

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.31) – FEBRUARY 2013

PREPARED FOR LEADER CIVIL ENGINEERING CORPORATION LIMITED

Quality Index Date	Reference No.	Prepared By	Approved By
18 March 2013	TCS00512/09/600/R0619v2	Anh	Phin
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Version	Date	Description
1	13 March 2013	First Submission
2	18 March 2013	Amended against IEC's comments on 18 March 2013

# **Scott Wilson CDM Joint Venture**

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Hong Kong	Date:	19 March 2013 BY FAX & EMAIL
<u>Attention: Ms. Jacky C M Wong</u>		BY FAX & EMAIL

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 <u>Monthly Environmental Monitoring and Audit (EM&A) Report No. 31 (February 2013)</u>

We refer to the Monthly EM&A Monitoring Report No. 31 for February2013 received under cover of the email from the Environmental Team, Action-United Environmental Services and Consulting (AUES), dated 18 March 2013. We have no comment and have verified the captioned report.

Yours faithfully SCOTT WILSON CDM JOINT VENTURE

Rodney Ip Independent Environmental Checker

ICWR/SYSL/ycky

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



## EXECUTIVE SUMMARY

ES.01. This is the **31**<sup>st</sup> monthly Environmental Monitoring and Audit (EM&A) Report for Sok Kwu Wan (hereinafter 'this Report') for the designated works under the Environmental Permit [EP-281/2007/A], covering a period from **26 January to 25 February 2013** (hereinafter 'the Reporting Period').

#### **ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES**

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

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	45
All Quality	24-hour TSP	15
Construction Noise	L <sub>eq(30min)</sub> Daytime	20
Water Quality	Marine Water Sampling	12
Inspection / Audit	ET Regular Environmental Site Inspection	3

ES.03. As informed by the Contractor, the marine work of outfall construction has been commenced on 19 July 2011, therefore, water quality was undertaken in this Reporting Period.

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

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

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

*Note: NOE* – *Notification of Exceedance* 

### SITE INSPECTION BY EXTERNAL PARTIES

ES.05. In this Reporting Period, weekly joint site inspection by RE, the Contractor and ET was carried out on 29 January, 5 and 19 February 2013. All the observation has been rectified during the next week site inspection.

# ENVIRONMENTAL COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.06. No written or verbal environmental complaint, summons or successful prosecutions were recorded in this Reporting Period.

### **REPORTING CHANGE**

ES.07. No reporting change was made in this Reporting Period.

#### **FUTURE KEY ISSUES**

ES.08. During dry season, special attention should be paid to the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. Nevertheless, 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.09. Muddy water and other water quality pollutants via site surface water runoff into the sea body within Fish Culture Zone (FCZ) at Picnic Bay and the secondary recreation contact subzone at Mo Tat Wan is the key issue of the Project. Mitigation measures for water quality should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary.



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## 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 Kwu Wan (the Project) by the Drainage Services Department (DSD) on 4 May 2010. The Project is part of an overall plan approved under a statutory EIA for Outlying Islands Sewerage Stage 1 Phase 2 Package J Sok Kwu Wan Sewage Collection and Treatment (Register No. AEIAR-075/2003) and Disposal Facilities and Outlying Islands Sewerage Stage 1 Phase 1 Package C Yung Shue Wan Sewage Treatment Works and Outfall (Register No. EIA-124/BC). The Environmental Permit (EP) No. EP-281/2007 and EP-282/2007 for the Project have been obtained by the DSD on 29 June 2007 for the relevant works. After July 2009, EP-281/2007/A stead EP-281/2007 is EP for Sok Kwu Wan relevant works.
- 1.02 The Project involves construction of sewage treatment works at Sok Kwu Wan and Yung She Wan with a capacity of 1,430m<sup>3</sup>/day and 2,850m<sup>3</sup>/day respectively to provide secondary treatment, construction of 2 pumping stations at Sok Kwu Wan and 1 pumping station at Yung Shue Wan, construction of submarine outfall from the coastline and lying of underground sewerage pipeline. The site layout plan for the captioned work under the Project is showing in *Appendix A*.
- 1.03 According to the Particular Specification (PS) and *Appendix 25* of the Project, Leader should establish an Environmental Team (ET) 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 programme. 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 Manual 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.
- 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, 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 **31**<sup>st</sup> monthly EM&A Report Sok Kwu Wan Portion Area presenting the monitoring results and inspection findings for the Reporting Period from **26 January to 25 February 2013**.

### **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	<b>CONSTRUCTION NOISE MONITORING RESULTS</b>
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 programme are enclosed in *Appendix C* and the major construction activities undertaken in this Reporting Period are listed below:-
  - Construction of SKWSTW: Concreting, Steel Fixing, Formwork Erection, Formwork Removal, Backfilling,
  - Construction of SKW PS1 & PS2: E&M works installation

#### SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.03 Summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this Reporting Period is presented in *Table 2-1*.

Table 2-1Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Air Pollution Control (Construction Dust)	Notified EPD on 19 May 2010
	Regulation	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	Issued on 26 May 2010
	Waste	A/C No: 7010815
5	Construction Noise Permit	Permit no. GW-RS1112-12
		Valid from: 30 Oct 2012
		Until: 29 Mar 2013

- 2.04 The "Baseline/Impact Monitoring Methodology (TCS00512/09/600/R0010Ver.4)" was set out in accordance with the Sok Kwu Wan EM&A Manual' requirements. It was approved by the Engineer Representative (ER) and agreed with the Independent Environmental Checker (IEC) and then submitted to the EPD on 8 July 2010.
- 2.05 Baseline Monitoring Report Volume 1 for Sok Kwu Wan (TCS00512/09/600/R0020Ver.3) was verified by the IEC on 12 July 2010 and submitted to EPD on 12 July 2010.
- 2.06 Baseline Water Quality Monitoring Report Volume 2 for Sok Kwu Wan (TCS00512/09/600/R0182v7) was revised against EPD comments and re-submitted on 11 October 2011.



## **3** SUMMARY OF BASELINE MONITORING REQUIREMENTS

## **ENVIRONMENTAL ASPECT**

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

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

 Table 3-1
 Summary of EM&A Requirements

## 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 3-2Location 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*, 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
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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.

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

Table 3-4	Location of Marine Water Quality Monitoring Station	n
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### MONITORING FREQUENCY AND PERIOD

3.07 The impact monitoring carried out in the EM&A programme is basically in accordance with the requirements in *EM&A Manual Sections* 2.7, 3.6, 4.7 and 4.8. The monitoring requirements are listed as follows.

## Air Quality Monitoring

Parameters:	1-hour TSP and 24-hour TSP.
Frequency:	Once in every six days for 24-hour TSP and three times in every six days for 1-hour TSP.
Duration:	Throughout the construction period.

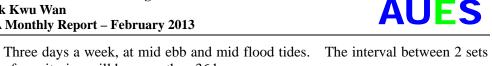
## Noise Monitoring

Parameters:	$L_{eq 30min}$ & $L_{eq(5min)}$ , $L_{10}$ and $L_{90}$ . $L_{eq(15min)}$ & $L_{eq(5min)}$ , $L_{10}$ and $L_{90}$ 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

<u>Parameters</u>: 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.
<u>Sampling</u> 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<sup>-1</sup>.

### Water Quality Monitoring

- 3.11 **Dissolved Oxygen and Temperature Measuring Equipment** The instrument should be a portable and weatherproof dissolved oxygen (DO) measuring instrument complete with cable and sensor, and use a DC power source. The equipment should be capable of measuring as included a DO level in the range of 0 20mg L-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 a range 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 suspended solids 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 DO 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 programme in the Reporting Period 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 programme.
- 3.27 The monitoring data recorded in the equipment e.g. 1-hour TSP meter, sound level meter and Multi-parameter Water Quality Monitoring System, are downloaded directly from the equipments at the end of each monitoring day. The downloaded monitoring data are input into a computerized database properly maintained by the ET. The laboratory results are input directly into the computerized database and QA/QC checked by personnel other than those who input the data. For monitoring activities require laboratory analysis, the local laboratory follows the QA/QC requirements as set out under the HOKLAS scheme for all laboratory testing.

### REPORTING

3.28 It was agreed among the ER, IEC, Contractor and ET that, in order to streamline the EM&A report submission and to cater for the occasional delay in obtaining laboratory analysis results, the cutoff day for each month is the 25th i.e. the first day of each report is the 26<sup>th</sup> of the last month and the end

day, the 25<sup>th</sup> of that month.

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

3.29 According to the Sok Kwu Wan Environmental Monitoring and Audit Manual, the air quality, construction noise and marine water quality were set up, namely Action and Limit levels are listed in *Tables 3-5*, *3-6 and 3-7* as below.

Table 3-5Action and Limit Levels for Air Quality

Monitoring Station	Action Le	vel (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )	
Womtoring Station	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	Action Level	Limit Level
Location	0700-1900 hours on normal weekdays	
NM1 NM2 RNM3 NM4	When one or more documented complaints are received	75 dB(A) of $L_{eq(30min)}$ during normal hours from 0700 to 1900 hours on normal weekdays, reduced to 70 dB(A) of $L_{eq(30min)}$ for schools and 65 dB(A) during school examination periods

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

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

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 The impact EM&A programme was carried out as compliance with the contract Particular Specification, Sok Kwu Wan EM&A Manual and the EP.

### **Results of Air Quality Monitoring**

4.02 In this Reporting Period, **45** and **15** monitoring events were performed for 1-hour TSP and 24-hour TSP monitoring respectively at the designated locations AM1, AM2 and AM3. The monitoring results for 24-hour and 1-hour TSP are summarized in *Tables 4-1, 4-2* and *4-3*. The detail 24-hour TSP data are shown in *Appendix G* and the graphical plots of are shown in *Appendix H*.

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

	24-hour	1-hour TSP (µg/m <sup>3</sup> )				
Date	TSP (µg/m <sup>3</sup> )	Date	Start Time	1 <sup>st</sup> hour measured	2 <sup>nd</sup> hour measured	3 <sup>rd</sup> hour measured
28-Jan-13	23	30-Jan-13	12:30	76	79	83
2-Feb-13	15	5-Feb-13	10:10	61	66	58
8-Feb-13	27	9-Feb-13	12:45	44	49	47
14-Feb-13	35	15-Feb-13	8:00	38	43	40
20-Feb-13	40	21-Feb-13	8:00	49	54	47
Average	28	Avera	ge	56		
(Range)	(15 - 40)	(Rang	e)	(38 - 83)		

Table 4-2	Summary of 24-hour and 1-hour TSP Monitoring Results – AM2
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	24-hour	1-hour TSP (µg/m <sup>3</sup> )				
Date	TSP (µg/m <sup>3</sup> )	Date	Start Time	1 <sup>st</sup> hour measured	2 <sup>nd</sup> hour measured	3 <sup>rd</sup> hour measured
28-Jan-13	65	30-Jan-13	15:40	88	95	86
2-Feb-13	43	5-Feb-13	12:15	56	59	57
8-Feb-13	51	9-Feb-13	15:45	39	42	45
14-Feb-13	39	15-Feb-13	11:45	34	39	33
20-Feb-13	55	21-Feb-13	12:00	57	68	62
Average	45	Avera	ge	57		
(Range)	(39 - 65)	(Rang	e)	(33 – 95)		

Table 4-3         Summary of 24-hour and 1-hour TSP Monitoring Results – AM	Table 4-3	Summary of 24-hour and 1-hour TSP Monitoring Results – AM3
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	24-hour			1-hour TSP	$(\mu g/m^3)$				
Date	TSP (μg/m <sup>3</sup> )	Date	Start Time	1 <sup>st</sup> hour measured	2 <sup>nd</sup> hour measured	3 <sup>rd</sup> hour measured			
28-Jan-13	74	30-Jan-13	10:10	127	136	120			
2-Feb-13	32	5-Feb-13	7:50	114	127	125			
8-Feb-13	46	9-Feb-13	9:10	60	64	68			
14-Feb-13	53	15-Feb-13	14:05	55	62	53			
20-Feb-13	55	21-Feb-13	15:10	121	129	138			
Average	52	Avera	ge	100					
(Range)	(32 - 74)	(Rang	e)	(53 – 138)					

4.03 As shown in *Tables 4-1, 4-2* and *4-3*, 1-hour and 24-hour TSP results fluctuated well below the Action Level during the Reporting Period.

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 are presented in the following sub-sections.

### **Results of Construction Noise Monitoring**

5.02 In this Reporting Period, a total of **20** construction noise monitoring events were undertaken at designated locations. The results for  $L_{eq30min}$  at NM1, NM2, RNM3 and NM3 are summarized in *Tables 5-1, 5-2, 5-3* and *5-4* and graphical plots are shown in *Appendix H*.

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

Date	Start Time	End time	1 <sup>st</sup> Leq5	2 <sup>nd</sup> Leq5	3 <sup>rd</sup> Leq5	4 <sup>th</sup> Leq5	5 <sup>th</sup> Leq5	6 <sup>th</sup> Leq5	Leq30
30-Jan-13	10:05	10:35	49.1	52.1	57.4	52.3	51.9	51.3	53.2
5-Feb-13	9:37	10:07	48.5	46.5	53.1	55.8	57.0	44.7	53.1
9-Feb-13	13:21	13:51	57.6	53.2	44.8	54.6	47.4	47.7	53.1
15-Feb-13	13:00	13:30	44.7	55.3	45.4	45.5	51.3	57.6	52.8
21-Feb-13	13:10	13:40	50.5	47.1	54.4	53.7	50.1	49.3	51.6
Limit Le	evel in dH	B(A)							75

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

Date	Start Time	End time	1 <sup>st</sup> Leq5	2 <sup>nd</sup> Leq5	3 <sup>rd</sup> Leq5	4 <sup>th</sup> Leq5	5 <sup>th</sup> Leq5	6 <sup>th</sup> Leq5	Leq30
30-Jan-13	10:40	11:10	64.0	64.2	64.0	64.1	63.7	63.6	63.9
5-Feb-13	10:12	10:42	63.8	63.8	63.6	63.8	64.1	63.8	63.8
9-Feb-13	13:58	14:28	63.7	63.7	63.7	64.6	63.5	63.5	63.8
15-Feb-13	13:38	14:08	63.5	63.5	63.4	63.4	63.4	63.7	63.5
21-Feb-13	13:55	14:25	58.1	51.5	52.0	55.1	56.6	50.4	54.9
Limit Le	vel in dE	B(A)		75					

Date	Start Time	End time	1 <sup>st</sup> Leq5	2 <sup>nd</sup> Leq5	3 <sup>rd</sup> Leq5	4 <sup>th</sup> Leq5	5 <sup>th</sup> Leq5	6 <sup>th</sup> Leq5	Leq30	Corrected* Leq30
30-Jan-13	11:17	11:47	60.2	56.8	55.4	57.8	63.4	62.3	60.3	63.3
5-Feb-13	10:47	11:17	61.5	60.6	58.7	57.5	59.2	59.8	59.7	62.7
9-Feb-13	15:33	16:03	58.7	55.4	55.8	67.1	61.9	54.9	61.5	64.5
15-Feb-13	14:17	14:47	56.5	58.2	56.7	56.3	57.3	55.4	56.8	59.8
21-Feb-13	14:30	15:00	57.0	53.6	53.7	52.8	50.5	51.4	53.7	56.7
Limit Le	vel in dE	<b>B</b> ( <b>A</b> )		-						

\* 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
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Date	Start Time	End time	1 <sup>st</sup> Leq5	2 <sup>nd</sup> Leq5	3 <sup>rd</sup> Leq5	4 <sup>th</sup> Leq5	5 <sup>th</sup> Leq5	6 <sup>th</sup> Leq5	Leq30
30-Jan-13	13:00	13:30	54.1	53.1	54.5	53.8	54.2	53.1	53.8
5-Feb-13	11:23	11:53	47.5	47.5	47.0	47.8	50.5	49.1	48.4
9-Feb-13	16:12	16:42	48.4	51.5	50.4	49.3	49.4	54.3	51.0
15-Feb-13	11:33	12:03	50.8	48.0	57.0	54.9	55.7	61.0	56.4
21-Feb-13	15:08	15:38	56.9	51.3	60.1	57.5	52.7	53.2	56.4
Limit Le	evel in dE	B(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 The construction of marine outfall works was commenced on 19 July 2011 and therefore marine water quality monitoring is required in this Reporting Period. In this Reporting Period, 12 events of water quality monitoring were carried out at the designated locations.
- 6.02 The monitoring results including in-situ measurements and laboratory testing results are presented in *Appendix G*. The graphical plots are shown in *Appendix H*.
- 6.03 During the Reporting Period, field measurements of both control and impact stations showed that marine water of the depth average of the salinity concentration was within 33.62 to 35.76 ppt, and pH value was within 6.75 to 8.07.
- 6.04 Monitoring results of 3 key parameters: dissolved oxygen (DO), turbidity and suspended solids (SS) in this Reporting Period, are summarized in *Tables 6-1, 6-2, 6-3 and 6-4*. A summary of exceedances for the 3 parameters are shown in *Table 6-5*.

 Table 6-1
 Summary of Water Quality Results – Mid-ebb Tides (Dissolved Oxygen)

Sampling date		ed Oxyg and		of Depth yer (mg/I	Dissol	Dissolved Oxygen conc. of Depth Ave. of Bottom Layer (mg/L)						
	W1	W2	W3	C1	C2	C3	W1	W2	W3	C1	C2	C3
26-Jan-13	7.74	8.11	7.82	8.34	7.40	8.24	NA	8.11	8.09	8.13	7.90	7.96
28-Jan-13	7.88	7.68	7.72	6.86	7.96	7.39	NA	7.96	7.57	6.95	7.97	7.17
30-Jan-13	7.57	7.25	7.46	6.64	8.10	6.53	NA	7.40	7.44	6.55	7.87	6.52
1-Feb-13	7.59	6.67	6.92	6.62	7.95	7.05	NA	6.83	6.69	6.57	7.89	6.90
5-Feb-13	6.21	6.20	6.60	5.87	7.18	5.94	NA	6.05	6.40	5.88	6.73	5.83
7-Feb-13	6.74	6.92	6.20	7.77	5.90	7.63	NA	6.83	6.13	7.58	5.68	7.63
9-Feb-13	6.54	6.42	5.84	7.65	5.56	7.77	NA	6.30	5.62	7.63	5.36	7.75
15-Feb-13	6.50	6.53	6.89	5.79	7.74	6.72	NA	6.45	6.95	5.98	7.35	6.47
19-Feb-13	7.72	8.02	8.16	7.66	8.12	7.66	NA	7.79	7.91	8.01	7.91	7.73
21-Feb-13	8.32	7.84	7.90	7.81	7.71	8.78	NA	7.96	7.93	7.94	7.60	7.89
23-Feb-13	8.14	8.56	8.05	8.43	8.07	8.16	NA	8.34	8.04	7.97	8.09	7.98
25-Feb-13	7.75	8.85	8.25	8.35	8.05	7.99	NA	8.64	8.21	7.98	8.26	8.03

 Table 6-2
 Summary of Water Quality Results – Mid-ebb Tides (Turbidity & Suspended Solids)

Sompling data		Т	urbidity	y Depth Av	ve. (NTU)		Suspe	ended S	olids D	epth A	ve. (m	g/L)
Sampling date	W1	W2	W3	C1	C2	C3	W1	W2	W3	<b>C1</b>	C2	C3
26-Jan-13	1.24	1.37	1.28	1.18	1.43	1.16	1.30	3.30	1.90	1.83	2.57	1.23
28-Jan-13	1.51	1.57	1.39	1.49	1.47	1.27	3.00	3.57	2.67	3.00	2.17	2.93
30-Jan-13	2.79	2.51	2.81	1.31	1.11	1.45	3.30	3.83	4.67	3.77	4.03	4.53
1-Feb-13	2.00	1.90	2.45	2.20	1.67	2.20	1.20	1.70	2.87	2.17	5.00	1.37
5-Feb-13	1.27	1.16	1.34	1.18	1.20	1.42	1.80	1.03	1.10	1.57	1.00	2.13
7-Feb-13	1.03	1.18	1.29	0.98	1.10	1.20	0.50	1.23	1.23	1.17	2.03	1.90
9-Feb-13	1.17	1.12	1.33	1.29	1.05	1.34	3.60	2.17	1.77	3.17	2.30	1.97
15-Feb-13	0.88	1.06	1.06	1.11	1.77	1.07	1.00	1.30	1.37	1.37	2.47	1.23
19-Feb-13	0.88	0.68	0.75	1.08	1.10	0.84	4.40	0.83	1.07	1.10	1.30	2.13
21-Feb-13	0.86	1.11	1.53	0.95	1.41	1.02	0.50	0.80	2.33	1.97	1.63	1.70
23-Feb-13	0.76	0.78	1.30	1.19	1.01	1.46	2.60	1.40	2.77	1.63	1.33	0.87
25-Feb-13	0.99	0.79	0.84	0.78	1.02	1.45	1.20	1.37	0.97	1.33	1.53	1.53

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Sampling date		Dissolved Oxygen conc. of Depth Ave. of Surf. and Mid Layer (mg/L)						Dissolved Oxygen conc. of Depth Ave. of Bottom Layer (mg/L)						
I B	W1	W2	W3	C1	C2	C3	W1	W2	W3	C1	C2	C3		
26-Jan-13	8.73	8.74	8.16	7.47	8.53	7.91	NA	8.49	8.48	7.56	8.74	7.67		
28-Jan-13	7.19	7.05	6.45	7.76	5.86	7.80	NA	6.99	6.32	7.63	5.73	7.70		
30-Jan-13	7.20	7.03	6.33	7.53	6.79	7.79	NA	6.98	6.33	7.33	6.59	7.40		
1-Feb-13	7.35	7.08	7.94	6.51	7.99	7.09	NA	6.99	7.79	6.44	7.79	6.86		
5-Feb-13	6.54	6.67	7.27	6.39	6.11	6.24	NA	6.52	6.94	6.11	6.98	5.97		
7-Feb-13	7.97	7.44	7.30	6.83	6.71	7.55	NA	7.29	7.46	6.71	7.55	7.14		
9-Feb-13	7.41	6.95	7.00	6.65	6.67	7.08	NA	6.80	6.88	6.67	6.80	6.77		
15-Feb-13	6.34	6.46	5.49	7.41	7.34	7.36	NA	6.44	5.50	7.34	5.16	7.41		
19-Feb-13	7.40	7.46	7.87	7.69	7.62	7.61	NA	7.70	7.54	7.62	7.25	7.83		
21-Feb-13	8.03	8.00	7.92	8.03	7.75	7.91	NA	7.60	7.46	7.75	7.66	7.66		
23-Feb-13	8.81	8.60	7.85	8.36	8.28	8.73	NA	8.41	8.16	8.28	8.05	8.35		
25-Feb-13	8.92	8.29	8.03	8.52	8.60	9.14	NA	8.46	8.14	8.60	8.60	8.92		

Summary of Water Quality Results – Mid-flood Tides (Dissolved Oxygen)

Table 6-4Summary of Water Quality Results – Mid-flood Tides (Turbidity &<br/>Suspended Solids)

Somuling data		Т	urbidity	y Depth Av	ve. (NTU)		Susp	ended S	Solids 1	Depth A	ve. (m	g/L)
Sampling date	W1	W2	W3	C1	C2	C3	W1	W2	W3	C1	C2	C3
26-Jan-13	0.79	0.90	0.75	0.72	1.09	0.74	2.00	1.77	2.10	2.37	2.97	4.57
28-Jan-13	0.88	1.05	0.97	0.89	0.88	0.83	1.60	1.67	1.60	2.17	1.83	2.67
30-Jan-13	2.03	1.82	1.82	0.87	0.80	1.11	4.40	4.13	1.53	1.70	1.63	2.63
1-Feb-13	1.36	1.41	1.89	1.64	1.17	1.73	2.20	2.00	1.57	1.63	3.07	3.67
5-Feb-13	1.20	1.15	1.31	1.22	1.10	1.29	1.60	0.93	1.47	0.83	0.50	1.63
7-Feb-13	1.15	1.32	1.38	0.91	1.59	1.09	1.50	0.93	0.67	1.60	3.40	1.17
9-Feb-13	1.38	1.32	1.21	1.26	1.26	1.36	1.60	0.90	1.77	1.20	1.00	2.30
15-Feb-13	0.93	0.91	1.06	0.65	0.87	0.93	2.30	2.13	1.57	2.50	1.97	2.70
19-Feb-13	0.81	0.74	0.89	0.71	1.16	0.83	0.90	1.75	0.83	1.00	1.50	1.00
21-Feb-13	0.94	1.15	1.86	1.00	1.24	1.11	2.00	1.80	1.53	1.03	1.57	0.77
23-Feb-13	0.83	0.94	1.12	1.01	1.14	0.83	1.20	2.40	1.27	1.67	1.07	1.53
25-Feb-13	0.68	0.96	1.07	0.95	1.05	0.78	1.00	1.47	2.10	1.30	2.57	1.43

Table 6-5

Table 6-3

Summarized Exceedances of Marine Water Quality

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

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

## 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 inspection of the transplanted tree was carried out by the landscaping sub-Contractor (Melofield Nursery and Landscape Contractor Limited) on 30 January 2013 and 15 February 2013. As a contingency measure in case that CT7 to CT10 can no longer be recovered, additional 7 no. of *Celtis Timorensis* (No. CT\_1A to CT7A) were planted adjacent to the under-monitoring Celtis Timorensis CT7 to CT10 on 30 April 2011.
- 7.03 In April 2012, CT\_1A and CT\_7A were damaged by the fell broken tree trunk due to tree decayed by white ants. Therefore, only 5 no. of additional *Celtis Timorensis*, namely CT\_2A, CT\_3A, CT4A, CT\_5A and CT\_6A were inspected since May 2012. Furthermore, during tree inspection on 30 July, CT4A was disappeared after typhoon No.10 on 24 July and it was certified as dead. Eventually, 4 no. of additional *Celtis Timorensis*, namely CT\_2A, CT\_5A and CT\_6A were inspected in the remaining period.
- 7.04 The tree inspection report for this Reporting Period is presented 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 8-1* and *8-2* and the Monthly Summary Waste Flow Table is shown in *Appendix J*. Whenever possible, materials were reused on-site as far as practicable.

### Table 8-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) ('000m <sup>3</sup> )	0	-
Reused in the Contract (Inert) ( $(000m^3)$ )	0	-
Reused in other Projects (Inert) ('000m <sup>3</sup> )	0	-
Disposal as Public Fill (Inert) ('000m <sup>3</sup> )	0	-

### Table 8-2Summary of Quantities of C&D Wastes

Type of Waste	Quantity	<b>Disposal Location</b>
Metal (kg)	0	-
Paper / Cardboard Packing (kg)	0	-
Plastic (kg)	0	-
Chemical Wastes (kg)	0	-
General Refuses (tonne)	6.530	Outlying Islands Transfer Facilities (Sok Kwu Wan)

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, weekly joint site inspection by RE, the Contractor and ET was carried out on 29 January, 5 and 19 February 2013.
- 9.02 The findings/ deficiencies that observed during the weekly site inspection are listed in *Table 9-1* and the relevant checklists are attached in *Appendix K*.

Table 9-1 Site Observations						
Date	Findings / Deficiencies	Follow-Up Status				
29January2013	• Scattered of construction waste was observed, the Contractor should improve the housekeeping of the site.	The construction waste was cleared on 5 February 2013.				
5 February 2013	• Construction waste was observed stockpiled near Portion of the construction site. Regular removal from the site to avoid excessive accumulation is reminded, or covering with tarpaulin sheeting is required.	The stockpile was confirmed to be outside of the construction boundary. No action was taken.				
19 February 2013	• No adverse environmental impacts were observed during site inspection. However, full implementation of the required environmental mitigation measures, particularly construction dust suppression measures during dusty activities under dry and wind conditions, is reminded.	Not required for general reminders.				

Table 9-1Site Observations



## 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 10-1, 10-2* and *10-3*.

Table 10-1	Statistical Summary of Environmental	Complaints

Departing Devied	<b>Environmental Complaint Statistics</b>					
Reporting Period	Frequency	Cumulative	<b>Complaint Nature</b>			
27 July 2010 – 31 December 2011	1 (Nov 2011)	1 (Nov 2011)	water quality			
January - December 2012	0	1 (Nov 2011)	NA			
January 2013	0	1 (Nov 2011)	NA			
February 2013	0	1 (Nov 2011)	NA			

#### Table 10-2 Statistical Summary of Environmental Summons

Departing Devied	<b>Environmental Summons Statistics</b>					
<b>Reporting Period</b>	Frequency	Cumulative	<b>Complaint Nature</b>			
27 July 2010 – 31 December 2011	0	0	NA			
January - December 2012	0	0	NA			
January 2013	0	0	NA			
February 2013	0	1 (Nov 2011)	NA			

### Table 10-3 Statistical Summary of Environmental Prosecution

Depenting Devied	<b>Environmental Prosecution Statistics</b>					
Reporting Period	Frequency	Cumulative	<b>Complaint Nature</b>			
27 July 2010 – 31 December 2011	0	0	NA			
January - December 2012	0	0	NA			
January 2013	0	0	NA			
February 2013	0	1 (Nov 2011)	NA			



## 11 IMPLEMENTATION STATUS OF MITIGATION MEASURES

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

## Construction Run-off and Drainage

- 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 Period are summarized in *Table 11-1*.

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

 Table 11-1
 Environmental Mitigation Measures



Issues	Environmental Mitigation Measures
Noise	<ul> <li>Good site practices to limit noise emissions at the sources;</li> </ul>
	<ul> <li>Use of quite plant and working methods;</li> </ul>
	• 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	• Excavated material should be reused on site as far as possible to minimize off-site
Chemical	disposal. Scrap metals or abandoned equipment should be recycled if possible;
Management	• Waste arising should be kept to a minimum and be handled, transported and disposed of in a writeble memory
management	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.



12.01 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

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• 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 **31**<sup>st</sup> monthly EM&A Report covering the construction period from **26 January to 25** February 2013.
- 13.02 In this Reporting Period, no 1-hour and 24-hour TSP results were found to be triggered the Action or Limit Level
- 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 Period.
- 13.04 The monitoring result demonstrated no exceedance of Action or Limit Level of marine water quality monitoring in this Reporting Period.
- 13.05 No documented complaint, notification of summons or successful prosecution was received.
- 13.06 In this Reporting Period, weekly joint site inspection by RE, the Contractor and ET was carried out on **29 January, 5 and 19 February 2013**. All the observation has been rectified during the next week site inspection. The environmental performance of the Project was therefore considered as satisfactory.

#### RECOMMENDATIONS

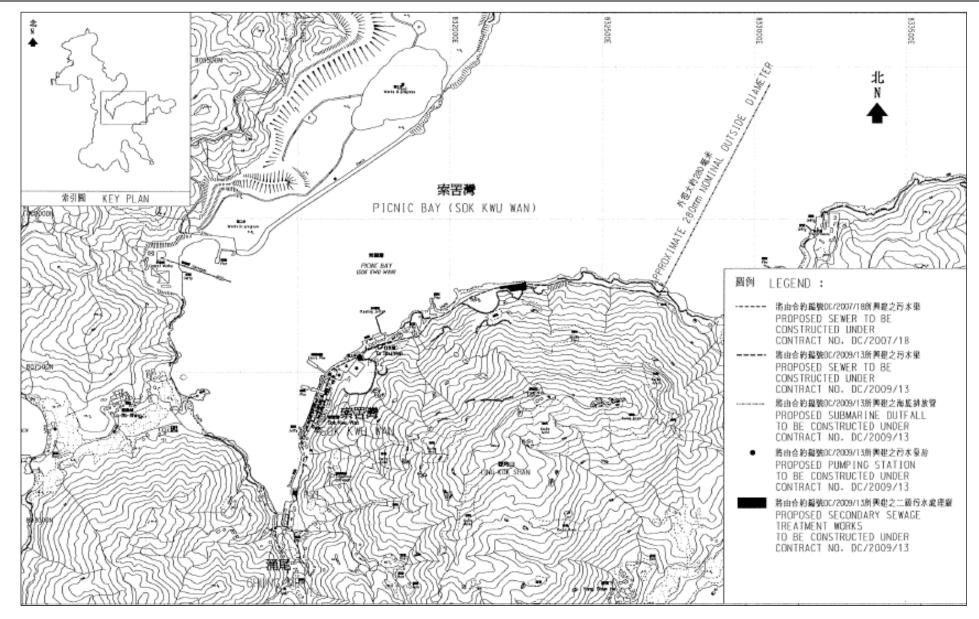
- 13.07 During dry season, special attention should be paid to the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. Nevertheless, mitigation measures implemented for control the surface runoff including wheel wash facilities, covering of the loose soil surface or stockpile with tarpaulin sheet, etc., should fully implement.
- 13.08 Muddy water and other water quality pollutants via site surface water runoff into the sea body within Fish Culture Zone (FCZ) at Picnic Bay and the secondary recreation contact subzone at Mo Tat Wan is the key issue of the Project. Mitigation measures for water quality should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary.



## Appendix A

## Site Layout Plan – Sok Kwu Wan Portion Area







## **Appendix B**

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

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

## Contact Details of Key Personnel

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

AUES



## Appendix C

## A Master and Three Months Rolling Construction Programme

Activity ID	Description		Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors			2013		
	Data	Juration	Complete	Start	FIIIISII	Start	FIIIISII	FIUal			JAN	FEB	MAR	APR	MAY
Project Key	Receive Letter of Acceptance		100		05/05/10 A		05/05/10 A	1		KD0125					
	·	0	100												+
KD0020	Project Commencement Date	0	100		17/05/10 A		17/05/10 A			E&M0010, E&M0070, E&M1001, E&M2001, KD0125, PRE0020, PRE0040, PRE0050, PRE0060, PRE0090, PRE0100, PRE0130,					l
										SKW0250, SKW0588, SKW0651, SKW0881, SKW1131, SKW1481, SKW1591, SKW1611,					
										YSW020, YSW0050, YSW0075, YSW0180, YSW0200, YSW0220, YSW0240,					
										YSW02401, YSW0412, YSW0422					
									VOW0400 VOW0440 VOW0440						
KD0030	Section W1 - Slope Works in Portion A & C	0	100		14/10/11 A		14/10/11 A	0.*	YSW0100, YSW0110, YSW0140, E&M0700, YSW0400, YSW0800,	KD0125, KD0130, YSW01755 KD0125, KD0132					L
KD0040	Section W2 - YSW STW & Submarine Outfall (1370d)	0	0		16/06/14 *		16/06/14 *	0 *	YSW0870, YSW0925, YSW16704, YSW1700	ND0125, ND0152					
KD0050	Section W3 - Footpath Diversion in Ptn G	0	0		30/01/13 *		24/03/11 *	-678d *	SKW0481	KD0125		Section W3 - Footpath	Diversion in Ptn G		
KD0060	Section W4 - Slope Works in Portios H & I	0	0		30/01/13 *		27/03/12 *	-309d *	SKW05938, SKW059416	KD0125, KD0135, SKW05941	┝╺╴╸╸╸╸┝╶╺┥	Section W4 - Slope Wo	rks in Portios H & I $=$ =	======	=======
											┝╺╺╸╸╸┾┝╶╅				r
KD0070	Section W5 - P.S. No. 1 in Portion D	0	0		30/01/13 *		10/02/12 *		SKW0741	KD0125		Section W5 - P.S. No.	1		L
KD0080	Section W6 - Sewer & PS No2 in Ptn. E & F	0	0		30/01/13 *		10/02/12 *	-355d *		KD0125 KD0125, KD0165, SKW0491	╞╺╺╸╸╸╸┾┝ <b>┉</b>	Section W6 - Sewer &	$-5 \times 10^{2} \ln P \ln E \& F$		+
KD0090	Section W7 - SKW STW, RM & Sm. Outfall	0	0		07/10/14 *		07/10/14 *	0 *	E&M3360, SKW1221, SKW1291, SKW1431, SKW1441, SKW1521,	KD0125, KD0105, SKW0491			ŢŢ_		
KD0100	Section W8 - Landscape Softworks	0	0		05/04/13 *		05/04/13 *	0 *	SKW1611, SKW1621		+H-		+ + <b>- ◆</b> -Se	ction W8 - La	andscape Softworks
KD0110	Section W9 - Establishment Works	0	0		03/04/14 *		03/04/14 *	0 *	SKW1631	KD0125					
KD0125	Project Completion	0	0		12/09/15 *		12/09/15 *	0 *	KD0010, KD0020, KD0030, KD0040, KD0050, KD0060, KD0070, KD0080,		1.11		i i i	i	
									KD0090, KD0110, SKW0541						
KD0130	Completion of Maintenance Period of W1	1	0	31/01/13	31/01/13 *	13/10/12	13/10/12 *	-110d	KD0030, YSW01755, YSW01805,		│╴╴╴╶╴╴┶╬ <mark>╞</mark> ┦	Completion of Maintena	nce Period of W1		
KD0132	Completion of Maintenance Devied of WO	-		15/00/15	15/06/15 *	15/06/15	15/06/15 *		YSW01810 E&M0730, KD0040		lii l			- i	
KD0132	Completion of Maintenance Period of W2 Completion of Maintenance Period of W4	1	v	15/06/15 27/03/13	27/03/13 *	27/03/13	27/03/13 *	-	KD0060, SKW05947, SKW1581					I In of Mainten	ance Period of W4
KD0135	Completion of Mantenance Period of W4	·   ·	0	27/03/13	27/03/13	27/03/13	27/03/13					i i			
KD0145	Completion of Maintenance Period of W5	1	0	10/02/13	10/02/13 *	10/02/13	10/02/13 *	0			- ++		aintenance Period of W5		
KD0155	Completion of Maintenance Period of W6	1	0	10/02/13	10/02/13 *	10/02/13	10/02/13 *	0	E&M2130, E&M2180, SKW0961,			I H I-I Completion of M	aintenance Period of W6		
KD0165	Completion of Maintenance period of W7	1	0	06/10/15	06/10/15 *	06/10/15	06/10/15 *	0 *	KD0090, SKW0595, SKW05972, SKW0861		111		i ii i	i	
Preliminary (	(Civil)										111	1111 +	<u>1 11 1</u> 1 11 1		
PRE0020	Pre-condition Survey	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A	1	KD0020		111				
PRE0040	Erection of Engineer's Site Accommodation at YSW	60		17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020			1111 1	I II I	i	
PRE0050	Taking over the Secondary Engineer's Site Accomm	75	100	17/05/10 A	30/07/10 A	17/05/10 A	30/07/10 A		KD0020						
PRE0060	Application of Consent from Marine Department	60		17/05/10 A	15/07/10 A	17/05/10 A			KD0020						
PRE0090	Working Group Meeting for Outfall Construction	120		17/05/10 A					KD0020	SKW1151		1111 1		!!	
PRE0100	Application & Consent of XP from HyD (Mo Tat Rd)	120		17/05/10 A			13/09/10 A		KD0020	SKW1491, SKW1501					
PRE0130	Setup Web-site for EM&A Reporting	90	100	17/05/10 A	14/08/10 A	17/05/10 A	14/08/10 A		KD0020		111				
Preliminary (											111	1111 1	i ii i	i	
Technical Subr	nission gn of SKWSTW & YSWSTW										111		I II I I II I		
E&M0010	Submission	38	100	17/05/10 A	23/06/10 A	17/05/10 4	23/06/10 A	1	KD0020	E&M0020, E&M0040, E&M0235					
E&M0020	Vetting and Comment by ER	21		24/06/10 A			14/07/10 A		E&M0010	E&M0030, E&M0040		1111 1	i ii i	i	
E&M0030	Revision and Resubmission	125					16/11/10 A	1	E&M0020	E&M0080					
E&M0080	Approval from the Engineer	14			30/11/10 A				E&M0030	E&M0295	111				
Hydraulic Desi				I	•	•	•			1	111	I <b>II</b> I			
E&M0040	Submission	21		15/07/10 A	04/08/10 A	15/07/10 A	04/08/10 A		E&M0010, E&M0020	E&M0050, E&M0101, E&M0240, E&M0260,					
E&M0050	Vetting and Comment by ER	14		05/08/10 A			18/08/10 A		E&M0040	E&M0060	111	1111 1		!	
E&M0060	Revision and Resubmission	97			10/10/10 A				E&M0050	E&M0430	111	1111 1			
E&M0430	Approval from the Engineer	7	, 100	24/11/10 A	30/11/10 A	24/11/10 A	30/11/10 A		E&M0060	E&M0295	111				
	omission & Approval	- I	1	I	1	I	1	1	//=	1		1111 1	i ii i	i	
E&M0070	Submission of Membrane Module	50		17/05/10 A			05/07/10 A		KD0020	E&M0090	111				
E&M0090 E&M0100	Vetting and Comment by ER Revision and Resubmission	14		06/07/10 A 20/07/10 A	19/07/10 A 24/02/11 A		19/07/10 A 24/02/11 A		E&M0070 E&M0090	E&M0100 E&M0160		1111 1			
E&M0100	Submission of Equipment	90					30/11/11 A		E&M0040	E&M0102		1111 1	i ii i		
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									01/01/10						
Run date 05/02/13 Progress point Construction of Sources Treatment Works at VSW & SKW															
Page number 1A Critical point Summary point Critical point Critical point Summary point Critical point Critical point Summary point Critical point Crit															
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	Activity ID	Description		Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	JAN		
	E&M0103	Revision and Resubmission	60		01/02/11 A	30/11/11 A	01/02/11 A	30/11/11 A		E&M0102	E&M0110, E&M0120, E&M0130, E&M0140,			
	E&M0110	Approval on Coarse Screens	30		25/05/11 A	25/05/11 A	25/05/11 A	25/05/11 A		E&M0103	E&M0390	111	11	
	E&M0120	Approval on Fine Screens	30		12/09/11 A	12/09/11 A	12/09/11 A	12/09/11 A		E&M0103	E&M0400, E&M3060			
	E&M0130	Approval on Pumps	30		23/06/11 A	23/06/11 A	23/06/11 A	23/06/11 A		E&M0103	E&M0410, E&M3070			
	E&M0140	Approval on Submersible Mixers	30	100	23/03/11 A	23/03/11 A	23/03/11 A	23/03/11 A		E&M0103	E&M0420, E&M3080			
	E&M0150	Approval on Grit Removal Equipment	30	100	10/10/11 A	10/10/11 A	10/10/11 A	10/10/11 A		E&M0103	E&M0380, E&M3030			40-4 — 10 1
	E&M0160	Approval on MBR Membrane Modules (M.M.)	105	100	03/08/10 A	24/02/11 A	03/08/10 A	24/02/11 A		E&M0100	E&M0360, E&M0370, E&M3010			81 I 81 I
	E&M0170	Approval on Sludge Dewatering Equipment	30	100	01/09/11 A	01/09/11 A	01/09/11 A	01/09/11 A		E&M0103	E&M0440, E&M3090			
	E&M0180	Approval on Valves, Pipes & Fittings	30	85	19/11/11 A	04/02/13	19/11/11 A	20/02/13	17d	E&M0103	E&M0450, E&M3100			Appr
	E&M0190	Approval on Penstocks	30	100	15/11/11 A	15/11/11 A	15/11/11 A	15/11/11 A		E&M0103	E&M0460, E&M3110	111		
	E&M0200	Approval on Instrumentation	30	100	21/06/11 A	08/03/12 A	21/06/11 A	08/03/12 A	Ì	E&M0103	E&M0470, E&M3130			117 -
	E&M0210	Approval on MCC & LVSB	30	95	19/11/11 A	01/02/13	19/11/11 A	03/06/11	-609d	E&M0103	E&M0480, E&M3140			Approv
	E&M0220	Approval on BS Equipment	30	85	30/11/11 A	07/03/13	30/11/11 A	02/11/11	-491d	E&M0103, E&M0280	E&M0490, E&M3150			
	E&M0230	Approval on FS Equipment	30	85	30/11/11 A	19/03/13	30/11/11 A	15/08/11	-582d	E&M0103, E&M0290	E&M0295, E&M0320, E&M0500, E&M3160			
	Drawings Subn	nission & Approval				•	•	•	•	•	•			#    #
	E&M0235	Sub. P&ID Drawings	100	75	24/06/10 A	24/02/13	24/06/10 A	24/07/11	-582d	E&M0010	E&M0250			
	E&M0240	Sub. Plant GA Drawings	45	68	04/08/10 A	14/02/13	04/08/10 A	24/07/11	-571d	E&M0040	E&M0250, E&M0280, E&M0290	<u></u>		
	E&M0250	Sub. Builder's Works Requirements Drawings	15	100	04/08/10 A	31/01/13 A	04/08/10 A	31/01/13 A		E&M0235, E&M0240, E&M0260,	E&M0280, E&M0290		S	Sub. Bi
	E&M0260	Sub. Mechanical Installation Drawings	60	70	27/09/10 A	17/02/13	27/09/10 A	24/07/11	-575d	E&M0040	E&M0250			11+ -
	E&M0270	Sub. Electrical Installation Drawings	60	75	27/09/10 A	14/02/13	27/09/10 A	24/07/11	-572d	E&M0040	E&M0250, E&M0280			
	E&M0280	Sub. BS Installation Drawings	120	95	27/09/10 A	02/03/13	27/09/10 A	28/10/11	-491d	E&M0240, E&M0250, E&M0270	E&M0220			
	E&M0290	Sub. FS Installation Drawings	120	85	13/11/11 A	14/03/13	13/11/11 A	11/08/11	-582d	E&M0240, E&M0250	E&M0230			
	Statutory Submi	ission				•	•			•	•			
	E&M0295	Preparation of Submission to HEC	39	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A		E&M0080, E&M0230, E&M0430	E&M0300	111		
	E&M0300	Application & Approval from HEC	150		01/11/11 A	03/04/13	01/11/11 A	28/10/12	-157d	E&M0295	E&M0305			
	E&M0305	Provision of Cables to the STWs	180		03/04/13	30/09/13	29/10/12	26/04/13	-157d	E&M0300	E&M0680	111		
	E&M0320	Form 314 Submission to FSD	14	0	19/03/13	02/04/13	13/04/13	26/04/13	25d	E&M0230	E&M0325, E&M0670			
	E&M0325	Submission to WSD	14	100	01/11/11 A	29/02/12 A	01/11/11 A	29/02/12 A		E&M0320	E&M0670, E&M0680	111		
	E&M0330	Form 501 Submission to FSD (YSW)	28	0	12/12/14	09/01/15	14/11/13	11/12/13	-394d	E&M0500	E&M0700	======		ina =
	E&M0340	Form 501 Submission to FSD (SKW)	28	0	06/09/13	04/10/13	11/06/14	08/07/14	278d	E&M3160	E&M3360	111		81 I 81 I
lii	E&M0350	Form 501 Submission to FSD (PS1 & PS2)	28	0	28/02/13	28/03/13	14/11/12	11/12/12	-107d	E&M2016	E&M11800, E&M2180	111		
Y	ung Shue W	lan	<u> </u>	<u> </u>	l						1	111		
	Preliminary													
	YSW0020	Approval of Environmental Team	16	100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A		KD0020	YSW00201, YSW0030, YSW00351,			81 I 81 I
		Change Baseline Monitoring Location (Air&Noise)	59	100	02/06/10 A	30/07/10 A	02/06/10 A	30/07/10 A		YSW0020	YSW0030			
	YSW0030	Baseline monitoring (Air & Noise)	23		31/07/10 A		31/07/10 A	22/08/10 A		YSW0020, YSW00201	YSW0035			
	YSW0035	Baseline Monitoring Report Submission (A & N)	16		23/08/10 A	07/09/10 A	23/08/10 A	07/09/10 A		YSW0030	YSW0120, YSW01545, YSW0500,			81 I 81 I
	YSW00351	Submission & Approval for Monitoring Method (W)	58		02/06/10 A	29/07/10 A	02/06/10 A	29/07/10 A		YSW0020	YSW0040			
İİ	YSW0040	Baseline monitoring (Water)	155		30/07/10 A	31/12/10 A	30/07/10 A	31/12/10 A		YSW0020, YSW00351	YSW0350	HI		10-1 — 10 1
	YSW0050	Erect Hoarding and Fencing	60	100	19/05/10 A	17/07/10 A	19/05/10 A	17/07/10 A		KD0020	YSW0155	ii i		
	Section W1-SI	ope W orks in Portion A & C							•	•	•			<b>1</b> 1 1 <b>1</b> 1 1
	YSW0075	Mobilization	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A		KD0020	YSW0080, YSW0100	iii		
	YSW0080	Site Clearance	30	100	16/06/10 A	15/07/10 A	16/06/10 A	15/07/10 A		YSW0075	YSW0085, YSW0090, YSW0120	111		NI 1 NI 1
	YSW0085	Initial Survey	14	100	02/07/10 A	15/07/10 A	02/07/10 A	15/07/10 A	Ì	YSW0080	YSW0120	ii i		
	YSW0090	Verify the Rock Boulder required Stablization Wk	249		16/07/10 A	21/03/11 A	16/07/10 A	21/03/11 A	Ì	YSW0080	YSW0100, YSW0110			81 I 81 I
	YSW0100	Removal of Rock Boulder	257	100	20/09/10 A	03/06/11 A	20/09/10 A	03/06/11 A		YSW0075, YSW0090	KD0030			
	YSW0110	Stablizing work for rock boulder	35	100	16/07/11 A	19/08/11 A	16/07/11 A	19/08/11 A	Ì	YSW0090	KD0030	nı		шт — ШТ
	YSW0120	Cut the slope to design profile	2	100	24/09/10 A	25/09/10 A	24/09/10 A	25/09/10 A	Ì	YSW0035, YSW0080, YSW0085	YSW0131, YSW0155, YSW0170	ii i		
	YSW0131	Mobilization of Plant and Material of Soil Nails	14	100	12/09/10 A	25/09/10 A	12/09/10 A	25/09/10 A	Ì	YSW0120	YSW0132	111		81 I 81 I
	YSW0132	Erect Scaffold and Working Platform	2	100	26/09/10 A	27/09/10 A	26/09/10 A	27/09/10 A		YSW0131	YSW0133			
	YSW0133	Setting out and Verify Locations of Soil Nails	45	100	28/09/10 A	11/11/10 A	28/09/10 A	11/11/10 A		YSW0132	YSW0134	۱۱۱ ایالے ــــــــ		ШТ ЛЦ _
	YSW0134	Drilling and Soil Nails Installation	43	100	19/10/10 A	30/11/10 A	19/10/10 A	30/11/10 A		YSW0133	YSW0135			
	YSW0135	Construction of Nail Heads	12		01/12/10 A	12/12/10 A	01/12/10 A	12/12/10 A		YSW0134	YSW0136			81 I 81 I
	YSW0136	Mesh Installation on Cut Slope	3		13/12/10 A	15/12/10 A	13/12/10 A	15/12/10 A		YSW0135	YSW01361		11	
	YSW01361	Verify alignment of access & channels on slope	118		16/12/10 A	12/04/11 A	16/12/10 A	12/04/11 A	Ì	YSW0136	YSW0140			
	YSW0140	Construct U-channels & Step Channel on Cut Slope	182		13/04/11 A	11/10/11 A	13/04/11 A	11/10/11 A		YSW01361	KD0030			
St	art date 05/	/05/10 Early bar			•								_	T
Fi	nish date 28/	/10/16 Progress bar					Leade	r Civil Er	nginee	ering Corp. Ltd.				31
		/01/13 Critical bar Summary bar								C/2009/13				
	un date 05/ Ig e number 2A	/02/13 A Progress point				Constru				ent Works at YSW & Sh	(W			
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	Sub. P&ID	Drawings			
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Sub	. Mechanica	irements Dra al Installation	Drawings		
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Activity ID	Description	Original Percent Juration Complete	Early Start	Early Late Finish Star			Predecessors	Successors				2013			
YSW0153	Removal of Ex U-Channel where clash with B. Wall		10/05/11 A	07/10/11 A 10/05/1			YSW01545	YSW01750	JAN	FEB		MAR	APR		MAY
YSW01545	Temporary Diversion of Drainage		08/09/10 A	09/05/11 A 08/09/1			YSW0035	YSW0153	-		ii				
YSW0155	RC Barrier Wall Bay 1-13 (below Ground Level)		26/09/10 A	08/06/11 A 26/09/1			YSW0050, YSW0120	KD0030, YSW0170, YSW0175, YSW01750					1 1		
YSW0170	RC Barrier Wall Bay 1-13 (above Ground Level)		09/06/11 A	11/10/11 A 09/06/1			YSW0120, YSW0155	KD0030							
YSW0175	Construct U-channels and Catchpits (Phase 1)		09/06/11 A	23/08/11 A 09/06/1	1 A 23/08/	11 A	YSW0155	KD0030			i i	11	1 1		
YSW01750	Construction of subsoil drain (phase 1)		12/10/11 A	08/02/12 A 12/10/1	1 A 08/02/	12 A	YSW0153, YSW0155	KD0030	■1 -   ·		1- + -				
YSW01755	Construct subsoil drain (phase 2)		06/12/12 A	31/12/12 A 06/12/1	2 A 31/12/	12 A	KD0030, YSW01800	KD0130	Construct subsoil drair	n (phase 2)					
YSW01800	RC Barrier Wall Bay 14 (below & above Ground)		03/09/12 A	28/11/12 A 03/09/1	2 A 28/11/	12 A	YSW0760	YSW01755, YSW01810	4 (below & above Grour	nd)					
YSW01805	Hydroseeding		31/01/13	13/02/13 29/09/1	2 12/10/	12 -1240	YSW01810	KD0130	╎╴╴╴╴╵┣┋	Hydrose	eding !				
YSW01810	Construct U-channels and Catchpits (Phase 2)	30 100	29/11/12 A	22/12/12 A 29/11/1	2 A 22/12/	12 A	YSW01800	KD0130, YSW01805	ruct U-channels and Ca	atchpits (Phase	2)	11			
Section W 2 - Y	SW STW & Submarine Outfall						•								
Civil & Structu	ral Work										i i	ii ii	1 1		
YSW0412	Mobilization	30 100	17/05/10 A	15/06/10 A 17/05/1	0 A   15/06/	10 A	KD0020	YSW0422							
YSW0422	Site Clearance	30 100	17/05/10 A	15/06/10 A 17/05/1	0 A 15/06/	10 A	KD0020, YSW0412	YSW0432, YSW0500, YSW0610, YSW0650			ii	ii ii	i i		
YSW0432	Initial Survey	14 100	02/06/10 A	15/06/10 A 02/06/1	0 A   15/06/	10 A	YSW0422	YSW0510	╡ :!!!:						
YSW STW -	GLH-T	<u>·</u>	•	· · ·					11 11	11	1 1		1 1		
YSW0500	ELS & Excavation for Inlet Pumping Station	105 100	08/09/10 A	21/12/10 A 08/09/1	0 A 21/12/	10 A	YSW0035, YSW0422	YSW0510							
YSW0510	Sub-structure construction (Inlet Pumping Stn)		22/12/10 A	29/04/11 A 22/12/1	0 A 29/04/	11 A	YSW0432, YSW0500	YSW0520	1 11		1 1	11	i i		
YSW0520	Backfill & Remove ELS (Inlet Pumping Stn)		30/04/11 A	08/06/11 A 30/04/1	1 A 08/06/	11 A	YSW0510	YSW05701							
YSW0530	ELS & Excavation for Equalization Tank		01/01/11 A	08/06/11 A 01/01/1	1 A 08/06/	11 A	YSW0660	YSW0540, YSW05701	1 11		1 1	11	i i		
YSW0540	Sub-structure construction (Equalization Tank)		09/06/11 A	28/09/11 A 09/06/1	1 A 28/09/	11 A	YSW0530	YSW0550, YSW05901							
YSW0550	Backfilling & Remove ELS (Equalization Tank)		29/09/11 A	18/10/11 A 29/09/1	1 A 18/10/	11 A	YSW0540	YSW05901	1 11		1 1	П	I I		
YSW05701	ELS & Excavation for Grit Chambers		09/06/11 A	06/07/11 A 09/06/1	1 A 06/07/	11 A	YSW0520, YSW0530	YSW05711, YSW05731					1 1		
YSW05711	Construct sub-structure for Grit Chambers		07/07/11 A	20/10/11 A 07/07/1	1 A 20/10/	11 A	YSW05701	YSW05721, YSW05911							
YSW05721	Backfill & Remove ELS for Grit Chambers		21/10/11 A	01/11/11 A 21/10/1	1 A 01/11/	11 A	YSW05711	YSW05911							
YSW05731	ELS & Excavation for Grease Separators (GS)		07/07/11 A	09/08/11 A 07/07/1	1 A 09/08/	11 A	YSW05701	YSW05741			1.1			L	
YSW05741	Construct sub-structure for Grease Separators		10/08/11 A	30/09/11 A 10/08/1	1 A 30/09/	11 A	YSW05731	YSW05751							
YSW05751	Install Dia.400 Puddles in Grease Separators		01/10/11 A	27/10/11 A 01/10/1		11 A	YSW05741	YSW05752							
YSW05752	Construct sub-structure for GS (above puddles)		28/10/11 A	14/12/11 A 28/10/1			YSW05751	YSW05761							
YSW05761	Backfill & remove ELS for Grease Separators		15/12/11 A	24/12/11 A 15/12/1	1 A 24/12/	11 A	YSW05752	YSW0580, YSW05921							
YSW0580	Excavate to Formation for Deodorizer Room		25/12/11 A	03/01/12 A 25/12/1			YSW05761	YSW05801, YSW05922	U - U		L _ I _	11			
YSW05801	Excavate to formation - Grid J-N/5-7		04/01/12 A	12/02/12 A 04/01/1			YSW0580	YSW05802, YSW05923					1 1		
YSW05802	Excavate to formation - Grid GA-H/5-7		13/02/12 A	22/02/12 A 13/02/1			YSW05801	YSW05924			i i		1 1		
YSW05901	G/F to 1/F Construction Grid GA-K/1-5		29/09/11 A	27/12/11 A 29/09/1			YSW0540, YSW0550	YSW06001					1 1		
	G/F to 1/F Construction Grid N-S/1-5			08/01/12 A 21/10/1			YSW05711, YSW05721	YSW06011, YSW06035	<u>_</u>		ii	ii ii	1 1		
YSW05921	G/F to 1/F Construction Grid K-N/1-5			07/02/12 A 25/12/1			YSW05761	YSW06021							
YSW05922	G/F to 1/F Construction for Deodorizer Room		04/01/12 A	23/03/12 A 04/01/1			YSW0580	YSW06022			ii	ii ii	ii		
YSW05923	G/F to 1/F Construction for Grid J-N/5-7		13/02/12 A	12/04/12 A 13/02/1			YSW05801	E&M0530, E&M0540, E&M0550, E&M0560,							
YSW05924	G/F to 1/F Construction for Grid GA-H/5-7		28/05/12 A	16/07/12 A 28/05/1			YSW05802, YSW06023	YSW06034			I I	II.	i i		
YSW06001	1/F to Roof Constuction for Grid GA-K/1-5		28/12/11 A	23/03/12 A 28/12/1			YSW05901	YSW0800							
YSW06011	1/F to Roof Constuction for Grid N-S/1-5		09/01/12 A	23/03/12 A 09/01/1			YSW05911	YSW0800	+u-u	ч	_ <u>_ </u>				
YSW06021	1/F to Roof Constuction for Grid K-N/1-5		08/02/12 A	22/03/12 A 08/02/1			YSW05921	YSW07201							
YSW06022	1/F to Roof Constuction for Deodorizer Room		24/03/12 A	22/05/12 A 24/03/1			YSW05922	YSW0800			1 1	11	1 1		
YSW06023	1/F to Roof Constuction for Grid J-N/5-7 1/F to Roof Constuction for Grid GA-H/5-7		13/04/12 A	27/05/12 A 13/04/1 13/08/12 A 27/07/1			YSW05923 YSW05924	E&M0580, YSW05924 YSW0800							
YSW06034			27/07/12 A 18/04/12 A				YSW05924 YSW05911	YSW0800 YSW07204			1 1	11	1 1		
YSW06035 YSW07201	Construct buffle walls in Grease Separators Water tightness test for Inlet Pumping Station		18/04/12 A 23/03/12 A	16/07/12 A 18/04/1 21/05/12 A 23/03/1			YSW06021	YSW07204 YSW07202, YSW0800	+ n - n			II			
	Water tightness test for Inlet Pumping Station Water tightness test for Equalization Tanks			ļ			YSW06021 YSW07201	E&M0600, YSW07203, YSW0800			1 1	11	1 1		
YSW07202	Water tightness test for Equalization Tanks Water tightness test for Grit Chambers		22/05/12 A 17/09/12 A	02/07/12 A 22/05/1 29/09/12 A 17/09/1			YSW07201	YSW07204, YSW0800							
YSW07203 YSW07204	Water tightness test for Grease Separators		03/10/12 A	31/10/12 A 03/10/1			YSW06035, YSW07203	E&M0570, YSW07205, YSW0800	1   11  S   11   11			11			
YSW07204 YSW07205	· ·	+ +	31/01/13	20/02/13 10/06/1			YSW07204	YSW0800		!	i I Tartiabtear		er channole <sup> </sup>		
	Water tightness test for water channels ABWF installation	U U					YSW06001, YSW06011, YSW06022,	KD0040				s test for wate			
YSW0800		271 88	03/07/12 A	04/03/13 03/07/1	2 A 16/06/	4/00	13000001, 13000011, 13000022,			11	- ADVVF	HISIAIIALIUII			
YSW STW - YSW0610	GL I - X Excavate to formation	10 100	08/09/10 A	17/09/10 A 08/09/1		10 A I	YSW0035, YSW0422	YSW0620			1	11			
YSW0610	Base slab construction		18/09/10 A	23/05/11 A 18/09/1			YSW0035, YSW0422 YSW0610	YSW0620 YSW0630			i	11	i i		
1300020		100	10/03/10 A	20/00/11 A 10/09/1	23/03/				11 11	11	I				
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Run date 05 Page number 34	02/13 A Progress point			Construction of			nent Works at YSW & S	KW							
rayenumber 3P	Critical point						(Feb 2013 - Apr 2013)								+
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Finish date	28/10/16		Progress b
Data date	31/01/13		Critical bar
Run date	05/02/13		Progress p
Page number	ЗA	] 🔻	Critical poir
		<b>7</b>	Summary
c Primavera	Svstems. Inc.	🔶	Start miles

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	JAN			FEB		2013 MAR		APR		MAY
	G/F to 1/F construction	205	•	24/05/11 A	14/12/11 A	24/05/11 A	14/12/11 A		YSW0620	YSW0640	JAN	11	1111			MAR		AFN		WAY
′SW0640	1/F to Roof Construction	64		15/12/11 A	16/02/12 A	15/12/11 A	16/02/12 A		YSW0630	YSW0810		- 11	1111		i	11	i	i		
YSW0810	ABWF installation	80		28/12/11 A	16/03/12 A	28/12/11 A	16/03/12 A		YSW0640	E&M0610, E&M0620, E&M0630, E&M0640					1	11	1	1		
/SW STW - GI	iLF-H&DN Tanks		100	<u>'</u>					<u> </u>							+1 11			_	
	ELS & Excavation for DN Tanks	37	100	08/09/10 A	14/10/10 A	08/09/10 A	14/10/10 A		YSW0035, YSW0422	YSW0660	41	- 11	1111		i	ii	i	i		
YSW0660	Sub-struction construction (DN Tanks)	78	100				31/12/10 A		YSW0650	YSW0530, YSW0670					1	11	1	1		
	Backfill & Remove ELS (DN Tanks)	70		01/01/11 A	11/03/11 A		11/03/11 A		YSW0660	YSW0680		- 11			i	ii	i	i		
	Base slab construction (SD1, SD2 & MBR4)	17	100		28/03/11 A		28/03/11 A		YSW0670	YSW0690					1			1		
	Construct Superstructure SD1, SD2 & MBR4	82	100		18/06/11 A		18/06/11 A		YSW0680	YSW0710, YSW0820					i		i	i		
	Construct Superstructure of DN Tanks	28	100	/		15/05/12 A	11/06/12 A		YSW0735	YSW0830		· - !- -			+	14		·   -		
	Water test for MBR 4	47		01/10/12 A	16/11/12 A		16/11/12 A		YSW0710	E&M0510, E&M0640, YSW07055, YSW0820					i		i	i i		
	Water test for SD1 & SD2	54	100				10/01/13 A		YSW0705, YSW07105	E&M0610			I III r SD1.	8 SD2	!			!		
	Apply protective paint for MBR 4	7		24/09/12 A	30/09/12 A		30/09/12 A		YSW0690	YSW0705, YSW07105							1	1		
	Apply protective paint for SD1 & SD2			01/10/12 A	07/10/12 A		07/10/12 A		YSW0710	YSW07055	41 1	- !!	111		- i !		!	1		
	ABWF installation	34		15/01/13 A	27/02/13		07/10/12 A 08/01/13	-49d		E&M0630, E&M0640	+  <u> -</u>					installatio	" <mark> </mark>	·¦-		
	Water test for DN Tanks	28							YSW06901	YSW0850	┧┥╴╴╴╴╴	- 🏼 -	╶╎┧╤╦	I	I	11	or DN Tank	I		
		20	0	07/02/13	06/03/13	10/02/13	10/03/13		YSW0830	E&M0610									 Tanko	
	Apply protecitve paint for DN Tanks	<u> </u>	0	07/03/13	12/03/13	10/03/13	16/03/13	40	1300000	EXIVIOITO	<u>  </u>		<u> </u>				rotecitve pai			
(SW STW - GI					1						41		100		1	· · · ·	1	1		
	Completion of HDD	<u> </u>		21/01/12 A		21/01/12 A	00/2211		YSW03601, YSW03605	YSW0732	41		1111		i	ii	i	i		
	Excavate for MBR 2 & 3	20		21/01/12 A			09/02/12 A		YSW0730	YSW0733	41				1		!	!		
	Construct basement of MBR 2 & 3	20		10/02/12 A	29/02/12 A		29/02/12 A		YSW0732	YSW0735, YSW0740	41				1		i			
	Construct superstructure of MBR 2	75		01/03/12 A	14/05/12 A		14/05/12 A		YSW0733	YSW06901, YSW0736, YSW08302,	41				1		!	!		
	Construct superstructure of MBR 3	100	100		14/05/12 A	15/05/12 A	14/05/12 A		YSW0735	YSW08302, YSW08305		. — Ц.	ни.		+	14				
	ELS & excavate for Outfall Shaft	75	100	1	14/05/12 A		14/05/12 A		YSW0733	YSW0750	41				I		!	!		
YSW0750	Construct basement of Outfall Shaft	19	100	15/05/12 A	02/06/12 A	15/05/12 A	02/06/12 A		YSW0740	YSW07501					1	11	1	1		
YSW07501	Connect additional flange to HDPE pipe (VO 042)	5	100	03/06/12 A	07/06/12 A	03/06/12 A	07/06/12 A		YSW0750	YSW07502			1111		1	11	1	I		
YSW07502	Construct sub-structure of Outfall Shaft	16	100		23/06/12 A	08/06/12 A	23/06/12 A		YSW07501	YSW0760										
YSW0760	Backfill & remove ELS (outfall shaft)	8	100	24/06/12 A	01/07/12 A	24/06/12 A	01/07/12 A		YSW07502	YSW01800, YSW07601, YSW07603,		_ <u>_</u>	ш			1	i	İ_	_ [	
YSW07601	Construct superstructure for Outfall Shaft	30	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		YSW0760	YSW08301, YSW08305	]	· - [].			T		I	1		
YSW07603	ELS & excavate for FSH Water Supply Tank	25	100	01/06/12 A	25/06/12 A	01/06/12 A	25/06/12 A		YSW0760	YSW07604	H	· - n -	lon	<sub>I</sub>	i		i	i		
YSW07604	Construct substructure for FSH Water Supply Tank	24	100	26/06/12 A	19/07/12 A	26/06/12 A	19/07/12 A		YSW07603	YSW07605	71				1			1		
YSW07605	Backfill & remove ELS for FSH Water Supply Tank	12	100	20/07/12 A	31/07/12 A	20/07/12 A	31/07/12 A		YSW07604	YSW07607	11			i	i	ii	i	i		
YSW07607	Construct basement of MBR 1 & Workshop	24	100	01/08/12 A	24/08/12 A	01/08/12 A	24/08/12 A		YSW07605	YSW07608, YSW07609	11	- !!			1			1		
YSW07608	Construct superstructure for FSH Water Supply Tk	37	100	25/08/12 A	30/09/12 A	25/08/12 A	30/09/12 A		YSW07607	YSW08304, YSW08305					+				- [	
YSW07609	Construct superstructure for MBR 1	37	100	25/08/12 A	30/09/12 A	25/08/12 A	30/09/12 A		YSW07607	YSW07610, YSW08303, YSW1470	1	!!	0.111	. !	1		!	!		
YSW07610	Construct Workshop, FSSH Pump Rm, PW Pump Rm	31					31/10/12 A		YSW07609	YSW0840, YSW16606, YSW16607,	W Pump Rm		11 11 1 11 11 1		1	11		1		
YSW08301	Water tightness test for Outfall Shaft	42		27/02/13	09/04/13	12/04/13	23/05/13	44d	YSW0380, YSW07601	E&M0690	╄	· -  -  -						Water tigh	tness test	t for Out
YSW08302	Water tightness test for MBR 2 & 3	95	100	03/07/12 A	05/10/12 A	03/07/12 A	05/10/12 A		YSW0735, YSW0736	E&M0520, E&M0590, E&M0605, E&M0650	11		и ні и ні		1	11			- +	· <b></b>
YSW08303	Water tightness test for MBR 1	19		30/11/12 A			18/12/12 A		YSW07609	E&M0520	htness test fo	or MBF	י ≣וון <mark>א</mark>		<del>Ť</del>	11		·		
	Water tightness test for FSH Water Supply Tank	32		31/01/13	03/03/13		16/03/13	13d	YSW07608	E&M0610	11i	Ľ			Wat	er tiahtne	ss test for F	SH Water	Supply Ta	ank
	Apply protective paint	120	0	02/10/12 A	22/03/13		16/03/13	-6d		E&M0610, YSW0870					ι.	-	Apply protec			
	ABWF installation	30		22/03/13	21/04/13		16/06/14		YSW08305	KD0040					1		1010-010-010-010-010-010-010-010-010-01		। BWF insta	allation
	l / Sprinkler Pump Rm		0	///							l li		<u> </u>			<u> </u>	I			
	ELS & excavate to formation (+0 mPD approx.)	40	0	09/02/13	20/03/13	17/01/13	25/02/13	-23d	YSW07610, YSW16606	YSW0860	11:	- !!				E	ا LS & excava	te to forma	l tion (⊥0 r	mPD an
	Sub-structure construction	40	1	21/03/13	29/04/13	26/02/13	06/04/13	-23d		YSW0880	416				i					structure
	Backfill & remove ELS	25	0	30/04/13	03/06/13	07/04/13	11/05/13	-23d		YSW0890	-11:		u		1	11				
	Construction Ground Slab at +5.2mPD	40	0	04/06/13	13/07/13		20/06/13	-23u		YSW0900	411									
		40	0							YSW0910, YSW0925	41!		1111		I		I			
	Superstructure construction upto +8.2mPD Water test	35	0	14/07/13	17/08/13 14/09/13	21/06/13 26/07/13	25/07/13 22/08/13	-23d -23d		YSW0910, YSW0925 YSW0915	+ +				+					
		28	0	1						E&M0640, YSW0925	-11:		1111		i		i			
	Apply protective paint		0	15/09/13	28/09/13	23/08/13	05/09/13	-23d				ul.		∐	ا ــــــ	 +  +				
	ABWF installation	30	0	30/08/13	28/09/13	18/05/14	16/06/14	261d	YSW0900, YSW0915	KD0040										
Emergency Sto	-	<b></b>			Leeven						41:				1					
	ELS & excavate to formation (-1.5mPD Approx.)	16		17/09/12 A					YSW07609	YSW1480	41i		1111		i	11	i			
	Sub-structure construction	14		' I		03/10/12 A			YSW1470	YSW1490	<u>  </u>				!	11	!			
	Backfill & extract sheetpile	3		17/10/12 A	1		19/10/12 A		YSW1480	YSW1500			hi u u		1	11				
	Superstructure construction upto +10.5mPD	41	100	20/10/12 A	29/11/12 A	20/10/12 A	29/11/12 A		YSW1490	YSW1530, YSW1536	uction upto +				1	11	i			
YSW1500														Da	te		Revision	1	Checke	
YSW1500 ate 05/0 date 28/1 ate 31/0	05/10   Early bar     10/16   Progress bar     01/13   Ortical bar								ering Corp. Ltd. C/2009/13					31/01/13		Revisi	on 0		RH	VC
YSW1500 ate 05/0 date 28/1 ate 31/0 ate 05/0	05/10 Early bar 10/16 Progress bar 01/13 Critical bar 02/13 Progress point				Construe	C	ontract N	No. DO	C/2009/13	SKW				31/01/13		Revisi	on 0			
YSW1500 ate 05/0 date 28/1 ate 31/0	05/10   Early bar     10/16   Progress bar     01/13   Critical bar     Summary bar					C ction of S	ontract N ewage T	No. DO		SKW				31/01/13		Revisi	on 0			

Activity ID	Description	Original Percent Juration Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors					2013				
YSW1530	Underground pipeline works	•	31/01/13	11/03/13	14/04/13	23/05/13		YSW1500	E&M0690, YSW1680	JAN	Ът	FEB		MAR Underar	ound pipeline	APR works	MAY	
YSW1536	Water tightness test	<u> </u>	31/01/13	11/03/13	03/02/13	14/03/13		YSW1500	YSW1538					-	htness test	= = = = = =	;====:	= = =
YSW1538	Apply protective paint	30 0	12/03/13	10/04/13	15/03/13	13/04/13	3d	YSW1536	YSW1540				-	- 11		ا Apply protecti	ive paint	
YSW1540	ABWF installation	40 0	11/04/13	20/05/13	14/04/13	23/05/13	3d	YSW1538	E&M0690	-  ¦				11		11 <b>,</b> 1		ABWF
Road, Drain,	Cable Draw Pits & Ducting		<u>′1</u>		1	1	1			!	11 11	1	1	11	1		<u>+</u>	
YSW16601	ELS & excavate 6m deep sewer (FM1 - YFMH13)	60 0	09/02/13	09/04/13	12/01/13	12/03/13	-28d	YSW0760, YSW16606, YSW16607,	YSW16602		11 11 11 11 11 11	-		11	E	LS & excavat	te 6m deep sew	<i>w</i> er (FN
YSW16602	Lay pipe & backfill 6m deep sewer (FM1 - YFMH13)	45 0	10/04/13	24/05/13	13/03/13	26/04/13	-28d	YSW16601	E&M0680, YSW1700		21 192			11				Lav
YSW16603	Construct UU & pipes along sea side (Grid Q-X)		07/02/13	08/04/13	24/03/13	22/05/13	45d	YSW16607, YSW16608	YSW16604, YSW16703		11 🙀					nstruct UU	& pipes along	sea si
YSW16604	Construct UU & pipes along sea side (Grid XA-D)	60 C	08/04/13	07/06/13	23/05/13	21/07/13	45d	YSW16603	YSW16605, YSW16701	⊣l:			. !					
YSW16605	Construct UU & pipes along sea side (Grid D-Q)	60 C	07/06/13	06/08/13	22/07/13	19/09/13	45d	YSW16604	YSW16702, YSW1700		- 1 <b>     </b>	11	· ·	ii				
YSW16606	Construct UU & pipes along hill side (Grid D-Q)	90 90	10/10/12 A	08/02/13	10/10/12 A	11/01/13	-28d	YSW07610	YSW0840, YSW16601		- 1-1 - 1-11 - 1-1 - 1-11	Construct	UU & pipe	s along h	nill side (Grid	D-Q)		
YSW16607	Construct UU & pipes along hill side (Grid Q-X)	72 90	20/08/12 A	07/02/13	20/08/12 A	11/01/13	-26d	YSW07610	YSW16601, YSW16603			Construct	UU & pipes	s along hi	ill side (Grid	Q-X)	1	
YSW16608	Construct UU & pipes along hill side (Grid XA-D)	72 90	30/11/12 A	07/02/13	30/11/12 A	11/01/13	-26d	YSW07610	YSW16601, YSW16603, YSW1690			Construct	UU & pipes	s along hi	ill side (Grid	XA-D)	1	
YSW16701	Construct Boundary Wall (Grid XA-D)	80 90	10/01/13 A	15/06/13	10/01/13 A	19/09/13	97d	YSW16604	YSW16702	<u><u></u>י</u>						[		
YSW16702	Construct Boundary Wall (Grid D-Q)	80 C	06/08/13	25/10/13	20/09/13	08/12/13	45d	YSW16605, YSW16701	YSW16703								L	
YSW16703	Construct Boundary Wall (Grid Q-X)	80 C	25/10/13	13/01/14	09/12/13	26/02/14		YSW16603, YSW16702	YSW16704, YSW1700		0 0	-				i		
YSW16704	ABWF installation for Boundary Wall	240 C	06/08/13	03/04/14	20/10/13	16/06/14	75d	YSW16703	KD0040				¦		1		1	
YSW1680	Fire Hydrant & pipeline installation	120 10	26/01/13 A	27/06/13	26/01/13 A	08/09/13		YSW1530	YSW1690, YSW1700	!; '								
YSW1690	Construction of Road Kerbs, Downpipes, U-channel	180 5	02/01/13 A	15/12/13	02/01/13 A	26/02/14	73d	YSW16608, YSW1680	YSW1700			1		11		· 		
YSW1700	Road Paving	110 C	13/01/14	03/05/14	27/02/14	16/06/14	45d	YSW16602, YSW16605, YSW16703, YSW1680, YSW1690	KD0040				!	11	1			
Submarine Out			1		1	I	1	,	1									
YSW0180	Coordination of HEC	53 100	17/05/10 A	08/07/10 4	17/05/10 A	08/07/10 A	1	KD0020	YSW0350			-	1		1			
YSW0200	Submission and Approval of Ecologist		17/05/10 A		17/05/10 A	15/07/10 A		KD0020	YSW0210	i	11 111	1	i	ii ii	i			
YSW0210	Ecology Survey		16/07/10 A		16/07/10 A	11/02/11 A		YSW0200	YSW0350			-			1			
YSW0220	Submission and Approval of In. Hydro Survey		17/05/10 A	-	17/05/10 A	27/08/10 A		KD0020	YSW0230		11 111	1	i	ii.	i			
YSW0230	Hydrogrophical Survey (YSW)		28/08/10 A	<u> </u>	28/08/10 A	31/01/11 A		YSW0220	YSW0350					11	1			
YSW0240	Material Submission, Approval of HDPE pipe		17/05/10 A		17/05/10 A	31/03/11 A		KD0020	YSW0360		n - n	т — — — т	Ť	iT	<u>-</u>			
YSW02401	Clarify Coordinate of Point Y (Reply of RFI 010)		28/06/10 A	ļ	1	18/09/10 A		KD0020	YSW0250			-			1			
YSW0250	Submit and Approval of Method Statement for HDD		19/09/10 A	<u> </u>	19/09/10 A	25/03/11 A		YSW02401	YSW0260, YSW0270, YSW0340		11 11				!			
YSW0260	Submission of HDD Method Statement to HEC		26/03/11 A	08/04/11 A	26/03/11 A	08/04/11 A		YSW0250	YSW0340						1		1	
YSW0270	Additional G.I. Boreholes (YSW)		19/09/10 A	19/01/11 A	19/09/10 A	19/01/11 A	1	YSW0250	YSW0280, YSW0290				!		1			
YSW0280	Submission of propose alignment		20/01/11 A	04/03/11 A	20/01/11 A	04/03/11 A	1	YSW0270	YSW0310, YSW0340				±	 11			·	
YSW0290	Submission of Marine Notice	69 100	20/01/11 A	29/03/11 A	20/01/11 A	29/03/11 A		YSW0270	YSW0350				1		1			
YSW0310	Construction of Entry Pit and Preparation Work	27 100	05/03/11 A	31/03/11 A	05/03/11 A	31/03/11 A		YSW0280	YSW0320		11 111	I.	i	ii	i		1	
YSW0320	Prepare of HDD Drill Rig Set-up (YSW)	28 100	01/04/11 A	28/04/11 A	01/04/11 A	28/04/11 A		YSW0310	YSW0330, YSW0350	<b>-</b>   ;					1			
YSW0330	Establishment of HDD plant & equipment	6 100	09/04/11 A	14/04/11 A	09/04/11 A	14/04/11 A	İ	YSW0320	YSW0340	<b>-</b>   ;	11 111	I	i	ü	i			
YSW0340	Setting up at drillhole location	14 100	15/04/11 A	28/04/11 A	15/04/11 A	28/04/11 A		YSW0250, YSW0260, YSW0280,	YSW0350				T			I		
YSW0350	Drill pilot hole and reaming hole - NS400 - 530m		29/04/11 A	13/12/11 A	29/04/11 A	13/12/11 A		YSW0040, YSW0180, YSW0210,	YSW0360		11 111		1		1		1	
YSW0360	Installation of NS400 HDPE 530m		14/12/11 A	30/12/11 A	14/12/11 A	30/12/11 A		YSW0240, YSW0350	SKW1181, YSW03601, YSW03620,					11	1			
YSW03601	Demobilization of HDD plant & equipment		31/12/11 A	06/01/12 A	31/12/11 A	06/01/12 A		YSW0360	YSW03605, YSW03641, YSW0730	!!					!			
YSW03605	Remove Entry pit of HDD		07/01/12 A	<u> </u>	07/01/12 A	20/01/12 A		YSW03601	YSW0730	L			I		L.			
YSW03620	Removal of Receiving Pit		31/12/11 A		31/12/11 A	13/01/12 A		YSW0360	YSW0365	!!			!				1	
YSW03641	Prepare backfilling material under VO 046A		07/01/12 A		07/01/12 A			YSW03601	YSW0365	I:			;	ii ii	i			
YSW0365	Set up of Silt Curtain as per EP		23/11/12 A		23/11/12 A			SKW1431, YSW03620, YSW03641	YSW0370	per EP			! !					
YSW0370	Dredging of Marine Deposit for Diffuser (YSW)		24/11/12 A		24/11/12 A			YSW0360, YSW0365	YSW0380	eposit for Diffu	iser (YSV	N)						
YSW0380	Diffuser Construction (YSW)		30/11/12 A	26/02/13	30/11/12 A	11/04/13	-	YSW0370	E&M0690, YSW0400, YSW08301	—	n - nr	1	Diffuser	Construc	tion (YSW)		====;	= = =
YSW0400	Removal of silt curtain	30 C	27/02/13	28/03/13	18/05/14	16/06/14	445d	YSW0380	KD0040		л п	ı			Removal o	of slit curtain		
		1 110					1	E&M0160	E&M0510	<b></b>   ;					1			
E&M0360	Delivery of MBR Memb. Mod. (MBR Tk 4)		24/02/11 A		24/02/11 A 24/02/11 A			E&M0160	E&M0520									
E&M0370	Delivery of MBR Membrane Modules - 2nd Shipment			-	10/10/11 A			E&M0150	E&M0530				¦		1			
E&M0380 E&M0390	Delivery of Grit Removal Equipment Delivery of Coarse Screens		10/10/11 A 06/09/11 A		06/09/11 A	12/01/12 A		E&M0110	E&M0540				!		1		1	
E&M0400	Delivery of Fine Screens		12/09/11 A		12/09/11 A			E&M0120	E&M0550	i	11 111	I.			1		1	
E&M0410	Delivery of Pumps		23/06/11 A		23/06/11 A	05/09/11 A		E&M0130	E&M0560					11	L .		· _ ·	
E&M0410	Delivery of Submersible Mixers		26/02/11 A	-	26/02/11 A			E&M0140	E&M0570	-  i	11 111	I.		11	i i		1	
		100		L 0, 02/11 A	20,02/11 A	20/02/11 A		1						<del>, 11</del>				
	05/10 Early bar 10/16 Progress bar											Da 31/01/13	ate	Revisio	Revision		hecked Appr H VC	proved
	01/13 Critical bar							ering Corp. Ltd.				31/01/13		newsi		K		+
	02/13 Summary bar Progress point			0				C/2009/13	Z\\/									
Page number 5A	Critical point							ent Works at YSW & S										
O Primovora Cust	Summary point			3-MO		iy Progra	amme	(Feb 2013 - Apr 2013)										
c Primavera Syste	5115, IIIU. 🔺 Einich milactone naint																	

Activity	Description	Original		Early	Late	Late	Total	Predecessors	Successors			2013		
ID E&M0440	Delivery of Sludge Dewatering Equipment	Juration 558	Complete Start 55 31/08/11 A	Finish 09/10/13	Start 31/08/11 A	Finish 10/06/13	Float	E&M0170	E&M0580	JAN	FEB	MAR	APR	MAY
E&M0450	Delivery of Valves, Pipes & Fittings	560	90 30/08/11 A	29/08/13	30/08/11 A	14/09/13		E&M0180	E&M0590					
E&M0460	Delivery of Penstocks	135	100 12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A		E&M0190	E&M0600, E&M0605	-   : ::  - :				
E&M0470	Delivery of Instruments	232	100 03/11/11 A	21/06/11 A	03/11/11 A	21/06/11 A		E&M0200	E&M0610	+       -   -				
E&M0480	Delivery of MCC LVSB	90	30 03/12/12 A	05/12/14	03/12/12 A	05/04/13	-609d	E&M0210	E&M0620	-				
E&M0490	Delivery of BS Equipment	446	38 10/12/11 A	18/08/14	10/12/11 A	14/04/13		E&M0220	E&M0630					
E&M0500	Delivery FS Equipment	507	25 11/12/11 A	12/12/14	11/12/11 A	09/05/13	-582d	E&M0230	E&M0330, E&M0640		• •			
E&M0510	Install Membrane Modules in MBR Tank no. 4	89	70 03/11/12 A	26/02/13	03/11/12 A	23/05/13	86d	E&M0360, YSW0705	E&M0690		Install I	Membrane Modules in	MBR Tank no. 4	
E&M0520	Install Membrane Modules in MBR Tank No. 1 to 3	57	50 03/12/12 A	28/02/13	03/12/12 A	23/05/13	85d	E&M0370, YSW08302, YSW08303	E&M0690		Instal	l Membrane Modules i	n MBR Tank No. 1 to	<sub>3</sub> = = = = = = = =
E&M0530	Install Grit Removal Equipment	122	100 01/06/12 A	30/09/12 A	01/06/12 A	30/09/12 A	1	E&M0380, YSW05923	E&M0590, E&M0660		·· +	╎━━ ━ ━ ╎; ╡ ━ ━ ━ ━ ┝		
E&M0540	Install Coarse Screens	240	90 23/04/12 A	23/02/13	23/04/12 A	12/04/13	48d	E&M0390, YSW05923	E&M0660		Install Co	oarse Screens <sup>_</sup>		
E&M0550	Install Fine Screens	122	80 01/06/12 A	24/02/13	01/06/12 A	17/01/13	-37d	E&M0400, YSW05923	E&M0590, E&M0660		Install F	ine Screens		
E&M0560	Install Pumps	355	60 23/04/12 A	21/06/13	23/04/12 A	12/04/13	-70d	E&M0410, YSW05923	E&M0660					
E&M0570	Install Submersible Mixers	163	50 15/01/13 A	22/04/13	15/01/13 A	12/04/13	-10d	E&M0420, YSW07204	E&M0660, E&M0690	┥╎╣┆┙┝╴╸╴╴╴╘╢╴╙ ╵╙╫╫ <mark>╞╞<mark>╓╓╓╓╓</mark>┍┍</mark>			Install Subm	ersible Mixer
E&M0580	Install Sludge Dewatering Equipment	361	25 29/05/12 A	28/10/13	29/05/12 A	24/05/13	-157d	E&M0440, YSW06023	E&M0690					
E&M0590	Install Valves, Pipes & Fittings	232	45 15/01/13 A	02/07/13	15/01/13 A	25/05/13	-37d	E&M0450, E&M0530, E&M0550,	E&M0650, E&M0690					
E&M0600	Install Penstocks (Batch 1, GL H - T)	213	90 23/04/12 A	21/02/13	23/04/12 A	23/05/13	92d	E&M0460, YSW07202	E&M0690		Install Per	stocks (Batch 1, GL H	- T)	
E&M0605	Install Penstocks (Batch 2, GL A - F)	131	60 02/01/13 A	24/03/13	02/01/13 A	23/05/13	61d	E&M0460, YSW08302	E&M0690		······		tocks (Batch 2, GL A	- F) <sup>-</sup>
E&M0610	Install Instruments	74	5 02/01/13 A	31/05/13	02/01/13 A	25/05/13	-6d	E&M0470, YSW07055, YSW0810,	E&M0690		••			
E&M0620	Install SAT, MCC & LVSB	8	10 02/01/13 A	12/12/14	02/01/13 A	12/04/13	-609d	E&M0480, YSW0810	E&M0660, E&M0680		···		I	
E&M0630	Install BS Equipment	180	25 02/01/13 A	01/11/14	02/01/13 A	28/06/13	-491d	E&M0490, YSW0810, YSW0820	E&M0690				I	
E&M0640	Install FS Equipment	180	5 02/01/13 A	31/01/15	02/01/13 A	28/06/13	-582d	E&M0500, YSW0705, YSW0810,	E&M0690		···			
E&M0650	Hydraulic Tests of Pipeworks	153	20 02/01/13 A	06/06/13	02/01/13 A	30/05/13	-7d	E&M0590, YSW08302	E&M0690				I	
E&M0660	Cabling Works	15	0 12/12/14	27/12/14	13/04/13	27/04/13	-609d	E&M0530, E&M0540, E&M0550, E&M0560, E&M0570, E&M0620	E&M0670					
									1					
E&M0670	Insulation Tests of Cables and Cable Termination	26	0 27/12/14	22/01/15	28/04/13	23/05/13		E&M0320, E&M0325, E&M0660,	E&M0690					
E&M0680	Energization	1	0 12/12/14 *	13/12/14	27/04/13	27/04/13		E&M0305, E&M0325, E&M0620,	E&M0670					
E&M0690	Functional and Performance Tests of Equipment	35	0 22/01/15	26/02/15	24/05/13	27/06/13 *	-609d	E&M0510, E&M0520, E&M0570, E&M0580, E&M0590, E&M0600, E&M0605, E&M0610, E&M0630, E&M0640, E&M0650, E&M0670, YSW0380, YSW08301, YSW1530, YSW1540	E&M0700		11 1 11 1 11 1 11 1			
E&M0700	T&C Period	137	0 26/02/15	13/07/15	12/12/13	27/04/14	-442d	E&M0330, E&M0690	E&M0730, KD0040					
E&M0730	Trial Operation Period	413	0 13/07/15	28/10/16	28/04/14	14/06/15		E&M0700	KD0132	+n - <mark>n</mark>	п <mark></mark> 1	<u>-</u>		
Sok Kwu Wa	n		<u> </u>	1			1							
Preliminary	••													
SKW0250	Approval of Environmental Team	16	100 17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A	1	KD0020	SKW0260					
SKW0260	Baseline monitoring (Air & Noise)	14		15/06/10 A				SKW0250	SKW0242, SKW0265, SKW0592, SKW0681					
SKW0265	Baseline Monitoring Submission (A & N)	14		08/07/10 A				SKW0260	SKW0242, SKW0592, SKW0681, SKW0921					
	ootpath Diversion in Portion G		100 10,00,10 /	00/01/10/1	10/00/10/1	00/01/10/1			,,,,,	<sup>^</sup>		<u> </u>		
Civil & Geotecl	•													
SKW0240	Site Clearance	21	100 17/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A	1		SKW0241					
SKW0241	Initial Survey	9		15/06/10 A				SKW0240	SKW0242					
SKW0242	Retaining Wall Bay 0-10 (Incl. VO. 001A)	177		23/12/10 A			1	SKW0241, SKW0260, SKW0265	SKW0461	- :::::::::::::::::::::::::::::::::::::				
SKW0461	Utilities Laying and Diversion	70	100 24/12/10 A					SKW0242	SKW0471	1 u u	II I			
SKW0471	Concreting for Pavement	7		10/03/11 A				SKW0461	SKW0481					
SKW0481	Footpath Diversion - Stage 1	14		24/03/11 A				SKW0471	KD0050, SKW04811, SKW0491	+:: -				
SKW04811	Excavate for FP transition at CH0-35 &CH130-141	37		30/04/11 A				SKW0481	SKW04821	+n -		· +		
SKW04821	Construction of Drainage outfall near bay 10	3		03/05/11 A				SKW04811	SKW04831	1 u u	11 I			
SKW04831	Cable diversion by HEC	26		29/05/11 A		29/05/11 A		SKW04821	SKW04841					
SKW04841	Diversion of Ducting and Drawpit by PCCW	12		31/05/11 A				SKW04831	SKW04851					
SKW04851	Soil backfilling behind FP retaining wall	14	100 01/06/11 A	14/06/11 A		14/06/11 A	1	SKW04841	SKW04861	н <mark>-     -  </mark> н 				
SKW04861	Concreting for footpath pavement	7		21/06/11 A		21/06/11 A	1	SKW04851	SKW04871					
SKW04871	Relocation of Temp Safety Fence at SKW STW A-G	57		17/08/11 A		1	1	SKW04861	SKW04881	- !!!!				
SKW04881	Disposal of excavation material at A-G SKW STW	138		02/01/12 A		02/01/12 A		SKW04871	SKW04885					
SKW04885	Footpath Diversion - Stage 2	7	100 10/00/11/A	09/01/12 A		09/01/12 A		SKW04881	SKW1261	- !!!!				
SKW04005	Removal of Haul Road after SKW STW	7	0 08/10/14	14/10/14	29/05/15	04/06/15	233d	KD0090, SKW0481, SKW1401	SKW0501	╋ <u>╋╺╺╺╺</u> ╺╴╴╴┤ <mark>╴</mark> ╎		$\frac{1}{1}\frac{1}{11} \frac{1}{1}$		
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Finish date28Data date31Run date05	iv05/10     Early bar       iv10/16     Progress bar       /01/13     Critical bar       iv02/13     Progress point			Constru	C	Contract	No. DC	ering Corp. Ltd. 2/2009/13 ent Works at YSW & Sl	ĸw		Date 31/01/13	Revision 0	Checked RH	Approved VC
Page number 6A	Critical point							(Feb 2013 - Apr 2013)						+
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o i innavora Oyo	Einich miloctono noint										<u> </u>			

Activity	Description	Original		Early	Early	Late	Late	Total	Predecessors	Successors			20	13		
ID		Duration C	•	Start	Finish	Start	Finish	Float			JAN	FEB	MA	R A	PR	MAY
SKW0501	Concreting for no-fine concrete	14	0	08/10/14	21/10/14	29/05/15	11/06/15	l	SKW0491	SKW0511	1	1111	1			
SKW0511	Wall Tie & Stone Facing	14	0	22/10/14	04/11/14	12/06/15	25/06/15		SKW0501	SKW0521			i	ii i		
SKW0521	Gabion Wall & Geotextile	30	0	05/11/14	04/12/14	26/06/15	25/07/15		SKW0511	SKW0531	1	1111	I	II I		
SKW0531	Installation of Flower Pot	/	·	05/12/14	11/12/14	26/07/15	01/08/15		SKW0521	SKW0541		<u>    </u> 		· -¦+		
SKW0541	Completion of Outstanding Works	42	0	12/12/14	22/01/15	02/08/15	12/09/15	2330	SKW0531	KD0125		1111	i			
	Slope W orks in Portions H & I											1111				
Geotechnical SKW0588		30		15/06/10 A	14/07/10 4	15/00/10 4	14/07/10 4	1	KD0020	SKW0590		1111	i	ii i		
SKW0588 SKW0590	Construct scaffolding access	100		15/06/10 A 15/07/10 A		15/06/10 A 15/07/10 A			SKW0588	SKW0591		1111				
SKW0590	Site Clearance for Slope Initial Survey for Slope	28		21/09/10 A		21/09/10 A	22/10/10 A 18/10/10 A		SKW0590	SKW0592	1	1111	1	11 I		
SKW0591	Temporary Rockfall fence at ex. Footpath	43		31/08/10 A		31/08/10 A	12/10/10 A		SKW0260, SKW0265, SKW0591	SKW05931	- 1	1111				
SKW0592	Construction of Haul Road (To +30mPD)	50		03/09/10 A		03/09/10 A	22/10/10 A		SKW0592	SKW05932	1	1111	!			
SKW05932	Construction of Haul Road (To +42.5mPD)	68		23/10/10 A		23/10/10 A	29/12/10 A		SKW05931	SKW059322		нн пп	+	· -¦ <del> </del>		
SKW059321	Removal of Boulders (IBG 1 - 119, SI No. 11B)	121		03/11/10 A		03/11/10 A	03/03/11 A			SKW059411	1	1111	!			
SKW059322		174		11/01/11 A		11/01/11 A	03/07/11 A		SKW05932	SKW059341		1111				
SKW059322	Revised Profile at West Slope (+56 to +42.5mPD)	1/4		17/03/11 A	17/03/11 A	17/03/11 A	17/03/11 A			SKW059324	1	1111	!			
SKW059324	Construction of Haul Road (+42.5 to +56mPD)	12		18/03/11 A	29/03/11 A	18/03/11 A	29/03/11 A		SKW059323	SKW059325	- 1	1111				
SKW059325		17		30/03/11 A		30/03/11 A	15/04/11 A		SKW059324	SKW05933	1	HH IIII	+	· -!+		
SKW05933	West Slope Cutting (+56mPD to +42.5mPD)	2		16/04/11 A	17/04/11 A		17/04/11 A		SKW059325	SKW059331		1111				
SKW059331	Removal of Boulders (IBG 140-189, SI No. 11D)	45		18/04/11 A		18/04/11 A	01/06/11 A		SKW05933	SKW05934	1	1111				
SKW05934	West Slope Cutting (+42.5mPD to +35mPD)	32		02/06/11 A		02/06/11 A	03/07/11 A		SKW059331	SKW059341		1111		ii i		
SKW059341	Revised Profile at West Slope (+20 to +4.8mPD)	1		04/07/11 A		04/07/11 A	04/07/11 A		SKW059322, SKW05934	SKW05935	1	1111				
SKW05935	West Slope Cutting (+35mPD to +27.5mPD)	83		08/07/11 A		08/07/11 A	28/09/11 A		SKW059341	SKW05936		nn	<u>†</u>	· -ii i -		
SKW05936	West Slope Cutting (+27.5mPD to +20mPD)	61		29/09/11 A		29/09/11 A	28/11/11 A		SKW05935	SKW05937	1	1111	<u> </u>			
SKW05937	West Slope Cutting (+20mPD to +12.5mPD)	39		29/11/11 A		29/11/11 A	06/01/12 A		SKW05936	SKW05938		1111	i	ii i		
SKW05938	West Slope Cutting (+12.5mPD to +4.8mPD)	90		07/01/12 A		07/01/12 A	27/03/12 A		SKW05937	KD0060, SKW1261, SKW1311, SKW1371	1	1111	!			
SKW05941	Slope Stormwater Drainage	300		28/03/12 A		28/03/12 A	25/05/12 A		KD0060	SKW05942		1111	i	ii i		
SKW059411	East Slope Cutting (+50mPD to +42.5mPD)	72		04/03/11 A		04/03/11 A	14/05/11 A		SKW059321	SKW059412	1		+	· -1+		
SKW059412		82		15/05/11 A	04/08/11 A		04/08/11 A		SKW059411	SKW059413		1111	i	ii i		
SKW059413		55		05/08/11 A		05/08/11 A	28/09/11 A		SKW059412	SKW059414	1	1111				
SKW059414	East Slope Cutting (+27.5mPD to +20mPD)	61		29/09/11 A	28/11/11 A	29/09/11 A	28/11/11 A		SKW059413	SKW059415		1111	į į	11 I		
SKW059415	East Slope Cutting (+20mPD to +12.5mPD)	39		29/11/11 A	06/01/12 A	29/11/11 A	06/01/12 A		SKW059414	SKW059416	- 1	1111				
SKW059416	East Slope Cutting (+12.5mPD to +4.8mPD)	81		07/01/12 A	27/03/12 A	07/01/12 A	27/03/12 A	i – – – – – – – – – – – – – – – – – – –	SKW059415	KD0060, SKW1311, SKW1371	_=====	<u> </u>	<u>-</u>	- <u> </u>		
SKW05942	Slope Miscellaneous Works	61			31/07/12 A	26/05/12 A	31/07/12 A		SKW05941	SKW05943, SKW0595	1	1111				
SKW05943	Buttress & surface Protection (SI No. 31)	60	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A		SKW05942	SKW05944	╊╺╺╸╸╸╸┩╴	нн	+	· -   +		·
SKW05944	Slope Treatment (SI. No. 36)	60		03/07/12 A					SKW05943	SKW05945			I I			
SKW05945	Rock Slope Treatment (SI. No. 68)	60	100	01/08/12 A	30/09/12 A	01/08/12 A	30/09/12 A		SKW05944	SKW05946		1111 HH -				
SKW05946	Rock Slope Treatment (SI. No. 98)	60	85	10/09/12 A	08/02/13	10/09/12 A	22/03/13	42d	SKW05945	SKW05947		Rock Slop	e Treatment (	SI <u>.</u> No. 98)		
SKW05947	Rock Slope Treatment (SI. No. 115)	60	70	01/11/12 A	17/02/13	01/11/12 A	26/03/13	37d	SKW05946	KD0135		Roo	k Slope Treatr	ment (SI. No. 115)		
SKW05948	Soil Nailing Works (VO. No. 52)	300	85	10/02/12 A	16/03/13	10/02/12 A	15/06/14	456d		SKW05963				Soil Nailing Works	(VO. No. 52)	
SKW0595	Rock Meshing	60	0	08/05/14	06/07/14	07/08/15	05/10/15	456d	SKW05942, SKW05972	KD0165		1111				
SKW05963	Determine Alignment & Foundation Design of RFB	120		10/02/12 A	08/06/12 A	10/02/12 A	08/06/12 A		SKW05948	SKW059631, SKW05964, SKW05965	1	1111	İ	i i		
SKW059631	GEO Approval of Foundation Design	70		09/06/12 A		09/06/12 A	31/07/12 A		SKW05963	SKW05968		пп Ш				
SKW05964	Fabrication & Shipping of RFB Material	180		09/06/12 A		09/06/12 A	30/11/12 A		SKW05963	SKW05972	g of RFB Material	1111	1	1 1		
SKW05965	Site clearance & Formation of access	62				09/06/12 A	31/07/12 A	<u> </u>	SKW05963	SKW05967		HH	+	· - +		
SKW05967	Plant mobilization	14		02/01/13 A		02/01/13 A	15/01/13 A	<u> </u>	SKW05965	SKW05968	Plant mob	ilization		I I		
SKW05968	Construction of anchors & pull out test	180	10	16/01/13 A	11/07/13	16/01/13 A	10/10/14	456d		SKW05969		HH	+	-+		
SKW05969	Construction of Foundation	120	v	12/07/13	08/11/13	11/10/14	07/02/15	456d		SKW05970	!	1111	!	1 1		
SKW05970	Proof Load Test	60		09/11/13	07/01/14	08/02/15	08/04/15	456d		SKW05971	1	1111				
SKW05971	Transportation of Material (To the slope crest)	30	0	08/01/14	06/02/14	09/04/15	08/05/15		SKW05970	SKW05972		1111	!			
SKW05972	Installation of Flexible barrier	90	0	07/02/14	07/05/14	09/05/15	06/08/15	456d	SKW05964, SKW05971	KD0165, SKW0595		1111 1111				
	P.S. No. 1 in Portion D											1111 1111				
	chnical Works									-	I	1111		i i		
SKW0651	Site Clearance	7				17/05/10 A			KD0020	SKW0652		1111 1111				
SKW0652	Initial Survey	7	100	24/05/10 A	30/05/10 A	24/05/10 A	30/05/10 A		SKW0651	SKW0661, SKW0681		1111	, i	· ·		
	25/05/10 Early bar 28/10/16 Progress bar					Leade	r Civil E	nainee	ering Corp. Ltd.			Da 31/01/13	ate F	Revision Revision 0	Checke RH	ed Approved VC
	Critical bar								C/2009/13							
Run date 0 Page number 7	05/02/13 A Progress point				Constru				ent Works at YSW & S	KW						
ragenumber /	Summary point								(Feb 2013 - Apr 2013)							
c Primavera Sy	stems, Inc.								· · ·							

Activity	Description	• •	Percent	Early	Early	Late	Late	Total	Predecessors	Successors			2013	B		
			Complete	Start	Finish	Start	Finish	Float	SKW0652	SKW0681	JAN .	FEB	MAR		APR	MAY
SKW0661 SKW0681	Transplantation for uncommon vegatation Excavate to lower the working platform to +3mPD	30		31/05/10 A 30/06/10 A	17/08/10 A	31/05/10 A 30/06/10 A	29/06/10 A 17/08/10 A		SKW0652 SKW0260, SKW0265, SKW0652,	SKW0691		1111		1	1	
SKW0691	ELS to +2.2mPD	49		18/08/10 A	26/09/10 A		26/09/10 A		SKW0200, SKW0203, SKW0032,	SKW0721		1111	<u>!</u>	1	!	
SKW0091	Excavate to formation	270		17/09/10 A	13/06/11 A	ļ	13/06/11 A		SKW0691	SKW0741					<u></u>	
SKW0722	Construction of Manholes (VO. No. 21A)	107		10/08/13	I	24/03/14	08/07/14	2250	E&M11800	E&M3360		1111		I I		
Structural Wor			0	10/00/10	20/11/10		00/07/11					1111				
SKW0741	RC Works for Structure	240	100	14/06/11 A	08/02/12 A	14/06/11 A	08/02/12 A		SKW0721	KD0070, SKW0841		iiii	i	i i	i	
SKW0841	ABWF works	60		09/02/12 A		09/02/12 A	08/04/12 A		SKW0741	E&M1101, E&M1102, E&M1103, E&M1104,	-		1		!	
SKW0861	300mm U-channel & 675mm Step Channel	30		10/08/13	09/09/13	06/09/15	05/10/15	7560	E&M11800, SKW0841	KD0165	┡╺╺╺╺╺╺	- нн		- +	÷	
			0									1111		<u> </u>	1	
E&M Works (F												1111	i	i	i	
Submission E&M1001	Submission of Pumps	198	100	17/05/10 A	24/02/11 4	17/05/10 A	24/02/11 4	1	KD0020	E&M1011		1111				
E&M1001	Submission of Gen-Set			17/05/10 A		17/05/10 A	24/02/11 A			E&M1012	-	1111	i i	i i	i	
E&M1002	Submission of DeO System	198 198		17/05/10 A		17/05/10 A	16/07/13 A			E&M1012		1111		1	I	
E&M1003	Submission of LV SB & MCC	190		17/05/10 A		17/05/10 A	09/01/12 A			E&M1013		1111	I	I	I	
E&M1004	Submission of Instrumentation	243		17/05/10 A	1	17/05/10 A	12/03/12 A			E&M1015	-					
E&M1005	Submission of FS System	243		17/05/10 A		17/05/10 A	30/09/12 A			E&M1016		- нн	+	- +	⊢	
E&M1008	Submission of BS System	243		17/05/10 A	07/02/13	17/05/10 A	27/09/13	2320		E&M1017		IIII Submissi	on of BS System			
E&M1007	Delivery of Pumps	150	-	24/02/11 A		24/02/11 A	27/09/13 21/07/11 A	2320	E&M1001	E&M1101					.	
E&M1011 E&M1012	Delivery of Gen-Set	150		24/02/11 A 24/02/11 A		24/02/11 A	21/07/11 A 23/09/11 A		E&M1002	E&M1102	4	1111		1		
E&M1012	Delivery of DeO System	150		11/07/11 A		11/07/11 A	23/09/11 A 28/10/11 A		E&M1002	E&M1103	-	1111	i	i	i l	
E&M1013	Delivery of LV SB & MCC	150		01/06/12 A		01/06/12 A	31/07/12 A		E&M1004	E&M1104						
E&M1014	Delivery of Instrumentation	90		01/11/11 A		01/11/11 A	03/11/11 A		E&M1005	E&M1105	-	1111	i	i	i l	
								005-				1111		l Numerati		
E&M1016	Delivery of FS Equipment	107		01/12/11 A	21/02/13	01/12/11 A	04/10/13		E&M1006	E&M1106	-		Delivery of FS Ed		i l	
E&M1017	Delivery of BS Equipment	107	80	15/11/11 A	28/02/13	15/11/11 A	18/10/13	2320	E&M1007	E&M1107				BS Equipment	1	
Installation,				00/10/10 1			00/11/10	070-				1111	i i	i	i l	
E&M1101	Install Pumps	55		02/10/12 A	05/02/13	02/10/12 A			E&M1011, SKW0841	E&M1110, E&M1140	-	Install Pun	1 A		1	
E&M1102	Install Gen Set	55		02/10/12 A	10/02/13	02/10/12 A			E&M1012, SKW0841 E&M1013, SKW0841	E&M1110, E&M1140 E&M1110, E&M1140	-	Install	•	I	i l	
E&M1103	Install DeO System	55		03/12/12 A	21/02/13	03/12/12 A	03/11/13	2550	E&M1013, SKW0841	E&M1140	- - -		Install DeO Syste		VSB&MCC	
E&M1104	Install LV SB & MCC	55		02/01/13 A	26/03/13 A	02/01/13 A	26/03/13 A	0000		E&M1140	 			1	1	
E&M1105	Install Instrumentation	55	-	01/11/12 A	15/03/13	01/11/12 A	03/11/13		E&M1015, SKW0841 E&M1016, SKW0841	E&M1130, E&M1140				stall Instrumer		
E&M1106	Install FS Equipment	55		02/10/12 A	23/03/13	02/10/12 A	03/11/13		E&M1017, SKW0841			<u>     </u>		Install FS		
E&M1107	Install BS Equipment	55	10	02/10/12 A	17/03/13	02/10/12 A	03/11/13		E&M1101, E&M1102, E&M1103,	E&M1110, E&M1140 E&M1120				Install BS Equ	atall Valves Pin	oo <sup>®</sup> Eittingo
E&M1110 E&M1120	Install Valves, Pipes & Fittings Hydraulic Test of Pipeworks	40		02/01/13 A 04/04/13	04/04/13	02/01/13 A 16/01/14	15/01/14 22/01/14	2870		E&M11800		1111				es & Fittings est of Pipeworks
E&M1120	Form 501 Submission to FSD	28	-	23/03/13	20/04/13	26/12/13	22/01/14		E&M1106	E&M11800	-	1111			Eorm E	501 Submission to F
E&M1130	Cabling Works	43	0	23/03/13	05/05/13	04/11/13	16/12/13		E&M1101, E&M1102, E&M1103,	E&M1150						Cabling Works
E&M1140	Insulation Tests of Cables and Cable Termination	43	0	05/05/13	12/05/13	17/12/13	23/12/13		E&M1140	E&M1160	-	1111	1	r=1	i	Insulation T
E&M1150	Engergization	7	0	12/05/13	15/05/13	24/12/13	26/12/13		E&M1150	E&M1170	-	1111	1	1	!	Engergiz
E&M1170	Functional and Performance Tests of Equipment	30	•	02/01/13 A	11/06/13	02/01/13 A	22/01/14		E&M1160	E&M11800		1111			<u> </u>	
		60	10	11/06/13		23/01/13 A			E&M0350, E&M1120, E&M1130,	SKW0722, SKW0861		1111				
E&M11800	Commissioning Test	00	0	11/00/13	10/08/13	23/01/14	23/03/14	2230	Lawi0000, Lawi120, Eawi1100,			1111		- <del> </del>	<u> </u>	
	Sever and PS No.2 in Portions E&H											1111		1	!	
Civil & Geotec	Inical Works			17/05/10 A	23/05/10 4	17/05/10 A	23/05/10 4	1	KD0020	SKW0891	4	1111		I		
SKW0881 SKW0891	Plant mobilization			17/05/10 A 17/05/10 A		17/05/10 A 17/05/10 A	23/05/10 A 23/05/10 A		SKW0881	SKW0891 SKW0892	4	1111		1	I	
SKW0891 SKW0892		/		17/05/10 A 24/05/10 A		17/05/10 A 24/05/10 A	23/05/10 A 22/06/10 A		SKW0891	SKW0892 SKW0901	4	1111		I		
SKW0892 SKW0901	Initial Survey	30		24/05/10 A 23/06/10 A		24/05/10 A 23/06/10 A	22/06/10 A 20/09/10 A		SKW0891 SKW0892	SKW0901 SKW0921	4	1111		1	.	
	Tree Transplantation								SKW0892 SKW0260, SKW0265, SKW0901		4			I		
SKW0921	Cut Slope & U-Channel	14		21/09/10 A		21/09/10 A	04/10/10 A			SKW0931, SKW0951				- +	<u></u>	
SKW0931	Hoarding & Fencing	14		05/10/10 A		05/10/10 A	18/10/10 A		SKW0921	SKW0950, SKW0951	4	1111		1		
SKW0950	Removal of Rock Boulders before ELS	66		19/10/10 A	23/12/10 A	ļ	23/12/10 A		SKW0931	SKW0951	4	1111	i i	I	i	
SKW0951	ELS & Excavate to formation	169		24/12/10 A			10/06/11 A		SKW0921, SKW0931, SKW0950 SKW1081	SKW0971		'민느	<u> </u>	<u> </u>		Dotoining Mal
SKW0961	Mass Conc. Retaining Wall	90	-	16/01/13 A	12/04/13	16/01/13 A	09/02/13	-620		KD0155		111	1	I		Retaining Wall
SKW1491	LCS (ChA0+45 to 1+75) VO.7	90		24/03/12 A	21/06/12 A		21/06/12 A		PRE0100, SKW1021	SKW15111		(11)		- +		
SKW15111	Twin DN150 DI Rising Main (ChA1+75 - ChA5+79)	180		22/06/12 A	30/11/12 A		30/11/12 A	400	SKW1491 SKW1581	SKW1531 E&M3360	ng Main (ChA1+75			· 		ing Main (ChA0+0
SKW15112	Twin DN150 DI Rising Main (ChA0+00 - ChA0+45)	30	0	02/03/13	01/04/13	09/06/14	08/07/14	4630	SKW 1381	E&1013300		111		IWI	I DN 150 DI RIS	ang Main (ChA0+0
Start date 05	5/05/10 Early bar											Г	Date	Revisio	n IC	hecked Approved
	B/10/16 Progress bar					Leade	r Civil F	ngine	ering Corp. Ltd.			31/01/13		evision 0	R	
	1/01/13 Critical bar Summary bar								C/2009/13							
	5/02/13 Progress point				Construe				nent Works at YSW & S	KW						
Page number 8/	Critical point								(Feb 2013 - Apr 2013)							

c Primavera Systems, Inc.

Activity ID	Description	Original Juration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	JAN	
SKW1531	Extent village sewers S163.1 & S164.1	34	100	30/11/12 A	10/01/13 A	30/11/12 A	10/01/13 A		SKW15111	SKW1581	Extent village	sewers
SKW1581	Construct Manhole no. S163 & S164	34	10	11/01/13 A	02/03/13	11/01/13 A	26/03/13	24d	SKW1531	KD0135, SKW15112		- 11 1
Structural Work	ks	•	•		•	•	•		•	•		
SKW0971	Structural Works (Phase 1)	245	100	11/06/11 A	10/02/12 A	11/06/11 A	10/02/12 A		SKW0951	KD0080, SKW1021	1	
SKW1021	Structural Works (Phase 2)	42	100	11/02/12 A	23/03/12 A	11/02/12 A	23/03/12 A		SKW0971	SKW1061, SKW1081, SKW1491	1	
SKW1061	ABWF Works	90	100	24/03/12 A	21/06/12 A	24/03/12 A	21/06/12 A		SKW1021	E&M2101, E&M2102, E&M2103, E&M2104,	] []	L iii
SKW1081	375mm U-channel/catchpits/outfall	30	100	22/06/12 A	31/01/13 A	22/06/12 A	31/01/13 A		SKW1021, SKW1061	KD0155, SKW0961		375mm
E&M Works (PS	PS2)											ii i
Submission &	& Delivery											
E&M2001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A		KD0020	E&M2011		ii -
E&M2002	Submission of Gen-Set	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A			E&M2012		
E&M2003	Submission of DeO System	198	100	17/05/10 A	11/07/11 A	17/05/10 A	11/07/11 A			E&M2013		ii –
E&M2004	Submission of LV SB & MCC	271	100	17/05/10 A	30/06/12 A	17/05/10 A	30/06/12 A			E&M2014		
E&M2005	Submission of Instrumentation	243	100	17/05/10 A	30/06/12 A	17/05/10 A	30/06/12 A			E&M2015		<u>_</u> <u>ü</u>
E&M2006	Submission of FS System	243	97	17/05/10 A	07/02/13	17/05/10 A	02/08/12	-189d		E&M2016		Su
E&M2007	Submission of BS System	243	97	17/05/10 A	07/02/13	17/05/10 A	30/07/12	-192d		E&M2017		Su Su
E&M2011	Delivery of Pumps	150	100	24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A		E&M2001	E&M2101	]	
E&M2012	Delivery of Gen-Set	150	100	24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A		E&M2002	E&M2102		ii –
E&M2013	Delivery of DeO System	150	100	11/07/11 A	28/10/11 A	11/07/11 A	28/10/11 A		E&M2003	E&M2103		- 14
E&M2014	Delivery of LV SB & MCC	150	100	29/02/12 A	31/07/12 A	29/02/12 A	31/07/12 A		E&M2004	E&M2104		- 11
E&M2015	Delivery of Instrumentation	90	100	21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A		E&M2005	E&M2105		
E&M2016	Delivery of FS Equipment	107	80	01/12/11 A	28/02/13	01/12/11 A	23/08/12	-189d	E&M2006	E&M0350, E&M2106		
E&M2017	Delivery of BS Equipment	107	80	15/01/11 A	28/02/13	15/01/11 A	20/08/12	-192d	E&M2007	E&M2107		
Installation, T	-&C		<u> </u>		·	-	·		<u>.</u>			11
E&M2101	Install Pumps	55	80	02/10/12 A	10/02/13	02/10/12 A	12/01/13	-29d	E&M2011, SKW1061	E&M2110		
E&M2102	Install Gen Set	55	80	01/09/12 A	10/02/13	01/09/12 A	12/01/13	-29d	E&M2012, SKW1061	E&M2110		
E&M2103	Install DeO System	55	90	03/12/12 A	05/02/13	03/12/12 A	12/01/13	-24d	E&M2013, SKW1061	E&M2110		Insta
E&M2104	Install LV SB & MCC	55	100	02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A		E&M2014, SKW1061	E&M2140		Install L
E&M2105	Install Instrumentation	55	0	31/01/13	26/03/13	30/07/12	22/09/12	-185d	E&M2015, SKW1061	E&M2140	┨┡	- 1-1
E&M2106	Install FS Equipment	55	45	02/10/12 A	30/03/13	02/10/12 A	22/09/12	-189d	E&M2016, SKW1061	E&M2140		
E&M2107	Install BS Equipment	55	40	01/09/12 A	02/04/13	01/09/12 A	22/09/12	-192d	E&M2017, SKW1061	E&M2110, E&M2140		
E&M2110	Install Valves, Pipes & Fittings	46	100	02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A		E&M2101, E&M2102, E&M2103,	E&M2120		Install V
E&M2120	Hydraulic Test of Pipeworks	7	100	02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A		E&M2110	E&M2130		Hydraul
E&M2130	Form 501 Submission to FSD	28	0	02/04/13	30/04/13	13/01/13	09/02/13	-80d		KD0155		
E&M2140	Cabling Works	43	0	02/04/13	15/05/13	23/09/12	04/11/12	-192d	E&M2104, E&M2105, E&M2106,	E&M2150		
E&M2150	Insulation Tests of Cables and Cable Termination	7	0	15/05/13	22/05/13	05/11/12	11/11/12	-192d	E&M2140	E&M2160		1
E&M2160	Engergization	3	0	22/05/13	25/05/13	12/11/12	14/11/12	-192d		E&M2170		
E&M2170	Functional and Performance Tests of Equipment	30	10	15/01/13 A	21/06/13	15/01/13 A	11/12/12	-192d		E&M2180		
E&M2180	Commissioning Test	60	0	21/06/13	20/08/13	12/12/12	09/02/13	-192d	E&M0350, E&M2170	KD0155		
r	KW STW, Sewer and Submarine Outfall											
Submarine Out			-		-	-	-	-				
SKW1130	Approval of IHS Consultant	180	100	17/05/10 A		17/05/10 A				SKW1131		
SKW1131	Hydrographical Survey (SKW)	300	100	01/02/11 A		01/02/11 A			KD0020, SKW1130	SKW1231		
SKW1141	Baseline Monitoring (Water)	213	100	27/07/10 A		27/07/10 A			SKW0260, SKW0265	SKW1151		
SKW1151	Set up Temporary Working Platform	90	100	15/06/11 A	30/09/11 A		30/09/11 A		PRE0090, SKW1141	SKW1171		
SKW1171	ELS for HDD Set-up (SKW)	90	100	01/09/11 A	30/09/11 A	01/09/11 A	30/09/11 A		SKW1151	SKW1181		
SKW1181	Mobilization of HDD plant & equipment to SKW	8	100	06/01/12 A	07/01/12 A	06/01/12 A	07/01/12 A		SKW1171, YSW0360	SKW1191		
SKW1191	Setting up at drillhole location	7	100	09/01/12 A	14/01/12 A	09/01/12 A	14/01/12 A		SKW1181	SKW1201		
SKW1201	Drill pilot hole and reaming hole - NS280 - 750m	33	100	16/01/12 A	16/02/12 A	16/01/12 A	16/02/12 A		SKW1191	SKW1211		
SKW1211	Receiving Pit for HDD (SKW)	13	100	16/01/12 A	29/02/12 A	16/01/12 A	29/02/12 A		SKW1201	SKW1221		
SKW1221	Installaiton of NS280 HDPE 450mm dia. pipe	61	100	31/03/12 A	30/04/12 A	31/03/12 A	30/04/12 A		SKW1211	KD0090, SKW1231, SKW1441	L	
SKW1231	Removal of Receiving Platform	50	100	01/05/12 A	19/06/12 A	01/05/12 A	19/06/12 A		SKW1131, SKW1221	SKW1241		1
SKW1241	Dredging of MD for Diffuser (PS CL 1.122(3))	16	100	20/06/12 A	05/07/12 A	20/06/12 A	05/07/12 A		SKW1231	E&M3359, SKW1251	]	
SKW1251	Diffuser Construction	77	100	01/09/12 A	16/11/12 A	01/09/12 A	16/11/12 A		SKW1241	SKW1431	-	
SKW1431	Removal of silt curtain	1	100	17/11/12 A		17/11/12 A	17/11/12 A		SKW1251	KD0090, SKW1440, YSW0365	J I	
SKW1440	Sewer of Outfall Chamber to connection pit VO37A	90	35	31/12/12 A	30/03/13	31/12/12 A	08/12/13	254d	SKW1431	SKW1441		
	5/05/10 Early bar											
	3/10/16 Progress bar Critical bar					Leade	r Civil Eı	nginee	ering Corp. Ltd.			31/
	Summary bar								C/2009/13			— —
un date 05/ ag e number 9A	V02/13  Progress point Critical point				Constru	ction of S	ewage T	reatm	nent Works at YSW & S	KW		
	Summary point						-		(Feb 2013 - Apr 2013)			
c Primavera Syste	tems, Inc. Start milestone point											
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Activity ID	Description	Original Perc		Early Late Finish Start	Late Finish	Total Predecessors	Successors			2013		
SKW1441	Sewer of Connection Pit to Outfall VO45	177	0 30/03/13	23/09/13 09/12/13	03/06/14	254d SKW1221, SKW1440	E&M3359, KD0090	JAN	FEB		APR	МАҮ
SKW STW			0 00,00,10		00,00,11					· · · · ·		
	Delivery (E&M)											
E&M3010	Delivery of MBR M.M 1st shipment for Temp STP	150	100 24/02/11 A	17/10/11 A 24/02/11 A	17/10/11 A	E&M0160	E&M3170	1				
E&M3030	Delivery of Grit Removal Equipment	180	100 10/10/11 A	29/12/11 A 10/10/11 A	29/12/11 A	E&M0150	E&M3190	╄  ·		+	· ,	
E&M3060	Delivery of Fine Screens	136	100 12/09/11 A	30/11/11 A 12/09/11 A	30/11/11 A	E&M0120	E&M3210	╊╺╺╺╺╺╺┝		· +	·	
E&M3070	Delivery of Pumps	136	100 23/06/11 A	05/09/11 A 23/06/11 A	05/09/11 A	E&M0130	E&M3220	╊╺╺╺╺╺╺┝		+	5	
E&M3080	Delivery of Submersible Mixers	180	100 26/07/11 A	17/11/11 A 26/07/11 A	17/11/11 A	E&M0140	E&M3230	╊╺╺╸╸╸╸-		· + +	· ¦+	
E&M3090	Delivery of Sludge Dewatering Equipment	210	50 01/09/11 A	15/05/13 01/09/11 A	11/01/14	241d E&M0170	E&M3240					Deliveryo
E&M3100	Delivery of Valves, Pipes & Fittings	180	50 30/08/11 A	05/05/13 30/08/11 A	19/11/13	199d E&M0180	E&M3250			<u> </u>	11	Delivery of Valve
E&M3110	Delivery of Penstocks	180	100 12/08/11 A	24/12/11 A 12/08/11 A	24/12/11 A	E&M0190	E&M3260	1			11	'
E&M3130	Delivery of instruments	180	100 21/06/11 A	03/11/11 A 21/06/11 A	03/11/11 A	E&M0200	E&M3270	╊╺╺╸╸╸╸-			· ¦¦	
E&M3140	Delivery of MCC LVSB	180	0 01/02/13	31/07/13 07/04/13	03/10/13	65d E&M0210	E&M3261	╊╺╺╸╸╸╸╺╘		+		
E&M3150	Delivery of BS Equipment	180	8 03/07/12 A	20/08/13 03/07/12 A	04/12/13	107d E&M0220	E&M3291				- H	
E&M3160	Delivery of FS Equipment	180	5 30/06/12 A	06/09/13 30/06/12 A	23/12/13	109d E&M0230	E&M0340, E&M3300					
Construction	of Grid A-G		<b>.</b>	<u> </u>	-	• •	•				11	
SKW1261	Excavate for SKW STW Structure (Grid A -G)	164	100 28/03/12 A	31/08/12 A 28/03/12 A	31/08/12 A	SKW04885, SKW05938	SKW1271, SKW1371	1			11 11	
SKW1271	55 M3 Fire Sprinkle Water Tank (FL +0.9 mPD)	36	100 03/07/12 A	31/07/12 A 03/07/12 A	31/07/12 A	SKW1261	SKW1281	]		т т	н	
SKW1281	Ground Floor Slab (Grid A-G)	46	100 03/07/12 A	31/07/12 A 03/07/12 A	31/07/12 A	SKW1271	SKW1291	1		  +		L
SKW1291	Columns & Walls to 1/F & 1/F Slab (Grid A-G)	50	100 03/07/12 A	31/07/12 A 03/07/12 A	31/07/12 A	SKW1281	KD0090, SKW1301	]		. – r I I	н — — — — — — — — — — — — — — — — — — —	
SKW1301	Columns & Walls to R/F & R/F Slab (Grid A-G)	50	100 01/09/12 A	31/01/13 A 01/09/12 A	31/01/13 A	SKW1291	E&M3261, E&M3291, E&M3311, SKW1411		Columns & Walls to R/	F & R/F Slab (Grid A-G	i) II	
SKW1411	ABWF Works	105	0 31/01/13	15/05/13 07/03/13	19/06/13	35d SKW1301	E&M3261, E&M3291, E&M3311, SKW1551	<b>-</b>		•		ABWF W
Construction	of Grid G-N		<b>.</b>	<u> </u>		· · ·					 	
SKW1311	Excavate for SKW STW Structure (Grid G-N)	90	100 28/03/12 A	25/06/12 A 28/03/12 A	25/06/12 A	SKW05938, SKW059416	SKW1321, SKW1371	1				
SKW1321	Equalization Tank no.1 & 2 with base slabs (-2.1	42	100 26/06/12 A	30/09/12 A 26/06/12 A	30/09/12 A	SKW1311	SKW1331				11	
SKW1331	Columns & Walls from B/S to G/F Slab (Grid G-N)	35	100 01/09/12 A	30/09/12 A 01/09/12 A	30/09/12 A	SKW1321	SKW1341			i i		
SKW1341	Ground Floor Slab (Grid G-N)	35	100 01/09/12 A	17/12/12 A 01/09/12 A	17/12/12 A	SKW1331	SKW1351	loor Slab (Grid G-N	<b>I</b> )		11 11	
SKW1351	Columns & Walls to 1/F & 1/F Slab (Grid G-N)	28	100 01/11/12 A	15/01/13 A 01/11/12 A	15/01/13 A	SKW1341	SKW1361	Columns	& Walls to 1/F & 1/F Sla	b (Grid G-N)		
SKW1361	Columns & Walls to R/F & R/F Slab (Grid G-N)	35	25 01/11/12 A	26/02/13 01/11/12 A	17/12/12	-70d SKW1351	SKW1451		Colu	mns & Walls to R/F & R	/F Slab (Grid	G-N)
SKW1451	ABWF Works	54	0 26/02/13	21/04/13 18/12/12	09/02/13	-70d SKW1361	E&M3170, E&M3190, E&M3210, E&M3291, E&M3300, SKW1391, SKW1551			<u> </u>	ABW	F Works
Construction					-						ii ii	
SKW1371	Excavate for SKW STW Structure (Grid N-T)	97	100 03/07/12 A	25/01/13 A 03/07/12 A	25/01/13 A	SKW05938, SKW059416, SKW1261,	SKW1381	E×	cavate for SKW STW Str	- I		
SKW1381	Ground Floor Slabs include MBR Tank (Grid N-T)	58	100 02/10/12 A	<u> </u>	31/01/13 A	SKW1371	SKW1391		Ground Floor Slabs inc	clude MBR Tank (Grid I	<b>(</b>	
SKW1391	Columns & Walls to 1/F & 1/F Slab (Grid N-T)	35	0 21/04/13	26/05/13 10/02/13	16/03/13	-70d SKW1381, SKW1451	SKW1401				. u <b></b>	C
SKW1401	Columns & Walls to R/F & R/F Slab (Grid N-T)	35	0 26/05/13	30/06/13 17/03/13	20/04/13	-70d SKW1391	E&M3240, SKW0491, SKW1421			т т	н	
SKW1421	ABWF Works	60	0 30/06/13	29/08/13 21/04/13	19/06/13	-70d SKW1401	E&M3240, SKW1551			I I +	н н – – – –	
SKW1551	Drainage (SSMH1-SSMH7)	35	0 29/08/13	03/10/13 20/06/13	24/07/13	-70d SKW1411, SKW1421, SKW1451	SKW1561				П	
SKW1561	Sewer (SMFH1-SMFH2, SMFH3-SMFH7)	220	0 03/10/13	11/05/14 25/07/13	01/03/14	-70d SKW1551	SKW1571	1		т т	н	
SKW1571	Roadwork & Drainage Channel (SKW)	220	0 11/05/14	17/12/14 02/03/14	07/10/14	-70d SKW1561	KD0090	1				
SKW STW - E8	&M Works	· ·		· ·	-	· · · · · · · · · · · · · · · · · · ·				1 1	П	
E&M3170	Install Membrane Modules in MBR Tank No. 1 to 2	100	0 21/04/13	30/07/13 07/01/14	16/04/14	261d E&M3010, SKW1451	E&M3311	]			″, <b>┤╼└───</b>	1
E&M3190	Install Grit Removal Equipment	60	0 20/06/13	19/08/13 21/09/13	19/11/13	93d E&M3030, E&M3210, SKW1451	E&M3250, E&M3320	]		1 I	!	
E&M3210	Install Fine Screens	60	0 21/04/13	20/06/13 24/05/13	22/07/13	33d E&M3060, SKW1451	E&M3190, E&M3220, E&M3250, E&M3260, E&M3320	]		I I	╵⊥ <sub>╼</sub>	1
		_ <u> </u>		ļ				4				
E&M3220	Install Pumps	75	0 20/06/13	03/09/13 23/07/13	05/10/13	33d E&M3070, E&M3210	E&M3230, E&M3250, E&M3260, E&M3320	4		I I		
E&M3230	Install Submersible Mixers	45	0 03/09/13	18/10/13 06/10/13	19/11/13	33d E&M3080, E&M3220	E&M3250, E&M3260, E&M3311, E&M3320			<u>+</u>		
E&M3240	Install Sludge Dewatering Equipment	74	0 29/08/13	11/11/13 12/01/14	26/03/14	136d E&M3090, SKW1401, SKW1421	E&M3320	4		i   		
E&M3250	Install Valves, Pipes & Fittings	75	0 18/10/13	01/01/14 20/11/13	02/02/14	33d E&M3100, E&M3190, E&M3210, E&M3220, E&M3230	E&M3270, E&M3291, E&M3300, E&M3310			1 1		
E&M3260	Install Penstocks	135	0 18/10/13	02/03/14 03/12/13	16/04/14	46d E&M3110, E&M3210, E&M3220,	E&M3311	-		· · · · · · · · · · · · · · · · · · ·		
E&M3261	Install SAT of MCC & LVSB	135	0 31/07/13	21/01/14 04/10/13	26/03/14	65d E&M3140, SKW1301, SKW1411	E&M3311, E&M3320	-		1 1		
E&M3270	Install instruments	60	0 01/01/14	02/03/14 16/02/14	16/04/14	46d E&M3130, E&M3250	E&M3311	-		i   		
, , , , , , , , , , , , , , , , , , ,			°	<u> </u>			E&M3331, E&M3359	+		4 4		
E&M3291	Install BS Equipment	180	0 02/11/13	01/05/14 05/12/13	02/06/14	33d E&M3150, E&M3250, SKW1301, SKW1411, SKW1451	Lawissi, Lawissia			i   		
										<u> </u>		
	/05/10 Early bar								Date	Revision		Checked Approved
	/10/16 Progress bar /01/13 Critical bar					ngineering Corp. Ltd.			31/01/13	Revision 0	F	RH VC
	(02/12 Summary bar					No. DC/2009/13						
Page number 10						Freatment Works at YSW & S	SKW					<u> </u>
_	Summary point			3-month Rollin	ig Progra	mme (Feb 2013 - Apr 2013)						
c Primavera Syst	ems, Inc.											

Activity	Description	Original		Early	Early	Late	Late	Total	Predecessors	Successors			2013		
ID	Beschption	Juration	Complete	Start	Finish	Start	Finish	Float	11000000010	Cuttococore	JAN	FEB	MAR	APR	MAY
E&M3300	Install FS Equipment	161	0	02/11/13	12/04/14	24/12/13	02/06/14	52d	E&M3160, E&M3250, SKW1451	E&M3331, E&M3359			I	1	
E&M3310	Hydraulic Tests of Pipeworks	90	0	01/01/14	01/04/14	06/03/14	03/06/14	64d	E&M3250	E&M3359			1	:	
E&M3311	Cabling Works	47	0	02/03/14	18/04/14	17/04/14	02/06/14	46d	E&M3170, E&M3230, E&M3260, E&M3261, E&M3270, SKW1301,	E&M3331, E&M3359			i	i	
E&M3320	Cabling Works for Dewatering Equipment	47	0	21/01/14	09/03/14	27/03/14	12/05/14	65d	E&M3190, E&M3210, E&M3220, E&M3230, E&M3240, E&M3261	E&M3321	_		1	1 1 1	
E&M3321	Insulation Tests of Cables and Cable Termination	21	0	09/03/14	30/03/14	13/05/14	02/06/14	65d	E&M3320	E&M3331			<del>1</del>	L	
E&M3331	Energization	1	0	01/05/14	02/05/14	03/06/14	03/06/14	33d	E&M3291, E&M3300, E&M3311,	E&M3359			1	!	
E&M3359	Functional and Performance Tests of Equipment	35	0	02/05/14	06/06/14	04/06/14	08/07/14	33d	E&M3291, E&M3300, E&M3310, E&M3311, E&M3331, SKW1241,	E&M3360					
E&M3360	T&C Period	91	0	06/06/14	05/09/14	09/07/14	07/10/14	33d	E&M0340, E&M3359, SKW0722, SKW15112	E&M3370, KD0090			I I		
E&M3370	Trial Operation Period	456	0	05/09/14	05/12/15	31/05/15	28/10/16	269d	E&M3360				1	-	
Rising Main		<b>I</b>		•	•	•	•	•		-			I	1	
SKW1481	Subm, Approval & Delivery of DI pipes	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A		KD0020	SKW1501			1	-	
SKW1501	LCS (ChB0+00 - ChB1+20)	300	100	14/09/10 A	10/07/11 A	14/09/10 A	10/07/11 A		PRE0100, SKW1481	SKW1521			I	·	
SKW1521	Twin DN150 DI Rising Main (ChB0+00 - ChA4+55)	250	85	11/07/11 A	09/03/13	11/07/11 A	07/10/14	578d	SKW1501	KD0090			Twin DN150 DI Ris	sing Main (ChB0	)+00 - ChA4+55)
Section W8 - L	andscape Softworks in All Portions	•	•	•	•	•				•				!	
SKW1591	Tree Survey	21	100	17/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A		KD0020	SKW1621				.	
SKW1611	Preservation & Protection of Trees	1053	99	17/05/10 A	10/02/13	17/05/10 A	03/04/13	53d	KD0020	KD0100, SKW1631		Preservation	& Protection of Trees		
SKW1621	Transplantation at SKW	90	100	07/06/10 A	04/09/10 A	07/06/10 A	04/09/10 A	İ	SKW1591	KD0100					
Section W9-E	stablishment W orks in All Portions	•	•	•	•	•	•	•		•					-
SKW1631	Section W9 - Establishment Works	365	<u>م</u>	10/02/13	10/02/14	04/04/13	03/04/14	53d	SKW1611	KD0110					

Start date	05/05/10			Early bar
Finish date	28/10/16			Progress bar
Data date	31/01/13			Critical bar
Run date	05/02/13			Summary bar Progress point
Page number	11A		₹.	Critical point
			$\mathbf{\nabla}$	Summary point
c Primavera	Systems, Inc.		Start milestone point	

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

3

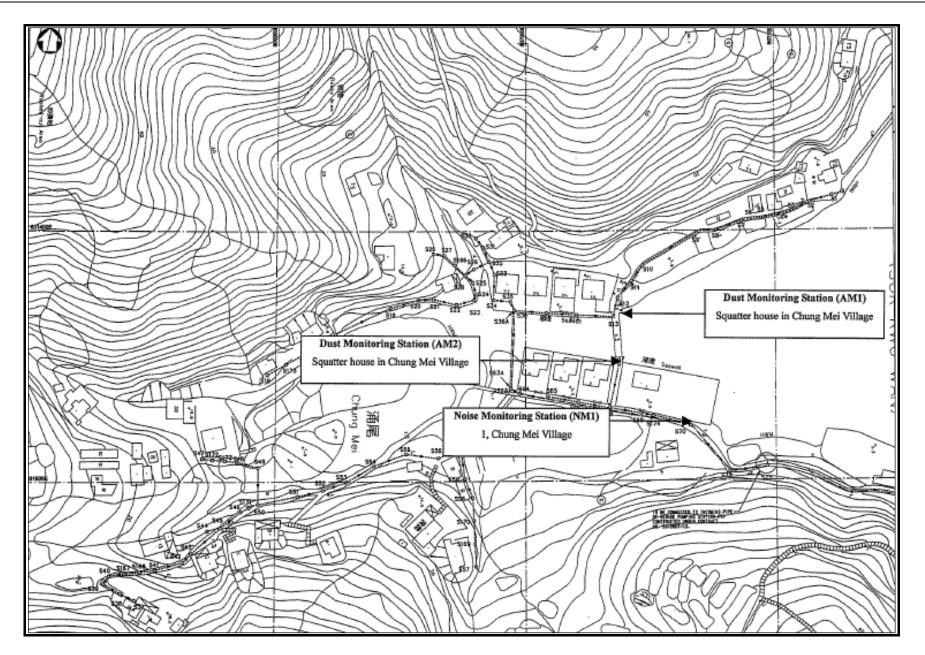
Date	Revision	Checked	Approved
31/01/13	Revision 0	RH	VC



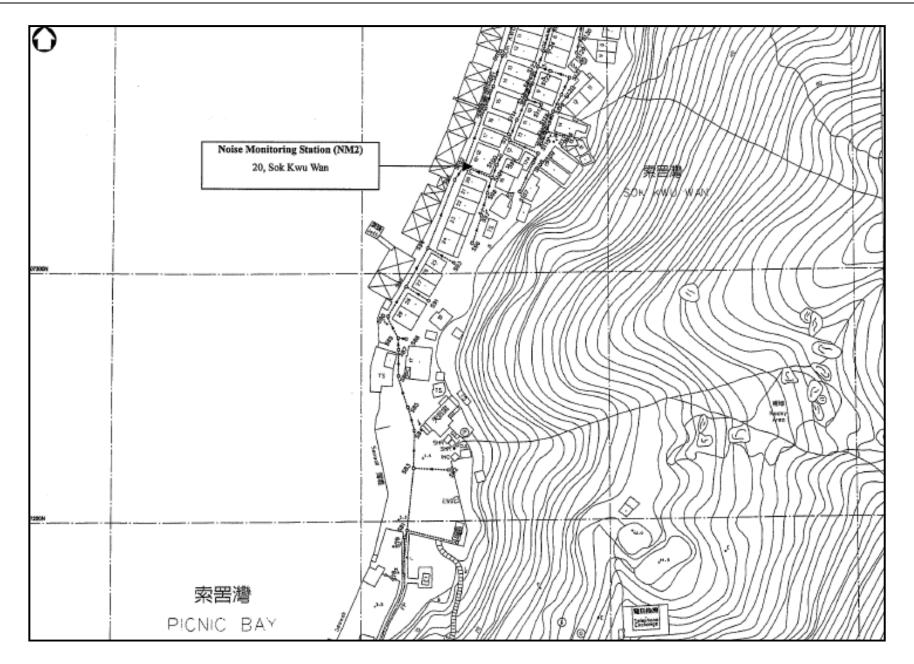
# Appendix D

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



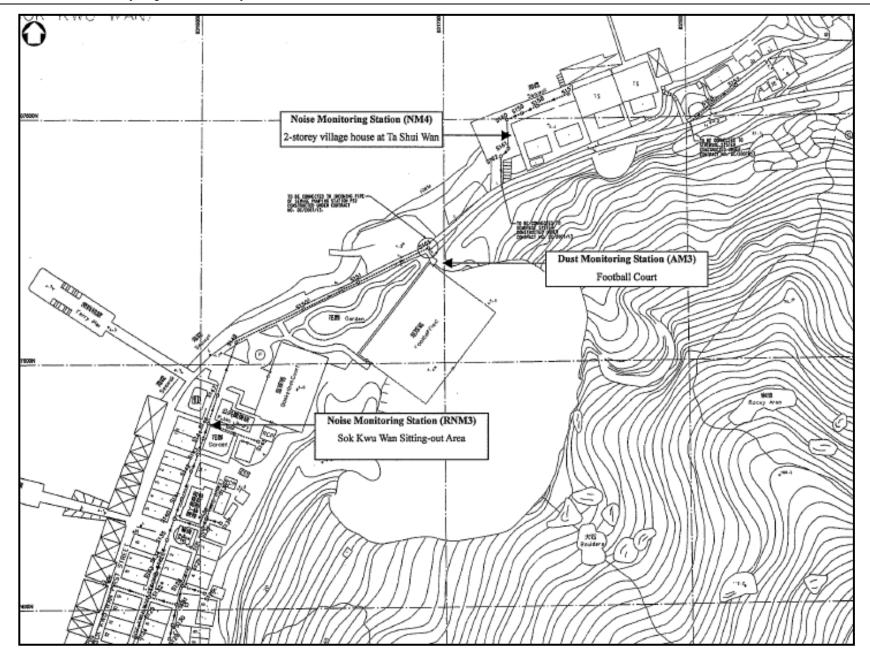




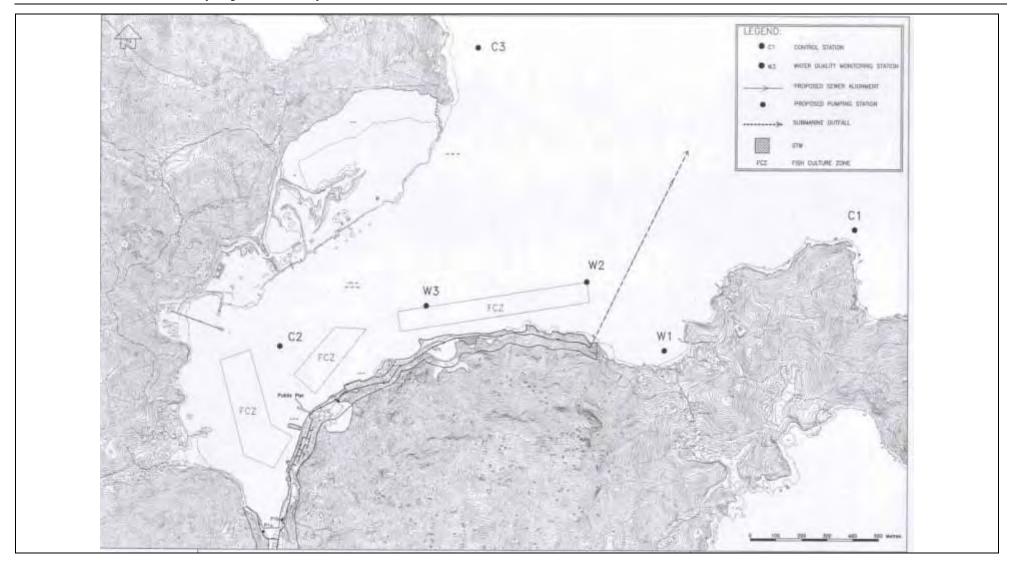


Contract No. DC/2009/13 – Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan Sok Kwu Wan – EM&A Monthly Report – February 2013





# **AUES**



# 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 - Ma Operator		Rootsmeter Orifice I.I		438320 1483	Ta (K) - Pa (mm) -	294 754.38
PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	======== DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1 2 3 4 5	NA NA NA NA NA	NA NA NA NA NA	1.00 1.00 1.00 1.00 1.00	1.4140 0.9960 0.8910 0.8510 0.7020	3.2 6.4 7.9 8.7 12.8	2.00 4.00 5.00 5.50 8.00

#### DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0018 0.9976 0.9955 0.9945 0.9890	0.7085 1.0016 1.1173 1.1686 1.4088	1.4185 2.0061 2.2429 2.3524 2.8371	0.9957 0.9915 0.9894 0.9884 0.9830	0.7042 0.9955 1.1105 1.1615 1.4003	0.8829 1.2486 1.3959 1.4641 1.7657
Qstd slc intercep coeffici y axis =	ut (b) = ent (r) =	2.02742 -0.02027 0.99996 Pa/760)(298/Ta)]	Qa slop intercep coeffici v axis =	ot (b) =	1.26953 -0.01262 0.99996 Ta/Pa)l

#### 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 =  $1/m\{ [SQRT H2O(Ta/Pa)] - b \}$ 

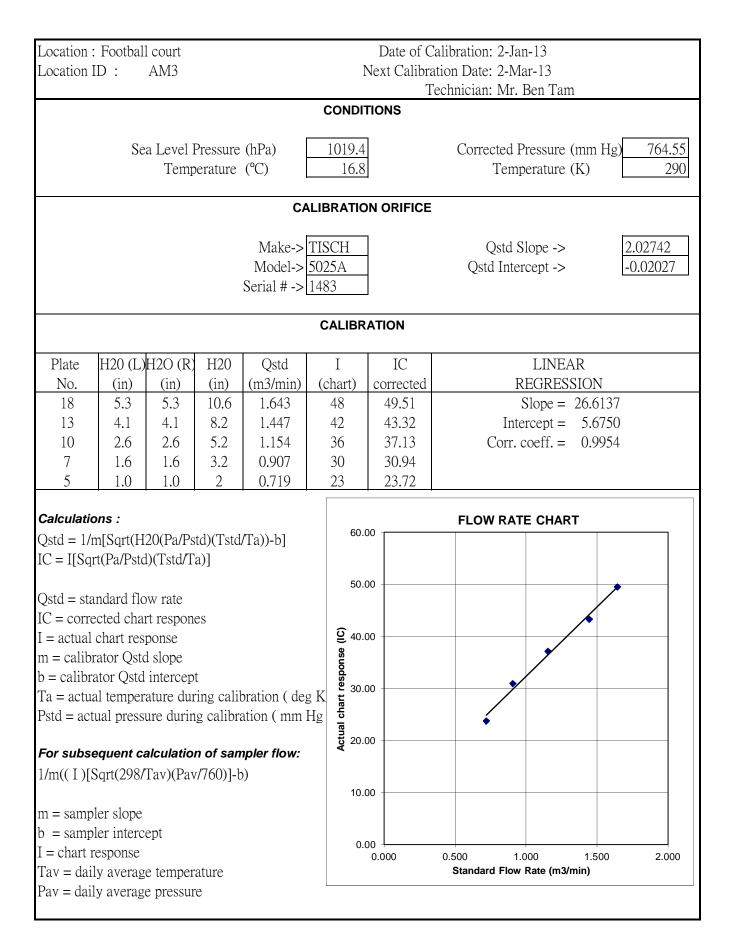
#### TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

	1													
	-		n Chung	Mei Villag	e		Date of C							
Location 1	D :	AM1				ľ	Vext Calibra							
								echni	cian: Mi	: Ben	l'am			
					C		TIONS							
	Sa	a Level I	Draccura	$(hD_0)$		1019.4	]	C	Corrected	Draces	ira (mn	чu	764.	55
	30		erature	. ,		1019.4 16.8		C			ire (IIII) ire (K)	1 ng)_		90
		TCIIIp	Clature	$(\mathbf{C})$		10.0	1		101	nperau			L)	10
				CA	LIB	RATIO								
				Make->	TIS	СН	]		Qstd	Slope	->	2	.02742	
				Model->	502	.5A			Qstd Int	tercept	->	-	0.02027	
				Serial # ->	148	3								
					С	ALIBR	ATION							
Plate	H20 (L)	H2O (R)	H20	Qstd		Ι	IC			LIN	VEAR			
No.	(in)	(in)	(in)	(m3/min)	(c	hart)	corrected			REGR	ESSIO	N		
18	5.1	5.1	10.2	1.612		56	57.76		Slope = 28.6480					
13	4.1	4.1	8.2	1.447	50		51.57		Intercept = $11.0234$					
10	3	3	6	1.239		45	46.41		Corr	coeff	. = 0.	9968		
7	1.6	1.6	3.2	0.907		37	38.16							
5	1.0	1.0	2	0.719		30	30.94							
Calculatio	ons:							F						
Qstd = 1/r		20(Pa/Ps	td)(Tstd	/Ta))-b]		70.0	0		201110					
IC = I[Squ				1										
	,					60.0	0					•		
Qstd = sta	ndard flo	ow rate												
IC = corrections	ected char	rt respon	es			50.0								
I = actual		-				(IC)					*			
m = calibr	-	-				<b>ຮູ</b> 40.0	0							
b = calibration	-	-				resp			/					
	-		_	bration ( deg			0		•					
Pstd = act	ual press	ure durin	ig calibra	ation ( mm ]	Hg	alc	-							
For subs	auont o	alaulatia	n of con	npler flow:		Actual chart response (IC)	0							
1/m(( I )[S	-			-		20.0								
1/111(( 1 )[,	5411(296/	Tav)(Fav	///00)] <b>-</b> L	))		10.0								
m = samp	ler slope					10.0	0							
h = samp b = samp		ent												
I = chart r		opt				0.0	0.000	0.500		1.000	1.5	500	2.000	,
T = chart T Tav = dai	-	e temper	ature						andard Flo				2.000	
Pav = dai														
		1.122000												

#### TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

-											
	-		1 Chung	Mei Village	e			alibration: 2-Ja			
Location I	Location ID : AM2 Next Calibration Date: 2-Mar-13 Technician: Mr. Ben Tam										
	CONDITIONS										
						UNDIT	IONS				
	Se	a Level I	Pressure	(hPa)	1	019.4		Corrected F	Pressure (mm	n Hg) 764	- 55
	50		erature			16.8			perature (K)		290
								1			
				CA	LIBF	RATIO					
				Make->	TISC	CH		Qstd S	Slope ->	2.02742	2
				Model->	5025	бA		Qstd Inte	rcept ->	-0.0202	27
				Serial # ->	1483	3					
					CA		ATION				
DI	1100 (T)		1120			-	10				
Plate		H2O (R)		Qstd		I	IC	г	LINEAR	NT	
<u>No.</u> 18	(in) 5.8	(in) 5.8	(in) 11.6	(m3/min) 1.719		nart) 59	corrected 60.85		$\frac{\text{REGRESSIO}}{\text{Slope} = 28}$		
18	4	3.0 4	8	1.719		59 50	51.57	Slope = 28.4201 Intercept = 11.3952			
10	3.1	3.1	6.2	1.259		45	46.41		coeff. = 0.9		
7	1.8	1.8	3.6	0.962		38	39.19			//00	
5	1.0	1.0	2	0.719		31	31.97				
	÷			• • • •		•	•				
Calculatio						70.0	0	FLOW RAT	E CHART		_
Qstd = 1/r				/Ta))-b]		70.0					
IC = I[Sqn	t(Pa/Pstc	d)(Tstd/T	a)]			<u> </u>				•	
Ostal sta						60.0	0				
Qstd = sta IC = corre			90								
I = actual		-	-3			<sup>50.0</sup>	0				
m = calibr		-				) əsı					
b = calibra	-	-	t			40.0	0				
	-	-		bration ( deg	g K	art re					
Pstd = act	ual press	ure durin	g calibra	ation ( mm I	Hg	Actual chart response (IC) 0.06 0.07	0				
For subse	equent ca	alculatio	n of san	npler flow:		<b>Acti</b> 20.0	0				
1/m(( I )[S	-			-		20.0					
						10.0	0				
m = samp											
b = samp		ept				0.0	o				
I = chart r	-						0.000			500 2.0	000
Tav = dail								Standard Flow	Kate (m3/min)		
Pav = daily average pressure											

#### **TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET**







# **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			Model			8520
Temperature	68.5 (20.3)	°F (°C)	-			
Relative Humidity	19	%RH	- Serial Numbe	er		23080
Barometric Pressure	29.11 (985.8)	inHg (hPa)				
🖾 As Left		X	In Tolerance			
As Found			Out of Tolerance			
	Device Response (mg/m3) 1 01 1 01	-	n Linearity Plot o			
	0.01	- o 01 0.1		o = In Tolerau $\bullet = Out of To$ 00	lerance	stem ID: DTI101-02
Zero Stability Results						
Average:	Minimum:		Maximum:		Time:	
0.000 :mg/m	3 0.00	<b>50</b> :mg/m <sup>2</sup>	0.001	:mg/m <sup>3</sup>	2:00	) :hrs.
Barometric Pressure EC Humidity EC DC Voltage EC Microbalance M	pplicable specific           ests required under           s measurements.           (le mass of standar           rstem ID         Last           003733         02-2           002873         11-1           003315         01-0           001324         01-0	ations agreed upor er this contract were Calibration of this is rd ISO 12103-1, A1	n by TSI and the cus successfully conducte astrument performed l	stomer and with ed according to ro by TSI has been a t). Our calibratio	all publishea equired specifi lone using eme n ratio is grea <u>ID Last C</u> 3 11-14- 4 01-03- 9 01-26-	l specifications. All ications. There is no ery oil and has been ter than 1.2:1 al. <u>Cal. Due</u> 11 11-14-12 12 01-03-13 12 07-26-12
Ton Da Calibra	ted		nal Function Check	Ma	arch 8, 2012 Date	2
	U					

S. I.	Tel: 5-800	0-874-2811 1-6	500 Car 51-490-7	2811 Fax: 1-651-490-	3824 http://www.ts	si.con1	
Environment Condition				Model		AM	510
Temperature Relative Humidity	68.4 (20.2) 59	°F (°C) %RH		Serial Number		1100	
Barometric Pressure	28.97 (981.0)	) inHg (hPa)	] ⊠In	Tolcrance			
As Found				ut of Tolerance			<u></u>
	100	Concent	ration	Linearity Plot			
	-			o			
	<i>\สึพ) อ</i>			o			
	Device Response (mg/m3) 10 · 1 01	_	a				
	evice R				o = in Tolerance		
	ลั 0.01.		····		<ul> <li>= Out of Toleran</li> <li>Tolerance : ±109</li> </ul>		
		).01 0.1 Aerosol (		10 10 tration (mg/m3)	0		
						System I	D: DT1101-
TSI incorporated does herel strict accordance with the performance and acceptance NIST standard for optical na nominally adjusted to respired	opplicable_specifi tests required univer- tes measurmants	ications agreed der this contrac Colibration of	d upon l ct were si Cibis insi	by TSI and the custo uccessfully conducted tranent performed by	omer and with all p according to require TSI has been done	published spec ed specification using emery oil	ifications 1s. There is 1 and has be
Barometric Pressure Humidity DC Voltage Microbalance	E003733 02 E002873 11 E003315 01 M001324 01	-25-12 02-2 -14-11 11-1 -03-12 01-0 -04-11 01-0	Leac 5-13 4-12 13-13 14-13 16-13	Massuen.csi Vaj Temperature DC Voltage Photometer Pressure	addic System 12 E002873 E003314 E003319 E003511	Cast Cal. 11-14-11 01-03-12 07-26-12 11-11-11	Cal, Que 11-14-12 01-03-13 01-26-13 11-11-12
$n \sum_{i=1}^{n} \langle 2 \rho_i \rangle$		[		l Function	Augus	t 9, 2012	
Narleno John	K1.722		Cł			Date	

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TSI P/N 2300157



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C122427 證書編號

ITEM TESTED / 送檢」	項目	(Job No. / 序引編號: IC12-0960)
Description / 儀器名稱	:	Integrating Sound Level Meter (EQ010)
Manufacturer / 製造商	:	Bruel & Kjaer
Model No. / 型號	:	2238
Serial No. / 編號	:	2285721
Supplied By / 委託者	:	Action-United Environmental Services and Consulting
		Unit A, 20/F., Gold King Industrial Building,
		35-41 Tai Lin Pai Road, Kwai Chung, N.T.

#### TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Line Voltage / 電壓 : --- Relative Humidity / 相對濕度 : (55±20)%

#### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 20 April 2012

#### TEST RESULTS / 測試結果

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 測試

L K Yeung

Certified By Date of Issue 23 April 2012 1 核證 簽發日期 K/C Lee

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部視印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory e/o 4/F, Tsing Shan Wan Exchange Building, I Hing On Lane, Tuen Mun. New Territories, Hong Kong 歸創工程有限公司 – 校正及檢測實驗所 e/o 香港新界屯門興安里一號青川灣機樓四樓 Tel/電話: 2927 2606 Fax/傳賞: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C122427 證書編號

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 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: 2713428 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	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

- 5. Test procedure : MA101N.
- 6. Results :
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level

	UUT Setting				d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L <sub>AFP</sub>	Α	F	94.00	1	94.0	± 0.7

#### 6.1.2 Linearity

	UU	Γ Setting	Applie	Applied Value		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	LAFP	A	F	94.00	1	94.0 (Ref.)
			1.124	104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. :  $\pm$  0.4 dB per 10 dB step and  $\pm$  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	LAFP	Α	F	94.00	1	94.0	Ref.
	L <sub>ASP</sub>		S			94.0	$\pm 0.1$
	LAIP		I			94.1	± 0.1

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C122427 證書編號

#### 6.2.2 Tone Burst Signal (2 kHz)

	UUT	Setting		App	lied Value	UUT	IEC 60651	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration	Reading (dB)	Type 1 Spec. (dB)	
30 - 110	LAFP	A	F	106.0	Continuous	106.0	Ref.	
	LAFMax				200 ms	105.0	$-1.0 \pm 1.0$	
	L <sub>ASP</sub>		S		Continuous	106.0	Ref.	
	LASMax			A	500 ms	101.9	$-4.1 \pm 1.0$	

#### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

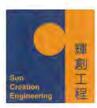
	UUT	Setting		Appli	ed Value	UUT	IEC 60651		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)		
50 - 130	LAFP	Α	F	94.00	31.5 Hz	54.6	$-39.4 \pm 1.5$		
			63 Hz	67.8	$-26.2 \pm 1.5$				
							125 Hz	77.8	$-16.1 \pm 1.0$
						250 Hz	85.3	$-8.6 \pm 1.0$	
					500 Hz	90.7	$-3.2 \pm 1.0$		
					1 kHz	94.0	Ref.		
					2 kHz	95.2	$+1.2 \pm 1.0$		
					4 kHz	95.0	$+1.0 \pm 1.0$		
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)		
		11.0-000001	1		12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)		

6.3.2 C-Weighting

UUT Setting			Appli	ed Value	UUT	IEC 60651		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)	
50 - 130	L <sub>CFP</sub>	C	F	94.00	31.5 Hz	91.1	$-3.0 \pm 1.5$	
				10.11		63 Hz	93.3	$-0.8 \pm 1.5$
				125 Hz	93.8	$-0.2 \pm 1.0$		
					250 Hz	94.0	$0.0 \pm 1.0$	
					500 Hz	94.0	$0.0 \pm 1.0$	
					1 kHz	94.0	Ref.	
					2 kHz	93.8	$-0.2 \pm 1.0$	
					4 kHz	93.2	$-0.8 \pm 1.0$	
					8 kHz	90.9	-3.0 (+1.5 ; -3.0)	
		-			12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)	

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C122427 證書編號

#### 6.4 Time Averaging

	UUT Setting			Applied Value					UUT	IEC 60804
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAcq	А	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
		1 C Y 1 B		1.1	11 ( ) (	1/102		90	89.6	± 0.5
		1.00	60 sec.			1/103		80	79.8	± 1.0
			5 min.		1	1/104		70	69.8	± 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 250 Hz - 500 Hz 1 kHz 2 kHz 4 kHz 8 kHz 12.5 kHz 104 dB : 1 kHz 114 dB : 1 kHz	: $\pm 0.30 \text{ dB}$ : $\pm 0.20 \text{ dB}$ : $\pm 0.40 \text{ dB}$ : $\pm 0.50 \text{ dB}$ : $\pm 0.70 \text{ dB}$ : $\pm 1.20 \text{ dB}$ : $\pm 0.10 \text{ dB} (\text{Ref. 94 dB})$
	114 dB : 1 kHz Burst equivalent level	$\pm 0.10 \text{ dB} (\text{Ref. 94 dB})$ $\pm 0.2 \text{ dB} (\text{Ref. 110 dB})$ continuous sound level)

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

Note :

The values given in this Certificate 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.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prime written approval of this laboratory.

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C122426 證書編號

ITEM TESTED / 送檢	項目	(Job No. / 序引編號:IC12-0960)
Description / 儀器名稱	:	Acoustical Calibrator (EQ082)
Manufacturer / 製造商	1	Bruel & Kjaer
Model No. / 型號	1	4231
Serial No. / 編號	:	2713428
Supplied By / 委託者	:	Action-United Environmental Services and Consulting
		Unit A, 20/F., Gold King Industrial Building,
		35-41 Tai Lin Pai Road, Kwai Chung, N.T.

#### TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Line Voltage / 電壓 : --- Relative Humidity / 相對濕度 : (55 ± 20)%

#### TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 20 April 2012

#### TEST RESULTS / 測試結果

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 測試

L K Yeung

K/C Lee

Certified By 核證

Date of Issue 簽發日期 5

23 April 2012

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Sun Creation Engineering Limited – Calibration & Testing Laboratory c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 – 校正及檢測實驗所 c/o 香港新界屯門與安里一號青山灣機樓四欄 Tel:電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C122426 證書編號

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 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 CL130 CL281 TST150A <u>Description</u> Universal Counter Multifunction Acoustic Calibrator Measuring Amplifier <u>Certificate No.</u> C113350 DC110233 C120886

- 4. Test procedure : MA100N.
- 5. Results :
- 5.1 Sound Level Accuracy
- 5.1.1 Before Adjustment

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.1	± 0.2	± 0.2
114 dB, 1 kHz	114.1	I marked a	

#### 5.1.2 After Adjustment

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

#### 5.2.1 Before Adjustment

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

#### 5.2.2 After Adjustment

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

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C122426 證書編號

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

#### Note :

The values given in this Certificate 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.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部裡印本證書需先獲本實驗所書面批准。



# ALS Technichem (HK) Pty Ltd

### **REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION**

CONTACT: MR BEN TAM CLIENT: ACTION UNITED ENVIRO SERVICES ADDRESS: RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG. PROJECT: --

HK1229602
HONG KONG
07/11/2012
14/11/2012

#### COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory. Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test:	Dissolved Oxygen, pH, Salinity, Temperature and Turbidity
Description:	YSI Sonde
Brand Name:	YSI
Model No.:	YSI 6820 / 650MDS
Serial No.:	02J0912 / 02K0788 AA
Equipment No.:	
Date of Calibration:	13 November, 2012

#### NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

#### **ISSUING LABORATORY: HONG KONG**

Address

ALS Technichem (HK) Pty Ltd

11/F Chung Shun Knitting Centre 1-3 Wing Yip Street Kwai Chung HONG KONG 
 Phone:
 852-2610 1044

 Fax:
 852-2610 2021

 Email:
 hongkong@alsglobal.com

Mr Chan Kwok Fai, Oodfrey Laboratory Manager -Hong Kong

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Page 1 of 3

ADDRESS 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong PHONE +852 2610 1044 FAX +852 2610 2021 ALS TECHNICHEM (HK) PTY LTD Part of the ALS Laboratory Group A Campbell Brothers Limited Company

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#### **REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION**

Work Order:	HK1229602
Date of Issue:	14/11/2012
Client:	ACTION UNITED ENVIRO SERVICES



Description:	YSI Sonde		
Brand Name:	YSI		
Model No.:	YSI 6820 / 650MDS		
Serial No.:	02J0912 / 02K0788 AA		
Equipment No.:			
Date of Calibration:	13 November, 2012	Date of next Calibration:	13 F

February, 2013

#### Parameters:

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.02	3.04	0.02
6.26	6.20	-0.06
7.78	7.90	0.12
	Tolerance Limit (±mg/L)	0.20

pH Value

#### Method Ref: APHA 21st Ed. 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.10	0.10
7.0	7.09	0.09
10.0	10.07	0.07
	Tolerance Limit (±unit)	0.2

Salinity

#### Method Ref: APHA (21st edition), 2520B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.06	
10	10.49	4.9
20	20.22	1.1
30	30.68	2.3
	Tolerance Limit (±%)	10.0

Mr Chan Kwold Fai, Godfrey Laboratory Manager - Hong Hong Kong

### **REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION**

Work Order: Date of Issue: Client: HK1229602 14/11/2012 ACTION UNITED ENVIRO SERVICES



Description:YSI SondeBrand Name:YSIModel No.:YSI 6820 / 650MDSSerial No.:02J0912 / 02K0788 AAEquipment No.:--Date of Calibration:13 November, 2012

Date of next Calibration:

13 February, 2013

#### Parameters:

Temperature

#### Method Ref: Section 6 of International Accreditation New Zealand Technical

#### Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C )	Displayed Reading (°C )	Tolerance (°C )
11.50	11.48	0.0
21.35	21.34	0.0
36.50	36.32	-0.2
	Tolerance Limit (°C)	2.0

#### Turbidity

#### Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.1	
4	4.1	2.5
40	40.3	0.7
80	80.1	0.1
400	380.2	-5.0
800	760.4	-5.0
	Tolerance Limit (±%)	10.0

D Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong



# ALS Technichem (HK) Pty Ltd

### **REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION**

CONTACT: MR BEN TAM CLIENT: ACTION UNITED ENVIRO SERVICES ADDRESS: RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG PROJECT: -- 
 WORK ORDER:
 HK1303145

 LABORATORY:
 HONG KONG

 DATE RECEIVED:
 05/02/2013

 DATE OF ISSUE:
 15/02/2013

#### COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory. Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:	Dissolved Oxygen, pH, Salinity and Temperature
Description:	YSI PROFESSIONAL PLUS
Brand Name:	YSI
Model No.:	YSI PROFESSIONAL PLUS
Serial No.:	10G101946
Equipment No.:	
Date of Calibration:	14 February, 2013

#### NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

#### **ISSUING LABORATORY: HONG KONG**

#### Address

ALS Technichem (HK) Pty Ltd

11/F Chung Shun Knitting Centre 1-3 Wing Yip Street Kwai Chung HONG KONG Phone: Fax: Email:

852-2610 1044 852-2610 2021 <u>hongkong@alsglobal.com</u>

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

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#### **REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION**

HK1303145
15/02/2013
ACTION UNITED ENVIRO SERVICES



Description:	YSI PROFESSIONAL PLUS		
Brand Name:	YSI		
Model No.:	YSI PROFESSIONAL PLUS		
Serial No.:	10G101946		
Equipment No.:			
Date of Calibration:	14 February, 2013	Date of next Calibration:	14 May, 2013

#### Parameters:

**Dissolved Oxygen** 

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
1.36	1.33	-0.03
4.52	4.64	0.12
8.14	8.12	-0.02
	Tolerance Limit (±mg/L)	0.20

pH Value

#### Method Ref: APHA 21st Ed. 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.10	0.10
7.0	7.11	0.11
10.0	9.99	-0.01
	Tolerance Limit (±pH unit)	0.20

Salinity

#### Method Ref: APHA (21st edition), 2520B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0	
10	9.44	-5.6
20	19.62	-1.9
30	28.86	-3.8
	Tolerance Limit (±%)	10.0

Temperature

#### Method Ref: Section 6 of International Accreditation New Zealand Technical

	arch 2008: Working Thermometer	
Expected Reading (°C)	Displayed Reading (°C )	Tolerance (°C )
		0.1
13.0	12.9	-0.1
22.0	21.9	-0.1
40.0	38.7	-1.3
	Tolerance Limit (±°C)	2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Kwok Fa), Godfrey Laboratory Manager - Hong Kong

# ALS Technichem (HK) Pty Ltd

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### ALS Technichem (HK) Pty Ltd

### REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM CLIENT: ACTION UNITED ENVIRO SERVICES ADDRESS: RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG. N.T., HONG KONG. PROJECT:

WORK ORDER:	HK1300617
LABORATORY:	HONG KONG
DATE RECEIVED:	08/01/2013
DATE OF ISSUE:	17/01/2013

#### **COMMENTS**

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory. Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:	Turbidity
Description:	Turbidimeter
Brand Name:	HACH
Model No.:	2100Q
Serial No.:	11030C008499
Equipment No.:	
Date of Calibration:	14 January, 2013

#### NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

#### **ISSUING LABORATORY: HONG KONG**

#### Address

ALS Technichem (HK) Pty Ltd

11/F Chung Shun Knitting Centre 1-3 Wing Yip Street Kwai Chung HONG KONG

Phone: Fax: Email:

852-2610 1044 852-2610 2021 hongkong@alsglobal.com

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

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Page 1 of 2

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### **REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION**

Work Order: Date of Issue: Client: HK1300617 17/01/2013 ACTION UNITED ENVIRO SERVICES



Description:	Turbidimeter		
Brand Name:	HACH		
Model No.:	2100Q		
Serial No.:	11030C008499		
Equipment No.:			
Date of Calibration:	14 January, 2013	Date of next Calibration:	14 April, 2013

#### **Parameters:**

Turbidity

#### Method Ref: ALPHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0	
4	3.9	-2.50
40	42.1	5.25
80	78	-2.50
400	405	1.25
800	815	1.88
	Tolerance Limit (±%)	10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd



Hong Kong Accreditation Service 香港認可處

### **Certificate of Accreditation**

認可證書

This is to certify that 特此證明

### ALS TECHNICHEM (HK) PTY LIMITED

# 11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong 香港新界葵涌永業街1-3號忠信針織中心11樓

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a 為香港認可處執行機關根據認可諮詢委員會建議而接受的

**HOKLAS Accredited Laboratory** 

「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence 此實驗所符合ISO / IEC 17025 : 2005 –《測試及校正實驗所能力的通用規定》所訂的要求, of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as 獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定 listed in the HOKLAS Directory of Accredited Laboratories within the test category of 測試或校正工作

#### Environmental Testing 環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005. 本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。 This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory 這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作 quality management system (see joint IAF-ILAC-ISO Communiqué). (見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive 香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator 執行幹事 陳成城 Issue Date : 5 May 2009 簽發日期:二零零九年五月五日

Registration Number : HCKLAS 066 註冊號碼 :



Date of First Registration : 15 September 1995 首次註冊日期:一九九五年九月十五日

# ∟ 000552

# Appendix F

# **Event/Action Plan**



### Air Quality

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

#### **Construction Noise**

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

### Water Quality

EVENT			)N	
	ET	IC(E)	ER	CONTRACTOR
ACTION LEVEL		(=)		
1. Exceedance for one sampling day	<ol> <li>Repeat in-situ measurement on the next day of exceedance to confirm findings;</li> <li>Identify source(s) of impact;</li> <li>Inform ICE, Contractor, ER, EPD and AFCD; and</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods.</li> </ol>	1. Check monitoring data submitted by ET and Contractor's working methods	<ol> <li>Confirm receipt of notification of non-compliance in writing; and</li> <li>Notify Contractor</li> </ol>	<ol> <li>Information the ER and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice; and</li> <li>Amend working methods if appropriate</li> </ol>
2. Exceedance for two or more consecutive sampling days	<ol> <li>Same as the above;</li> <li>Inform ICE, Contractor, ER, EPD and AFCD;</li> <li>Discuss mitigation measures with IC(E), RE and Contractor;</li> <li>Ensure well implementation of mitigation measures; and</li> <li>Increase the monitoring frequency to daily until no exceedance of Action Level</li> </ol>	<ol> <li>Same as the above;</li> <li>Discuss with ET and Contractor on possible remedial actions;</li> <li>Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; and</li> <li>Supervise the implementation of mitigation measures.</li> </ol>	<ol> <li>Discuss with IC(E) on the proposed mitigation measures;</li> <li>Ensure well implementation of mitigation measures; and</li> <li>Assess the effectiveness of the implemented mitigation measures</li> </ol>	<ol> <li>Same as the above;</li> <li>Check all plant and equipment and consider changes of working methods;</li> <li>Submit proposal of additional mitigation measures to ER within 3 working days of notification and discuss with ET, IC(E), and ER; and</li> <li>Implement the agreed mitigation measures</li> </ol>
		LIMIT LEVEL		
1. Exceedance for one sampling day	<ol> <li>Repeat in-situ measurement on the next day of exceedance to confirm findings;</li> <li>Identify source(s) of impact;</li> <li>Inform ICE, Contractor, ER, EPD and AFCD;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods; and</li> <li>Discuss mitigation measures with IC(E), RE and Contractor</li> </ol>	<ol> <li>Check monitoring data submitted by ET and Contractor's working method</li> <li>Discuss with ER and Contractor on possible remedial actions; and</li> <li>Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly</li> </ol>	<ol> <li>Confirm receipt of notification failure in writing; and</li> <li>Discuss with IC(E), ET and</li> <li>Contractor on the proposed mitigation measures; and</li> <li>Request Contractor to review the working methods</li> </ol>	<ol> <li>Inform the ER and confirm notification of the failure in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment and consider changes of working methods; and</li> <li>Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET and ER</li> </ol>
2. Exceedance for two or more consecutive sampling days	<ol> <li>Same as the above;</li> <li>Ensure mitigation measures are implemented; and</li> <li>Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days</li> </ol>	<ol> <li>Same as the above; and</li> <li>Supervise the Implementation of mitigation measures</li> </ol>	mitigation measures	<ol> <li>Same as the above;</li> <li>Take immediate action to avoid further exceedance;</li> <li>Implement the agreed mitigation measures;</li> <li>Resubmit proposals of mitigation measures if problem still not under control; and</li> <li>As directed by the Engineer, to slow down or to stop all or part of the construction activities until to no exceedance of Limit Level.</li> </ol>



# Appendix G

# **Monitoring Data Sheet**



### 24-hour TSP Monitoring Data Sheet

### Air Qualtiy Monitoring - 24-hour TSP Monitoring data sheet

		EI	LAPSED TI	ME	CHA	ART READ	DING			STANDARD	)	INITIAL	FINAL	WEIGHT	DUST
DATE	SAMPLE							AVG	AVG	FLOW	AIR	FILTER	FILTER	DUST	24-hour TSP
	NUMBER	INITIAL	FINAL	ACTUAL	MIN	MAX	AVG	TEMP	PRESS	RATE	VOLUME	WEIGHT	WEIGHT	COLLECTED	IN AIR
				(min)				(oC)	(hPa)	(m3/min)	(std m3)	(g)	(g)	(g)	$(ug/m^3)$
24-hour TSP	Monitoring F	Results - AN	<b>/</b> 1												
28-Jan-13	25308	13054.44	13078.43	1439.40	32	34	33.0	16.2	1022.4	0.79	1137	2.7674	2.794	0.0266	23
2-Feb-13	25352	13078.43	13102.42	1439.40	32	34	33.0	21.1	1019.8	0.78	1120	2.7488	2.7656	0.0168	15
8-Feb-13	25386	13102.42	13126.41	1439.40	31	33	32.0	16.4	1019.3	0.75	1082	2.7381	2.7677	0.0296	27
14-Feb-13	25391	13126.41	13150.4	1439.40	31	33	32.0	18.3	1017.3	0.75	1076	2.7578	2.7953	0.0375	35
20-Feb-13	12570	13150.4	13174.39	1439.40	32	33	32.5	17.3	1019.9	0.77	1106	2.7556	2.8001	0.0445	40
24-hour TSP	Monitoring F	Results - AN	12												
28-Jan-13	25309	11557.54	11581.53	1439.40	33	35	34.0	16.2	1022.4	0.82	1179	2.7575	2.8343	0.0768	65
2-Feb-13	25353	11581.53	11605.52	1439.40	32	33	32.5	21.1	1019.8	0.75	1085	2.7604	2.8072	0.0468	43
8-Feb-13	25387	11605.52	11629.51	1439.40	31	33	32.0	16.4	1019.3	0.74	1072	2.7575	2.8127	0.0552	51
14-Feb-13	25392	11629.51	11653.5	1439.40	31	33	32.0	18.3	1017.3	0.74	1065	2.7642	2.8056	0.0414	39
20-Feb-13	102571	11653.5	11677.49	1439.40	32	33	32.5	17.3	1019.9	0.76	1096	2.7572	2.8173	0.0601	55
24-hour TSP	Monitoring F	Results - AN	13												
28-Jan-13	25310	7099.45	7123.44	1439.4	32	33	35	16.2	1022.4	1.13	1623	2.7629	2.8823	0.1194	74
2-Feb-13	25385	7123.44	7147.43	1439.4	32	33	35	21.1	1019.8	1.11	1605	2.7512	2.8032	0.0520	32
8-Feb-13	25388	7147.43	7171.42	1439.4	32	33	35	16.4	1019.3	1.13	1620	2.7593	2.8337	0.0744	46
14-Feb-13	25322	7171.42	7195.41	1439.4	31	33	35	18.3	1017.3	1.12	1611	2.7443	2.8294	0.0851	53
20-Feb-13	102572	7195.41	7219.4	1439.4	32	33	35	17.3	1019.9	1.12	1617	2.7473	2.8359	0.0886	55



### Marine Water Quality Monitoring Data Sheet

# Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan

#### Sok Kwu Wan

Date 26-Jan-13

Date / Time	Location	Tide*	Co-oro	linates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
	Location	Thue.	East	North	m	m	C	mg/L	%	NTU	ppt	unit	mg/l
2013/1/26 12:27	W1	ME	832954	807755	2.5	1.250	17.47	7.75	100.1	1.1	35.24	7.24	1.3
						1.250	17.44 17.45	7.72 8.00	99.6 103.4	1.3 1.3	35.29 35.35	7.22	
						1.000	17.45	8.10	103.4	1.5	35.33	7.09	2.8
2012/1/26 12:20	W2	ME	022676	807004	12.4	6.200	17.36	8.15	105.2	1.3	35.46	7.08	4.2
2013/1/26 12:39	W Z	ME	832676	807994	12.4	6.200	17.36	8.17	105.4	1.4	35.49	7.07	4.2
						11.400	17.37	8.09	104.5	1.4	35.53	7.03	2.9
						11.400	17.36 17.73	8.12 7.50	104.9 97.3	1.4	35.63 35.27	7.04 7.48	
						1.000	17.73	7.50	97.5	1.0	35.33	7.48	1.4
2012/1/07 20 17	W/O		0220061	007001	10	6.000	17.51	7.98	103.2	1.1	35.37	7.37	0.1
2013/1/26 20:47	W3	ME	832061	807881	12	6.000	17.50	8.06	104.2	1.3	35.38	7.37	2.1
						11.000	17.47	8.11	104.8	1.5	35.47	7.32	2.2
						11.000	17.47	8.07	104.3	1.7	35.49	7.32	
						1.000	17.40 17.40	8.44 8.44	109.0 109.0	1.0	35.56 35.65	7.48 7.48	2.2
						7.200	17.35	8.24	109.0	1.0	35.65	7.48	
2013/1/26 12:14	C1	ME	833681	808198	14.4	7.200	17.36	8.23	106.4	1.1	35.66	7.48	1.2
						13.400	17.35	8.14	105.2	1.5	35.79	7.48	2.1
	_					13.400	17.33	8.12	105.0	1.4	35.82	7.47	2.1
						1.000	17.98	7.08	92.3	1.4	35.28	7.64	1.1
						1.000 5.550	17.93 17.77	7.12 7.64	92.8 99.3	1.4 1.4	35.31 35.34	7.59 7.56	
2013/1/26 13:10	C2	ME	831453	807732	11.1	5.550	17.76	7.76	100.8	1.5	35.35	7.55	1.8
						10.100	17.68	7.92	102.8	1.4	35.46	7.52	4.8
						10.100	17.69	7.88	102.3	1.5	35.45	7.49	4.8
						1.000	17.34	8.47	109.2	1.1	35.51	7.48	1.4
						1.000	17.32	8.28	105.7	1.1	33.74	7.48	
2013/1/26 11:52	C3	ME	832216	808838	15.1	7.550	17.35 17.35	8.11 8.09	104.7 104.4	1.2 1.3	35.57 35.61	7.48 7.46	1.0
						14.100	17.34	7.99	104.4	1.2	35.89	7.46	
						14.100	17.35	7.92	102.4	1.2	35.88	7.46	1.3
	_					_							
2013/1/26 17:28	W1	MF	832947	807708	2.7	1.350	17.68	8.76	113.5	0.7	35.13	7.09	2.0
						1.350	17.68	8.70	112.7	0.9	35.11	7.06	
						1.000	17.62 17.61	9.02 8.80	116.7 113.8	0.7	35.13 35.14	7.02	1.7
				0.0 80 (8	10.6	6.800	17.50	8.53	110.2	0.9	35.14	7.03	
2013/1/26 17:28	W2	MF	832697	807967	13.6	6.800	17.50	8.62	111.4	1.0	35.16	7.02	1.6
						12.600	17.46	8.49	109.6	0.9	35.21	7.02	2.0
						12.600	17.47	8.49	109.6	1.2	35.19	7.04	2.0
						1.000	17.63	7.71	99.8	0.6	35.12	7.02	2.0
						1.000 6.650	17.60 17.50	8.13 8.29	105.2 107.0	0.7	35.11 35.08	7.05 6.97	
2013/1/26 17:28	W3	MF	832024	807911	13.3	6.650	17.50	8.29	107.0	0.5	35.08	7.00	1.7
						12.300	17.46	8.43	108.8	0.9	35.13	6.97	26
						12.300	17.45	8.52	109.9	1.0	35.17	7.01	2.6
						1.000	17.56	7.21	93.1	0.7	34.95	7.60	2.6
						1.000 7.750	17.56 17.40	7.29 7.67	94.1 98.8	0.6	34.97 35.04	7.58 7.52	
2013/1/26 17:28	C1	MF	833724	808198	15.5	7.750	17.40	7.69	98.8 99.0	0.7	35.04	7.52	2.4
						14.500	17.36	7.59	97.8	0.7	35.10	7.45	
						14.500	17.35	7.53	97.0	0.9	35.21	7.48	2.1
						1.000	17.84	8.18	105.9	0.9	34.60	7.12	3.1
						1.000	17.79	8.45	109.5	0.9	34.74	7.01	2.1
2013/1/26 17:28	C2	MF	831472	807760	12.5	6.250	17.62	8.66	111.9	1.1	34.93	6.69	2.4
						6.250 11.500	17.60 17.51	8.83 8.73	114.2 112.8	1.0	34.98 35.13	6.67 6.51	
						11.500	17.31	8.73	112.8	1.2	35.15	6.52	3.4
						1.000	17.57	7.95	102.7	0.6	35.04	7.51	2.0
						1.000	17.59	7.95	102.8	0.6	35.04	7.51	3.0
2013/1/26 17:28	C3	MF	832248	808890	16.2	8.100	17.42	7.89	101.7	0.8	35.10	7.51	3.4
2013/1/20 17:20		.,11	052240	000070	10.2	8.100	17.41	7.84	101.0	0.8	35.11	7.52	5.7
						15.200	17.35	7.68	98.9	0.9	35.21	7.51	7.3
ME- Mid Flood Tide	1					15.200	17.34	7.66	98.7	0.7	35.25	7.51	L

MF- Mid Flood Tide

ME- Mid Ebb tide



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



#### Sok Kwu Wan

Date 28-Jan-13

Date / Time	Leasting	Tide*	Co-or	dinates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	1100*	East	North	m	m	ĉ	mg/L	%	NTU	ppt	unit	mg/l
2013/1/28 13:08	W1	ME	832954	807744	2.4	1.200	17.43	7.90	101.7	1.4	34.79	7.55	3.0
2013/1/20 13:00		10112	052751		2	1.200	17.43	7.85	101.0	1.6	34.80	7.55	5.0
						1.000	17.42 17.43	7.53 7.68	96.9 98.8	1.5 1.5	34.64 34.70	7.65 7.67	4.0
						6.250	17.45	7.66	98.5	1.5	34.70	7.59	
2013/1/28 12:57	W2	ME	832691	807973	12.5	6.250	17.41	7.86	101.1	1.6	34.76	7.54	4.1
						11.500	17.38	7.90	101.6	1.7	34.84	7.56	26
						11.500	17.38	8.01	103.1	1.7	34.86	7.58	2.6
						1.000	17.54	7.50	96.7	1.2	34.73	7.11	3.2
						1.000	17.56	7.67	98.9	1.4	34.75	7.11	
2013/1/28 12:45	W3	ME	832057	807897	12.4	6.200 6.200	17.48 17.48	7.82 7.87	100.8 101.4	1.3 1.5	34.86 34.88	7.16	2.2
						11.400	17.43	7.63	98.2	1.5	34.89	7.11	
						11.400	17.43	7.51	96.7	1.5	34.89	7.12	2.6
						1.000	17.49	6.67	86.0	1.4	34.71	7.84	2.7
						1.000	17.49	6.71	86.5	1.4	34.72	7.80	2.7
2013/1/28 13:21	C1	ME	833679	808177	14.6	7.300	17.49	7.03	90.5	1.6	34.82	7.75	1.8
						7.300	17.50	7.02	90.4 89.7	1.6	34.79	7.70	
						13.600 13.600	17.47 17.46	6.96 6.94	89.7	1.5 1.4	34.89 34.93	7.69 7.71	4.5
						1.000	17.40	8.10	104.4	1.4	34.36	7.36	<b></b>
						1.000	17.60	8.01	103.3	1.5	34.42	7.18	1.3
2012/1/20 12:24	C2	ME	831472	007726	11.0	5.600	17.52	7.78	100.3	1.5	34.67	6.86	2.4
2013/1/28 12:34	C2	ME	851472	807736	11.2	5.600	17.51	7.93	102.1	1.5	34.71	6.87	2.4
						10.200	17.47	7.94	102.2	1.5	34.73	6.72	2.8
	_					10.200	17.47	7.99	102.8	1.4	34.75	6.68	
						1.000	17.48 17.49	7.58	97.6	1.1	34.79	7.70 7.70	2.2
						1.000 7.550	17.49	7.46 7.25	96.2 93.5	1.0 1.4	34.76 34.81	7.66	
2013/1/28 13:41	C3	ME	832247	808881	15.1	7.550	17.49	7.28	93.8	1.4	34.81	7.66	2.4
						14.100	17.48	7.17	92.4	1.4	34.88	7.67	4.2
						14.100	17.49	7.17	92.5	1.3	34.89	7.69	4.2
2013/1/28 8:51	W1	MF	832974	807738	2.7	1.350	17.40	7.17	92.4	0.8	35.10	7.80	1.6
						1.350	17.39	7.21	92.9	0.9	35.11	7.76	
						1.000	<u>17.40</u> 17.40	7.13	91.9 91.2	0.9	35.15 35.16	7.74	1.7
						6.750	17.40	6.94	89.4	1.2	35.23	7.74	
2013/1/28 9:01	W2	MF	832658	807989	13.5	6.750	17.36	7.04	90.8	1.1	35.26	7.74	1.8
						12.500	17.37	6.98	90.0	1.1	35.40	7.72	1.5
						12.500	17.35	6.99	90.2	0.9	35.45	7.72	1.5
						1.000	17.40	6.43	82.8	0.8	35.06	7.89	1.4
						1.000	17.40	6.42	82.7	0.7	35.09	7.87	
2013/1/28 9:19	W3	MF	832658	807909	13.4	6.700 6.700	17.41 17.43	6.48 6.46	83.6 83.3	1.2	35.22 35.22	7.82 7.78	1.5
						12.400	17.43	6.33	81.8	0.9	35.38	7.78	
						12.400	17.43	6.31	81.5	0.9	35.39	7.77	1.9
						1.000	17.39	7.93	102.5	1.0	35.59	7.81	2.0
						1.000	17.39	7.74	100.0	0.9	35.57	7.77	2.0
2013/1/28 8:33	C1	MF	833683	808184	15.4	7.700	17.39	7.67	99.2	0.6	35.66	7.79	2.4
						7.700	17.39	7.68	99.2	0.7	35.67	7.79	
						14.400 14.400	17.39 17.39	7.62 7.63	98.5 98.7	1.0	35.71 35.70	7.80 7.78	2.1
						14.400	17.39	5.91	76.1	0.8	35.03	7.88	
						1.000	17.40	5.95	76.7	0.7	35.08	7.84	1.8
2013/1/28 9:32	C2	MF	831469	807750	12.1	6.050	17.35	5.78	74.4	0.9	35.22	7.78	2.1
2013/1/20 9.32	C2	IVIF	851409	807750	12.1	6.050	17.37	5.80	74.8	0.9	35.18	7.78	2.1
						11.100	17.16	5.72	73.5	1.0	35.23	7.77	1.6
	+					11.100	17.15	5.73	73.6	1.0	35.28	7.76	
						1.000	17.39 17.39	7.87 7.84	101.5 101.2	0.7	35.34 35.37	7.88 7.87	3.0
						8.000	17.39	7.84	101.2	0.8	35.63	7.87	<b> </b>
					16		17.40	1.14					2.9
2013/1/28 8:13	C3	MF	832233	808845	16	8.000	17.40	7.76	100.3	0.7	35.64	7.83	2.17
2013/1/28 8:13	C3	MF	832233	808845	10		17.40 17.39	7.76 7.69	100.3 99.4	0.7	35.64 35.72	7.83 7.82	2.1

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



#### Sok Kwu Wan

Date 30-Jan-13

Data (Time	Terretter	m: 1. +	Co-ore	linates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	Tide*	East	North	m	m	ç	mg/L	%	NTU	ppt	unit	mg/l
2013/1/30 14:17	W1	ME	832964	807726	2.4	1.200	17.84	7.68	99.7	2.7	34.89	7.68	3.3
						1.200	17.87 17.87	7.46 7.13	96.9 92.5	2.9 2.8	34.87 34.80	7.68 7.81	
						1.000	17.87	7.13	92.5	2.6	34.80	7.81	3.6
2012/1/20 14:05	11/2		000654	000001	10.5	6.250	17.52	7.30	94.2	2.5	34.99	7.77	2.2
2013/1/30 14:05	W2	ME	832654	808001	12.5	6.250	17.52	7.37	95.1	2.7	34.92	7.74	3.3
						11.500	17.46	7.41	95.5	2.3	34.95	7.70	4.6
						11.500	17.46	7.39	95.3	2.1	34.95	7.68	
						1.000	17.89 17.88	7.47 7.45	97.0 96.8	2.5 2.9	34.84 34.89	7.66 7.65	5.4
						6.150	17.88	7.44	90.8 96.4	2.9	34.93	7.58	
2013/1/30 13:50	W3	ME	832037	807902	12.3	6.150	17.75	7.48	96.9	2.8	34.92	7.57	3.3
						11.300	17.67	7.45	96.6	2.9	35.23	7.54	5.3
						11.300	17.69	7.43	96.4	2.8	35.18	7.53	5.5
						1.000	17.93	6.72	87.2	1.2	34.66	7.68	3.8
						1.000 7.300	17.88 17.70	6.67 6.58	86.5 85.1	1.2	34.71 34.84	7.68 7.66	
2013/1/30 14:37	C1	ME	833695	808166	14.6	7.300	17.70	6.59	85.3	1.4	34.85	7.66	3.5
						13.600	17.65	6.55	84.7	1.4	34.87	7.64	4.0
						13.600	17.65	6.55	84.7	1.4	34.93	7.65	4.0
						1.000	17.95	8.15	105.7	0.9	34.43	8.22	3.6
						1.000	17.94	8.21	106.5	1.1	34.50	8.11	5.0
2013/1/30 13:39	C2	ME	831473	807759	11.5	5.750 5.750	17.83 17.85	8.04 8.01	104.2 103.8	1.1	34.70 34.73	7.78 7.69	3.6
						10.500	17.83	7.89	103.8	1.1	34.75	7.69	
						10.500	17.72	7.85	102.2	1.2	34.89	7.53	4.9
						1.000	17.93	6.50	84.4	1.1	34.80	7.63	4.4
						1.000	17.94	6.51	84.6	1.1	34.79	7.64	4.4
2013/1/30 15:00	C3	ME	832239	808855	15	7.500	17.71	6.54	84.7	1.4	34.84	7.64	4.8
2013/1/30 13:00	0.5	IVIL	052257	000055	15	7.500	17.72	6.55	84.8	1.5	34.85	7.63	1.0
						14.000	17.61	6.53	84.4	1.8	34.97	7.65	4.4
						14.000	17.67	6.50	84.2	1.8	34.98	7.63	
2012/1/20 0.07	11/1	) (F	000054	007170	2.0	1.400	17.75	7.14	92.6	1.9	34.99	8.04	
2013/1/30 9:07	W1	MF	832954	807179	2.8	1.400	17.74	7.25	94.0	2.2	35.05	8.04	4.4
						1.000	17.74	7.06	91.6	1.8	35.09	7.99	4.2
						1.000	17.76	7.05	91.5	1.7	35.06	7.96	1.2
2013/1/30 9:18	W2	MF	832659	807993	13.4	6.700 6.700	17.74 17.77	7.01 6.99	90.9 90.8	1.8 1.7	35.20 35.17	7.98 7.95	4.1
						12.400	17.77	6.99	90.8 90.7	1.7	35.17	7.95	
						12.400	17.75	6.98	90.7	2.0	35.39	7.96	4.1
						1.000	17.57	6.31	81.5	2.0	34.96	8.08	1.0
						1.000	17.57	6.34	81.9	2.0	34.99	8.04	1.8
2013/1/30 9:33	W3	MF	832052	807890	13.3	6.650	17.53	6.34	81.9	1.4	35.10	7.97	1.2
						6.650	17.49	6.34	81.9	1.7	35.19	7.98	
						12.300 12.300	17.49 17.49	6.34 6.31	81.8 81.5	1.8 2.0	35.11 35.05	7.90 7.90	1.6
						1.000	17.79	7.77	101.1	0.9	35.46	8.01	
						1.000	17.78	7.58	98.6	0.9	35.44	8.01	1.6
2013/1/30 8:50	C1	MF	833682	808186	15.5	7.750	17.74	7.39	96.1	0.8	35.46	8.00	1.4
2013/1/30 0.30	CI	1411	055002	000100	10.0	7.750	17.76	7.36	95.7	0.7	35.55	8.01	1.1
						14.500	17.76	7.32	95.3	1.0	35.64	7.98	2.1
	1					14.500 1.000	17.74 17.56	7.33 7.07	95.4 91.4	1.0	35.67 35.24	8.01 7.91	
						1.000	17.54	6.77	87.5	0.7	35.19	7.88	2.0
2012/1/20 0-40	<u></u>	ME	021450	807760	12.6	6.300	17.48	6.65	85.9	0.8	35.28	7.91	1.6
2013/1/30 9:49	C2	MF	831450	807762	12.6	6.300	17.50	6.65	85.9	0.7	35.24	7.90	1.6
						11.600	17.49	6.58	85.0	1.0	35.28	7.88	1.3
						11.600	17.49	6.60	85.3	0.8	35.31	7.91	1.5
						1.000	17.78 17.78	8.24 7.98	106.9	0.8	35.13	8.14	2.4
								/ 98	103.6	0.8	35.16	8.10	
									07.2	1.2	35.40	8.06	
2013/1/30 8:30	C3	MF	832232	808879	16.2	8.100 8.100	17.77	7.48	97.2 96.9	1.2 1.3	35.40 35.45	8.06 8.05	2.4
2013/1/30 8:30	C3	MF	832232	808879	16.2	8.100		7.48		1.2 1.3 1.3	35.40 35.45 35.71		2.4

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



#### Sok Kwu Wan

1-Feb-13 Date

D · (57	<b>.</b>	<b>m</b> :1 +	Co-oro	linates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	Tide*	East	North	m	m	ĉ	mg/L	%	NTU	ppt	unit	mg/l
2013/2/1 15:58	W1	ME	832973	807744	2.3	1.150	17.91	7.83	101.5	2.0	34.59	7.36	1.2
						1.150	17.91	7.34	95.2	2.0	34.58	7.39	
						1.000	17.86 17.86	6.46 6.49	83.7 84.1	1.9 2.1	34.56 34.55	7.55 7.51	1.1
						6.250	17.83	6.86	88.9	1.9	34.58	7.42	
2013/2/1 15:44	W2	ME	832679	807992	12.5	6.250	17.85	6.87	89.0	1.9	34.62	7.40	2.3
						11.500	17.51	6.81	87.7	1.7	34.66	7.34	1.7
					-	11.500	17.49	6.84	88.1	1.8	34.64	7.28	1.7
						1.000	18.22	6.88	89.8	1.9	34.58	7.48	3.3
						1.000 6.100	18.22	6.93 6.91	90.4 89.8	2.1 2.5	34.55 34.61	7.33	
2013/2/1 15:31	W3	ME	832033	807878	12.2	6.100	18.03	6.94	90.3	2.6	34.61	7.01	3.3
						11.200	17.83	6.76	87.7	2.6	34.72	6.72	2.0
						11.200	17.81	6.62	85.8	2.9	34.76	6.74	2.0
						1.000	17.88	6.59	85.4	1.9	34.51	7.58	2.0
						1.000	17.88	6.68	86.6	1.7	34.50	7.49	2.0
2013/2/1 16:16	C1	ME	833695	808154	14.5	7.250	17.66 17.65	6.56 6.66	84.7 86.0	2.2 2.4	34.55 34.57	7.37	1.3
						7.250 13.500	17.65	6.57	80.0 84.6	2.4	34.57	7.35	
						13.500	17.49	6.57	84.5	2.5	34.66	7.12	3.2
						1.000	18.33	7.94	103.9	1.7	34.63	8.06	0.0
						1.000	18.33	7.91	103.5	1.8	34.69	7.96	0.8
2013/2/1 15:17	C2	ME	831453	807761	11.4	5.700	18.22	7.98	104.2	1.8	34.77	7.63	0.8
2013/2/1 13.17	02	IVIL	001100	007701	11.1	5.700	18.16	7.95	103.7	1.8	34.84	7.62	0.0
						10.400	17.82 17.85	7.94 7.84	103.1 101.7	1.4	34.94 34.86	7.52	13.4
						10.400	17.85	7.84	92.6	1.6 1.8	34.80	7.43	
						1.000	18.08	7.08	92.0	1.8	34.54	7.04	1.6
2012/2/11/11/202	~		0000040	000000		7.750	17.66	6.99	90.2	2.4	34.63	7.11	1.0
2013/2/1 16:38	C3	ME	832243	808869	15.5	7.750	17.67	7.02	90.7	2.4	34.66	7.15	1.3
						14.500	17.51	6.90	88.9	2.3	34.71	7.13	1.2
						14.500	17.51	6.90	88.9	2.4	34.71	7.13	112
2012/2/1 10 12			000055	005500	2.5	1.350	18.15	7.36	95.8	1.4	34.35	7.12	
2013/2/1 10:43	W1	MF	832955	807728	2.7	1.350	18.15	7.33	95.4	1.3	34.34	7.10	2.2
						1.000	18.37	7.02	91.6	1.4	34.32	7.41	1.2
						1.000	18.27	7.04	91.8	1.4	34.36	7.36	1.2
2013/2/1 10:31	W2	MF	832674	807967	13.5	6.750	17.97	7.15	92.7	1.4	34.41	7.26	1.9
						6.750 12.500	17.99 17.78	7.11 7.01	92.3 90.6	1.4 1.4	34.40 34.49	7.23	
						12.500	17.78	6.97	90.0	1.4	34.52	7.13	2.9
						1.000	18.13	7.99	103.9	1.6	34.24	7.70	17
						1.000	18.12	7.96	103.4	1.6	34.24	7.66	1.7
2013/2/1 10:09	W3	MF	832058	807904	13.4	6.700	17.80	7.92	102.4	2.0	34.35	7.51	1.4
2010/2/1 10:07			052050	007701	1511	6.700	17.81	7.88	101.9	2.0	34.35	7.49	
						12.400 12.400	17.69 17.69	7.80 7.77	100.6 100.3	2.1 2.0	34.37 34.38	7.45 7.44	1.6
						12.400	17.09	6.33	82.8	1.5	34.38	7.64	
						1.000	18.41	6.55	85.7	1.6	34.38	7.54	1.2
			833716	808166	15.1	7.550	18.01	6.59	85.6	1.7	34.43	7.35	1.8
2012/2/1 11:05	C1				15.1	7 550	18.01	6.58	85.4	1.7	34.45	7.35	1.0
2013/2/1 11:05	C1	MF	855710	000100		7.550							
2013/2/1 11:05	C1	MF	855710	808100		14.100	18.01	6.44	83.6	1.6	34.55	7.25	1.9
2013/2/1 11:05	C1	MF	855710	308100		14.100 14.100	18.01 18.04	6.44 6.43	83.5	1.7	34.53	7.20	1.9
2013/2/1 11:05	C1	MF	855710	308100		14.100 14.100 1.000	18.01 18.04 17.91	6.44 6.43 8.00	83.5 103.5	1.7 1.3	34.53 34.19	7.20 7.58	1.9 2.7
						14.100 14.100 1.000 1.000	18.01 18.04 17.91 17.96	6.44 6.43 8.00 8.04	83.5 103.5 104.1	1.7 1.3 1.4	34.53 34.19 34.15	7.20 7.58 7.54	2.7
2013/2/1 11:05 2013/2/1 9:51	C1 C2	MF	833710	807756	12	14.100 14.100 1.000	18.01 18.04 17.91	6.44 6.43 8.00	83.5 103.5	1.7 1.3	34.53 34.19	7.20 7.58	
					12	14.100 14.100 1.000 1.000 6.000	18.01 18.04 17.91 17.96 17.84	6.44 6.43 8.00 8.04 7.99	83.5 103.5 104.1 103.2	1.7 1.3 1.4 1.4	34.53 34.19 34.15 34.19	7.20 7.58 7.54 7.37	2.7 3.4
					12	14.100 14.100 1.000 6.000 6.000 11.000 11.000	18.01 18.04 17.91 17.96 17.84 17.83 17.79 17.80	6.44           6.43           8.00           8.04           7.99           7.94           7.82           7.76	83.5 103.5 104.1 103.2 102.5 101.0 100.2	1.7 1.3 1.4 1.4 1.4 0.9 0.7	34.53 34.19 34.15 34.19 34.19 34.21 34.21	7.20 7.58 7.54 7.37 7.35 7.29 7.28	2.7
					12	14.100 14.100 1.000 6.000 6.000 11.000 11.000 1.000	18.01 18.04 17.91 17.96 17.84 17.83 17.79 17.80 18.28	6.44           6.43           8.00           8.04           7.99           7.94           7.82           7.76           7.25	83.5 103.5 104.1 103.2 102.5 101.0 100.2 94.5	$ \begin{array}{r} 1.7\\ 1.3\\ 1.4\\ 1.4\\ 0.9\\ 0.7\\ 1.4\\ \end{array} $	34.53 34.19 34.15 34.19 34.19 34.21 34.21 34.21 34.36	7.20 7.58 7.54 7.37 7.35 7.29 7.28 7.16	2.7 3.4
					12	14.100 14.100 1.000 6.000 6.000 11.000 11.000 1.000 1.000	18.01 18.04 17.91 17.96 17.84 17.83 17.79 17.80 18.28 18.26	6.44           6.43           8.00           8.04           7.99           7.94           7.82           7.76           7.25           7.19	83.5 103.5 104.1 103.2 102.5 101.0 100.2 94.5 93.8	$ \begin{array}{c} 1.7 \\ 1.3 \\ 1.4 \\ 1.4 \\ 1.4 \\ 0.9 \\ 0.7 \\ 1.4 $	34.53 34.19 34.15 34.19 34.19 34.21 34.21 34.21 34.36 34.38	7.20 7.58 7.54 7.37 7.35 7.29 7.28 7.16 7.16	2.7 3.4 3.1
					12	14.100 14.100 1.000 6.000 6.000 11.000 11.000 1.000 8.150	18.01 18.04 17.91 17.96 17.84 17.83 17.79 17.80 18.28 18.26 18.01	6.44           6.43           8.00           8.04           7.99           7.94           7.82           7.76           7.25           7.19           6.97	83.5 103.5 104.1 103.2 102.5 101.0 100.2 94.5 93.8 90.5	$ \begin{array}{r} 1.7\\ 1.3\\ 1.4\\ 1.4\\ 0.9\\ 0.7\\ 1.4\\ 1.4\\ 1.8\\ \end{array} $	34.53 34.19 34.15 34.19 34.21 34.21 34.21 34.36 34.38 34.46	7.20 7.58 7.54 7.37 7.35 7.29 7.28 7.16 7.16 7.12	2.7 3.4 3.1
2013/2/1 9:51	C2	MF	831479	807756		14.100 14.100 1.000 6.000 6.000 11.000 11.000 1.000 1.000	18.01 18.04 17.91 17.96 17.84 17.83 17.79 17.80 18.28 18.26	6.44           6.43           8.00           8.04           7.99           7.94           7.82           7.76           7.25           7.19	83.5 103.5 104.1 103.2 102.5 101.0 100.2 94.5 93.8	$ \begin{array}{c} 1.7 \\ 1.3 \\ 1.4 \\ 1.4 \\ 1.4 \\ 0.9 \\ 0.7 \\ 1.4 $	34.53 34.19 34.15 34.19 34.19 34.21 34.21 34.21 34.36 34.38	7.20 7.58 7.54 7.37 7.35 7.29 7.28 7.16 7.16	· 2.7 3.4 3.1 3.6

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



#### Sok Kwu Wan

Date 5-Feb-13

Date / Time	Location	Tide*	Co-or	dinates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	Tide*	East	North	m	m	ĉ	mg/L	%	NTU	ppt	unit	mg/
2013/2/5 8:43	W1	ME	832970	807716	2.2	1.100	18.42	6.16	80.9	1.4	35.20	7.65	1.8
2015/2/5 0.45	** 1	IVIL	052710	007710	2.2	1.100	18.40	6.26	82.2	1.2	35.20	7.67	1.0
						1.000	18.42	6.16	81.0	1.3	35.26	7.76	0.9
						1.000	18.42	6.23	81.9	1.2	35.24	7.74	
2013/2/5 8:31	W2	ME	832681	807994	12.5	6.250	18.35	6.19	81.4	1.2	35.36	7.70	1.3
						6.250 11.500	18.35 18.17	6.22 6.07	81.8 79.5	1.2	35.34 35.24	7.68	
						11.500	18.17	6.07	79.5	1.1	35.24	7.67	0.9
						1.000	18.19	6.61	79.1 87.1	1.0	35.45	7.76	
						1.000	18.43	6.62	87.1	1.3	35.46	7.74	1.1
						6.050	18.45	6.58	86.6	1.2	35.56	7.68	
2013/2/5 8:16	W3	ME	832049	807900	12.1	6.050	18.39	6.57	86.5	1.3	35.57	7.68	0.6
						11.100	18.23	6.44	84.6	1.2	35.72	7.64	
						11.100	18.23	6.36	83.6	1.5	35.72	7.63	1.6
						1.000	18.24	5.81	76.2	1.4	35.09	7.70	
						1.000	18.33	5.85	76.8	1.2	35.09	7.69	1.6
						6.850	18.10	5.90	77.1	1.0	35.16	7.64	
2013/2/5 8:59	C1	ME	833719	808153	13.7	6.850	18.11	5.90	77.1	1.0	35.15	7.60	1.5
						12.700	18.09	5.87	76.7	1.3	35.24	7.60	
						12.700	18.09	5.88	76.7	1.5	35.18	7.60	1.6
						12.700	18.45	7.22	95.2	1.3	35.65	7.81	
						1.000	18.45	7.18	93.2	1.3	35.68	7.79	1.3
						5.300	18.43	7.18	94.7	1.4	35.08	7.74	
2013/2/5 8:01	C2	ME	831459	807740	10.6	5.300	18.45	7.20	94.0	1.1	35.94	7.74	1.2
						9.600	18.45	6.82	90.2	1.1	36.14	7.63	
						9.600	18.44	6.63	90.2 87.6	1.2	36.14	7.65	0.
	_												
						1.000	18.31	6.04	79.2	1.6	35.11	7.57	1.6
						1.000	18.31	5.98	78.4	1.7	35.10	7.58	
2013/2/5 9:18	C3	ME	832231	808870	14.5	7.250	18.12	5.86	76.6	1.4	35.26	7.58	0.9
						7.250	18.11	5.86	76.6	1.4	35.23	7.56	
						13.500	18.09	5.83	76.2	1.2	35.27	7.58	3.9
						13.500	18.10	5.83	76.2	1.2	35.25	7.56	
						1.250	18.53	6.51	85.7	1.2	35.10	7.84	
2013/2/5 12:47	W1	MF	832953	807722	2.5	1.250	18.55	6.57	86.5	1.2	35.10	7.89	1.6
	_												
						1.000	18.71	6.63	87.6	1.4	35.14	7.18	1.0
						1.000	18.68	6.75	89.1	1.4	35.15	7.14	
2013/2/5 12:34	W2	MF	832674	808007	13.6	6.800	18.32	6.69	87.9	0.9	35.30	7.98	0.9
						6.800	18.32	6.61	86.8	0.9	35.28	7.95	
						12.600	17.58	6.53	84.6	1.2	35.33	7.79	0.9
	_					12.600	17.58	6.50	84.2	1.1	35.34	7.79	
						1.000	18.63	7.22	95.4	1.4	35.43	7.13	0.0
						1.000	18.55	7.31	96.4	1.3	35.37	7.04	
2013/2/5 12:20	W3	MF	832060	807895	13.2	6.600	18.40	7.31	96.2	1.3	35.59	7.15	2.2
						6.600	18.34	7.24	95.3	1.2	35.62	7.15	
						12.200	18.26	7.00	92.1	1.4	35.69	7.65	1.0
						12.200	18.27	6.87	90.4	1.4	35.69	7.65	<u> </u>
						1.000	18.76	6.37	84.2	1.3	35.04	7.35	0.
						1.000	18.74	6.42	84.8	1.3	35.04	7.36	
2013/2/5 13:06	C1	MF	833717	808146	14.5	7.250	18.26	6.41	84.1	1.2	35.23	7.21	0.
						7.250	18.23	6.37	83.5	1.0	35.24	7.19	<u> </u>
						13.500	17.91	6.12	79.7	1.3	35.27	7.11	1.:
						13.500	17.90	6.09	79.3	1.2	35.29	7.07	<u> </u>
						1.000	18.67	7.85	103.6	1.3	35.07	7.29	0.
						1.000	18.67	7.88	104.1	1.3	35.16	7.35	<u> </u>
2013/2/5 12:07	C2	MF	831458	807762	11.3	5.650	18.50	7.01	92.7	1.1	35.76	7.65	0.
						5.650	18.48	7.04	92.3	0.9	34.60	7.66	<u> </u>
						10.300	18.50	7.02	92.8	1.1	35.95	7.65	0.
						10.300	18.51	6.93	91.7	0.9	35.97	7.66	
						1.000	18.80	6.24	82.5	1.3	35.02	7.09	0.2
						1.000	18.81	6.29	83.1	1.1	35.02	7.10	<u> </u>
2013/2/5 13:27	C3	MF	832198	808883	15.6	7.800	18.28	6.24	81.8	1.2	35.23	7.06	2.0
						7.800	18.28	6.18	81.0	1.3	35.23	7.07	
							17.04	5.97	77.8	1.5	35.26	7.05	•
						14.600 14.600	17.94 17.91	5.96	77.7	1.5	35.25	7.05	2.2

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



#### Sok Kwu Wan

7-Feb-13 Date

Data (Wina	Territor	m: 1. *	Co-ore	linates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	Tide*	East	North	m	m	ç	mg/L	%	NTU	ppt	unit	mg/l
2013/2/7 10:38	W1	ME	832974	807745	2.3	1.150	18.49	6.70	87.9	1.0	34.57	7.71	0.5
						1.150 1.000	18.46 18.46	6.77 7.12	88.8 93.3	1.1	34.64 34.65	7.69 7.66	
						1.000	18.46	6.94	93.3 91.0	1.1	34.63	7.63	0.5
						6.300	18.39	6.75	88.4	1.0	34.71	7.65	
2013/2/7 10:48	W2	ME	832686	808000	12.6	6.300	18.41	6.85	89.8	1.0	34.71	7.64	0.5
						11.600	18.06	6.84	89.2	1.5	35.04	7.64	2.7
						11.600	18.06	6.81	88.8	1.4	35.02	7.63	2.1
						1.000	18.62	6.14	80.7	1.4	34.67	7.58	1.2
						1.000 6.200	18.63 18.38	6.38 6.15	83.9 80.5	1.4 1.4	34.69 34.72	7.61 7.56	
2013/2/7 11:09	W3	ME	832051	807902	12.4	6.200	18.39	6.13	80.3	1.4	34.73	7.58	0.5
						11.400	18.15	6.09	79.6	1.3	34.92	7.58	2.0
						11.400	18.15	6.16	80.4	1.1	34.97	7.57	2.0
						1.000	18.56	8.11	106.6	1.1	34.67	7.71	1.2
						1.000	18.58	7.80	102.5	1.0	34.68	7.70	112
2013/2/7 10:22	C1	ME	833687	808188	13.7	6.850 6.850	18.41 18.41	7.59 7.58	99.5 99.3	1.1 0.9	34.78 34.75	7.71 7.72	0.8
						12.700	18.14	7.56	99.5	0.9	34.82	7.71	
						12.700	18.12	7.60	99.2	0.9	34.85	7.71	1.5
						1.000	18.78	5.91	78.0	1.0	34.54	7.68	0.5
						1.000	18.81	5.93	78.2	1.0	34.57	7.66	0.5
2013/2/7 11:26	C2	ME	831477	807756	11.1	5.550	18.70	5.89	77.6	1.1	34.67	7.61	2.7
						5.550	18.71	5.85	77.1	1.0	34.64	7.60	
						10.100	18.63 18.64	5.71 5.64	75.1 74.2	1.3 1.3	34.78 34.77	7.56 7.54	2.9
						1.000	18.68	7.44	97.6	1.2	34.08	7.95	
						1.000	18.67	7.72	101.4	1.2	34.17	7.92	1.8
2013/2/7 10:03	C3	ME	832207	000020	14.8	7.400	18.49	7.66	100.4	1.4	34.47	7.79	2.1
2015/2/7 10.05	CS	ME	832207	808839	14.0	7.400	18.49	7.69	100.8	1.3	34.51	7.77	2.1
						13.800	18.07	7.61	99.0	1.0	34.68	7.75	1.8
						13.800	18.07	7.64	99.4	0.9	34.69	7.74	
2013/2/7 15:31	W1	MF	832977	807719	2.7	1.350	18.37	8.03	105.3	1.1	34.93	7.31	1.5
2013/27 13.51		1011	052711	007715	2.7	1.350	18.36	7.90	103.6	1.2	34.90	7.30	1.5
						1.000	18.36 18.36	7.42 7.46	97.1 97.7	1.1	34.64 34.64	7.34	0.6
						6.800	18.10	7.40	97.1	1.0	34.04	7.34	
2013/2/7 15:18	W2	MF	832679	807964	13.6	6.800	18.09	7.43	96.8	1.3	34.80	7.31	1.1
						12.600	17.89	7.31	95.0	1.6	34.97	7.25	1.1
						12.600	17.89	7.27	94.5	1.6	35.07	7.23	1.1
						1.000	18.82	7.25	95.7	1.3	34.64	7.04	0.6
						1.000 6.700	18.76 18.51	7.33 7.20	96.7 94.5	1.4 1.4	34.69 34.66	7.07	
2013/2/7 15:04	W3	MF	832036	807888	13.4	6.700	18.52	7.20	94.3	1.4	34.65	6.98	0.5
						12.400	18.21	7.45	97.3	1.3	34.77	6.92	0.0
						12.400	18.19	7.46	97.4	1.4	34.81	6.96	0.9
						1.000	18.46	6.38	83.7	1.0	34.76	7.52	1.2
						1.000	18.46	6.87	90.1	0.9	34.75	7.51	1.2
2013/2/7 15:44	C1	MF	833691	808161	14.8	7.400 7.400	18.39 18.41	7.05	92.6 92.1	0.9	35.07 35.05	7.47 7.44	1.5
						13.800	18.41	6.73	92.1 87.9	1.0	35.05	7.44	
						13.800	18.05	6.69	87.4	0.8	35.32	7.42	2.1
						1.000	19.01	8.35	110.3	1.3	34.07	7.24	1.0
						1.000	19.00	8.37	110.6	1.2	34.16	7.15	1.0
2013/2/7 14:52	C2	MF	831455	807762	12	6.000	18.77	7.78	102.4	1.4	34.32	6.99	2.0
						6.000 11.000	18.78 18.27	7.73	101.9 98.5	1.1 2.3	34.38 34.46	6.94 6.84	
						11.000	18.27	7.53	98.5 98.5	2.3	34.40	6.82	7.2
	1					1.000	18.47	7.92	104.0	0.9	34.85	7.46	0.0
						1.000	18.46	7.60	99.8	0.9	34.86	7.47	0.8
2013/2/7 16:06	C3	MF	832243	808890	16	8.000	18.40	7.36	96.6	1.4	35.12	7.48	1.3
2015/2/1 10:00	0.5	.,11	052245	000070	10	8.000	18.40	7.32	96.1	1.1	35.15	7.47	1.5
						15.000	18.03	7.16	93.5 92.9	1.2	35.40	7.47	1.4
						15.000	18.03	7.11	92.9	1.1	35.40	7.47	L

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



#### Sok Kwu Wan

9-Feb-13 Date

Date / Time	Location	Tide*	Co-ore	linates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	Tide.	East	North	m	m	C	mg/L	%	NTU	ppt	unit	mg/l
2013/2/9 11:49	W1	ME	832977	807719	2.3	1.150	17.97	6.55	84.8	1.2	34.14	7.83	3.6
						1.150	17.96	6.52	84.5	1.1	34.16	7.83	
						1.000	17.98 17.95	6.46 6.45	83.6 83.5	1.1	34.15 34.20	7.80 7.81	2.9
						6.300	17.84	6.40	82.7	1.0	34.33	7.82	
2013/2/9 12:00	W2	ME	832679	807996	12.6	6.300	17.84	6.36	82.2	1.1	34.34	7.82	0.8
						11.600	17.61	6.30	81.2	1.3	34.51	7.81	2.8
						11.600	17.62	6.30	81.3	1.2	34.50	7.82	2.0
						1.000	18.03	5.86	76.0	1.2	34.09	7.81	0.7
						1.000	18.04	5.94	77.0 74.7	1.4	34.12	7.81 7.79	
2013/2/9 12:16	W3	ME	832058	807879	12.2	6.100 6.100	17.87 17.88	5.77 5.78	74.7	1.3 1.3	34.34 34.36	7.79	2.5
						11.200	17.63	5.61	72.3	1.4	34.49	7.83	
						11.200	17.63	5.63	72.6	1.4	34.50	7.80	2.1
						1.000	17.82	7.72	99.6	1.4	34.10	7.84	3.2
						1.000	17.82	7.66	98.9	1.3	34.10	7.84	5.2
2013/2/9 11:33	C1	ME	833687	808165	14.6	7.300	17.78	7.58	97.9	1.3	34.16	7.81	3.1
						7.300 13.600	17.77 17.59	7.64 7.62	98.6 98.1	1.5 1.2	34.19 34.33	7.85 7.86	
						13.600	17.59	7.63	98.3	1.2	34.33	7.86	3.2
						1.000	18.05	5.64	73.2	1.1	34.15	7.72	
						1.000	18.04	5.63	73.1	1.0	34.18	7.77	2.1
2013/2/9 12:30	C2	ME	831479	807758	11.1	5.550	18.00	5.49	71.2	1.2	34.30	7.78	2.5
2013/2/9 12.30	C2	IVIL	031479	007750	11.1	5.550	18.00	5.47	71.0	1.1	34.30	7.79	2.5
						10.100	17.78	5.36	69.3	1.0	34.54	7.82	2.3
	_					10.100	17.78	5.36	69.4	1.0	34.57	7.83	
						1.000	17.83 17.83	7.84 7.79	101.1 100.5	1.2 1.2	33.91 33.92	7.82 7.83	2.1
						7.350	17.83	7.70	99.2	1.2	34.10	7.85	
2013/2/9 11:12	C3	ME	832196	808881	14.7	7.350	17.72	7.75	99.9	1.1	34.15	7.85	1.6
						13.700	17.59	7.75	99.8	1.6	34.27	7.85	2.2
						13.700	17.59	7.74	99.6	1.7	34.27	7.85	2.2
						1.050	15.04	5.15	06.0		0.4.00	a 65	
2013/2/9 17:05	W1	MF	832955	807746	2.7	1.350	17.91	7.47	96.8	1.4	34.32	7.57	1.6
						1.350 1.000	17.91 17.89	7.35	95.2 90.6	1.4 1.3	34.32 34.17	7.57 7.55	
						1.000	17.92	7.00	90.0	1.3	34.17	7.53	0.5
2012/2/0 16 52		N (FF	000000	000000	10.5	6.750	17.86	6.91	89.4	1.4	34.24	7.57	0.0
2013/2/9 16:52	W2	MF	832662	808003	13.5	6.750	17.86	6.90	89.2	1.3	34.24	7.57	0.8
						12.500	17.72	6.80	87.8	1.3	34.45	7.58	1.4
	_					12.500	17.72	6.80	87.9	1.3	34.47	7.59	1.1
						1.000	18.10	7.02	91.1	1.3	34.05 34.05	7.48 7.48	2.1
						1.000 6.650	18.10 17.95	7.04 6.98	91.3 90.4	1.1	34.05	7.48	
2013/2/9 16:40	W3	MF	832036	807910	13.3	6.650	17.95	6.96	90.1	1.1	34.16	7.49	1.8
						12.300	17.64	6.88	88.6	1.3	34.31	7.52	1.4
						12.300	17.64	6.87	88.5	1.4	34.31	7.51	1.4
						1.000	17.82	6.49	83.8	1.3	34.28	7.60	1.2
						1.000	17.82	6.56	84.8	1.3	34.29	7.62	
2013/2/9 17:19	C1	MF	833691	808154	15.3	7.650 7.650	17.83 17.82	6.76 6.77	87.4 87.6	1.3 1.2	34.37 34.38	7.63 7.63	1.5
						14.300	17.82	6.67	86.4	1.2	34.58	7.65	
						14.300	17.78	6.66	86.3	1.3	34.70	7.65	0.9
						1.000	18.08	6.93	89.8	1.3	33.75	7.76	0.8
						1.000	18.07	7.04	91.1	1.1	33.82	7.68	0.0
2013/2/9 16:28	C2	MF	831453	807739	12	6.000	17.90	6.79	87.7	1.4	34.08	7.59	1.3
					_	6.000 11.000	17.90 17.65	6.92	89.5	1.5 1.1	34.13	7.59	
						11.000	17.65	6.78 6.82	87.3 87.8	1.1	34.22 34.26	7.52 7.53	0.9
						1.000	17.83	7.41	95.8	1.2	34.20	7.68	0.7
						1.000	17.83	7.11	92.0	1.4	34.37	7.67	0.9
2013/2/9 17:41	C3	MF	832232	808890	16	8.000	17.70	6.88	88.9	1.3	34.59	7.66	2.9
2013/2/7 17.41	0	1411.	052252	000090	10	8.000	17.73	6.90	89.1	1.4	34.55	7.67	2.7
						15.000	17.68	6.77	87.5	1.3	34.75	7.67	3.1
ME MELEL-JTEL						15.000	17.68	6.76	87.4	1.4	34.75	7.68	

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



#### Sok Kwu Wan

Date 15-Feb-13

Data (Time	Terretory	Tide*	Co-or	linates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	1100*	East	North	m	m	ບ	mg/L	%	NTU	ppt	unit	mg/l
2013/2/15 16:25	W1	ME	832973	807750	2.2	1.100	18.28	6.49	84.6	0.9	34.34	7.19	1.0
						1.100	18.31 18.31	6.50 6.57	84.9 85.7	0.9	34.34 34.24	7.19 7.24	
						1.000	18.29	6.56	85.6	1.0	34.24	7.24	0.6
2012/2/15 16 00	WO.		000/75	000000	10.0	6.300	17.98	6.52	84.6	1.0	34.41	7.19	17
2013/2/15 16:09	W2	ME	832675	808002	12.6	6.300	18.01	6.48	84.1	1.0	34.41	7.20	1.7
						11.600	17.98	6.45	83.7	1.0	34.48	7.16	1.6
						11.600	17.97	6.44	83.6	1.3	34.52	7.17	
						1.000	18.52 18.55	6.67 6.75	87.4 88.5	0.9	34.28 34.32	7.14 7.09	1.1
						6.150	18.22	7.11	92.6	1.6	34.44	6.97	
2013/2/15 15:52	W3	ME	832053	807882	12.3	6.150	18.22	7.04	91.8	1.2	34.43	6.94	1.3
						11.300	18.01	6.93	90.1	1.0	34.62	6.94	1.7
						11.300	17.99	6.96	90.5	1.0	34.55	6.95	1.7
						1.000	18.60	5.50	72.1	1.2	34.20	7.52	0.9
						1.000 6.750	18.62 18.23	5.51 6.10	72.2 79.5	1.1	34.18 34.30	7.48 7.45	
2013/2/15 16:38	C1	ME	833719	808186	13.5	6.750	18.22	6.06	79.0	1.2	34.31	7.44	1.7
						12.500	17.97	5.98	77.7	1.0	34.50	7.42	1.5
						12.500	17.98	5.98	77.6	1.0	34.55	7.41	1.5
						1.000	18.94	7.92	104.4	1.5	33.98	7.50	1.5
						1.000	18.95	7.84	103.4	1.3	34.05	7.55	1.5
2013/2/15 15:38	C2	ME	831471	807736	11.1	5.550	18.51	7.61	99.6	1.1	34.18	7.50	1.3
						5.550 10.100	18.49 18.20	7.59 7.33	99.3 95.5	1.1 2.7	34.22 34.58	7.50 7.45	
						10.100	18.20	7.36	95.5 96.0	2.7	34.58	7.45	4.6
						1.000	18.62	6.91	90.6	1.1	34.02	7.40	
						1.000	18.58	6.74	88.4	1.0	34.25	7.43	1.3
2013/2/15 16:59	C3	ME	832231	808867	14.5	7.250	18.11	6.62	86.1	1.0	34.52	7.42	1.1
2013/2/13 10.39	CS	IVIE	632231	000007	14.3	7.250	18.13	6.61	86.1	1.0	34.47	7.41	1.1
						13.500	17.93	6.49	84.2	1.3	34.62	7.41	1.3
						13.500	17.93	6.45	83.7	1.1	34.63	7.41	
						1.300	18.40	6.45	84.1	0.9	33.93	7.23	
2013/2/15 10:38	W1	MF	832956	807737	2.6	1.300	18.35	6.22	81.0	1.0	33.95	7.16	2.3
						1.000	18.32	6.40	83.3	1.0	33.90	6.95	2.0
						1.000	18.34	6.37	83.0	1.1	33.87	6.89	2.0
2013/2/15 10:49	W2	MF	832681	807990	13.5	6.750	18.13	6.54	84.9	0.9	34.08	6.86	1.9
2013/2/13 10.49	** 2	1011	052001	007990	15.5	6.750	18.13	6.51	84.5	0.9	34.07	6.84	1.9
						12.500	18.02	6.40	83.0	0.8	34.17	6.80	2.5
	-					12.500 1.000	18.03 18.33	6.48 5.49	84.0 71.5	0.8	34.17 34.02	6.79 7.32	
						1.000	18.30	5.49	71.3	0.8	34.02	7.31	1.7
						6.600	18.22	5.45	70.9	1.0	34.07	7.23	
2013/2/15 11:06	W3	MF	832049	807900	13.2	6.600	18.23	5.55	72.2	1.1	34.09	7.22	1.4
						12.200	18.00	5.51	71.5	1.3	34.30	7.18	1.6
						12.200	18.01	5.48	71.1	1.3	34.30	7.15	1.0
						1.000	18.37	7.46	97.1	0.7	33.62	7.51	1.7
						1.000 7.300	18.21 18.12	7.43	96.4 95.5	0.6	33.63 33.77	7.52	
2013/2/15 10:21	C1	MF	833683	808181	14.6	7.300	18.12	7.36	95.5 95.4	0.6	33.74	7.52	3.0
						13.600	17.98	7.33	94.9	0.0	33.95	7.55	0.0
						13.600	17.97	7.34	95.0	0.6	33.96	7.55	2.8
						1.000	18.49	5.27	69.0	0.8	34.25	7.49	1.0
						1.000	18.38	5.09	66.4	0.8	34.26	7.33	1.0
2013/2/15 11:22	C2	MF	831443	807761	15.7	7.850	18.38	5.14	67.1	0.9	34.26	7.31	1.1
						7.850	18.35 17.91	5.16 5.16	67.3 66.9	0.8	34.25 34.46	7.26 7.27	
						14.700	17.91	5.16	66.8	1.0	34.46	7.27	3.8
						14.700	17.94	7.32	94.9	1.1	33.48	7.63	1.7
						1.000	18.27	7.33	95.1	1.0	33.51	7.60	1.5
2013/2/15 10:03	C3	MF	832213	808844	12.2	6.100	18.12	7.40	95.9	0.9	33.66	7.55	2.8
2015/2/15 10.05	C	IVIF	052215	000044	12.2	6.100	18.12	7.40	95.8	0.8	33.66	7.54	2.0
						11.200	17.98	7.38	95.4	0.9	33.81	7.51	3.8
						11.200	17.98	7.43	96.1	0.9	33.83	7.54	2.0

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



#### Sok Kwu Wan

Date 19-Feb-13

Date / Time         Lack         Part of the par	Data (mina	Territor	T: 1-*	Co-or	dinates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
MONOMOND         Wei         Wei         Kong         Wais         Kong         <	Date / Time	Location	1100+	East	North	m	m	ç	mg/L	%	NTU	ppt	unit	mg/l
2013(2)19         11.0	2013/2/19 17:47	W1	ME	832973	807740	2.2								4.4
2013/2/9 17:31         W1         M1         M12         M12         M12         M13         K75         M21         M2         M35         C41         M35         M36         M36         M35         M36         M36 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>														
2013/219         M2         M2         M4         S250 A         S070 A         S22 A         CB30 A         CB31 A         CB3 A         CB3 A <thcb3 A         CB</thcb3 														0.8
201301911733         W2         ME         84.00         94.00         7.35         0.08         0.83         0.95         0.44.00         7.35         0.08           201302191738         W3         ME         82.08         82.08         7.78         0.12         0.66         34.35         7.34         0.02           201302191738         W3         ME         82.08         80.07         81.31         7.08         1.15         34.00         7.35         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.36         1.15         34.00         7.37         1.05         1.16         3.13         1.13         3.13         1.13         1.13         1.13         1.13         1.13         1.13         1.13         1.13         1.13														
100         100         1844         7.78         10.12         0.6         3.76         7.34         103           20132/19 17:18         W3         ME         82208         8.87         1.800         18.72         8.801         1.03         3.107         7.80         3.12         7.80         7.85         1.03         3.107         3.12         7.80         7.85         1.03         3.05         1.00         3.12         7.86	2013/2/19 17:33	W2	ME	832652	807974	12.2								0.8
2013/2/19 17.18         W3         ME         63206         80977         11.20         18.00         18.77         8.01         10.2         64.10         7.42         1.5           2013/2/19 17.18         W3         ME         63206         80977         12.3         15.100         18.77         8.01         10.1         34.21         7.74         1.5           2013/2/19 18.02         C1         ME         833714         808184         1.67         7.87         1.01         3.53         7.66         0.7           2013/2/19 18.02         C1         ME         833714         808184         1.41         7.57         1.61         5.3         3.49         7.73         1.5           2013/2/19 18.02         C1         ME         833714         808184         1.41         7.57         1.61         8.30         0.3         3.55         7.39         1.5           2013/2/19 18.02         C2         ME         87165         8779         1.61         8.00         11.33         1.42         3.00         1.30         1.30         1.30         1.30         1.30         1.30         1.30         1.30         1.30         1.31         3.22         7.77         1.31         <							11.200	18.04	7.80	101.5	0.5	34.75	7.34	0.0
20132/19         1:1:1:1:1         1:1:1:1:1         1:1:1:1:1:1         1:1:1:1:1:1:1         1:1:1:1:1:1         1:1:1:1:1:1         1:1:1:1:1:1:1         1:1:1:1:1:1:1         1:1:1:1:1:1:1         1:1:1:1:1:1:1         1:1:1:1:1:1:1         1:1:1:1:1:1:1:1         1:1:1:1:1:1:1:1:1         1:1:1:1:1:1:1:1:1         1:1:1:1:1:1:1:1:1:1:1         1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:														0.9
2013/219         17:18         N3         M8         83306         8077         12.1         61.50         18.10         82.1         107.2         0.0         35.50         7.44         0.7           2013/219         18.10         18.00         18.07         7.85         10.04         0.5         34.60         7.66         1.0           2013/219         18.00         18.06         18.07         7.85         10.04         0.65         34.60         7.60         1.5           2013/219         18.00         18.06         18.00         18.06         7.25         9.57         1.6         34.56         7.70         1.5           2013/219         17.60         18.11         8.12         10.70         0.65         34.56         7.70         1.6           2013/219         17.61         18.16         18.70         0.63         34.56         7.70         1.05         34.56         7.70         1.05         34.56         7.70         1.05         34.56         7.70         1.06         34.56         7.77         1.06         34.56         7.77         1.06         34.56         7.77         1.06         36.56         7.77         1.07         36.5         34.56														1.5
2013/219         1/1.30         18.07         8.12         1037         8.12         1037         8.12         1037         9.13         1034         1035         13.00         13.0														
11:00         18:07         795         1034         0.5         34.62         7.36         1.0           2013/2/1918.02         R	2013/2/19 17:18	W3	ME	832036	807977	12.3								0.7
2013/21/9 18:02         C1         MB         83374         898184         14.1         1000         18.04         7.87         102.2         1.5         45.00         7.90         1.3           2013/21/9 18:02         C1         MB         833714         898184         14.1         1000         18.06         7.25         95.7         1.16         43.22         7.89         1.3           2013/21/9 17:01         C2         MB         831461         80738         1000         17.90         1.81         8.18         106.3         0.09         34.56         7.73         0.5           2013/21/9 17:01         C2         MB         831461         80738         1000         19.90         8.03         106.5         0.7         34.09         81.56         1.8           2013/21/9 17:01         C2         MB         831461         80738         1.00         19.14         7.26         9.81         0.8         34.25         1.8         1.8           2013/21/9 18:21         C3         MB         83228         80739         2.6         1.300         1.81         4.4         1.3         34.48         6.57         1.3         34.25         7.78         1.00           <														
2013/219         Ref         Ref <thref< th="">         Ref         <thref< th=""> <thref< <="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>11.300</td><td>18.04</td><td>7.87</td><td>102.4</td><td>0.5</td><td>34.66</td><td>7.36</td><td>1.0</td></thref<></thref<></thref<>							11.300	18.04	7.87	102.4	0.5	34.66	7.36	1.0
2013/21/9 18:02         C1         ME         83714         88854         14.1         18.00         18.05         17.2         90.7         16.5         44.55         7.30         15.5           2013/21/9 18:02         C1         n         13.00         17.09         8.07         104.9         0.8         34.56         7.72         40.5           2013/21/9 17:01         C2         ME         831461         80778         104         10.8         10.13         11.1         34.11         34.26         7.72         10.5           2013/21/9 17:01         C2         ME         831461         80778         10.4         10.00         19.30         8.03         106.6         1.3         34.13         7.82         1.4           2013/21/9 18:21         C3         ME         80778         1.4         10.9         1.3         34.49         6.51         0.7         1.4         1.4         34.56         7.78         1.0         1.3         1.49         5.5         1.8         1.1         1.5         1.1         4.55         7.56         1.0         7.78         1.0         1.6         3.43         7.77         1.0         1.0         3.45         7.56         1.0											1.5			13
2013/219183/2         C1         Mill         R31/4         80819         1/41         700         1811         818         005         0.0         34.56         7.70         1.5           2013/21917.01         C2         Mill         83104         80738         0.0         1918         8.40         0.0         34.76         7.77         0.5           2013/21917.01         C2         Mill         83104         80738         100         1928         8.03         1066         1.3         34.13         7.82         1.8           2013/21917.01         C2         Mill         83104         80738         10.0         1920         8.03         1066         1.3         34.13         7.82         1.4           2013/21917.01         C3         Mill         82728         808877         1.0         1.00         19.14         7.26         0.61         1.3         34.34         6.51         1.0           2013/21918.21         C3         Mill         82288         808879         2.6         1.300         18.04         7.99         1.00         34.55         7.68         1.0           2013/21918.21         W1         Mill         Mill         80759         2.6 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1.5</td>														1.5
1100         17.99         8.07         10.49         0.8         3.476         7.74         0.5           2013/2/1917.01         C2         ME         8.81461         807.78         1.00         19.18         8.40         11.1         3.100         3.477         7.73         1.8           2013/2/1917.01         C2         ME         831461         8.77         1930         8.30         106.6         1.3         34.33         7.72         1.8           2013/2/1917.01         C2         ME         831461         8.77         1831         8.80         105.6         1.4         34.48         6.57         1.0           2013/2/1918.21         C3         ME         82228         8887         1.48         1.000         19.11         7.76         0.66         1.4         34.48         6.57         1.0           2013/2/1918.21         C3         ME         82228         8887         1.48         1.000         18.01         7.75         10.08         3.425         7.76         1.0           2013/2/1918.21         W1         MF         822968         80779         2.6         1.300         18.70         7.36         0.66         3.43         7.76         1.0	2013/2/19 18:02	C1	ME	833714	808184	14.1								1.5
100         100         1708         735         103.4         0.9         34.77         7.73         U.5           2013/2/19 17.01         2         ME         8.84         807.78         1000         1918         8.00         111.3         1.11         34.09         8.15         1.8           2013/2/19 17.01         C2         ME         8.81461         807738         10.1         1000         193.0         8.00         111.3         1.14         34.04         6.51         1.4           2013/2/19 18.21         C3         ME         832238         808877         1.4         1.00         19.14         7.26         9.03         1.05         7.44         10.1         0.3         34.36         6.52         1.07           2013/2/19 18.21         C3         ME         832238         808877         1.48         7.00         10.01         10.39         1.0         34.35         7.66         1.0           2013/2/19 18.21         W1         MF         832960         80779         2.6         1.300         18.74         7.35         9.06         0.8         34.04         7.75         10.9           2013/2/19 11:51         W1         MF         832960 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>														
2013/2/19 17:01         C2         ME         831461         807738         10.00         1930         8.03         10.06         1.13         3.41.13         7.82         1.8           2013/2/19 17:01         C2         ME         831461         807738         10.9         5.450         1831         7.07         10.05         1.4         3.44.8         6.57         0.7           2013/2/19 18:21         C3         ME         82238         808877         14.8         1.000         19.14         7.26         96.1         1.4         3.44.9         6.57         0.7           2013/2/19 18:21         C3         ME         832238         808877         1.48         1.000         19.14         7.26         96.1         0.7         3.2.6         7.78         1.0           2013/2/19 18:21         C3         ME         83280         80779         2.6         1.300         18.04         7.75         10.08         8.34.73         7.66         4.4           2013/2/19 11:52         W2         MF         832661         807799         2.6         1.300         18.74         7.36         9.66         0.8         34.01         7.51         1.0         1.2         1.2         1.300<														0.5
2013/2/19 17:01         C2         ME         81461         80738         1000         18.30         80.30         105.6         1.3         34.13         7.82         1.4           2013/2/19 17:01         C2         ME         81461         807738         18.37         80.8         105.6         0.7         34.36         6.03         1.4           2013/2/19 18:21         C3         ME         82228         80877         1.4         1.4         4.44         6.57.         0.7           2013/2/19 18:21         C3         ME         82228         808877         1.4         1.44         4.448         6.57.         0.7         1.00           2013/2/19 18:21         C3         ME         83286         808779         2.6         1.300         18.74         7.75         100.2         0.8         34.76         7.65         1.4           2013/2/19 11:41         W1         MF         833960         80779         2.6         1.300         18.70         7.78         100.2         0.8         34.76         7.65         1.4           2013/2/19 11:52         W2         MF         833681         80799         2.6         1.300         18.70         7.28         0.6														1.0
2013/2/19 11:51         C2         ME         8346         807.38         10.9         5450         18.34         7.97         103.6         1.4         34.36         6.03         1.4           2013/2/19 18:21         C3         ME         82238         80887         1.4         9000         18.05         7.97         103.6         1.4         34.48         65.71         0.7           2013/2/19 18:21         C3         ME         82238         80887         1.48         1.000         19.14         7.26         90.3         0.8         34.26         7.78         1.0           2013/2/19 18:21         C3         ME         83296         807739         2.6         1.300         18.71         7.75         100.8         0.8         34.73         7.66         4.4           2013/2/19 11:41         W1         MF         832960         807739         2.6         1.300         18.71         7.75         100.8         0.8         34.01         7.75         0.9         34.01         7.75         10.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2         1.2								19.30	8.03	106.6	1.3	34.13	7.82	1.8
2013/2/19         16.1         16.1         16.1         16.2         17.7         10.3         34.48         6.53         0.7           2013/2/19         18.21         7.26         96.1         10.9         1.3         34.48         6.51         1.0           2013/2/19         11.21         W1         MF         832960         807739         2.6         1.300         18.74         7.25         96.6         0.8         34.04         7.75         0.9           2013/2/19         11.41         W1         MF         832960         807739         2.6         1.300         18.70         7.43         90.5         0.8         34.03         7.69         0.9           2013/2/19         11.52         W2         MF         832969         807739         2.6         1.300         18.70         7.43         90.2         7.61         1.2           2013/2/19         11.52         W1	2013/2/19 17:01	C2	ME	831461	807738	10.9								14
2013/2/19         18.21         C3         ME         83228         80797         14.8         1000         19.14         7.26         96.1         0.7         34.26         7.78         10.           2013/2/19         18.21         C3         ME         83228         808877         14.8         7.90         103.9         1.0         34.25         7.78         10.           2013/2/19         18.21         V1         MF         832960         80779         2.6         1.300         18.01         7.75         100.8         0.8         34.37         7.66         4.4           2013/2/19         11:41         W1         MF         832681         807990         2.6         1.300         18.74         7.36         96.6         0.8         34.04         7.75         0.9         0.9           2013/2/19         11:52         W2         MF         832681         807996         2.66         1.801         7.71         100.3         0.6         34.16         7.41         -0.5           2013/2/19         11:52         W2         MF         832681         807996         10.5         18.21         7.70         100.3         0.6         34.16         7.41	2013/2/19 11:01	02	IVIL	001101	007750	10.9								
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$														0.7
2013/2/19         R3         RE         832238         808877         14.8         1000         19.11         7.50         99.3         0.8         34.25         7.77         1.0           2013/2/19         11:41         W1         MF         832238         808877         14.8         7.400         18.04         7.79         10.0         34.55         7.68         1.0           2013/2/19         11:41         W1         MF         832960         807739         2.6         1.300         18.01         7.75         10.08         0.8         34.03         7.66         7.44           2013/2/19         11:52         W2         MF         832681         807996         13.5         1.300         18.70         7.43         97.5         0.8         34.04         7.75         10.9           2013/2/19         11:52         W2         MF         832681         807996         13.5         18.70         7.72         100.0         0.8         34.04         7.75         10.9         34.13         7.40         34.3         7.41         40.5           2013/2/19         11:52         W2         MF         832056         807875         13.5         17.65         99.8														
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$														1.0
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2012/2/10 10 21	<b>C</b> 2		000000	000077	14.0								1.0
2013/2/19 11:41         W1         MF         832960         807739         2.6         13.800         17.99         7.70         100.2         0.8         34.76         7.65         4.4           2013/2/19 11:41         W1         MF         832960         807739         2.6         1.300         18.74         7.36         96.6         0.8         34.04         7.75         0.9           2013/2/19 11:52         W2         MF         832681         807996         12.50         17.18         94.2         0.7         34.02         7.49         0.5           2013/2/19 11:52         W2         WF         832681         807996         13.5         6.750         18.31         7.66         99.8         0.6         34.16         7.41         0.5           12.500         17.95         7.72         100.0         0.9         34.31         7.35         2.3           2013/2/19 12:08         W3         MF         832056         807875         13.2         6.600         18.24         7.78         99.4         1.0         34.31         7.34         2.3           2013/2/19 12:08         W3         MF         832056         807875         13.2         7.61         10.10 <td>2013/2/19 18:21</td> <td>C3</td> <td>ME</td> <td>832238</td> <td>808877</td> <td>14.8</td> <td>7.400</td> <td>18.05</td> <td>7.88</td> <td>102.5</td> <td>0.9</td> <td>34.55</td> <td>7.68</td> <td>1.0</td>	2013/2/19 18:21	C3	ME	832238	808877	14.8	7.400	18.05	7.88	102.5	0.9	34.55	7.68	1.0
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $														44
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$							13.800	17.99	7.70	100.2	0.8	34.76	7.65	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$							1 300	18 74	736	06.6	0.8	34.04	7 75	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2013/2/19 11:41	W1	MF	832960	807739	2.6								0.9
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$														1.0
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$							1.000	18.70	7.29	95.7	0.7	34.02	7.49	1.2
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2013/2/19 11:52	W2	MF	832681	807996	13.5								<0.5
2013/2/19 12:08         W3         MF         832056         807875         13.2         1000         18.91         7.94         104.6         0.9         34.02         7.68         0.6           2013/2/19 12:08         W3         MF         832056         807875         13.2         1000         18.91         7.94         104.6         0.9         34.02         7.68         0.6           2013/2/19 12:08         W3         MF         832056         807875         12.200         17.94         7.55         97.8         0.9         34.32         7.54         1.1           12.200         17.94         7.53         97.6         0.9         34.35         7.38         0.8           2013/2/19 11:24         C1         MF         833686         808157         14.7         1000         18.90         7.61         100.0         0.7         33.86         7.46         <0.5	2013/2/17 11.52	112	1011	052001	001770	15.5								10.5
$ 2013/2/19 12:08 \\ W3 \\ W3 \\ W4 \\ W5 \\ W3 \\ W6 \\ W3 \\ W6 \\ W3 \\ W6 \\ W3 \\ W6 \\ W5 \\ W3 \\ W6 \\ W6 \\ W6 \\ W6 \\ W6 \\ W6 \\ W6$														2.3
2013/2/19 12:08         W3         MF         832056         807875         13.2         1.000         18.91         7.94         104.6         0.8         34.02         7.65         0.6           2013/2/19 12:08         W3         MF         832056         807875         13.2         1.000         18.91         7.78         101.3         0.9         34.22         7.54         1.1           2013/2/19 11:24         C1         MF         832666         807875         14.7         7.55         97.6         0.9         34.32         7.73         0.8           2013/2/19 11:24         C1         MF         833686         808157         14.7         7.350         18.25         7.71         100.0         0.7         33.61         7.42         0.7           2013/2/19 11:24         C2         MF         831475         80759         14.7         14.7         14.00         18.90         7.66         99.2         0.7         33.86         7.46         <0.5														
2013/2/19 12:08         W3         MF         832056         807875         13.2         6.600         18.24         7.80         101.6         0.9         34.22         7.54         1.1           2013/2/19 12:08         W3         MF         832056         807875         13.2         6.600         18.24         7.78         101.3         0.9         34.22         7.51         1.1           2013/2/19 11:24         C1         MF         833686         808157         14.7         1.200         17.94         7.53         97.6         0.9         34.37         7.38         0.8           2013/2/19 11:24         C1         MF         833686         808157         14.7         14.7         1.000         18.90         7.61         100.0         0.7         33.61         7.42         0.7           2013/2/19 11:24         C2         MF         831475         80759         14.7         1.4.7         1.300         18.90         7.61         100.0         0.7         33.61         7.42         0.7           2013/2/19 12:24         C2         MF         831475         80759         11.8         1.000         18.92         7.14         94.1         1.0         34.02         7.43														0.6
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2012/2/10 12:09	11/2	ME	922056	007075	12.0			7.80	101.6	0.9			1.1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2015/2/19 12:08	VV 5	NIF	832030	807875	15.2								1.1
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$									1					0.8
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$														
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$														0.7
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$														
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2013/2/19 11:24	Cl	MF	833686	808157	14.7								<0.5
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$														13
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		-												1.5
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$														1.3
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$														
2013/2/19 11:03         C3         MF         832208         808876         15.3         18.08         7.22         93.8         1.3         34.31         7.02         1.4           10.800         18.07         7.27         94.5         1.2         34.33         7.02         1.4           2013/2/19 11:03         C3         MF         832208         808876         15.3         1000         18.78         7.31         95.8         1.0         33.54         7.62         1.1           1.000         18.76         7.49         98.2         0.9         33.58         7.60         1.1           1.000         18.76         7.49         98.2         0.9         33.58         7.60         1.1           1.4         1.000         18.76         7.49         98.2         0.9         33.58         7.60         1.1           1.4         1.4         1.4         1.000         18.76         7.49         98.2         0.9         33.58         7.60         1.1           1.3         7.650         18.31         7.86         102.3         0.8         33.78         7.54         0.9           14.300         18.08         7.87         102.0	2013/2/19 12:24	C2	MF	831475	807759	11.8								1.8
2013/2/19 11:03         C3         MF         832208         808876         15.3         10.800         18.07         7.27         94.5         1.2         34.33         7.02         1.4           2013/2/19 11:03         C3         MF         832208         808876         15.3         1.000         18.78         7.31         95.8         1.0         33.54         7.62         1.1           1.000         18.76         7.49         98.2         0.9         33.58         7.60         1.1           1.000         18.76         7.49         98.2         0.9         33.58         7.60         1.1           1.000         18.76         7.49         98.2         0.9         33.58         7.60         1.1           1.000         18.76         7.49         98.2         0.9         33.78         7.56         0.9           14.300         18.08         7.87         102.0         0.7         33.87         7.46         0.9														1.4
2013/2/19 11:03         C3         MF         832208         808876         15.3         1.000         18.76         7.49         98.2         0.9         33.58         7.60         1.1           2013/2/19 11:03         C3         MF         832208         808876         15.3         15.3         7.650         18.32         7.78         101.2         0.8         33.77         7.56         0.9           14.300         18.08         7.87         102.0         0.7         33.87         7.46         0.9														1.4
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$														1.1
2013/2/19 11:05 C3 MIF 832208 80870 15.3 7.650 18.31 7.86 102.3 0.8 33.78 7.54 0.9 14.300 18.08 7.87 102.0 0.7 33.87 7.46 (0.5														
14.300 18.08 7.87 102.0 0.7 33.87 7.46	2013/2/19 11:03	C3	MF	832208	808876	15.3								0.9
							14.300	18.12	7.79	102.0	0.7	33.87	7.49	<0.5

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



#### Sok Kwu Wan

Date 21-Feb-13

Data (minus	Taratian	<b>T</b> : 1. <b>*</b>	Co-ore	dinates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	Tide*	East	North	m	m	ĉ	mg/L	%	NTU	ppt	unit	mg/l
2013/2/21 17:44	W1	ME	832958	807716	2.8	1.400	18.49	8.49	111.3	0.9	34.54	7.75	0.5
2010/2/21 1/111			002/00	007710	2.0	1.400	18.50	8.14	106.8	0.9	34.53	7.74	0.5
						1.000	18.44 18.45	7.24 7.70	94.8 100.8	0.9	34.33 34.34	7.83 7.83	0.8
						6.900	18.07	8.22	100.8	1.1	34.69	7.85	
2013/2/21 17:29	W2	ME	832674	807971	13.8	6.900	18.07	8.18	107.1	1.2	34.70	7.75	0.9
						12.800	17.86	7.99	103.8	1.1	35.03	7.71	0.7
						12.800	17.84	7.93	102.5	1.1	34.12	7.69	0.7
						1.000	18.40	7.48	97.7	1.3	34.28	7.80	1.6
						1.000	18.42	7.75	101.0	1.3	33.60	7.76	
2013/2/21 17:16	W3	ME	832038	807904	13.5	6.750 6.750	18.36 18.30	8.14 8.22	106.4	1.3 1.2	34.41 34.46	7.69 7.67	2.3
						12.500	17.97	7.96	107.5	1.2	34.79	7.63	1.
						12.500	17.95	7.90	102.0	2.2	33.57	7.62	3.1
						1.000	18.21	7.23	94.3	1.1	34.52	7.76	2.2
						1.000	18.26	7.55	98.5	1.0	34.49	7.76	2.2
2013/2/21 18:03	C1	ME	833681	808179	15.6	7.800	18.10	8.25	107.5	0.9	34.73	7.74	2.2
						7.800 14.600	18.09 17.87	8.22 7.98	106.9 103.8	1.0 0.8	34.44 35.11	7.73 7.72	
						14.600	17.88	7.98	103.8	0.8	35.11	7.72	1.5
						14.000	17.68	7.15	93.7	1.2	33.94	7.69	
						1.000	18.66	7.65	99.8	1.0	33.15	7.65	0.7
2013/2/21 17:03	C2	ME	831449	807761	11.4	5.700	18.44	8.05	105.3	1.4	34.29	7.52	1.8
2013/2/21 17.03	C2	IVIL	031449	807701	11.4	5.700	18.40	7.99	104.4	1.5	34.36	7.52	1.0
						10.400	18.00	7.61	99.1	1.6	34.86	7.41	2.4
						10.400	17.99	7.59	98.8	1.7	34.88	7.41	
						1.000	18.46 18.42	9.79 8.55	128.3 111.9	0.7	34.55 34.54	7.78 7.77	1.9
						8.050	18.03	8.33	111.9	1.2	34.98	7.73	
2013/2/21 18:27	C3	ME	832246	808866	16.1	8.050	18.07	8.32	108.5	1.0	34.96	7.71	1.7
						15.100	17.87	7.91	103.0	1.2	35.18	7.72	1.5
						15.100	17.86	7.86	102.0	1.1	34.81	7.71	1.5
						1.0.50	10.00	0.05	1015		00.04		الكمي
2013/2/21 10:15	W1	MF	832977	807744	2.7	1.350 1.350	18.30 18.30	8.05 8.00	104.7 104.2	0.9	33.91 33.91	7.84 7.84	2.0
						1.330	18.30	8.18	104.2	1.0	33.79	7.84	
						1.000	18.30	8.04	100.5	1.0	33.81	7.91	1.8
2013/2/21 9:59	W2	MF	832683	808004	13.6	6.800	18.18	7.88	102.4	0.9	34.07	7.83	1.5
2015/2/21 9.59	VV Z	IVIF	652065	000004	15.0	6.800	18.19	7.89	102.5	0.8	34.05	7.85	1.5
						12.600	18.02	7.62	99.0	1.6	34.38	7.83	2.1
						12.600	18.02	7.58	98.5	1.6	34.40	7.83	
						1.000	18.28 18.28	7.94 7.94	103.3 103.3	1.5 1.2	33.80 33.80	7.86 7.86	0.5
						6.600	18.25	7.89	103.5	1.2	33.89	7.82	
2013/2/21 9:46	W3	MF	832057	807899	13.2	6.600	18.26	7.89	102.6	1.3	33.87	7.84	1.7
						12.200	18.10	7.52	97.7	3.0	34.21	7.78	2.4
						12.200	18.09	7.39	96.0	3.0	34.23	7.80	2.4
						1.000	18.31	8.08	105.2	1.0	33.84	7.93	1.0
						1.000 7.450	18.32 18.21	8.09 7.98	105.3 103.9	1.0 0.9	33.85 34.12	7.88 7.88	}
2013/2/21 10:29	C1	MF	833718	808190	14.9	7.450	18.18	7.97	103.9	1.0	34.12	7.86	0.5
						13.900	17.95	7.77	100.8	1.0	34.50	7.86	17
						13.900	17.96	7.73	100.3	1.0	34.51	7.85	1.6
						1.000	18.24	7.77	100.7	1.2	33.48	7.87	1.5
						1.000	18.25	7.79	101.0	1.2	33.53	7.85	
2013/2/21 9:31	C2	MF	831472	807756	11.4	5.700 5.700	18.25 18.25	7.78 7.79	101.0 101.2	1.2	33.63 33.64	7.82 7.78	2.0
						10.400	18.25	7.69	99.9	1.0	33.72	7.78	
						10.400	18.26	7.62	99.0	1.4	33.72	7.79	1.2
						1.000	18.30	7.93	103.3	1.1	33.95	7.84	1.0
	1	MF	832232		15.4	1.000	18.31	7.93	103.3	1.2	33.95	7.84	1.0
2013/2/21 10:52	C3	MF	832232	808879	15.4	7.700	18.06	7.90	102.5	1.0	34.29	7.85	0.5
2013/2/21 10:52	C3	MF	832232	808879	15.4			7.90 7.86 7.67	102.5 102.0 99.5	1.0 1.0 1.2	34.29 34.32 34.49	7.85 7.82 7.82	0.5

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



#### Sok Kwu Wan

Date 23-Feb-13

Data (Tima	Teachian	T:4-*	Co-ore	dinates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	Tide*	East	North	m	m	ç	mg/L	%	NTU	ppt	unit	mg/l
2013/2/23 11:14	W1	ME	832960	807726	2.2	1.100	18.19	8.02	104.3	0.7	34.08	7.67	2.6
						1.100	18.22 18.21	8.25 8.63	107.3 112.3	0.8	34.09 34.12	7.60	
						1.000	18.21	8.03	112.5	0.8	34.12	7.43	1.1
2012/2/22 11 22			000.000		10.6	6.300	18.00	8.52	110.5	0.6	34.24	7.45	
2013/2/23 11:29	W2	ME	832676	808000	12.6	6.300	18.00	8.56	110.9	0.6	34.25	7.44	1.5
						11.600	17.91	8.39	108.7	1.0	34.33	7.39	1.6
	-					11.600	17.91	8.29	107.4	0.9	34.37	7.39	110
						1.000	18.42 18.39	7.68 7.90	100.4 103.0	0.9	34.15 34.09	7.83 7.79	2.5
						6.100	18.20	8.32	105.0	0.9	34.09	7.57	
2013/2/23 11:43	W3	ME	832054	807890	12.2	6.100	18.19	8.28	107.7	0.9	34.18	7.58	2.4
						11.200	17.97	8.04	104.3	2.1	34.37	7.54	3.4
						11.200	17.96	8.04	104.3	2.1	34.39	7.53	5.4
						1.000	18.13	8.46	109.8	0.8	34.00	7.66	1.3
						1.000 7.350	18.15 17.88	8.73 8.33	113.4 107.7	0.9	34.00 34.17	7.65	
2013/2/23 10:55	C1	ME	833717	808188	14.7	7.350	17.89	8.21	107.7	0.9	34.16	7.64	1.5
						13.700	17.86	7.98	103.2	1.9	34.25	7.63	0.1
						13.700	17.86	7.95	102.8	1.9	34.25	7.63	2.1
						1.000	18.40	7.77	101.4	1.1	34.08	7.92	1.1
						1.000	18.40	7.85	102.4	0.9	34.08	7.88	1.1
2013/2/23 11:56	C2	ME	831479	807756	10.4	5.200	18.27	8.34	108.6	1.0	34.15	7.77	1.1
						5.200 9.400	18.26 18.19	8.33 8.20	108.4 106.7	0.8	34.15 34.28	7.76 7.67	
						9.400	18.20	7.98	100.7	1.1	34.20	7.67	1.8
						1.000	18.18	8.09	105.0	0.9	33.85	7.65	
						1.000	18.16	8.12	105.3	1.1	33.88	7.65	0.9
2013/2/23 10:35	C3	ME	832231	808869	15.2	7.600	17.91	8.24	106.5	1.0	34.04	7.64	0.8
2013/2/23 10.33	CS	IVIE	632231	000009	13.2	7.600	17.89	8.18	105.8	1.1	34.05	7.63	0.0
						14.200	17.83	8.00	103.4	2.1	34.16	7.62	0.9
						14.200	17.82	7.95	102.7	2.4	34.18	7.62	
						1.350	18.35	8.78	114.7	0.9	34.34	7.57	
2013/2/23 16:28	W1	MF	832975	807728	2.7	1.350	18.37	8.83	114.7	0.9	34.29	7.57	1.2
						1.000	18.38	8.21	107.2	1.2	34.23	7.78	
						1.000	18.38	8.42	110.0	1.1	34.23	7.71	2.3
2013/2/23 16:12	W2	MF	832681	807974	13.7	6.850	18.04	8.93	115.9	0.9	34.35	7.62	2.0
2013/2/23 10.12	** 2	1411	052001	007974	15.7	6.850	18.06	8.83	114.7	0.9	34.34	7.58	2.0
						12.700	17.91	8.48	109.8	0.8	34.46	7.52	2.9
						12.700	17.91	8.33	108.0 95.8	0.8	34.46	7.52	
						1.000	18.48 18.49	7.33 7.59	95.8 99.3	1.3 1.4	34.15 34.12	7.42	1.2
						6.700	18.21	8.17	106.4	1.4	34.27	7.22	
2013/2/23 15:56	W3	MF	832058	807907	13.4	6.700	18.22	8.29	107.9	1.3	34.25	7.19	1.2
						12.400	17.91	8.18	105.6	0.8	33.72	7.09	1.4
						12.400	17.91	8.14	105.1	0.7	33.66	7.08	1.4
						1.000	18.47	7.92	103.5	1.2	34.15	7.88	0.5
						1.000 7.700	18.44 18.06	8.20 8.70	107.2 113.0	1.2	34.21 34.32	7.85 7.75	
2013/2/23 16:44	C1	MF	833722	808156	15.4	7.700	18.00	8.61	115.0	1.1	34.32	7.73	2.1
						14.400	17.83	8.32	107.7	0.7	34.57	7.64	2.1
						14.400	17.83	8.23	106.7	0.8	34.63	7.66	2.4
						1.000	18.55	7.49	98.0	1.3	34.04	7.86	0.7
						1.000	18.54	7.83	102.6	1.0	34.14	7.70	0.7
2013/2/23 15:43	C2	MF	831472	807731	11.7	5.850	18.29	8.08	105.4	1.1	34.25	7.43	0.9
						5.850 10.700	18.29 17.95	8.18 8.16	106.7 104.9	1.0 1.3	34.26 32.87	7.33 7.24	
						10.700	17.95	7.94	104.9	1.3	32.87	7.15	1.6
	1					1.000	17.97	8.82	115.2	0.8	34.30	7.71	
						1.000	18.43	8.85	115.7	0.8	34.24	7.71	1.4
2013/2/23 17:05	C3	MF	832247	000000	16.3	8.150	18.08	8.68	112.8	0.8	34.35	7.64	1.0
2013/2/23 17:03	CS	IVIP	652247	808889	10.5	8.150	18.06	8.58	111.4	0.8	34.38	7.66	1.0
						15.300	17.91	8.41	109.1	0.9	34.59	7.63	2.2
	1					15.300	17.89	8.29	107.5	0.9	34.61	7.63	

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



#### Sok Kwu Wan

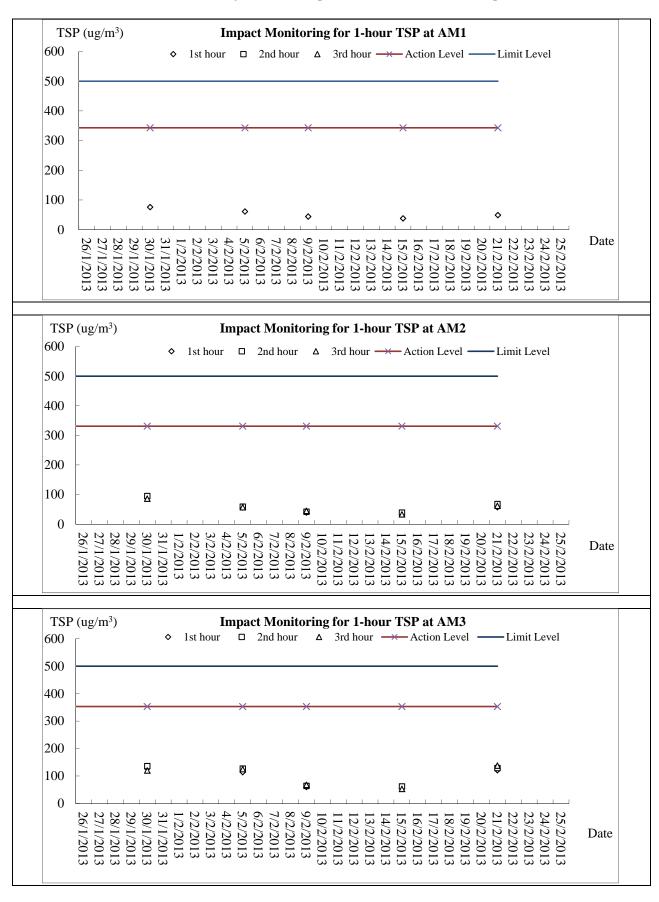
25-Feb-13 Date

Data / Wina	Territor	Tide*	Co-or	linates	Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
Date / Time	Location	TICE.	East	North	m	m	c	mg/L	%	NTU	ppt	unit	mg/l
2013/2/25 11:56	W1	ME	832974	807740	2.3	1.150	18.15	7.55	98.2	0.9	34.19	7.80	1.2
2010/2/20 11:00		10112	002771	0077.10	2.0	1.150	18.17	7.95	103.5	1.1	34.24	7.73	
						1.000	18.18	8.88	115.6	0.7	34.26	7.57	1.1
						1.000 6.300	18.16 18.11	8.90 8.82	115.8 114.6	0.7	34.30 34.37	7.56 7.51	
2013/2/25 12:10	W2	ME	832683	807977	12.6	6.300	18.10	8.78	114.0	0.8	34.37	7.50	1.6
						11.600	17.92	8.68	112.5	0.9	34.47	7.46	
						11.600	17.86	8.60	111.4	1.0	34.53	7.44	1.4
						1.000	18.11	8.02	104.2	0.7	34.36	7.80	0.9
						1.000	18.07	8.23	107.0	0.8	34.39	7.79	0.9
2013/2/25 12:22	W3	ME	832056	807879	12.2	6.100	18.02	8.33	108.2	0.7	34.43	7.70	0.8
						6.100	18.02	8.40	109.1	0.7	34.45	7.69	
						11.200 11.200	17.91 17.88	8.27 8.15	107.4 105.7	1.1	34.60 34.61	7.63 7.61	1.2
						1.000	17.00	8.40	105.7	0.9	34.01	7.35	1
						1.000	18.13	8.41	109.1	0.9	34.11	7.35	1.2
2012/2/25 11 11	<b>C1</b>		000717	000104	14.0	7.400	17.88	8.30	107.2	0.8	34.24	7.33	1.4
2013/2/25 11:41	C1	ME	833717	808184	14.8	7.400	17.85	8.28	107.0	0.8	34.26	7.32	1.4
						13.800	17.78	8.00	103.4	0.8	34.36	7.31	1.4
						13.800	17.78	7.95	102.7	0.7	34.36	7.31	1.4
						1.000	18.19	7.72	100.5	0.9	34.28	7.85	1.9
						1.000	18.18	7.86	102.3	0.9	34.29	7.84	
2013/2/25 12:35	C2	ME	831464	807738	10.7	5.350 5.350	18.09 18.10	8.29 8.33	107.8 108.3	1.0 1.3	34.36 34.39	7.75 7.73	1.6
						9.700	17.98	8.27	108.5	1.5	34.39	7.67	
						9.700	17.97	8.25	107.4	1.0	34.49	7.66	1.1
						1.000	18.18	7.66	99.6	1.8	33.94	7.61	1.0
						1.000	18.18	7.90	102.7	2.0	33.96	7.57	1.8
2013/2/25 11:20	C3	ME	832208	808855	15.2	7.600	17.89	8.18	105.8	1.5	34.11	7.45	1.1
2013/2/23 11.20	CS	IVIE	632206	000000	13.2	7.600	17.89	8.20	106.1	1.5	34.13	7.41	1.1
						14.200	17.78	8.03	103.7	1.0	34.25	7.35	1.7
						14.200	17.80	8.02	103.5	0.9	34.24	7.34	
						1.400	10.27	8.00	0 1175 06	24.20	7.70	l l	
2013/2/25 17:47	W1	MF	832972	807739	2.8	1.400	18.37 18.36	8.99 8.84	117.5 115.5	0.6	34.38 34.39	7.79	1.0
						1.400	18.30	7.78	101.7	0.7	34.39	8.00	1
						1.000	18.36	8.15	106.5	0.9	34.33	7.96	1.4
2012/2/25 17 21	11/2		822661	007000	12.2	6.650	18.17	8.58	111.7	1.1	34.43	7.89	1.4
2013/2/25 17:31	W2	MF	832661	807990	13.3	6.650	18.17	8.66	112.7	1.1	34.44	7.87	1.4
						12.300	18.16	8.46	110.2	1.1	34.58	7.83	1.6
						12.300	18.17	8.46	110.3	0.9	34.67	7.79	1.0
						1.000	18.38	7.51	98.0	1.1	34.20	8.02	1.6
						1.000	18.38	7.79	101.7	0.9	34.26	8.00	
2013/2/25 17:19	W3	MF	832040	807904	13	6.500 6.500	18.24 18.24	8.34 8.49	108.7 110.7	1.1	34.41 34.45	7.88 7.87	2.0
						12.000	17.98	8.33	108.1	1.4	34.45	7.72	l
						12.000	17.97	7.95	103.2	1.0	34.59	7.68	2.7
						1.000	18.40	8.27	108.1	1.1	34.33	7.97	1.0
						1.000	18.41	8.39	109.6	1.3	34.33	7.95	1.2
2013/2/25 18:02	C1	MF	833692	808196	15.6	7.800	18.28	8.73	114.0	0.8	34.46	7.88	1.0
2013/2/23 10.02	CI	IVII	655092	000190	15.0	7.800	18.29	8.70	113.6	0.8	34.46	7.88	1.0
						14.600	18.13	8.61	112.1	0.9	34.65	7.84	1.7
						14.600	18.14	8.58	111.8	0.7	34.69	7.84	
						1.000	18.33 18.33	7.93 8.18	103.4 106.6	1.2	34.13 34.18	7.92 7.87	1.6
						5.600	18.33	8.66	106.6	1.1	34.18	7.74	<u> </u>
2013/2/25 17:06	C2	MF	831458	807752	11.2	5.600	18.30	8.72	113.0	1.1	34.36	7.69	2.1
						10.200	18.05	8.66	112.5	0.9	34.38	7.57	
						10.200	18.05	8.54	110.9	0.9	34.41	7.59	4.0
						1.000	18.42	9.15	119.7	0.7	34.37	7.84	1.0
						1.000	18.41	9.14	119.5	0.7	34.36	7.83	1.2
2013/2/25 18:22	C3	MF	832236	808883	16	8.000	18.30	9.14	119.4	0.8	34.49	7.82	1.5
2013/2/23 10.22	0.5	.,11	052250		10	8.000	18.33	9.12	119.2	0.8	34.48	7.80	1.5
						15.000	18.13	8.95	116.7	0.9	34.71	7.79	1.6
						15.000	18.16	8.88	115.8	0.8	34.71	7.79	I



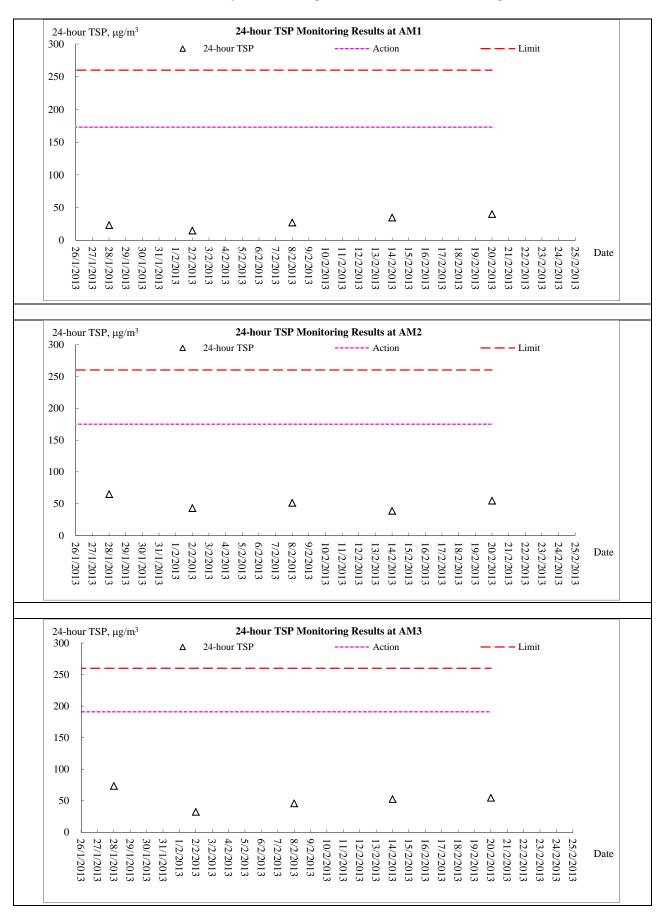
# Appendix H

# **Graphical Plots of Monitoring Results**



#### Air Quality Monitoring – 1 hour TSP Monitoring



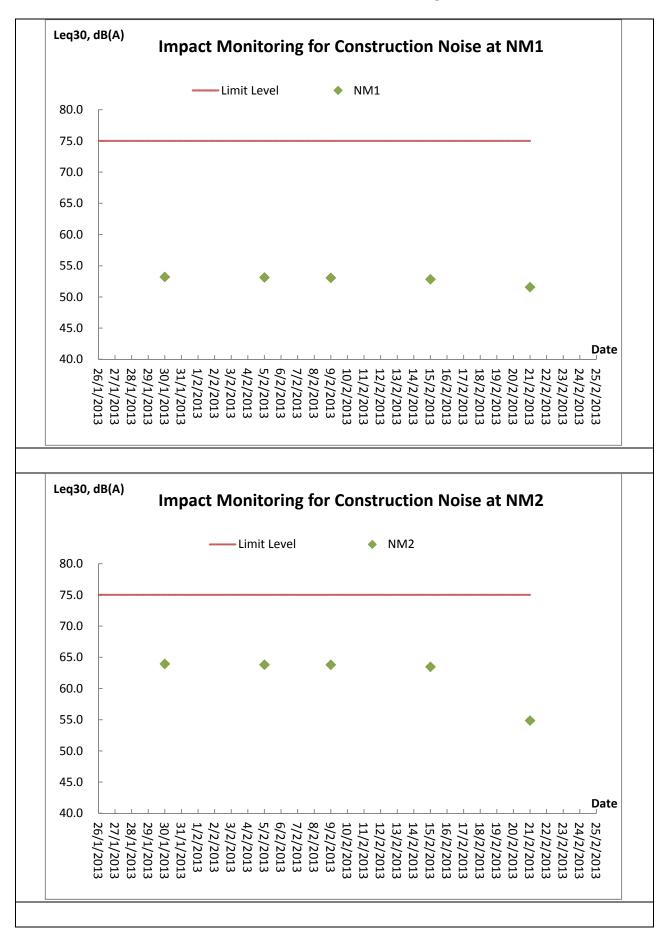


#### Air Quality Monitoring – 24 hour TSP Monitoring

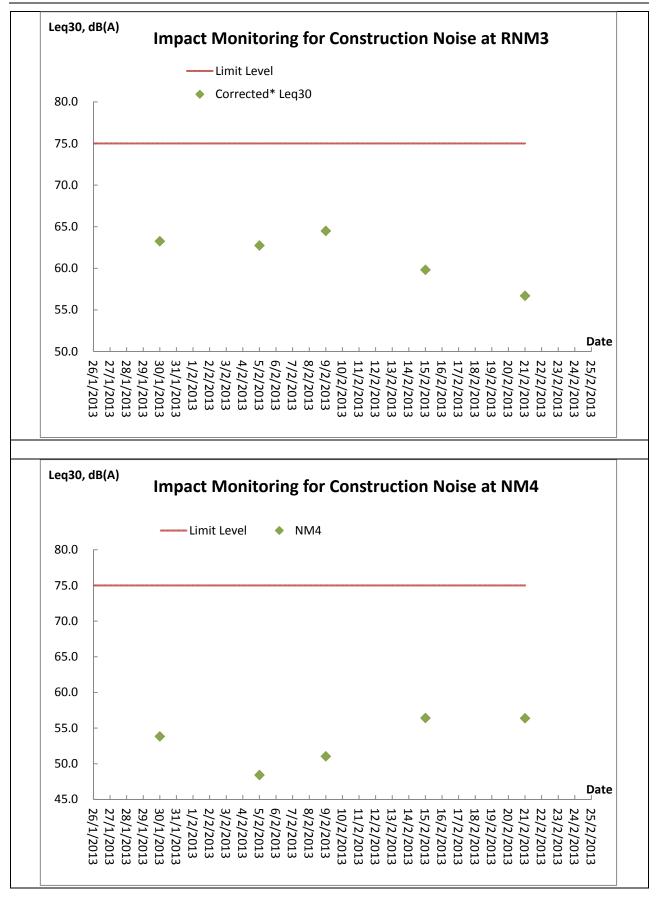


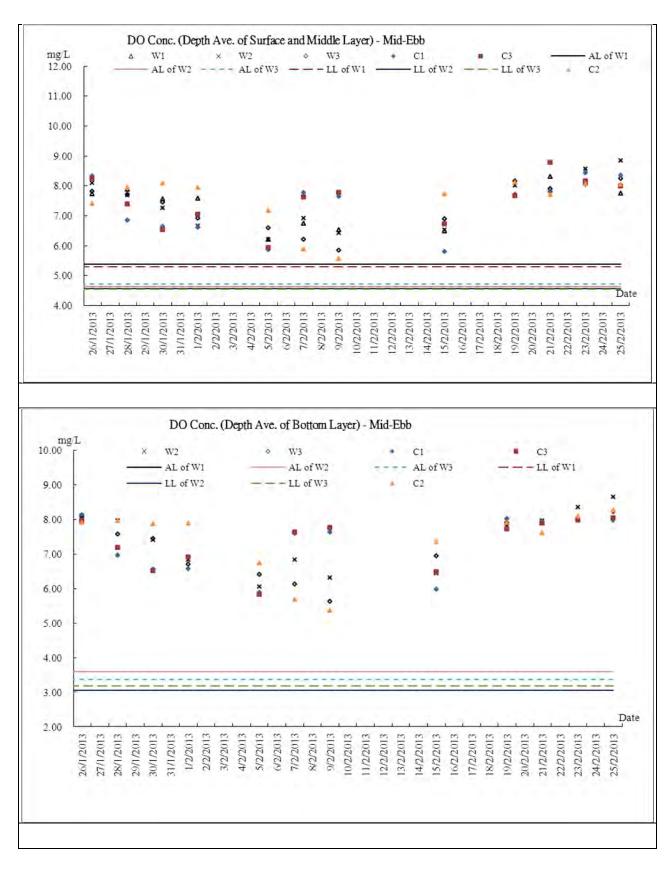


#### **Construction Noise Monitoring**



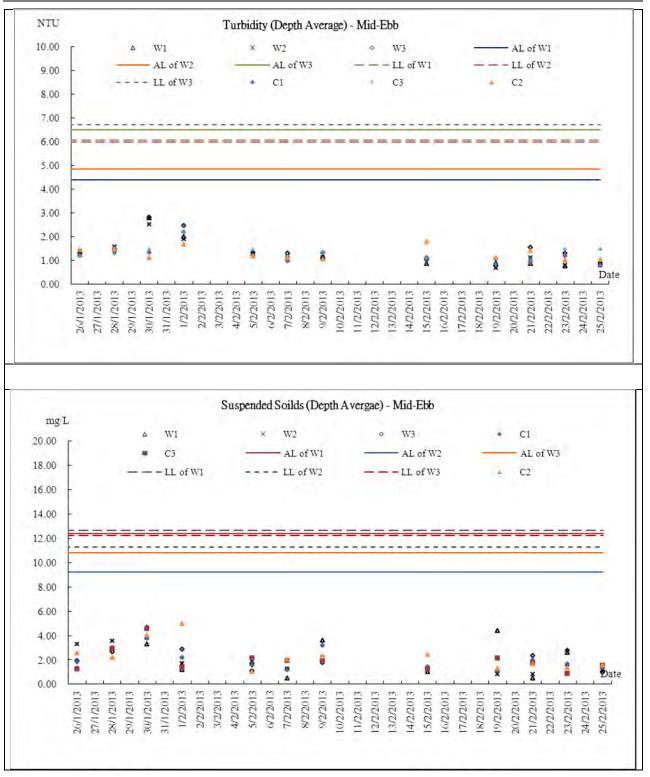






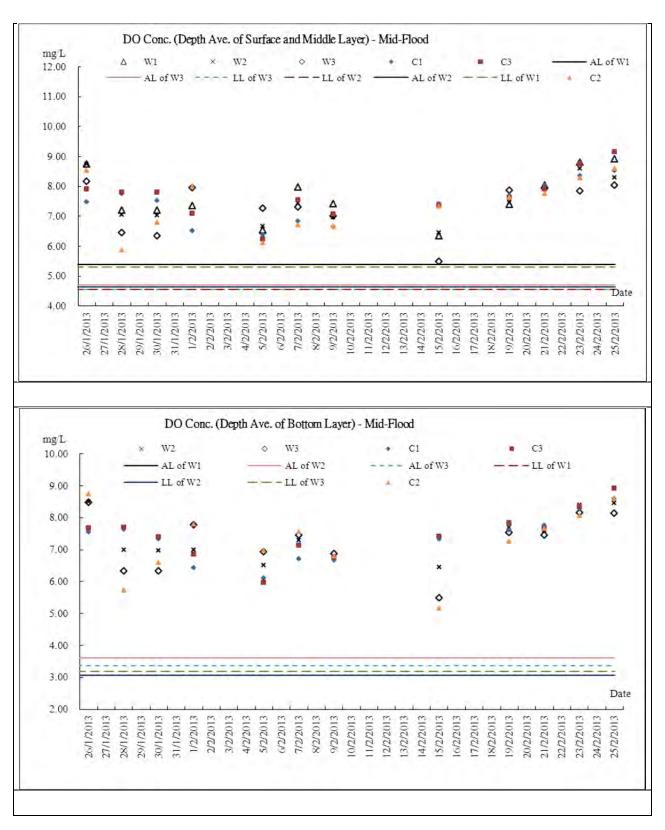
#### Marine Water Quality Monitoring - Mid-Ebb Tide





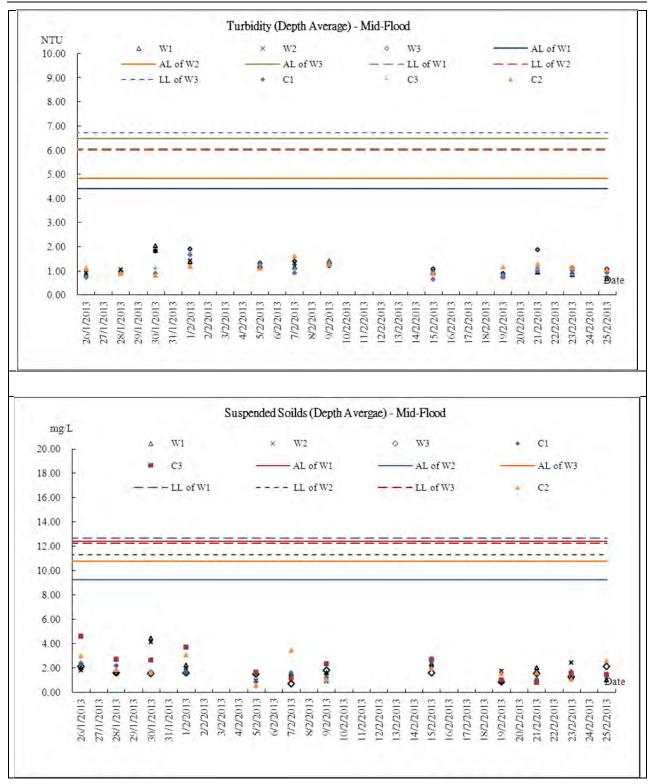
#### Contract No. DC/2009/13 – Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan Sok Kwu Wan – EM&A Monthly Report – February 2013

**AUES** 



#### Marine Water Quality Monitoring - Mid-Flood Tide





AUES



# Appendix I

# **Meteorological Information**



#### Meteorological Data Extracted from HKO during the Reporting Period

Date		Weather
26-Jan-13	Sat	Sunny periods, cloudy, moderate east to northeasterly winds.
27-Jan-13	Sun	Sunny periods, cloudy, moderate east to northeasterly winds.
28-Jan-13	Mon	Sunny periods, cloudy, moderate east to northeasterly winds.
29-Jan-13	Tue	Mainly fine, dry, moderate east to northeasterly winds.
30-Jan-13	Wed	Fine, light to moderate easterly winds.
31-Jan-13	Thu	Cloudy, sunny periods, moderate to fresh easterly winds
1-Feb-13	Fri	Cloudy, fog, rain, light to moderate easterly winds.
2-Feb-13	Sat	Cloudy, fog, rain, light to moderate easterly winds.
3-Feb-13	Sun	Warm, rain, sunny periods, moderate easterly winds
4-Feb-13	Mon	Warm, sunny periods, moderate easterly winds
5-Feb-13	Tue	Warm, rain, sunny periods, moderate easterly winds
6-Feb-13	Wed	Warm, sunny periods, moderate easterly winds
7-Feb-13	Thu	Cloudy, rain, fresh east to northeasterly winds.
8-Feb-13	Fri	Warm, rain, sunny periods, moderate easterly winds
9-Feb-13	Sat	Cloudy, rain, fresh east to northeasterly winds.
10-Feb-13	Sun	Warm, rain, sunny periods, moderate easterly winds
11-Feb-13	Mon	Warm, rain, sunny periods, moderate easterly winds
12-Feb-13	Tue	Cloudy, rain, fresh east to northeasterly winds.
13-Feb-13	Wed	Cloudy, rain, fresh east to northeasterly winds.
14-Feb-13	Thu	Warm, rain, sunny periods, moderate easterly winds
15-Feb-13	Fri	Cloudy, sunny periods, Light winds.
16-Feb-13	Sat	Cloudy, fog, warm, light to moderate southeasterly winds
17-Feb-13	Sun	Cloudy, sunny periods, Light winds.
18-Feb-13	Mon	Cloudy, fog, warm, light to moderate southeasterly winds
19-Feb-13	Tue	Sunny periods, fog, rain, light winds, winds will freshen from the east to northeast
20-Feb-13	Wed	Cloudy, bright, fresh east to northeasterly winds.
21-Feb-13	Thu	Cloudy, sunny periods, moderate east to northeasterly winds.
22-Feb-13	Fri	Cloudy, sunny periods, moderate east to northeasterly winds.
23-Feb-13	Sat	Cloudy, bright, fresh east to northeasterly winds.
24-Feb-13	Sun	Cloudy, sunny periods, moderate east to northeasterly winds.
25-Feb-13	Mon	Cloudy, fog, rain, sunny intervals, fresh easterly winds.



# Appendix J

### Monthly Summary Waste Flow Table

### Monthly Summary Waste Flow Table for February 2013

			Actu	al Quant	ities of Ir	ert C&D	Material	s Genera	ted Mont	hly				A	ctual Qu	antities	of C&D	Wastes	Generat	ed Mont	hly	
Month	Total Duantity		Hard Rock and Large Broken Concrete (b)		Reused in the Contract (c)		Reused in other Projects (d)		Dispo Publi (e	c Fill	Import (i		Metals		Paper/ cardboard packaging		Plastics		Chemical Waste			ners, ubbish
	(in '00	$100m^{3})$	(in '00	$00m^{3})$	(in '00	00m <sup>3</sup> )	(in '00	$100m^{3}$ )	(in '00	$100m^{3}$ )	(in '00	(1000000000000000000000000000000000000	(in '0	00kg)	(in '0	00kg)	(in '0	00kg)	(in '0	00kg)	(in tonne)	
	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW
2013	13.341	50.328	0.160	0.410	0.740	2.802	0.000	0.000	12.601	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	<mark>400.410</mark>	<mark>103.440</mark>
Jan	0.332	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.332	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.040	9.840
Feb	0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.530	6.530
Mar																						
Apr																						
May																						
Jun																						
<mark>Sub-total</mark>	13.756	50.328	0.160	0.415	0.740	2.802	0.000	0.000	13.016	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	<mark>416.980</mark>	<mark>119.810</mark>
Jul																						
Aug																						
Sep																						
Oct																						
Nov																						
Dec																						
Total	13.756	50.328	0.160	0.415	0.740	2.802	0.000	0.000	13.016	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	<mark>416.980</mark>	119.810
Total	64.0	)84	0.5	74	3.5	42	0.0	00	60.5	542	0.0	00	0.0	00	0.0	00	0.000		0.000		536.790	

*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

-



		Inspected b	W		Checklist No. TCS512B-29 Jan 2013						
	Construction of Sewage Treatment Works at	ETL/ ET's R	Representat	ive	Ms. Nicola Hon						
	Yung Shue Wan and Sok Kwu Wan	RE's Repre	sentative		Mr. Alfred		¢				
		Contractor'	•	ntative	Mr. So K.Y.						
		IEC's Repro	esentative		14:00						
Date:	29 Jan 2013				Environmental Permit No.						
PART		Rainy		ſ		1/2007A					
Weat	her:SunnyFineCloudy erature:7.7⁰C	( any		L							
Humi											
Wind		Calm									
	nspected										
1	Sok Kwu Wan										
PART	B: SITE AUDIT										
[	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance;	Not	Yee		Follow	N/A	Photo/				
Note:	Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Obs.	Yes	No 	Up	N/A	Remarks				
Sectio	n 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?		$\checkmark$			<u> </u>					
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 t sedimentation tanks?		$\checkmark$								
1.06	Are there any perimeter channels provided at site boundaries t intercept storm runoff from crossing the site?	to									
1.07	Is drainage system well maintained?		$\checkmark$								
1.08	As excavation proceeds, are temporary access roads protected t crushed stone or gravei?	<sup>by</sup>									
1.09	Are temporary exposed slopes properly covered?					$\checkmark$					
1.10	Are earthworks final surfaces well compacted or protected?										
1.11	Are manholes adequately covered or temporarily sealed?		$\square$								
1,12	Are there any procedures and equipment for rainstorm protection	?	$\mathbf{\overline{\mathbf{A}}}$								
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?		$\checkmark$								
1.17	Are the vehicle and plant servicing areas paved and located with roofed areas?	nin 🔲									
1.18	Is the oil/grease leakage or spillage avoided?		$\checkmark$				·····				
1.19	Are there any measures to prevent leaked oil from entering t drainage system?		<b>V</b>				,				
1.20	Are there any measures to collect spilt cement and concre washings during concreting works?		$\checkmark$								
1.21	Are there any oil interceptors/grease traps in the drainage system for vehicle and plant servicing areas, canteen kitchen, etc?	ms									
1.22	Are the oil interceptors/grease traps maintained properly?					$\checkmark$					

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NO(e.	Not Obs - Not Observed: Yes: Compliance: No: Non-Compliance: Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Ops.		No	Follow	N/A	Photo/
1.23	Is used bentonite recycled where appropriate?					$\checkmark$	I
1.25	Designated settlement area for runoff/wheel wash waste is provide					1	
1.24	and located at the streambed with 1-2m deep, 12m long and around 50m3 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.					$\checkmark$	
1.27	Mobile toilets should provide on site and located away the stream course.		$\checkmark$				
1.28	License collector should be employed for handling the sewage of mobile toilet.		$\checkmark$				
1.29	Is ponding /stand water avoided?		$\checkmark$				
Secti	on 2: Air Quality						
2.01	Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?					$\checkmark$	
2.02	Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?		$\checkmark$				
2.03	Are the excavated materials sprayed with water during handling?					$\checkmark$	
2.04	Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?					$\checkmark$	
2.05	Is the exposed earth properly treated within six months after the last construction activities?					$\checkmark$	
2.06	Are the access roads sprayed with water to maintain the entire road surface wet or paved?					$\checkmark$	
2.07	Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?					$\checkmark$	
2.08	is the load on vehicles covered entirely by clean impervious sheeting?					$\checkmark$	
2.09	Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?					$\checkmark$	
2.10	Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?					$\checkmark$	
2.11	is dark smoke emission from plant/equipment avoided?		$\checkmark$				
2.12	Are de-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement?					$\checkmark$	<u></u>
2.13	Are site vehicles travelling within the speed limit not more than 15km/hour?					$\checkmark$	
2.14	Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?		$\checkmark$				
2.15	Is open burning avoided?		$\checkmark$				
2.16	Excavated materials from the stream must be removed from the site on the same day. The materials shall be stored in covered impermeable skips awaiting removal from site.					$\checkmark$	
Sec	tion 3: Noise						
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?					2	
3.02	Is silenced equipment adopted?					$\square$	
3.03	Is idle equipment turned off or throttled down?	$\square$					*****
3.04			$\checkmark$				
3.05	construction activities cause noise impact on scholare recorrerer						
3.06	dunið oberations						
3.07	operation?					$\square$	
3.08	Are flaps and panels of mechanical equipment closed during operation?					$\square$	

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	Not Obe - Not Observed: Yes: Compliance: No: Non-Compliance:	Not	X	No	Follow	NI/A	Photo/
Note:	Follow Up: Observations requiring follow-Up actions         N/A: Not Applicable           Are Construction Noise Permit(s) applied for percussive piling	Obs.				$\overline{\mathbf{A}}$	Remarko
3.09	works? Are Construction Noise Permit(s) applied for general construction						
3.10	works during restricted hours?						
3.11	Are valid Construction Noise Permit(s) posted at site entrances?					$\square$	
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).					$\checkmark$	
Sectio	on 4: Waste/Chemical Management						
4.01	Waste Management Plan had been submit to Engineer for approval.		$\checkmark$				
4.02	Are receptacles available for general refuse collection?		$\checkmark$				
4.03	is general refuse sorting or recycling implemented?		$\checkmark$				
4.04	Is general refuse disposed of properly and regularly?		$\checkmark$				
4.05	Is the Contractor registered as a chemical waste producer?					$\checkmark$	
4.06	Are the chemical waste containers and storage area properly labelled?					$\checkmark$	
4.07	Are the chemical wastes stored in proper storage areas?					$\checkmark$	
4.08	Is the chemical container or equipment provided with drip tray?					$\checkmark$	
4.09	Is the chemical waste storage area used for storage of chemical waste only?					$\checkmark$	
4.10	Are incompatible chemical wastes stored in different areas?					$\checkmark$	
4.11	Are the chemical wastes disposed of by licensed collectors?					$\checkmark$	
4.12	Are trip tickets for chemical wastes disposal available for inspection?					$\square$	
4.13	Are chemical/fuel storage areas bounded?					$\checkmark$	
4.14	Are designated areas identified for storage and sorting of construction wastes?					$\checkmark$	
4.15	Are construction wastes sorted (inert and non-inert) on site?		$\checkmark$				
4.16	Are construction wastes reused?		$\checkmark$				
4.17	Are construction wastes disposed of properly?				$\checkmark$		Photo 1
4.18	Are site hoardings and signboards made of durable materials instead of timber?		$\checkmark$				
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?		$\checkmark$				
4.20	Are appropriate procedures followed if contaminated material exists?					$\checkmark$	······
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?					$\checkmark$	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.		$\checkmark$				
4.23	Contaminated sediments will be managed according to WBTC					$\checkmark$	
Sec	tion 5: Landscape & Visual				_		
5.01	Are retained and transplanted trees in health condition?					$\checkmark$	

Follow up (5 Feb 20(3) The construction waste was cleared.

Enwing

	Not Obs - Not Observed: Yes: Compliance: No: Non-Compliance:	Not		 Follow		Photo/
Note:	Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Obs.		 Up		Remarks
5.02	Are retained and transplanted trees properly protected?			$\checkmark$		Refer to EM&A report - December 2 Jan 24.
5.03	Are surgery works carried out for the damaged trees?	$\checkmark$				
5.04	Is damage to trees outside site boundary due to construction activities avoided?		$\checkmark$			
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?				$\checkmark$	
Sectio	n 6: Others					
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?				$\checkmark$	

### (Sok Kwu Wan)

### Remarks:

### Findings of Site Inspection: (29 Jan 2013)



1. Scattered of construction waster was observed, the Contractor should improve housekeeping of the site.

IEC's representative	RE's representative	ET's representative	EO's representative	Contractor's representative
	A	Al	Carte-	
( )		( Nicola Hon )		( )
	(Alfiel Cherry 57eb 2013	) 29 Jan 20/3	(So. K.Y. 5 Feb 2013	)

Project: Date: PART Weath Tempe Humic Wind: Area Ir 1	Construction of Sewage Treatment Works at       F         Yung Shue Wan and Sok Kwu Wan       F         5 February 2013       F         A:       GENERAL INFORMATION         er:       Sunny         Fine       Cloudy         rature:       23         °C       °C         lity:       High         Strong       Breeze         Strong       Breeze         Sok Kwu Wan	RE's Repre	epresentative sentative s Represent	-		/ong Cheung	9512B-5 Feb 2013
PARTI		Not	<u> </u>		Follow		Photo/
Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Obs.	Yes	No	Up	N/A	Remarks
	n 1: Water Quality	П	$\square$	П			·····
1.01	Is an effluent discharge license obtained for the Project?						
1.02	Is the effluent discharged in accordance with the discharge licence?		<u>.</u>				<u> </u>
1.03	Is the discharge of turbid water avoided? Are there proper desilting facilities in the drainage systems to						
1.04	reduce SS levels in effluent?						
1.05	Are there channels, sandbags or bunds to direct surface run-off to sedimentation tanks?						<u></u>
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?		$\checkmark$				
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	′□					
1.09	Are temporary exposed slopes properly covered?					$\overline{\mathbf{A}}$	
1.10	Are earthworks final surfaces well compacted or protected?		$\checkmark$				
1.11	Are manholes adequately covered or temporarily sealed?		$\square$				<u> </u>
1.12	Are there any procedures and equipment for rainstorm protection?		$\square$				
1.13	Are wheel washing facilities well maintained?						
1.14	Is runoff from wheel washing facilities avoided?					$\checkmark$	
1.15	Are there toilets provided on site?		$\checkmark$				
1.16	Are toilets properly maintained?		$\checkmark$				
1.17	Are the vehicle and plant servicing areas paved and located withi roofed areas?	n 🔲				$\checkmark$	. <u> </u>
1.18	Is the oil/grease leakage or spillage avoided?		$\checkmark$				
1.19	Are there any measures to prevent leaked oil from entering th drainage system?		$\overline{\mathbf{A}}$				
1.20	Are there any measures to collect spilt cement and concret washings during concreting works?	te	$\checkmark$				
1.21	Are there any oil interceptors/grease traps in the drainage system for vehicle and plant servicing areas, canteen kitchen, etc?	ns				$\checkmark$	

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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
1.22	Are the oil interceptors/grease traps maintained properly?						
1.23	Is used bentonite recycled where appropriate?					$\square$	
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 50m3 capacities for sedimentation.						
1.25	No excavation is undertaken in the settlement area.					$\square$	
1.26	Concreting wastes water should be neutralized below the pH Action Levels before discharge.					$\checkmark$	
1.27	Mobile toilets should provide on site and located away the stream course.		$\checkmark$				
1.28	License collector should be employed for handling the sewage of mobile toilet.		$\overline{\mathbf{A}}$				
1.29	ls ponding /stand water avoided?		$\checkmark$				
Sectio	on 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?		$\checkmark$				
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?						<u> </u>
2.05	Is the exposed earth properly treated within six months after the last construction activities?					$\checkmark$	
2.06	Are the access roads sprayed with water to maintain the entire road surface wet or paved?					$\checkmark$	
2.07	Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?					$\checkmark$	
2.08	Is the load on vehicles covered entirely by clean impervious sheeting?					$\checkmark$	
2.09	Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?					$\checkmark$	<u></u>
2.10	Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?					$\square$	
2.11	Is dark smoke emission from plant/equipment avoided?		$\checkmark$				
2.12	Are de-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement?					$\checkmark$	
2.13	Are site vehicles travelling within the speed limit not more than 15km/hour?					$\checkmark$	<b>_</b>
2.14	Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?		$\checkmark$				
2.15	Is open burning avoided?		$\checkmark$				
2.16	Excavated materials from the stream must be removed from the site on the same day. The materials shall be stored in covered impermeable skips awaiting removal from site.					$\checkmark$	
Sect	ion 3: Noise						
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?					$\square$	<u> </u>
3.02	is silenced equipment adopted?						<del></del>
3.03	Is idle equipment turned off or throttled down?	$\square$					
3.04			$\checkmark$				. <u> </u>
3.05	construction activities cause noise impact on senaitive recenterer					$\square$	
3.06	during operation?						
3.07	Are air compressors fitted with valid noise emission labels during					$\square$	

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					$\overline{\checkmark}$	
3.09	operation? Are Construction Noise Permit(s) applied for percussive piling					$\checkmark$	
3.10	works? Are Construction Noise Permit(s) applied for general construction					$\checkmark$	<u> </u>
3.11	works during restricted hours? Are valid Construction Noise Permit(s) posted at site entrances?					- 2	<u></u>
	Use of quiet plant had been used on site to minimise the					- 1	<u> </u>
3.12	construction noise impact to the surrounding residences/dwellings (Level 1 mitigation measures). Temporary/Moveable noise barrier or site hoarding are provide or	L]				تے	
3.13	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)					$\square$	
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).						
Sectio	on 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?		$\checkmark$				
4.05	Is the Contractor registered as a chemical waste producer?					$\square$	
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?					$\overline{\mathbf{A}}$	
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?		$\square$				
4.16	Are construction wastes reused?		$\checkmark$				. <u> </u>
4.17	Are construction wastes disposed of properly?		$\checkmark$		· · 🗖		<u></u>
4.18	Are site hoardings and signboards made of durable materials instead of timber?		$\mathbf{\overline{\mathbf{A}}}$				
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?		$\checkmark$				
4.20	Are appropriate procedures followed if contaminated material exists?					$\checkmark$	<b></b>
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?					$\mathbf{\nabla}$	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.		$\checkmark$				
4.23	Contaminated sediments will be managed according to WBTC					$\checkmark$	

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	NI-6	Eallow	

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
Sectio	on 5: Landscape & Visual						
5.01	Are retained and transplanted trees in health condition?					$\checkmark$	
5.02	Are retained and transplanted trees properly protected?				$\checkmark$		Refer to EM&A report –Dec 2012
5.03	Are surgery works carried out for the damaged trees?	$\checkmark$					
5.04	Is damage to trees outside site boundary due to construction activities avoided?		$\checkmark$				
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?					$\checkmark$	
Sectio	on 6: Others						
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?					$\checkmark$	<u> </u>

### (Sok Kwu Wan)

### Remarks:

### Findings of Site Inspection: ( 5 February 2013)

1. Construction waste was observed stock piled near Portion K of the construction site. Regular removal from the site to avoid excessive accumulation is reminded, or covering with tarpaulin sheeting is required.

5
Follow up ( February 2013)

The stock pile was confirmed to be outside of the construction boundary. No action was taken.

IEC's representative	RE's representative	ET's representative	EO's representative	Contractor's representative	-
	Æ	and a	Sph-		
( )	(Alfred Cheung)	(Wong F N)	( So K.Y. )	( )	
		OS Feb 20B			

Humid Wind:	Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan         19 February 2013         A:       GENERAL INFORMATION         her:       ✓ Sunny       Fine       Cloudy         brature:       ✓ O'C       ✓         jity:       High       Moderate       Low         Strong       Breeze       ✓ Light       ✓         nspected       Sok Kwu Wan       ✓       ✓	RE's Repre	epresentative sentative s Representa	_		Nong Cheung Y. 14220	28512B-19 Feb 2013
PART		Not			Follow		Photo/
Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Obs.	Yes	No	Up	N/A	Remarks
Sectio	n 1: Water Quality	<b>F</b> -1	$\square$				
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?						<u> </u>
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?		$\square$				
1.06	Are there any perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?		$\checkmark$				<del></del> .
1.07	Is drainage system well maintained?		$\checkmark$				
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?					$\checkmark$	
1.09	Are temporary exposed slopes properly covered?					$\checkmark$	
1.10	Are earthworks final surfaces well compacted or protected?		$\square$				
1.11	Are manholes adequately covered or temporarily sealed?		$\square$				
1.12	Are there any procedures and equipment for rainstorm protection?		$\checkmark$				
1.13	Are wheel washing facilities well maintained?						
1.14	Is runoff from wheel washing facilities avoided?		Ľ,			$\checkmark$	
1.15	Are there toilets provided on site?		$\checkmark$				
1.16	Are toilets properly maintained?		$\checkmark$				
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	n 🔲				$\checkmark$	
1.18	Is the oil/grease leakage or spillage avoided?		$\checkmark$				
1.19	Are there any measures to prevent leaked oil from entering th drainage system?		$\checkmark$				
1.20	Are there any measures to collect spilt cement and concret washings during concreting works?	e 🗌	$\checkmark$				
1.21	Are there any oil interceptors/grease traps in the drainage system for vehicle and plant servicing areas, canteen kitchen, etc?	s				$\checkmark$	,
1.22	Are the oil interceptors/grease traps maintained properly?					$\checkmark$	

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tal Team – Weekly Site Inspection and Audit Checklist – Sok Kwu Wan	AUES

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?					$\checkmark$	
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 50m3 capacities for sedimentation.						
1.25	No excavation is undertaken in the settlement area.					$\checkmark$	
1.26	Concreting wastes water should be neutralized below the pH Action Levels before discharge.					$\square$	
1.27	Mobile toilets should provide on site and located away the stream course.		$\checkmark$				
1.28	License collector should be employed for handling the sewage of mobile toilet.		$\checkmark$				
1.29	Is ponding /stand water avoided?		$\checkmark$				
Sectio	n 2: Air Quality						
2.01	Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?					$\checkmark$	
2.02	Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?		$\checkmark$				<u></u>
2.03	Are the excavated materials sprayed with water during handling?					$\checkmark$	
2.04	Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?					$\checkmark$	
2.05	Is the exposed earth properly treated within six months after the last construction activities?					$\checkmark$	
2.06	Are the access roads sprayed with water to maintain the entire road surface wet or paved?					$\checkmark$	
2.07	Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?					$\checkmark$	
2.08	Is the load on vehicles covered entirely by clean impervious sheeting?					$\checkmark$	
2.09	Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?					$\checkmark$	
2.10	Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?					$\checkmark$	<u></u>
2.11	is dark smoke emission from plant/equipment avoided?		$\checkmark$				
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?					$\checkmark$	
2.14	Are hoardings of not less than 2.4m high provided along the site boundary, which adjoins areas accessible to the public?		$\checkmark$				
2.15	Is open burning avoided?		$\checkmark$				
2.16	Excavated materials from the stream must be removed from the site on the same day. The materials shall be stored in covered impermeable skips awaiting removal from site.					$\checkmark$	<u> </u>
Secti	on 3: Noise						
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?						
3.02	Is silenced equipment adopted?					$\checkmark$	
3.03	Is idle equipment turned off or throttled down?	$\checkmark$					
3.04	Are all plant and equipment well maintained and in good condition?		$\checkmark$				
3.05	Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?	┗┯┙				$\square$	
3.06	Are hand held breakers fitted with valid noise emission labels during operation?					$\square$	. <u></u>
3.07	Are air compressors fitted with valid noise emission labels during operation?					$\checkmark$	·
3.08	Are flaps and panels of mechanical equipment closed during operation?					$\square$	

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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
3.09	Are Construction Noise Permit(s) applied for percussive piling works?					$\checkmark$	
3.10	Are Construction Noise Permit(s) applied for general construction works during restricted hours?					$\checkmark$	<u> </u>
3.11	Are valid Construction Noise Permit(s) posted at site entrances?					$\checkmark$	
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)					$\checkmark$	
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).					$\square$	
Section	on 4: Waste/Chemical Management						
4.01	Waste Management Plan had been submit to Engineer for approval.		$\checkmark$				
4.02	Are receptacles available for general refuse collection?		$\checkmark$				<u></u>
4.03	Is general refuse sorting or recycling implemented?						
4.04	Is general refuse disposed of properly and regularly?		$\checkmark$				
4.05	Is the Contractor registered as a chemical waste producer?					$\checkmark$	<u> </u>
4.06	Are the chemical waste containers and storage area properly labelled?						<u></u>
4.07	Are the chemical wastes stored in proper storage areas?						
4.08	Is the chemical container or equipment provided with drip tray?					$\checkmark$	
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?						<u></u>
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?					$\checkmark$	
4.15	Are construction wastes sorted (inert and non-inert) on site?		$\checkmark$				
4.16	Are construction wastes reused?		$\checkmark$				
4.17	Are construction wastes disposed of properly?		$\checkmark$				
4.18	Are site hoardings and signboards made of durable materials instead of timber?		$\checkmark$				<del></del>
4.19	Is trip ticket system implemented for the disposal of construction wastes and records available for inspection?		$\checkmark$				<u> </u>
4.20	Are appropriate procedures followed if contaminated material exists?					$\checkmark$	
4.21	Is relevant license/ permit for disposal of construction waste or excavated materials available for inspection?					$\checkmark$	
4.22	Site cleanliness and appropriate waste management training had provided for the site workers.		$\checkmark$				
4.23	Contaminated sediments will be managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.					$\checkmark$	. <u></u>
Sect	tion 5: Landscape & Visual						
5.01	Are retained and transplanted trees in health condition?					$\checkmark$	M

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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
5.02	Are retained and transplanted trees properly protected?				$\checkmark$		Refer to EM&A report –Dec 2012
5.03	Are surgery works carried out for the damaged trees?	$\checkmark$					
5.04	Is damage to trees outside site boundary due to construction activities avoided?		$\checkmark$				
5.05	Is the night-time lighting controlled to minimize glare to sensitive receivers?					$\checkmark$	· · · · · · · · · · · · · · · · · · ·
Sectio	n 6: Others						
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?					$\checkmark$	

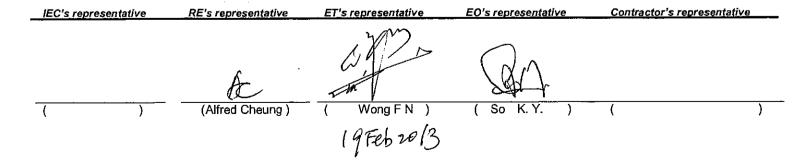
### (Sok Kwu Wan)

### Remarks:

Findings of Site Inspection: (19 February 2013)

ndings of Site Inspection: (19 February 2013) No adverse environmental impacts were absenved. However, full implementation General reminders General reminders 1. No adverse environmental impacts of the required environmental mitigation measures, in particular construction dust suppression measures during dry and windy conditions, is remainded.

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## Appendix L

### **Implementation Schedule of Mitigation Measures**

### **Implementation Schedule of Air Quality Measures**

EIA	EM&A		Location /	Implementation	Implementation Stages**			Relevant Legislation
Ref	Ref	Environmental Protection Measures*	Timing	Agent	D	C	0	& Guidelines
Constr	uction Phase							
3.32	2.34	Installation of 2m high solid fences around the construction site of Pumping Station P2.	Work site / during construction	Contractor		$\checkmark$		
3.34	2.34	<ul> <li>Adopting the following good site practices and follow the dust control requirements of the Air Pollution Control (Construction Dust) Regulation:</li> <li>Stockpiles of imported material kept on site should be contained within hoardings, dampened and / or covered during dry and windy weather;</li> <li>Material stockpiled alongside trenches should be covered with tarpaulins whenever works are close to village houses;</li> <li>Water sprays should be used during the delivery and handling of cement, sands, aggregates and the like.</li> <li>Any vehicle used for moving sands, aggregates and construction waste should have properly fitting side and tail boards. Materials should not be loaded to a level higher than the side and tail boards, and should be covered by a clean tarpaulin.</li> </ul>	Work site / during construction	All contractors		V		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		V		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

# **AUES**

### Implementation Schedule of Noise Measures

EIA	EM&A	Environmental Protection Measures*	Location/Timing	Implementation	Implementation Stages **			Relevant Legislation &	
Ref	Ref			Agent	D	С	0	Guidelines	
Construct	tion Phase								
4.41-4.43	3.19	<ul> <li>Use of quiet PME for the construction of the pumping stations</li> <li>Use of temporary noise barrier during the construction of Pumping Station P1a</li> </ul>	Work site /during the construction of Pumping Stations	Contractor		V		EIAO-TM, NCO	
4.44 – 4.49	3.19	<ul> <li>Implementation of following measures during the sewer construction:</li> <li>Use of quiet PME or method;</li> <li>Restriction on the number plant (1 item for each type of plant); and</li> <li>Good Site Practices</li> <li>Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.</li> <li>Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.</li> <li>Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.</li> <li>Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	Work site /during the construction of Sewer.	Contractor					

# **AUES**

EIA	EM&A	Environmental Protection Measures*	Location/Timing	Implementation	Implementation Stages **			Relevant Legislation &
Ref	Ref		Location, Thinng	Agent	D	С	0	Guidelines
4.50 – 4.53	3.19	<ul> <li>Use of noise screening structures such as acoustic shed and barrier wherever practicable and feasible in areas with sufficient clearance and headroom.</li> <li>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.</li> <li>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.</li> </ul>	Work site /during the construction of Sewer.	Contractor		V		
4.60	Section 35	Noise monitoring	Designated noise monitoring locations / throughout construction period	Contractor/ Environmental Team		$\checkmark$		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

### **Implementation Schedule of Water Quality Control Measures**

EIA	EM&A	Knyuronmontal Protoction Magguroce	Location (duration /completion of	Implementation		lement Stages*	Relevant Legislation	
Ref	Ref		measures)	Agent	D	С	0	and Guidelines
	uction Phas		1	I				
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		N		
5.73	4.36	Dredging Works	Marine works site	Contractor				
5.78		<ul> <li>Implementation of following measures during the dredging works:</li> <li>dredging should be undertaken using closed grab dredgers with a maximum total production rate of 55m<sup>3</sup>/hr;</li> <li>deployment of 2-layer silt curtains with the first layer enclosing the grab and the second layer at around 50m from the dredging area while dredging works are in progress;</li> <li>dredging operation should be undertaken during ebb tide only;</li> </ul>	and at the identified water sensitive receivers/ During construction					
		<ul> <li>all vessels should be sized such that adequate clearance (i.e. minimum clearance of 0.6m) is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;</li> <li>all pipe leakages should be repaired promptly and plant should not</li> </ul>						
		<ul> <li>be operated with leaking pipes;</li> <li>excess material should be cleaned from the decks and exposed fittings of barges before the vessel is moved;</li> </ul>						
		• 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 be filled to a level which will cause the overflow of materials or polluted water during loading or transportation; and						

# **AUES**

EIA	EM&A	Environmental Protection Measures*	Location (duration /completion of	Implementation		lement Stages*		Relevant Legislation
Ref	Ref	Environmental i lotection weasures	measures)	Agent	D	С	0	and Guidelines
		• 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	Construction Run-off and Drainage	Construction works	Contractor		$\checkmark$		ProPECC
		Implementation of the following site practices outlined in ProPECC PN 1/94 for "Construction Site Drainage"	sites					PN 1/94
		• 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						
5.80	4.38	General Construction Activities	Construction works	Contractor				
		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	sites					

# **AUES**

EIA	EM&A	Environmental Protection Measures* /completion of		Implementation	Implementation Stages**			Relevant Legislation
Ref	Ref	Environmental riotection weasures	measures)	Agent	D	С	0	and Guidelines
		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	<u>Wastewater Arising from Workforce</u> 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		V		
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

### **Implementation Schedule of Sediment Contamination Mitigation Measures**

EIA	EM&A	Environmental Protection Measures*	Location / Timing	Implementation	Im	plementa Stages**		Relevant Legislation &	
Ref	Ref		Location / Thing	Agent	D	С	0	Guidelines	
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		V		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		$\checkmark$			
6.19	5.5	<ul> <li>During the transportation and disposal of the dredged sediment, the following measures should be taken:</li> <li>Bottom opening of barges should be fitted with tight fitting seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved.</li> <li>Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels should be equipped with automatic self monitoring devices as specified by the DEP.</li> </ul>	Marine works site and at the identified sensitive receivers	Contractor		V			

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

### Implementation Schedule of Solid Waste Management Measures

EIA	EM&A		Location /	Implementation		plementa Stages *		Relevant Legislation &
Ref	Ref	Environmental Protection Measures*	Timing	Agent	D	C	0	Guidelines
Construc	tion Phase							•
7.14	6.4	<ul> <li><u>Good site practices</u></li> <li>Nomination of an approved person, such as a site manager, to be responsible for implementation of good site practices, arranging for collection and effective disposal to an appropriate facility, of all wastes generated at the site</li> <li>Training (proper waste management and chemical handling procedure) should be provided for site staffs</li> <li>Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.</li> <li>Provision of sufficient waste disposal points and regular collection for disposal.</li> <li>Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility.</li> <li>Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> <li>Maintain records of the quantities of wastes generated, recycled and disposed.</li> </ul>	Work sites/During construction	Contractor				Waste Disposal Ordinance (Cap.54)
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		V		WBTC No. 21/2002
7.16	6.6	<ul> <li>Recommendations to achieve waste reduction include:</li> <li>segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;</li> <li>to encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated</li> </ul>	Work sites/During construction	Contractor		N		WBTC No. 4/98, 5/98



EIA	EM&A		Location /	Implementation		olementa Stages **		Relevant Legislation &
Ref	Ref	Environmental Protection Measures*	Timing	Agent	D	С	0	Guidelines
		<ul> <li>by the work force;</li> <li>any unused chemicals or those with remaining functional capacity should be recycled;</li> <li>use of reusable non-timber formwork to reduce the amount of C&amp;D material;</li> <li>prior to disposal of C&amp;D waste, it is recommended that wood, steel and other metals should be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;</li> <li>proper storage and site practices to minimise the potential for damage or contamination of construction materials; and</li> <li>plan and stock construction materials carefully to minimise amount of waste generated and avoid</li> </ul>						
7.18	6.7	<ul> <li>unnecessary generation of waste.</li> <li><u>General Site Wastes</u></li> <li>A collection area for construction site waste should be provided where waste can be stored prior to removal from site</li> <li>An enclosed and covered area for the collection of the waste is recommended to reduce 'wind blow' of light material</li> </ul>	Work sites/During construction	Contractor		√		Public Health and Municipal Services Ordinance (Cap. 132)
7.19-7.20	6.8 - 6.9	<ul> <li><u>Chemical Wastes</u></li> <li>After use, chemical waste should be handled according to the Code of Practice on the Package, Labelling and Storage of Chemical Wastes</li> <li>Any unused chemicals or those with remaining functional capacity should be recycled</li> <li>Waste should be properly stored on site within suitably designed containers and should be collected by an approved licensed waste collectors for disposal at the Chemical Waste Treatment Facility or other licenced facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordance.</li> </ul>	Work sites/During construction	Contractor		V		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Wastes

# **AUES**

EIA	EM&A		Location /	Implementation		olementa Stages **		Relevant Legislation &
Ref	Ref	Environmental Protection Measures*	Timing	Agent	D	С	0	Guidelines
		• 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	<ul> <li>Construction and Demolition Material</li> <li>The C&amp;D waste should be separated on-site into three categories:</li> <li>&gt; public fill, the inert portion of the C&amp;D material (e.g. concrete and rubble), which should be re-used on-site or disposed of at a public filling area;</li> <li>&gt; C&amp;D waste for re-use and / or recycling, the non-inert portion of the C&amp;D material, (e.g. steel and other metals, woods, glass and plastic);</li> <li>&gt; C&amp;D waste which cannot be re-used and / or recycled (e.g. wood, glass and plastic)</li> <li>• Where possible, inert material should be re-used on-site</li> <li>• Where practicable, steel and other metals should be separated for re-use and/or recycling prior to disposal of C&amp;D material</li> </ul>	During all construction phases	Contractors		~		WBTC No. 4/98, 5/98, 21/2002, 25/99, 12/2000

\* 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

### **Implementation Schedule of Ecological Impact Measures**

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Imp	lement: Stages		Relevant Legislation & Guidelines
			Tining	Agent	D	С	0	Guidennes
	tion Phase				1	1	r	1
8.157	7.2	<ul> <li><u>Terrestrial Ecology</u></li> <li>Labeling and fencing of the uncommon tree species</li> <li>Avoidance of use of woodland habitats as Works Area, in particular where trees are located</li> </ul>	Work sites / during construction phase	Contractor		N		
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		V		
8.161	7.4	<ul> <li>Site runoff</li> <li>Construction and maintenance of sand / silt removal facilities</li> <li>Silt curtains</li> <li>Timing of earthworks</li> <li>Coverage of sand / fill piles during storms.</li> <li>Barriers along the landward side of Pumping Station P2 site boundary (to prevent site runoff from entering area with Romer's Tree Frog)</li> </ul>	All work sites / during construction phase	Contractor		V		

\* 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

### **Implementation Schedule of Fisheries Impact Measures**

EIA	EM&A	Environmental Protection Measures*	Environmental Protection Measures* Location / Implementation		Implementation Stages**			Relevant Legislation	
Ref	Ref		Timing	Agent	D	С	0	& Guidelines	
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		$\checkmark$		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		$\checkmark$	V	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

### Implementation Schedule of Landscape and Visual Impact Measures

EIA EM&A Ref Ref		Environmental Protection Measures*	Location /	Implementation	Implementation Stages **			Relevant Legislation &	
Kel	Kei		Timing	Agent	D	С	0	Guidelines	
Constr	uction Pha	ase							
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		$\checkmark$		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 <i>Macaranga tanarius</i> and is located at the proposed Pumping Station P2 location).	All sites	Contractor		$\checkmark$		WBTC No. 14/2002	
		Short excavation and immediate backfilling sections upon completion of works to reduce active site area.	All sites	Contractor		$\checkmark$			
		Screening of site construction works by use of hoarding that is appropriate to its site.	All sites	Contractor		V		WBTC No. 19/2001	
		Conservation of topsoil for reuse.	All sites	Contractor		$\checkmark$			
		Night-time light source from marine fleets should be directed away from the residential units.	Outfall area.	Contractor		$\checkmark$			

\* 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

## Appendix M

### **Tree Inspection Report**

經緯園藝有限公司 Melofield Nursery & Landscape Contractor Ltd <sup>元朗下依田村 125 號</sup> 125, Ha Yau Tin Tsuen, Yuen Long, N.T.

TEL: (852) 2572-0048 FAX: (822)2573-9099 E-mail: melofield@netvigator.com

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

## Sok Kwu Wan

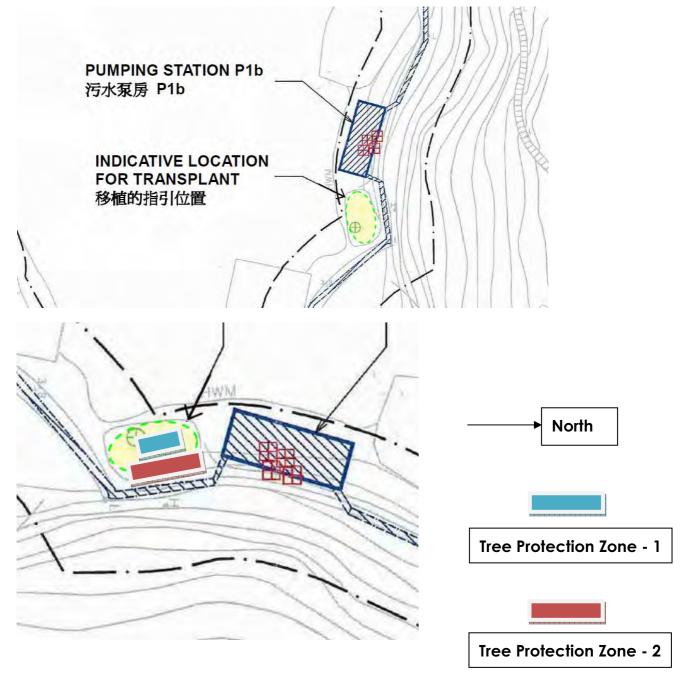
# **Tree Inspection Report for Celtis timorensis**

# Inspection Date : 30-01-2013



### 1. Introduction

According to the requirement in the Environmental Permit EP-281/2007/A, the uncommon tree species, *Celtis timorensis*, found in the pumping station P1b area as shown in figure below shall be properly transplanted to the area immediately south of the Pumping Station P1b before commencement of construction of the Pumping Station P1b



This Tree Inspection Report describes the bi weekly monitoring result of the *Celtis timorensis*, which were additionally planted as the compensation of previously transplanted Celtis timorensis CT7, CT8, CT9 & CT10.

### 2. Summary of Inspection

Date of Inspection	30 January 2013, around 15:30
Location	A soil ground adjacent to the Pumping
	Station P1b Chung Mei, at Sok Kwu Wan,
	Lamma Island.
Weather	Cloudy, the vegetations are located under
	the shade of existing tall trees.
The labeled Celtis timorensis	CT_2A, CT_3A, CT_5A & CT_6A
under Tree Protection Zone 2	

### 3. Proposed Inspection Schedule

Month	Actual / proposed Inspection Date	
October, 2011	10 and 24 October 2011	
November, 2011	8 November 2011	
December, 2011	14 and 30 December 2011	
January 2012	31 January 2012	
February 2012	15 and 29 February 2012	
March 2012	15 and 31 March 2012	
April 2012	16 and 30 April 2012	
May 2012	15 and 31 May 2012	
June 2012	15 and 30 June 2012	
July 2012	16 and 30 July 2012	
August 2012	15 and 31 August 2012	
September 2012	15 and 29 September 2012	
October 2012	15 and 31 October 2012	
November 2012 15 and 30 November 2012		
December 2012	15 and 30 December 2012	
January 2013 15 and 30 January 2013		

### 4. Summary of Inspection Result

Tree No	Speciation	Health Status
CT_2A	Celtis timorensis	Poor

CT_3A	Celtis timorensis	Poor
CT_5A	Celtis timorensis	Good
CT_6A	Celtis timorensis	Good

### Inspection parameters or criteria

- Good Leaves and stem grown very lush, additional or larger in size of leaves can be observed in each inspection
- Fair Green leaves can be found. No major unhealthy condition of the plant is observed. The condition is stable.
- Poor Fewer green leaves than usual are observed. No new leaf is grown and the condition keep stable. The bark is dry. The plant is weak.
- Very Poor No new green leaf or bud can be observed. The bark is dry. The plant is weak.

### 5. Description of Inspection Results:

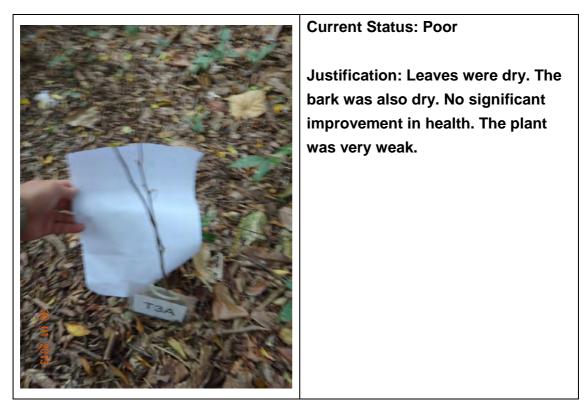
### Tree ID:CT\_2A



### **Current Status: Poor**

Justification: Leaves were dry. The bark was also dry. No significant improvement in health. The plant was very weak.

### Tree ID: CT\_3A



Tree ID: CT\_5A



### Tree ID: CT\_6A



### **Overall Condition**

In the Tree Protection Zone 2, The health of CT\_5A and CT\_6A were found satisfactory. Regular watering and weeding will be carried out during dry weather. They may better recover under this warm and rainy weather. Some newly grown green leaves were found eaten by insects. 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.

Considering the condition of CT2A, CT3A were in poor condition, compensatory of additional Celtis timorensis is proposed and will be carried out in the coming warm weather season for better growing. 經緯園藝有限公司 Melofield Nursery & Landscape Contractor Ltd <sup>元朗下攸田村 125號</sup> 125, Ha Yau Tin Tsuen, Yuen Long, N.T.

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

## Sok Kwu Wan

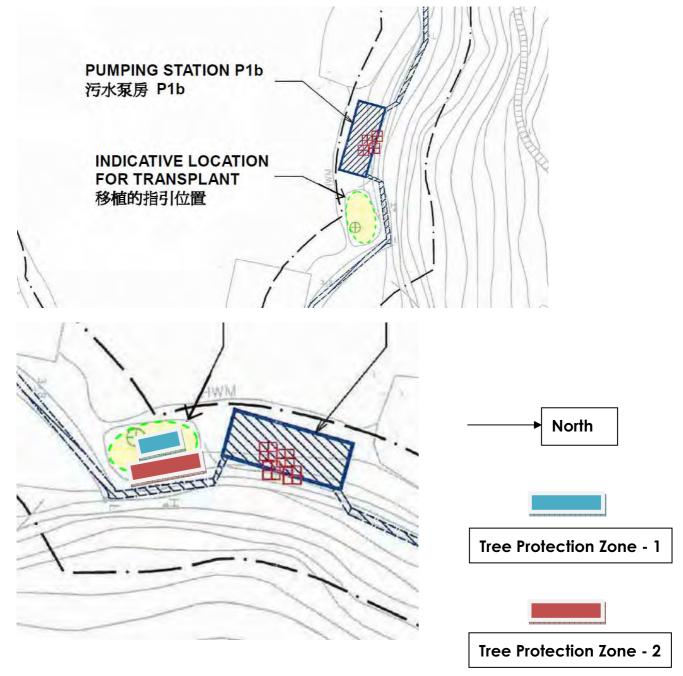
# **Tree Inspection Report for Celtis timorensis**

# Inspection Date : 15-02-2013



### 1. Introduction

According to the requirement in the Environmental Permit EP-281/2007/A, the uncommon tree species, *Celtis timorensis*, found in the pumping station P1b area as shown in figure below shall be properly transplanted to the area immediately south of the Pumping Station P1b before commencement of construction of the Pumping Station P1b



This Tree Inspection Report describes the bi weekly monitoring result of the *Celtis timorensis*, which were additionally planted as the compensation of previously transplanted Celtis timorensis CT7, CT8, CT9 & CT10.

### 2. Summary of Inspection

Date of Inspection	15 February 2013, around 15:30	
Location	A soil ground adjacent to the Pumping	
	Station P1b Chung Mei, at Sok Kwu Wan,	
	Lamma Island.	
Weather	Cloudy, the vegetations are located under	
	the shade of existing tall trees.	
The labeled Celtis timorensis	CT_2A, CT_3A, CT_5A & CT_6A	
under Tree Protection Zone 2		

### 3. Proposed Inspection Schedule

Month	Actual / proposed Inspection Date	
October, 2011	10 and 24 October 2011	
November, 2011	8 November 2011	
December, 2011	14 and 30 December 2011	
January 2012	31 January 2012	
February 2012	15 and 29 February 2012	
March 2012	15 and 31 March 2012	
April 2012	16 and 30 April 2012	
May 2012	15 and 31 May 2012	
June 2012	15 and 30 June 2012	
July 2012	16 and 30 July 2012	
August 2012	15 and 31 August 2012	
September 2012	15 and 29 September 2012	
October 2012	15 and 31 October 2012	
November 2012	15 and 30 November 2012	
December 2012	15 and 30 December 2012	
January 2013	15 and 30 January 2013	
February 2013	15 February 2013	

Tree No	Speciation	Health Status
CT_2A	Celtis timorensis	Poor
CT_3A	Celtis timorensis	Poor
CT_5A	Celtis timorensis	Good
CT_6A	Celtis timorensis	Good

### 4. Summary of Inspection Result

### Inspection parameters or criteria

- Good Leaves and stem grown very lush, additional or larger in size of leaves can be observed in each inspection
- Fair Green leaves can be found. No major unhealthy condition of the plant is observed. The condition is stable.
- Poor Fewer green leaves than usual are observed. No new leaf is grown and the condition keep stable. The bark is dry. The plant is weak.
- Very Poor No new green leaf or bud can be observed. The bark is dry. The plant is weak.

### 5. Description of Inspection Results:

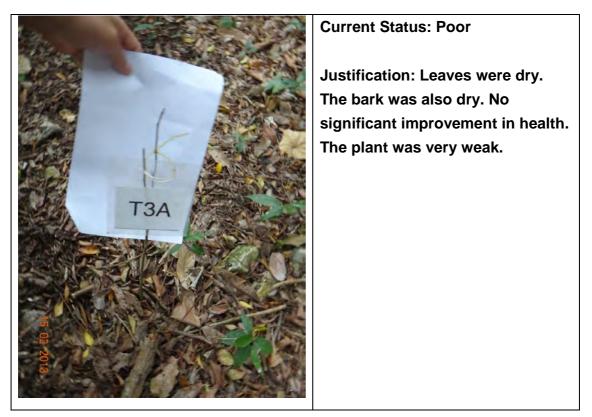
### Tree ID:CT\_2A



### **Current Status: Poor**

Justification: Leaves were dry. The bark was also dry. No significant improvement in health. The plant was very weak.

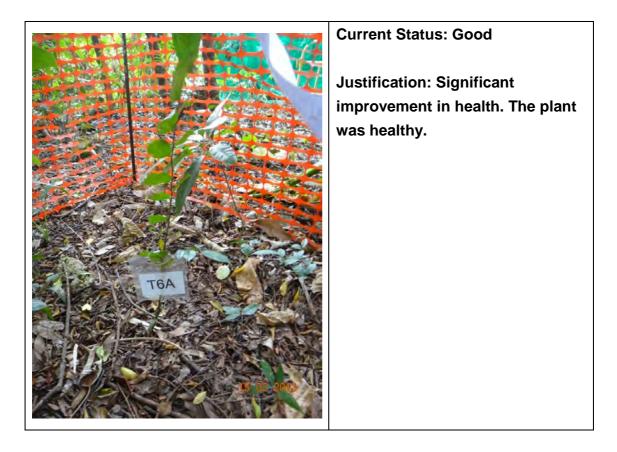
### Tree ID: CT\_3A



Tree ID: CT\_5A



### Tree ID: CT\_6A



### **Overall Condition**

In the Tree Protection Zone 2, The health of CT\_5A and CT\_6A were found satisfactory. Regular watering and weeding will be carried out during dry weather. They may better recover under this warm and rainy weather. Some newly grown green leaves were found eaten by insects. 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.

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