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
MONTHLY ENVIRONMENTAL MONITORING AND AUDIT
(EM&A) REPORT (NO.9) – APRIL 2011

PREPARED FOR
LEADER CIVIL ENGINEERING CORPORATION LIMITED

Quality Index

Date	Reference No.	Prepared By	Approved By
23 May 2011	TCS00512/09/600/R0221v2	Nicola Hon Environmental Consultant	T.W. Tam Environmental Team Leader

Version	Date	Description
1	13 May 2011	First Submission
2	23 May 2011	Amended against IEC's comments on 19 May 2011

Scott Wilson CDM Joint Venture

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

Your reference:

Our reference: 05117/6/16/375887

Date: 24 May 2011

BY FAX ONLY

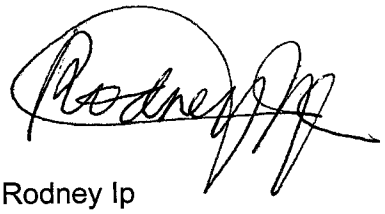
Attention: Mr. C K Au

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
Monthly Environmental Monitoring and Audit (EM&A) Report No. 9 (Apr 2011)

We refer to the Monthly EM&A Monitoring Report No. 9 for April 2011 received under cover of the email from the Environmental Team, Action-United Environmental Services and Consulting (AUES), dated 24 May 2011. We do not have further comment and have verified the captioned report.

Yours faithfully
SCOTT WILSON CDM JOINT VENTURE



Rodney Ip

ICWR/STKW/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. This is the **9th** monthly EM&A Report for Sok Kwu Wan (hereinafter 'this Report') for the designated works under Environmental Permit No.EP-281/2007/A, covering a period from **1 to 30 April 2011** (hereinafter 'the Reporting Period') during the construction of relevant land works commencement on 27 July 2010.

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

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

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	45
	24-hour TSP	18
Construction Noise	Leq (30min) Daytime	20
Water Quality	Marine Water Sampling	0
Inspection / Audit	ET Regular Environmental Site Inspection	4

ES.03. According to the EM&A Manual of Sok Kwu Wan, water quality monitoring should be carried out during the marine work commencement. Since the marine work of outfall construction has not yet commenced, no impact water quality monitoring was undertaken in this reporting month.

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.04. No exceedance of air quality and construction noise monitoring were recorded in this Reporting Month. No Notification of Exceedance (NOE) was, therefore, issued. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	--	--
	24-hour TSP	0	0	0	--	--
Construction Noise	Leq_{30min} Daytime	0	0	0	--	--
Water Quality	DO	NA	NA	NA	NA	NA
	Turbidity	NA	NA	NA	NA	NA
	SS	NA	NA	NA	NA	NA

Note: NOE – Notification of Exceedance

ENVIRONMENTAL COMPLAINT

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

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
27 July 2010 – 31 March 2011	0	0	NA
1 – 30 April 2011	0	0	NA

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

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

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
27 July 2010 – 31 March 2011	0	0	NA
1 – 30 April 2011	0	0	NA

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
27 July 2010 – 31 March 2011	0	0	NA
1 – 30 April 2011	0	0	NA

REPORTING CHANGE

ES.07. There is no reporting change in this reporting month.

SITE INSPECTION BY EXTERNAL PARTIES

ES.08. No site inspection was undertaken by external parties i.e. EPD or AFCD within the Reporting Period.

FUTURE KEY ISSUES

ES.09. As wet season is approaching, 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.10. Moreover, special attention should be also paid on the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. Mitigation measures implemented for control the surface runoff including wheel wash facilities, covering of the loose soil surface or stockpile with tarpaulin sheet, etc., should fully implement.

ES.11. Construction of outfall marine works cannot be carried out until the baseline water quality monitoring completion and the related Action and Limit (A/L) levels have established.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

1 INTRODUCTION

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 stead 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 1,430m^3/day and 2,850m^3/day respectively to provide secondary treatment, construction of 2 pumping stations at Sok Kwu Wan and 1 pumping station at Yung Shue Wan, construction of submarine outfall from the coastline and lying of underground sewerage pipeline. The site layout plan for the captioned work under the Project is showing in ***Appendix A***

1.03 According to the Particular Specification (PS) and ***Appendix 25*** of the Project, Leader should establish an Environmental Team to implement the environmental monitoring and auditing works to fulfill the requirements as stipulated in the Environmental Monitoring and Audit (EM&A) Manual. This EM&A Manual is referred to the Appendix B of the Review Report on EIA Study – Sok Kwu Wan (Final) in January 2007 (Agreement No. CE 20/2005(DS))."

1.04 Action-United Environmental Services and Consulting (AUES) has been commissioned by Leader as the ET to implement the relevant EM&A program. Organization chart of the Environmental Team for the Project is shown in ***Appendix B***. For ease of reporting, the proposed EM&A programme for baseline and impact monitoring is spilt to following two stand-alone parts:

(a) Proposed EM&A Programme for Baseline and Impact Monitoring – Sok Kwu Wan (under EP No. 281/2007/A varied on 23 September 2009)

(b) Proposed EM&A Programme for Baseline and Impact Monitoring – Yung Shue Wan (under EP No. 282/2007)

1.05 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 **9th** monthly EM&A report – Sok Kwu Wan Portion Area presenting the monitoring results and inspection findings for the reporting period from **1 to 30 April 2011**.

REPORT STRUCTURE

1.09 The Monthly Environmental Monitoring and Audit (EM&A) Report – Sok Kwu Wan is structured into the following sections:-

SECTION 1	**INTRODUCTION**
SECTION 2	**PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS**
SECTION 3	**SUMMARY OF MONITORING REQUIREMENTS**
SECTION 4	**AIR QUALITY MONITORING RESULTS**
SECTION 5	**CONSTRUCTION NOISE MONITORING RESULTS**
SECTION 6	**WATER QUALITY MONITORING RESULTS**
SECTION 7	**WASTE MANAGEMENT**
SECTION 8	**SITE INSPECTIONS**
SECTION 9	**ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE**
SECTION 10	**IMPLEMENTATION STATUES OF MITIGATION MEASURES**
SECTION 11	**IMPACT FORECAST**
SECTION 12	**CONCLUSIONS AND RECOMMENDATION**

2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

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***.

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 Reporting Month are listed below:-

- Footpath Diversion adjacent to SKW Sewage Treatment Works
- Construction for pumping station no.1 & 2
- Construction of the rising main
- Rock slope cutting works

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	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-RS044-11 Valid from: 7 Feb 2011 Until: 6 Aug 2011

2.04 The "Baseline/Impact Monitoring Methodology (TCS00512/10/600/R0010Ver.4)" was set out in accordance with the Sok Kwu Wan Environmental Monitoring and Audit Manual. It was approved by the ER and agreed with the Independent Environmental Checker (IEC) and submitted to the EPD for endorsement.

2.05 Baseline Monitoring Report Volume 1 (TCS00512/10/600/R0020Ver.3) for Sok Kwu Wan for the Project was issued by the ETL and verified by the IEC on 12 July 2010. The report was also submitted to the EPD for endorsement.

2.06 Baseline Monitoring Report Volume 2 of water quality for Sok Kwu Wan for the Project will be submitted to IEC verification and EPD endorsement upon the six months baseline marine water monitoring completion.

3 SUMMARY OF BASELINE MONITORING REQUIREMENTS

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	• 1-hour TSP Monitoring by Real-Time Portable Dust Meter; and • 24-hour TSP Monitoring by High Volume Air Sampler.
Noise	• Leq (30min) during normal working hours; and • Leq (15min) during Restricted Hours.
Marine Water Quality	***In-situ Measurements*** • Dissolved Oxygen Concentration (mg/L); • Dissolved Oxygen Saturation (%); • Turbidity (NTU); • pH unit; • Salinity (ppt); • Water depth (m); and • Temperature (ºC). ***Laboratory Analysis*** • Suspended Solids (mg/L)

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-ordnance 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-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

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.

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.

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 Reporting Month would be attached in ***Appendix E***.

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.

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.

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 ($\mu g/m^3$)		Limit Level ($\mu g/m^3$)	
	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.

3.30 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan enclosed in ***Appendix F***.

4 IMPACT MONITORING RESULTS - AIR QUALITY

4.01 As informed by the Contractor, the construction of relevant land works at Sok Kwu Wan was commenced on 27 July 2010, therefore, the impact EM&A program was started as compliance with the contract Particular Specification, Sok Kwu Wan the EM&A Manual, and the EP. The air quality monitoring results shared with Contract DC/2007/18 are presented in the following sub-sections.

Results of Air Quality Monitoring

4.02 In this reporting period, **6 and 15** monitoring event were performed for 1-hour TSP and 24-hour TSP monitoring at the designated locations AM1, AM2 and AM3. The results for 24-hour and 1-hour TSP at AM1, AM2 and AM3 are summarized in ***Tables 4-1, 4-2*** and ***4-3*** respectively. The 24-hour TSP data are shown in ***Appendix G***. Also, the graphical plots of 24-hour and 1-hour TSP are shown in ***Appendix H***.

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results – AM1

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
1-Apr-11	65	2-Apr-11	11:00	138	131	148
7-Apr-11	47	8-Apr-11	11:15	79	72	69
13-Apr-11	40	13-Apr-11	11:00	90	79	86
18-Apr-11	152	19-Apr-11	10:56	95	79	88
21-Apr-11	64	26-Apr-11	11:01	87	94	88
27-Apr-11	27					
Average (Range)	**66 (27 – 152)**	Average (Range)		**95 (69 – 148)**		

Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results – AM2

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
1-Apr-11	105	2-Apr-11	11:03	156	135	132
7-Apr-11	79	8-Apr-11	11:25	71	70	64
13-Apr-11	56	13-Apr-11	13:18	87	93	85
18-Apr-11	156	19-Apr-11	13:19	88	99	91
21-Apr-11	70	26-Apr-11	13:18	97	89	101
27-Apr-11	46					
Average (Range)	**85 (46 – 156)**	Average (Range)		**97 (64 – 156)**		

Table 4-3 Summary of 24-hour and 1-hour TSP Monitoring Results – AM3

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
1-Apr-11	87	2-Apr-11	14:30	136	136	138
7-Apr-11	117	8-Apr-11	14:00	72	66	53
13-Apr-11	100	13-Apr-11	13:25	106	98	96
18-Apr-11	72	19-Apr-11	13:25	103	96	99
21-Apr-11	157	26-Apr-11	13:39	108	97	100
27-Apr-11	41					
Average (Range)	**96 (41 – 157)**	Average (Range)		**100 (53 – 138)**		

4.03 As shown in ***Tables 4-1, 4-2*** and ***4-3***, 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.

4.04 The meteorological information during the impact monitoring days are summarized in ***Appendix I.***

5 IMPACT MONITORING RESULTS – CONSTRUCTION NOISE

5.01 The noise monitoring results extracted from Contract DC/2007/18 are presented in the following sub-sections.

Results of Construction Noise Monitoring

5.02 In this monthly report period, **5** construction noise monitoring events were undertaken at designated location NM1, NM2, RNM3 and NM4. The results for Leq_{30min} at NM1, NM2, RNM3 and NM3 are summarized in ***Tables 5-1, 5-2, 5-3*** and ***5-4*** respectively. Also, the graphical plots are shown in ***Appendix H***.

Table 5-1 Summarized of Construction Noise Monitoring Results at NM1

Date	Start Time	End time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30
2-Apr-11	13:00	13:30	52.5	53.0	55.4	52.2	48.8	55.7	53.5
8-Apr-11	11:30	12:00	60.2	56.6	56.1	66.6	48.0	45.9	60.4
13-Apr-11	11:30	12:00	60.5	58.2	55.9	53.0	66.9	55.0	61.0
19-Apr-11	14:28	14:58	49.3	51.2	49.8	54.2	52.8	49.0	51.5
26-Apr-11	11:29	11:59	57.2	50.2	48.3	51.4	52.8	56.6	53.9
Limit Level in dB(A)			-						**75**

Table 5-2 Summarized of Construction Noise Monitoring Results at NM2

Date	Start Time	End time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30
2-Apr-11	13:35	14:05	74.6	72.7	75.7	73.5	78.3	71.6	75.0
8-Apr-11	14:20	14:50	66.4	61.7	76.0	73.1	66.4	60.1	70.8
13-Apr-11	13:06	13:36	56.0	53.3	47.8	54.6	54.5	52.7	53.8
19-Apr-11	13:44	14:14	54.2	51.6	61.0	56.3	59.7	53.8	57.4
26-Apr-11	13:18	13:48	57.4	58.2	54.3	58.1	53.3	56.4	56.7
Limit Level in dB(A)			-						**75**

Table 5-3 Summarized of Construction Noise Monitoring Results at RNM3

Date	Start Time	End time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30	Corrected* Leq30
2-Apr-11	14:10	14:40	65.0	62.1	59.4	58.3	57.8	57.5	61.0	64.0
8-Apr-11	15:00	15:30	60.9	59.2	59.2	63.4	60.9	59.1	60.7	63.7
13-Apr-11	13:41	14:11	51.6	52.4	56.6	51.5	53.3	54.2	53.7	56.7
19-Apr-11	13:08	13:38	51.2	53.8	55.4	61.8	58.3	57.7	57.7	60.7
26-Apr-11	13:54	14:24	60.7	59.0	61.3	58.5	55.4	57.6	59.2	62.2
Limit Level in dB(A)			-							**75**

*** A façade correction of +3dB(A) has been added according to acoustical principles and EPD guidelines.**

Table 5-4 Summarized of Construction Noise Monitoring Results at NM4

Date	Start Time	End time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30
2-Apr-11	14:50	15:20	65.5	67.1	67.0	65.2	64.1	67.8	66.3
8-Apr-11	13:47	14:17	73.6	64.4	80.5	69.3	68.6	65.7	74.2
13-Apr-11	14:45	15:15	56.1	53.3	57.1	52.3	51.6	53.2	54.4
19-Apr-11	11:31	12:01	60.6	61.8	53.2	60.2	60.8	54.4	59.5
26-Apr-11	14:31	15:01	53.6	51.2	56.2	54.7	58.8	57.4	56.0
Limit Level in dB(A)			-						**75**

5.03 It was noted that no noise complaint (which is an Action Level exceedance) was received. In view of the results shown in ***Tables 5-1***, ***5-2***, ***5-3 and 5-4*** which were all below 75dB(A), no Action or Limit Level exceedance was triggered during this month.

6 IMPACT MONITORING RESULTS – WATER QULAITY

6.01 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 month and no results are presented accordingly in this section.

7 ECOLOGY

7.01 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.

7.02 Regular inspections were carried out on **4 and 19 April 2011** by the landscaping sub-Contractor (Melofield Nursery and Landscape Contractor Limited) after the transplantation. A copy of the inspection reports are attached in ***Appendix M***.

8 WASTE MANAGEMENT

8.01 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

Records of Waste Quantities

8.02 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.

8.03 The quantities of waste for disposal in this Reporting Period are summarized in ***Table 7-1*** and ***7-2*** and the Monthly Summary Waste Flow Table is shown in ***Appendix J***. Whenever possible, materials were reused on-site as far as practicable.

Table 7-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) ('000m^3)	0.025	Sok Kwu Wan Transfer Facility
Reused in the Contract (Inert) ('000m^3)	0.090	-
Reused in other Projects (Inert) ('000m^3)	1.159	-
Disposal as Public Fill (Inert) ('000m^3)	0	Sok Kwu Wan Transfer Facility

Table 7-2 Summary of Quantities of C&D Wastes

Type of Waste	Quantity	Disposal Location
Recycled Metal (kg)	0	-
Recycled Paper / Cardboard Packing (kg)	0	-
Recycled Plastic (kg)	0	-
Chemical Wastes (kg)	0	-
General Refuses (tonne)	5.160	Sok Kwu Wan Transfer Facility

8.04 There was no site effluent discharged but the estimated volume of surface runoff was less than 50m^3 in this monthly period.

9 SITE INSPECTION

9.01 According to the Environmental Monitoring and Audit Manual, the environmental site inspection should been formulated by ET Leader. Regular environmental site inspections had been carried out by the ET to confirm the environmental performance. In this reporting period, site inspection was carried out on **6, 14, 19 and 26 April 2011** after the relevant land work commencement at Sok Kwu Wan Portion Area on 27 July 2010. Besides, routine joint-site visit by IEC, RE, Leader and ET was carried out on **14 April 2011**.

9.02 The findings/ deficiencies that observed during the weekly site inspection are listed in ***Table 8-1*** and the relevant checklists are attached in **Appendix K**.

Table 8-1 Site Observations

Date	Findings / Deficiencies	Follow-Up Status
6 April 2011	• No environmental issue was observed during the site inspection.	N.A
14 April 2011	• House-keeping on the site has to be improved. (Portion G). • The general refuse should be removed. (Portion G) • Regular water spraying was reminded to apply on dry haul road. (Portion G)	The observations have been followed on 14, 18 and 19 April 2011.
19 April 2011	• The power generator without drip tray was observed.	The observation has been followed on 26 April 2011.
26 April 2011	• No environmental issue was observed during the site inspection.	N.A

10 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

10.01 No environmental complaint, summons and prosecution was received in this reporting period. The statistical summary table of environmental complaint is presented in ***Tables 9-1, 9-2*** and ***9-3***.

Table 9-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
27 July 2010 – 31 March 2011	0	0	NA
1 – 30 April 2011	0	0	NA

Table 9-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
27 July 2010 – 31 March 2011	0	0	NA
1 – 30 April 2011	0	0	NA

Table 9-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
27 July 2010 – 31 March 2011	0	0	NA
1 – 30 April 2011	0	0	NA

11 IMPLEMENTATION STATUS OF MITIGATION MEASURES

11.01 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

11.02 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

11.03 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

11.04 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.

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

- Dredging should be undertaken using closed grab dredgers with a total production rate of 55m^3/hr;
- Deployment of 2-layer silt curtains with first layer enclosing the grab and the second layer at around 50, from the dredging area while dredging works are in progress;
- all vessels should be sized such that adequate clearance (i.e. minimum clearance of 0.6m) is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;
- all pipe leakages should be repaired promptly and plant shall not be operated with leaking pipes;
- excess material should be cleaned from the decks and exposed fittings of barges before the vessel is moved;
- adequate freeboard (i.e. minimum of 200m) should be maintained on barges to ensure that decks are not washed by wave action;
- all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; and
- loading of barges and hoppers should be controlled to prevent splashing of dredged material to the surrounding water, and barges and hoppers should not be filled to a level which would cause the overflow of materials or sediment laden water during loading or transportation; and
- the decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard.

Construction Run-off and Drainage

11.06 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

11.07 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

11.08 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

11.09 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).

11.10 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.

11.11 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

11.12 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.

11.13 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.

11.14 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

11.15 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

11.16 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.

11.17 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

11.18 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.

11.19 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

11.20 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.

11.21 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.

11.22 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

11.23 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.

11.24 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

11.25 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

11.26 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

11.27 The implementation schedule of mitigation measures is presented in ***Appendix L***.

11.28 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 10-1***.

Table 10-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	• Drainage channels were provided to convey run-off into the treatment facilities; and • Drainage systems were regularly and adequately maintained.
Air Quality	• Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet; • Public roads around the site entrance/exit had been kept clean and free from dust; and • Tarpaulin covering of any dusty materials on a vehicle leaving the site.

Issues	Environmental Mitigation Measures
Noise	• Good site practices to limit noise emissions at the sources; • Use of quite plant and working methods; • Use of site hoarding or other mass materials as noise barrier to screen noise at ground level of NSRs; and • To minimize plant number use at the worksite.
Waste and Chemical Management	• Excavated material should be reused on site as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment should be recycled if possible; • Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner; • The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designed public filling facility and/or landfill; and • Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.
General	• The site was generally kept tidy and clean.

12 IMPACT FORECAST

12.01 Key issues to be considered in the coming month include:

Water Quality

- Erect of sand bag in proper area to avoid any muddy surface runoff from the loose soil surface or haul road during the rainy days; and
- The accumulated stagnant water should be drained away.

Air Quality

- Vehicles shall be cleaned of mud and debris before leaving the site;
- Stockpile and loose soil surface shall be covered with tarpaulin sheet or other means to eliminate the fugitive dust;
- Water spaying on the dry haul road and exit/entrance of the site in regular basis is reminded; and
- Public roads around the site entrance/exit had been kept clean and free from dust.

Noise

- Works and equipment should be located to minimize noise nuisance from the nearest sensitive receiver; and
- Idle equipments should be either turned off or throttled down;

Waste and Chemical Management

- Housekeeping on site shall be improved;
- The Contractor is advised to fence off the construction waste at a designated area in order to maintain the tidiness of the site;
- Drip tray and proper label should be provided for all chemical containers.
- C&D waste should be disposed in regular basis.

13 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

13.01 This is the **9th** Monthly EM&A Report covering the construction period from **1 to 30 April 2011** (the Reporting Period).

13.02 No 1-hour TSP or 24-hr TSP monitoring results was found to be triggered the Action or Limit Level in this Reporting Period.

13.03 No noise complaint (an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this reporting month.

13.04 No impact water quality monitoring was undertaken in this reporting month and baseline monitoring is in progress.

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

13.06 In this reporting period, site inspection was carried out on **6, 14, 19 and 26 April 2011** after the relevant land work commencement at Sok Kwu Wan Portion Area on 27 July 2010. Besides, routine joint-site visit by IEC, RE, Leader and ET was carried out on **14 April 2011**. All the observation has been rectified during the next week site inspection. The environmental performance of the Project was therefore considered as satisfactory.

RECOMMENDATIONS

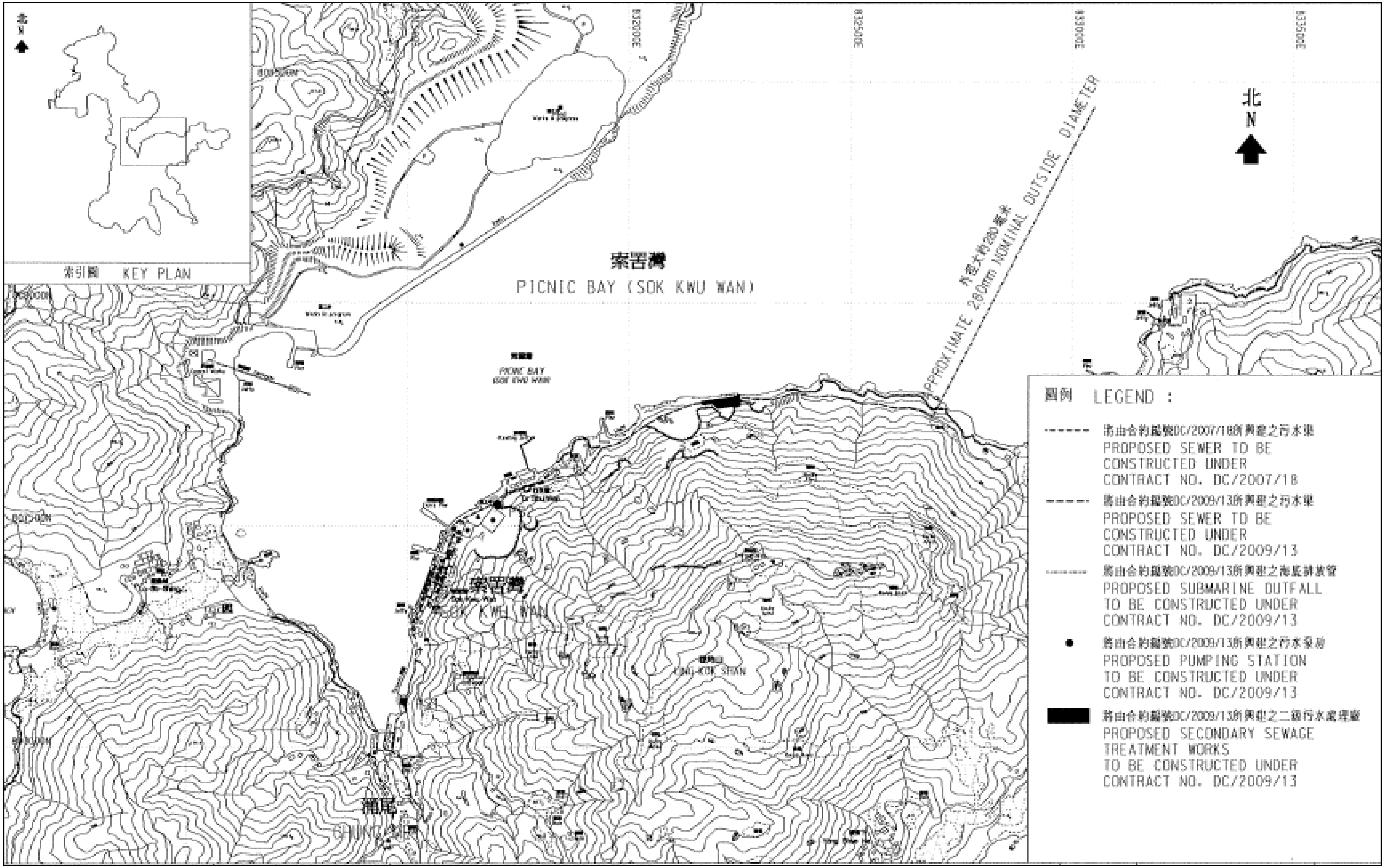
13.07 As wet season is approaching, muddy water and other water quality pollutants via site surface water runoff into the sea body within Fish culture zone at Picnic Bay and the Secondary recreation contact subzone at Mo Tat Wan is the key issue of the Project. Mitigation measures for water quality should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary.

13.08 Moreover, special attention should be also paid on the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. Mitigation measures implemented for control the surface runoff including wheel wash facilities, covering of the loose soil surface or stockpile with tarpaulin sheet, etc., should fully implement.

13.09 Construction of outfall marine works cannot be carried out. The work perform should be until to the baseline water quality monitoring completion and the related Action and Limit (A/L) levels establishment.

Appendix A

Site Layout Plan – Sok Kwu Wan Portion Area


索引圖 KEY PLAN
北
N
索罟灣
PICNIC BAY (SOK KWU WAN)
APPROXIMATE 280mm NOMINAL OUTSIDE DIAMETER
索罟灣
SOK KWU WAN
模達山
MO TAT WAN
LING KOK SHAN
榕尾
SHEUNG MUI
圖例 LEGEND :
將由合約編號DC/2007/18所興建之污水渠
PROPOSED SEWER TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2007/18
將由合約編號DC/2009/13所興建之污水渠
PROPOSED SEWER TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
將由合約編號DC/2009/13所興建之海底排放管
PROPOSED SUBMARINE OUTFALL TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
將由合約編號DC/2009/13所興建之污水泵房
PROPOSED PUMPING STATION TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
將由合約編號DC/2009/13所興建之二級污水處理廠
PROPOSED SECONDARY SEWAGE TREATMENT WORKS TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13

Appendix B

Organization Structure and Contact Details of Relevant Parties

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. AU Chi Kwong	-	-
SCJV	Engineer's Representative	Mr. Neil Wong	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	Project Manager	Mr. Wilfred So	2982 1750	2982 1163
Leader	Site Agent/ Environmental Officer	Mr. Vincent Chan	2982 1750	2982 1163
Leader	Section Engineer	Mr. Burgess Yip	2982 1750	2982 1163
Leader	Safety Officer	Mr. Edwin Leung	2982 1750	2982 1163
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Assistance Environmental Consultant	Mr. Ray Cheung	2959 6059	2959 6079
AUES	Team Supervisor	Mr. Ben Tam	2959 6059	2959 6079

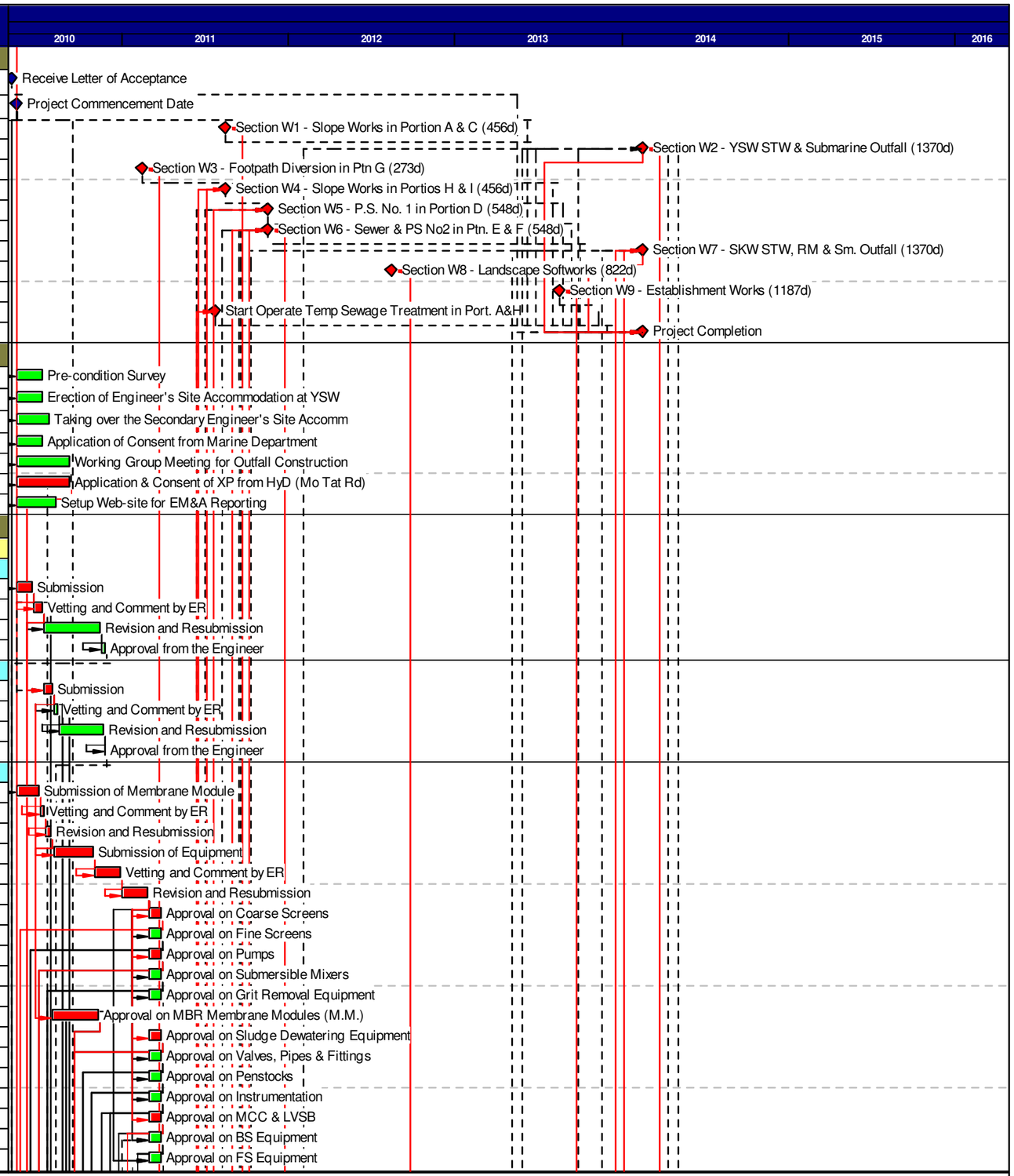
Legend:

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

A Master and Three Months Rolling Construction Programs

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
Project Key Date								
KD0010	0		05/05/10 A		05/05/10 A			KD0125
KD0020	0		17/05/10 A		17/05/10 A			E&M0010, E&M0070, E&M1001,
KD0030	0		15/08/11 *		15/08/11	0 *	YSW0150	KD0125
KD0040	0		14/02/14 *		14/02/14	0 *	E&M0720, YSW0400, YSW0930,	KD0125
KD0050	0		13/02/11 *		13/02/11	0 *	SKW0551	KD0125
KD0060	0		15/08/11 *		15/08/11	0 *	SKW0594, SKW0595	KD0125
KD0070	0		15/11/11 *		15/11/11	0 *	E&M1130, E&M11800, SKW0861	KD0125
KD0080	0		15/11/11 *		15/11/11	0 *	E&M2120, E&M2130, E&M2180,	KD0125
KD0090	0		14/02/14 *		14/02/14	0 *	E&M3370, SKW1221, SKW1291,	KD0125
KD0100	0		15/08/12 *		15/08/12	0 *	SKW1611	
KD0110	0		15/08/13 *		15/08/13	0 *	SKW1631	KD0125
KD0115	0		23/07/11 *		23/07/11	0 *	E&M0510	KD0125
KD0125	0		14/02/14 *		14/02/14	0 *	KD0010, KD0020, KD0030,	
Preliminary (Civil)								
PRE0020	60	17/05/10	15/07/10	19/05/10	17/07/10 *	2d	KD0020	
PRE0040	60	17/05/10 *	15/07/10	19/05/10	17/07/10 *	2d	KD0020	
PRE0050	75	17/05/10	30/07/10	18/05/10	31/07/10 *	1d	KD0020	
PRE0060	60	17/05/10	15/07/10	18/05/10	16/07/10 *	1d	KD0020	
PRE0090	120	17/05/10	13/09/10	01/11/10	28/02/11	168d	KD0020	SKW1151
PRE0100	120	17/05/10	13/09/10	17/05/10	13/09/10	0	KD0020	SKW1491, SKW1501
PRE0130	90	17/05/10	14/08/10	18/05/10	15/08/10 *	1d	KD0020	
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	KD0020	E&M0020, E&M0040, E&M0235
E&M0020	21	24/06/10	14/07/10	24/06/10	14/07/10	0	E&M0010	E&M0030, E&M0040
E&M0030	125	15/07/10	16/11/10	12/02/11	16/06/11	212d	E&M0020	E&M0080
E&M0080	14	17/11/10	30/11/10	17/06/11	30/06/11	212d	E&M0030	E&M0295
Hydraulic Design								
E&M0040	21	15/07/10	04/08/10	15/07/10	04/08/10	0	E&M0010, E&M0020	E&M0050, E&M0101, E&M0240,
E&M0050	14	05/08/10	18/08/10	05/03/11	18/03/11	212d	E&M0040	E&M0060
E&M0060	97	19/08/10	23/11/10	19/03/11	23/06/11	212d	E&M0050	E&M0430
E&M0430	7	24/11/10	30/11/10	24/06/11	30/06/11	212d	E&M0060	E&M0295
Equipment Submission & Approval								
E&M0070	50	17/05/10	05/07/10	17/05/10	05/07/10	0	KD0020	E&M0090
E&M0090	14	06/07/10	19/07/10	06/07/10	19/07/10	0	E&M0070	E&M0100
E&M0100	14	20/07/10	02/08/10	20/07/10	02/08/10	0	E&M0090	E&M0160
E&M0101	90	05/08/10	02/11/10	05/08/10	02/11/10	0	E&M0040	E&M0102
E&M0102	60	03/11/10	01/01/11	03/11/10	01/01/11	0	E&M0101	E&M0103
E&M0103	60	02/01/11	02/03/11	02/01/11	02/03/11	0	E&M0102	E&M0110, E&M0120, E&M0130,
E&M0110	30	03/03/11	01/04/11	03/03/11	01/04/11	0	E&M0103	E&M0390
E&M0120	30	03/03/11	01/04/11	29/04/11	28/05/11	57d	E&M0103	E&M0400, E&M3060
E&M0130	30	03/03/11	01/04/11	03/03/11	01/04/11	0	E&M0103	E&M0410, E&M3070
E&M0140	30	03/03/11	01/04/11	01/06/11	30/06/11	90d	E&M0103	E&M0420, E&M3080
E&M0150	30	03/03/11	01/04/11	29/04/11	28/05/11	57d	E&M0103	E&M0380, E&M3030
E&M0160	105	03/08/10	15/11/10	03/08/10	15/11/10	0	E&M0100	E&M0360, E&M0370, E&M3010
E&M0170	30	03/03/11	01/04/11	03/03/11	01/04/11	0	E&M0103	E&M0440, E&M3090
E&M0180	30	03/03/11	01/04/11	28/06/11	27/07/11	117d	E&M0103	E&M0450, E&M3100
E&M0190	30	03/03/11	01/04/11	11/06/11	10/07/11	100d	E&M0103	E&M0460, E&M3110
E&M0200	30	03/03/11	01/04/11	09/10/11	07/11/11	220d	E&M0103	E&M0470, E&M3130
E&M0210	30	03/03/11	01/04/11	03/03/11	01/04/11	0	E&M0103	E&M0480, E&M3140
E&M0220	30	03/03/11	01/04/11	31/07/11	29/08/11	150d	E&M0103, E&M0280	E&M0490, E&M3150
E&M0230	30	03/03/11	01/04/11	01/06/11	30/06/11	90d	E&M0103, E&M0290	E&M0295, E&M0320, E&M0500,



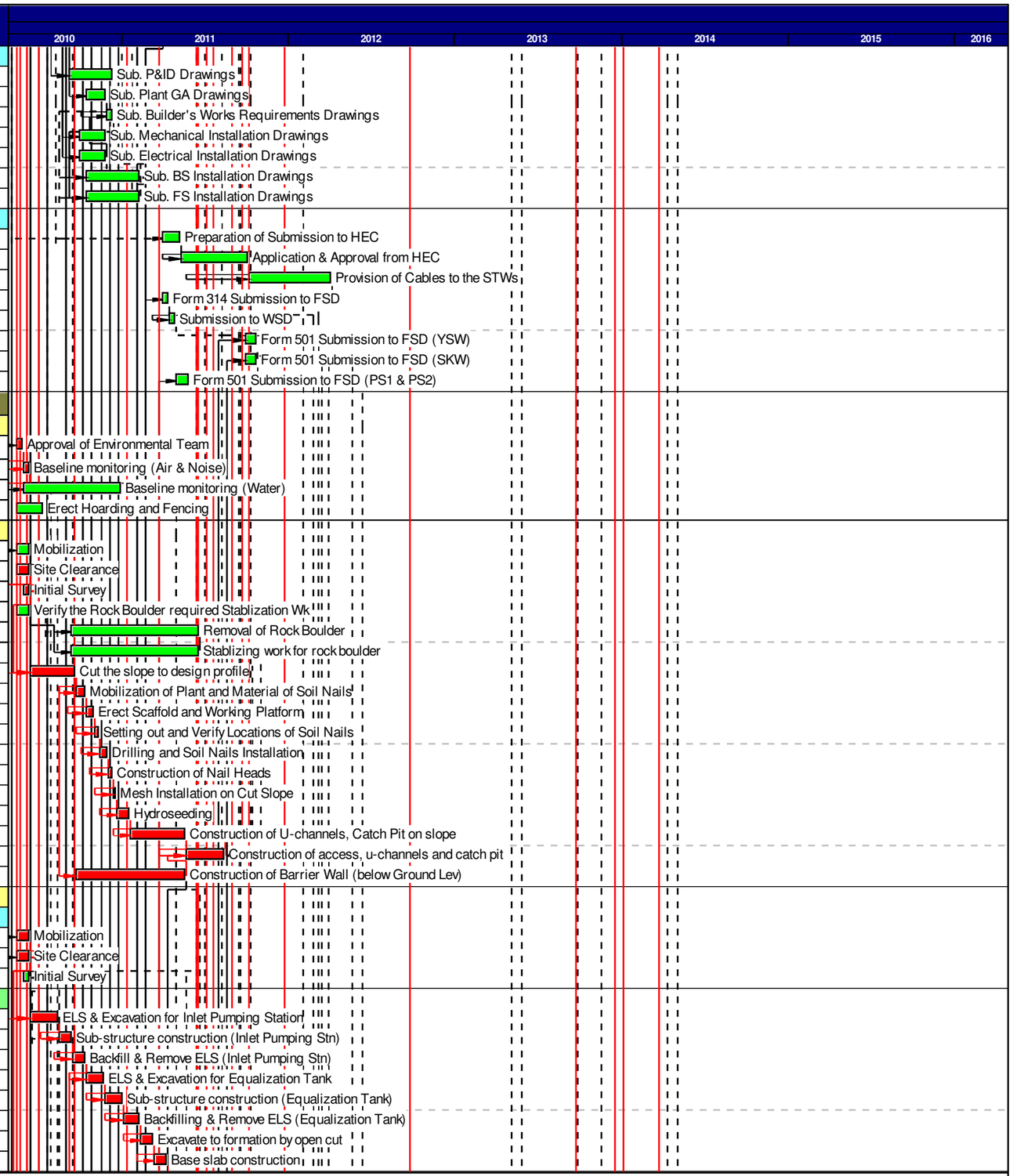
Start date	05/05/10
Finish date	14/02/14
Data date	17/05/10
Run date	06/01/11
Page number	1A
c Primavera Systems, Inc.	

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

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 2)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC
30/12/10	Revision 2	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
Drawings Submission & Approval								
E&M0235	100	07/09/10	15/12/10	07/11/13	14/02/14	1157d	E&M0010	
E&M0240	45	17/10/10	30/11/10	02/02/11	18/03/11	108d	E&M0040	E&M0250, E&M0280, E&M0290
E&M0250	15	01/12/10	15/12/10	19/03/11	02/04/11	108d	E&M0240, E&M0270	E&M0280, E&M0290
E&M0260	60	02/10/10	30/11/10	17/12/13	14/02/14	1172d	E&M0040	
E&M0270	60	02/10/10	30/11/10	18/01/11	18/03/11	108d	E&M0040	E&M0250, E&M0280
E&M0280	120	16/10/10	12/02/11	02/04/11	30/07/11	168d	E&M0240, E&M0250, E&M0270	E&M0220
E&M0290	120	16/10/10	12/02/11	01/02/11	31/05/11	108d	E&M0240, E&M0250	E&M0230
Statutory Submission								
E&M0295	39	02/04/11	10/05/11	01/07/11	08/08/11	90d	E&M0080, E&M0230, E&M0430	E&M0300
E&M0300	150	11/05/11	07/10/11	09/08/11	05/01/12	90d	E&M0295	E&M0305
E&M0305	180	08/10/11	04/04/12	06/01/12	03/07/12	90d	E&M0300	E&M0680
E&M0320	14	02/04/11	15/04/11	15/04/12	28/04/12	379d	E&M0230	E&M0325, E&M0670
E&M0325	14	16/04/11	29/04/11	29/04/12	12/05/12	379d	E&M0320	E&M0670, E&M0680
E&M0330	28	29/09/11	26/10/11	12/07/12	08/08/12	287d	E&M0500	E&M0700
E&M0340	28	29/09/11	26/10/11	12/07/12	08/08/12	287d	E&M3160	E&M3360
E&M0350	28	02/05/11	29/05/11	18/01/14	14/02/14	992d	E&M2016	
Yung Shue Wan								
Preliminary								
YSW0020	16	17/05/10	01/06/10	17/05/10	01/06/10	0	KD0020	YSW0030, YSW0040
YSW0030	14	02/06/10	15/06/10	02/06/10	15/06/10	0	YSW0020	YSW0120, YSW0152, YSW0500,
YSW0040	213	02/06/10	31/12/10	16/07/10	13/02/11	44d	YSW0020	YSW0350
YSW0050	60	17/05/10	15/07/10	19/05/10	17/07/10 *	2d		
Section W 1 - Slope W orks in Portion A & C								
YSW0075	30	17/05/10	15/06/10	10/10/10	08/11/10	146d	KD0020	YSW0100
YSW0080	30	17/05/10	15/06/10	17/05/10	15/06/10	0		YSW0085, YSW0120
YSW0085	14	02/06/10	15/06/10	02/06/10	15/06/10	0	YSW0080	YSW0120
YSW0090	30	17/05/10	15/06/10	12/07/10	10/08/10	56d		YSW0100, YSW0110
YSW0100	280	14/09/10	20/06/11	09/11/10	15/08/11	56d	YSW0075, YSW0090	YSW0150
YSW0110	280	14/09/10	20/06/11	09/11/10	15/08/11	56d	YSW0090	YSW0150
YSW0120	100	16/06/10	23/09/10	16/06/10	23/09/10	0	YSW0030, YSW0080, YSW0085	YSW0131, YSW0165
YSW0131	20	24/09/10	13/10/10	24/09/10	13/10/10	0	YSW0120	YSW0132
YSW0132	20	14/10/10	02/11/10	14/10/10	02/11/10	0	YSW0131	YSW0133
YSW0133	10	03/11/10	12/11/10	03/11/10	12/11/10	0	YSW0132	YSW0134
YSW0134	20	13/11/10	02/12/10	13/11/10	02/12/10	0	YSW0133	YSW0135
YSW0135	10	03/12/10	12/12/10	03/12/10	12/12/10	0	YSW0134	YSW0136
YSW0136	10	13/12/10	22/12/10	13/12/10	22/12/10	0	YSW0135	YSW0137
YSW0137	30	23/12/10	21/01/11	23/12/10	21/01/11	0	YSW0136	YSW0140
YSW0140	120	22/01/11	21/05/11	22/01/11	21/05/11	0	YSW0137	YSW0150
YSW0150	86	22/05/11	15/08/11	22/05/11	15/08/11	0	YSW0100, YSW0110, YSW0140,	KD0030
YSW0165	240	24/09/10	21/05/11	24/09/10	21/05/11	0	YSW0120	YSW0150, YSW0154, YSW0155
Section W 2 - YSW STW & Submarine Outfall								
Civil & Structural Work								
YSW0412	30	17/05/10	15/06/10	17/05/10	15/06/10	0	KD0020	YSW0422
YSW0422	30	17/05/10	15/06/10	17/05/10	15/06/10	0	KD0020, YSW0412	YSW0432, YSW0500, YSW0610,
YSW0432	14	02/06/10	15/06/10	03/08/10	16/08/10	62d	YSW0422	YSW0510
YSW STP - GL H - T								
YSW0500	62	16/06/10	16/08/10	16/06/10	16/08/10	0	YSW0030, YSW0422	YSW0510
YSW0510	30	17/08/10	15/09/10	17/08/10	15/09/10	0	YSW0432, YSW0500	YSW0520
YSW0520	30	16/09/10	15/10/10	16/09/10	15/10/10	0	YSW0510	YSW0530, YSW0610
YSW0530	40	16/10/10	24/11/10	16/10/10	24/11/10	0	YSW0520	YSW0540
YSW0540	40	25/11/10	03/01/11	25/11/10	03/01/11	0	YSW0530	YSW0550
YSW0550	40	04/01/11	12/02/11	04/01/11	12/02/11	0	YSW0540	YSW0570
YSW0570	30	13/02/11	14/03/11	13/02/11	14/03/11	0	YSW0550	YSW0580
YSW0580	30	15/03/11	13/04/11	15/03/11	13/04/11	0	YSW0570	YSW0590



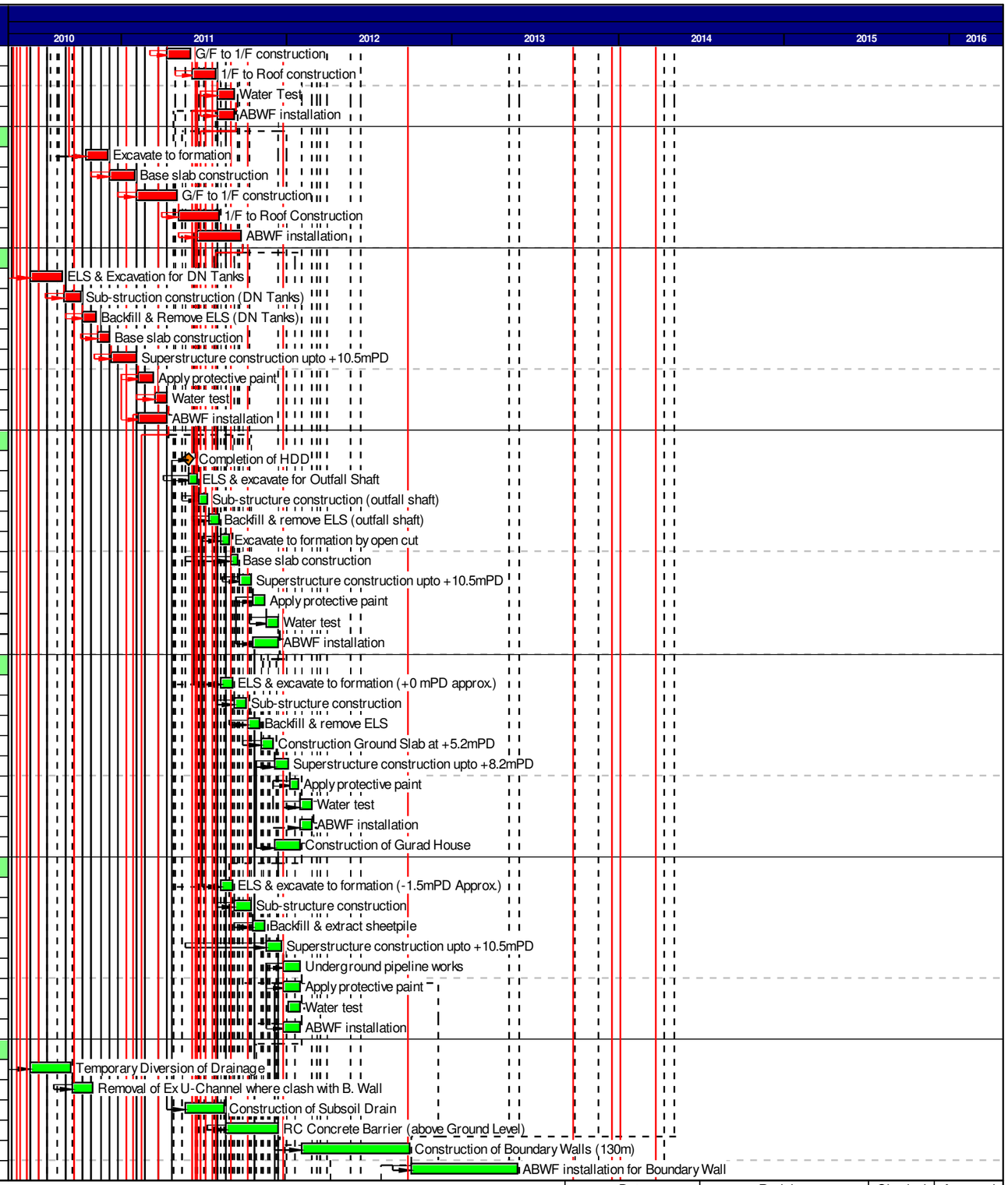
Start date	05/05/10
Finish date	14/02/14
Data date	17/05/10
Run date	06/01/11
Page number	2A
c Primavera Systems, Inc.	

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

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 2)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC
30/12/10	Revision 2	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
YSW0590	55	14/04/11	07/06/11	14/04/11	07/06/11	0	YSW0580	YSW0600
YSW0600	55	08/06/11	01/08/11	08/06/11	01/08/11	0	YSW0590	YSW0720, YSW0800
YSW0720	40	02/08/11	10/09/11	02/08/11	10/09/11	0	YSW0600	E&M0530, E&M0540, E&M0550,
YSW0800	40	02/08/11	10/09/11	02/08/11	10/09/11	0	YSW0600	E&M0530, E&M0540, E&M0550,
YSW STP - GL T - X								
YSW0610	50	16/10/10	04/12/10	16/10/10	04/12/10	0	YSW0030, YSW0422, YSW0520	YSW0620
YSW0620	60	05/12/10	02/02/11	05/12/10	02/02/11	0	YSW0610	YSW0630
YSW0630	95	03/02/11	08/05/11	03/02/11	08/05/11	0	YSW0620	YSW0640
YSW0640	91	09/05/11	07/08/11	09/05/11	07/08/11	0	YSW0630	YSW0810, YSW0840
YSW0810	100	18/06/11	25/09/11	18/06/11	25/09/11	0	YSW0640	E&M0610, E&M0620, E&M0630,
YSW STP - GL F - H & DN Tanks								
YSW0650	72	16/06/10	26/08/10	16/06/10	26/08/10	0	YSW0030, YSW0422	YSW0660
YSW0660	44	27/08/10	09/10/10	27/08/10	09/10/10	0	YSW0650	YSW0670
YSW0670	32	10/10/10	10/11/10	10/10/10	10/11/10	0	YSW0660	YSW0680
YSW0680	30	11/11/10	10/12/10	11/11/10	10/12/10	0	YSW0670	YSW0690
YSW0690	60	11/12/10	08/02/11	11/12/10	08/02/11	0	YSW0680	YSW0700, YSW0820
YSW0700	35	09/02/11	15/03/11	09/02/11	15/03/11	0	YSW0690	YSW0710
YSW0710	30	16/03/11	14/04/11	16/03/11	14/04/11	0	YSW0700	E&M0510, E&M0630, E&M0640
YSW0820	65	09/02/11	14/04/11	09/02/11	14/04/11	0	YSW0690	E&M0510, E&M0630, E&M0640
YSW STP - GL A - F								
YSW0730	0	01/06/11		01/07/11		30d	YSW0360	YSW0740
YSW0740	22	01/06/11	22/06/11	01/07/11	22/07/11	30d	YSW0730	YSW0750
YSW0750	22	23/06/11	14/07/11	23/07/11	13/08/11	30d	YSW0740	YSW0760
YSW0760	24	15/07/11	07/08/11	14/08/11	06/09/11	30d	YSW0750	YSW0770, YSW1470
YSW0770	22	08/08/11	29/08/11	07/09/11	28/09/11	30d	YSW0760	YSW0780
YSW0780	21	30/08/11	19/09/11	29/09/11	19/10/11	30d	YSW0770	YSW0790
YSW0790	30	20/09/11	19/10/11	20/10/11	18/11/11	30d	YSW0780	YSW0795, YSW0870
YSW0795	30	20/10/11	18/11/11	19/11/11	18/12/11	30d	YSW0790	YSW0830
YSW0830	30	19/11/11	18/12/11	19/12/11	17/01/12	30d	YSW0795	E&M0520, E&M0605, E&M0630,
YSW0870	60	20/10/11	18/12/11	28/12/11	25/02/12	69d	YSW0790	E&M0520, E&M0605, E&M0630,
Fire Hose Reel / Sprinkler Pump Rm								
YSW0840	30	08/08/11	06/09/11	01/09/11	30/09/11	24d	YSW0030, YSW0422, YSW0640	YSW0860
YSW0860	30	07/09/11	06/10/11	01/10/11	30/10/11	24d	YSW0840	YSW0880
YSW0880	30	07/10/11	05/11/11	31/10/11	29/11/11	24d	YSW0860	YSW0890
YSW0890	30	06/11/11	05/12/11	30/11/11	29/12/11	24d	YSW0880	YSW0900, YSW0930
YSW0900	35	06/12/11	09/01/12	30/12/11	02/02/12	24d	YSW0890	YSW0910, YSW0925
YSW0910	21	10/01/12	30/01/12	03/02/12	23/02/12	24d	YSW0900	YSW0915, YSW0925
YSW0915	30	31/01/12	29/02/12	24/02/12	24/03/12	24d	YSW0910	YSW0925
YSW0925	30	31/01/12	29/02/12	24/02/12	24/03/12	24d	YSW0900, YSW0910, YSW0915	E&M0640
YSW0930	60	06/12/11	03/02/12	06/05/12	04/07/12	152d	YSW0890	E&M0690, KD0040
Emergency Storage Tank								
YSW1470	30	08/08/11	06/09/11	07/11/11	06/12/11	91d	YSW0030, YSW0760	YSW1480
YSW1480	40	07/09/11	16/10/11	07/12/11	15/01/12	91d	YSW1470	YSW1490
YSW1490	30	17/10/11	15/11/11	16/01/12	14/02/12	91d	YSW1480	YSW1500
YSW1500	40	16/11/11	25/12/11	15/02/12	25/03/12	91d	YSW1490	YSW1530, YSW1536, YSW1540
YSW1530	40	26/12/11	03/02/12	26/03/12	04/05/12	91d	YSW1500	E&M0690, YSW1620, YSW1640,
YSW1536	40	26/12/11	03/02/12	26/05/12	04/07/12	152d	YSW1500	YSW1538
YSW1538	30	05/01/12	03/02/12	05/06/12	04/07/12	152d	YSW1536	E&M0690
YSW1540	40	26/12/11	03/02/12	26/05/12	04/07/12	152d	YSW1500	E&M0690
Road, Drain, Cable Draw Pits & Ducting								
YSW0152	92	16/06/10	15/09/10	26/09/13	26/12/13	1198d	YSW0030	YSW0153
YSW0153	50	16/09/10	04/11/10	27/12/13	14/02/14	1198d	YSW0152	
YSW0154	90	22/05/11	19/08/11	08/10/11	05/01/12	139d	YSW0165	YSW0155
YSW0155	120	20/08/11	17/12/11	06/01/12	04/05/12	139d	YSW0154, YSW0165	YSW1640, YSW1660
YSW1620	240	04/02/12	30/09/12	24/08/12	20/04/13	202d	YSW1530	KD0040, YSW1625, YSW1690
YSW1625	240	01/10/12	28/05/13	20/06/13	14/02/14	262d	YSW1620	KD0040



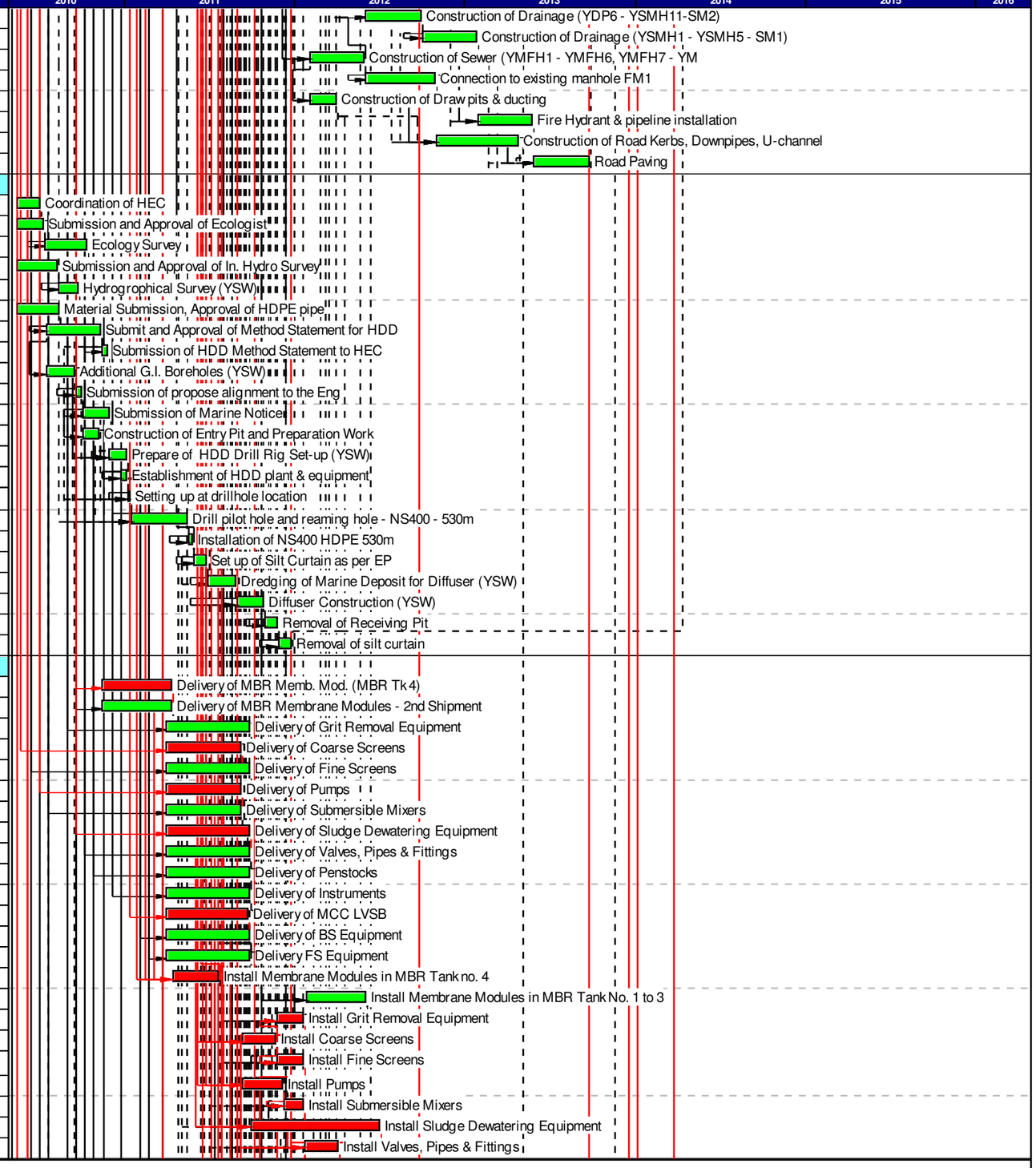
Start date	05/05/10
Finish date	14/02/14
Data date	17/05/10
Run date	06/01/11
Page number	3A
c Primavera Systems, Inc.	

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

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 2)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC
30/12/10	Revision 2	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
YSW1640	120	03/06/12	30/09/12	23/10/12	19/02/13	142d	YSW0155, YSW1530, YSW1660	YSW1650, YSW1690
YSW1650	120	01/10/12	28/01/13	20/02/13	19/06/13	142d	YSW1640	YSW1680, YSW1700
YSW1660	120	04/02/12	02/06/12	05/05/12	01/09/12	91d	YSW0155, YSW1530	YSW1640, YSW1670, YSW1675,
YSW1670	150	03/06/12	30/10/12	22/11/12	20/04/13	172d	YSW1660	YSW1690
YSW1675	60	04/02/12	03/04/12	05/05/12	03/07/12	91d	YSW1660	E&M0680, YSW1690
YSW1680	120	29/01/13	28/05/13	20/06/13	17/10/13	142d	YSW1530, YSW1650	YSW1700
YSW1690	180	31/10/12	28/04/13	21/04/13	17/10/13	172d	YSW1620, YSW1640, YSW1670,	YSW1700
YSW1700	120	29/05/13	25/09/13	18/10/13	14/02/14	142d	YSW1650, YSW1660, YSW1680,	KD0040
Submarine Outfall								
YSW0180	53	17/05/10	08/07/10	23/12/10	13/02/11	220d		YSW0350
YSW0200	60	17/05/10	15/07/10	17/09/10	15/11/10	123d		YSW0210
YSW0210	90	16/07/10	13/10/10	16/11/10	13/02/11	123d	YSW0200	YSW0350
YSW0220	90	17/05/10	14/08/10	02/10/10	30/12/10	138d		YSW0230
YSW0230	45	15/08/10	28/09/10	31/12/10	13/02/11	138d	YSW0220	YSW0350
YSW0240	93	17/05/10	17/08/10	16/06/10	16/09/10	30d		YSW0250
YSW0250	120	19/07/10	15/11/10	18/08/10	15/12/10	30d	YSW0240	YSW0260, YSW0270, YSW0340
YSW0260	14	16/11/10	29/11/10	16/12/10	29/12/10	30d	YSW0250	YSW0320, YSW0340
YSW0270	62	19/07/10	18/09/10	06/09/10	06/11/10	49d	YSW0250	YSW0280, YSW0320
YSW0280	14	19/09/10	02/10/10	07/11/10	20/11/10	49d	YSW0270	YSW0290, YSW0310, YSW0340
YSW0290	60	03/10/10	01/12/10	16/12/10	13/02/11	74d	YSW0280	YSW0350
YSW0310	39	03/10/10	10/11/10	21/11/10	29/12/10	49d	YSW0280	YSW0320, YSW0330
YSW0320	39	30/11/10	07/01/11	30/12/10	06/02/11	30d	YSW0260, YSW0270, YSW0310	YSW0330, YSW0350
YSW0330	14	25/12/10	07/01/11	24/01/11	06/02/11	30d	YSW0310, YSW0320	YSW0340
YSW0340	7	08/01/11	14/01/11	07/02/11	13/02/11	30d	YSW0250, YSW0260, YSW0280,	YSW0350
YSW0350	123	15/01/11	17/05/11	14/02/11	16/06/11	30d	YSW0040, YSW0180, YSW0210,	YSW0360
YSW0360	14	18/05/11	31/05/11	17/06/11	30/06/11	30d	YSW0350	SKW1181, YSW0365, YSW0370,
YSW0365	30	01/06/11	30/06/11	20/07/13	18/08/13	780d	YSW0360	YSW0370
YSW0370	60	01/07/11	29/08/11	19/08/13	17/10/13	780d	YSW0360, YSW0365	YSW0380
YSW0380	60	30/08/11	28/10/11	18/10/13	16/12/13	780d	YSW0370	YSW0390
YSW0390	30	29/10/11	27/11/11	17/12/13	15/01/14	780d	YSW0380	YSW0400
YSW0400	30	28/11/11	27/12/11	16/01/14	14/02/14	780d	YSW0390	KD0040
E&M Works - YSW STP								
E&M0360	150	16/11/10	14/04/11	16/11/10	14/04/11	0	E&M0160	E&M0510
E&M0370	150	16/11/10	14/04/11	29/09/11	25/02/12	317d	E&M0160	E&M0520
E&M0380	180	02/04/11	28/09/11	29/05/11	24/11/11	57d	E&M0150	E&M0530
E&M0390	162	02/04/11	10/09/11	02/04/11	10/09/11	0	E&M0110	E&M0540
E&M0400	180	02/04/11	28/09/11	29/05/11	24/11/11	57d	E&M0120	E&M0550
E&M0410	162	02/04/11	10/09/11	02/04/11	10/09/11	0	E&M0130	E&M0560
E&M0420	162	02/04/11	10/09/11	01/07/11	09/12/11	90d	E&M0140	E&M0570
E&M0440	180	02/04/11	28/09/11	02/04/11	28/09/11	0	E&M0170	E&M0580
E&M0450	180	02/04/11	28/09/11	28/07/11	23/01/12	117d	E&M0180	E&M0590, E&M0605
E&M0460	180	02/04/11	28/09/11	11/07/11	06/01/12	100d	E&M0190	E&M0600
E&M0470	180	02/04/11	28/09/11	08/11/11	05/05/12	220d	E&M0200	E&M0610
E&M0480	177	02/04/11	25/09/11	02/04/11	25/09/11	0	E&M0210	E&M0620
E&M0490	180	02/04/11	28/09/11	30/08/11	25/02/12	150d	E&M0220	E&M0630
E&M0500	180	02/04/11	28/09/11	27/09/11	24/03/12	178d	E&M0230	E&M0330, E&M0640
E&M0510	100	15/04/11	23/07/11	15/04/11	23/07/11	0	E&M0360, YSW0710, YSW0820	KD0115
E&M0520	130	27/01/12	04/06/12	26/02/12	04/07/12	30d	E&M0370, YSW0830, YSW0870	E&M0690
E&M0530	60	25/11/11	23/01/12	25/11/11	23/01/12	0	E&M0380, E&M0540, YSW0720,	E&M0590, E&M0660
E&M0540	75	11/09/11	24/11/11	11/09/11	24/11/11	0	E&M0390, YSW0720, YSW0800	E&M0530, E&M0550, E&M0570,
E&M0550	60	25/11/11	23/01/12	25/11/11	23/01/12	0	E&M0400, E&M0540, YSW0720,	E&M0590, E&M0660
E&M0560	90	11/09/11	09/12/11	11/09/11	09/12/11	0	E&M0410, YSW0720, YSW0800	E&M0570, E&M0590, E&M0660
E&M0570	45	10/12/11	23/01/12	10/12/11	23/01/12	0	E&M0420, E&M0540, E&M0560,	E&M0590, E&M0660, E&M0690
E&M0580	280	29/09/11	04/07/12	29/09/11	04/07/12	0	E&M0440, YSW0720, YSW0800	E&M0690
E&M0590	75	24/01/12	07/04/12	24/01/12	07/04/12	0	E&M0450, E&M0530, E&M0540,	E&M0610, E&M0630, E&M0640,



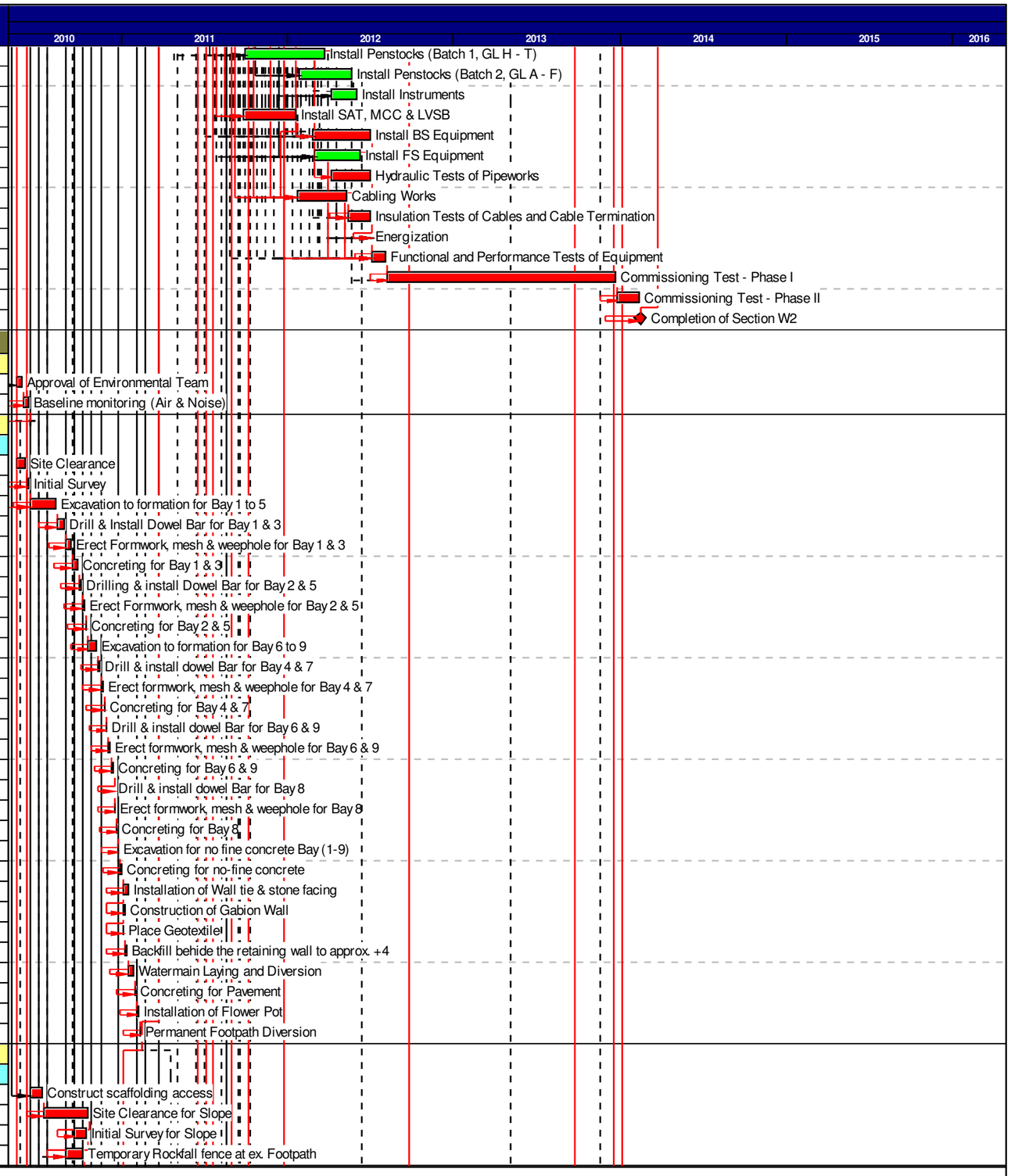
Start date	05/05/10
Finish date	14/02/14
Data date	17/05/10
Run date	06/01/11
Page number	4A
c Primavera Systems, Inc.	

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

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 2)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC
30/12/10	Revision 2	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M0600	180	29/09/11	26/03/12	07/01/12	04/07/12	100d	E&M0460, YSW0720, YSW0800	E&M0690
E&M0605	120	27/01/12	25/05/12	07/03/12	04/07/12	40d	E&M0450, YSW0830, YSW0870	E&M0690
E&M0610	60	08/04/12	06/06/12	06/05/12	04/07/12	28d	E&M0470, E&M0590, YSW0720,	E&M0690
E&M0620	120	26/09/11	23/01/12	26/09/11	23/01/12	0	E&M0480, YSW0810	E&M0660, E&M0680
E&M0630	130	26/02/12	04/07/12	26/02/12	04/07/12	0	E&M0490, E&M0590, YSW0710,	E&M0690
E&M0640	102	01/03/12	10/06/12	25/03/12	04/07/12	24d	E&M0500, E&M0590, YSW0710,	E&M0690
E&M0650	88	08/04/12	04/07/12	08/04/12	04/07/12	0	E&M0590	E&M0690
E&M0660	110	24/01/12	12/05/12	24/01/12	12/05/12	0	E&M0530, E&M0540, E&M0550,	E&M0670
E&M0670	52	13/05/12	03/07/12	13/05/12	03/07/12	0	E&M0320, E&M0325, E&M0660	E&M0680
E&M0680	1	04/07/12	04/07/12	04/07/12	04/07/12	0	E&M0305, E&M0325, E&M0620,	E&M0690
E&M0690	35	05/07/12	08/08/12	05/07/12	08/08/12	0	E&M0520, E&M0570, E&M0580,	E&M0700
E&M0700	505	09/08/12	26/12/13	09/08/12	26/12/13	0	E&M0330, E&M0690	E&M0710
E&M0710	50	27/12/13	14/02/14	27/12/13	14/02/14	0	E&M0700	E&M0720
E&M0720	0		14/02/14 *		14/02/14	0 *	E&M0710	KD0040
Sok Kwu Wan								
Preliminary								
SKW0250	16	17/05/10	01/06/10	17/05/10	01/06/10	0	KD0020	SKW0260
SKW0260	14	02/06/10	15/06/10	02/06/10	15/06/10	0	SKW0250	SKW0242, SKW0592, SKW0681,
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		SKW0241
SKW0241	9	07/06/10	15/06/10	07/06/10	15/06/10	0	SKW0240	SKW0242
SKW0242	57	16/06/10	11/08/10	16/06/10	11/08/10	0	SKW0241, SKW0260	SKW0251
SKW0251	21	12/08/10	01/09/10	12/08/10	01/09/10	0	SKW0242	SKW0301
SKW0301	14	02/09/10	15/09/10	02/09/10	15/09/10	0	SKW0251	SKW0311
SKW0311	14	16/09/10	29/09/10	16/09/10	29/09/10	0	SKW0301	SKW0321
SKW0321	7	30/09/10	06/10/10	30/09/10	06/10/10	0	SKW0311	SKW0331
SKW0331	7	07/10/10	13/10/10	07/10/10	13/10/10	0	SKW0321	SKW0341
SKW0341	7	14/10/10	20/10/10	14/10/10	20/10/10	0	SKW0331	SKW0351
SKW0351	21	21/10/10	10/11/10	21/10/10	10/11/10	0	SKW0341	SKW0361
SKW0361	6	11/11/10	16/11/10	11/11/10	16/11/10	0	SKW0351	SKW0371
SKW0371	7	17/11/10	23/11/10	17/11/10	23/11/10	0	SKW0361	SKW0381
SKW0381	7	24/11/10	30/11/10	24/11/10	30/11/10	0	SKW0371	SKW0391
SKW0391	3	01/12/10	03/12/10	01/12/10	03/12/10	0	SKW0381	SKW0401
SKW0401	7	04/12/10	10/12/10	04/12/10	10/12/10	0	SKW0391	SKW0411
SKW0411	7	11/12/10	17/12/10	11/12/10	17/12/10	0	SKW0401	SKW0421
SKW0421	1	18/12/10	18/12/10	18/12/10	18/12/10	0	SKW0411	SKW0431
SKW0431	4	19/12/10	22/12/10	19/12/10	22/12/10	0	SKW0421	SKW0441
SKW0441	4	23/12/10	26/12/10	23/12/10	26/12/10	0	SKW0431	SKW0461
SKW0461	3	27/12/10	29/12/10	27/12/10	29/12/10	0	SKW0441	SKW0471
SKW0471	7	30/12/10	05/01/11	30/12/10	05/01/11	0	SKW0461	SKW0481
SKW0481	14	06/01/11	19/01/11	06/01/11	19/01/11	0	SKW0471	SKW0491
SKW0491	7	06/01/11	12/01/11	06/01/11	12/01/11	0	SKW0481	SKW0501
SKW0501	3	06/01/11	08/01/11	06/01/11	08/01/11	0	SKW0491	SKW0511
SKW0511	7	09/01/11	15/01/11	09/01/11	15/01/11	0	SKW0501	SKW0521
SKW0521	14	16/01/11	29/01/11	16/01/11	29/01/11	0	SKW0511	SKW0531
SKW0531	7	30/01/11	05/02/11	30/01/11	05/02/11	0	SKW0521	SKW0541
SKW0541	7	06/02/11	12/02/11	06/02/11	12/02/11	0	SKW0531	SKW0551
SKW0551	1	13/02/11	13/02/11	13/02/11	13/02/11	0	SKW0541	KD0050, SKW1261, SKW1311
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	KD0020	SKW0590
SKW0590	100	15/07/10	22/10/10	15/07/10	22/10/10	0	SKW0588	SKW0591
SKW0591	28	21/09/10	18/10/10	21/09/10	18/10/10	0	SKW0590	SKW0592
SKW0592	43	31/08/10	12/10/10	31/08/10	12/10/10	0	SKW0260, SKW0591	SKW0931



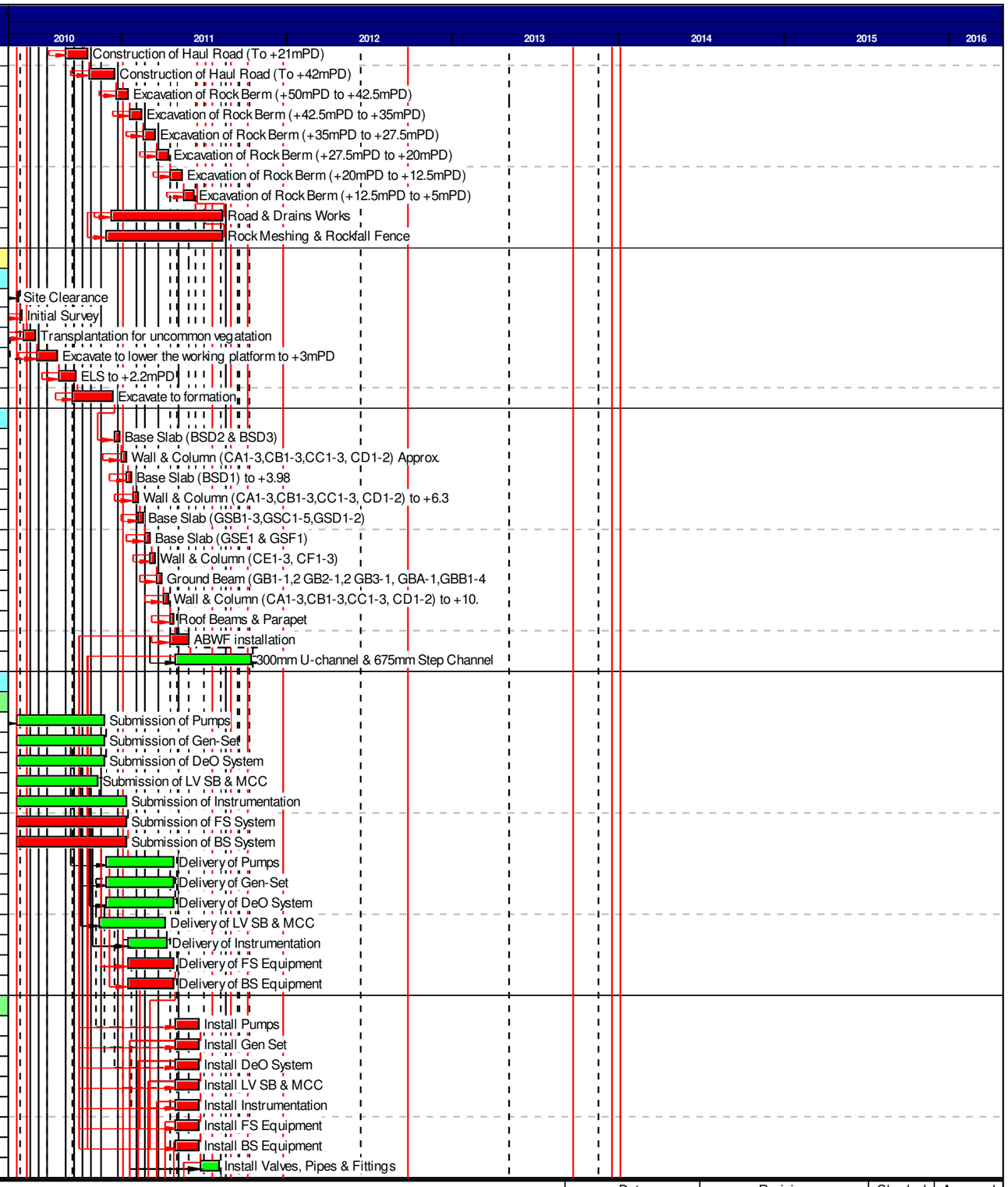
Start date	05/05/10
Finish date	14/02/14
Data date	17/05/10
Run date	06/01/11
Page number	5A
c Primavera Systems, Inc.	

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

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 2)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC
30/12/10	Revision 2	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
SKW05931	50	03/09/10	22/10/10	03/09/10	22/10/10	0	SKW0592	SKW05932
SKW05932	60	23/10/10	21/12/10	23/10/10	21/12/10	0	SKW05931	SKW05933
SKW05933	30	22/12/10	20/01/11	22/12/10	20/01/11	0	SKW05932	SKW05934
SKW05934	30	21/01/11	19/02/11	21/01/11	19/02/11	0	SKW05933	SKW05935
SKW05935	30	20/02/11	21/03/11	20/02/11	21/03/11	0	SKW05934	SKW05936
SKW05936	30	22/03/11	20/04/11	22/03/11	20/04/11	0	SKW05935	SKW05937
SKW05937	30	21/04/11	20/05/11	21/04/11	20/05/11	0	SKW05936	SKW05938
SKW05938	26	21/05/11	15/06/11	21/05/11	15/06/11	0	SKW05937	SKW0594, SKW0595, SKW1311,
SKW0594	248	11/12/10	15/08/11	11/12/10	15/08/11	0	SKW05938	KD0060
SKW0595	260	29/11/10	15/08/11	29/11/10	15/08/11	0	SKW05938	KD0060
Section W 5 - 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	KD0020	SKW0652
SKW0652	7	24/05/10	30/05/10	24/05/10	30/05/10	0	SKW0651	SKW0661, SKW0681
SKW0661	30	31/05/10	29/06/10	31/05/10	29/06/10	0	SKW0652	SKW0681
SKW0681	49	30/06/10	17/08/10	30/06/10	17/08/10	0	SKW0260, SKW0652, SKW0661	SKW0691
SKW0691	40	18/08/10	26/09/10	18/08/10	26/09/10	0	SKW0681	SKW0721
SKW0721	92	17/09/10	17/12/10	17/09/10	17/12/10	0	SKW0691	SKW0741
Structural Works								
SKW0741	15	18/12/10	01/01/11	18/12/10	01/01/11	0	SKW0721	SKW0751
SKW0751	14	01/01/11	14/01/11	01/01/11	14/01/11	0	SKW0741	SKW0761
SKW0761	14	14/01/11	27/01/11	14/01/11	27/01/11	0	SKW0751	SKW0771
SKW0771	14	27/01/11	09/02/11	27/01/11	09/02/11	0	SKW0761	SKW0781
SKW0781	14	09/02/11	22/02/11	09/02/11	22/02/11	0	SKW0771	SKW0791
SKW0791	14	22/02/11	07/03/11	22/02/11	07/03/11	0	SKW0781	SKW0801
SKW0801	14	07/03/11	20/03/11	07/03/11	20/03/11	0	SKW0791	SKW0811
SKW0811	14	21/03/11	03/04/11	21/03/11	03/04/11	0	SKW0801	SKW0821
SKW0821	14	04/04/11	17/04/11	04/04/11	17/04/11	0	SKW0811	SKW0831
SKW0831	14	18/04/11	01/05/11	18/04/11	01/05/11	0	SKW0821	E&M1101, E&M1102, E&M1103,
SKW0841	45	18/04/11	01/06/11	18/04/11	01/06/11	0	SKW0831	E&M1101, E&M1102, E&M1103,
SKW0861	168	02/05/11	16/10/11	01/06/11	15/11/11	30d	SKW0831, SKW0841	KD0070
E&M Works (PS1)								
Submission & Delivery								
E&M1001	198	17/05/10	30/11/10	19/05/10	02/12/10	2d	KD0020	E&M1011
E&M1002	198	17/05/10	30/11/10	19/05/10	02/12/10	2d		E&M1012
E&M1003	198	17/05/10	30/11/10	19/05/10	02/12/10	2d		E&M1013
E&M1004	180	17/05/10	12/11/10	06/06/10	02/12/10	20d		E&M1014
E&M1005	243	17/05/10	14/01/11	03/06/10	31/01/11	17d		E&M1015
E&M1006	243	17/05/10	14/01/11	17/05/10	14/01/11	0		E&M1016
E&M1007	243	17/05/10	14/01/11	17/05/10	14/01/11	0		E&M1017
E&M1011	150	01/12/10	29/04/11	03/12/10	01/05/11	2d	E&M1001	E&M1101
E&M1012	150	01/12/10	29/04/11	03/12/10	01/05/11	2d	E&M1002	E&M1102
E&M1013	150	01/12/10	29/04/11	03/12/10	01/05/11	2d	E&M1003	E&M1103
E&M1014	150	13/11/10	11/04/11	03/12/10	01/05/11	20d	E&M1004	E&M1104
E&M1015	90	15/01/11	14/04/11	01/02/11	01/05/11	17d	E&M1005	E&M1105
E&M1016	107	15/01/11	01/05/11	15/01/11	01/05/11	0	E&M1006	E&M1106
E&M1017	107	15/01/11	01/05/11	15/01/11	01/05/11	0	E&M1007	E&M1107
Installation, T&C								
E&M1101	55	02/05/11	25/06/11	02/05/11	25/06/11	0	E&M1011, SKW0831, SKW0841	E&M1110, E&M1140
E&M1102	55	02/05/11	25/06/11	02/05/11	25/06/11	0	E&M1012, SKW0831, SKW0841	E&M1110, E&M1140
E&M1103	55	02/05/11	25/06/11	02/05/11	25/06/11	0	E&M1013, SKW0831, SKW0841	E&M1110, E&M1140
E&M1104	55	02/05/11	25/06/11	02/05/11	25/06/11	0	E&M1014, SKW0831, SKW0841	E&M1140
E&M1105	55	02/05/11	25/06/11	02/05/11	25/06/11	0	E&M1015, SKW0831, SKW0841	E&M1140
E&M1106	55	02/05/11	25/06/11	02/05/11	25/06/11	0	E&M1016, SKW0831, SKW0841	E&M1130, E&M1140
E&M1107	55	02/05/11	25/06/11	02/05/11	25/06/11	0	E&M1017, SKW0831, SKW0841	E&M1110, E&M1140
E&M1110	46	26/06/11	10/08/11	24/12/13	07/02/14	912d	E&M1101, E&M1102, E&M1103,	E&M1120



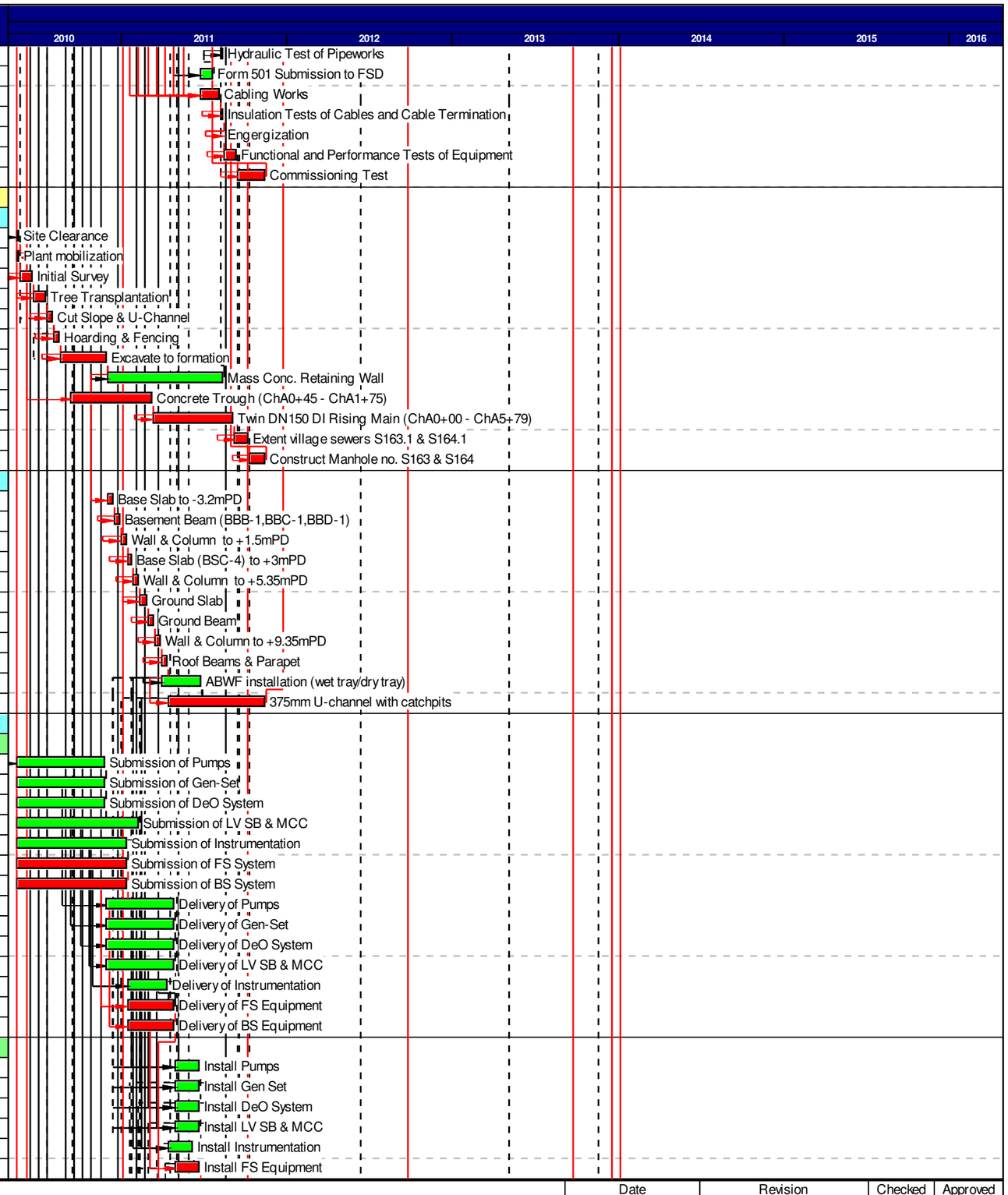
Start date	05/05/10
Finish date	14/02/14
Data date	17/05/10
Run date	06/01/11
Page number	6A
c Primavera Systems, Inc.	

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

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 2)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC
30/12/10	Revision 2	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M1120	7	11/08/11	17/08/11	08/02/14	14/02/14	912d	E&M1110	
E&M1130	28	26/06/11	23/07/11	19/10/11	15/11/11	115d	E&M1106	KD0070
E&M1140	43	26/06/11	07/08/11	26/06/11	07/08/11	0	E&M1101, E&M1102, E&M1103,	E&M1150
E&M1150	7	08/08/11	14/08/11	08/08/11	14/08/11	0	E&M1140	E&M1160
E&M1160	3	15/08/11	17/08/11	15/08/11	17/08/11	0	E&M1150	E&M1170
E&M1170	30	18/08/11	16/09/11	18/08/11	16/09/11	0	E&M1160	E&M11800
E&M11800	60	17/09/11	15/11/11	17/09/11	15/11/11	0	E&M1170	KD0070
Section W 6 - Sewer and PS No.2 in Portions E&H								
Civil & Geotechnical Works								
SKW0881	7	17/05/10	23/05/10	17/05/10	23/05/10	0	KD0020	SKW0891
SKW0891	7	17/05/10	23/05/10	17/05/10	23/05/10	0	SKW0881	SKW0892
SKW0892	30	24/05/10	22/06/10	24/05/10	22/06/10	0	SKW0891	SKW0901
SKW0901	30	23/06/10	22/07/10	23/06/10	22/07/10	0	SKW0892	SKW0921
SKW0921	14	23/07/10	05/08/10	23/07/10	05/08/10	0	SKW0260, SKW0901	SKW0931, SKW0951
SKW0931	14	06/08/10	19/08/10	06/08/10	19/08/10	0	SKW0921	SKW0951
SKW0951	106	20/08/10	03/12/10	20/08/10	03/12/10	0	SKW0921, SKW0931	SKW0961, SKW0971
SKW0961	257	04/12/10	17/08/11	04/03/11	15/11/11	90d	SKW0951	KD0080
SKW1491	180	14/09/10	12/03/11	14/09/10	12/03/11	0	PRE0100	SKW1511
SKW1511	180	13/03/11	08/09/11	13/03/11	08/09/11	0	SKW1491	SKW1531
SKW1531	34	09/09/11	12/10/11	09/09/11	12/10/11	0	SKW1511	SKW1581
SKW1581	34	13/10/11	15/11/11	13/10/11	15/11/11	0	SKW1531	KD0080
Structural Works								
SKW0971	14	04/12/10	17/12/10	04/12/10	17/12/10	0	SKW0951	SKW0981
SKW0981	14	18/12/10	31/12/10	18/12/10	31/12/10	0	SKW0971	SKW0991
SKW0991	14	01/01/11	14/01/11	01/01/11	14/01/11	0	SKW0981	SKW1001
SKW1001	14	15/01/11	28/01/11	15/01/11	28/01/11	0	SKW0991	SKW1011
SKW1011	14	29/01/11	11/02/11	29/01/11	11/02/11	0	SKW1001	SKW1021
SKW1021	20	12/02/11	03/03/11	12/02/11	03/03/11	0	SKW1011	SKW1031
SKW1031	14	04/03/11	17/03/11	04/03/11	17/03/11	0	SKW1021	SKW1041
SKW1041	14	18/03/11	31/03/11	18/03/11	31/03/11	0	SKW1031	SKW1051
SKW1051	14	01/04/11	14/04/11	01/04/11	14/04/11	0	SKW1041	E&M2101, E&M2102, E&M2103,
SKW1061	90	01/04/11	29/06/11	18/04/11	16/07/11	17d	SKW1051	E&M2101, E&M2102, E&M2103,
SKW1081	215	15/04/11	15/11/11	15/04/11	15/11/11	0	SKW1051	KD0080
E&M Works (PS2)								
Submission & Delivery								
E&M2001	198	17/05/10	30/11/10	20/07/10	02/02/11	64d	KD0020	E&M2011
E&M2002	198	17/05/10	30/11/10	20/07/10	02/02/11	64d		E&M2012
E&M2003	198	17/05/10	30/11/10	20/07/10	02/02/11	64d		E&M2013
E&M2004	271	17/05/10	11/02/11	19/05/10	13/02/11	2d		E&M2014
E&M2005	243	17/05/10	14/01/11	03/06/10	31/01/11	17d		E&M2015
E&M2006	243	17/05/10	14/01/11	17/05/10	14/01/11	0		E&M2016
E&M2007	243	17/05/10	14/01/11	17/05/10	14/01/11	0		E&M2017
E&M2011	150	01/12/10	29/04/11	03/02/11	02/07/11	64d	E&M2001	E&M2101
E&M2012	150	01/12/10	29/04/11	03/02/11	02/07/11	64d	E&M2002	E&M2102
E&M2013	150	01/12/10	29/04/11	03/02/11	02/07/11	64d	E&M2003	E&M2103
E&M2014	150	01/12/10	29/04/11	03/12/10	01/05/11	2d	E&M2004	E&M2104
E&M2015	90	15/01/11	14/04/11	01/02/11	01/05/11	17d	E&M2005	E&M2105
E&M2016	107	15/01/11	01/05/11	15/01/11	01/05/11	0	E&M2006	E&M0350, E&M2106
E&M2017	107	15/01/11	01/05/11	15/01/11	01/05/11	0	E&M2007	E&M2107
Installation, T&C								
E&M2101	55	30/04/11	23/06/11	03/07/11	26/08/11	64d	E&M2011, SKW1051, SKW1061	E&M2110
E&M2102	55	30/04/11	23/06/11	03/07/11	26/08/11	64d	E&M2012, SKW1051, SKW1061	E&M2110
E&M2103	55	30/04/11	23/06/11	03/07/11	26/08/11	64d	E&M2013, SKW1051, SKW1061	E&M2110
E&M2104	55	30/04/11	23/06/11	02/05/11	25/06/11	2d	E&M2014, SKW1051, SKW1061	E&M2140
E&M2105	55	15/04/11	08/06/11	02/05/11	25/06/11	17d	E&M2015, SKW1051, SKW1061	E&M2140
E&M2106	55	02/05/11	25/06/11	02/05/11	25/06/11	0	E&M2016, SKW1051, SKW1061	E&M2140



Start date	05/05/10
Finish date	14/02/14
Data date	17/05/10
Run date	06/01/11
Page number	7A
c Primavera Systems, Inc.	

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

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 2)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC
30/12/10	Revision 2	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
E&M2107	55	02/05/11	25/06/11	02/05/11	25/06/11	0	E&M2017, SKW1051, SKW1061	E&M2110, E&M2140
E&M2110	46	26/06/11	10/08/11	27/08/11	11/10/11	62d	E&M2101, E&M2102, E&M2103,	E&M2120
E&M2120	7	11/08/11	17/08/11	12/10/11	18/10/11	62d	E&M2110	E&M2130, KD0080
E&M2130	28	18/08/11	14/09/11	19/10/11	15/11/11	62d	E&M2120	KD0080
E&M2140	43	26/06/11	07/08/11	26/06/11	07/08/11	0	E&M2104, E&M2105, E&M2106,	E&M2150
E&M2150	7	08/08/11	14/08/11	08/08/11	14/08/11	0	E&M2140	E&M2160
E&M2160	3	15/08/11	17/08/11	15/08/11	17/08/11	0	E&M2150	E&M2170
E&M2170	30	18/08/11	16/09/11	18/08/11	16/09/11	0	E&M2160	E&M2180
E&M2180	60	17/09/11	15/11/11	17/09/11	15/11/11	0	E&M2170	KD0080
Section W 7 - SKW STW ,Sewer and Submarine Outfall								
Submarine Outfall								
SKW1130	180	17/05/10	12/11/10	11/04/12	07/10/12	695d		SKW1131
SKW1131	300	13/11/10	08/09/11	08/10/12	03/08/13	695d	KD0020, SKW1130	SKW1231
SKW1141	213	16/06/10	14/01/11	31/07/10	28/02/11	45d	SKW0260	SKW1151
SKW1151	185	15/01/11	18/07/11	01/03/11	01/09/11	45d	PRE0090, SKW1141	SKW1171
SKW1171	120	19/07/11	15/11/11	02/09/11	30/12/11	45d	SKW1151	SKW1181
SKW1181	60	16/11/11	14/01/12	31/12/11	28/02/12	45d	SKW1171, YSW0360	SKW1191
SKW1191	30	15/01/12	13/02/12	29/02/12	29/03/12	45d	SKW1181	SKW1201
SKW1201	210	14/02/12	10/09/12	30/03/12	25/10/12	45d	SKW1191	SKW1211
SKW1211	180	11/09/12	09/03/13	26/10/12	23/04/13	45d	SKW1201	SKW1221
SKW1221	57	10/03/13	05/05/13	24/04/13	19/06/13	45d	SKW1211	KD0090, SKW1231, SKW1441
SKW1231	60	06/05/13	04/07/13	04/08/13	02/10/13	90d	SKW1131, SKW1221	SKW1241
SKW1241	60	05/07/13	02/09/13	03/10/13	01/12/13	90d	SKW1231	SKW1251
SKW1251	45	03/09/13	17/10/13	02/12/13	15/01/14	90d	SKW1241	SKW1431
SKW1431	30	18/10/13	16/11/13	16/01/14	14/02/14	90d	SKW1251	KD0090
SKW1441	240	06/05/13	31/12/13	20/06/13	14/02/14	45d	SKW1221	
SKW STW								
Submission & Delivery (E&M)								
E&M3010	150	16/11/10	14/04/11	24/04/13	20/09/13	890d	E&M0160	E&M3170
E&M3030	180	02/04/11	28/09/11	31/08/11	26/02/12	151d	E&M0150	E&M3190
E&M3060	136	02/04/11	15/08/11	15/08/11	28/12/11	135d	E&M0120	E&M3210
E&M3070	136	02/04/11	15/08/11	15/08/11	28/12/11	135d	E&M0130	E&M3220
E&M3080	180	02/04/11	28/09/11	15/09/11	12/03/12	166d	E&M0140	E&M3230
E&M3090	210	02/04/11	28/10/11	18/07/11	12/02/12	107d	E&M0170	E&M3240
E&M3100	180	02/04/11	28/09/11	05/02/13	03/08/13	675d	E&M0180	E&M3250
E&M3110	180	02/04/11	28/09/11	18/02/13	16/08/13	688d	E&M0190	E&M3260
E&M3130	180	02/04/11	28/09/11	04/05/13	30/10/13	763d	E&M0200	E&M3270
E&M3140	180	02/04/11	28/09/11	09/05/11	04/11/11	37d	E&M0210	E&M3261
E&M3150	180	02/04/11	28/09/11	20/02/13	18/08/13	690d	E&M0220	E&M3291
E&M3160	180	02/04/11	28/09/11	14/01/12	11/07/12	287d	E&M0230	E&M0340, E&M3300
Construction of Grid A-G								
SKW1261	164	14/02/11	27/07/11	14/02/11	27/07/11	0	SKW0551	SKW1271, SKW1371
SKW1271	25	28/07/11	21/08/11	28/07/11	21/08/11	0	SKW1261	SKW1281
SKW1281	25	22/08/11	15/09/11	22/08/11	15/09/11	0	SKW1271	SKW1291
SKW1291	25	16/09/11	10/10/11	16/09/11	10/10/11	0	SKW1281	KD0090, SKW1301
SKW1301	25	11/10/11	04/11/11	11/10/11	04/11/11	0	SKW1291	E&M3261, E&M3291, E&M3311,
SKW1411	85	11/10/11	03/01/12	11/10/11	03/01/12	0	SKW1301	E&M3261, E&M3291, E&M3311
Construction of Grid G-N								
SKW1311	36	16/06/11	21/07/11	29/06/11	03/08/11	13d	SKW0551, SKW05938	SKW1321
SKW1321	35	22/07/11	25/08/11	04/08/11	07/09/11	13d	SKW1311	SKW1331
SKW1331	35	26/08/11	29/09/11	08/09/11	12/10/11	13d	SKW1321	SKW1341
SKW1341	35	30/09/11	03/11/11	13/10/11	16/11/11	13d	SKW1331	SKW1351
SKW1351	18	04/11/11	21/11/11	17/11/11	04/12/11	13d	SKW1341	SKW1361
SKW1361	24	22/11/11	15/12/11	05/12/11	28/12/11	13d	SKW1351	E&M3170, E&M3190, E&M3210,
Construction of Grid N-T								

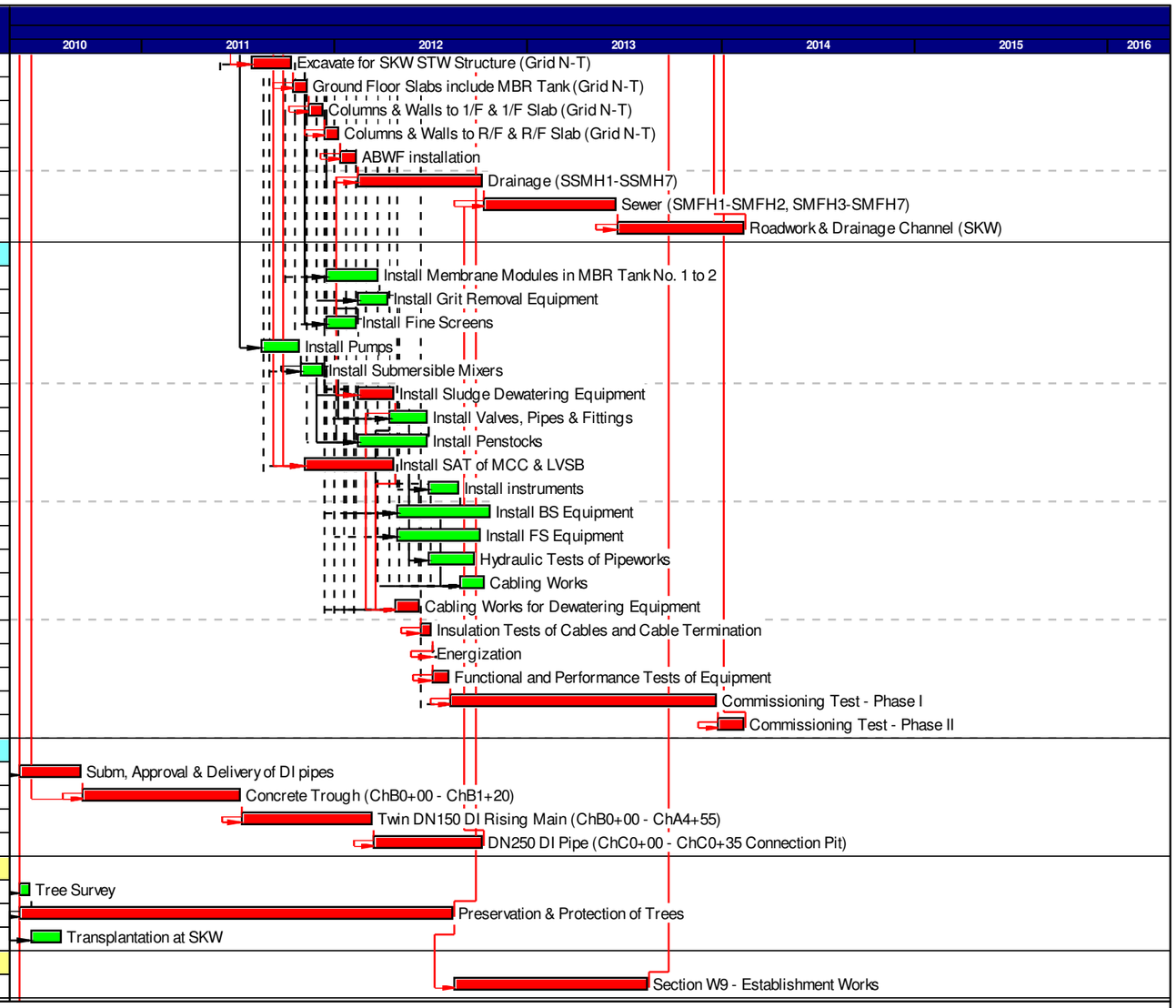
Start date	05/05/10
Finish date	14/02/14
Data date	17/05/10
Run date	06/01/11
Page number	8A
c Primavera Systems, Inc.	

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

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 2)

Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC
30/12/10	Revision 2	StL	VC

Activity ID	Original Duration	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors
SKW1371	80	28/07/11	15/10/11	28/07/11	15/10/11	0	SKW05938, SKW1261	SKW1381
SKW1381	30	16/10/11	14/11/11	16/10/11	14/11/11	0	SKW1371	SKW1391
SKW1391	30	15/11/11	14/12/11	15/11/11	14/12/11	0	SKW1381	SKW1401
SKW1401	30	15/12/11	13/01/12	15/12/11	13/01/12	0	SKW1391	E&M3240, SKW1421
SKW1421	30	14/01/12	12/02/12	14/01/12	12/02/12	0	SKW1401	E&M3240, SKW1551
SKW1551	241	13/02/12	10/10/12	13/02/12	10/10/12	0	SKW1421	SKW1561
SKW1561	251	11/10/12	18/06/13	11/10/12	18/06/13	0	SKW1541, SKW1551	SKW1571
SKW1571	241	19/06/13	14/02/14	19/06/13	14/02/14	0	SKW1561	KD0090
SKW STP - E&M Works								
E&M3170	100	16/12/11	24/03/12	21/09/13	29/12/13	645d	E&M3010, SKW1361	E&M3311
E&M3190	60	14/02/12	13/04/12	27/02/12	26/04/12	13d	E&M3030, E&M3210, SKW1361	E&M3250, E&M3320
E&M3210	60	16/12/11	13/02/12	29/12/11	26/02/12	13d	E&M3060, SKW1361	E&M3190, E&M3250, E&M3260,
E&M3220	75	16/08/11	29/10/11	29/12/11	12/03/12	135d	E&M3070	E&M3230, E&M3250, E&M3260,
E&M3230	45	30/10/11	13/12/11	13/03/12	26/04/12	135d	E&M3080, E&M3220	E&M3250, E&M3260, E&M3311,
E&M3240	74	13/02/12	26/04/12	13/02/12	26/04/12	0	E&M3090, SKW1401, SKW1421	E&M3320
E&M3250	75	14/04/12	27/06/12	04/08/13	17/10/13	477d	E&M3100, E&M3190, E&M3210,	E&M3270, E&M3291, E&M3300,
E&M3260	135	14/02/12	27/06/12	17/08/13	29/12/13	550d	E&M3110, E&M3210, E&M3220,	E&M3311
E&M3261	174	05/11/11	26/04/12	05/11/11	26/04/12	0	E&M3140, SKW1301, SKW1411	E&M3311, E&M3320
E&M3270	60	28/06/12	26/08/12	31/10/13	29/12/13	490d	E&M3130, E&M3250	E&M3311
E&M3291	180	29/04/12	25/10/12	19/08/13	14/02/14	477d	E&M3150, E&M3250, SKW1301,	
E&M3300	161	29/04/12	06/10/12	07/09/13	14/02/14	496d	E&M3160, E&M3250, SKW1361	
E&M3310	90	28/06/12	25/09/12	17/11/13	14/02/14	507d	E&M3250	
E&M3311	47	27/08/12	12/10/12	30/12/13	14/02/14	490d	E&M3170, E&M3230, E&M3260,	
E&M3320	47	27/04/12	12/06/12	27/04/12	12/06/12	0	E&M3190, E&M3210, E&M3220,	E&M3321
E&M3321	21	13/06/12	03/07/12	13/06/12	03/07/12	0	E&M3320	E&M3331
E&M3331	1	04/07/12	04/07/12	04/07/12	04/07/12	0	E&M3321	E&M3359
E&M3359	35	05/07/12	08/08/12	05/07/12	08/08/12	0	E&M3331	E&M3360
E&M3360	505	09/08/12	26/12/13	09/08/12	26/12/13	0	E&M0340, E&M3359	E&M3370
E&M3370	50	27/12/13	14/02/14	27/12/13	14/02/14	0	E&M3360	KD0090
Rising Main								
SKW1481	120	17/05/10	13/09/10	17/05/10	13/09/10	0	KD0020	SKW1501
SKW1501	300	14/09/10	10/07/11	14/09/10	10/07/11	0	PRE0100, SKW1481	SKW1521
SKW1521	250	11/07/11	16/03/12	11/07/11	16/03/12	0	SKW1501	SKW1541
SKW1541	208	17/03/12	10/10/12	17/03/12	10/10/12	0	SKW1521	SKW1561
Section W 8 - Landscape Softworks in All Portions								
SKW1591	21	17/05/10	06/06/10	26/11/13	16/12/13	1289d	KD0020	SKW1621
SKW1611	822	17/05/10	15/08/12	17/05/10	15/08/12	0	KD0020	KD0100, SKW1631
SKW1621	60	07/06/10	05/08/10	17/12/13	14/02/14	1289d	SKW1591	
Section W 9 - Establishment W orks in All Portions								
SKW1631	365	16/08/12	15/08/13	16/08/12	15/08/13	0	SKW1611	KD0110



Start date	05/05/10
Finish date	14/02/14
Data date	17/05/10
Run date	06/01/11
Page number	9A
c Primavera Systems, Inc.	

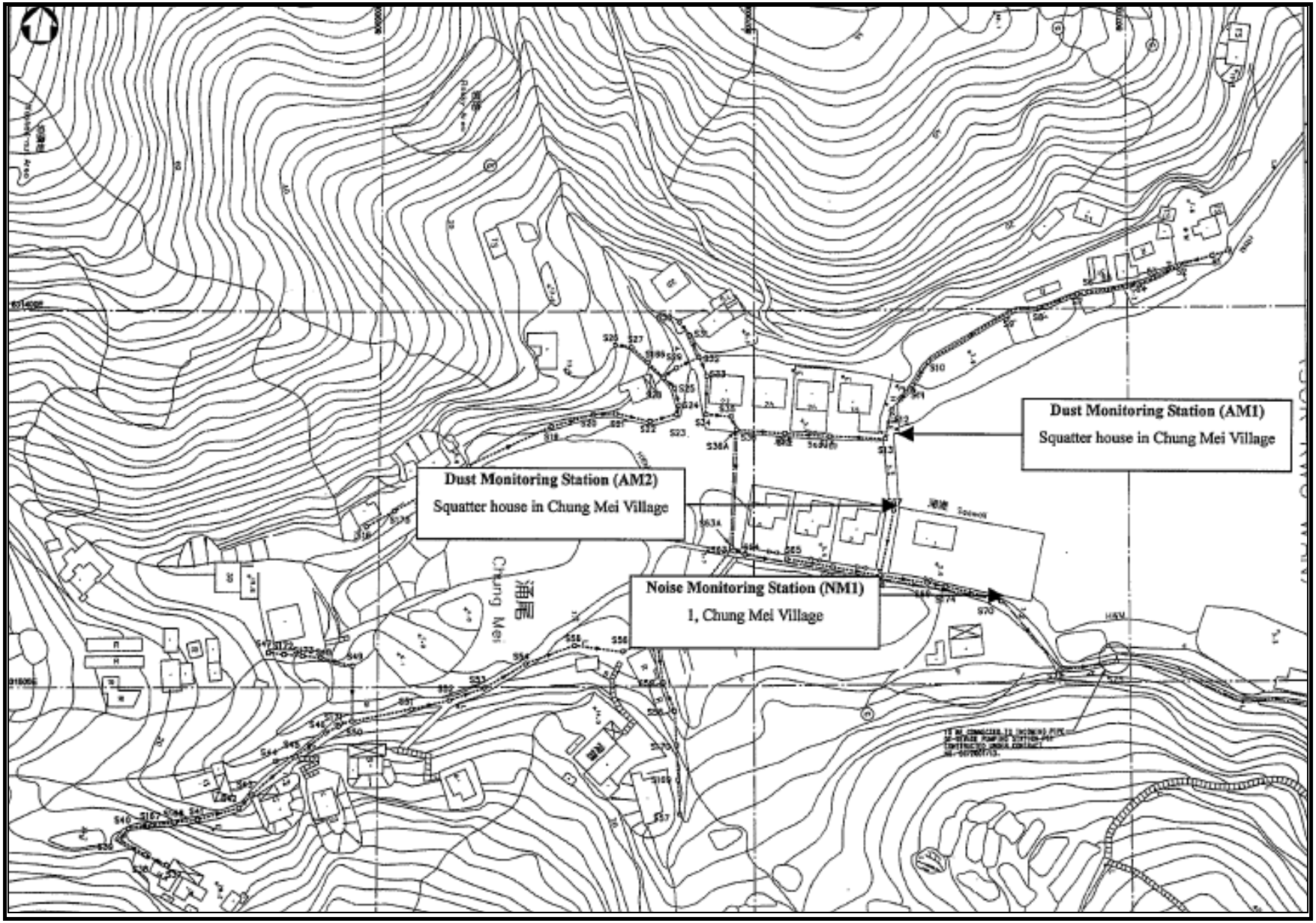
Early bar
Progress bar
Critical bar
Summary bar
Progress point
Critical point
Summary point
Start milestone point
Finish milestone point

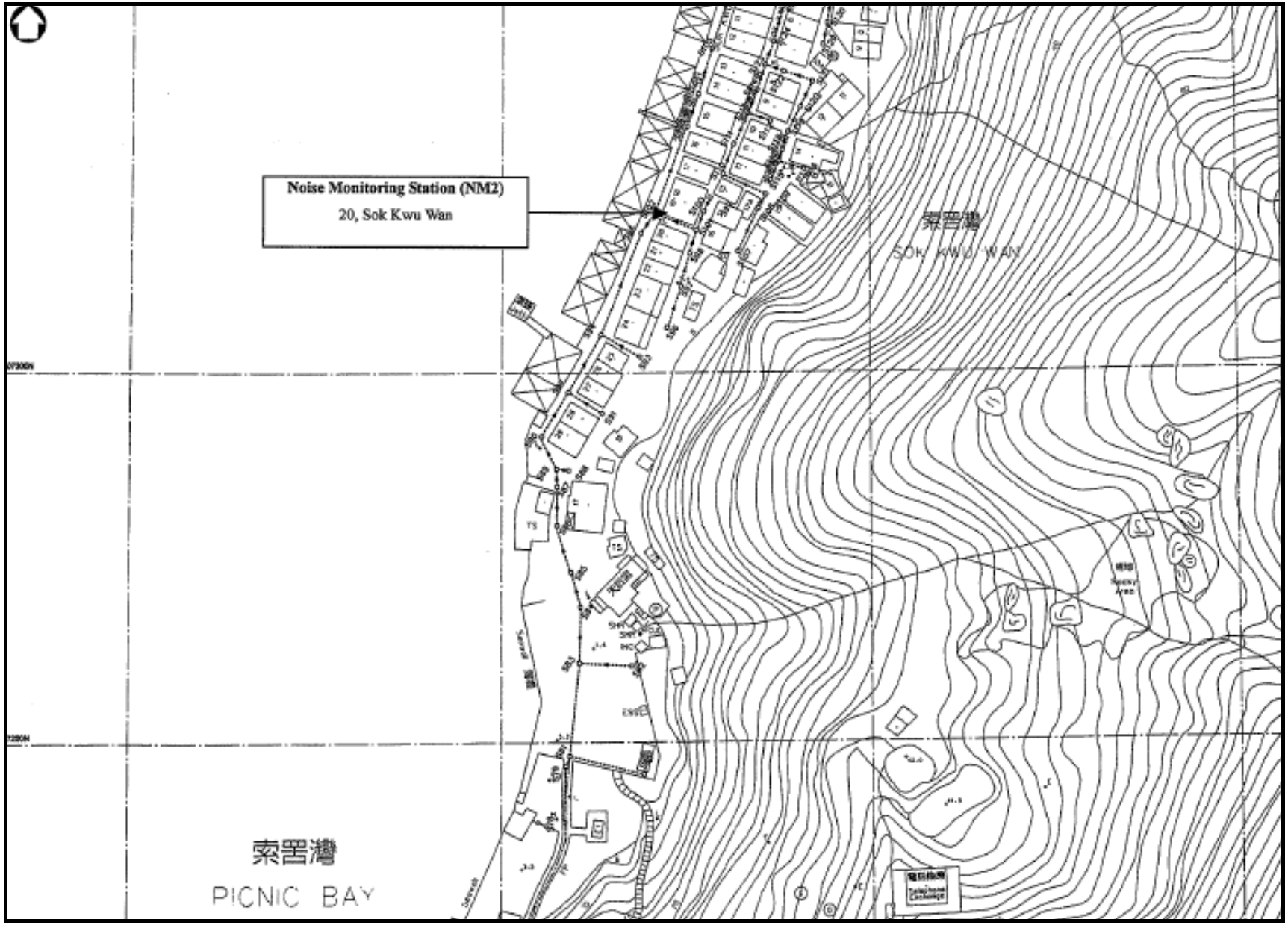
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
Works Programme (Rev. 2)

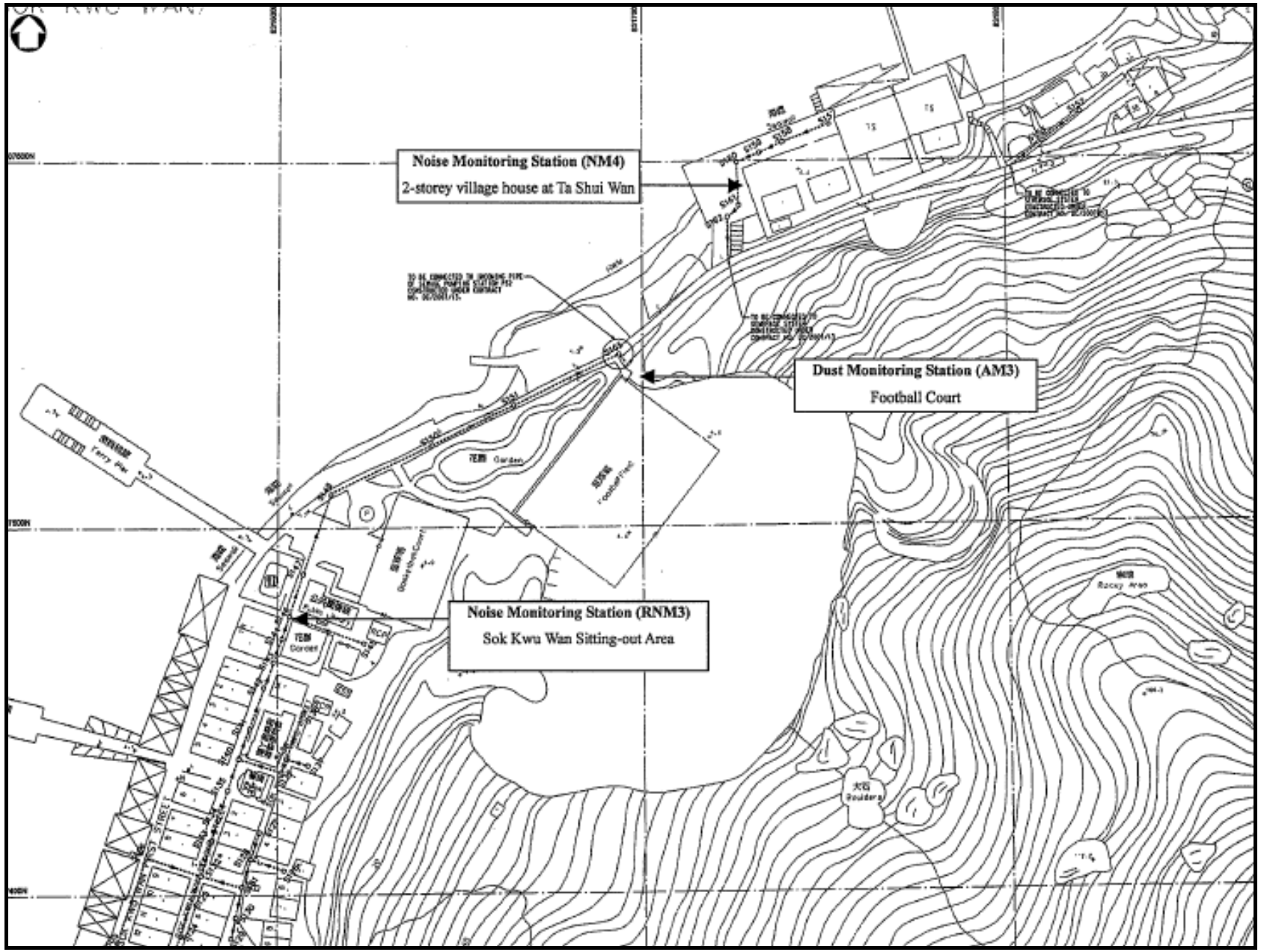
Date	Revision	Checked	Approved
17/05/10	Revision 0	StL	VC
31/07/10	Revision 1	StL	VC
30/12/10	Revision 2	StL	VC

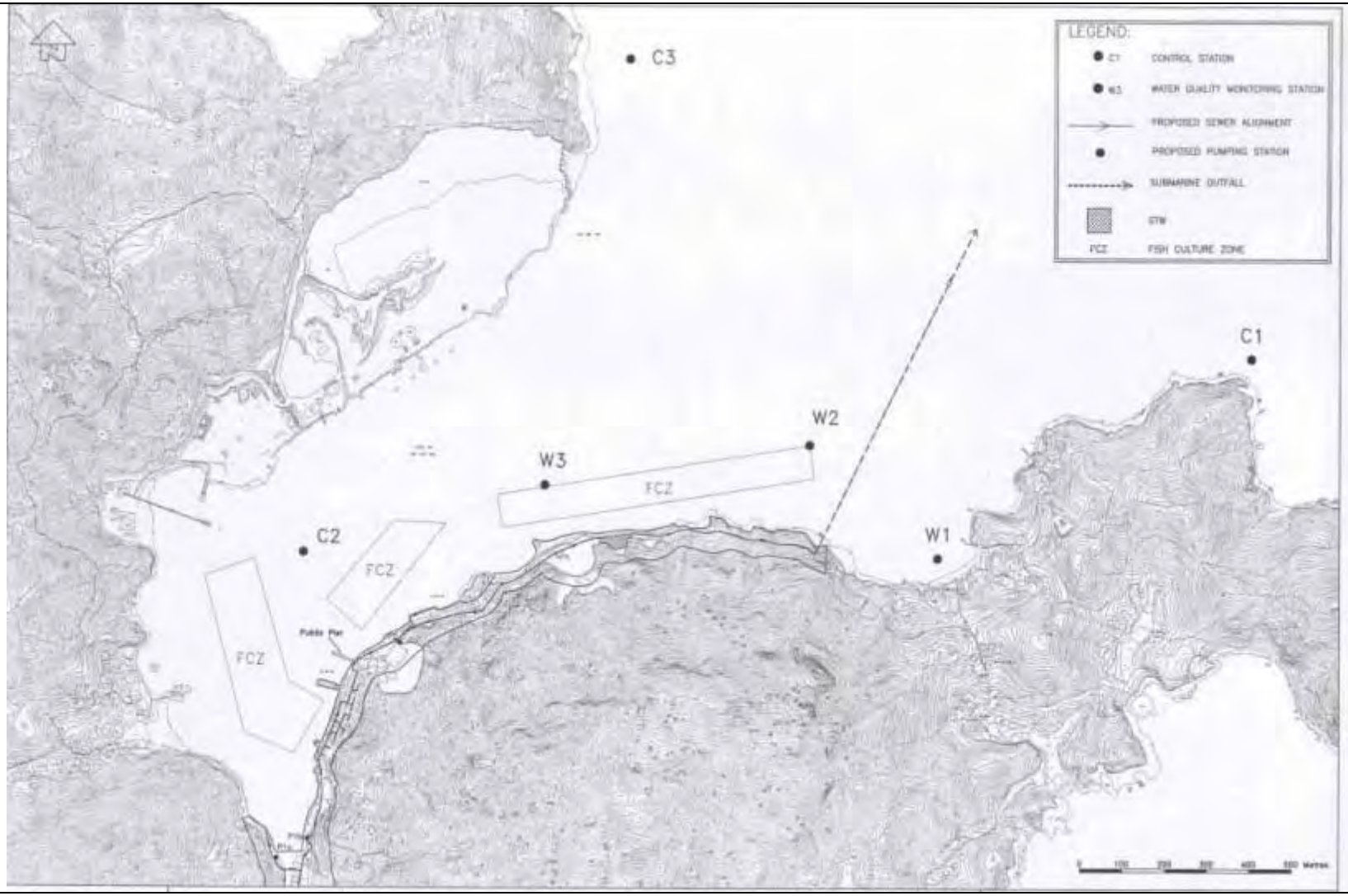
Appendix D

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


Dust Monitoring Station (AM1)
Squatter house in Chung Mei Village
Dust Monitoring Station (AM2)
Squatter house in Chung Mei Village
Noise Monitoring Station (NM1)
1, Chung Mei Village
Chung Mei
涌尾


Noise Monitoring Station (NM2)
20, Sok Kwu Wan
索罟灣
SOK KWU WAN
索罟灣
PICNIC BAY


Noise Monitoring Station (NM4)
2-storey village house at Ta Shui Wan
Dust Monitoring Station (AM3)
Football Court
Noise Monitoring Station (RNM3)
Sok Kwu Wan Sitting-out Area


LEGEND:
CONTROL STATION
WATER QUALITY MONITORING STATION
PROPOSED SEWER ALIGNMENT
PROPOSED PUMPING STATION
SUBMARINE OUTFALL
STW
FCZ
FISH CULTURE ZONE
C3
C1
W2
W3
FCZ
C2
W1
FCZ
FCZ
Public Pier

Appendix E

Monitoring Equipments Calibration Certificate

TISCH ENVIROMENTAL, INC.
145 SOUTH MIAMI AVE.
VILLAGE OF CLEVES, OH 45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jun 02, 2010 Rootsmeter S/N 9833620 Ta (K) - 297
Operator Tisch Orifice I.D. - 1483 Pa (mm) - 746.76

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3990	3.2	2.00
2	NA	NA	1.00	0.9820	6.4	4.00
3	NA	NA	1.00	0.8770	7.9	5.00
4	NA	NA	1.00	0.8350	8.8	5.50
5	NA	NA	1.00	0.6910	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9816	0.7017	1.4042		0.9957	0.7117	0.8919
0.9775	0.9954	1.9858		0.9914	1.0096	1.2613
0.9754	1.1122	2.2202		0.9893	1.1281	1.4102
0.9742	1.1668	2.3286		0.9882	1.1835	1.4790
0.9689	1.4023	2.8084		0.9828	1.4223	1.7837
Qstd slope (m) =		2.00279		Qa slope (m) =		1.25411
intercept (b) =		-0.00494		intercept (b) =		-0.00314
coefficient (r) =		0.99994		coefficient (r) =		0.99994
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

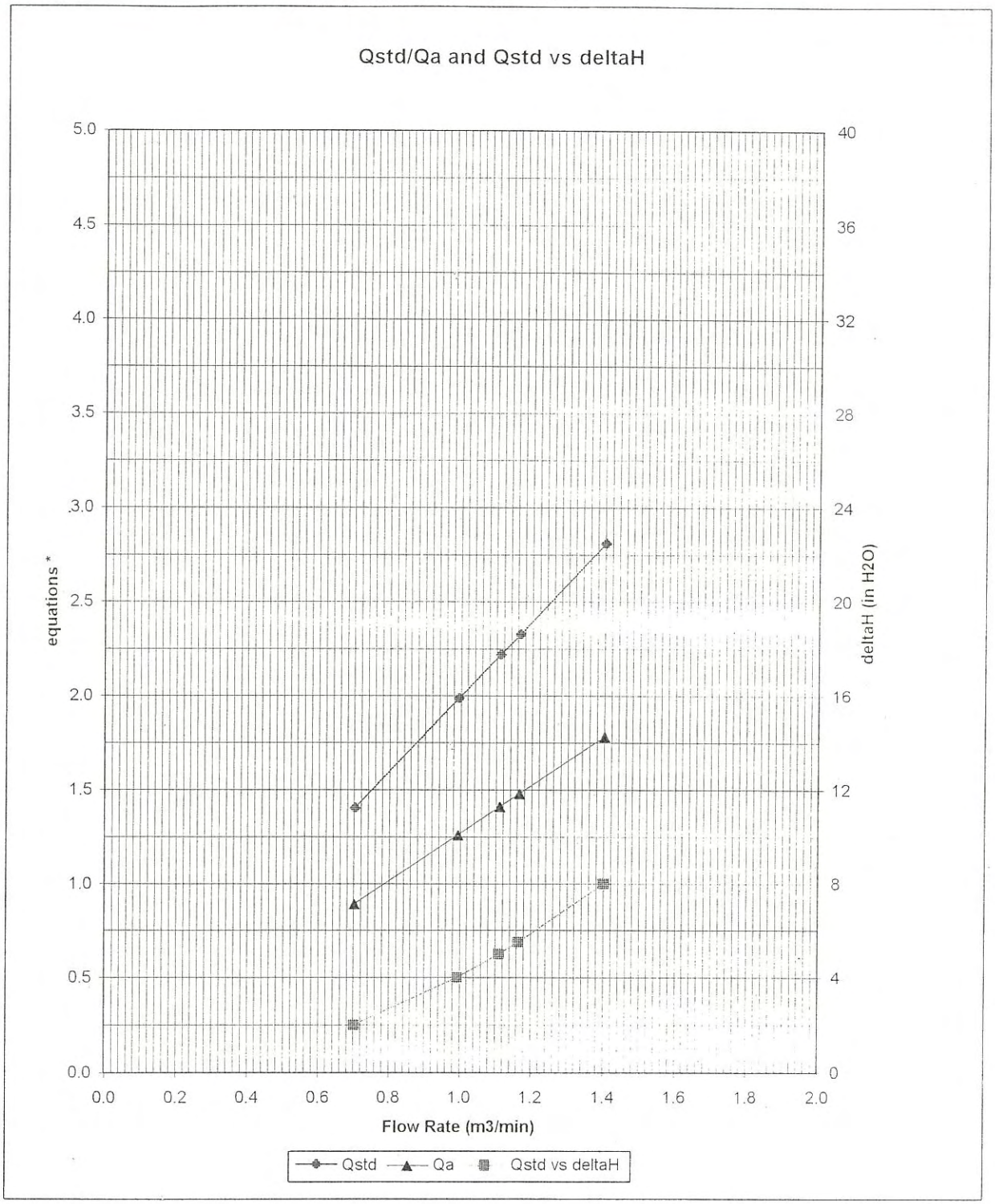
Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

TISCH ENVIROMENTAL, INC.
145 SOUTH MIAMI AVE.
VILLAGE OF CLEVES, OH 45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series: $\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$

Qa series: $\sqrt{(\Delta H\ (Ta\ /\ Pa))}$

#1483

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C102286

Certificate of Calibration

This is to certify that the equipment

Description : Integrating Sound Level Meter (EQ006)

Manufacturer : Bruel & Kjaer

Model No. : 2238

Serial No. : 2285762

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C102286.

The equipment is supplied by

Co. Name : Action-United Environmental Services and Consulting

Address : Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

Date of Issue : 27 April 2010

Certified by : K C Lee

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C102286

Calibration Report

ITEM TESTED

DESCRIPTION : Integrating Sound Level Meter (EQ006)
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 2238
SERIAL NO. : 2285762

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 26 April 2010 ***JOB NO.*** : IC10-0951

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by : *W L Lai* *Date : 27 April 2010*

Report No. : C102286

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using the B & K Acoustic Calibrator 4231, S/N : 2326408 was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C100067
CL281	Multifunction Acoustic Calibrator	DC090052

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.0	Ref.
	L_{ASP}		S			94.1	± 0.1
	L_{AIP}		I			94.1	± 0.1

Report No. : C102286

Calibration Report

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L_{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L_{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	55.4	-39.4 ± 1.5
					63 Hz	68.1	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.1	+1.2 ± 1.0
					4 kHz	95.1	+1.0 ± 1.0
					8 kHz	93.3	-1.1 (+1.5 ; -3.0)
					12.5 kHz	90.0	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.8	-3.0 ± 1.5
					63 Hz	93.5	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	93.9	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
					8 kHz	91.3	-3.0 (+1.5 ; -3.0)
					12.5 kHz	88.0	-6.2 (+3.0 ; -6.0)

Report No. : C102286

Calibration Report

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.8	± 0.5
						$1/10^2$		90	89.8	± 0.5
			60 sec.			$1/10^3$		80	79.3	± 1.0
			5 min.			$1/10^4$		70	69.3	± 1.0

Remarks : - Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB :	31.5 Hz - 125 Hz	: ± 0.40 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz	: ± 0.40 dB
	4 kHz	: ± 0.50 dB
	8 kHz	: ± 0.70 dB
	12.5 kHz	: ± 1.20 dB
104 dB :	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB :	1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C102350

Certificate of Calibration

This is to certify that the equipment

Description : Integrating Sound Level Meter (EQ008)

Manufacturer : Bruel & Kjaer

Model No. : 2238

Serial No. : 2285690

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C102350.

The equipment is supplied by

Co. Name : Action-United Environmental Services and Consulting

Address : Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

Date of Issue : 30 April 2010

Certified by : K C Lee

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C102350

Calibration Report

ITEM TESTED

DESCRIPTION : Integrating Sound Level Meter (EQ008)
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 2238
SERIAL NO. : 2285690

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 29 April 2010 ***JOB NO.*** : IC10-0951

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies, USA
- Fluke Everett Service Center, USA
- Rohde & Schwarz Laboratory, Germany

Tested by : L L Cheung *Date : 30 April 2010*

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

Report No. : C102350

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using the laboratory acoustic calibrator was performed before the test 6.1.1.2 to 6.4.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C100067
CL281	Multifunction Acoustic Calibrator	DC090052

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.1

6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

Report No. : C102350

Calibration Report

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.0	Ref.
	L_{ASP}		S			94.1	± 0.1
	L_{AIP}		I			94.1	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L_{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L_{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	54.7	-39.4 ± 1.5
					63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

Report No. : C102350

Calibration Report

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.1	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	93.9	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						$1/10^2$		90	89.6	± 0.5
			60 sec.			$1/10^3$		80	79.7	± 1.0
			5 min.			$1/10^4$		70	69.7	± 1.0

Remarks : - Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB :	31.5 Hz - 125 Hz	: ± 0.40 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz	: ± 0.40 dB
	4 kHz	: ± 0.50 dB
	8 kHz	: ± 0.70 dB
	12.5 kHz	: ± 1.20 dB
104 dB :	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB :	1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C102285

Certificate of Calibration

This is to certify that the equipment

Description : Acoustical Calibrator (EQ081)

Manufacturer : Bruel & Kjaer

Model No. : 4231

Serial No. : 2326408

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C102285.

The equipment is supplied by

Co. Name : Action-United Environmental Services and Consulting

Address : Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

Date of Issue : 27 April 2010

Certified by : K C Lee

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C102285

Calibration Report

ITEM TESTED

DESCRIPTION : Acoustical Calibrator (EQ081)
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 4231
SERIAL NO. : 2326408

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 26 April 2010 ***JOB NO.*** : IC10-0951

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by : *W L Lai* *Date : 27 April 2010*

Report No. : C102285

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
TST150A	Measuring Amplifier	C101008
CL130	Universal Counter	C093122
CL281	Multifunction Acoustic Calibrator	DC090052

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.0		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

Remark : - The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

E(2102

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

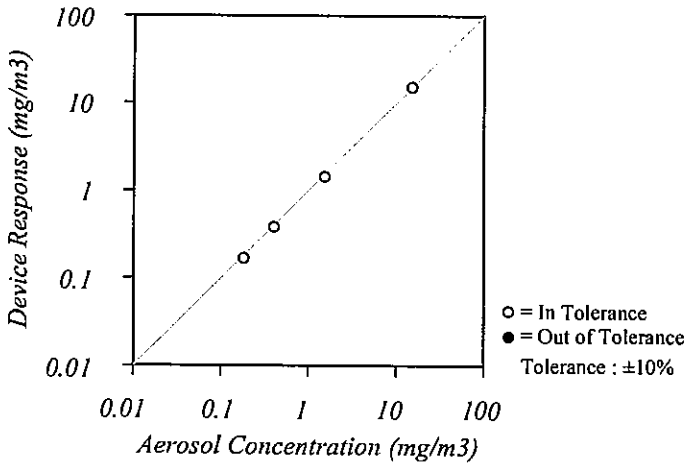
Environment Condition		
Temperature	74.8 (23.8)	°F (°C)
Relative Humidity	38	%RH
Barometric Pressure	28.96 (980.7)	inHg (hPa)

Model	AM510
Serial Number	11008017

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTI101-01

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Photometer	E003433	05-17-10	11-17-10	Flow and temperature	E003434	04-21-10	04-21-11
DC Voltage(Keithley)	E002859	01-05-10	01-05-11	Microbalance	E003403	01-07-10	01-07-11
Barometric Pressure	E003733	12-26-09	12-26-10	Temperature	E002873	02-23-10	02-23-11
Humidity	E002873	02-23-10	02-23-11	Pressure	E003440	08-26-09	08-26-10

Sona H.
Calibrated

☒ Final Function Check

August 6, 2010
Date

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

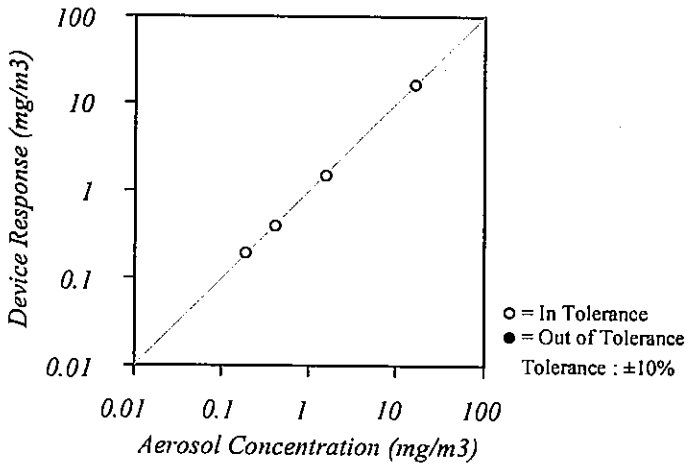
Environment Condition		
Temperature	73.2 (22.9)	°F (°C)
Relative Humidity	38	%RH
Barometric Pressure	29.08 (984.8)	inHg (hPa)

Model	AM510
Serial Number	11008060

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTI101-01

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due
Photometer	E003433	05-17-10	11-17-10
DC Voltage(Keithley)	E002859	01-05-10	01-05-11
Barometric Pressure	E003733	12-26-09	12-26-10
Humidity	E002873	02-23-10	02-23-11

Measurement Variable	System ID	Last Cal.	Cal. Due
Flow and temperature	E003434	04-21-10	04-21-11
Microbalance	E003403	01-07-10	01-07-11
Temperature	E002873	02-23-10	02-23-11
Pressure	E003440	08-26-09	08-26-10

Kao Vang
Calibrated

☑ Final Function Check

August 17, 2010
Date

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

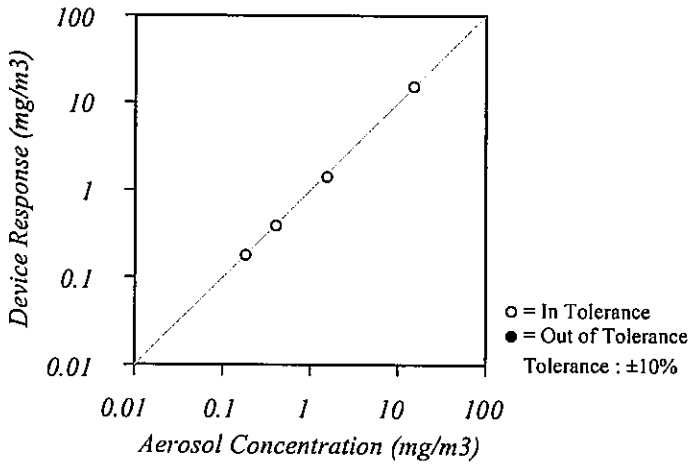
Environment Condition		
Temperature	74.8 (23.8)	°F (°C)
Relative Humidity	38	%RH
Barometric Pressure	28.96 (980.7)	inHg (hPa)

Model	**AM510**
Serial Number	**11008018**

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-01

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Photometer	E003433	05-17-10	11-17-10	Flow and temperature	E003434	04-21-10	04-21-11
DC Voltage(Keithley)	E002859	01-05-10	01-05-11	Microbalance	E003403	01-07-10	01-07-11
Barometric Pressure	E003733	12-26-09	12-26-10	Temperature	E002873	02-23-10	02-23-11
Humidity	E002873	02-23-10	02-23-11	Pressure	E003440	08-26-09	08-26-10

Sonia H.
Calibrated

☒ Final Function Check

August 6, 2010
Date

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Squatter house in Chung Mei Village	Date of Calibration: 28-Feb-11
Location ID : AM1	Next Calibration Date: 28-Apr-11
	Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1014	Corrected Pressure (mm Hg)	760.5
Temperature (ºC)	21.6	Temperature (K)	295

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00279
Model->	5025A	Qstd Intercept ->	-0.00494
Serial # ->	1483		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.2	5.2	10.4	1.622	59	59.70	Slope = 32.9014
13	4	4	8	1.423	53	53.63	Intercept = 6.5993
10	2.9	2.9	5.8	1.212	46	46.55	Corr. coeff. = 0.9998
7	1.7	1.7	3.4	0.929	37	37.44	
5	0.8	0.8	1.6	0.638	27	27.32	

Calculations :

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

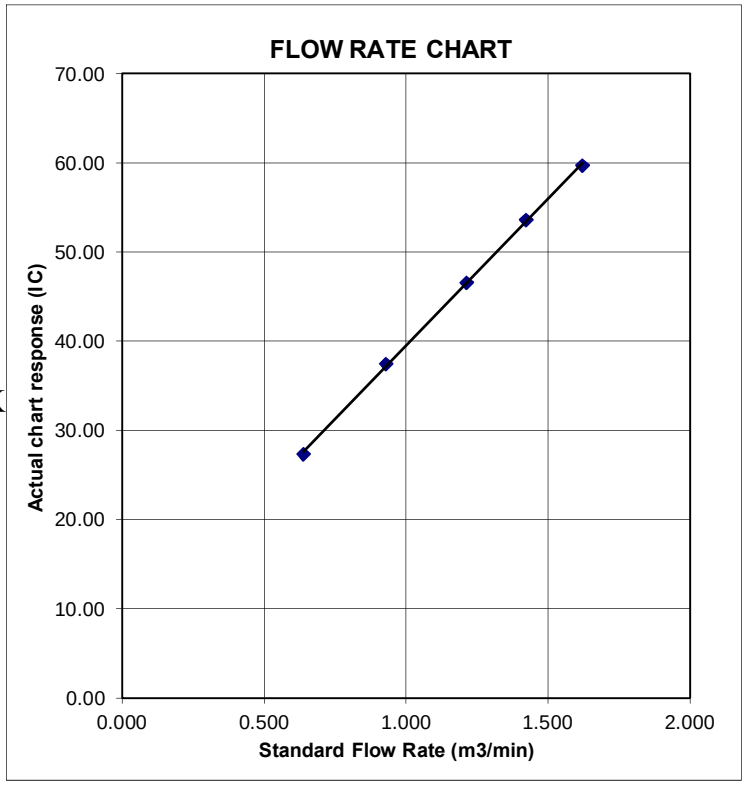
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K
Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Squatter house in Chung Mei Village
Location ID : AM2

Date of Calibration: 28-Feb-11
Next Calibration Date: 28-Apr-11
Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1014	Corrected Pressure (mm Hg)	760.5
Temperature (ºC)	21.6	Temperature (K)	295

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00279
Model->	5025A	Qstd Intercept ->	-0.00494
Serial # ->	1483		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12	1.743	58	58.69	Slope = 24.5723
13	4.3	4.3	8.6	1.476	51	51.61	Intercept = 15.5545
10	3	3	6	1.233	45	45.53	Corr. coeff. = 0.9997
7	1.7	1.7	3.4	0.929	38	38.45	
5	0.7	0.7	1.4	0.597	30	30.36	

Calculations :

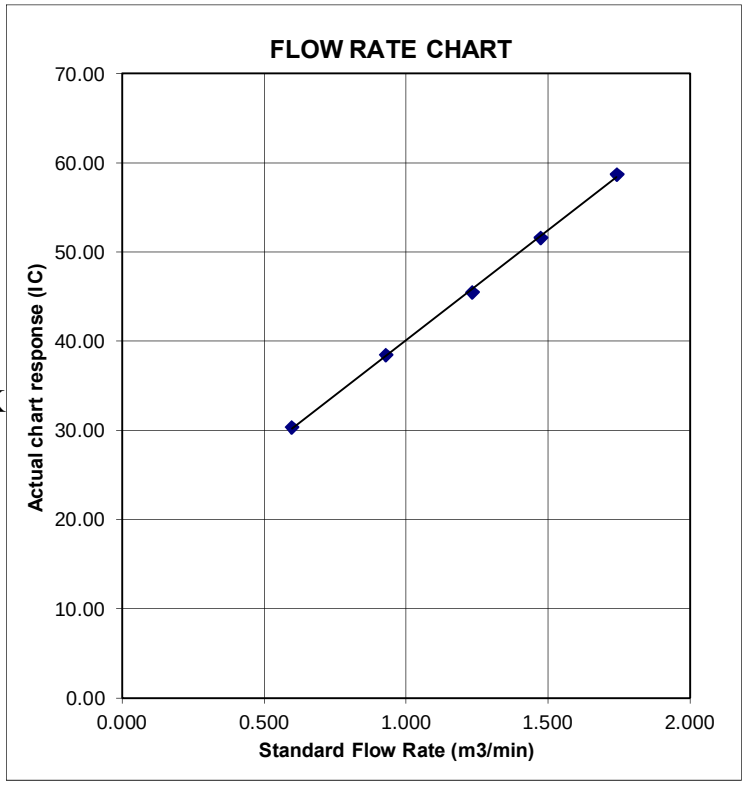
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K
Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Football court
Location ID : AM3

Date of Calibration: 28-Feb-11
Next Calibration Date: 28-Apr-11
Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1014	Corrected Pressure (mm Hg)	760.5
Temperature (ºC)	21.6	Temperature (K)	295

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00279
Model->	5025A	Qstd Intercept ->	-0.00494
Serial # ->	1483		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.3	5.3	10.6	1.638	51	51.61	Slope = 23.9771
13	4.1	4.1	8.2	1.441	46	46.55	Intercept = 12.1533
10	3	3	6	1.233	41	41.49	Corr. coeff. = 0.9997
7	1.5	1.5	3	0.873	33	33.39	
5	0.6	0.6	1.2	0.553	25	25.30	

Calculations :

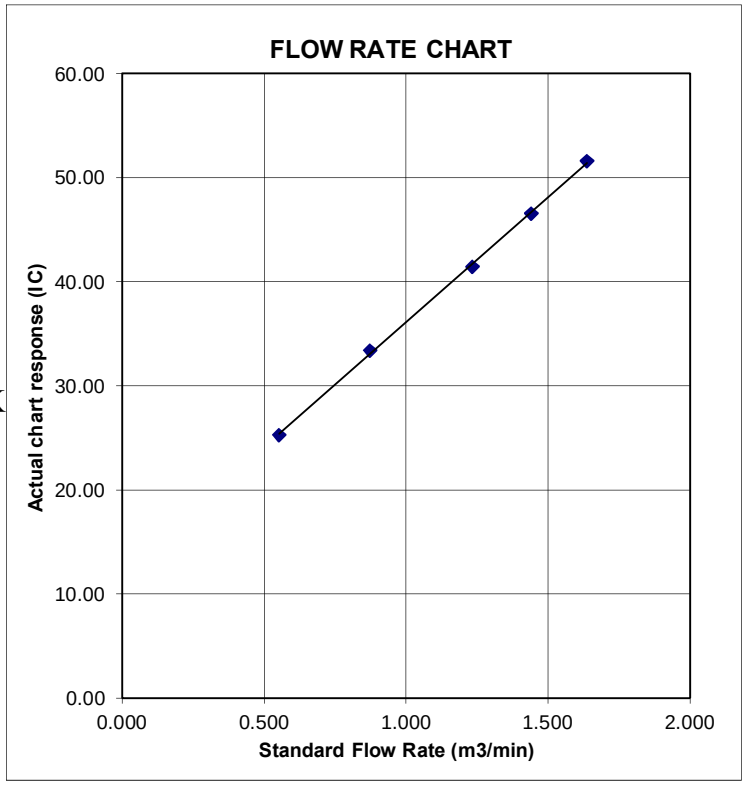
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K
Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



Appendix F

Event/Action Plan

Air Quality

EVENT	ACTION			
	ET	IC(E)	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IC(E) and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IC(E) and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IC(E) and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IC(E) and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IC(E), ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IC(E) and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IC(E), agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Construction Noise

EVENT	ACTION			
	ET	IC(E)	ER	CONTRACTOR
Action Level	1. Notify IC(E) and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IC(E), ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IC(E); 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IC(E), ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IC(E), ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Appendix G

Monitoring Data Sheet

24-hour TSP Monitoring Results - AM1

Date of Calibration: 28-Feb-11 Slope = 32.9014

Next Calibration Date: 28-Apr-11 Intercept = 6.5993

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (oC)	STANDARD			INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (g)	WEIGHT DUST COLLECTED (g)	DUST 24-hour TSP IN AIR (ug/m^3)
		INITIAL	FINAL	ACTUAL (min)	MIN	MAX	AVG		AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)				
1-Apr-11	23503	10380.22	10403.85	1417.80	32	34	33.0	20.5	1016.5	0.81	1151	2.8139	2.889	0.0751	65
7-Apr-11	23521	10403.85	10427.05	1392.00	34	36	35.0	19.8	1016.7	0.87	1217	2.7906	2.8481	0.0575	47
13-Apr-11	23553	10427.05	10451.74	1481.40	36	36	36.0	23	1016.7	0.90	1332	2.7997	2.8532	0.0535	40
18-Apr-11	23589	10451.74	10475.36	1417.20	36	38	37.0	23.6	1010.1	0.92	1311	2.8182	3.0176	0.1994	152
21-Apr-11	23621	10475.36	10499.22	1431.60	29	32	30.5	23.1	1014.7	0.73	1045	2.9203	2.9872	0.0669	64
27-Apr-11	23636	10499.22	10523.18	1437.60	32	34	33.0	25.9	1007.8	0.80	1147	2.9	2.9306	0.0306	27

24-hour TSP Monitoring Results - AM2

Date of Calibration: 28-Feb-11 Slope = 24.5723

Next Calibration Date: 28-Apr-11 Intercept = 15.5545

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (oC)	STANDARD			INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (g)	WEIGHT DUST COLLECTED (g)	DUST 24-hour TSP IN AIR (ug/m^3)
		INITIAL	FINAL	ACTUAL (min)	MIN	MAX	AVG		AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)				
1-Apr-11	23504	8910.55	8933.96	1404.60	30	33	31.5	20.5	1016.5	0.66	928	2.8028	2.9007	0.0979	105
7-Apr-11	23522	8933.96	8957.32	1401.60	30	34	32.0	19.8	1016.7	0.68	957	2.7932	2.8692	0.0760	79
13-Apr-11	23554	8957.32	8981.57	1455.00	32	36	34.0	23	1016.7	0.76	1102	2.8266	2.8885	0.0619	56
18-Apr-11	23590	8981.57	9005.91	1460.40	32	36	34.0	23.6	1010.1	0.75	1098	2.8291	3.0001	0.1710	156
21-Apr-11	23620	9005.91	9029.57	1419.60	30	32	31.0	23.1	1014.7	0.63	899	2.9055	2.968	0.0625	70
27-Apr-11	23619	9029.57	9053.27	1422.00	28	32	30.0	25.9	1007.8	0.58	829	2.9096	2.9477	0.0381	46

24-hour TSP Monitoring Results - AM3

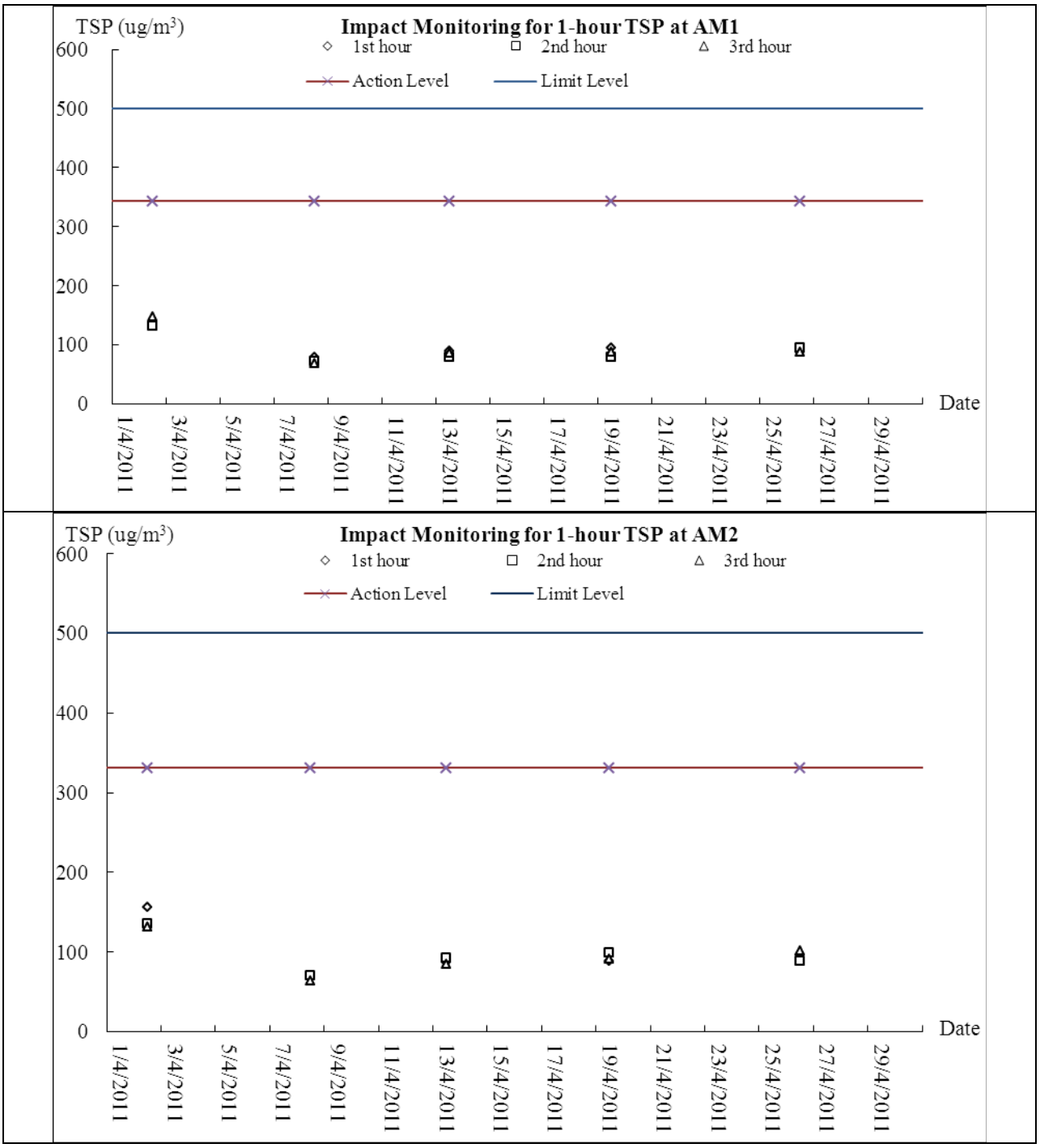
Date of Calibration: 28-Feb-11 Slope = 23.9771

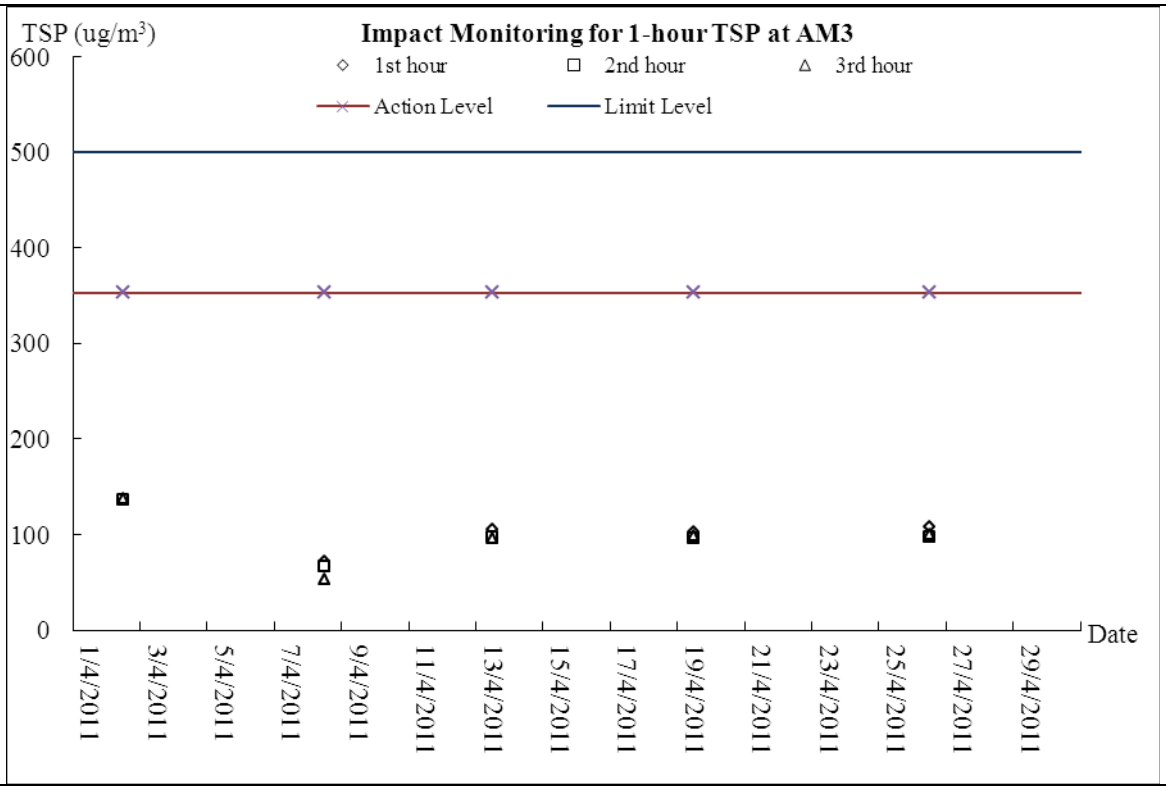
Next Calibration Date: 28-Apr-11 Intercept = 12.1533

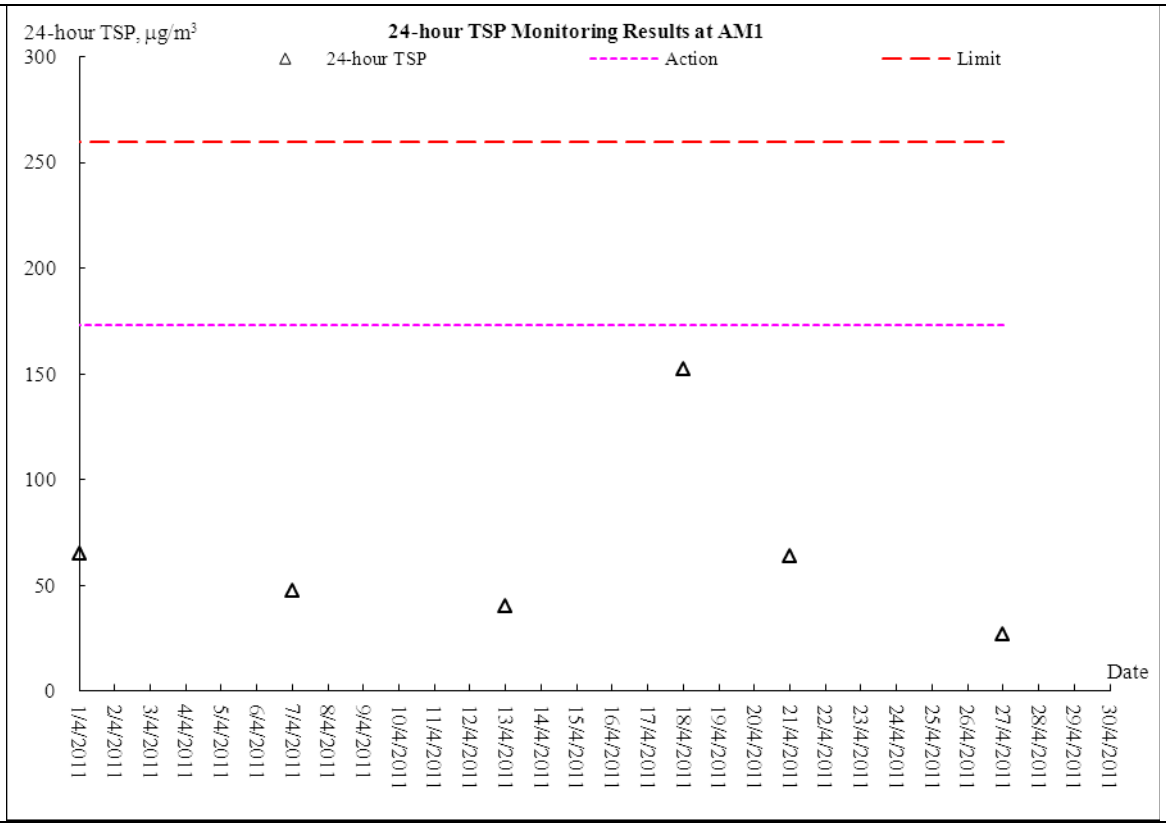
DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (oC)	STANDARD			INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (g)	WEIGHT DUST COLLECTED (g)	DUST 24-hour TSP IN AIR (ug/m^3)
		INITIAL	FINAL	ACTUAL (min)	MIN	MAX	AVG		AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)				
1-Apr-11	23505	4421.02	4445.54	1471.20	29	32	30.5	20.5	1016.5	0.78	1143	2.8071	2.9066	0.0995	87
7-Apr-11	23523	4445.54	4469.06	1411.20	29	33	31.0	19.8	1016.7	0.80	1128	2.7765	2.9084	0.1319	117
13-Apr-11	23555	4469.06	4492.91	1431.00	28	33	30.5	23	1016.7	0.77	1104	2.7904	2.9012	0.1108	100
18-Apr-11	23591	4492.91	4516.7	1427.40	30	33	31.5	23.6	1010.1	0.81	1153	2.8057	2.8886	0.0829	72
21-Apr-11	23622	4516.70	4540.16	1407.60	30	33	31.5	23.1	1014.7	0.81	1143	2.9064	3.0857	0.1793	157
27-Apr-11	23634	4540.16	4564.04	1432.80	32	34	33.0	25.9	1007.8	0.86	1237	2.89	2.9403	0.0503	41

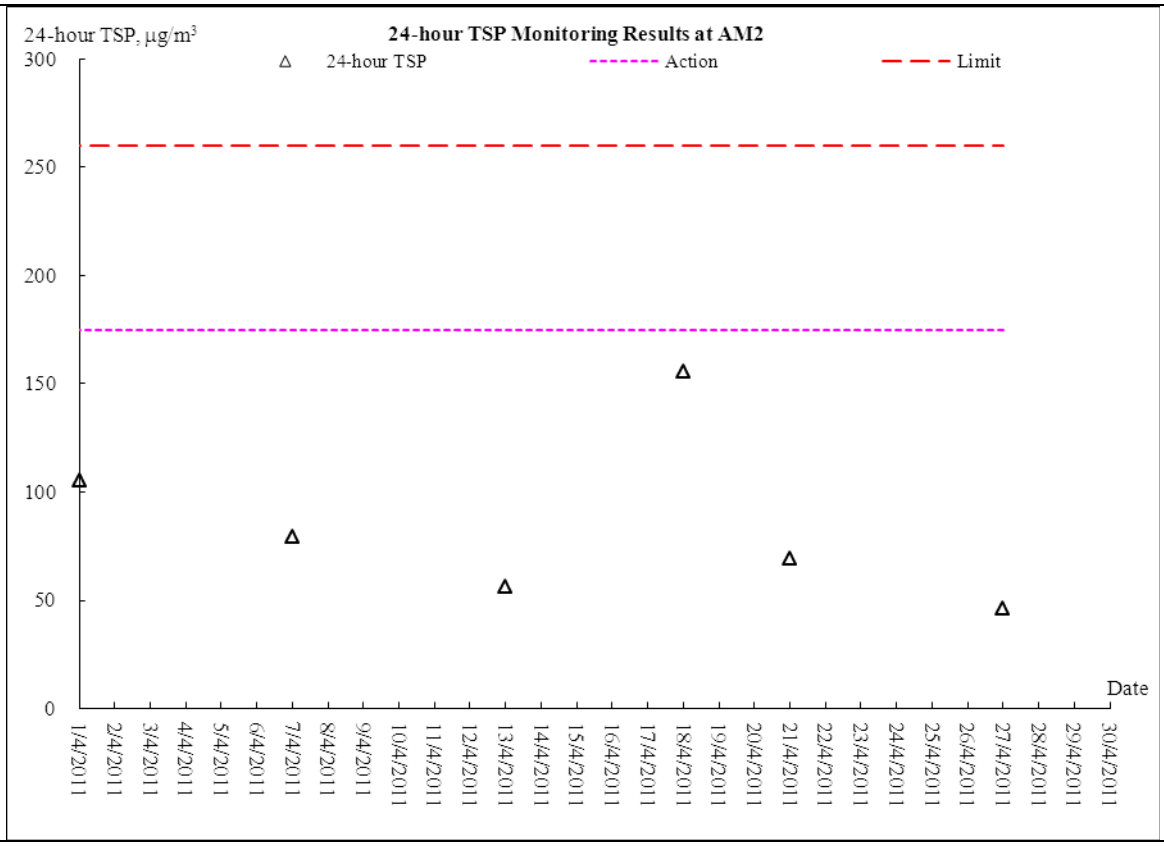
Appendix H

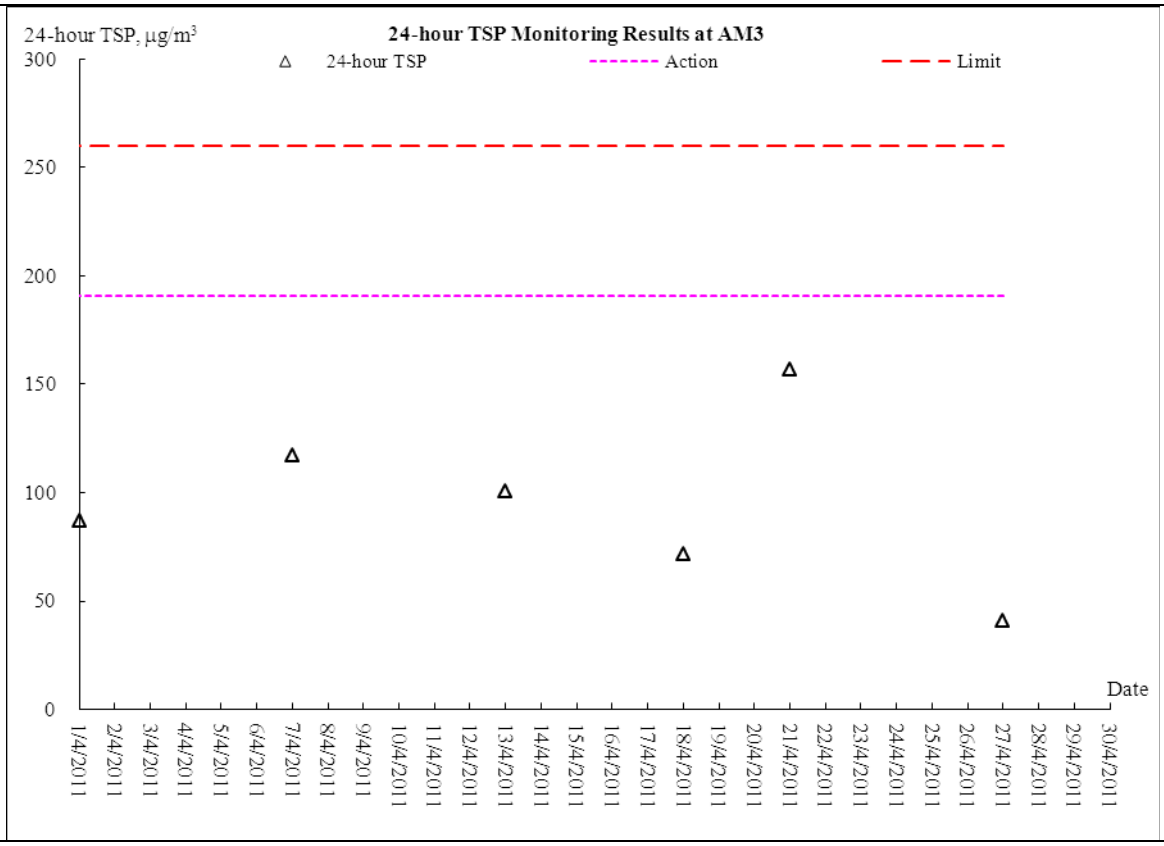
Graphical Plots of Monitoring Results

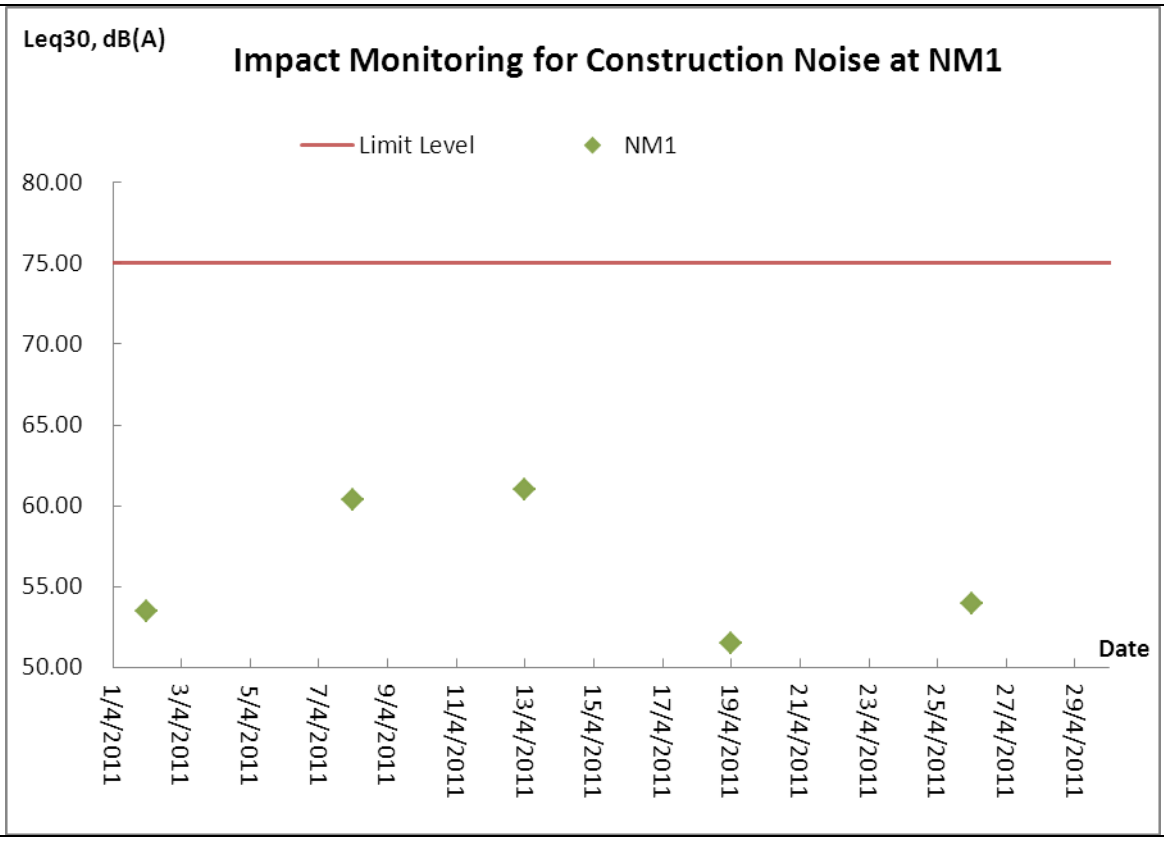

TSP (ug/m³)
Impact Monitoring for 1-hour TSP at AM1
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1/4/2011
3/4/2011
5/4/2011
7/4/2011
9/4/2011
11/4/2011
13/4/2011
15/4/2011
17/4/2011
19/4/2011
21/4/2011
23/4/2011
25/4/2011
27/4/2011
29/4/2011
TSP (ug/m³)
Impact Monitoring for 1-hour TSP at AM2
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1/4/2011
3/4/2011
5/4/2011
7/4/2011
9/4/2011
11/4/2011
13/4/2011
15/4/2011
17/4/2011
19/4/2011
21/4/2011
23/4/2011
25/4/2011
27/4/2011
29/4/2011

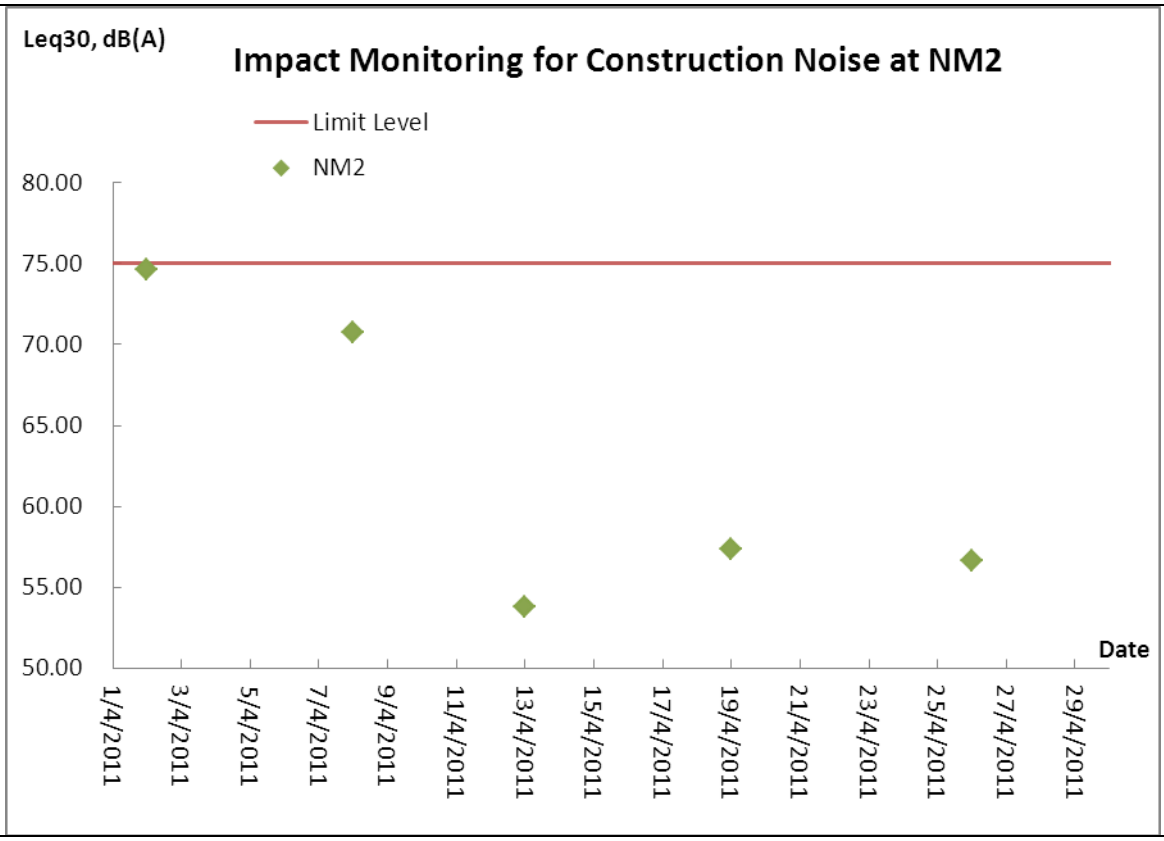

Impact Monitoring for 1-hour TSP at AM3
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1/4/2011
3/4/2011
5/4/2011
7/4/2011
9/4/2011
11/4/2011
13/4/2011
15/4/2011
17/4/2011
19/4/2011
21/4/2011
23/4/2011
25/4/2011
27/4/2011
29/4/2011

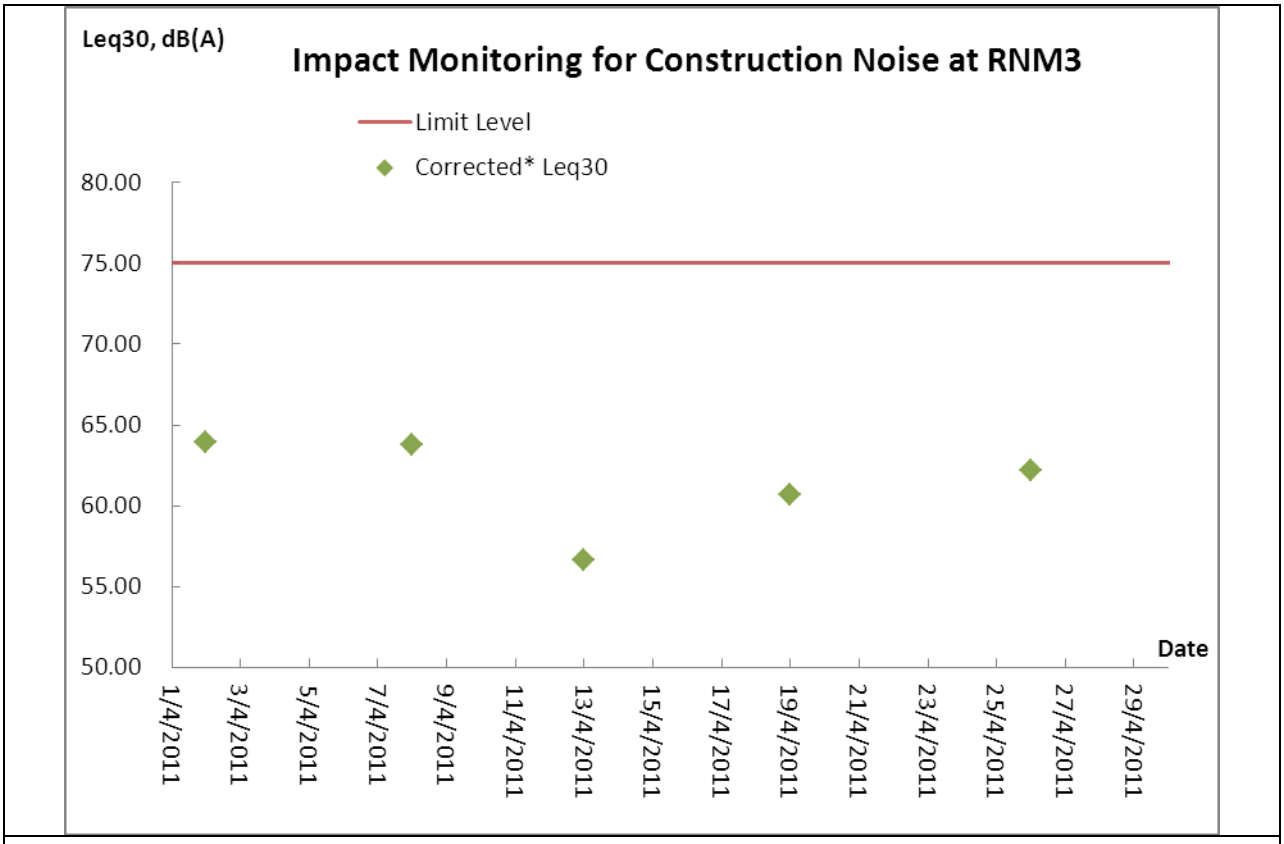

24-hour TSP Monitoring Results at AM1
24-hour TSP, µg/m3
24-hour TSP
Action
Limit
300
250
200
150
100
50
0
Date
1/4/2011
2/4/2011
3/4/2011
4/4/2011
5/4/2011
6/4/2011
7/4/2011
8/4/2011
9/4/2011
10/4/2011
11/4/2011
12/4/2011
13/4/2011
14/4/2011
15/4/2011
16/4/2011
17/4/2011
18/4/2011
19/4/2011
20/4/2011
21/4/2011
22/4/2011
23/4/2011
24/4/2011
25/4/2011
26/4/2011
27/4/2011
28/4/2011
29/4/2011
30/4/2011

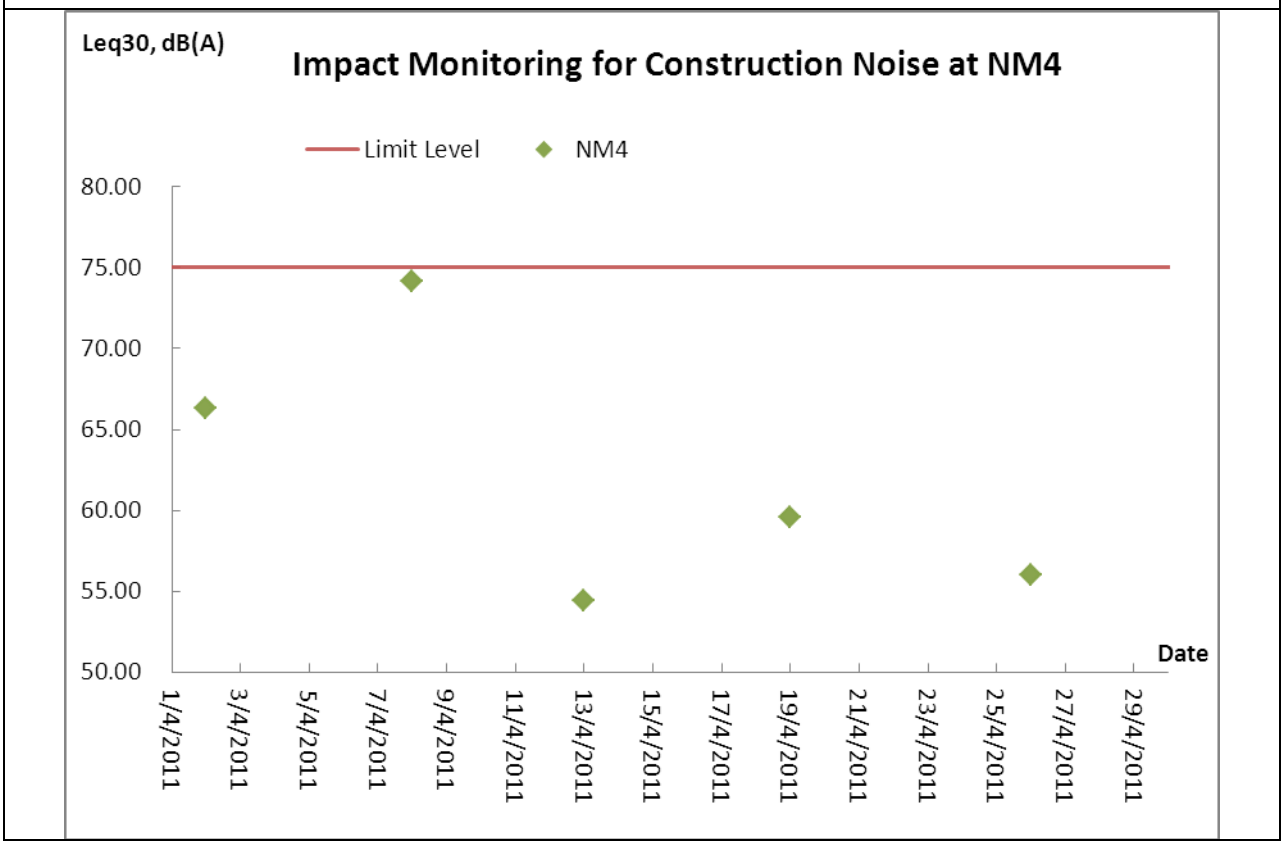

24-hour TSP, µg/m³
24-hour TSP Monitoring Results at AM2
24-hour TSP
Action
Limit
300
250
200
150
100
50
0
Date
1/4/2011
2/4/2011
3/4/2011
4/4/2011
5/4/2011
6/4/2011
7/4/2011
8/4/2011
9/4/2011
10/4/2011
11/4/2011
12/4/2011
13/4/2011
14/4/2011
15/4/2011
16/4/2011
17/4/2011
18/4/2011
19/4/2011
20/4/2011
21/4/2011
22/4/2011
23/4/2011
24/4/2011
25/4/2011
26/4/2011
27/4/2011
28/4/2011
29/4/2011
30/4/2011


24-hour TSP, µg/m³
24-hour TSP Monitoring Results at AM3
24-hour TSP
Action
Limit
300
250
200
150
100
50
0
Date
1/4/2011
2/4/2011
3/4/2011
4/4/2011
5/4/2011
6/4/2011
7/4/2011
8/4/2011
9/4/2011
10/4/2011
11/4/2011
12/4/2011
13/4/2011
14/4/2011
15/4/2011
16/4/2011
17/4/2011
18/4/2011
19/4/2011
20/4/2011
21/4/2011
22/4/2011
23/4/2011
24/4/2011
25/4/2011
26/4/2011
27/4/2011
28/4/2011
29/4/2011
30/4/2011


Leq30, dB(A)
Impact Monitoring for Construction Noise at NM1
Limit Level
NM1
80.00
75.00
70.00
65.00
60.00
55.00
50.00
Date
1/4/2011
3/4/2011
5/4/2011
7/4/2011
9/4/2011
11/4/2011
13/4/2011
15/4/2011
17/4/2011
19/4/2011
21/4/2011
23/4/2011
25/4/2011
27/4/2011
29/4/2011


Leq30, dB(A)
Impact Monitoring for Construction Noise at NM2
Limit Level
NM2
80.00
75.00
70.00
65.00
60.00
55.00
50.00
Date
1/4/2011
3/4/2011
5/4/2011
7/4/2011
9/4/2011
11/4/2011
13/4/2011
15/4/2011
17/4/2011
19/4/2011
21/4/2011
23/4/2011
25/4/2011
27/4/2011
29/4/2011


Leq30, dB(A)
Impact Monitoring for Construction Noise at RNM3
Limit Level
Corrected* Leq30
80.00
75.00
70.00
65.00
60.00
55.00
50.00
Date
1/4/2011
3/4/2011
5/4/2011
7/4/2011
9/4/2011
11/4/2011
13/4/2011
15/4/2011
17/4/2011
19/4/2011
21/4/2011
23/4/2011
25/4/2011
27/4/2011
29/4/2011


Leq30, dB(A)
Impact Monitoring for Construction Noise at NM4
Limit Level
NM4
80.00
75.00
70.00
65.00
60.00
55.00
50.00
Date
1/4/2011
3/4/2011
5/4/2011
7/4/2011
9/4/2011
11/4/2011
13/4/2011
15/4/2011
17/4/2011
19/4/2011
21/4/2011
23/4/2011
25/4/2011
27/4/2011
29/4/2011

Appendix I

Meteorological Information

Meteorological Data Extracted from HKO during the Reporting Period

Date		Weather
1-Apr-11	Fri	Moderate northeasterly winds
2-Apr-11	Sat	Light winds
3-Apr-11	Sun	Fine and hot
4-Apr-11	Mon	Mainly fine and dry
5-Apr-11	Tue	Holiday
6-Apr-11	Wed	Mainly fine
7-Apr-11	Thu	Moderate easterly winds.
8-Apr-11	Fri	Fine and hot. Light winds
9-Apr-11	Sat	Fresh easterly winds
10-Apr-11	Sun	Moderate easterly winds.
11-Apr-11	Mon	Mainly fine with visibility relatively low
12-Apr-11	Tue	Moderate easterly winds, fresh offshore.
13-Apr-11	Wed	Mainly fine and dry.
14-Apr-11	Thu	Light to moderate southeasterly winds.
15-Apr-11	Fri	Fine
16-Apr-11	Sat	Sunny intervals.
17-Apr-11	Sun	Moderate northeasterly winds.
18-Apr-11	Mon	Fine and dry
19-Apr-11	Tue	Fine and dry.
20-Apr-11	Wed	Sunny periods
21-Apr-11	Thu	Moderate easterly winds.
22-Apr-11	Fri	Holiday
23-Apr-11	Sat	Holiday
24-Apr-11	Sun	Holiday
25-Apr-11	Mon	Holiday
26-Apr-11	Tue	Mainly fine and dry.
27-Apr-11	Wed	Cloudy with a few rain patches and mist.
28-Apr-11	Thu	Showers and a few squally thunderstorms.
29-Apr-11	Fri	Moderate southerly winds
30-Apr-11	Sat	Cloudy with sunny intervals.

Appendix J

Monthly Summary Waste Flow Table

Name of Department: ~~ArchSD/CEDD/DSD/EMSD/HyD/WSD~~ **Contract No.:** **DC/2009/13**

Monthly Summary Waste Flow Table for April 2011

Month	Actual Quantities of Inert C&D Materials Generated Monthly												Actual Quantities of C&D Wastes Generated Monthly									
	Total Quantity Generated (a) = (c)+(d)+(e)		Hard Rock and Large Broken Concrete (b)		Reused in the Contract (c)		Reused in other Projects (d)		Disposed as Public Fill (e)		Imported Fill (f)		Metals		Paper/ cardboard packaging		Plastics		Chemical Waste		Others, e.g. rubbish	
	(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in tonne)	
	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW
2010	4.522	0.030	0.068	0.104	0.488	0.000	0.000	0.000	4.033	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.460
Jan	0.985	3.110	0.003	0.013	0.120	0.484	0.000	2.626	0.865	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.240
Feb	0.377	0.000	0.000	0.043	0.000	0.000	0.000	0.000	0.377	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.350
Mar	0.758	1.430	0.002	0.106	0.006	0.255	0.000	1.175	0.752	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.360
Apr	1.135	1.249	0.017	0.025	0.112	0.090	0.000	1.159	1.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.160
May																						
Jun																						
Sub-total	7.7766	5.8193	0.0885	0.2913	0.7262	0.8290	0.0000	4.9600	7.0505	0.0303	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	26.5700
Jul																						
Aug																						
Sep																						
Oct																						
Nov																						
Dec																						
Total	7.7766	5.8193	0.0885	0.2913	0.726	0.829	0.000	4.960	7.0505	0.0303	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.57
	13.596		0.380		1.555		4.960		7.081		0.000		0.000		0.000		0.000		0.000		26.57	

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

YSW: Yung Shue Wan

SKW: Sok Kwu Wan

Appendix K

Weekly Site Inspection Checklist

Environmental Team – Weekly Site Inspection and Audit Checklist – Sok Kwu Wan

Project:	**TCS/00512/09**	**Inspected by**	**Checklist No.** **TCS512B-060411**
	Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan	**ETL/ ET's Representative:**	Ray Cheung
		RE's Representative:	Joseph Ng
		Contractor's Representative:	Edwin Leung
		IEC's Representative:	
Date:	06 April 2011	**Time:**	14:00

PART A: **GENERAL INFORMATION** **Environmental Permit No.**

Weather: ☐ Sunny ☐ Fine ☑ Cloudy ☐ Rainy ☑ EP- 281/2007A

Temperature: 19.6 ^{0}C

Humidity: ☐ High ☑ Moderate ☐ Low

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Area Inspected

1 Sok Kwu Wan

PART B: **SITE AUDIT**

Note: **Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable		**Not Obs.**	**Yes**	**No**	**Follow Up**	**N/A**	**Photo/ Remarks**
Section 1: Water Quality							
1.01	Is an effluent discharge license obtained for the Project?	☐	☑	☐	☐	☐	
1.02	Is the effluent discharged in accordance with the discharge licence?	☐	☑	☐	☐	☐	
1.03	Is the discharge of turbid water avoided?	☐	☑	☐	☐	☐	
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	☐	☑	☐	☐	☐	
1.05	Are there channels, sandbags or bunds to direct surface run-off to sedimentation tanks?	☐	☑	☐	☐	☐	
1.06	Are there any perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	☐	☑	☐	☐	☐	
1.07	Is drainage system well maintained?	☐	☑	☐	☐	☐	
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	☐	☑	☐	☐	☐	
1.09	Are temporary exposed slopes properly covered?	☐	☑	☐	☐	☐	
1.10	Are earthworks final surfaces well compacted or protected?	☐	☑	☐	☐	☐	
1.11	Are manholes adequately covered or temporarily sealed?	☐	☑	☐	☐	☐	
1.12	Are there any procedures and equipment for rainstorm protection?	☐	☑	☐	☐	☐	
1.13	Are wheel washing facilities well maintained?	☑	☐	☐	☐	☐	
1.14	Is runoff from wheel washing facilities avoided?	☑	☐	☐	☐	☐	
1.15	Are there toilets provided on site?	☐	☑	☐	☐	☐	
1.16	Are toilets properly maintained?	☐	☑	☐	☐	☐	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	☑	☐	☐	☐	☐	
1.18	Is the oil leakage or spillage avoided?	☐	☑	☐	☐	☐	
1.19	Are there any measures to prevent leaked oil from entering the drainage system?	☐	☑	☐	☐	☐	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	☐	☐	☐	☐	☑	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	☑	☐	☐	☐	☐	
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☑	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
1.23	Is used bentonite recycled where appropriate?	☑	☐	☐	☐	☐	
1.24	Designated settlement area for runoff/wheel wash waste is provide and located at the streambed with 1-2m deep, 12m long and around 50m^3 capacities for sedimentation.	☑	☐	☐	☐	☐	
1.25	No excavation is undertaken in the settlement area.	☐	☑	☐	☐	☐	
1.26	Concreting wastes water should be neutralized below the pH Action Levels before discharge.	☑	☐	☐	☐	☐	
1.27	Mobile toilets should provide on site and located away the stream course.	☑	☐	☐	☐	☐	
1.28	License collector should be employed for handling the sewage of mobile toilet.	☑	☐	☐	☐	☐	
1.29	Is ponding /stand water avoided?	☐	☑	☐	☐	☐	
1.30	Is open stockpiles well covered by impermeable sheet?	☐	☑	☐	☐	☐	
Section 2: Air Quality							
2.01	Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?	☑	☐	☐	☐	☐	
2.02	Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?	☐	☑	☐	☐	☐	
2.03	Are the excavated materials sprayed with water during handling?	☐	☑	☐	☐	☐	
2.04	Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?	☐	☐	☐	☐	☐	
2.05	Is the exposed earth properly treated within six months after the last construction activities?	☑	☐	☐	☐	☐	
2.06	Are the access roads sprayed with water to maintain the entire road surface wet or paved?	☐	☑	☐	☐	☐	
2.07	Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?	☐	☑	☐	☐	☐	
2.08	Is the load on vehicles covered entirely by clean impervious sheeting?	☐	☑	☐	☐	☐	
2.09	Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?	☐	☑	☐	☐	☐	
2.10	Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?	☐	☑	☐	☐	☐	
2.11	Is dark smoke emission from plant/equipment avoided?	☐	☑	☐	☐	☐	
2.12	Are de-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement?	☑	☐	☐	☐	☐	
2.13	Are site vehicles travelling within the speed limit not more than 15km/hour?	☐	☑	☐	☐	☐	
2.14	Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?	☐	☑	☐	☐	☐	
2.15	Is open burning avoided?	☐	☑	☐	☐	☐	
2.16	Excavated materials from the stream must remove form site on the same day. The materials shall be stored in covered impermeable skips awaiting removal from site.	☐	☑	☐	☐	☐	
Section 3: Noise							
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?	☐	☑	☐	☐	☐	
3.02	Is silenced equipment adopted?	☐	☑	☐	☐	☐	
3.03	Is idle equipment turned off or throttled down?	☐	☑	☐	☐	☐	
3.04	Are all plant and equipment well maintained and in good condition?	☐	☑	☐	☐	☐	
3.05	Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?	☑	☐	☐	☐	☐	
3.06	Are hand held breakers fitted with valid noise emission labels during operation?	☐	☑	☐	☐	☐	
3.07	Are air compressors fitted with valid noise emission labels during operation?	☐	☑	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
3.08	Are flaps and panels of mechanical equipment closed during operation?	☐	☑	☐	☐	☐	
3.09	Are Construction Noise Permit(s) applied for percussive piling works?	☑	☐	☐	☐	☐	
3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☑	☐	☐	☐	☐	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	☑	☐	☐	☐	☐	
3.12	Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures).	☑	☐	☐	☐	☐	
3.13	Temporary/Moveable noise barrier or site hoarding are provide or erect at the site boundary to minimise the noise impact of the closest NSRs or stationary equipments shield by the noise barrier which cannot visible from NSRs (Level 2 mitigation measure)	☑	☐	☐	☐	☐	
3.14	Temporary/Moveable noise barrier equal to or more than 3m height with 10kg/m2 are provide for noise mitigation measures (Level 2 mitigation measures).	☑	☐	☐	☐	☐	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	☐	☑	☐	☐	☐	
4.02	Are receptacles available for general refuse collection?	☐	☑	☐	☐	☐	
4.03	Is general refuse sorting or recycling implemented?	☐	☑	☐	☐	☐	
4.04	Is general refuse disposed of properly and regularly?	☐	☑	☐	☐	☐	
4.05	Is the Contractor registered as a chemical waste producer?	☑	☐	☐	☐	☐	
4.06	Are the chemical waste containers and storage area properly labelled?	☐	☑	☐	☐	☐	
4.07	Are the chemical wastes stored in proper storage areas?	☐	☑	☐	☐	☐	
4.08	Is the chemical container or equipment provided with drip tray?	☐	☑	☐	☐	☐	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	☐	☑	☐	☐	☐	
4.10	Are incompatible chemical wastes stored in different areas?	☐	☑	☐	☐	☐	
4.11	Are the chemical wastes disposed of by licensed collectors?	☐	☑	☐	☐	☐	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	☐	☑	☐	☐	☐	
4.13	Are chemical/fuel storage areas bounded?	☐	☑	☐	☐	☐	
4.14	Are designated areas identified for storage and sorting of construction wastes?	☐	☑	☐	☐	☐	
4.15	Are construction wastes sorted (inert and non-inert) on site?	☐	☑	☐	☐	☐	
4.16	Are construction wastes reused?	☐	☑	☐	☐	☐	
4.17	Are construction wastes disposed of properly?	☐	☑	☐	☐	☐	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	☐	☑	☐	☐	☐	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☑	☐	☐	☐	
4.20	Are appropriate procedures followed if contaminated material exists?	☐	☑	☐	☐	☐	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	☐	☐	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	☐	☑	☐	☐	☐	
4.23	Contaminated sediments will managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	☑	☐	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
Section 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	☐	☐	☐	☑	☐	Refer to Monthly EM&A report - April 2011 - Appendix M
5.02	Are retained and transplanted trees properly protected?	☐	☑	☐	☐	☐	Refer to tree photos
5.03	Are surgery works carried out for the damaged trees?	☑	☐	☐	☐	☐	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☑	☐	☐	☐	☐	
Section 6: Others							
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☑	☐	☐	☐	☐	

(Sok Kwu Wan)
Remarks:
Findings of Site Inspection: (6 April 2011) **Follow up:**

No environmental issue was observed during the site inspection.

Tree Photos:

The transplanted and retained uncommon tree species trees were found to be labeled, fenced and protected.

Prepared by:
ET's representative

(Ray Cheung)

Environmental Team – Weekly Site Inspection and Audit Checklist – Sok Kwu Wan

Project:	**TCS/00512/09**	**Inspected by**	**Checklist No.** **TCS512B-140411**
	Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan	**ETL/ ET's Representative:**	Ray Cheung
		RE's Representative:	Joseph Ng
		Contractor's Representative:	Edwin Leung
		IEC's Representative:	KK Kwok
Date:	14 April 2011	**Time:**	09:30

PART A: **GENERAL INFORMATION** **Environmental Permit No.**

Weather: ☑ Sunny ☐ Fine ☐ Cloudy ☐ Rainy ☑ EP- 281/2007A

Temperature: 24.1 ^{0}C

Humidity: ☐ High ☑ Moderate ☐ Low

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Area Inspected

1 Sok Kwu Wan

PART B: **SITE AUDIT**

Note: **Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable		**Not Obs.**	**Yes**	**No**	**Follow Up**	**N/A**	**Photo/ Remarks**
Section 1: Water Quality							
1.01	Is an effluent discharge license obtained for the Project?	☐	☑	☐	☐	☐	
1.02	Is the effluent discharged in accordance with the discharge licence?	☐	☑	☐	☐	☐	
1.03	Is the discharge of turbid water avoided?	☐	☑	☐	☐	☐	
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	☐	☑	☐	☐	☐	
1.05	Are there channels, sandbags or bunds to direct surface run-off to sedimentation tanks?	☐	☑	☐	☐	☐	
1.06	Are there any perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	☐	☑	☐	☐	☐	
1.07	Is drainage system well maintained?	☐	☑	☐	☐	☐	
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	☐	☑	☐	☐	☐	
1.09	Are temporary exposed slopes properly covered?	☐	☑	☐	☐	☐	
1.10	Are earthworks final surfaces well compacted or protected?	☐	☑	☐	☐	☐	
1.11	Are manholes adequately covered or temporarily sealed?	☐	☑	☐	☐	☐	
1.12	Are there any procedures and equipment for rainstorm protection?	☐	☑	☐	☐	☐	
1.13	Are wheel washing facilities well maintained?	☑	☐	☐	☐	☐	
1.14	Is runoff from wheel washing facilities avoided?	☑	☐	☐	☐	☐	
1.15	Are there toilets provided on site?	☐	☑	☐	☐	☐	
1.16	Are toilets properly maintained?	☐	☑	☐	☐	☐	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	☑	☐	☐	☐	☐	
1.18	Is the oil leakage or spillage avoided?	☐	☑	☐	☐	☐	
1.19	Are there any measures to prevent leaked oil from entering the drainage system?	☐	☑	☐	☐	☐	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	☐	☐	☐	☐	☑	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	☑	☐	☐	☐	☐	
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☑	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
1.23	Is used bentonite recycled where appropriate?	☑	☐	☐	☐	☐	
1.24	Designated settlement area for runoff/wheel wash waste is provide and located at the streambed with 1-2m deep, 12m long and around 50m^3 capacities for sedimentation.	☑	☐	☐	☐	☐	
1.25	No excavation is undertaken in the settlement area.	☐	☑	☐	☐	☐	
1.26	Concreting wastes water should be neutralized below the pH Action Levels before discharge.	☑	☐	☐	☐	☐	
1.27	Mobile toilets should provide on site and located away the stream course.	☑	☐	☐	☐	☐	
1.28	License collector should be employed for handling the sewage of mobile toilet.	☑	☐	☐	☐	☐	
1.29	Is ponding /stand water avoided?	☐	☑	☐	☐	☐	
1.30	Is open stockpiles well covered by impermeable sheet?	☐	☑	☐	☐	☐	
Section 2: Air Quality							
2.01	Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?	☑	☐	☐	☐	☐	
2.02	Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?	☐	☑	☐	☐	☐	
2.03	Are the excavated materials sprayed with water during handling?	☐	☑	☐	☐	☐	
2.04	Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?	☐	☐	☐	☐	☐	
2.05	Is the exposed earth properly treated within six months after the last construction activities?	☑	☐	☐	☐	☐	
2.06	Are the access roads sprayed with water to maintain the entire road surface wet or paved?	☐	☐	☐	☑	☐	Remark 3
2.07	Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?	☐	☑	☐	☐	☐	
2.08	Is the load on vehicles covered entirely by clean impervious sheeting?	☐	☑	☐	☐	☐	
2.09	Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?	☐	☑	☐	☐	☐	
2.10	Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?	☐	☑	☐	☐	☐	
2.11	Is dark smoke emission from plant/equipment avoided?	☐	☑	☐	☐	☐	
2.12	Are de-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement?	☑	☐	☐	☐	☐	
2.13	Are site vehicles travelling within the speed limit not more than 15km/hour?	☐	☑	☐	☐	☐	
2.14	Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?	☐	☑	☐	☐	☐	
2.15	Is open burning avoided?	☐	☑	☐	☐	☐	
2.16	Excavated materials from the stream must remove form site on the same day. The materials shall be stored in covered impermeable skips awaiting removal from site.	☐	☑	☐	☐	☐	
Section 3: Noise							
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?	☐	☑	☐	☐	☐	
3.02	Is silenced equipment adopted?	☐	☑	☐	☐	☐	
3.03	Is idle equipment turned off or throttled down?	☐	☑	☐	☐	☐	
3.04	Are all plant and equipment well maintained and in good condition?	☐	☑	☐	☐	☐	
3.05	Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?	☑	☐	☐	☐	☐	
3.06	Are hand held breakers fitted with valid noise emission labels during operation?	☐	☑	☐	☐	☐	
3.07	Are air compressors fitted with valid noise emission labels during operation?	☐	☑	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
3.08	Are flaps and panels of mechanical equipment closed during operation?	☐	☑	☐	☐	☐	
3.09	Are Construction Noise Permit(s) applied for percussive piling works?	☑	☐	☐	☐	☐	
3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☑	☐	☐	☐	☐	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	☑	☐	☐	☐	☐	
3.12	Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures).	☑	☐	☐	☐	☐	
3.13	Temporary/Moveable noise barrier or site hoarding are provide or erect at the site boundary to minimise the noise impact of the closest NSRs or stationary equipments shield by the noise barrier which cannot visible from NSRs (Level 2 mitigation measure)	☑	☐	☐	☐	☐	
3.14	Temporary/Moveable noise barrier equal to or more than 3m height with 10kg/m2 are provide for noise mitigation measures (Level 2 mitigation measures).	☑	☐	☐	☐	☐	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	☐	☑	☐	☐	☐	
4.02	Are receptacles available for general refuse collection?	☐	☑	☐	☐	☐	
4.03	Is general refuse sorting or recycling implemented?	☐	☑	☐	☐	☐	
4.04	Is general refuse disposed of properly and regularly?	☐	☑	☐	☐	☐	
4.05	Is the Contractor registered as a chemical waste producer?	☑	☐	☐	☐	☐	
4.06	Are the chemical waste containers and storage area properly labelled?	☐	☑	☐	☐	☐	
4.07	Are the chemical wastes stored in proper storage areas?	☐	☑	☐	☐	☐	
4.08	Is the chemical container or equipment provided with drip tray?	☐	☑	☐	☐	☐	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	☐	☑	☐	☐	☐	
4.10	Are incompatible chemical wastes stored in different areas?	☐	☑	☐	☐	☐	
4.11	Are the chemical wastes disposed of by licensed collectors?	☐	☑	☐	☐	☐	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	☐	☑	☐	☐	☐	
4.13	Are chemical/fuel storage areas bounded?	☐	☑	☐	☐	☐	
4.14	Are designated areas identified for storage and sorting of construction wastes?	☐	☑	☐	☐	☐	
4.15	Are construction wastes sorted (inert and non-inert) on site?	☐	☑	☐	☐	☐	
4.16	Are construction wastes reused?	☐	☑	☐	☐	☐	
4.17	Are construction wastes disposed of properly?	☐	☐	☐	☑	☐	Remark 1 & 2
4.18	Are site hoardings and signboards made of durable materials instead of timber?	☐	☑	☐	☐	☐	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☑	☐	☐	☐	
4.20	Are appropriate procedures followed if contaminated material exists?	☐	☑	☐	☐	☐	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	☐	☐	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	☐	☑	☐	☐	☐	
4.23	Contaminated sediments will managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	☑	☐	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
Section 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	☐	☐	☐	☑	☐	Refer to Monthly EM&A report - April 2011 - Appendix M
5.02	Are retained and transplanted trees properly protected?	☐	☑	☐	☐	☐	Refer to tree photos
5.03	Are surgery works carried out for the damaged trees?	☑	☐	☐	☐	☐	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☑	☐	☐	☐	☐	
Section 6: Others							
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☑	☐	☐	☐	☐	

(Sok Kwu Wan)
Remarks:

Findings of Site Inspection: (14 April 2011)	**Follow up:**
 House-keeping on the site has to be improved. (Portion G)	 The house-keeping was improved. (Rectified on 19 April 2011)
 The general refuse should be removed. (Portion G)	 The general refuse was removed. (Rectified on 18 April 2011)
 Regular water spraying was reminded to apply on dry haul road. (Portion G)	 Water spraying was applied immediately. (Rectified on 14 April 2011)

Tree Photos:

The transplanted and retained uncommon tree species trees were found to be labeled, fenced and protected.

Prepared by:
ET's representative

(Ray Cheung)

Environmental Team – Weekly Site Inspection and Audit Checklist – Sok Kwu Wan

Project:	**TCS/00512/09**	**Inspected by**	**Checklist No.** **TCS512B-190411**
	Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan	**ETL/ ET's Representative:**	Ray Cheung
		RE's Representative:	Joseph Ng
		Contractor's Representative:	Edwin Leung
		IEC's Representative:	
Date:	19 April 2011	**Time:**	14:00

PART A: **GENERAL INFORMATION** **Environmental Permit No.**

Weather: ☐ Sunny ☑ Fine ☐ Cloudy ☐ Rainy ☑ EP- 281/2007A

Temperature: 23.6 ^{0}C

Humidity: ☐ High ☑ Moderate ☐ Low

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Area Inspected

1 Sok Kwu Wan

PART B: **SITE AUDIT**

Note: **Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable		**Not Obs.**	**Yes**	**No**	**Follow Up**	**N/A**	**Photo/ Remarks**
Section 1: Water Quality							
1.01	Is an effluent discharge license obtained for the Project?	☐	☑	☐	☐	☐	
1.02	Is the effluent discharged in accordance with the discharge licence?	☐	☑	☐	☐	☐	
1.03	Is the discharge of turbid water avoided?	☐	☑	☐	☐	☐	
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	☐	☑	☐	☐	☐	
1.05	Are there channels, sandbags or bunds to direct surface run-off to sedimentation tanks?	☐	☑	☐	☐	☐	
1.06	Are there any perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	☐	☑	☐	☐	☐	
1.07	Is drainage system well maintained?	☐	☑	☐	☐	☐	
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	☐	☑	☐	☐	☐	
1.09	Are temporary exposed slopes properly covered?	☐	☑	☐	☐	☐	
1.10	Are earthworks final surfaces well compacted or protected?	☐	☑	☐	☐	☐	
1.11	Are manholes adequately covered or temporarily sealed?	☐	☑	☐	☐	☐	
1.12	Are there any procedures and equipment for rainstorm protection?	☐	☑	☐	☐	☐	
1.13	Are wheel washing facilities well maintained?	☑	☐	☐	☐	☐	
1.14	Is runoff from wheel washing facilities avoided?	☑	☐	☐	☐	☐	
1.15	Are there toilets provided on site?	☐	☑	☐	☐	☐	
1.16	Are toilets properly maintained?	☐	☑	☐	☐	☐	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	☑	☐	☐	☐	☐	
1.18	Is the oil leakage or spillage avoided?	☐	☑	☐	☐	☐	
1.19	Are there any measures to prevent leaked oil from entering the drainage system?	☐	☑	☐	☐	☐	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	☐	☐	☐	☐	☑	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	☑	☐	☐	☐	☐	
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☑	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
1.23	Is used bentonite recycled where appropriate?	☑	☐	☐	☐	☐	
1.24	Designated settlement area for runoff/wheel wash waste is provide and located at the streambed with 1-2m deep, 12m long and around 50m^3 capacities for sedimentation.	☑	☐	☐	☐	☐	
1.25	No excavation is undertaken in the settlement area.	☐	☑	☐	☐	☐	
1.26	Concreting wastes water should be neutralized below the pH Action Levels before discharge.	☑	☐	☐	☐	☐	
1.27	Mobile toilets should provide on site and located away the stream course.	☑	☐	☐	☐	☐	
1.28	License collector should be employed for handling the sewage of mobile toilet.	☑	☐	☐	☐	☐	
1.29	Is ponding /stand water avoided?	☐	☑	☐	☐	☐	
1.30	Is open stockpiles well covered by impermeable sheet?	☐	☑	☐	☐	☐	
Section 2: Air Quality							
2.01	Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?	☑	☐	☐	☐	☐	
2.02	Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?	☐	☑	☐	☐	☐	
2.03	Are the excavated materials sprayed with water during handling?	☐	☑	☐	☐	☐	
2.04	Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?	☐	☐	☐	☐	☐	
2.05	Is the exposed earth properly treated within six months after the last construction activities?	☑	☐	☐	☐	☐	
2.06	Are the access roads sprayed with water to maintain the entire road surface wet or paved?	☐	☑	☐	☐	☐	
2.07	Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?	☐	☑	☐	☐	☐	
2.08	Is the load on vehicles covered entirely by clean impervious sheeting?	☐	☑	☐	☐	☐	
2.09	Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?	☐	☑	☐	☐	☐	
2.10	Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?	☐	☑	☐	☐	☐	
2.11	Is dark smoke emission from plant/equipment avoided?	☐	☑	☐	☐	☐	
2.12	Are de-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement?	☑	☐	☐	☐	☐	
2.13	Are site vehicles travelling within the speed limit not more than 15km/hour?	☐	☑	☐	☐	☐	
2.14	Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?	☐	☑	☐	☐	☐	
2.15	Is open burning avoided?	☐	☑	☐	☐	☐	
2.16	Excavated materials from the stream must remove form site on the same day. The materials shall be stored in covered impermeable skips awaiting removal from site.	☐	☑	☐	☐	☐	
Section 3: Noise							
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?	☐	☑	☐	☐	☐	
3.02	Is silenced equipment adopted?	☐	☑	☐	☐	☐	
3.03	Is idle equipment turned off or throttled down?	☐	☑	☐	☐	☐	
3.04	Are all plant and equipment well maintained and in good condition?	☐	☑	☐	☐	☐	
3.05	Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?	☑	☐	☐	☐	☐	
3.06	Are hand held breakers fitted with valid noise emission labels during operation?	☐	☑	☐	☐	☐	
3.07	Are air compressors fitted with valid noise emission labels during operation?	☐	☑	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
3.08	Are flaps and panels of mechanical equipment closed during operation?	☐	☑	☐	☐	☐	
3.09	Are Construction Noise Permit(s) applied for percussive piling works?	☑	☐	☐	☐	☐	
3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☑	☐	☐	☐	☐	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	☑	☐	☐	☐	☐	
3.12	Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures).	☑	☐	☐	☐	☐	
3.13	Temporary/Moveable noise barrier or site hoarding are provide or erect at the site boundary to minimise the noise impact of the closest NSRs or stationary equipments shield by the noise barrier which cannot visible from NSRs (Level 2 mitigation measure)	☑	☐	☐	☐	☐	
3.14	Temporary/Moveable noise barrier equal to or more than 3m height with 10kg/m2 are provide for noise mitigation measures (Level 2 mitigation measures).	☑	☐	☐	☐	☐	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	☐	☑	☐	☐	☐	
4.02	Are receptacles available for general refuse collection?	☐	☑	☐	☐	☐	
4.03	Is general refuse sorting or recycling implemented?	☐	☑	☐	☐	☐	
4.04	Is general refuse disposed of properly and regularly?	☐	☑	☐	☐	☐	
4.05	Is the Contractor registered as a chemical waste producer?	☑	☐	☐	☐	☐	
4.06	Are the chemical waste containers and storage area properly labelled?	☐	☑	☐	☐	☐	
4.07	Are the chemical wastes stored in proper storage areas?	☐	☑	☐	☐	☐	
4.08	Is the chemical container or equipment provided with drip tray?	☐	☐	☐	☑	☐	Remark 1
4.09	Is the chemical waste storage area used for storage of chemical waste only?	☐	☑	☐	☐	☐	
4.10	Are incompatible chemical wastes stored in different areas?	☐	☑	☐	☐	☐	
4.11	Are the chemical wastes disposed of by licensed collectors?	☐	☑	☐	☐	☐	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	☐	☑	☐	☐	☐	
4.13	Are chemical/fuel storage areas bounded?	☐	☑	☐	☐	☐	
4.14	Are designated areas identified for storage and sorting of construction wastes?	☐	☑	☐	☐	☐	
4.15	Are construction wastes sorted (inert and non-inert) on site?	☐	☑	☐	☐	☐	
4.16	Are construction wastes reused?	☐	☑	☐	☐	☐	
4.17	Are construction wastes disposed of properly?	☐	☑	☐	☐	☐	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	☐	☑	☐	☐	☐	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☑	☐	☐	☐	
4.20	Are appropriate procedures followed if contaminated material exists?	☐	☑	☐	☐	☐	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	☐	☐	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	☐	☑	☐	☐	☐	
4.23	Contaminated sediments will managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	☑	☐	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
Section 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	☐	☐	☐	☑	☐	Refer to Monthly EM&A report - April 2011 - Appendix M
5.02	Are retained and transplanted trees properly protected?	☐	☑	☐	☐	☐	Refer to tree photos
5.03	Are surgery works carried out for the damaged trees?	☑	☐	☐	☐	☐	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☑	☐	☐	☐	☐	
Section 6: Others							
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☑	☐	☐	☐	☐	

(Sok Kwu Wan)
Remarks:
Findings of Site Inspection: (19 April 2011)

The power generator without drip tray was observed.

Follow up:

Drip tray is provided for the power generator. (Rectified on 26 April 2011)

Tree Photos:

The transplanted and retained uncommon tree species trees were found to be labeled, fenced and protected.

Prepared by:
ET's representative

(Ray Cheung)

Environmental Team – Weekly Site Inspection and Audit Checklist – Sok Kwu Wan

Project:	**TCS/00512/09**	**Inspected by**	**Checklist No.** **TCS512B-260411**
	Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan	**ETL/ ET's Representative:**	Ray Cheung
		RE's Representative:	Joseph Ng
		Contractor's Representative:	Edwin Leung
		IEC's Representative:	
Date:	26 April 2011	**Time:**	14:00

PART A: **GENERAL INFORMATION** **Environmental Permit No.**

Weather: ☐ Sunny ☑ Fine ☐ Cloudy ☐ Rainy ☑ EP- 281/2007A

Temperature: 24.2 ^{0}C

Humidity: ☐ High ☑ Moderate ☐ Low

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

Area Inspected

1 Sok Kwu Wan

PART B: **SITE AUDIT**

Note: **Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable		**Not Obs.**	**Yes**	**No**	**Follow Up**	**N/A**	**Photo/ Remarks**
Section 1: Water Quality							
1.01	Is an effluent discharge license obtained for the Project?	☐	☑	☐	☐	☐	
1.02	Is the effluent discharged in accordance with the discharge licence?	☐	☑	☐	☐	☐	
1.03	Is the discharge of turbid water avoided?	☐	☑	☐	☐	☐	
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	☐	☑	☐	☐	☐	
1.05	Are there channels, sandbags or bunds to direct surface run-off to sedimentation tanks?	☐	☑	☐	☐	☐	
1.06	Are there any perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?	☐	☑	☐	☐	☐	
1.07	Is drainage system well maintained?	☐	☑	☐	☐	☐	
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	☐	☑	☐	☐	☐	
1.09	Are temporary exposed slopes properly covered?	☐	☑	☐	☐	☐	
1.10	Are earthworks final surfaces well compacted or protected?	☐	☑	☐	☐	☐	
1.11	Are manholes adequately covered or temporarily sealed?	☐	☑	☐	☐	☐	
1.12	Are there any procedures and equipment for rainstorm protection?	☐	☑	☐	☐	☐	
1.13	Are wheel washing facilities well maintained?	☑	☐	☐	☐	☐	
1.14	Is runoff from wheel washing facilities avoided?	☑	☐	☐	☐	☐	
1.15	Are there toilets provided on site?	☐	☑	☐	☐	☐	
1.16	Are toilets properly maintained?	☐	☑	☐	☐	☐	
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	☑	☐	☐	☐	☐	
1.18	Is the oil leakage or spillage avoided?	☐	☑	☐	☐	☐	
1.19	Are there any measures to prevent leaked oil from entering the drainage system?	☐	☑	☐	☐	☐	
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?	☐	☐	☐	☐	☑	
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?	☑	☐	☐	☐	☐	
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☑	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
1.23	Is used bentonite recycled where appropriate?	☑	☐	☐	☐	☐	
1.24	Designated settlement area for runoff/wheel wash waste is provide and located at the streambed with 1-2m deep, 12m long and around 50m^3 capacities for sedimentation.	☑	☐	☐	☐	☐	
1.25	No excavation is undertaken in the settlement area.	☐	☑	☐	☐	☐	
1.26	Concreting wastes water should be neutralized below the pH Action Levels before discharge.	☑	☐	☐	☐	☐	
1.27	Mobile toilets should provide on site and located away the stream course.	☑	☐	☐	☐	☐	
1.28	License collector should be employed for handling the sewage of mobile toilet.	☑	☐	☐	☐	☐	
1.29	Is ponding /stand water avoided?	☐	☑	☐	☐	☐	
1.30	Is open stockpiles well covered by impermeable sheet?	☐	☑	☐	☐	☐	
Section 2: Air Quality							
2.01	Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?	☑	☐	☐	☐	☐	
2.02	Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?	☐	☑	☐	☐	☐	
2.03	Are the excavated materials sprayed with water during handling?	☐	☑	☐	☐	☐	
2.04	Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?	☐	☐	☐	☐	☐	
2.05	Is the exposed earth properly treated within six months after the last construction activities?	☑	☐	☐	☐	☐	
2.06	Are the access roads sprayed with water to maintain the entire road surface wet or paved?	☐	☑	☐	☐	☐	
2.07	Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?	☐	☑	☐	☐	☐	
2.08	Is the load on vehicles covered entirely by clean impervious sheeting?	☐	☑	☐	☐	☐	
2.09	Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?	☐	☑	☐	☐	☐	
2.10	Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?	☐	☑	☐	☐	☐	
2.11	Is dark smoke emission from plant/equipment avoided?	☐	☑	☐	☐	☐	
2.12	Are de-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement?	☑	☐	☐	☐	☐	
2.13	Are site vehicles travelling within the speed limit not more than 15km/hour?	☐	☑	☐	☐	☐	
2.14	Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?	☐	☑	☐	☐	☐	
2.15	Is open burning avoided?	☐	☑	☐	☐	☐	
2.16	Excavated materials from the stream must remove form site on the same day. The materials shall be stored in covered impermeable skips awaiting removal from site.	☐	☑	☐	☐	☐	
Section 3: Noise							
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?	☐	☑	☐	☐	☐	
3.02	Is silenced equipment adopted?	☐	☑	☐	☐	☐	
3.03	Is idle equipment turned off or throttled down?	☐	☑	☐	☐	☐	
3.04	Are all plant and equipment well maintained and in good condition?	☐	☑	☐	☐	☐	
3.05	Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?	☑	☐	☐	☐	☐	
3.06	Are hand held breakers fitted with valid noise emission labels during operation?	☐	☑	☐	☐	☐	
3.07	Are air compressors fitted with valid noise emission labels during operation?	☐	☑	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
3.08	Are flaps and panels of mechanical equipment closed during operation?	☐	☑	☐	☐	☐	
3.09	Are Construction Noise Permit(s) applied for percussive piling works?	☑	☐	☐	☐	☐	
3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?	☑	☐	☐	☐	☐	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?	☑	☐	☐	☐	☐	
3.12	Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures).	☑	☐	☐	☐	☐	
3.13	Temporary/Moveable noise barrier or site hoarding are provide or erect at the site boundary to minimise the noise impact of the closest NSRs or stationary equipments shield by the noise barrier which cannot visible from NSRs (Level 2 mitigation measure)	☑	☐	☐	☐	☐	
3.14	Temporary/Moveable noise barrier equal to or more than 3m height with 10kg/m2 are provide for noise mitigation measures (Level 2 mitigation measures).	☑	☐	☐	☐	☐	
Section 4: Waste/Chemical Management							
4.01	Waste Management Plan had been submit to Engineer for approval.	☐	☑	☐	☐	☐	
4.02	Are receptacles available for general refuse collection?	☐	☑	☐	☐	☐	
4.03	Is general refuse sorting or recycling implemented?	☐	☑	☐	☐	☐	
4.04	Is general refuse disposed of properly and regularly?	☐	☑	☐	☐	☐	
4.05	Is the Contractor registered as a chemical waste producer?	☑	☐	☐	☐	☐	
4.06	Are the chemical waste containers and storage area properly labelled?	☐	☑	☐	☐	☐	
4.07	Are the chemical wastes stored in proper storage areas?	☐	☑	☐	☐	☐	
4.08	Is the chemical container or equipment provided with drip tray?	☐	☑	☐	☐	☐	
4.09	Is the chemical waste storage area used for storage of chemical waste only?	☐	☑	☐	☐	☐	
4.10	Are incompatible chemical wastes stored in different areas?	☐	☑	☐	☐	☐	
4.11	Are the chemical wastes disposed of by licensed collectors?	☐	☑	☐	☐	☐	
4.12	Are trip tickets for chemical wastes disposal available for inspection?	☐	☑	☐	☐	☐	
4.13	Are chemical/fuel storage areas bounded?	☐	☑	☐	☐	☐	
4.14	Are designated areas identified for storage and sorting of construction wastes?	☐	☑	☐	☐	☐	
4.15	Are construction wastes sorted (inert and non-inert) on site?	☐	☑	☐	☐	☐	
4.16	Are construction wastes reused?	☐	☑	☐	☐	☐	
4.17	Are construction wastes disposed of properly?	☐	☑	☐	☐	☐	
4.18	Are site hoardings and signboards made of durable materials instead of timber?	☐	☑	☐	☐	☐	
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?	☐	☑	☐	☐	☐	
4.20	Are appropriate procedures followed if contaminated material exists?	☐	☑	☐	☐	☐	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	☐	☐	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.	☐	☑	☐	☐	☐	
4.23	Contaminated sediments will managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.	☑	☐	☐	☐	☐	

Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
Section 5: Landscape & Visual							
5.01	Are retained and transplanted trees in health condition?	☐	☐	☐	☑	☐	Refer to Monthly EM&A report - April 2011 - Appendix M
5.02	Are retained and transplanted trees properly protected?	☐	☑	☐	☐	☐	Refer to tree photos
5.03	Are surgery works carried out for the damaged trees?	☑	☐	☐	☐	☐	
5.04	Is damage to trees outside site boundary due to construction activities avoided?	☐	☑	☐	☐	☐	
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?	☑	☐	☐	☐	☐	
Section 6: Others							
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?	☑	☐	☐	☐	☐	

(Sok Kwu Wan)
Remarks:
Findings of Site Inspection: (26 April 2011) **Follow up:**

No environmental issue was observed during the site inspection.

Tree Photos:

The transplanted and retained uncommon tree species trees were found to be labeled, fenced and protected.

Prepared by:
ET's representative

(Ray Cheung)

Appendix L

Implementation Schedule of Mitigation Measures

Implementation Schedule of Air Quality Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
3.32	2.34	Installation of 2m high solid fences around the construction site of Pumping Station P2.	Work site / during construction	Contractor		√		
3.34	2.34	Adopting the following good site practices and follow the dust control requirements of the Air Pollution Control (Construction Dust) Regulation: • Stockpiles of imported material kept on site should be contained within hoardings, dampened and / or covered during dry and windy weather; • Material stockpiled alongside trenches should be covered with tarpaulins whenever works are close to village houses; • Water sprays should be used during the delivery and handling of cement, sands, aggregates and the like. • Any vehicle used for moving sands, aggregates and construction waste should have properly fitting side and tail boards. Materials should not be loaded to a level higher than the side and tail boards, and should be covered by a clean tarpaulin.	Work site / during construction	All contractors		√		EIAO-TM, APCO, Air Pollution Control (Construction Dust) Regulation
3.36	Section 2	1 hour and 24 hour dust monitoring and site audit	Designated air monitoring locations / throughout construction period	Contractor/ Environmental Team		√		EM&A Manual

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.

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

N/A Not applicable

Implementation Schedule of Noise Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location/Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
4.41-4.43	3.19	• Use of quiet PME for the construction of the pumping stations • Use of temporary noise barrier during the construction of Pumping Station P1a	Work site /during the construction of Pumping Stations	Contractor		√		EIAO-TM, NCO
4.44 – 4.49	3.19	Implementation of following measures during the sewer construction: • Use of quiet PME or method; • Restriction on the number plant (1 item for each type of plant); and • Good Site Practices ➢ Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction 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 utilized, wherever practicable, in screening noise from on-site construction activities.	Work site /during the construction of Sewer.	Contractor		√		

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location/Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
4.50 – 4.53	3.19	• Use of noise screening structures such as acoustic shed and barrier wherever practicable and feasible in areas with sufficient clearance and headroom. • Adoption of manual working method wherever practicable and feasible in areas where the worksites of the proposed sewer alignment are located less than 20 m from the residential NSRs and less than 30 m from the temple (THT) and the public library. • Use of PME for the construction of the section of sewer between the NSR and the Pumping Station P1a should not be allowed during the excavation work of Pumping Station P1a.	Work site /during the construction of Sewer.	Contractor		√		
4.60	Section 35	Noise monitoring	Designated noise monitoring locations / throughout construction period	Contractor/ Environmental Team		√		EM&A Manual

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.

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

N/A Not applicable

Implementation Schedule of Water Quality Control Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location (duration /completion of measures)	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines
					D	C	O	
Construction Phase								
5.77	4.35	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. Silt curtains will be installed around the exit area of the pilot drill.	Marine works site / During construction of submarine outfall	Contractor		√		
5.73 – 5.78	4.36	Dredging Works Implementation of following measures during the dredging works: • dredging should be undertaken using closed grab dredgers with a maximum total production rate of 55m^3/hr; • deployment of 2-layer silt curtains with the first layer enclosing the grab and the second layer at around 50m from the dredging area while dredging works are in progress; • dredging operation should be undertaken during ebb tide only; • all vessels should be sized such that adequate clearance (i.e. minimum clearance of 0.6m) is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; • all pipe leakages should be repaired promptly and plant should not be operated with leaking pipes; • excess material should be cleaned from the decks and exposed fittings of barges before the vessel is moved; • adequate freeboard (i.e. minimum of 200mm) should be maintained on barges to ensure that decks are not washed by wave action; • all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; • loading of barges should be controlled to prevent splashing of dredged material to the surrounding water, and barges should not	Marine works site and at the identified water sensitive receivers/ During construction	Contractor		√		

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location (duration /completion of measures)	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines
					D	C	O	
		be filled to a level which will cause the overflow of materials or polluted 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.						
5.79	4.37	<u>Construction Run-off and Drainage</u> Implementation of the following site practices outlined in ProPECC PN 1/94 for "Construction Site Drainage" • Provision of perimeter channels to intercept storm-runoff from outside the site. These should be constructed in advance of site formation works and earthworks. • Works programmes should be designed to minimize works areas at any one time, thus minimizing exposed soil areas and reducing the potential for increased siltation and runoff. • Sand / silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove the sand / silt particles from run-off. These facilities should be properly and regularly maintained. These facilities should be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site. • Careful programming of the works to minimise soil excavation works during rainy seasons. • Exposed soil surface should be protected by paving or hydroseeding as soon as possible to reduce the potential of soil erosion. • Trench excavation should be avoided in the wet season, and if necessary, these should be excavated and backfilled in short sections. • Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric	Construction works sites	Contractor		√		ProPECC PN 1/94
5.80	4.38	<u>General Construction Activities</u> Debris and rubbish generated on-site should be collected, handled and	Construction works sites	Contractor		√		

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location (duration /completion of measures)	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines
					D	C	O	
		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.						
5.81	4.39	Wastewater Arising from Workforce Portable toilets should be provided by the Contractors, where necessary, to handle sewage from the workforce. The Contractor should also be responsible for waste disposal and maintenance practices.	Construction works sites	Contractor		√		
5.96	Section 4	Water quality monitoring	Designated water monitoring locations/ throughout construction period	Contractor		√		EM&A Manual

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Sediment Contamination Mitigation Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
6.17	5.3	Follow the requirement and procedures for dredged mud disposal specified under the WBTC No. 34/2002.	Marine works site / during dredging works	Contractor		√		WBTC No. 34/2002
6.18	5.4	Implement appropriate dredging methods which have been incorporated into the recommended water quality mitigation measures.	Marine works site, during dredging works	Contractor		√		
6.19	5.5	During the transportation and disposal of the dredged sediment, the following measures should be taken: • Bottom opening of barges should be fitted with tight fitting seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved. • Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels should be equipped with automatic self monitoring devices as specified by the DEP.	Marine works site and at the identified sensitive receivers	Contractor		√		

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Solid Waste Management Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
7.14	6.4	Good site practices • Nomination of an approved person, such as a site manager, to be responsible for implementation of good site practices, arranging for collection and effective disposal to an appropriate facility, of all wastes generated at the site • Training (proper waste management and chemical handling procedure) should be provided for site staffs • Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. • Provision of sufficient waste disposal points and regular collection for disposal. • Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility. • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. • Maintain records of the quantities of wastes generated, recycled and disposed.	Work sites/During construction	Contractor		√		Waste Disposal Ordinance (Cap.54)
7.15	6.5	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.	Work sites/During construction	Contractor		√		WBTC No. 21/2002
7.16	6.6	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	Work sites/During construction	Contractor		√		WBTC No. 4/98, 5/98

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
		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.						
7.18	6.7	General Site Wastes • A collection area for construction site waste should be provided where waste can be stored prior to removal from site • An enclosed and covered area for the collection of the waste is recommended to reduce 'wind blow' of light material	Work sites/During construction	Contractor		√		Public Health and Municipal Services Ordinance (Cap. 132)
7.19-7.20	6.8 – 6.9	Chemical Wastes • After use, chemical waste should be handled according to the Code of Practice on the Package, Labelling and Storage of Chemical Wastes • Any unused chemicals or those with remaining functional capacity should be recycled • Waste should be properly stored on site within suitably designed containers and should be collected by an approved licensed waste collectors for disposal at the Chemical Waste Treatment Facility or other licenced facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordance.	Work sites/During construction	Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Wastes

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
		• Any service shop and minor maintenance facilities should be located on hard standing within a bunded area, and sumps and oil interceptors should be provided. • Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should be undertaken within the designated areas equipped control these discharges						
7.21-7.22	6.10 – 6.11	<u>Construction and Demolition Material</u> • The C&D waste should be separated on-site into three categories: ➢ public fill, the inert portion of the C&D material (e.g. concrete and rubble), which should be re-used on-site or disposed of at a public filling area; ➢ C&D waste for re-use and / or recycling, the non-inert portion of the C&D material, (e.g. steel and other metals, woods, glass and plastic); ➢ C&D waste which cannot be re-used and / or recycled (e.g. wood, glass and plastic) • Where possible, inert material should be re-used on-site • Where practicable, steel and other metals should be separated for re-use and/or recycling prior to disposal of C&D material	During all construction phases	Contractors		√		WBTC No. 4/98, 5/98, 21/2002, 25/99, 12/2000

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Ecological Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
8.157	7.2	Terrestrial Ecology • Labeling and fencing of the uncommon tree species • Avoidance of use of woodland habitats as Works Area, in particular where trees are located	Work sites / during construction phase	Contractor		√		
8.159 – 8.160	7.3	Subtidal Ecology Use of HDD technique Dredging • Use of closed-grab dredger • Deploy silt curtains during dredging.	Marine works site / during dredging works	Contractor		√		
8.161	7.4	Site runoff • Construction and maintenance of sand / silt removal facilities • Silt curtains • Timing of earthworks • Coverage of sand / fill piles during storms. • Barriers along the landward side of Pumping Station P2 site boundary (to prevent site runoff from entering area with Romer's Tree Frog)	All work sites / during construction phase	Contractor		√		

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Fisheries Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
9.29	8.3	Use of closed grab dredging and silt curtains around the immediate dredging area and low dredging rates as recommended in Water Quality of the EIA report	Marine works site, during dredging works	Contractor		√		TM on EIA Process
9.32	Section 8	Water quality monitoring (see Implementation Schedule for Water Quality Control Measures)	Designated monitoring locations / throughout construction period and 1 year following operation of the STW	Contractor and Environmental Team		√	√	EM&A Manual

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.

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

N/A Not applicable

Implementation Schedule of Landscape and Visual Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
10.74	9.10	Retaining existing trees and minimizing damage to vegetation by close coordination and on site alignment adjusted of rising main and gravity sewer pipelines.	All sites	Contractor		√		WBTC No. 14/2002
		Careful and efficient transplanting of affected trees to temporary or final transplant location (the proposed tree to be transplanted is a semi-mature *Macaranga tanarius* and is located at the proposed Pumping Station P2 location).	All sites	Contractor		√		WBTC No. 14/2002
		Short excavation and immediate backfilling sections upon completion of works to reduce active site area.	All sites	Contractor		√		
		Screening of site construction works by use of hoarding that is appropriate to its site.	All sites	Contractor		√		WBTC No. 19/2001
		Conservation of topsoil for reuse.	All sites	Contractor		√		
		Night-time light source from marine fleets should be directed away from the residential units.	Outfall area.	Contractor		√		

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.

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

N/A Not applicable

Appendix M

Tree Inspection Report

經 緯 園 藝 有 限 公 司
Melofield Nursery & Landscape Contractor Ltd
元朗宏業東街宏業工貿中心 7 樓 A 室 FLAT A, 7/F, WANG YIP CENTRE, 18 WANG YIP ST. EAST, YUEN LONG, N.T.
TEL: (852) 2572-0048 FAX: (822)2573-9099 E-mail: melofield@netvigator.com

Project Name: Construction of Sewage Treatment works at Yung Shu Wan and Sok Kwu Wan

Contract No. DC/2009/13

Sok Kwu Wan

Tree Inspection Report for CT7, CT8, CT9, CT10

2011-04-04

Project Name: Construction of Sewage Treatment works at Yung Shu Wan and Sok Kwu Wan
Contract No. DC/2009/13

Sok Kwu Wan

A tree inspection was carried out on 04-04-2011. Observations and comment are described below and photo records are attached in **Annex A** for reference.

Remarks:
Tree T8 in previous report is the Tree CT10 in this report
Tree T10 in previous report is the Tree CT8 in this report

CT7
No bud was found in the top of the twig. The bark is dry. No significant improvement in health. The plant is weak. Soil is still cold and wet.

CT8
No bud was found in the top of the twig. The bark is dry. No significant improvement in health. The plant is weak. Soil is still cold and wet.

CT9
No bud was found in the top of the twig. The bark is dry. No significant improvement in health. The plant is weak. Soil is still cold and wet.

CT10
No bud was found in the top of the twig. The bark is dry. No significant improvement in health. The plant is weak. Soil is still cold and wet.

Overall

The overall health conditions were not satisfactory. The soil around the vegetation was cold and wet. Also, the recent weather is still unstable, this may affecting the recovery of the tree. It is expected the soil temperature will be increased in the coming weeks. They may take longer time to get better recover until the weather become warm and stable.

Measures

Any insect found on the plant shall be removed physically to prevent the bud attacked by leaf-feeding insect. No pesticide should be used when the plants are weak.

Annex A - Photo Records of Tree CT7, CT8, CT9, CT10

Photo 1　Overall view of CT7

Photo 2　Overall view of CT8

Photo 3　Overall view of CT9

Photo 4　Overall view of CT10

Photo 5 Overall views of the tree protection zone and warning sign

經 緯 園 藝 有 限 公 司
Melofield Nursery & Landscape Contractor Ltd
元朗宏業東街宏業工貿中心 7 樓 A 室 FLAT A, 7/F, WANG YIP CENTRE, 18 WANG YIP ST. EAST, YUEN LONG, N.T.
TEL: (852) 2572-0048 FAX: (822)2573-9099 E-mail: melofield@netvigator.com

Project Name: Construction of Sewage Treatment works at Yung Shu Wan and Sok Kwu Wan

Contract No. DC/2009/13

Sok Kwu Wan

Tree Inspection Report for CT7, CT8, CT9, CT10

2011-04-19

Project Name: Construction of Sewage Treatment works at Yung Shu Wan and Sok Kwu Wan
Contract No. DC/2009/13

Sok Kwu Wan

A tree inspection was carried out on 19-04-2011. Observations and comment are described below and photo records are attached in **Annex A** for reference.

Remarks:
Tree T8 in previous report is the Tree CT10 in this report
Tree T10 in previous report is the Tree CT8 in this report

CT7
No bud was found in the top of the twig. The bark was dry. No significant improvement in health. The plant was weak. Soil was still cold and wet.

CT8
No bud was found in the top of the twig. The bark was dry. No significant improvement in health. The plant was weak. Soil was still cold and wet.

CT9
No bud was found in the top of the twig. The bark was dry. No significant improvement in health. The plant was weak. Soil was still cold and wet.

CT10
No bud was found in the top of the twig. The bark was dry. No significant improvement in health. The plant was weak. Soil was still cold and wet.

Overall

The overall health conditions were not satisfactory. The soil around the vegetation was cold and wet. The soil temperature will increase in this a few weeks. Also, the weather is still unstable, this may affecting the recovery of the tree. They may take longer time to get better recover until the weather become warm and stable. Remove any insect found on the plant physically to prevent the bud attacked by leaf-feeding insect. No pesticide should be used when the plants are weak.

Furthermore to this scheduled routine monitoring on the 4 transplanted vegetation CT7 to CT10, additional planting of Celtis timorensis (Procure from Mainland's market) to the same area as remedial was under preparation. It could be prospected that the coming session would be more suitable for vegetation growing.

Annex A - Photo Records of Tree CT7, CT8, CT9, CT10

Photo 1　Overall view of CT7

Photo 2　Overall view of CT8

Photo 3　Overall view of CT9

Photo 4　Overall view of CT10

Photo 5 Overall views of the tree protection zone and warning sign