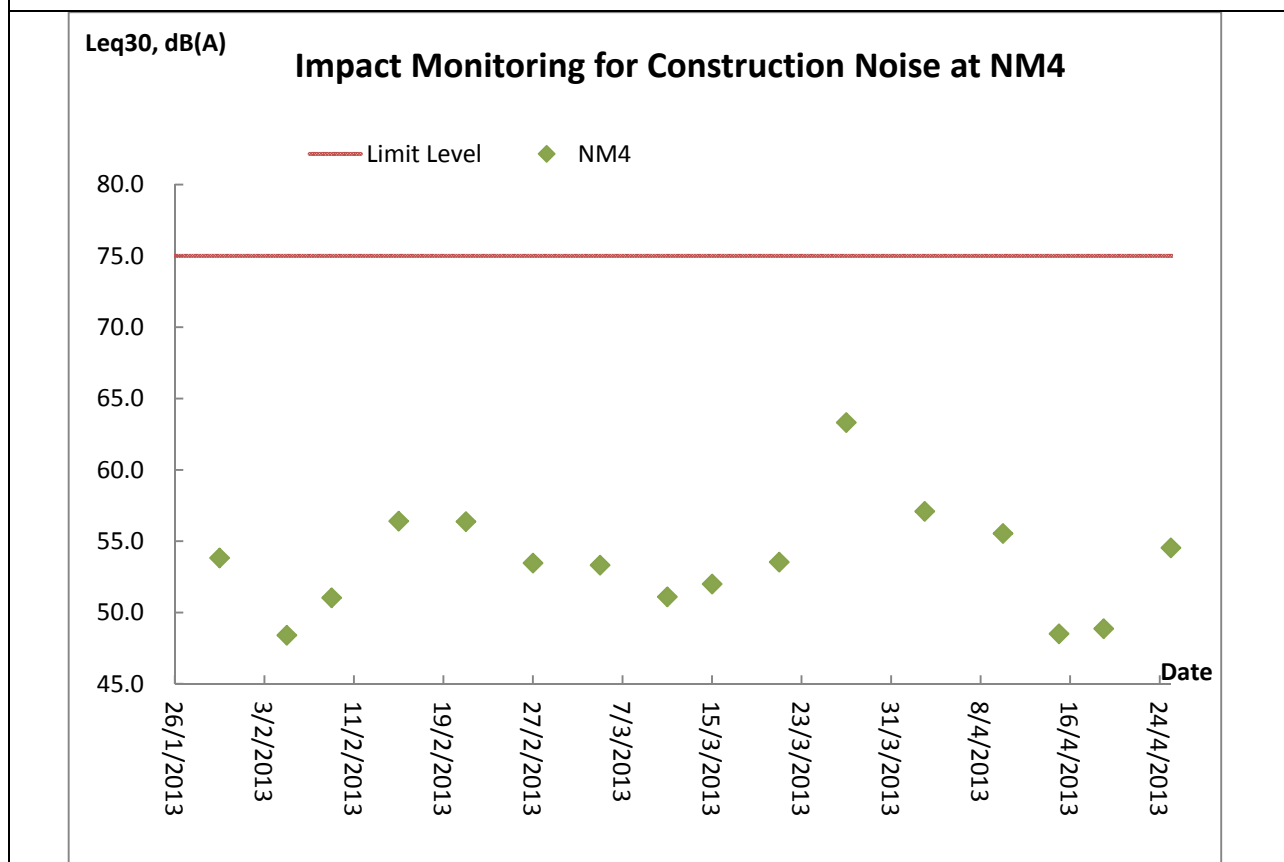
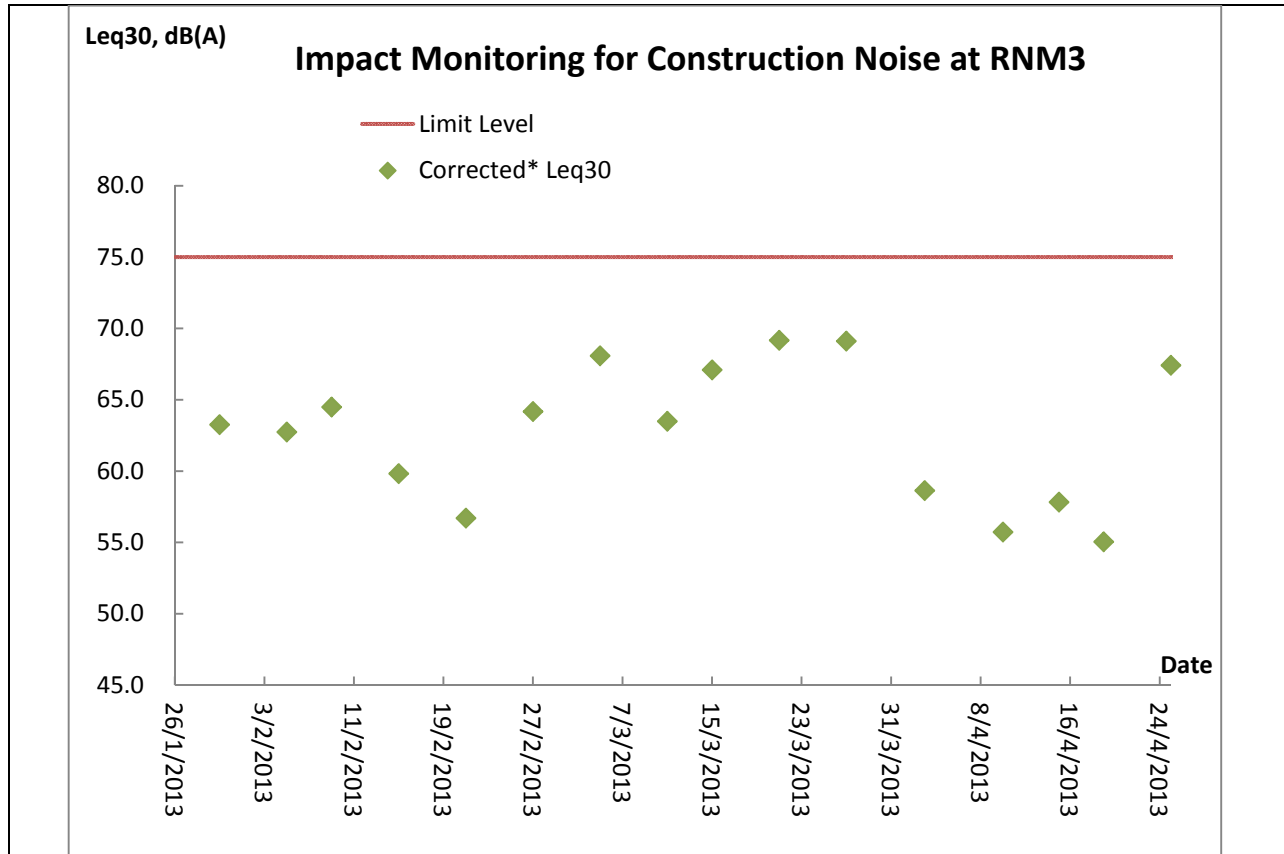


**Air Quality Monitoring – 24 hour TSP Monitoring**

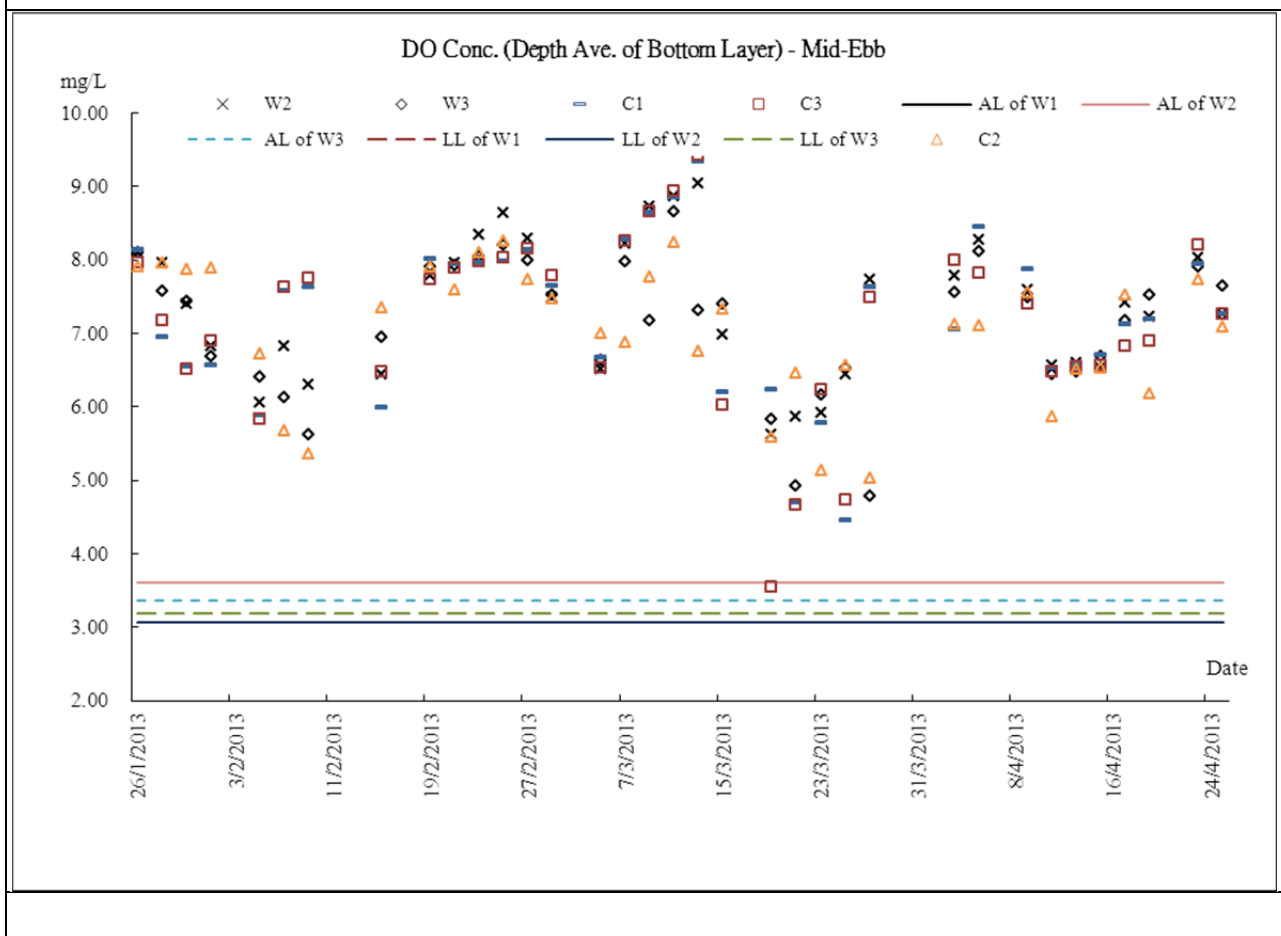
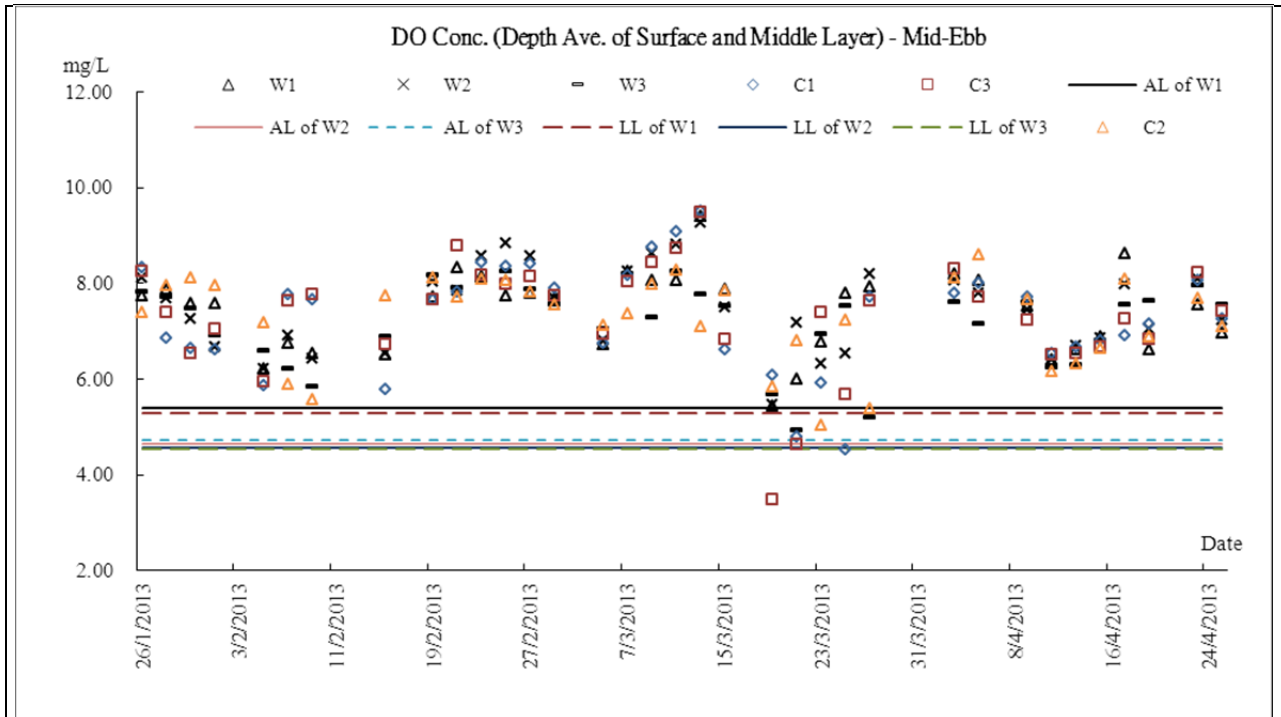


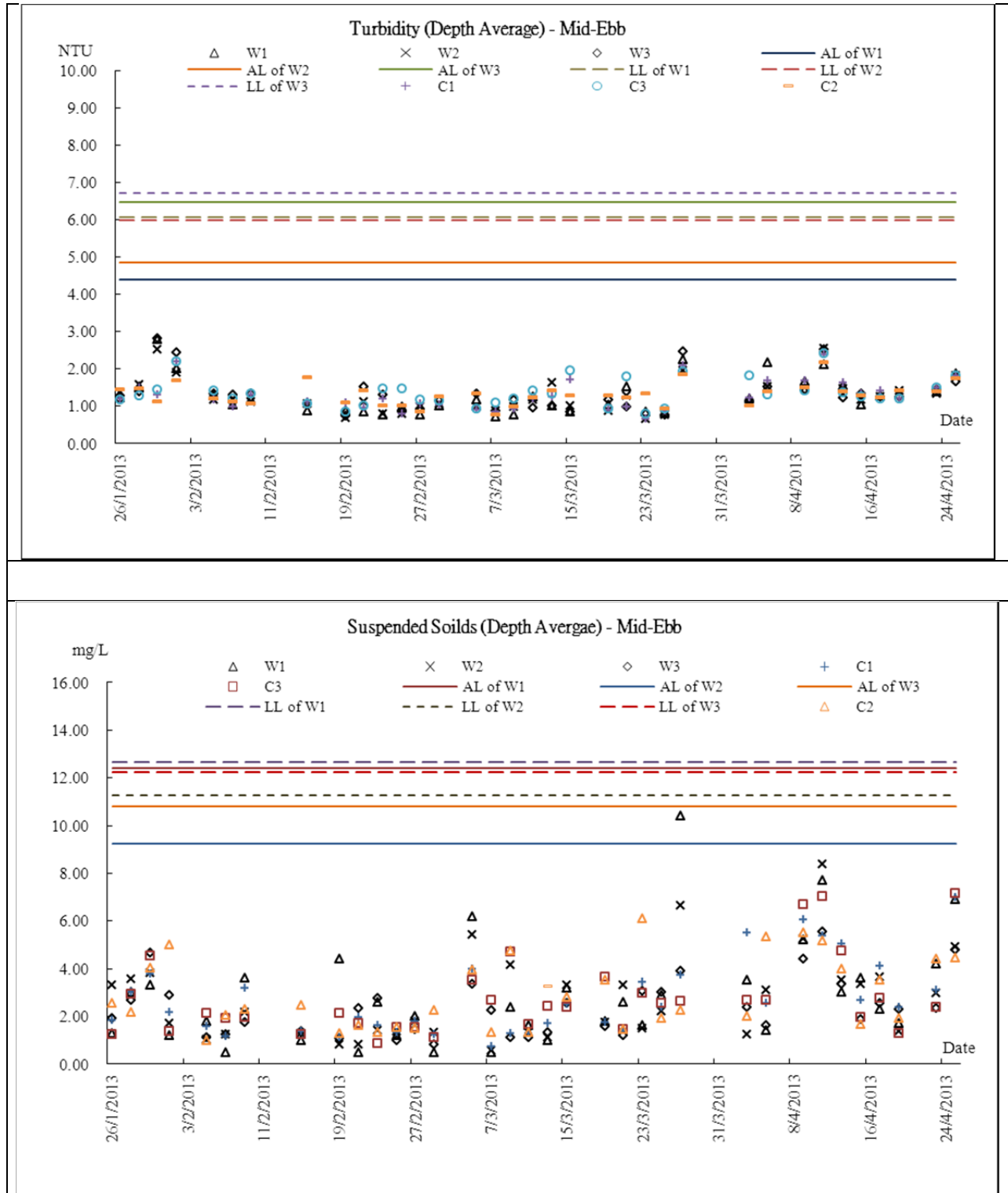
**Construction Noise Monitoring**



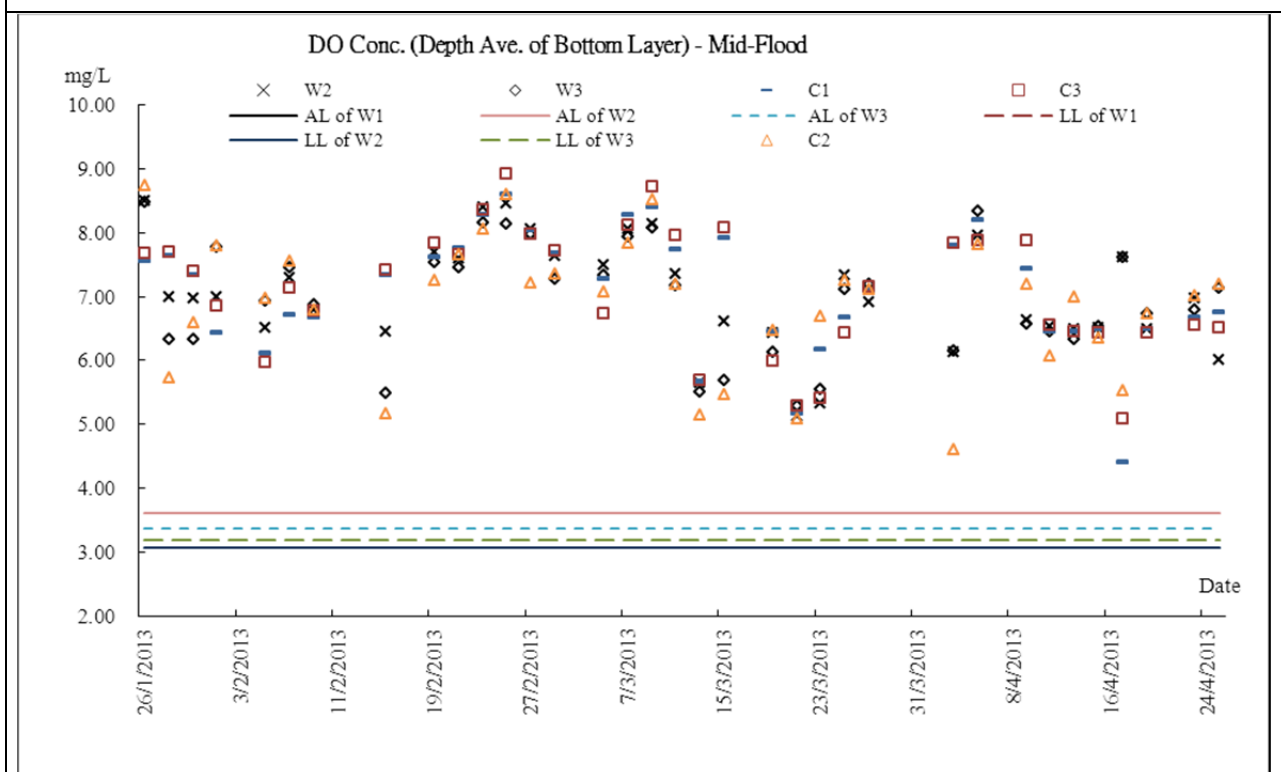
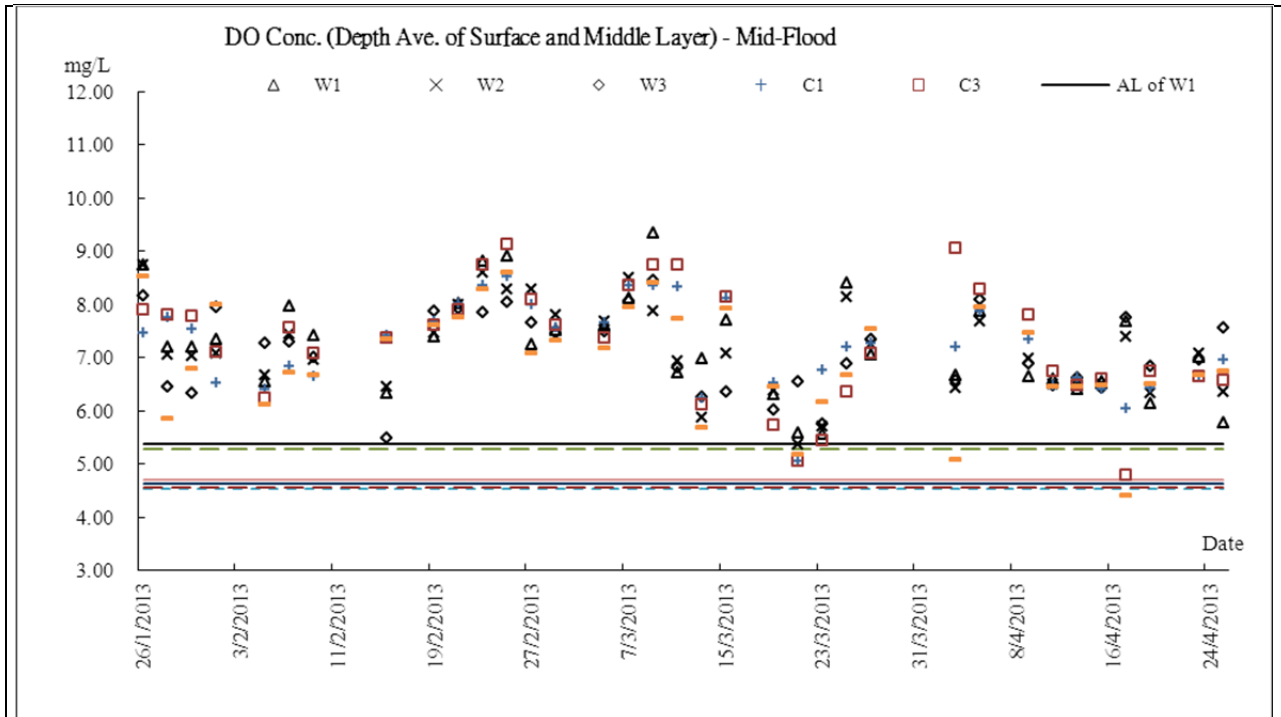


Marine Water Quality Monitoring - Mid-Ebb Tide

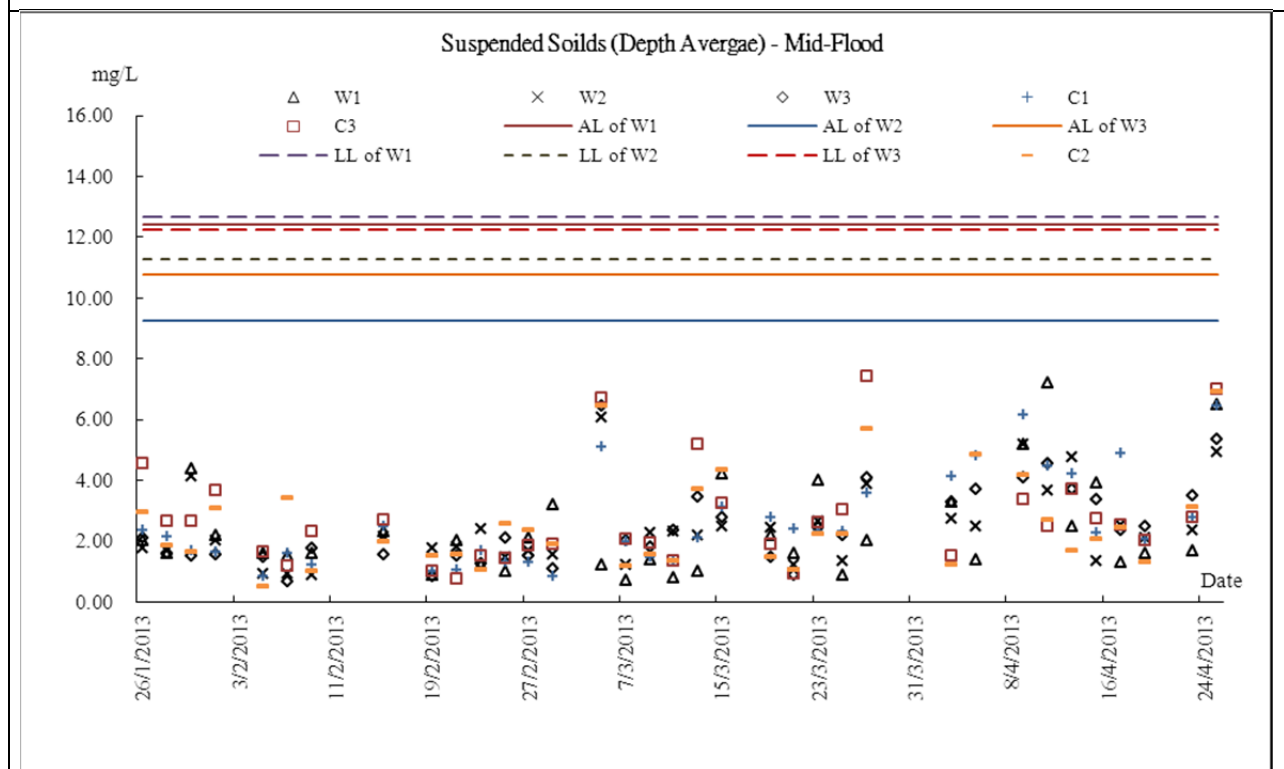
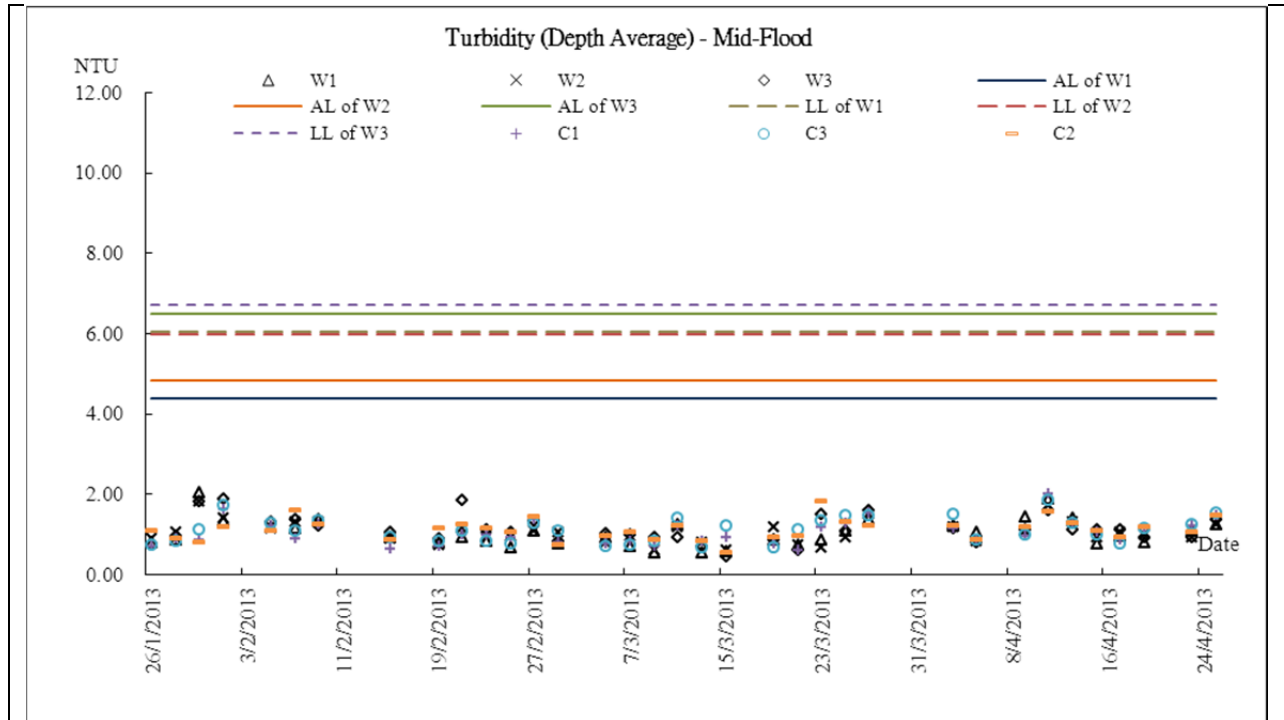




Marine Water Quality Monitoring - Mid-Flood Tide







## **Appendix F**

### **Meteorological Information**

### **Weather Condition – February 2013**

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

### **Weather Condition – March 2012**

With sunnier than usual weather and frequent visit of the warm maritime airstream, March 2013 was much warmer than usual. The mean temperature of 20.5 degrees for the month was 1.4 degrees above normal and the eighth warmest for March. Moreover, the monthly mean maximum temperature of 23.5 degrees was the fourth highest on record for March. Mainly due to the prolonged fine weather in the first half of the month, the total bright sunshine duration in March 2013 was 127.4 hours, about 40 percent above normal.

### **Weather Condition– April 2013**

April 2013 was marked by gloomy and unstable weather which were mainly attributed to the frequent interchange of the cooler northeast monsoon and the humid maritime airstream over the south China coast in the month. The month was more thundery than usual with 8 thunderstorm days, about 4 days more than normal. The sun only shone for 53.6 hours in the month, about 53 percent of the normal total duration of bright sunshine. The total rainfall in the month was 253.8 millimetres, 79.1 millimetres above the normal amount. The accumulated rainfall since the beginning of the year was 389.2 millimetres, about 16 percent above the normal figure of 336.0 millimetres.

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

## **Appendix G**

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

## Monthly Summary Waste Flow Table for April 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																						
Jun																						
<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	431.210	156.930
Jul																						
Aug																						
Sep																						
Oct																						
Nov																						
Dec																						
<b>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	431.210	156.930
	64.564		0.577		3.542		0.000		61.023		0.000		0.000		0.000		0.000		0.000		588.140	

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