



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.Q1 (August to
October 2010)**

PREPARED FOR
**LEADER CIVIL ENGINEERING CORPORATION
LIMITED**

Quality Index Date	Reference No.	Prepared By	Certified By
6 December 2010	TCS00512/09/600/R0116v2		
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Version	Date	Description
1	26 November 2010	First submission
2	6 December 2010	Amended against IEC's comments on 3 December 2010

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Your reference:

Our reference: 05117/6/10/344865

Date: 8 December 2010

Attention: Mr. C K Au

BY FAX ONLY

Dear Sir

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.Q1 (August to October 2010)

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 6 Dec 2010. We do not have further comment and have verified the captioned report.

Yours faithfully

SCOTT WILSON CDM JOINT VENTURE



Rodney Ip

ICWR/KKK/ecwc

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

EXECUTIVE SUMMARY

ES.01 The Leader Civil Engineering Corporation Limited (Leader) has been awarded the *Contract DC/2009/13 - Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwn Wan* (the Project) by the Drainage Services Department (DSD) on 4 May 2010.

ES.02 This is the 1st Quarterly EM&A summary report for Sok Kwu Wan under the Project, covering the construction period from **27 July to 31 October 2010**.

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

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

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	162
	24-hour TSP	54
Construction Noise	Leq (30min) Daytime	56
Water Quality	Marine Water Sampling	0
Inspection / Audit	ET Regular Environmental Site Inspection	14

BREACH OF ACTION AND LIMIT (A/L) LEVELS

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

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action	
				Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	-	-
	24-hour TSP	0	0	-	-
Construction Noise	Leq _{30min} Daytime	0	0	-	-

ENVIRONMENTAL COMPLAINT

ES.05 No environmental complaint was recorded or received in this Reporting Period. The statistics of environmental complaint are summarized in the following table.

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
27 July – 31 October 2010	0	0	NA

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.06 No environmental summons or successful prosecutions were recorded in this Reporting Period. The statistics of environmental complaint are summarized in the following tables.

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
27 July – 31 October 2010	0	0	NA

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
27 July – 31 October 2010	0	0	NA

REPORTING CHANGE

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

SITE INSPECTION BY EXTERNAL PARTIES

ES.08 No site inspection was undertaken by external parties i.e. EPD or AFCD within the Reporting Period. However, before construction of relevant land works commencement, a site visit was conducted by EPD together with IEC, ET, RE and Leader on 26 July 2010.

FUTURE KEY ISSUES

ES.09 During dry season, construction dust has become a key environmental issue in this Reporting Period. It was reminded that construction dust suppression measures should be fully implemented, as necessary.

ES.10 In addition, attention shall also put on the 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. Mitigation measures for water quality should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow to 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 Kwn Wan* (the Project) by the Drainage Services Department (DSD) on 4 May 2010. The Project is part of an overall plan approved under a statutory EIA for Outlying Islands Sewerage Stage 1 Phase 2 Package J – Sok Kwu Wan Sewage Collection and Treatment (Register No. AEIAR-075/2003) and Disposal Facilities and Outlying Islands Sewerage Stage 1 Phase 1 Package C – Yung Shue Wan Sewage Treatment Works and Outfall (Register No. EIA-124/BC). The Environmental Permit No. EP-281/2007 and EP-282/2007 for the Project have been obtained by the DSD on 29 June 2007 for the relevant works. After July 2009, EP-281/2007/A instead EP-281/2007 is EP for Sok Kwu Wan relevant Works.
- 1.02 The Project involves construction of sewage treatment works at Sok Kwn Wan and Yung She Wan with a capacity of 1,430m³/day and 2,850m³/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 *Annex A*.
- 1.03 According to the Particular Specification (PS) and *Appendix 25* of the Project, Leader should establish an Environmental Team to implement the environmental monitoring and auditing works to fulfill the requirements as stipulated in the Environmental Monitoring and Audit (EM&A) Manuals.
- 1.04 Action-United Environmental Services and Consulting (AUES) has been commissioned by Leader as the ET to implement the relevant EM&A program. Organization chart of the Environmental Team for the Project is shown in *Annex 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 According to the EM&A Manuals of Sok Kwu Wan and Yung Shue Wan, baseline water quality monitoring should be carried out for consecutive six months before the marine work commencement. Therefore, the baseline reports of Sok Kwu Wan and Yung Shue Wan are divided to two volumes i.e. the Volume 1 for air quality and noise monitoring; and the Volume II for water quality monitoring for separate submission.
- 1.06 There is a concurrent DSD contract “*DC/2007/18 Yung Shue Wan and Sok Kwu Wan Village Sewerage, Stage 1 Works*” undertaking at Sok Kwu Wan since April 2008 and the works are ongoing.
- 1.07 Consider that the construction works of DC/2007/18 and DC/2009/13 at Sok Kwu Wan is under the same Environmental Permit and EM&A Manual, so the performance criteria of air quality and construction noise at Sok Kwu Wan under the Project is recommended to adopt the Action/Limit Levels established by contract DC/2007/18. The Baseline Monitoring Report Volume 1 under the Project for air quality and noise at Sok Kwu Wan was submitted on 9 July 2010 and verified by IEC and for EPD endorsement before the relevant land works commencement on 27 July 2010.
- 1.08 This is the **1st** Quarterly EM&A Summary report for Sok Kwu Wan Portion Area presenting the monitoring results and inspection findings for the reporting period from **27 July 2010** to **31 October 2010**.

1.2 REPORT STRUCTURE

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

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

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 [Annex B](#).

2.2 CONSTRUCTION PROGRESS

2.02 The master and three month rolling construction programs are enclosed in [Annex C](#) and the major construction activities undertaken in this quarter are listed below:-

27 July to 31 August 2010

- Footpath Diversion adjacent to SKW Sewage Treatment Works
- Construction for pumping station no.1 & 2

1 September to 30 September 2010

- Footpath Diversion adjacent to SKW Sewage Treatment Works
- Construction for pumping station no.1 & 2

1 October to 31 October 2010

- Footpath Diversion adjacent to SKW Sewage Treatment Works
- Construction for pumping station no.1 & 2

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)	Notified EPD on 19 May 2010 Ref.: 317486
2	Chemical waste Producer Registration	In progress
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

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 program are presented in the following sub-sections.
- 3.03 A summary of the Air, Noise and Marine Water monitoring parameters 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"> • 1-hour TSP Monitoring by Real-Time Portable Dust Meter; and • 24-hour TSP Monitoring by High Volume Air Sampler.
Noise	<ul style="list-style-type: none"> • Leq (30min) during normal working hours; and • Leq (15min) during Restricted Hours.
Marine Water Quality	<p><i>In-situ Measurements</i></p> <ul style="list-style-type: none"> • Dissolved Oxygen Concentration (mg/L); • Dissolved Oxygen Saturation (%); • Turbidity (NTU); • pH unit; • Salinity (ppt); • Water depth (m); and • Temperature (°C). <p><i>Laboratory Analysis</i></p> <ul style="list-style-type: none"> • Suspended Solids (mg/L)

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 **Annex 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 *Annex 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 *Annex D* and would be performed for EM&A programme.

Table 3-4 Location of Marine Water Quality Monitoring Station

Station	Description	Co-ordnance	
		Easting	Northing
W1	Secondary recreation contact subzone at Mo Tat Wan	832 968	807 732
W2	Fish culture zone at Picnic Bay	832 607	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: Leq (30min) & Leq (5min), L10 and L90.

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

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

Duration: Throughout the construction period.

Marine Water Quality Monitoring

Parameters: Duplicate in-situ measurements: water depth, temperature, Dissolved Oxygen, pH, turbidity and salinity;
HOKLAS-accredited laboratory analysis: Suspended Solids

Frequency: Three days a week, at mid ebb and mid flood tides. The interval between 2 sets of monitoring will be more than 36 hours.

Sampling Depth (i.) Three depths: 1m below water surface, 1m above sea bottom and at mid-depth when the water depth exceeds 6m.
(ii.) If the water depth is between 3m and 6m, two depths: 1m below water surface and 1m above sea bottom.
(iii.) If the water depth is less than 3m, 1 sample at mid-depth is taken

Duration: During the course of marine works

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⁻¹.

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⁻¹ 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) due to it nearly the Project site.

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, noise meter and

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

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

3.28 According to the Sok Kwu Wan Environmental Monitoring and Audit Manual, the air quality, construction noise were set up, namely Action and Limit levels are listed in *Tables 3-5* and *3-6* 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 Leq(30min) during normal hours from 0700 to 1900 hours on normal weekdays, reduced to 70 dB(A) of Leq(30min) for schools and 65 dB(A) during school examination periods

3.29 Due to water quality baseline monitoring still not yet completed, the Action/Limit Levels will be provided in due course.

4 IMPACT MONITORING RESULTS

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

4.1 RESULTS OF AIR QUALITY MONITORING

4.02 Results of air quality monitoring at the identified locations during the Reporting Period are summarized in [Tables 4-1](#). In this quarter period, **162** events of 1-hour TSP and **18** successful events of 24-hour TSP measurements were conducted at designated Location AM1, AM2 and AM3. 24-hour and 1-hour TSP results fluctuated well below the Action Level during the Reporting Period. No Notification of Exceedance (NOE) of 24-hour and 1-hour TSP air quality criteria or corrective action was therefore required.

Table 4-1 Summary of 1-hour and 24-hour TSP result

Station	1-hour TSP			24-hour TSP		
	Max	Min	Mean	Max	Min	Mean
AM1	277	39	88	75	25	47
Record Date	2-Sep-10	27-Aug-10	162 events	2-Sep-10	27-Jul-10	18 events
AM2	259	41	91	87	35	51
Record Date	2-Sep-10	14-Sep-10	162 events	2-Sep-10	27-Jul-10	18 events
AM3	286	43	100	87	19	47
Record Date	2-Sep-10	23-Aug-10	162 events	2-Sep-10	27-Jul-10	18 events

4.2 RESULTS OF CONSTRUCTION NOISE MONITORING

4.03 Summary of construction noise monitoring at the identified locations during the Reporting Period are summarized in [Table 4-2](#) below. In this reporting quarter, a total of **14** 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)	
	Max	Min
NM1	69.1	58.2
Record Date	2-Aug-10	27-Jul-10
NM2	62.5	55.2
Record Date	12-Aug-10	23-Aug-10
RNM3	71.0	51.5
Record Date	30-Sep-10	12-Aug-10
NM4	59.2	49.2
Record Date	14-Sep-10	27-Jul-10

4.3 RESULTS OF MARINE WATER QUALITY OF MONITORING

4.04 Due to marine water quality baseline monitoring still not yet completed, no marine works was commenced in the Project at Sok Kwu Wan. No impact water quality monitoring was undertaken in this Reporting Period and no results are presented in this section.

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 *Annex 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
	Aug 10	Sep 10	Oct 10	
C&D Materials (Inert) (m ³)	0	2	1	-
Reused in this Contract (Inert) (m ³)	0	0	0	-
Reused in other Projects (Inert) (m ³)	0	0	0	-
Disposal as Public Fill (Inert) (m ³)	0	29	1	Sok Kwu Wan Transfer Facility

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

Type of Waste	Quantity			Disposal Location
	Aug 10	Sep 10	Oct 10	
Recycled Metal (kg)	0	0	0	-
Recycled Paper / Cardboard Packing (kg)	0	0	0	-
Recycled Plastic (kg)	0	0	0	-
Chemical Wastes (kg)	0	0	0	-
General Refuses (tonne)	8.25	4.58	0	Sok Kwu Wan Transfer Facility

5.04 There was no site effluent discharged but the estimated volume of surface runoff was less than 50m³ 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, site inspection was carried out on **26 July** (before work commencement), **3, 10, 17, 25 August 2010, 1, 10, 14, 21, 28 September and 5, 11, 19 and 26 October 2010..** Besides, EPD, IEC, RE, Leader and ET carried out joint-site visit on **26 July** in prior of the relevant land work commencement and routine joint-site visit by IEC, RE, Leader and ET was carried out on **25 August, 28 September and 11 October 2010.**
- 6.02 Observations for the site inspections and monthly audit within this Reporting Month are summarized in **Table 6-1.**

Table 6-1 Site Observations

Date	Findings / Deficiencies	Follow-Up Status
26 July 2010	<ul style="list-style-type: none"> The existing tree at the site should be fenced off properly or transplant to appropriate area. The construction material should be sorted out from the construction waste and stored at a designated area. It is recommended to lay more gravel at the edge of the site to avoid charge of water to the marine body. 	The observations have been followed during the site inspection on 3 August 2010.
3 Aug 2010	<ul style="list-style-type: none"> No environmental issue was observed during the site inspection. 	N/A
10 Aug 2010	<ul style="list-style-type: none"> Stockpiles shall be fully covered by the tarpaulin sheet to avoid generation of runoff during wet season. 	The observations have been followed during the site inspection on 17 August 2010
17 Aug 2010	<ul style="list-style-type: none"> Stockpiles shall be fully covered by the tarpaulin sheet to avoid generation of runoff during wet season. Dead tree and debris was cumulated in the site area, the contractor was reminded to clean in regular basis. Soil and loose material was cumulated in the u-channel, the contractor was reminded to clean to prevent blockage of the u-channel. 	The observations have been followed during the site inspection on 25 August 2010
25 Aug 2010	<ul style="list-style-type: none"> End plug should be provided to the drip tray. Soil and loose material was observed on the footpath, the contractor was reminded to clean in order to maintain the construction site tidiness. 	The observations have been followed during the site inspection on 1 September 2010.
1 September 2010	<ul style="list-style-type: none"> The contractor was reminded to set up temporary channel to direct muddy water to lower level to prevent water runoff to sea side (portion G)The construction material should be sorted out from the construction waste and stored at a designated area. The contractor was reminded to deploy the tarpaulin sheets to prevent soil runoff. (Portion G and PS1) 	The observations have been followed during the site inspection on 10 September 2010.
10 September 2010	<ul style="list-style-type: none"> The contractor was reminded to remove stagnant water accumulated in the 	The observations have been followed during the site inspection

	<p>excavator bucket to prevent mosquitoes breeding. (portion G).</p> <ul style="list-style-type: none"> As a general reminder, the coastline of the site was reminded to apply sand bags or other measures to prevent surface runoff from the site into water body (PS1) 	on 14 September 2010.
14 September 2010	<ul style="list-style-type: none"> Loose soil and sand was observed at the site entrance and public access, the contractor was reminded to keep the site entrance and public access clean. (PS2) 	The observations have been followed during the site inspection on 21 September 2010.
21 September 2010	<ul style="list-style-type: none"> Exposed slope without cover was observed, the contractor was reminded to cover all exposed surface to prevent turbidity run-off discharged. 	The observations have been followed during the site inspection on 28 September 2010.
28 September 2010	<ul style="list-style-type: none"> The de-silting facility shall be improved to avoid leakage. Dusty haul road is observed, the Contractor is reminded to wash up the road regularly in order to keep the site clean. 	The observations have been followed during the site inspection on 5 October 2010.
5 October 2010	<ul style="list-style-type: none"> Stagnant water cumulated inside the oil drums for rock fall fencing, the contractor should provide mitigation measure to prevent mosquito breeding. Exposed slope without protection was observed, the contractor was requested to cover the exposed surface to prevent loose material discharged into the water body from surface runoff. 	The observations have been followed during the site inspection on 11 October 2010.
11 October 2010	<ul style="list-style-type: none"> Turbidity water discharge from the sedimentation tank was observed, the contractor should improve the de-silting facility to prevent turbidity water discharged and meet the discharge licence requirement. 	The observations have been followed during the site inspection on 19 October 2010.
19 October 2010	<ul style="list-style-type: none"> Stockpile without cover was observed near the sea side, the contractor was request to cover or remove immediately to prevent surface runoff discharged to the water body. Oil firm was observed inside the sedimentation tank, the contractor was request to clean up immediately to prevent discharge to the water body. Turbidity water discharge from the sedimentation tank was observed, the contractor should improve the de-silting facility to prevent turbidity water discharged and meet the discharge licence requirement. 	The observations have been followed during the site inspection on 26 October 2010.
26 October 2010	<ul style="list-style-type: none"> The slope without tarpaulin sheets was observed, the contractor should maintain the covering along the sea side to avoid sand and mud runoff. Dry haul road was observed, water spraying should be applied more frequently. The contractor was reminded to maintain the haul road is moist. 	To be followed in next reporting Period.

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 – 31 October 2010	0	0	NA

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
27 July – 31 October 2010	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
27 July – 31 October 2010	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:

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

Noise Mitigation Measure

8.03 As detailed in the EIA report, concreting work of the Pumping Station P1a and sewer alignment construction activities would likely cause adverse noise impacts on some of the noise sensitive receivers. Appropriate mitigation measures have therefore been recommended. The mitigation measures recommended in the EIA report are summarised below:

- (a) Use of quiet equipment for the construction activities of the Pumping Stations and sewer alignment;
- (b) Use of temporary noise barrier around the site boundary of Pumping Station P1a;
- (c) Use of kick ripper (saw and lift) method to replace the breaker for pavement removal during sewer alignment construction;
- (d) Restriction on the number of plant during sewer alignment construction;
- (e) Use of noise screening structures in the form of acoustic shed or movable barrier wherever practicable and feasible in areas with sufficient clearance and headroom during the construction of sewer alignment;
- (f) Adoption of manual working method wherever practicable and feasible in areas where the worksites of the proposed sewer alignment are located less than 20m from the residential noise sensitive receivers and less than 30m from the temple and the public library; and
- (g) Implementation of the following good site practices:
 - Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.
 - Mobile plant, if any, should be sited as far away from NSRs as possible.
 - Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.
 - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.
 - Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.

Water Quality Mitigation Measure

8.04 No-dig method using Horizontal Directional Drilling (HDD) would be used for the installation of outfall pipe of about 480 m from shore to minimize the potential water quality impacts arising from the dredging works required for the submarine outfall construction. For the remaining

outfall pipe of about 240m and the diffuser section, open trench dredging would still be required.

8.05 During the dredging works, the Contractor should be responsible for the design and implementation of the following mitigation measures.

- Dredging should be undertaken using closed grab dredgers with a total production rate of 55m³/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"> • Drainage channels were provided to convey run-off into the treatment facilities; and • Drainage systems were regularly and adequately maintained.
Air Quality	<ul style="list-style-type: none"> • Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet; • Public roads around the site entrance/exit had been kept clean and free from dust; and • Tarpaulin covering of any dusty materials on a vehicle leaving the site.
Noise	<ul style="list-style-type: none"> • Good site practices to limit noise emissions at the sources; • Use of quiet plant and working methods; • Use of site hoarding or other mass materials as noise barrier to screen noise at ground level of NSRs; and • To minimize plant number use at the worksite.
Waste and Chemical Management	<ul style="list-style-type: none"> • Excavated material should be reused on site as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment should be recycled if possible; • Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner; • The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designed public filling facility and/or landfill; and • Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.
General	<ul style="list-style-type: none"> • The site was generally kept tidy and clean.

9 CONCLUSIONS AND RECOMMENTATIONS

9.1 CONCLUSIONS

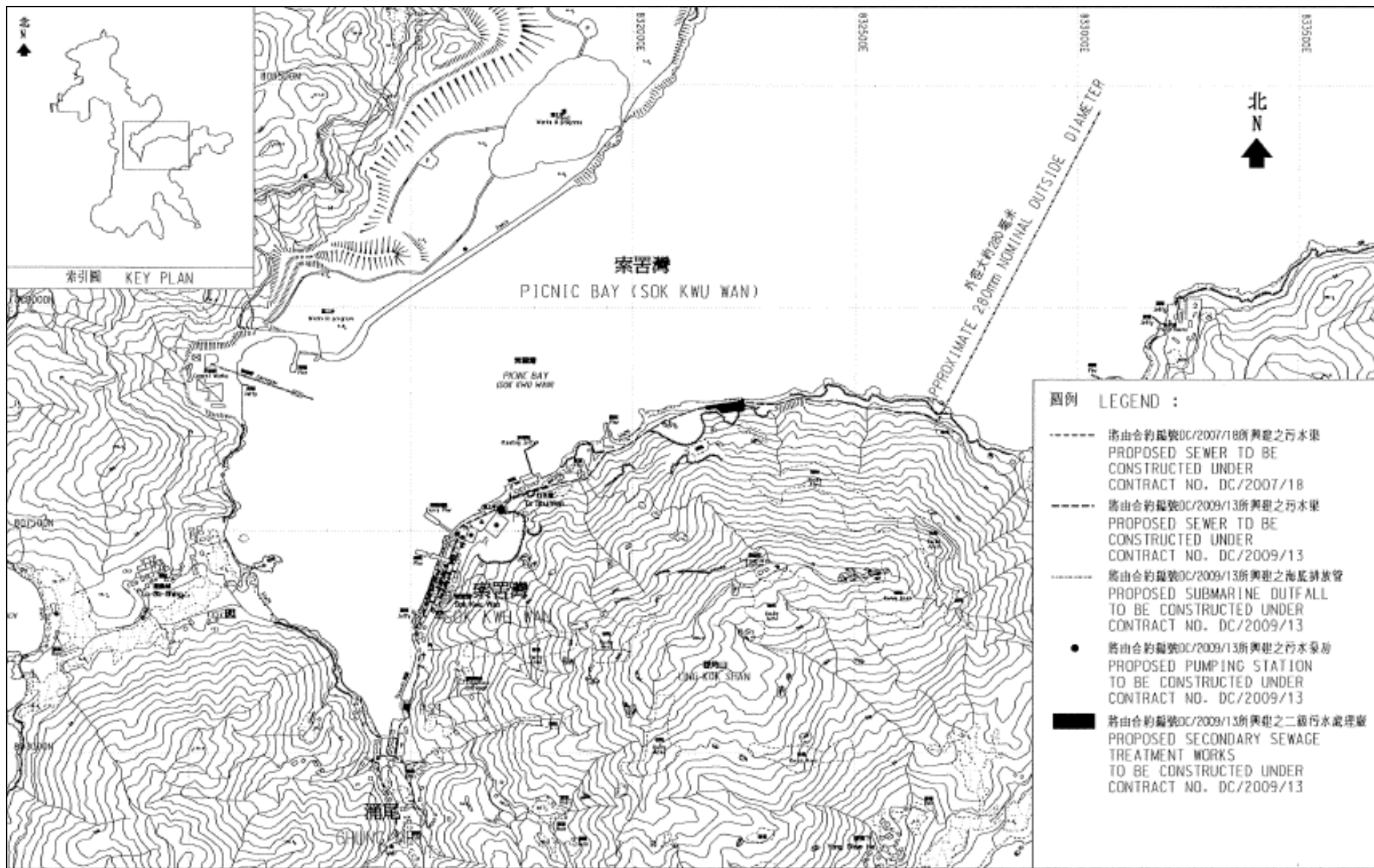
- 9.01 This is the **1st** Quarterly EM&A summary report for Sok Kwu Wan under the Project covering the construction period from **27 July to 31 October 2010**.
- 9.02 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this reporting quarter. No NOE or the associated corrective actions were therefore issued.
- 9.03 In this reporting quarter, no 1-hour TSP or 24-hr TSP monitoring results was found to be triggered the Action or Limit Level in this Reporting Period.
- 9.04 No documented complaint, notification of summons or successful prosecution was received.
- 9.05 **14** events of site inspection were carried out by ET in this Reporting Quarter 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.
- 9.06 No site inspection was undertaken by external parties i.e. EPD or AFCD within the Reporting Period. However, before construction of relevant land works commencement, a site visit was conducted by EPD together with IEC, ET, RE and Leader on 26 July 2010.

9.2 RECOMMENDATIONS

- 9.07 During dry season, construction dust has become a key environmental issue in this Reporting Period. It was reminded that construction dust suppression measures should be fully implemented, as necessary.
- 9.08 In addition, attention shall also put on the 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. Mitigation measures for water quality should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow to the site boundary.

Annex A

Site Layout Plan – Sok Kwu Wan Portion Area



Annex B

Organization Structure and Contact Details of Relevant Parties

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. AU Chi Kwong	-	-
SCJV	Engineer's Representative	Mr. Neil Wong	2982 0240	2982 4129
SCJV	Resident Engineer (Sok Kwu Wan Portion Area)	Mr. Toby Ng	2982 0240	2982 4129
Scott Wilson	Independent Environmental Checker	Mr. Rodney Ip	2410 3750	2428 9922
Leader	Project Manager	Mr. Wilfred So	2982 1750	2982 1803
Leader	Site Agent/ Environmental Officer	Mr. Vincent Chan	2982 1750	2982 1803
Leader	Safety Officer	Mr. Edwin Leung	2982 1750	2982 1803
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Assistance Environmental Consultant	Mr. Ray Cheung	2959 6059	2959 6079
AUES	Team Supervisor	Mr. Ben Tam	2959 6059	2959 6079

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

Annex C

Master and Three Months Rolling Construction Programs

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Project Key Date																
KD0010	0	05/05/10 A	05/05/10 A		05/05/10 A		Receive Letter of Acceptance									
KD0020	0	17/05/10 A	17/05/10 A		17/05/10 A		Project Commencement Date									
KD0030	0	15/08/11 *	15/08/11		15/08/11	0 *	Section W1 - Slope Works in Portion A & C (456d)									
KD0040	0	14/02/14 *	14/02/14		14/02/14	0 *	Section W2 - YSW STW & Submarine Outfall (1370d)									
KD0050	0	13/02/11 *	13/02/11		13/02/11	0 *	Section W3 - Footpath Diversion in Ptn G (273d)									
KD0060	0	15/08/11 *	15/08/11		15/08/11	0 *	Section W4 - Slope Works in Portion H & I (456d)									
KD0070	0	15/11/11 *	15/11/11		15/11/11	0 *	Section W5 - P.S. No. 1 in Portion D (548d)									
KD0080	0	15/11/11 *	15/11/11		15/11/11	0 *	Section W6 - Sewer & PS No2 in Ptn. E & F (548d)									
KD0090	0	14/02/14 *	14/02/14		14/02/14	0 *	Section W7 - SKW STW, RM & Sm. Outfall (1370d)									
KD0100	0	15/08/12 *	15/08/12		15/08/12	0 *	Section W8 - Landscape Softworks (822d)									
KD0110	0	15/08/13 *	15/08/13		15/08/13	0 *	Section W9 - Establishment Works (1187d)									
KD0115	0	30/06/11 *	30/06/11		30/06/11	0 *	Start Operate Temp. Sewage Treatment in Port. A&H									
KD0125	0	14/02/14 *	14/02/14		14/02/14	0 *	Project Completion									
Preliminary (Civil)																
PRE0020	60	17/05/10	15/07/10	19/05/10	17/07/10 *	2d	Pre-condition Survey									
PRE0040	60	17/05/10 *	15/07/10	19/05/10	17/07/10 *	2d	Erection of Engineer's Site Accommodation at YSW									
PRE0050	75	17/05/10	30/07/10	18/05/10	31/07/10 *	1d	Taking over the Secondary Engineer's Site Accom									
PRE0060	60	17/05/10	15/07/10	18/05/10	16/07/10 *	1d	Application of Consent from Marine Department									
PRE0090	120	17/05/10	13/09/10	17/09/10	14/01/11	123d	Working Group Meeting for Outfall Construction									
PRE0100	120	17/05/10	13/09/10	17/05/10	13/09/10	0	Application & Consent of XP from HyD (Mo Tat Rd)									
PRE0130	90	17/05/10	14/08/10	18/05/10	15/08/10 *	1d	Setup Web-site for EM&A Reporting									
Preliminary (E&M)																
Technical Submission																
Process Design of SKWSTW & YSWSTW																
E&M0010	38	17/05/10	23/06/10	17/05/10	23/06/10	0	Submission									
E&M0020	21	24/06/10	14/07/10	24/06/10	14/07/10	0	Vetting and Comment by ER									
E&M0030	28	15/07/10	11/08/10	20/05/11	16/06/11	309d	Revision and Resubmission									
E&M0080	14	12/08/10	25/08/10	17/06/11	30/06/11	309d	Approval from the Engineer									
Hydraulic Design																
E&M0040	21	15/07/10	04/08/10	15/07/10	04/08/10	0	Submission									
E&M0050	14	05/08/10	18/08/10	27/05/11	09/06/11	295d	Vetting and Comment by ER									
E&M0060	14	19/08/10	01/09/10	10/06/11	23/06/11	295d	Revision and Resubmission									
E&M0430	7	02/09/10	08/09/10	24/06/11	30/06/11	295d	Approval from the Engineer									
Equipment Submission & Approval																
E&M0070	50	17/05/10	05/07/10	08/06/10	27/07/10	22d	Submission of Membrane Module									
E&M0090	14	06/07/10	19/07/10	28/07/10	10/08/10	22d	Vetting and Comment by ER									
E&M0100	14	20/07/10	02/08/10	11/08/10	24/08/10	22d	Revision and Resubmission									
E&M0101	90	05/08/10	02/11/10	05/08/10	02/11/10	0	Submission of Equipment									
E&M0102	60	03/11/10	01/01/11	03/11/10	01/01/11	0	Vetting and Comment by ER									
E&M0103	60	02/01/11	02/03/11	02/01/11	02/03/11	0	Revision and Resubmission									
E&M0110	30	03/03/11	01/04/11	03/03/11	01/04/11	0	Approval on Coarse Screens									
E&M0120	30	03/03/11	01/04/11	03/03/11	01/04/11	0	Approval on Fine Screens									
E&M0130	30	03/03/11	01/04/11	03/03/11	01/04/11	0	Approval on Pumps									
E&M0140	30	03/03/11	01/04/11	03/04/11	02/05/11	31d	Approval on Submersible Mixers									
E&M0150	30	03/03/11	01/04/11	19/03/11	17/04/11	16d	Approval on Grit Removal Equipment									
E&M0160	60	03/08/10	01/10/10	25/08/10	23/10/10	22d	Approval on MBR Membrane Modules (M.M.)									
E&M0170	30	03/03/11	01/04/11	03/03/11	01/04/11	0	Approval on Sludge Dewatering Equipment									
E&M0180	30	03/03/11	01/04/11	18/05/11	16/06/11	76d	Approval on Valves, Pipes & Fittings									
E&M0190	30	03/03/11	01/04/11	18/05/11	16/06/11	76d	Approval on Penstocks									
E&M0200	30	03/03/11	01/04/11	01/08/11	30/08/11	151d	Approval on Instrumentation									
E&M0210	30	03/03/11	01/04/11	03/03/11	01/04/11	0	Approval on MCC & LVSB									
E&M0220	30	03/03/11	01/04/11	11/06/11	10/07/11	100d	Approval on BS Equipment									
E&M0230	30	03/03/11	01/04/11	01/06/11	30/06/11	90d	Approval on FS Equipment									
Drawings Submission & Approval																
E&M0235	60	24/06/10	22/08/10	12/01/11	12/03/11	202d	Sub. P&DI Drawings									
E&M0240	45	05/08/10	18/09/10	18/12/10	31/01/11	135d	Sub. Plant GA Drawings									
E&M0250	45	05/08/10	18/09/10	18/12/10	31/01/11	135d	Sub. Civil Works Requirements Drawings									
E&M0260	90	19/09/10	17/12/10	13/03/11	10/06/11	175d	Sub. Mechanical Installation Drawings									
E&M0270	120	19/09/10	16/01/11	11/02/11	10/06/11	145d	Sub. Electrical Installation Drawings									
E&M0280	120	19/09/10	16/01/11	11/02/11	10/06/11	145d	Sub. BS Installation Drawings									
E&M0290	120	19/09/10	16/01/11	01/02/11	31/05/11	135d	Sub. FS Installation Drawings									
Statutory Submission																
E&M0295	39	02/04/11	10/05/11	01/07/11	08/08/11	90d	Preparation of Submission to HEC									
E&M0300	150	11/05/11	07/10/11	09/08/11	05/01/12	90d	Application & Approval from HEC									
E&M0305	180	08/10/11	04/04/12	06/01/12	03/07/12	90d	Provision of Cables to the STWs									
E&M0320	14	02/04/11	15/04/11	15/04/12	28/04/12	379d	Form 314 Submission to FSD									
E&M0325	14	16/04/11	29/04/11	29/04/12	12/05/12	379d	Submission to WSD									
E&M0330	28	29/09/11	26/10/11	12/07/12	08/08/12	287d	Form 501 Submission to FSD (YSW)									
E&M0340	28	29/09/11	26/10/11	12/07/12	08/08/12	287d	Form 501 Submission to FSD (SKW)									
E&M0350	28	15/04/11	12/05/11	18/01/14	14/02/14	1009d	Form 501 Submission to FSD (PS1 & PS2)									
+Yung Shue Wan																
	1370	17/05/10	14/02/14	17/05/10	14/02/14	0										
Sok Kwu Wan																
Preliminary																
SKW0250	16	17/05/10	01/06/10	17/05/10	01/06/10	0	Approval of Environmental Team									
SKW0260	14	02/06/10	15/06/10	02/06/10	15/06/10	0	Baseline monitoring (Air & Noise)									
SKW0270	213	16/06/10	14/01/11	16/06/10	14/01/11	0	Baseline monitoring (Water)									
Section W3 - Footpath Diversion in Portion G																
Civil & Geotechnical Works																
SKW0240	21	17/05/10	06/06/10	17/05/10	06/06/10	0	Site Clearance									

Start date	05/05/10	Early bar
Finish date	14/02/14	Progress bar
Data date	17/05/10	Critical bar
Run date	11/08/10	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
Works Programme (Rev. 1)

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

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	2010	2011	2012	2013	2014	2015	2016	2017	2018
SKW0241	9	07/06/10	15/06/10	07/06/10	15/06/10	0		Initial Survey							
SKW0242	57	16/06/10	11/08/10	16/06/10	11/08/10	0		Excavation to formation for Bay 1 to 5							
SKW0251	21	12/08/10	01/09/10	12/08/10	01/09/10	0		Drill & install Dowel Bar for Bay 1 & 3							
SKW0301	14	02/09/10	15/09/10	02/09/10	15/09/10	0		Erect Formwork, mesh & weephole for Bay 1 & 3							
SKW0311	14	16/09/10	29/09/10	16/09/10	29/09/10	0		Concreting for Bay 1 & 3							
SKW0321	7	30/09/10	06/10/10	30/09/10	06/10/10	0		Drilling & install Dowel Bar for Bay 2 & 5							
SKW0331	7	07/10/10	13/10/10	07/10/10	13/10/10	0		Erect Formwork, mesh & weephole for Bay 2 & 5							
SKW0341	7	14/10/10	20/10/10	14/10/10	20/10/10	0		Concreting for Bay 2 & 5							
SKW0351	21	21/10/10	10/11/10	21/10/10	10/11/10	0		Excavation to formation for Bay 6 to 9							
SKW0361	6	11/11/10	16/11/10	11/11/10	16/11/10	0		Drill & install dowel Bar for Bay 4 & 7							
SKW0371	7	17/11/10	23/11/10	17/11/10	23/11/10	0		Erect formwork, mesh & weephole for Bay 4 & 7							
SKW0381	7	24/11/10	30/11/10	24/11/10	30/11/10	0		Concreting for Bay 4 & 7							
SKW0391	3	01/12/10	03/12/10	01/12/10	03/12/10	0		Drill & install dowel Bar for Bay 6 & 9							
SKW0401	7	04/12/10	10/12/10	04/12/10	10/12/10	0		Erect formwork, mesh & weephole for Bay 6 & 9							
SKW0411	7	11/12/10	17/12/10	11/12/10	17/12/10	0		Concreting for Bay 6 & 9							
SKW0421	1	18/12/10	18/12/10	18/12/10	18/12/10	0		Drill & install dowel Bar for Bay 8							
SKW0431	4	19/12/10	22/12/10	19/12/10	22/12/10	0		Erect formwork, mesh & weephole for Bay 8							
SKW0441	4	23/12/10	26/12/10	23/12/10	26/12/10	0		Concreting for Bay 8							
SKW0461	3	27/12/10	29/12/10	27/12/10	29/12/10	0		Excavation for no fine concrete Bay (1-9)							
SKW0471	7	30/12/10	05/01/11	30/12/10	05/01/11	0		Concreting for no-fine concrete							
SKW0481	14	06/01/11	19/01/11	06/01/11	19/01/11	0		Installation of Wall tie & stone facing							
SKW0491	7	06/01/11	12/01/11	06/01/11	12/01/11	0		Construction of Gabion Wall							
SKW0501	3	06/01/11	08/01/11	06/01/11	08/01/11	0		Place Geotextile							
SKW0511	7	09/01/11	15/01/11	09/01/11	15/01/11	0		Backfill behind the retaining wall to approx. +4							
SKW0521	14	16/01/11	29/01/11	16/01/11	29/01/11	0		Utilities Laying and diversion							
SKW0531	7	30/01/11	05/02/11	30/01/11	05/02/11	0		Concreting for Pavement							
SKW0541	7	06/02/11	12/02/11	06/02/11	12/02/11	0		Installation of Flower Pot							
SKW0551	1	13/02/11	13/02/11	13/02/11	13/02/11	0		Permanent Footpath Diversion							

Section W4 - Slope Works in Portions H & I

Geotechnical Works						
SKW0588	30	15/06/10	14/07/10	15/06/10	14/07/10	0
SKW0590	100	15/07/10	22/10/10	15/07/10	22/10/10	0
SKW0591	28	21/09/10	18/10/10	21/09/10	18/10/10	0
SKW0592	80	19/10/10	06/01/11	19/10/10	06/01/11	0
SKW0593	200	28/11/10	15/06/11	28/11/10	15/06/11	0
SKW0594	248	11/12/10	15/08/11	11/12/10	15/08/11	0
SKW0595	260	29/11/10	15/08/11	29/11/10	15/08/11	0

Construct scaffolding access
Site Clearance for Slope
Initial Survey for Slope
Temporary Rockfall fence at ex. Footpath
Cut Slope
Road & Drains Works
Rock Meshing & Rockfall Fence

Section W5 - P.S. No. 1 in Portion D

Civil & Geotechnical Works						
SKW0651	7	17/05/10	23/05/10	17/05/10	23/05/10	0
SKW0652	7	24/05/10	30/05/10	24/05/10	30/05/10	0
SKW0661	30	31/05/10	29/06/10	31/05/10	29/06/10	0
SKW0681	49	30/06/10	17/08/10	30/06/10	17/08/10	0
SKW0691	40	18/08/10	26/09/10	18/08/10	26/09/10	0
SKW0721	92	17/09/10	17/12/10	17/09/10	17/12/10	0

Structural Works						
SKW0741	15	18/12/10	01/01/11	18/12/10	01/01/11	0
SKW0751	14	01/01/11	14/01/11	01/01/11	14/01/11	0
SKW0761	14	14/01/11	27/01/11	14/01/11	27/01/11	0
SKW0771	14	27/01/11	09/02/11	27/01/11	09/02/11	0
SKW0781	14	09/02/11	22/02/11	09/02/11	22/02/11	0
SKW0791	14	22/02/11	07/03/11	22/02/11	07/03/11	0
SKW0801	14	07/03/11	20/03/11	07/03/11	20/03/11	0
SKW0811	14	21/03/11	03/04/11	21/03/11	03/04/11	0
SKW0821	14	04/04/11	17/04/11	04/04/11	17/04/11	0
SKW0831	14	18/04/11	01/05/11	18/04/11	01/05/11	0
SKW0841	45	18/04/11	01/06/11	18/04/11	01/06/11	0
SKW0861	168	02/05/11	16/10/11	01/06/11	15/11/11	30d

Site Clearance
Initial Survey
Transplantation for uncommon vegetation
Excavate to lower the working platform to +3mPD
ELS to +2.2mPD
Excavate to formation
Base Slab (BSD2 & BSD3)
Wall & Column (CA1-3, CB1-3, CC1-3, CD1-2) Approx.
Base Slab (BSD1) to +3.98
Wall & Column (CA1-3, CB1-3, CC1-3, CD1-2) to +6.3
Base Slab (GSB1-3, GSC1-5, GSD1-2)
Base Slab (GSE1 & GSF1)
Wall & Column (CE1-3, CF1-3)
Ground Beam (GB1-1,2 GB2-1,2 GB3-1, GBA-1, GBB1-4)
Wall & Column (CA1-3, CB1-3, CC1-3, CD1-2) to +10.
Roof Beams & Parapet
ABWF installation
300mm U-channel & 675mm Step Channel

E&M Works (PS1)

Submission & Delivery						
E&M1001	113	17/05/10	06/09/10	10/11/10	02/03/11	177d
E&M1002	143	17/05/10	06/10/10	11/10/10	02/03/11	147d
E&M1003	133	17/05/10	26/09/10	21/10/10	02/03/11	157d
E&M1004	180	17/05/10	12/11/10	04/09/10	02/03/11	110d
E&M1005	180	17/05/10	12/11/10	04/09/10	02/03/11	110d
E&M1006	213	17/05/10	15/12/10	02/08/10	02/03/11	77d
E&M1007	213	17/05/10	15/12/10	02/08/10	02/03/11	77d
E&M1011	60	07/09/10	05/11/10	03/03/11	01/05/11	177d
E&M1012	60	07/10/10	05/12/10	03/03/11	01/05/11	147d
E&M1013	60	27/09/10	25/11/10	03/03/11	01/05/11	157d
E&M1014	60	13/11/10	11/01/11	03/03/11	01/05/11	110d
E&M1015	60	13/11/10	11/01/11	03/03/11	01/05/11	110d
E&M1016	60	16/12/10	13/02/11	03/03/11	01/05/11	77d
E&M1017	60	16/12/10	13/02/11	03/03/11	01/05/11	77d

Installation, T&C						
E&M1101	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1102	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1103	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1104	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1105	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1106	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1107	55	02/05/11	25/06/11	02/05/11	25/06/11	0
E&M1110	46	26/06/11	10/08/11	27/08/11	11/10/11	62d

Submission of Pumps
Submission of Gen-Set
Submission of DeO System
Submission of LV SB & MCC
Submission of Instrumentation
Submission of FS System
Submission of BS System
Delivery of Pumps
Delivery of Gen-Set
Delivery of DeO System
Delivery of LV SB & MCC
Delivery of Instrumentation
Delivery of FS Equipment
Delivery of BS Equipment
Install Pumps
Install Gen Set
Install DeO System
Install LV SB & MCC
Install Instrumentation
Install FS Equipment
Install BS Equipment
Install Valves, Pipes & Fittings

Start date	05/05/10	Legend:	<ul style="list-style-type: none"> Green bar: Early bar Blue bar: Progress bar Red bar: Critical bar Black bar: Summary bar Blue triangle: Progress point Red triangle: Critical point Black triangle: Summary point Orange diamond: Start milestone point Black diamond: Finish milestone point 	<p align="center">Leader Civil Engineering Corp. Ltd. Contract No. DC/2009/13 Construction of Sewage Treatment Works at YSW & SKW Works Programme (Rev. 1)</p>					
Finish date	14/02/14	Date	17/05/10					Revision	Revision 0
Data date	17/05/10	Date	31/07/10	Revision	Revision 1	Checked	SiL	Approved	VC
Run date	11/08/10								
Page number	2A								
c Primavera Systems, Inc.									

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	2010	2011	2012	2013	2014	2015	2016	2017	2018
E&M3010	150	02/10/10	28/02/11	21/08/11	17/01/12	323d	█	█							
E&M3030	180	02/04/11	28/09/11	18/04/11	14/10/11	16d	█	█							
E&M3060	136	02/04/11	15/08/11	02/04/11	15/08/11	0	█	█							
E&M3070	136	02/04/11	15/08/11	02/04/11	15/08/11	0	█	█							
E&M3080	180	02/04/11	28/09/11	03/05/11	29/10/11	31d	█	█							
E&M3090	210	02/04/11	28/10/11	18/07/11	12/02/12	107d	█	█							
E&M3100	180	02/04/11	28/09/11	17/06/11	13/12/11	76d	█	█							
E&M3110	180	02/04/11	28/09/11	17/06/11	13/12/11	76d	█	█							
E&M3130	180	02/04/11	28/09/11	31/08/11	26/02/12	151d	█	█							
E&M3140	180	02/04/11	28/09/11	09/05/11	04/11/11	37d	█	█							
E&M3150	180	02/04/11	28/09/11	11/07/11	11/07/11	100d	█	█							
E&M3160	180	02/04/11	28/09/11	30/07/11	25/01/12	119d	█	█							
Construction of Grid A-G															
SKW1261	164	14/02/11	27/07/11	14/02/11	27/07/11	0	█	█							
SKW1271	25	28/07/11	21/08/11	28/07/11	21/08/11	0	█	█							
SKW1281	25	22/08/11	15/09/11	22/08/11	15/09/11	0	█	█							
SKW1291	25	16/09/11	10/10/11	16/09/11	10/10/11	0	█	█							
SKW1301	25	11/10/11	04/11/11	11/10/11	04/11/11	0	█	█							
SKW1411	85	11/10/11	03/01/12	11/10/11	03/01/12	0	█	█							
Construction of Grid G-N															
SKW1311	36	14/02/11	21/03/11	14/02/11	21/03/11	0	█	█							
SKW1321	35	22/03/11	25/04/11	22/03/11	25/04/11	0	█	█							
SKW1331	35	26/04/11	30/05/11	26/04/11	30/05/11	0	█	█							
SKW1341	35	31/05/11	04/07/11	31/05/11	04/07/11	0	█	█							
SKW1351	18	05/07/11	22/07/11	05/07/11	22/07/11	0	█	█							
SKW1361	24	23/07/11	15/08/11	23/07/11	15/08/11	0	█	█							
Construction of Grid N-T															
SKW1371	80	28/07/11	15/10/11	28/07/11	15/10/11	0	█	█							
SKW1381	30	16/10/11	14/11/11	16/10/11	14/11/11	0	█	█							
SKW1391	30	15/11/11	14/12/11	15/11/11	14/12/11	0	█	█							
SKW1401	30	15/12/11	13/01/12	15/12/11	13/01/12	0	█	█							
SKW1421	30	14/01/12	12/02/12	14/01/12	12/02/12	0	█	█							
SKW STP - E&M Works															
E&M3170	100	16/08/11	23/11/11	18/01/12	26/04/12	155d	█	█							
E&M3190	60	15/10/11	13/12/11	15/10/11	13/12/11	0	█	█							
E&M3210	60	16/08/11	14/10/11	16/08/11	14/10/11	0	█	█							
E&M3220	75	16/08/11	29/10/11	16/08/11	29/10/11	0	█	█							
E&M3230	45	30/10/11	13/12/11	30/10/11	13/12/11	0	█	█							
E&M3240	74	13/02/12	26/04/12	13/02/12	26/04/12	0	█	█							
E&M3250	75	14/12/11	26/02/12	14/12/11	26/02/12	0	█	█							
E&M3260	135	14/12/11	26/04/12	14/12/11	26/04/12	0	█	█							
E&M3261	174	05/11/11	26/04/12	05/11/11	26/04/12	0	█	█							
E&M3270	60	27/02/12	26/04/12	27/02/12	26/04/12	0	█	█							
E&M3291	180	29/12/11	25/06/12	07/01/12	04/07/12	9d	█	█							
E&M3300	161	29/12/11	06/06/12	26/01/12	04/07/12	28d	█	█							
E&M3310	90	27/02/12	26/05/12	11/05/12	08/08/12	74d	█	█							
E&M3311	47	27/04/12	12/06/12	27/04/12	12/06/12	0	█	█							
E&M3320	47	27/04/12	12/06/12	27/04/12	12/06/12	0	█	█							
E&M3321	21	13/06/12	03/07/12	13/06/12	03/07/12	0	█	█							
E&M3331	1	04/07/12	04/07/12	04/07/12	04/07/12	0	█	█							
E&M3359	35	05/07/12	08/08/12	05/07/12	08/08/12	0	█	█							
E&M3360	505	09/08/12	26/12/13	09/08/12	26/12/13	0	█	█							
E&M3370	50	27/12/13	14/02/14	27/12/13	14/02/14	0	█	█							
Rising Main															
SKW1481	120	17/05/10	13/09/10	17/05/10	13/09/10	0	█	█							
SKW1501	300	14/09/10	10/07/11	14/09/10	10/07/11	0	█	█							
SKW1521	230	11/07/11	25/02/12	11/07/11	25/02/12	0	█	█							
SKW1541	180	26/02/12	23/08/12	26/02/12	23/08/12	0	█	█							
SKW1551	180	24/08/12	19/02/13	24/08/12	19/02/13	0	█	█							
SKW1561	180	20/02/13	18/08/13	20/02/13	18/08/13	0	█	█							
SKW1571	180	19/08/13	14/02/14	19/08/13	14/02/14	0	█	█							
Section W8 - Landscape Softworks in All Portions															
SKW1591	21	17/05/10	06/06/10	26/11/13	16/12/13	1289d	█	█							
SKW1611	822	17/05/10	15/08/12	17/05/10	15/08/12	0	█	█							
SKW1621	60	07/06/10	05/08/10	17/12/13	14/02/14	1289d	█	█							
Section W9 - Establishment Works in All Portions															
SKW1631	365	16/08/12	15/08/13	16/08/12	15/08/13	0	█	█							

Start date	05/05/10	█ Early bar
Finish date	14/02/14	█ Progress bar
Data date	17/05/10	█ Critical bar
Run date	11/08/10	█ Summary bar
Page number	4A	▲ Progress point
		▼ Critical point
		◆ Summary point
		◇ Start milestone point
		◇ Finish milestone point

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

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

ID	Task Name	Duration	Start	Finish	2011					
					Sep	Oct	Nov	Dec	Jan	Feb
1	Portion G - Proposed Retaining Wall	28 days	Fri 10/9/10	Wed 13/10/10						
2	Bay 1	7 days	Fri 10/9/10	Fri 17/9/10						
3	Drilling holes & install dowel bars	1 day	Fri 10/9/10	Fri 10/9/10						
4	Erect formwork & concreting	5 days	Mon 13/9/10	Fri 17/9/10						
5	Bay 3	11 days	Sat 11/9/10	Fri 24/9/10						
6	Drilling holes & install dowel bars	1 day	Sat 11/9/10	Sat 11/9/10						
7	Erect formwork & concreting	5 days	Sat 18/9/10	Fri 24/9/10						
8	Bay 5	15 days	Mon 13/9/10	Thu 30/9/10						
9	Drilling holes & install dowel bars	1 day	Mon 13/9/10	Mon 13/9/10						
10	Erect formwork & concreting	5 days	Sat 25/9/10	Thu 30/9/10						
11	Bay 0	13 days	Tue 14/9/10	Wed 29/9/10						
12	Drilling holes & install dowel bars	1 day	Tue 14/9/10	Tue 14/9/10						
13	Erect formwork & concreting	4 days	Sat 25/9/10	Wed 29/9/10						
14	Bay 2	16 days	Wed 15/9/10	Mon 4/10/10						
15	Drilling holes & install dowel bars	1 day	Wed 15/9/10	Wed 15/9/10						
16	Erect formwork & concreting	4 days	Thu 30/9/10	Mon 4/10/10						
17	Bay 4	19 days	Thu 16/9/10	Fri 8/10/10						
18	Drilling holes & install dowel bars	1 day	Thu 16/9/10	Thu 16/9/10						
19	Erect formwork & concreting	4 days	Tue 5/10/10	Fri 8/10/10						
20	Bay 6	22 days	Fri 17/9/10	Wed 13/10/10						
21	Drilling holes & install dowel bars	1 day	Fri 17/9/10	Fri 17/9/10						
22	Erect formwork & concreting	4 days	Sat 9/10/10	Wed 13/10/10						
23										
24	Portion I - Proposed Rock Cut Slope	169.78 days	Mon 13/9/10	Thu 7/4/11						
25	Erection of temp. rock fall Fence	7 days	Mon 13/9/10	Mon 20/9/10						
26	Forming the haul road & platform at +13.0mPD	5 days	Tue 21/9/10	Mon 27/9/10						
27	Forming the haul road & platform at +21.0mPD	5 days	Tue 28/9/10	Sat 2/10/10						
28	Forming the haul road & platform at +29.0mPD	5 days	Mon 4/10/10	Fri 8/10/10						
29	Forming the haul road & platform at +37.0mPD	5 days	Sat 9/10/10	Thu 14/10/10						
30	Rock cutting & excavate the slope profile btw +49mPD to +42.5mPD(berm 1)	30 days	Fri 15/10/10	Fri 19/11/10						
31	Construct the associated 225 & 600 U-channel at above berm	14 days	Fri 12/11/10	Mon 29/11/10						

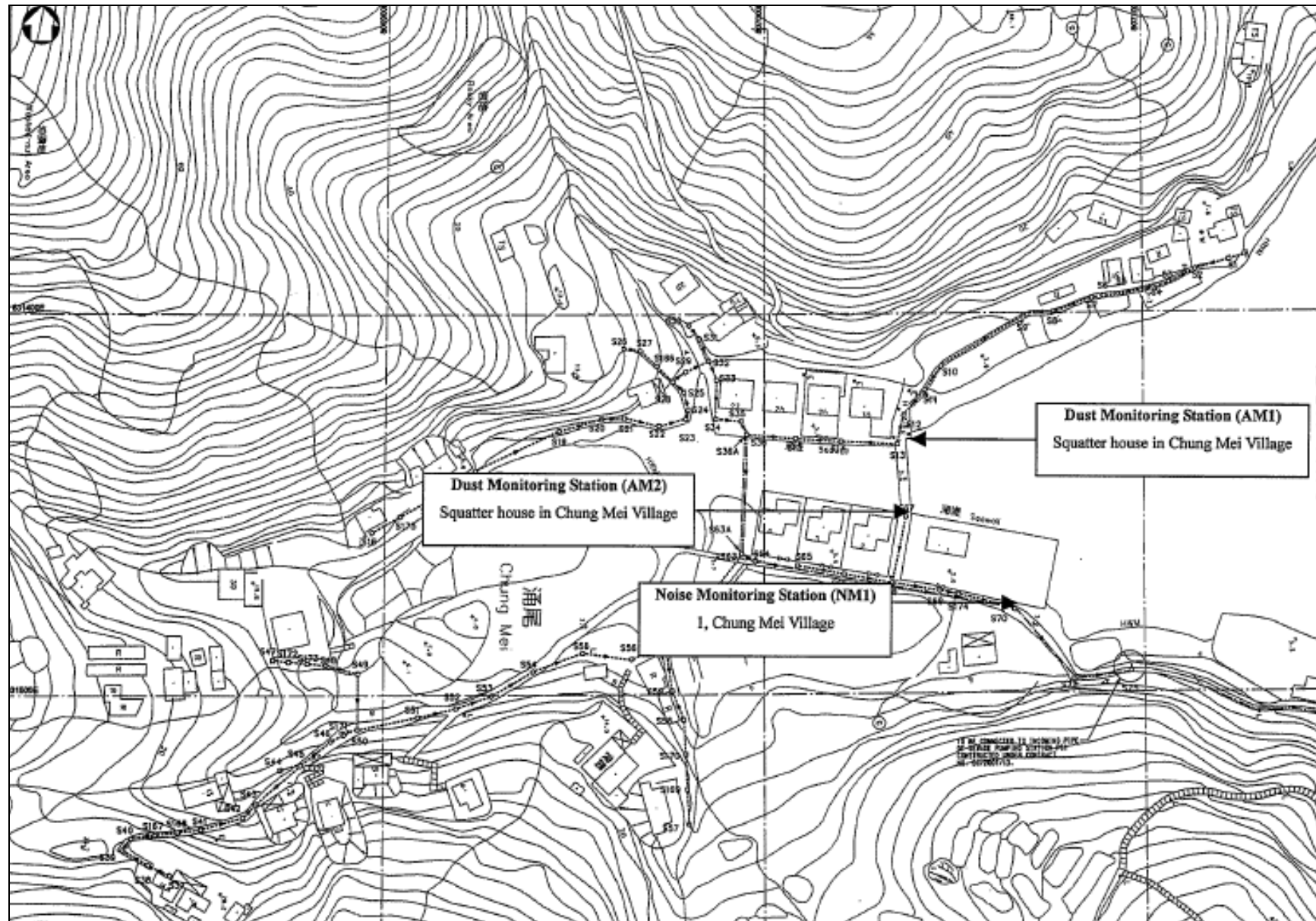
Project: Rolling Programme for Mau V Date: Wed 22/9/10	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

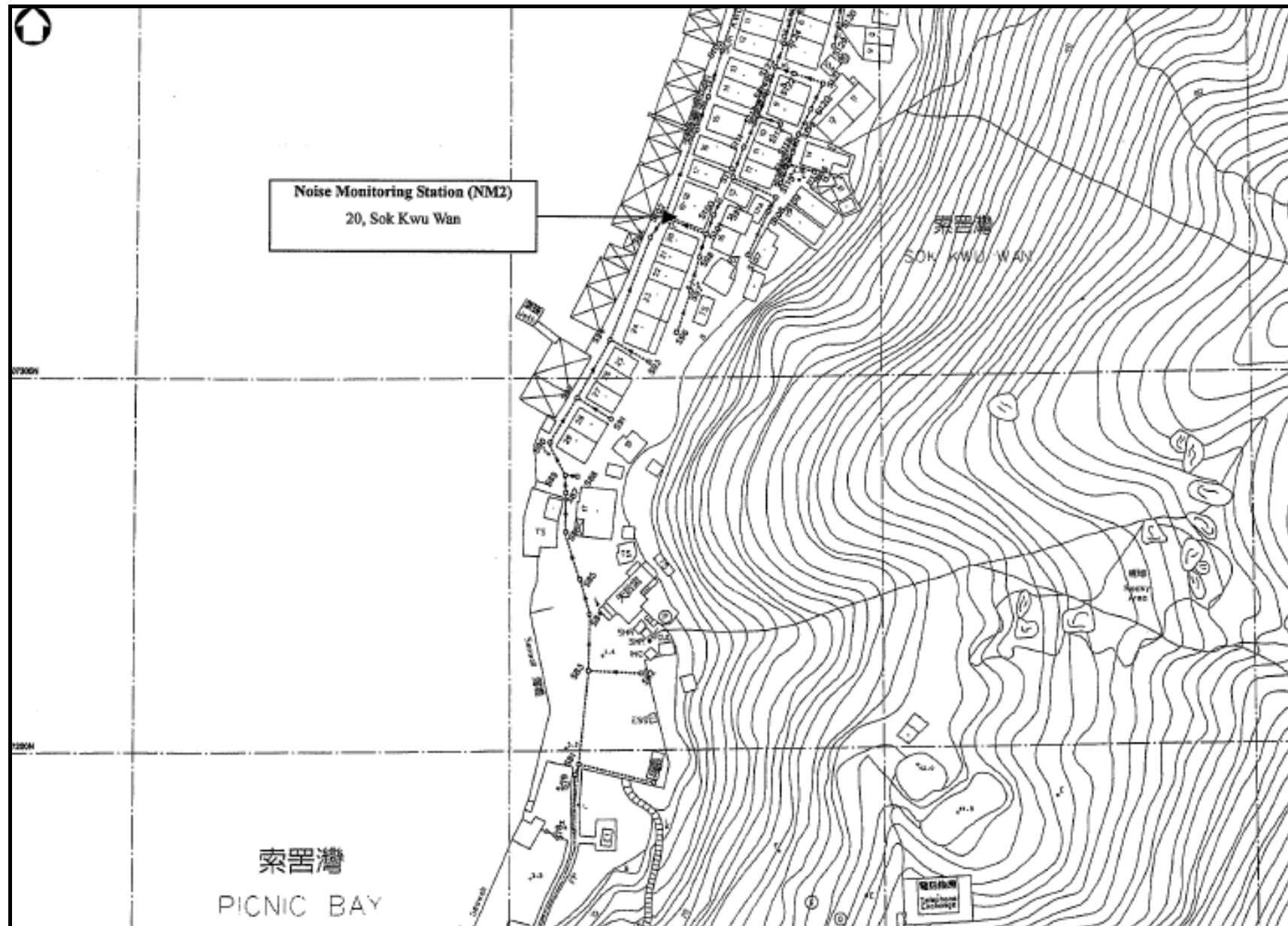
ID	Task Name	Duration	Start	Finish	2011					
					Sep	Oct	Nov	Dec	Jan	Feb
32	Rock cutting & excavate the slope profile btw +42.5mPD to +35.0mPD(berm 2)	21 days	Sat 20/11/10	Tue 14/12/10						
33	Construct the associated 225U-channel & 900 S-channel at above berm	14 days	Tue 7/12/10	Thu 23/12/10						
34	Rock cutting & excavate the slope profile btw +35.0mPD to +27.5mPD(berm 3)	21 days	Wed 15/12/10	Tue 11/1/11						
35	Construct the associated 225U-channel & 900 S-channel at above berm	14 days	Tue 4/1/11	Thu 20/1/11						
36	Rock cutting & excavate the slope profile btw+27.5mPD to +20.0mPD(berm 4)	21 days	Wed 12/1/11	Tue 8/2/11						
37	Construct the associated 225U-channel & 900 S-channel at above berm	14 days	Fri 28/1/11	Thu 17/2/11						
38	Rock cutting & excavate the slope profile btw +20.0mPD to +12.5mPD(berm 5)	21 days	Wed 9/2/11	Fri 4/3/11						
39	Construct the associated 225U-channel & 900 S-channel at above berm	14 days	Fri 25/2/11	Mon 14/3/11						
40	Rock cutting & excavate the slope profile btw +12.5mPD to +4.8mPD(ground)	21 days	Sat 5/3/11	Tue 29/3/11						
41	Construct the associated 225U-channel at above berm	14 days	Tue 22/3/11	Thu 7/4/11						
42										
43	Portion E - Pumping Station 2	149 days	Mon 13/9/10	Mon 14/3/11						
44	Breaking & removal of rock blouder	5 days	Mon 13/9/10	Fri 17/9/10						
45	Forming the formation level	10 days	Sat 18/9/10	Thu 30/9/10						
46	Trimming the proposed cut slope	7 days	Wed 22/9/10	Thu 30/9/10						
47	Mobilization of Plant for ELS Works	2 days	Fri 15/10/10	Mon 18/10/10						
48	Erection of ELS Works & Excavation to formation level	30 days	Tue 19/10/10	Mon 22/11/10						
49	Commence the structure works	90 days	Tue 23/11/10	Mon 14/3/11						
50										
51	Portion D - Pumping Station 1	136 days	Mon 13/9/10	Sat 26/2/11						
52	Trimming the formation at +2.5mPD	3 days	Mon 13/9/10	Wed 15/9/10						
53	Transport & delivery the ELS materials	2 days	Mon 13/9/10	Tue 14/9/10						
54	Erection of ELS works to +2.0mPD	14 days	Wed 15/9/10	Fri 1/10/10						
55	Erection of ELS Works & Excavation to formation level	30 days	Sat 2/10/10	Sat 6/11/10						
56	Commence the structure works	90 days	Mon 8/11/10	Sat 26/2/11						

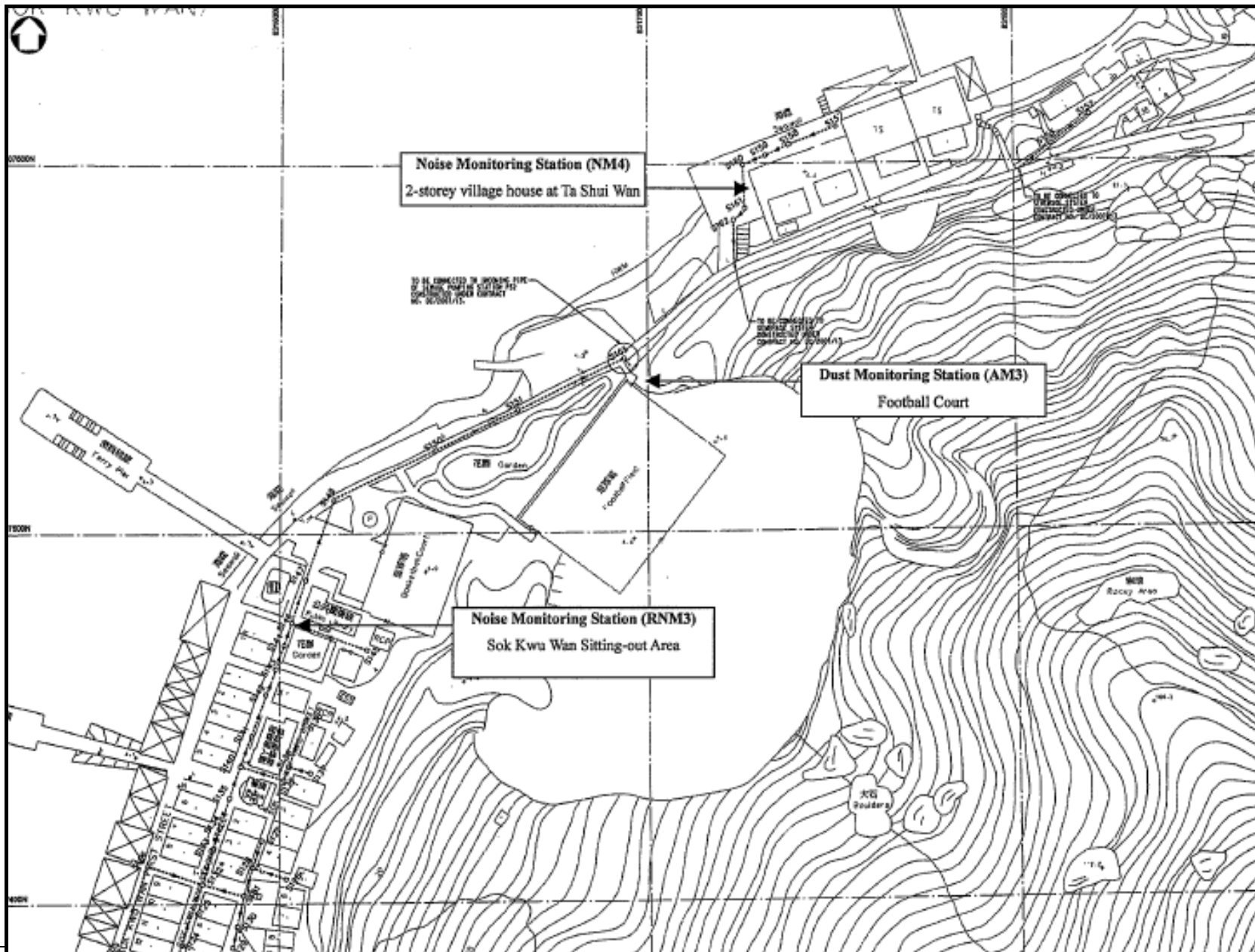
Project: Rolling Programme for Mau V Date: Wed 22/9/10	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

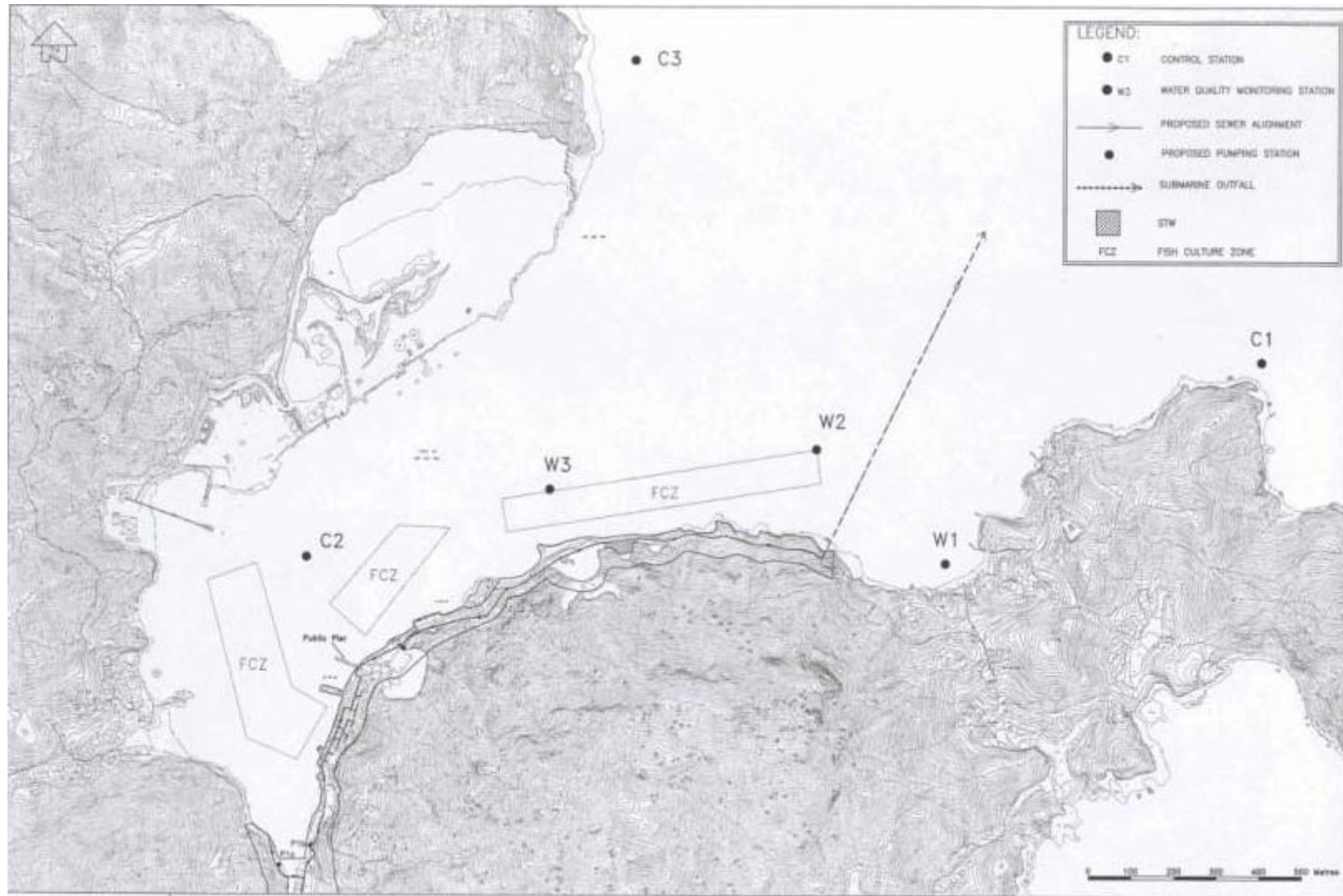
Annex D

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







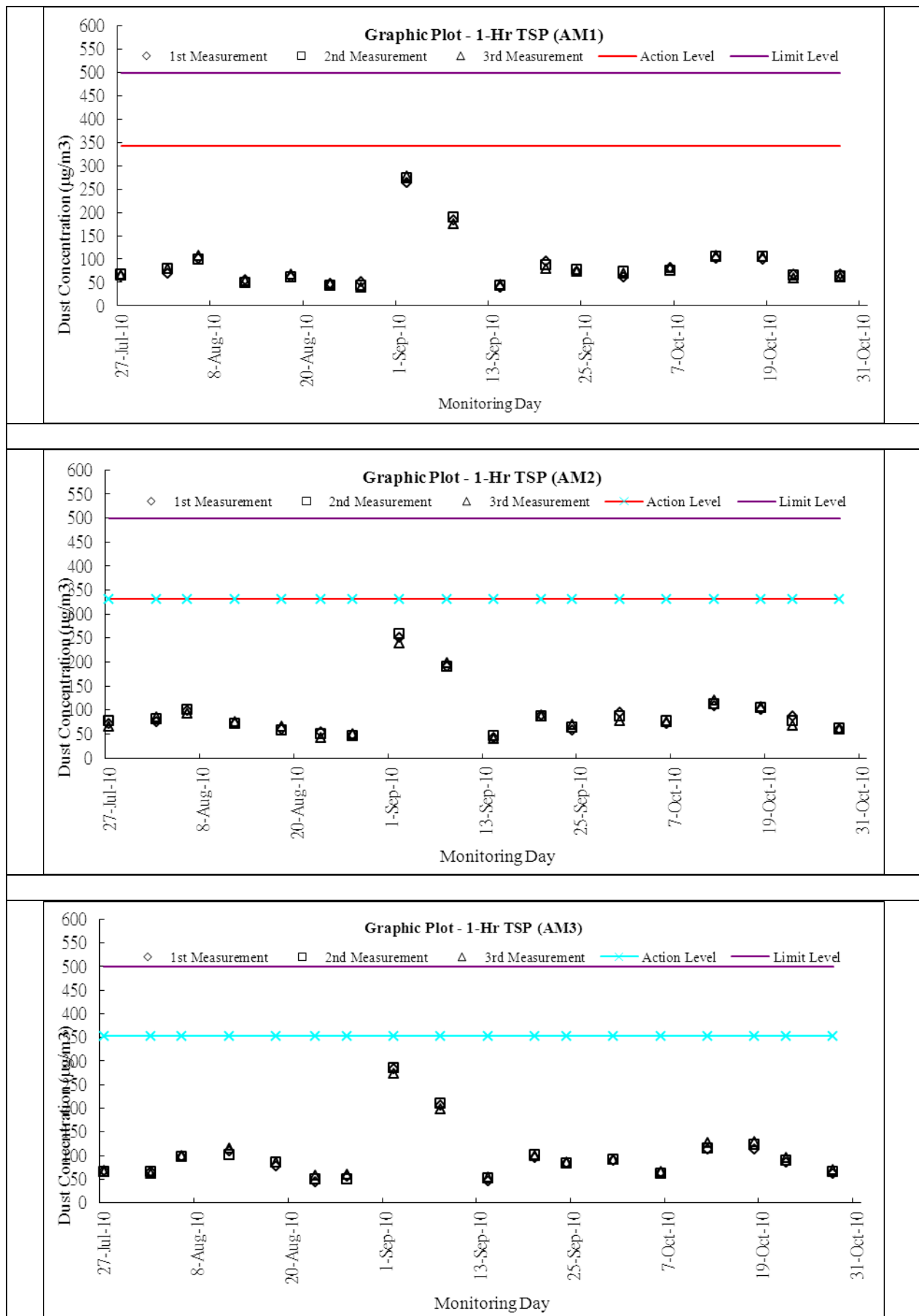


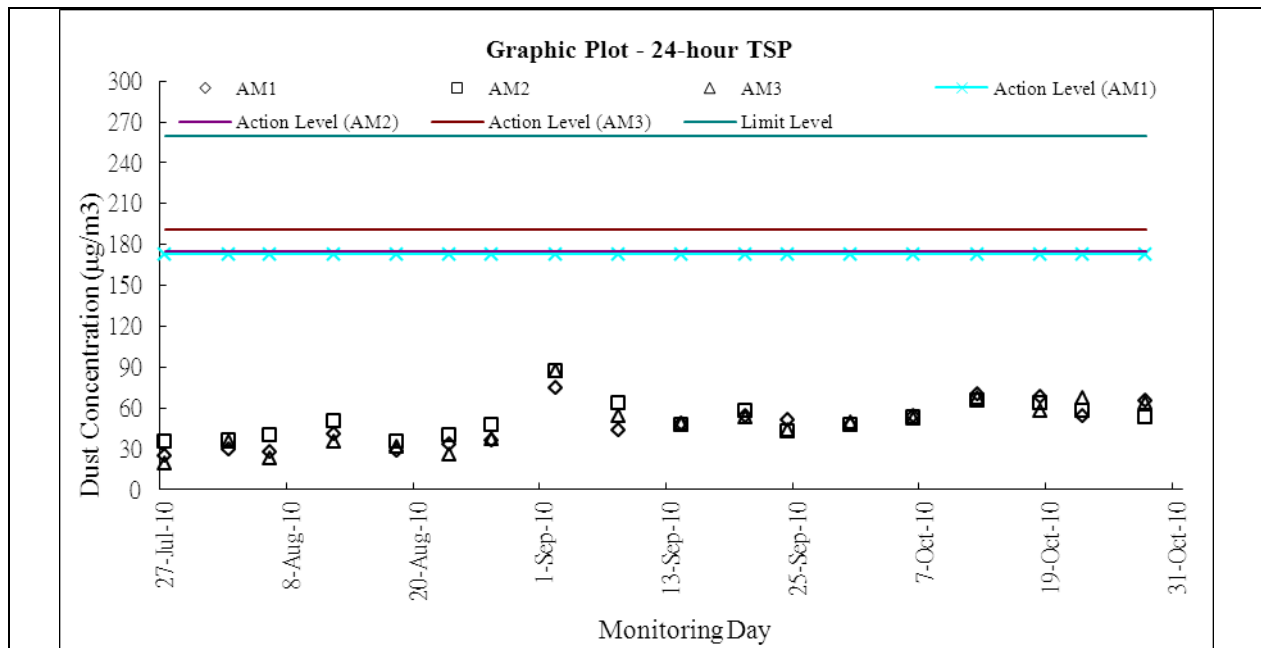
Annex E

Graphical Plots of Impact Monitoring

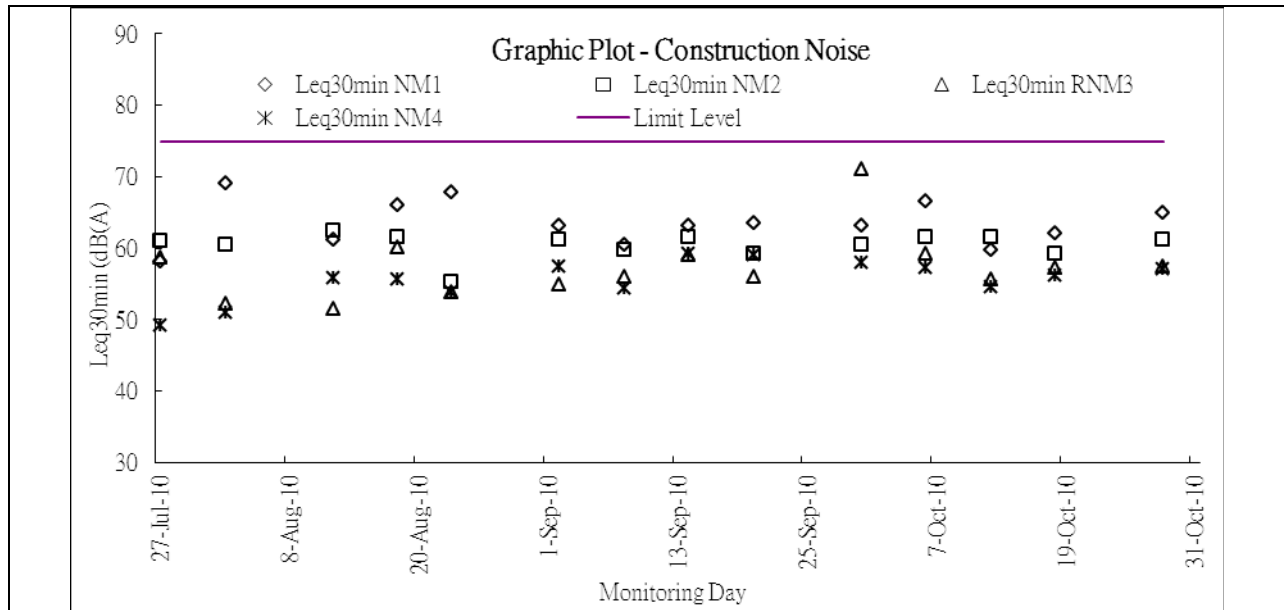
- 1. Air**
- 2. Noise**
- 3. Marine Water**

Air Quality





Construction Noise



Annex F

Meteorological Data of Reporting Month

Meteorological Data – August 2010

Date		Weather
27-Jul-10	Tue	Cloudy with showers. Moderate to fresh southwesterly winds.
28-Jul-10	Wed	Moderate southwesterly winds, occasionally fresh over offshore waters.
29-Jul-10	Thu	Mainly cloudy with a few showers.
30-Jul-10	Fri	Sunny periods and a few showers.
31-Jul-10	Sat	A few showers. Hot with sunny periods in the afternoon.
1-Aug-10	Sun	Fine and very hot. Moderate westerly winds.
2-Aug-10	Mon	Showers, heavy with squally thunderstorms tonight.
3-Aug-10	Tue	Occasionally fresh over offshore waters.
4-Aug-10	Wed	Sunny periods and a few showers.
5-Aug-10	Thu	Moderate east to northeasterly winds.
6-Aug-10	Fri	Sunny periods and a few showers.
7-Aug-10	Sat	Isolated squally thunderstorms later.
8-Aug-10	Sun	Very hot with sunny periods in the afternoon.
9-Aug-10	Mon	Sunny periods and a few showers.
10-Aug-10	Tue	It will be hot. Light to moderate southeasterly winds.
11-Aug-10	Wed	Showers and a few isolated squally thunderstorms.
12-Aug-10	Thu	Mainly fine and very hot during the day.
13-Aug-10	Fri	Mainly fine apart from isolated showers.
14-Aug-10	Sat	Mainly cloudy with showers and a few squally thunderstorms.
15-Aug-10	Sun	Light to moderate southwesterly winds.
16-Aug-10	Mon	Mainly cloudy with a few showers and isolated squally thunderstorms.
17-Aug-10	Tue	Mainly cloudy with a few showers.
18-Aug-10	Wed	Light to moderate easterly winds.
19-Aug-10	Thu	A few squally thunderstorms at first.
20-Aug-10	Fri	Mainly cloudy with showers and squally thunderstorms.
21-Aug-10	Sat	Moderate to fresh east to southeasterly winds
22-Aug-10	Sun	Mainly fine and hot apart from isolated showers.
23-Aug-10	Mon	Mainly fine and hot apart from isolated showers.
24-Aug-10	Tue	Very hot in the afternoon.
25-Aug-10	Wed	A few squally showers later.
26-Aug-10	Thu	Very hot with sunny periods in the afternoon.
27-Aug-10	Fri	Light winds.
28-Aug-10	Sat	A few showers and isolated squally thunderstorms later.
29-Aug-10	Sun	Moderate northerly winds.
30-Aug-10	Mon	There will also be swells over the sea.
31-Aug-10	Tue	Hazy with sunny periods.

Meteorological Data – September 2010

Date		Weather
1-Sep-10	Wed	Very hot and hazy. Isolated showers later.
2-Sep-10	Thu	A few showers.
3-Sep-10	Fri	Light to moderate southwesterly winds.
4-Sep-10	Sat	Sunny periods and a few showers.
5-Sep-10	Sun	Hot with sunny periods and haze.
6-Sep-10	Mon	A few showers and squally thunderstorms later.
7-Sep-10	Tue	Light to moderate southwesterly winds.
8-Sep-10	Wed	A few squally showers and thunderstorms later. I
9-Sep-10	Thu	Light to moderate northwesterly winds.
10-Sep-10	Fri	Mainly cloudy with a few showers and squally thunderstorms.
11-Sep-10	Sat	Cloudy with rain and a few squally thunderstorms.
12-Sep-10	Sun	isolated showers at first.
13-Sep-10	Mon	Light to moderate easterly winds.
14-Sep-10	Tue	Mainly cloudy with showers and a few squally thunderstorms.
15-Sep-10	Wed	Sunny periods. Isolated showers at first.
16-Sep-10	Thu	Fine and hot. Light winds.
17-Sep-10	Fri	Fine and hot. Light winds.
18-Sep-10	Sat	Hot with sunny periods and haze.
19-Sep-10	Sun	Light to moderate southwesterly winds.
20-Sep-10	Mon	Overcast with rain, heavy at times and a few squally thunderstorms.
21-Sep-10	Tue	Moderate to fresh southerly winds
22-Sep-10	Wed	Cloudy with rain.
23-Sep-10	Thu	Mainly fine apart from isolated showers tomorrow.
24-Sep-10	Fri	Moderate east to northeasterly winds.
25-Sep-10	Sat	Mainly fine.
26-Sep-10	Sun	Light to moderate easterly winds.
27-Sep-10	Mon	Light to moderate easterly winds, freshening tomorrow.
28-Sep-10	Tue	Sunny periods.
29-Sep-10	Wed	Moderate to fresh east to northeasterly winds.
30-Sep-10	Thu	Sunny periods this afternoon. Cloudy tonight.

Meteorological Data – October 2010

Date		Weather
1-Oct-10	Fri	HOLIDAY
2-Oct-10	Sat	Moderate to fresh northeasterly winds.
3-Oct-10	Sun	Mainly cloudy. It will be dry in the afternoon.
4-Oct-10	Mon	There will be swells over the sea.
5-Oct-10	Tue	Cloudy with a few rain patches
6-Oct-10	Wed	Moderate easterly winds
7-Oct-10	Thu	Moderate east to northeasterly winds
8-Oct-10	Fri	Cloudy with a few light rain patches.
9-Oct-10	Sat	he maximum temperature will be around 28 degrees.
10-Oct-10	Sun	Moderate to fresh easterly winds
11-Oct-10	Mon	Mainly cloudy with a few rain patches.
12-Oct-10	Tue	Mainly fine. Moderate east to northeasterly winds.
13-Oct-10	Wed	Mainly fine, becoming cloudy tomorrow night.
14-Oct-10	Thu	Fine and dry with some haze.
15-Oct-10	Fri	Moderate east to northeasterly winds.
16-Oct-10	Sat	Fine and dry.
17-Oct-10	Sun	Moderate north to northeasterly winds
18-Oct-10	Mon	Becoming cloudy. It will be dry.
19-Oct-10	Tue	Fresh north to northeasterly winds
20-Oct-10	Wed	The Standby Signal, No. 1 is in force.
21-Oct-10	Thu	The Strong Wind Signal, No. 3 is in force.
22-Oct-10	Fri	Cloudy and cooler with a few squally showers.
23-Oct-10	Sat	Dry with sunny periods.
24-Oct-10	Sun	Mainly cloudy. A few light rain patches overnight.
25-Oct-10	Mon	Moderate northerly winds.
26-Oct-10	Tue	Mainly cloudy and appreciably cooler.
27-Oct-10	Wed	Mainly fine and dry.
28-Oct-10	Thu	Fine and dry.
29-Oct-10	Fri	Fine and dry. Fresh north to northeasterly winds.
30-Oct-10	Sat	Moderate east to northeasterly winds
31-Oct-10	Sun	It will be fine. Dry during the day.

Annex G

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table for October 2010

Month	Actual Quantities of Inert C&D Materials Generated Monthly												Actual Quantities of C&D Wastes Generated Monthly									
	Total Quantity Generated (a) = (c)+(d)+(e)		Hard Rock and Large Broken Concrete (b)		Reused in the Contract (c)		Reused in other Projects (d)		Disposed as Public Fill (e)		Imported Fill (f)		Metals		Paper/ cardboard packaging		Plastics		Chemical Waste		Others, e.g. rubbish	
	(in '000m ³)		(in '000m ³)		(in '000m ³)		(in '000m ³)		(in '000m ³)		(in '000m ³)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in tonne)	
	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW
Jan	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	0.000	0.000
Feb	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	0.000	0.000
Mar	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	0.000	0.000
Apr	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	0.000	0.000
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	0.000	0.000
Jun	0.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.600
Sub-total	0.0539	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0539	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	3.60
Jul	0.139	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.320
Aug	0.345	0.000	0.044	0.000	0.000	0.000	0.000	0.000	0.345	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.930
Sep	1.917	0.029	0.000	0.002	0.000	0.000	0.000	0.000	1.917	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.580
Oct	0.829	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.829	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nov																						
Dec																						
Total	3.2842	0.0298	0.0637	0.0024	0.0000	0.0000	0.0000	0.0000	3.2842	0.0298	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	16.43
	3.314		0.066		0.000		0.000		3.314		0.000		0.000		0.000		0.000		0.000		16.43	

Remark: Assume 1.0 m³ village vehicle dump load = 1.6 tonnes C&D materials

Import fill materials, Assume type A & B, 1m³ = 1.45 tonne. Stockpile at YSW = 1440.2ton, SKW = 410.2ton. Delivery on Jul. & Dec. 08 and May 09

Excavated material from trench temporary stock at temporary platform at Chung Mei = approx. 59m³

YSW: Yung Shue Wan

SKW: Sok Kwu Wan