

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.53) – DECEMBER 2014

PREPARED FOR LEADER CIVIL ENGINEERING CORPORATION LIMITED

# Quality Index Reference No. Prepared By Approved By 14 January 2015 TCS00512/09/600/R0855v1 January January January Martin Li Martin Li Assistant Environmental T.W. Tam

VersionDateDescription114 January 2015First Submission\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Consultant

Environmental Team Leader

Z:\Jobs\2010\TCS00512(DC-2009-13)-Lama\600\EM&A Monthly Report\Sok Kwu Wan\53th December 2014\R0855v1.doc Action-United Environmental Services and Consulting

## **URS CDM Joint Venture**

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

Our reference:

05117/6/16/436927

Date:

26 January 2015

BY FAX

Attention: Mr F.K. Pong

Dear Sir,

Contract No. DC/2009/13 Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan Sok Kwu Wan Portion Area Monthly Environmental Monitoring and Audit (EM&A) Report No. 53 (December 2014)

We refer to the Monthly EM&A Monitoring Report No. 53 for December 2014 received under cover of the email from the Environmental Team, Action-United Environmental Services and Consulting (AUES), dated on 15 January 2015. We have no comment and have verified the captioned report.

Yours faithfully URS CDM JOINT VENTURE

Rodney Ip Independent Environmental Checker

ICWR/CKCH/wwsc

cc Leader Civil Engineering AUES ER/LAMMA CDM (Attn: Mr Ron Hung) (Attn: Mr T.W. Tam) (Attn: Mr Kenneth Kwong) (Attn: Mr Sylvester Hsu)



#### **EXECUTIVE SUMMARY**

ES.01. This is the 53<sup>th</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 November 2014 to 25 December 2014 (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	<b>45</b>
	24-hour TSP	17
Construction Noise	L <sub>eq(30min)</sub> Daytime	<u>16</u>
Inspection / Audit	ET Regular Environmental Site Inspection	4

ES.03. According to the EM&A Manual of Sok Kwu Wan, water quality monitoring should be carried out during the course of marine work. As informed by the Contractor in May 2014, the marine works in Sok Kwu Wan has been completed in April 2014. Marine water quality monitoring was therefore terminated from May 2014 after consent was obtained with IEC. In this regards, an associated letter ref. TCS00512/10/300/L0783 dated 19 May 2014 has been issued to EPD for approval and no comment was received.

#### **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 & Action		
Issues	Parameters		Level	NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0		
	24-hour TSP	0	0	0		
Construction Noise	Leq(30min) Daytime	0	0	0		

*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 2, 9, 16 and 22 December 2014. All the observation has been rectified in the set time frame.

# 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 and windy season, the Contractor shall pay attention on the construction dust that may cause environmental issues in the upcoming months. Mitigation measures on construction dust identified at the EM&A manual such as watering at haul road and covering of dusty material should be fully implemented.
- 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.



#### TABLE OF CONTENTS

1	INTRODUCTION Project Background Report Structure	<b>1</b> 1 2
2	<b>PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS</b> Project Organization and Management Structure Construction Progress Summary of Environmental Submissions	<b>3</b> 3 3 3
3	<ul> <li>SUMMARY OF BASELINE MONITORING REQUIREMENTS</li> <li>ENVIRONMENTAL ASPECT</li> <li>MONITORING LOCATIONS</li> <li>MONITORING FREQUENCY AND PERIOD</li> <li>MONITORING EQUIPMENT</li> <li>EQUIPMENT CALIBRATION</li> <li>METEOROLOGICAL INFORMATION</li> <li>DATA MANAGEMENT AND DATA QA/QC CONTROL</li> <li>REPORTING</li> <li>DETERMINATION OF ACTION/LIMIT (A/L) LEVELS</li> </ul>	<b>4</b> 4 5 6 9 9 9 9 9
4	IMPACT MONITORING RESULTS - AIR QUALITY	11
5	IMPACT MONITORING RESULTS – CONSTRUCTION NOISE	12
6	IMPACT MONITORING RESULTS – WATER QULAITY	13
7	ECOLOGY	14
8	WASTE MANAGEMENT	15
9	SITE INSPECTION	16
10	ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE	17
11	IMPLEMENTATION STATUS OF MITIGATION MEASURES	18
12	IMPACT FORECAST	24
13	CONCLUSIONS AND RECOMMENDATIONS Conclusions Recommendations	<b>25</b> 25 25



#### LIST OF TABLES

Table 2-1         Status of Environmental Licenses and Permits	nmental Licenses and Permits
--	------------------------------

- Table 3-1Summary of EM&A Requirements
- Table 3-2Location of Air Quality Monitoring Station
- Table 3-3
   Location of Construction Noise Monitoring Station
- Table 3-4Location of Marine Water Quality Monitoring Station
- Table 3-5Action and Limit Levels for Air Quality
- Table 3-6
   Action and Limit Levels for Construction Noise
- Table 3-7
   Action and Limit Levels for Marine Water Quality
- Table 4-1Summary of 24-hour and 1-hour TSP Monitoring Results AM1
- Table 4-2Summary of 24-hour and 1-hour TSP Monitoring Results AM2
- Table 4-3Summary of 24-hour and 1-hour TSP Monitoring Results AM3
- Table 5-1Summarized of Construction Noise Monitoring Results at NM1
- Table 5-2Summarized of Construction Noise Monitoring Results at NM2
- Table 5-3Summarized of Construction Noise Monitoring Results at RNM3
- Table 5-4Summarized of Construction Noise Monitoring Results at NM4
- Table 8-1
   Summary of Quantities of Inert C&D Materials
- Table 8-2Summary of Quantities of C&D Wastes
- Table 8-1Site Observations
- Table 10-1
   Statistical Summary of Environmental Complaints
- Table 10-2
   Statistical Summary of Environmental Summons
- Table 10-3
   Statistical Summary of Environmental Prosecution
- Table 11-1Environmental Mitigation Measures

#### **LIST OF APPENDICES**

- Appendix A Site Layout Plan Sok Kwu Wan Portion Area
- Appendix B Organization Structure and Contact Details of Relevant Parties
- Appendix C Three Months Rolling Construction Programme
- Appendix D Location of Monitoring Stations (Air Quality / Construction Noise / Water Quality)
- Appendix E Monitoring Equipments Calibration Certificate
- Appendix F Event and Action Plan
- Appendix G Impact Monitoring Schedule
- Appendix H Monitoring Data Sheet
- Appendix I Graphical Plots of Monitoring Results
- Appendix J Meteorological Information
- Appendix K Monthly Summary Waste Flow Table
- Appendix L Weekly Site Inspection Checklist
- Appendix M Implementation Schedule of Mitigation Measures
- Appendix N Tree Inspection Report



#### 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 53<sup>th</sup> monthly EM&A Report Sok Kwu Wan Portion Area presenting the monitoring results and inspection findings for the Reporting Period from 26 November 2014 to 25 December 2014.



#### **REPORT STRUCTURE**

- 1.09 The Monthly Environmental Monitoring and Audit (EM&A) Report Sok Kwu Wan is structured into the following sections:-
  - INTRODUCTION **SECTION 1 SECTION 2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS SECTION 3 SUMMARY OF MONITORING REOUIREMENTS SECTION 4 AIR QUALITY MONITORING RESULTS SECTION 5 CONSTRUCTION NOISE MONITORING RESULTS SECTION 6** WATER QUALITY MONITORING RESULTS WASTE MANAGEMENT **SECTION 7 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 three month rolling construction programme are enclosed in *Appendix C* and the major construction activities undertaken in this Reporting Period are listed below:-
  - Excavation works in SKWSTW
  - Finishing works in SKWSTW
  - Pipe laying works in SKWSTW
  - Concreting works in SKWSTW
  - E&M installation in SKWSTW

#### 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

- 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
	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 Watar Quality	• pH unit;
Marine Water Quality	• Salinity (ppt);
	• Water depth (m); and
	• Temperature (°C).
	Laboratory Analysis
	• Suspended Solids (SS) (mg/L)

Table 3-1Summary 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	Locatio	n of Construction Noise Monitoring Station
Sensitive Re	eceiver	Location

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

a. ..

#### 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	<b>Co-ordnance</b>	
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 3-4Location of Marine Water Quality Monitoring Station

#### 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.

#### <u>Noise Monitoring</u>

Parameters:Leq 30min) & Leq(5min), L10 and L90.Leq(15min) & Leq(5min), L10 and L90 during the construction undertaken during<br/>Restricted hours (19:00 to 07:00 hours next of normal working day and full day of<br/>public holiday and Sunday)Frequency:Once per week during 0700-1900 hours on normal weekdays. Restricted hour<br/>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.

#### 1-hour TSP

- 3.10 The 1-hour TSP monitor, a TSI Dust Track Aerosol Monitor Model 8520 or Sibata LD-3 Laser Dust Meter is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90<sup>o</sup> light scattering. The 1-hour TSP monitor consisted of the following:
  - a. A pump to draw sample aerosol through the optic chamber where TSP is measured;
  - b. A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
  - c. A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

#### 24-hour TSP

- 3.11 The equipment used for 24-hour TSP measurement will be a TISCH High Volume Air Sampler, HVS Model TE-5170, which complied with EPA Code of Federal Regulation, Appendix B to Part 50. The HVS consists of the following:
  - a. An anodized aluminum shelter;
  - b. A 8"x10" stainless steel filter holder;
  - c. A blower motor assembly;
  - d. A continuous flow/pressure recorder;
  - e. A motor speed-voltage control/elapsed time indicator;
  - f. A 7-day mechanical timer, and
  - g. A power supply of 220v/50 hz
- 3.12 For HVS for 24-hour TSP monitoring, the HVS is mounted in a metallic cage with a top for protection and also it is sat on the existing ground. The flow rate of the HVS between 0.63m3/min and 1.7m3/min will be properly set in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50. Glass Fiber Filter 8" x 10" of TE-653 will be used for 24-hour TSP monitoring and would be supplied by laboratory. The general procedures of sampling are described as below:-
  - A horizontal platform with appropriate support to secure the samples against gusty wind should be provided;

- No two samplers should be placed less than 2 meters apart;
- The distance between the sampler and an obstacle, such as building, must be at least twice the height that the obstacle protrudes above the sample;
- A minimum of 2 meters of separation from any supporting structure, measured horizontally is required;
- Before placing any filter media at the HVS, the power supply will be checked to ensure the sampler work properly;
- The filter paper will be set to align on the screen of HVS to ensure that the gasket formed an air tight seal on the outer edges of the filter. Then filter holder frame will be tightened to the filter hold with swing bolts. The holding pressure should be sufficient to avoid air leakage at the edge.
- The mechanical timer will be set for a sampling period of 24 hours (00:00 mid-night to 00:00 mid-night next day). Information will be recorded on the field data sheet, which would be included the sampling data, starting time, the weather condition at current and the filter paper ID with the initial weight;
- After sampling, the filter paper will be collected to transfer from the filter holder of the HVS to a sealed in the envelope and sent to a local HOKLAS accredited laboratory for quantifying.
- 3.13 All the sampled 24-hour TSP filters will be kept in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C, for six months prior to disposal.
- 3.14 The HVS used for 24-hour TSP monitoring will be calibrated before the commencement for sampling, and after in two months interval for 1 point checking of maintenance and six months interval for five points calibrate in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5028A) to establish a relationship between the follow recorder meter reading in cfm (cubic feet per minute) and the standard flow rate, Qstd, in m<sup>3</sup>/min.

#### Noise Monitoring

- 3.15 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>.
- 3.16 All noise measurements will be performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq(30 min) in six consecutive Leq(5 min) measurements will be used as the monitoring parameter for the time period between 0700-1900 hours on weekdays throughout the construction period. Leq(15 min) in three consecutive Leq(5 min) measurements for other time periods (e.g. during restricted hours) will only be conducted for monitoring the construction noise during restricted hours as necessary.
- 3.17 The sound level meter will be mounted on a tripod at a height of 1.2 m and placed at the assessment point and oriented such that the microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield will be fitted for all measurements. Where a measurement is to be carried out at a building, the assessment point would normally be at a position 1 m from the exterior of the building façade. Where a measurement is to be made for noise being received at a place other than a building, the assessment point would be at a position 1.2 m above the ground in a free-field situation, i.e. at least 3.5 m away from reflective surfaces such as adjacent buildings or walls.
- 3.18 Immediately prior to and following each noise measurement the accuracy of the sound level meter will be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements will be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0dB.
- 3.19 Noise measurements will not be made in fog, rain, wind with a steady speed exceeding 5m/s or



wind with gusts exceeding 10m/s. The wind speed will be checked with a portable wind speed meter capable of measuring the wind speed in m/s. An acoustic calibrator and sound level meter will be calibrated yearly. A valid of Calibration certificates will be shown in the Environmental Monitoring Report accordingly.

#### Water Quality Monitoring

- 3.20 Marine water quality monitoring will be conducted at the designated locations in accordance with EM&A Manual. The operating and analytical of sampling procedures are described as below:
  - A Global Positioning System (GPS) will be used to ensure that the correct location was selected prior to sample collection. A portable, battery-operated echo sounder will be used for the determination of water depth at each designated monitoring station.
  - The marine water sampler will be lowered into the water body at a predetermined depth. The trigger system of the sampler is activated with a messenger and opening ends of the sampler are closed accordingly then the sample of water is collected.
  - During the sampling, the sampling container will be rinsed to use a portion of the marine water sample before the water sample is transferred to the container. Upon sampling completion, the container is sealed with a screw cap.
  - Before the sampling process, general information such as the date and time of sampling, weather condition and tidal condition as well as the personnel responsible for the monitoring will be recorded on the monitoring field data sheet.
  - In-situ measurement including water temperature, turbidity, dissolved oxygen, salinity, pH and water depth undertake at the identified monitoring point. At each station, marine water samples are collected at three depths: 1m below water surface, 1m above sea bottom and at mid-depth when the water depth exceeds 6m. Samples at 1m below water surface and 1m above sea bottom are collected when the water depth is between 3m and 6m. Only 1 sample at mid-depth is taken when the water depth is below 3m.
  - For the in-situ measurement, two consecutive measurements of sampling depth, temperature, dissolved oxygen, salinity, turbidity and pH concentration will be measured at the sea. The YSI Model 6820 Multi-parameter Water Quality Sonde is retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set is more than 25% of the value of the first reading, the reading is discarded and further readings is taken.
  - Water sample collection would be used the water sampler. During the water sample collected from the sea, it is fill in high-density polythene bottles. Before the water sample storage, the sampling bottles will be pre-rinsed with the same water sample. The sample bottles then is packed in cool-boxes (cooled at 4°C without being frozen), and delivered to HOKLAS accredited laboratory for the chemical analysis as followed APHA *Standard Methods for the Examination of Water and Wastewater* 19ed 2540D, unless otherwise specified.
  - The laboratory has be comprehensive quality assurance and quality control programmes. For QA/QC procedures, one duplicate samples of every batch of 20 samples is analyzed as followed the HOKLAS accredited requirement.
- 3.21 For the marine water sampling period, the Multi-parameter Water Quality Monitoring System will be calibrated by three month interval accordingly. The available calibration certificate will be issued to ensure the performance of Multi-parameter Water Quality Monitoring System to use for in-situ measurement.
- 3.22 All water samples will be analyzed with various chemical tests as specified in the EM&A Manual by a local HOKLAS-accredited testing laboratory (ALS Technichem (HK) Pty Ltd HOKLAS registration no. 66). Duplicate samples from each independent sampling event are required for all parameters and the samples will be mixed and analyzed in one set of laboratory analysis. The mixed process would be carried by the laboratory. The determination works should start within 24 hours after collection of the water samples or within the holding time as advised by the laboratory. The laboratory analysis result will be input in our computer database upon received from the laboratory.



#### EQUIPMENT CALIBRATION

- 3.23 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.
- 3.24 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.
- 3.25 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.
- 3.26 The Multi-parameter Water Quality Monitoring System will be calibrated by HOKLAS accredited laboratory of three month intervals. The available calibration certificate will be issued to ensure the performance of Multi-parameter Water Quality Monitoring System to use for in-situ measurement.
- 3.27 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

3.28 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

- 3.29 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.
- 3.30 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

3.31 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

3.32 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.

Monitoring Station	Action Lev	vel (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )		
Monitoring 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 3-5Action and Limit Levels for Air Quality



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

Monitoring	Action Level	Limit Level
Location	0700-190	00 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	In	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	

3.33 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. The impact monitoring schedule for the Reporting Period and next Reporting Period is presented in *Appendix G*.

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

4.02 In this Reporting Period, **45** and **17** 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 H* and the graphical plots of are shown in *Appendix I*.

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

	24-hour	( <b>Pr8</b> , )						
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		
1-Dec-14	31	26-Nov-14	13:12	210	235	235		
6-Dec-14	62	2-Dec-14	13:04	219	218	217		
12-Dec-14	77	8-Dec-14	13:14	70	70	70		
18-Dec-14	51	13-Dec-14	9:35	67	77	74		
24-Dec-14	55	19-Dec-14	13:12	192	180	148		
		23-Dec-14	9:29	96	101	93		
Average	55	Average		143				
(Range)	(31-77)	(Rang	e)	(67 – 235)				

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

	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			
1-Dec-14	28	26-Nov-14	13:10	185	210	216			
6-Dec-14	45	2-Nov-14	13:07	222	220	221			
12-Dec-14	67	8-Dec-14	13:15	70	67	65			
18-Dec-14	55	13-Dec-14	9:32	80	73	79			
24-Dec-14	55	19-Dec-14	13:12	165	157	134			
		23-Dec-14	9:28	97	91	95			
Average	50	Average		136					
(Range)	(28-67)	(Rang	e)	(65 – 222)					

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

	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		
1-Dec-14	35	26-Nov-14	13:34	168	192	199		
6-Dec-14	74	2-Dec-14	13:15	231	227	226		
12-Dec-14	91	8-Dec-14	13:16	76	75	76		
18-Dec-14	115	13-Dec-14	13:06	88	71	82		
24-Dec-14	86	19-Dec-14	13:04	136	154	139		
		23-Dec-14	9:14	89	96	99		
Average	80	Average		135				
(Range)	(35-115)	(Rang	e)		(71 – 231)			

- 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 / Limit Level during the Reporting Period.
- 4.04 The meteorological information during the impact monitoring days are summarized in *Appendix J*.



#### 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<sub>eq30min</sub> at NM1, NM2, RNM3 and NM4 are summarized in *Tables 5-1, 5-2, 5-3* and *5-4* and graphical plots are shown in *Appendix I*.

 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
26-Nov-14	14:56	15:26	45.2	47.6	58.0	52.9	55.5	56.1	54.5
2-Dec-14	14:42	15:12	62.1	52.3	54.7	52.8	53.4	53.8	56.6
8-Dec-14	14:27	14:57	52.4	51.6	49.1	53.3	51.3	54.1	52.2
19-Dec-14	13:14	13:44	56.5	57.2	54.2	56.4	54.8	57.7	56.3
23-Dec-14	9:31	10:01	64.5	67.6	43.1	56.0	67.9	57.9	64.2
Limit Level in dB(A)					-	-			75

#### Table 5-2Summarized 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
26-Nov-14	14:21	14:51	59.0	58.7	58.7	58.6	60.2	58.9	59.1
2-Dec-14	14:07	14:37	64.5	58.2	66.8	63.1	57.4	62.1	63.2
8-Dec-14	15:02	15:32	57.8	57.1	61.3	57.7	57.3	57.6	58.4
19-Dec-14	13:51	14:21	62.4	66.7	65.4	63.8	65.4	66.8	65.3
23-Dec-14	10:07	10:37	61.9	64.7	60.1	58.6	63.1	59.4	61.8
Limit Le	Limit Level in dB(A) -				75				

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

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
26-Nov-14	13:48	14:18	51.6	51.7	51.5	51.5	52.4	54.5	52.3	55.3
2-Dec-14	13:34	14:04	49.9	54.2	54.7	53.2	50.1	52.1	52.7	55.7
8-Dec-14	13:48	14:18	53.7	52.8	54.2	53.4	52.6	53.4	53.4	56.4
19-Dec-14	14:24	14:54	49.0	49.5	56.2	50.3	49.8	49.3	51.6	54.6
23-Dec-14	10:40	11:10	54.8	55.8	51.6	55.2	54.3	56.0	54.8	57.8
Limit Le	it Level in dB(A) -				75					

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

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

Date	Start Time	End time	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
26-Nov-14	13:14	13:44	50.6	50.4	54.4	48.0	47.9	48.5	50.6
2-Dec-14	13:02	13:32	49.4	46.8	50.4	49.5	49.6	50.6	49.5
8-Dec-14	13:16	13:46	46.2	47.7	47.8	48.0	47.5	45.6	47.2
19-Dec-14	14:57	15:27	56.0	60.5	54.7	58.1	53.8	54.2	56.9
23-Dec-14	11:23	11:53	51.9	44.7	44.0	50.1	51.8	52.3	50.2
Limit Le	vel 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 According to the EM&A Manual of Sok Kwu Wan, water quality monitoring should be carried out during the course of marine work. As informed by the Contractor in May 2014, the marine works in Sok Kwu Wan has been completed in April 2014. Marine water quality monitoring was therefore terminated from May 2014 after consent was obtained with IEC. In this regards, an associated letter ref. TCS00512/10/300/L0783 dated 19 May 2014 has been issued to EPD for approval and no comment was received.



#### 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 29 November and 15 December 2014. 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 2012 and it was certified as dead. Eventually, 4 no. of additional *Celtis Timorensis*, namely CT\_2A, CT\_3A, CT\_6A were inspected in the remaining period.
- 7.04 During the tree inspection on 15 August 2013, CT2A and CT3A were lost due to typhoon on 14 August 2013. Compensatory of additional *Celtis Timorensis* is recommended to carry out by the Landscape Contractor.
- 7.05 The tree inspection report for this Reporting Period is presented in *Appendix N*.



#### 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 K*. Whenever possible, materials were reused on-site as far as practicable.

#### Table 8-1Summary 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 <sup>3</sup> )	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)	3.450	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<sup>3</sup> 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 2, 9, 16 and 22 December 2014.
- 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 L*.

Date	Findings / Deficiencies	Follow-Up Status
2 December 2014	• No environmental issue was observed during the site inspection	NA
9 December 2014	• The Contractor was reminded to clean the stagnant water and ensure no obstacle at the U-channel at rooftop of the sewage treatment works.	Stagnant water was removed and no obstacle was observed at the U-channel.
16 December 2014	• The Contractor was reminded to proper dispose the empty cement bag to reduce dust generation.	The empty cement bag has been removed.
22 December 2014	• No environmental issue was observed during the site inspection	NA

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 Pariod	<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 - December 2013	0	1 (Nov 2011)	NA		
January – November 2014	0	1 (Nov 2011)	NA		
December 2014	0	1 (Nov 2011)	NA		

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

Departing Devied	<b>Environmental Summons 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 - December 2013	0	0	NA		
January – November 2014	0	0	NA		
December 2014	0	0	NA		

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

Departing 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 - December 2013	0	0	NA		
January – November 2014	0	0	NA		
December 2014	0	0	NA		



#### 11 IMPLEMENTATION STATUS OF MITIGATION MEASURES

11.01 The environmental mitigation measures that recommended in the Sok Kwu Wan Environmental Monitoring and Audit 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 M*.
- 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	<ul> <li>Drainage channels were provided to convey run-off into the treatment facilities;</li> </ul>
Quality	and
Quintity	<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;
	• Public roads around the site entrance/exit had been kept clean and free from dust;
	and
	• Tarpaulin covering of any dusty materials on a vehicle leaving the site.

 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
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 IMPACT FORECAST**

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

#### Water Quality

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

#### Air Quality

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

#### Noise

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

#### Waste and Chemical Management

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



#### **13 CONCLUSIONS AND RECOMMENDATIONS**

#### CONCLUSIONS

- 13.01 This is the 53<sup>rd</sup> monthly EM&A Report covering the construction period from 26 November to 25 December 2014.
- 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 According to the construction information provided by the Contractor, the marine works in Sok Kwu Wan has been completed in April 2014. As agreed by the Contractor, IEC and RE, the marine water quality monitoring was therefore terminated from May 2014.
- 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 2, 9, 16 and 22 December 2014. All the observation has been rectified in the set time frame. The environmental performance of the Project was therefore considered as satisfactory.

#### RECOMMENDATIONS

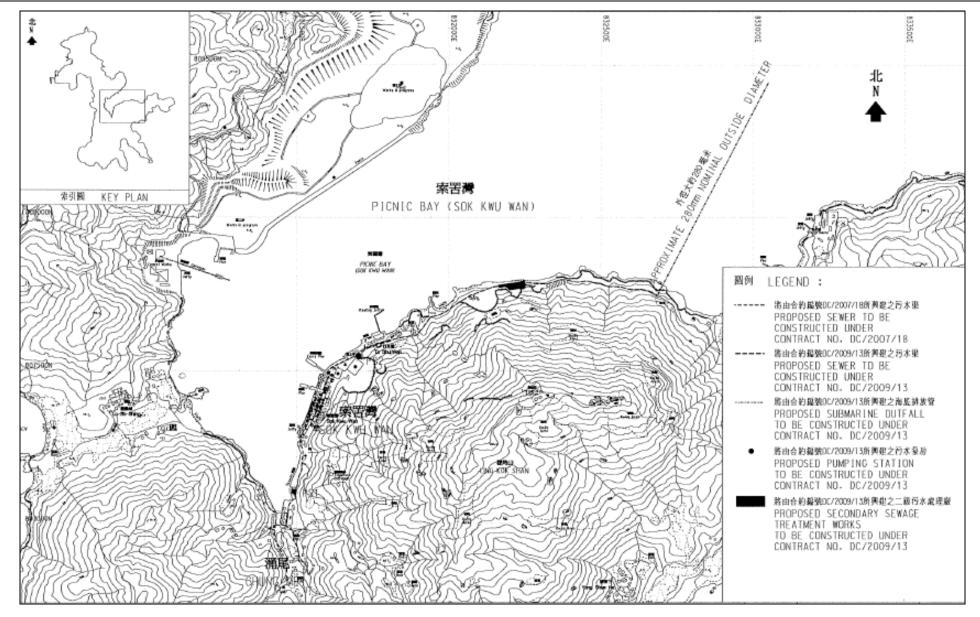
- 13.07 During dry and windy season, the Contractor shall pay attention on the construction dust that may cause environmental issues in the upcoming months. Mitigation measures on construction dust identified at the EM&A manual such as watering at haul road and covering of dusty material should be fully implemented.
- 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	Mr. F K Pong	2159-3550	2833-9162
UCJV	Engineer's Representative	Mr. Kenneth WK Kwong	2982 0240	2982 4129
URS	Independent Environmental Checker	Mr. Rodney Ip	2410 3750	2428 9922
Leader	Director	Mr. Wilfred So	2982 1750	2982 1163
Leader	Contracts Manager	Mr. Vincent Chan	2982 1750	2982 1163
Leader	Site Agent	Mr. Ron Hung	2982 1750	2982 1163
Leader	Environmental Officer	Mr. Leung Man Kin	2982 8652	2982 8650
Leader	Environmental Supervisor	Mr. Chan Chi Kau	2982 8652	2982 8650
Leader	Sub-Agent	Mr. Leung Man Kin	2982 1750	2982 1163
Leader	Safety Officer	Ms. Vanessa Chan	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

UCJV (Engineer) – URS Hong Kong Limited CDM Joint Venture

Leader (Main Contractor) – Leader Civil Engineering Corporation Limited

URS (IEC) – URS Hong Kong Limited

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



## Appendix C

## **Three Months Rolling Construction Programme**

Activity ID	Description	Original Percent Duration Complete	Early Start	Early Finish	Late Start	Late Finish	2014         2015           DEC         JAN         FEB         MAR         APR           30         07         14         21         28         04         11         18         25         01         08         15         22         29         05         12         19         2
Project Key	Date						30 07 14 21 20 04 11 10 20 01 00 13 22 01 00 13 22 23 03 12 13 2
KD0040	Section W2 - YSW STW & Submarine Outfall (1370d)	0 (	)	31/12/14 *		31/12/14 *	
KD0050	Section W3 - Footpath Diversion in Ptn G	0 (	)	31/12/14		31/12/14	Section W3 - Footpath Diversion in Ptn G
KD0060	Section W4 - Slope Works in Portios H & I	0 0	)	31/12/14 *		30/11/14 *	
KD0070	Section W5 - P.S. No. 1 in Portion D	0 0	)	31/12/14 *		31/12/14	Section W5 - P.S. No. 1 in Portion D
KD0080	Section W6 - Sewer & PS No2 in Ptn. E & F	0 0	)	31/12/14 *		31/12/14	
			,				
KD0090	Section W7 - SKW STW, RM & Sm. Outfall	0 0	)	22/02/15 *		22/02/15 *	Section W7 - SKW STW, RM & Sm. Outfall
KD0100	Section W8 - Landscape Softworks	0 0	)	11/01/15 *		11/01/15	Section W8 - Landscape Softworks
KD0110	Section W9 - Establishment Works	0 (	)	24/07/15 *		24/07/15	
KD0125	Project Completion	0 (		24/07/15		24/07/15	
KD0130	Completion of Maintenance Period of W1	1 100	) 13/10/12 A	13/10/12 A	13/10/12 A	13/10/12 A	
KD0132	Completion of Maintenance Period of W2	1 (	) 15/06/15	15/06/15 *	15/06/15	15/06/15 *	
KD0135	Completion of Maintenance Period of W4	1 (	01/01/15	01/01/15 *	01/11/14	01/11/14 *	Completion of Maintenance Period of W4
KD0145	Completion of Maintenance Period of W5	1 (	01/01/15	01/01/15 *	01/11/14	01/11/14 *	Completion of Maintenance Period of W5
KD0155	Completion of Maintenance Period of W6		01/01/15	01/01/15 *	01/11/14	01/11/14 *	Completion of Maintenance Period of W6
KD0165	Completion of Maintenance period of W7		06/10/15	06/10/15 *	06/10/15	06/10/15 *	
			00/10/13	00/10/13	00/10/13	00/10/13	
Preliminary	(Civil)						
PRE0020	Pre-condition Survey	60 100	) 17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A	
PRE0040	Erection of Engineer's Site Accommodation at YSW	60 100	) 17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A	
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	
PRE0060	Application of Consent from Marine Department		) 17/05/10 A		17/05/10 A	15/07/10 A	
PRE0090	Working Group Meeting for Outfall Construction		) 17/05/10 A		17/05/10 A	13/09/10 A	
			-				
PRE0100	Application & Consent of XP from HyD (Mo Tat Rd)		) 17/05/10 A		17/05/10 A	13/09/10 A	
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	
Preliminary	(E&M)						
Technical Sub	mission						
YSW0820	ABWF installation	90 100	15/01/13 A	05/09/14 A	15/01/13 A	05/09/14 A	
Process Desig	gn of SKWSTW & YSWSTW						
E&M0010	Submission	38 100	) 17/05/10 A	23/06/10 A	17/05/10 A	23/06/10 A	
E&M0020	Vetting and Comment by ER		24/06/10 A		24/06/10 A	14/07/10 A	
E&M0030	Revision and Resubmission		) 15/07/10 A			16/11/10 A	
E&M0080	Approval from the Engineer		) 17/11/10 A			30/11/10 A	
Hydraulic Des			, 17, 11, 10, 10	36/11/10/1	11/11/10/1	00/11/10/1	
	Submission	21 100	) 15/07/10 A	04/08/10 4	15/07/10 4	04/08/10 A	
E&M0040	Vetting and Comment by ER						
E&M0050			05/08/10 A		05/08/10 A	18/08/10 A	
E&M0060	Revision and Resubmission		) 19/08/10 A				
E&M0430	Approval from the Engineer		) 24/11/10 A				
YSW1536	Water tightness test	40 100	) 12/08/13 A	26/08/13 A	12/08/13 A	26/08/13 A	
Equipment Su	Ibmission & Approval						
E&M0070	Submission of Membrane Module	50 100	17/05/10 A	05/07/10 A	17/05/10 A	05/07/10 A	
E&M0090	Vetting and Comment by ER	14 100	06/07/10 A	19/07/10 A	06/07/10 A	19/07/10 A	
E&M0100	Revision and Resubmission		20/07/10 A		20/07/10 A	24/02/11 A	
E&M0101	Submission of Equipment		05/08/10 A			30/11/11 A	
E&M0102	Vetting and Comment by ER		03/11/10 A		03/11/10 A	30/11/11 A	
E&M0103	Revision and Resubmission		01/02/11 A			30/11/11 A	
E&M0110	Approval on Coarse Screens		25/05/11 A				
E&M0120	Approval on Fine Screens		12/09/11 A			12/09/11 A	
E&M0130	Approval on Pumps		) 23/06/11 A		23/06/11 A		
E&M0140	Approval on Submersible Mixers		) 23/03/11 A			23/03/11 A	
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&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&M0170	Approval on Sludge Dewatering Equipment		01/09/11 A			01/09/11 A	
E&M0180	Approval on Valves, Pipes & Fittings	30 100	) 19/11/11 A	04/08/13 A	19/11/11 A	04/08/13 A	
Start date	05/05/10 Early bar						Date Revision Checked Approv
Finish date	12/09/16 Progress bar			1.	oador Civ	vil Engin	ering Corp. Ltd. 31/12/14 Revision 0 RH VC
Data date	01/01/15 Critical bar Summary bar						DC/2009/13
Run date	09/01/15 A Progress point		0-	notruetie.			
Page number	1 A Critical point		UO				ment Works at YSW & SKW
	IA     V     Summary point       Systems, Inc.     Start milestone point			ు-month	Rolling	Program	ne (Jan 2015 - Mar 2015
	Finish milestone point						

Start date	05/05/10		Early bar
Finish date	12/09/16		Progress Critical ba
Data date	01/01/15		- Summary
Run date	09/01/15	▲	Progress
Page number	1A		Critical po Summary
c Primavera	Systems, Inc.	<b>ě</b>	Start mile
		1 🔶 👘	Finish mil

							0044		0045			
Activity ID	Description		Percent Early Complete Start	Early Finish	Late Start	Late Finish	2014 DEC JAN	FEB	2015	MAR 08 15 22	API	2
E&M0190	Approval on Penstocks	30				15/11/11 A	30 07 14 21 28 04 11 18 25 01 08	08 15 2	2 01	08 15 22	29 05 12	19 26
E&M0200	Approval on Instrumentation	30				08/03/12 A						
E&M0210	Approval on MCC & LVSB	30				01/01/14 A						
E&M0220	Approval on BS Equipment	30	99 30/11/11 A	31/12/14 * 3	60/11/11 A	13/09/14 *	Approval on BS Equipment				1 I I 1 I 1 I	
E&M0230	Approval on FS Equipment	30	100 30/11/11 A	02/10/14 A 3	0/11/11 A	02/10/14 A		11111				
Drawings Sub	mission & Approval		11	1 1	I							
E&M0235	Sub. P&ID Drawings	100	99 24/06/10 A	01/01/15 2	4/06/10 A	12/09/14	Sub. P&ID Drawings					
E&M0240	Sub. Plant GA Drawings	45	96 04/08/10 A	02/01/15 0	4/08/10 A	12/09/14	Sub. Plant GA Drawings	11111			1 I I I I I I	
E&M0250	Sub. Builder's Works Requirements Drawings	15	100 04/08/10 A	31/01/13 A 0	4/08/10 A	31/01/13 A						
E&M0260	Sub. Mechanical Installation Drawings	60	99 27/09/10 A	01/01/15 2	7/09/10 A	12/09/14	Sub. Mechanical Installation Drawings	11111				
E&M0270	Sub. Electrical Installation Drawings	60	99 27/09/10 A	01/01/15 2	7/09/10 A	12/09/14	Sub. Electrical Installation Drawings	+1414				
E&M0280	Sub. BS Installation Drawings	120	99 27/09/10 A	03/01/15 2	7/09/10 A	13/09/14	Sub. BS Installation Drawings					
E&M0290	Sub. FS Installation Drawings	120	100 13/11/11 A	08/10/14 A 1	3/11/11 A	08/10/14 A						
Statutory Subr				1								
E&M0295	Preparation of Submission to HEC	39		30/11/11 A 0								
E&M0300	Application & Approval from HEC	150		03/03/14 A 0		03/03/14 A						
E&M0305	Provision of Cables to the STWs	180				30/08/14 A	Form 214 Culturing in to ECD					
E&M0320	Form 314 Submission to FSD Submission to WSD	14		04/12/14 A 2		04/12/14 A	Form 314 Submission to FSD					
E&M0325		14				29/02/12 A	Form 501 Submission to FSD (YSW)	+11414		 		
E&M0330 E&M0340	Form 501 Submission to FSD (YSW) Form 501 Submission to FSD (SKW)	28				04/12/14 A 28/11/14 *		ubmission to FS				
E&M0340	Form 501 Submission to FSD (SKW)	28	-	28/01/15 0 28/01/15 A 0		28/11/14 * 28/01/15 A		ubmission to FS	· · · · ·			
Yung Shue V		20		20/01/13 A 0		20/01/13 A						
	an a											
Preliminary	Project Common comment Date	0	100	17/05/10 0		17/05/10 A		1111			I I I I I I I	
KD0020	Project Commencement Date	0	100	17/05/10 A		17/05/10 A		11111				
KD0030	Section W1 - Slope Works in Portion A & C	0	100	14/10/11 A		14/10/11 A						
YSW0020	Approval of Environmental Team	16		01/06/10 A 1	7/05/10 A	01/06/10 A		1111				
YSW00201	Change Baseline Monitoring Location (Air&Noise)	59				30/07/10 A						
YSW0030	Baseline monitoring (Air & Noise)	23				22/08/10 A					· · · · · · · · · · · · · · · · · · ·	
YSW0035	Baseline Monitoring Report Submission (A & N)	16		07/09/10 A 2		07/09/10 A						
YSW00351	Submission & Approval for Monitoring Method (W)	58		29/07/10 A 0		29/07/10 A						
YSW0040 YSW0050	Baseline monitoring (Water) Erect Hoarding and Fencing	155 60		31/12/10 A 3 17/07/10 A 1		31/12/10 A						
	Slope Works in Portion A & C	00	100 19/03/10 A		9/03/10 A	17/07/10 A		1111				
YSW0075	Mobilization	30	100 17/05/10 A	15/06/10 A 1	7/05/10 A	15/06/10 A						
YSW0080	Site Clearance	30				15/07/10 A						
YSW0085	Initial Survey	14				15/07/10 A						
YSW0090	Verify the Rock Boulder required Stablization Wk	249				21/03/11 A						
YSW0100	Removal of Rock Boulder	257				03/06/11 A						
YSW0110	Stablizing work for rock boulder	35		19/08/11 A 1		19/08/11 A						
YSW0120	Cut the slope to design profile	2				25/09/10 A						
YSW0131	Mobilization of Plant and Material of Soil Nails	14				25/09/10 A						
YSW0132	Erect Scaffold and Working Platform	2		27/09/10 A 2	6/09/10 A	27/09/10 A						
YSW0133	Setting out and Verify Locations of Soil Nails	45		11/11/10 A 2	8/09/10 A	11/11/10 A		11111				
YSW0134	Drilling and Soil Nails Installation	43		30/11/10 A 1	9/10/10 A	30/11/10 A		+1+1+1+ 11111 11111				
YSW0135	Construction of Nail Heads	12	100 01/12/10 A	12/12/10 A 0	1/12/10 A	12/12/10 A						
YSW0136	Mesh Installation on Cut Slope	3	100 13/12/10 A	15/12/10 A 1	3/12/10 A	15/12/10 A						
YSW01361	Verify alignment of access & channels on slope	118		12/04/11 A 1	6/12/10 A	12/04/11 A						
YSW0140	Construct U-channels & Step Channel on Cut Slope	182		11/10/11 A 1	3/04/11 A	11/10/11 A						
YSW0153	Removal of Ex U-Channel where clash with B. Wall	151	100 10/05/11 A	07/10/11 A 1		07/10/11 A						
YSW01545	Temporary Diversion of Drainage	244	100 08/09/10 A	09/05/11 A 0	8/09/10 A	09/05/11 A						
Otomic had												
Start date Finish date	05/05/10 Early bar 12/09/16 Progress bar							Da		Revision	Checked	
Data date	Critical bar			Lea			ering Corp. Ltd.	31/12/14		Revision 0	RH	VC
Run date	01/01/15         — Summary bar           09/01/15         ▲ Progress point		•	of m = = 1 = ==			DC/2009/13					
Page number	2A Critical point						nent Works at YSW & SKW ne (Jan 2015 - Mar 2015					
	Systems, Inc. Start milestone point			5-month R		ogram	וכ נסמוו 2013 - ואמו 2013					
	<ul> <li>Finish milestone point</li> </ul>											<u> </u>

Start date	05/05/10		Early ba
Finish date	12/09/16		Progress Critical b
Data date	01/01/15		- Summar
Run date	09/01/15		Progress
Page number	2A		Critical p Summar
c Primavera	Systems, Inc.	<b></b>	Start mil
		1 🛆	Einich m

Activity	Description		arly Early	Late	Late	2014 DEC		JAN		FEB	2015	MAR	APF	3
ID			Start Finish	Start	Finish	30 07 14 21	28 04	11 18 25	01 08	15	22 01	08 15 22	29 05 12	19 26
YSW0155 YSW0170	RC Barrier Wall Bay 1-13 (below Ground Level)	256 100 26/0 125 100 09/0		26/09/10 A										
YSW0170 YSW0175	RC Barrier Wall Bay 1-13 (above Ground Level)           Construct U-channels and Catchpits (Phase 1)	125 100 09/0 76 100 09/0		_										
YSW01750	Construction of subsoil drain (phase 1)	7 100 12/1					101 11 11 1 1 1 1 101 11 11 1 1 1 404 61 41 - 1			+1	i i			
YSW01755	Construct subsoil drain (phase 2)	14 100 06/1									H I			
YSW01800	RC Barrier Wall Bay 14 (below & above Ground)	87 100 03/0												
YSW01805	Hydroseeding	14 100 02/0												
YSW01810	Construct U-channels and Catchpits (Phase 2)	30 100 29/1		29/11/12 A	_									
Section W2 - Y	SW STW & Submarine Outfall	1 1 1									1			
Civil & Structu	ral Work													
E&M1120	Hydraulic Test of Pipeworks	7 100 09/0	5/13 A 30/11/14 A	09/05/13 A	30/11/14 A	Hydraulic Test of Pipeworks								
KD0010	Receive Letter of Acceptance	0 100	05/05/10 A		05/05/10 A									
YSW0412	Mobilization	30 100 17/0	5/10 A 15/06/10 A	17/05/10 A	15/06/10 A									
YSW0422	Site Clearance	30 100 17/0		17/05/10 A										
YSW0432	Initial Survey	14 100 02/0		02/06/10 A										
YSW STW -		14 100 02/0	5/10 A 15/00/10 P	02/00/10 A	13/00/10 A						<del>   </del>			
YSW0500	ELS & Excavation for Inlet Pumping Station	105 100 08/0	21/12/10 A	08/09/10 A	21/12/10 4		101         11         1         1           101         101         1         1         1           101         101         1         1         1           101         101         1         1         1           101         101         1         1         1           101         101         1         1         1           101         101         1         1         1							
YSW0510	Sub-structure construction (Inlet Pumping Station	129 100 22/1		22/12/10 A										
YSW0520	Backfill & Remove ELS (Inlet Pumping Stn)	40 100 30/0		30/04/11 A	-									
YSW0530	ELS & Excavation for Equalization Tank	159 100 01/0			08/06/11 A									
YSW0540	Sub-structure construction (Equalization Tank)	112 100 09/0	5/11 A 28/09/11 A	09/06/11 A	28/09/11 A									
YSW0550	Backfilling & Remove ELS (Equalization Tank)	20 100 29/0	9/11 A 18/10/11 A	29/09/11 A	18/10/11 A		HI         HI<		+	+1				
YSW05701	ELS & Excavation for Grit Chambers	28 100 09/0	6/11 A 06/07/11 A	09/06/11 A	06/07/11 A									
YSW05711	Construct sub-structure for Grit Chambers	106 100 07/0	7/11 A 20/10/11 A	07/07/11 A	20/10/11 A									
YSW05721	Backfill & Remove ELS for Grit Chambers	12 100 21/1	D/11 A 01/11/11 A	21/10/11 A	01/11/11 A						H I			
YSW05731	ELS & Excavation for Grease Separators (GS)	34 100 07/0	7/11 A 09/08/11 A	07/07/11 A	09/08/11 A		101 01 01 01 1 1 1 101 01 01 1 1 1 101 01 11 1 1 1 101 01 11 1 1			    	ii i			
YSW05741	Construct sub-structure for Grease Separators	52 100 10/0	3/11 A 30/09/11 A	10/08/11 A	30/09/11 A		1014 10 21 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5				H I			
YSW05751	Install Dia.400 Puddles in Grease Separators	27 100 01/1	D/11 A 27/10/11 A	01/10/11 A	27/10/11 A									
YSW05752	Construct sub-structure for GS (above puddles)	48 100 28/1		28/10/11 A										
YSW05761	Backfill & remove ELS for Grease Separators	10 100 15/1			24/12/11 A									
YSW0580	Excavate to Formation for Deodorizer Room	10 100 25/1					100 00 10 10 10 1 100 00 10 10 1 1 100 00 10 10 1 1		+	+1				
YSW05801	Excavate to formation - Grid J-N/5-7	40 100 04/0		04/01/12 A										
YSW05802	Excavate to formation - Grid GA-H/5-7	10 100 13/0 90 100 29/0					100 10 11 11 1 1 100 10 11 1 1 100 10 11 1				H I			
YSW05901 YSW05911	G/F to 1/F Construction Grid GA-K/1-5 G/F to 1/F Construction Grid N-S/1-5	90 100 29/0 80 100 21/1		29/09/11 A 21/10/11 A										
YSW05921	G/F to 1/F Construction Grid K-N/1-5	45 100 25/1									H I			
YSW05922	G/F to 1/F Construction for Deodorizer Room	80 100 04/0												
YSW05923	G/F to 1/F Construction for Grid J-N/5-7	60 100 13/0		13/02/12 A			100 01 01 01 0 100 01 01 0 0 100 01 01 0 100 01 0 100 00000000							
YSW05924	G/F to 1/F Construction for Grid GA-H/5-7	50 100 28/0												
YSW06001	1/F to Roof Constuction for Grid GA-K/1-5	87 100 28/1									H I			
YSW06011	1/F to Roof Constuction for Grid N-S/1-5	75 100 09/0		09/01/12 A										
YSW06021	1/F to Roof Constuction for Grid K-N/1-5	44 100 08/0	2/12 A 22/03/12 A	08/02/12 A	22/03/12 A						i i			
YSW06022	1/F to Roof Constuction for Deodorizer Room	60 100 24/0	3/12 A 22/05/12 A	24/03/12 A	22/05/12 A					1 11				
YSW06023	1/F to Roof Constuction for Grid J-N/5-7	45 100 13/0	1/12 A 27/05/12 A	13/04/12 A	27/05/12 A									
YSW06034	1/F to Roof Constuction for Grid GA-H/5-7	28 100 27/0	7/12 A 13/08/12 A	27/07/12 A	13/08/12 A									
YSW06035	Construct buffle walls in Grease Separators	90 100 18/0	1/12 A 16/07/12 A	18/04/12 A	16/07/12 A									
YSW07201	Water tightness test for Inlet Pumping Station	60 100 23/0	3/12 A 21/05/12 A	23/03/12 A	21/05/12 A									
YSW07202	Water tightness test for Equalization Tanks	42 100 22/0												
YSW07203	Water tightness test for Grit Chambers	42 100 17/0												
YSW07204	Water tightness test for Grease Separators	32 100 03/1												
YSW07205	Water tightness test for water channels	21 100 31/0												
YSW0800	ABWF installation	271 100 03/0	//12 A  03/07/14 A	03/07/12 A	03/07/14 A									
YSW STW -		10 100 00/2		08/00/40 4	17/00/40 4		100 10 10 10 10 10 10 10 10 10 10 10 10							
YSW0610	Excavate to formation	10 100 08/0		08/09/10 A			100 01 01 01 0 0 000 01 01 0 0 0 000 01 01 0 0 000 01 00 0 000 0 0							
YSW0620	Base slab construction	248 100 18/0	9/10 A 23/05/11 A	18/09/10 A	23/05/11 A									
Start date	05/05/10 Early bar									Г	ate	Revision	Checked	Approved
Finish date	12/09/16 Progress bar		I			ering Corp. Ltd.				31/12/14		Revision 0	RH	VC
Data date	01/01/15 Summary bar			Con	tract No. I	DC/2009/13								
Run date	09/01/15 Progress point Critical point					ment Works at YSW &								
	3A Critical point Summary point Systems, Inc. Start milestone point		3-montl	n Rolling	Programn	ne (Jan 2015 - Mar 201	5							
	Systems, mc. Start milestone point													

Activity		Original	Percent Early	Early	Late	Late	2014		201			
ID	Description	Duration		Finish	Start	Et al a la	DEC 00 07 14 21 28 04	JAN 11 18 25	FEB 01 08 15 22 0'	MAR I 08 15 22 2	APR 9 05 12	19 26
YSW0630	G/F to 1/F construction	205	100 24/05/11 A	14/12/11 A 2	24/05/11 A	14/12/11 A						
YSW0640	1/F to Roof Construction	64	100 15/12/11 A	16/02/12 A 1	5/12/11 A	16/02/12 A						
YSW0810	ABWF installation	80	100 28/12/11 A	16/03/12 A 2	28/12/11 A	16/03/12 A						
	GLF-H&DN Tanks											
YSW0650	ELS & Excavation for DN Tanks	37		14/10/10 A		1						
YSW0660	Sub-struction construction (DN Tanks)	78		31/12/10 A 1								
YSW0670	Backfill & Remove ELS (DN Tanks)	70	100 01/01/11 A	11/03/11 A 0								
YSW0680	Base slab construction (SD1, SD2 & MBR4)	17		28/03/11 A 1								
YSW0690	Construct Superstructure SD1, SD2 & MBR4	82	100 29/03/11 A	18/06/11 A 2				· 4			·	
YSW06901	Construct Superstructure of DN Tanks	28	100 15/05/12 A	11/06/12 A 1								
YSW0705	Water test for MBR 4	47	100 01/10/12 A	16/11/12 A								
YSW07055	Water test for SD1 & SD2	54		10/01/13 A 1								
YSW0710	Apply protective paint for MBR 4	7		30/09/12 A 2 07/10/12 A 0								
YSW07105 YSW0830	Apply protective paint for SD1 & SD2 Water test for DN Tanks	28	100 01/10/12 A 100 14/07/13 A	13/09/13 A 1							·	
YSW0830 YSW0850	Apply protective paint for DN Tanks	28	100 14/07/13 A 100 27/04/13 A									
YSW STW -		0	100 27/04/13 A	11/07/13 A 2	27/04/13 A	11/07/13 A						
YSW STW - YSW0730	GLA - F Completion of HDD		100 21/01/12 A		21/01/12 A							
YSW0730 YSW0732	Excavate for MBR 2 & 3	20		09/02/12 A 2		09/02/12 4						
YSW0732 YSW0733	Construct basement of MBR 2 & 3	20	100 21/01/12 A 100 10/02/12 A	29/02/12 A 1								
YSW0735	Construct basement of MBR 2 & 3	75	100 10/02/12 A 100 01/03/12 A	14/05/12 A		14/05/12 A						
YSW0736	Construct superstructure of MBR 3	100	100 01/03/12 A	14/05/12 A 1		14/05/12 A						
YSW0740	ELS & excavate for Outfall Shaft	75	100 01/03/12 A	14/05/12 A		14/05/12 A					·	
YSW0750	Construct basement of Outfall Shaft	19	100 15/05/12 A	02/06/12 A 1		02/06/12 A						
YSW07501	Connect additional flange to HDPE pipe (VO 042)	5	100 03/06/12 A	07/06/12 A		07/06/12 A						
YSW07502	Construct sub-structure of Outfall Shaft	16	100 08/06/12 A	23/06/12 A		23/06/12 A						
YSW0760	Backfill & remove ELS (outfall shaft)	8	100 24/06/12 A	01/07/12 A 2		01/07/12 A						
YSW07601	Construct superstructure for Outfall Shaft	30		31/07/12 A						++++++	++	
YSW07603	ELS & excavate for FSH Water Supply Tank	25	100 01/06/12 A	25/06/12 A		25/06/12 A						
YSW07604	Construct substructure for FSH Water Supply Tank	24	100 26/06/12 A	19/07/12 A 2		19/07/12 A						
YSW07605	Backfill & remove ELS for FSH Water Supply Tank	12	100 20/07/12 A	31/07/12 A 2	20/07/12 A	31/07/12 A						
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						
YSW07608	Construct superstructure for FSH Water Supply Tk	37	100 25/08/12 A	30/09/12 A 2	25/08/12 A	30/09/12 A						
YSW07609	Construct superstructure for MBR 1	37	100 25/08/12 A	30/09/12 A 2	25/08/12 A	30/09/12 A						
YSW07610	Construct Workshop, FSSH Pump Rm, PW Pump Rm	31	100 03/10/12 A	31/10/12 A	)3/10/12 A	31/10/12 A						
YSW08301	Water tightness test for Outfall Shaft	42	100 03/04/13 A	18/04/13 A	)3/04/13 A	18/04/13 A						
YSW08302	Water tightness test for MBR 2 & 3	95	100 10/08/13 A	24/08/13 A 1	0/08/13 A	24/08/13 A						
YSW08303	Water tightness test for MBR 1	19	100 30/11/12 A	18/12/12 A 3	80/11/12 A	18/12/12 A						
YSW08304	Water tightness test for FSH Water Supply Tank	32	100 31/08/13 A	01/10/13 A 3	31/08/13 A	01/10/13 A						
Fire Hose Re	el / Sprinkler Pump Rm											
YSW08305	Apply protective paint	120	100 02/10/12 A	15/08/13 A								
YSW0840	ELS & excavate to formation (+0 mPD approx.)	40		18/04/13 A 2		18/04/13 A						
YSW0860	Sub-structure construction	40	100 19/04/13 A	12/06/13 A 1		12/06/13 A						
YSW0880	Backfill & remove ELS	35		26/08/13 A 2		26/08/13 A						
YSW0890	Construction Ground Slab at +5.2mPD	40		14/07/13 A						· · · · · · · · · · · · · · · · · · ·	·	
YSW0900	Superstructure construction upto +9.2mPD	35		01/08/13 A		01/08/13 A						
YSW0910	Water test	28		27/01/14 A 3								
YSW0915	Apply protective paint	14		13/01/14 A 3								
YSW0925 Emergency S	ABWF installation	30	100 16/07/13 A	19/01/14 A 1	0/07/13 A	19/01/14 A						
YSW1470	ELS & excavate to formation (-1.5mPD Approx.)	16	100 17/09/12 A	02/10/12 A 1	7/09/12 ∆	02/10/12 △						
YSW1480	Sub-structure construction	14	100 17/09/12 A	16/10/12 A		16/10/12 A						
YSW1490	Backfill & extract sheetpile	3	100 17/10/12 A	19/10/12 A 1								
YSW 1500	Superstructure construction upto +10.5mPD	41		29/11/12 A 2								
YSW1530	Underground pipeline works	41		01/10/13 A 2								
		0+		2.,.0,1077 2		3.,.0,107					I I	<u> </u>
Start date	05/05/10 Early bar								Date	Revision	Checked	Approve
Finish date	12/09/16 Progress bar			Lea	ader Civ	vil Enginee	ering Corp. Ltd.		31/12/14	Revision 0	RH	VC
	01/01/15 Summary bar						C/2009/13					
	09/01/15 Progress point Critical point						nent Works at YSW & SKW					
Page number	4A Critical point			2 month E	ollina I	Programm	o ( Ian 2015 - Mar 2015					

F C F 
 Page number
 4A
 ♥
 Critical point

 c Primavera Systems, Inc.
 ♥
 Start milestone point

3-month Rolling Programme (Jan 2015 - Mar 2015

		<u></u>		<b>-</b>	1		2014		201	5		
Activit ID	y Description	Original Duration	Percent Early Complete Start	Early Finish	Late Start	Late Finish	DEC 30 07 14 21 28 04 11	JAN 18 25 01 08	FEB 15 22 01	MAR	APR	19 26
YSW1538	Apply protective paint	30	100 04/03/13 A		04/03/13 A					29	03 12	13 20
YSW1540		40	100 03/04/13 A	01/10/13 A	03/04/13 A	01/10/13 A						
Road, Dra	in, Cable Draw Pits & Ducting											
YSW1660		90	100 04/08/13 A		04/08/13 A							
YSW1660		45	100 20/01/14 A		20/01/14 A							
YSW1660		60			04/03/14 A							
YSW1660		60	100 22/07/13 A		22/07/13 A	06/02/14 A						
YSW1660 YSW1660		60 90	100 20/11/13 A 100 10/10/12 A		20/11/13 A 10/10/12 A	11/01/14 A 01/09/13 A						
YSW 1660		72	100 10/10/12 A 100 20/08/12 A		20/08/12 A							
YSW 1660		72	100 30/11/12 A		30/11/12 A							
YSW 1670		80	100 10/01/13 A		10/01/13 A							
YSW 1670		80	100 01/01/14 A	31/01/14 A	01/01/14 A	31/01/14 A						
YSW1670	3 Construct Boundary Wall (Grid Q-X)	80	100 21/02/14 A	26/03/14 A	21/02/14 A	26/03/14 A						
YSW1670		20	50 03/11/14 A	10/01/15	03/11/14 A		AB	WF installation for Boundary Wall				
YSW1670		5					g for Boundary Wall (V.O. No. 108)					
YSW1680	, , , , , , , , , , , , , , , , , , , ,	120	100 26/01/13 A		26/01/13 A							
YSW1690	· · · · · · ·	180	100 02/01/13 A		02/01/13 A			· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		
Submarine		110	100 23/05/14 A	U1/U1/15 A	23/05/14 A	U1/U1/15 A	Road Paving					
YSW0180	Coordination of HEC	53	100 17/05/10 A	08/07/10 4	17/05/10 A	08/07/10 4						
YSW0200	Submission and Approval of Ecologist	60	100 17/05/10 A		17/05/10 A	15/07/10 A						
YSW0210	Ecology Survey	211	100 16/07/10 A	13/07/10 / 11/02/11 A	16/07/10 A	11/02/11 A						
YSW0220	Submission and Approval of In. Hydro Survey	103	100 17/05/10 A	27/08/10 A								
YSW0230	Hydrogrophical Survey (YSW)	157	100 28/08/10 A		28/08/10 A							
YSW0240	Material Submission, Approval of HDPE pipe	319	100 17/05/10 A	31/03/11 A	17/05/10 A	31/03/11 A						
YSW02401	Clarify Coordinate of Point Y (Reply of RFI 010)	83	100 28/06/10 A	18/09/10 A	28/06/10 A	18/09/10 A						
YSW0250	Submit and Approval of Method Statement for HDD	188	100 19/09/10 A	25/03/11 A	19/09/10 A							
YSW0260	Submission of HDD Method Statement to HEC	14	100 26/03/11 A		26/03/11 A							
YSW0270	Additional G.I. Boreholes (YSW)	123	100 19/09/10 A		19/09/10 A			·				
YSW0280	Submission of propose alignment	69	100 20/01/11 A		20/01/11 A							
YSW0290 YSW0310	Submission of Marine Notice Construction of Entry Pit and Preparation Work	27	100 20/01/11 A 100 05/03/11 A		20/01/11 A 05/03/11 A							
YSW0310 YSW0320	Prepare of HDD Drill Rig Set-up (YSW)	27			05/03/11 A 01/04/11 A							
YSW0320	Establishment of HDD plant & equipment	6			09/04/11 A							
YSW0340	Setting up at drillhole location	14			15/04/11 A							
YSW0350	Drill pilot hole and reaming hole - NS400 - 530m	229			29/04/11 A							
YSW0360	Installation of NS400 HDPE 530m	17	100 14/12/11 A	30/12/11 A	14/12/11 A	30/12/11 A						
YSW03601	Demobilization of HDD plant & equipment	7	100 31/12/11 A	06/01/12 A	31/12/11 A	06/01/12 A						
YSW03605	Remove Entry pit of HDD	14			07/01/12 A				+ + + + + + +		++	
YSW03620	Removal of Receiving Pit	14			31/12/11 A							
YSW03641	Prepare backfilling material under VO 046A	120			07/01/12 A							
YSW0365	Set up of Silt Curtain as per EP Dredging of Marine Deposit for Diffuser (YSW)	2			23/11/12 A 24/11/12 A							
YSW0370 YSW0380	Diffuser Construction (YSW)	60			24/11/12 A 30/11/12 A							
YSW0400	Removal of silt curtain	30			30/04/13 A							
	s - YSW STW		100 00,0 % 10 / 1	1								
E&M0360	Delivery of MBR Memb. Mod. (MBR Tk 4)	118	100 24/02/11 A	21/06/11 A	24/02/11 A	21/06/11 A						
E&M0370	Delivery of MBR Membrane Modules - 2nd Shipment	236			24/02/11 A							
E&M0380	Delivery of Grit Removal Equipment	81	100 10/10/11 A	29/12/11 A	10/10/11 A	29/12/11 A						
E&M0390	Delivery of Coarse Screens	129			06/09/11 A							
E&M0400	Delivery of Fine Screens	80			12/09/11 A					· · · · · · · · · · · · · · · · · · ·		
E&M0410	Delivery of Pumps	75	100 23/06/11 A		23/06/11 A							
E&M0420	Delivery of Submersible Mixers	230			26/02/11 A							
E&M0440	Delivery of Sludge Dewatering Equipment	558			31/08/11 A 30/08/11 A							
E&M0450 Start date	Delivery of Valves, Pipes & Fittings       05/05/10   Early bar	560	100 30/08/11 A	20/02/14 A	30/08/11 A	20/02/14 A				Dovision	Chaolicad	Approvad
Finish date	12/09/16 Progress bar			ı	eader Civ	il Engine	ering Corp. Ltd.	2	Date 1/12/14	Revision Revision 0	RH	Approved VC
Data date	01/01/15 Critical bar Summary bar			L			DC/2009/13	3	1/12/14			vo
Run date	09/01/15  Progress point		Con	structio			ment Works at YSW & SKW					
Page numbe	Summary point						ne (Jan 2015 - Mar 2015					
c Primave	a Systems, Inc.    Start milestone point  Finish milestone point					-	-					
-						-						

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	30	201 DE 07 14		28	04	JAN 11 1	8 25	01	08	FEB 15	22
E&M0460	Delivery of Penstocks	135	100	12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A	50	07 14		888	0-		0 23	01	00	15	1111)
E&M0470	Delivery of Instruments	232	100 (	03/11/11 A	21/06/11 A	03/11/11 A	21/06/11 A				아머니							- 1000
E&M0480	Delivery of MCC LVSB	90	100 (	03/12/12 A	04/03/13 A	03/12/12 A	04/03/13 A	-										
E&M0490	Delivery of BS Equipment	180	100 1	10/12/11 A	15/04/15 A	10/12/11 A	15/04/15 A		I I	I	nn			I	I	I	I	11111
E&M0500	Delivery FS Equipment	995	100 1	11/12/11 A	01/01/15	11/12/11 A	01/01/15			I	ппп	Delivery FS	Equipm	ent	1	1	1	
E&M0510	Install Membrane Modules in MBR Tank no. 4	89	100 (	03/11/12 A	28/02/13 A	03/11/12 A	28/02/13 A											
E&M0520	Install Membrane Modules in MBR Tank No. 1 to 3	57	100 (	03/12/12 A	28/02/13 A	03/12/12 A	28/02/13 A				- <u>1</u> 0 0 0 - <u>1</u> 0 0 1 0 0 0							1001
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&M0540	Install Coarse Screens	240		23/04/12 A	23/08/13 A		23/08/13 A	1									i i	
E&M0550	Install Fine Screens	122		01/06/12 A	-	01/06/12 A	12/08/13 A	1										
E&M0560	Install Pumps	355		23/04/12 A	04/02/14 A	23/04/12 A	04/02/14 A	-									1	
E&M0570	Install Submersible Mixers	163	100	15/01/13 A	16/01/14 A	15/01/13 A	16/01/14 A					<del> </del>	L		· <u>+</u>   			11111 11111 11111
E&M0580	Install Sludge Dewatering Equipment	361		29/05/12 A	18/10/14 A		18/10/14 A	1										
E&M0590	Install Valves, Pipes & Fittings	232		15/01/13 A	12/10/14 A	15/01/13 A	12/10/14 A	1										
E&M0600	Install Penstocks (Batch 1, GL H - T)	213		23/04/12 A	21/05/13 A	23/04/12 A	21/05/13 A	1										
E&M0610	Install Instruments	74		02/01/13 A	02/12/14 A	02/01/13 A	02/12/14 A	 Ins	stall Instrumer	nts								
E&M0620	Install SAT, MCC & LVSB	8		02/01/13 A	02/01/15 A		02/01/15 A					Install S	AT, MCC	& LVSB	+			+1+1+
E&M0630	Install BS Equipment	637		02/01/13 A	01/01/15	02/01/13 A	01/01/15		1	I	ii ii ii	Install BS I	i í i					
E&M0640	Install FS Equipment	180		02/01/13 A	05/11/14 A	02/01/13 A	05/11/14 A			1								
E&M0650	Hydraulic Tests of Pipeworks	153		02/01/13 A	03/12/14 A	02/01/13 A			ydraulic Test	s of Pipew	orksilii							
E&M0660	Cabling Works	15		04/02/13 A	30/11/14 A		30/11/14 A	-	· · · · ·	,								
E&M0670	Insulation Tests of Cables and Cable Termination	26		11/04/13 A	03/12/14 A				sulation Test	s of Cables	s and (	able Termi	nation					$\frac{11111}{11111}$
E&M0680	Energization	1		02/04/13 A	03/04/13 A		03/04/13 A	'										
E&M0690	Functional and Performance Tests of Equipment	35		25/03/13 A		25/03/13 A	11/04/13 A	-										
E&M0700	T&C Period				-		01/07/13 A	-										
E&M0730	Trial Operation Period	137 413		09/12/13 A 02/07/13 A	01/07/13 A		01/07/13 A 04/03/16 A	_							-			
Sok Kwu Wa	•	413	100	J2/07/13 A	04/03/16 A	02/07/13 A	04/03/16 A			1					1	1		
	an							_										
Preliminary		101		00/04/40 1	40/04/44.4	00/04/40 4	40/04/44	-										
E&M0605	Install Penstocks (Batch 2, GL A - F)	131		02/01/13 A		02/01/13 A	19/01/14 A	-										
SKW0250	Approval of Environmental Team	16		17/05/10 A		17/05/10 A	01/06/10 A	-										
SKW0260	Baseline monitoring (Air & Noise)	14		02/06/10 A	15/06/10 A		15/06/10 A	-										
SKW0265	Baseline Monitoring Submission (A & N)	14	100	16/06/10 A	08/07/10 A	16/06/10 A	08/07/10 A			1					-			
	Footpath Diversion in Portion G																i i	
	Site Clearance	01	100		06/06/10 A	47/05/40 4	00/00/40 4	-										
		21						-										
SKW0241	Initial Survey			07/06/10 A		07/06/10 A	15/06/10 A	-									l. I.	
SKW0242	Retaining Wall Bay 0-10 (Incl. VO. 001A)	177		30/06/10 A		30/06/10 A	23/12/10 A	-								1		
SKW0461	Utilities Laying and Diversion	70		24/12/10 A	-	24/12/10 A 04/03/11 A	03/03/11 A	-										
SKW0471	Concreting for Pavement	-		04/03/11 A			10/03/11 A								+			
SKW0481	Footpath Diversion - Stage 1	14		11/03/11 A		11/03/11 A	24/03/11 A	+			11 11 11	-						
SKW04811	Excavate for FP transition at CH0-35 &CH130-141	37		25/03/11 A		25/03/11 A	30/04/11 A	-									i i	
SKW04821	Construction of Drainage outfall near bay 10	3		01/05/11 A		01/05/11 A	03/05/11 A	-										
SKW04831	Cable diversion by HEC	26		04/05/11 A		04/05/11 A	29/05/11 A	-										
SKW04841	Diversion of Ducting and Drawpit by PCCW	12		20/05/11 A		20/05/11 A	31/05/11 A		$-\frac{1}{1}-\cdots-\frac{1}{1}-\cdots-$		- 사람은	·	 	·	· +			- 11111 - 11111
SKW04851	Soil backfilling behind FP retaining wall	14		01/06/11 A		01/06/11 A	14/06/11 A	-								1		
SKW04861	Concreting for footpath pavement	7		15/06/11 A		15/06/11 A	21/06/11 A	-								1		11111
SKW04871	Relocation of Temp Safety Fence at SKW STW A-G	57		22/06/11 A	17/08/11 A		17/08/11 A	-										
SKW04881	Disposal of excavation material at A-G SKW STW	138		18/08/11 A	02/01/12 A		02/01/12 A	-										
SKW04885	Footpath Diversion - Stage 2	7		03/01/12 A	09/01/12 A		09/01/12 A	+										+1+1+1+
SKW04891	Underground FS pipes	20		02/01/15 A	03/01/15	02/01/15 A	04/04/15	-		1			I I I					
SKW04892	WWO46 submission and WSD inspection	7		04/01/15	10/01/15	05/04/15	11/04/15	-								NSD inspe	ction	
SKW04893	Thrust block and water test	10		29/01/15 A	15/01/15	29/01/15 A	16/04/15	4					Th	rust block	and wat	er test	_	
SKW04894	Road kerb and footpath (GL A to T)	30	-	16/01/15	14/02/15	17/04/15	16/05/15	4									1	d kerb and
	Removal of Haul Road after SKW STW	20	01	16/01/15 *	04/02/15	17/04/15	06/05/15	1	- I		- ii [ii [ii					Romova	of Haul	Road afte
SKW0491 SKW0501	Concreting for no-fine concrete	10	-	16/01/15	25/01/15	17/04/15	26/04/15									g for no-fir		

 Start date
 05/05/10
 Early bar

 Finish date
 12/09/16
 Progress bar

 Data date
 01/01/15
 Summary bar

 Run date
 09/01/15
 Progress point

 Page number
 6A
 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 (Jan 2015 - Mar 2015 Date 31/12/14

2	015								
	01	08	MAR 15	22	29	05	APR 12	19	26
	1		1	1	1	1	1		
	,			+			+   		
	1						1		
							D	elivery of	f BS E
	1		1			1	1		1
	   !						   		
	1						1		
	I I			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		
	, , ,								
	 						l I		
	1						1		
	1		1	-			1		
	 						l I		
	1			I I I			1		
	1			1					
	, ·		   	T			T		
	1								
	1						1		
	: : !			   			: : L		
	1	-     		1			1		
	1						1		1
						- 	- 		
	1			1			1		 
	1			   			1		1
handf	footnot	h (GL A t	, T)						
d after	SKW	STW	, i )				1 1 1		
	GIXW	51 00							-i
	I	Ì	I	I	I	1	1	i	i
е			Revis	sion		Chec	ked	Appro	ved
-		Revisio	on 0			RH		Appro VC	

Revision 0	RH	VC

			1								
Activity ID	Description	Original	Percent Early	Early Finish	Late	Late	2014 DEC JAN	FEB	MAR	AP	
SKW0511	Wall Tie & Stone Facing	Duration 20	Complete Start 0 26/01/15	14/02/15	Start 27/04/15	Finish 16/05/15	30 07 14 21 28 04 11 18 25	01 08 15 22 01 Wall Tie & Stone		05 12	19 26
SKW0511	Gabion Wall & Geotextile	20	0 15/02/15	06/03/15	17/05/15	05/06/15			Gabion Wall & Geotextile		
SKW0531	Installation of Flower Pot	7	0 07/03/15	13/03/15	06/06/15	12/06/15			► Installation of Flower Po		
SKW0541	Completion of Outstanding Works	42	0 14/03/15	24/04/15	13/06/15	24/07/15					Comp
	lope Works in Portions H & I		0								
Geotechnical V											
SKW 0588	Construct scaffolding access	30	100 15/06/10 A	14/07/10	A 15/06/10 A	14/07/10 A					
SKW 0590	Site Clearance for Slope	100	100 15/07/10 A	22/10/10	A 15/07/10 A	22/10/10 A					
SKW 0591	Initial Survey for Slope	28	100 21/09/10 A	18/10/10 A	A 21/09/10 A	18/10/10 A					
SKW 0592	Temporary Rockfall fence at ex. Footpath	43	100 31/08/10 A	12/10/10	A 31/08/10 A	12/10/10 A					
SKW 05931	Construction of Haul Road (To +30mPD)	50	100 03/09/10 A	22/10/10	A 03/09/10 A	22/10/10 A			· · · · · · · · · · · · · · · · · · ·		
SKW 05932	Construction of Haul Road (To +42.5mPD)	68	100 23/10/10 A	29/12/10	A 23/10/10 A						
SKW059321	Removal of Boulders (IBG 1 - 119, SI No. 11B)	121	100 03/11/10 A	03/03/11 /							
SKW 059322	Add. Site Invest. Works (VO. No. 9,12 &16)	174	100 11/01/11 A	03/07/11 /							
SKW 059323	Revised Profile at West Slope (+56 to +42.5mPD)	1	100 17/03/11 A	17/03/11 /							
SKW 059324	Construction of Haul Road (+42.5 to +56mPD)	12	100 18/03/11 A	29/03/11 /		29/03/11 A	·				
SKW 059325 SKW 05933	Removal of Boulders (IBG 120-139, SI No. 11C) West Slope Cutting (+56mPD to +42.5mPD)	2	100 30/03/11 A 100 16/04/11 A	15/04/11 A		15/04/11 A					
SKW059331	Removal of Boulders (IBG 140-189, SI No. 11D)	45	100 18/04/11 A	01/06/11 /		01/06/11 A					
SKW 05934	West Slope Cutting (+42.5mPD to +35mPD)	32	100 02/06/11 A	03/07/11		03/07/11 A					
SKW059341	Revised Profile at West Slope (+20 to +4.8mPD)	1	100 04/07/11 A	04/07/11 /							
SKW 05935	West Slope Cutting (+35mPD to +27.5mPD)	83	100 08/07/11 A	28/09/11					· <sup>1</sup> <sup>1</sup> <sup>1</sup> <sup>1</sup> 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
SKW 05936	West Slope Cutting (+27.5mPD to +20mPD)	61	100 29/09/11 A	28/11/11	A 29/09/11 A	28/11/11 A					
SKW 05937	West Slope Cutting (+20mPD to +12.5mPD)	39	100 29/11/11 A	06/01/12	A 29/11/11 A	06/01/12 A					
SKW 05938	West Slope Cutting (+12.5mPD to +4.8mPD)	90	100 07/01/12 A	27/03/12	A 07/01/12 A	27/03/12 A					
SKW 05941	Slope Stormwater Drainage	300	100 28/03/12 A	25/05/12	A 28/03/12 A	25/05/12 A					
SKW 059411	East Slope Cutting (+50mPD to +42.5mPD)	72	100 04/03/11 A	14/05/11 /	A 04/03/11 A	14/05/11 A					
SKW 059412	East Slope Cutting (+42.5mPD to +35mPD)	82	100 15/05/11 A	04/08/11 A							
SKW059413	East Slope Cutting (+35mPD to +27.5mPD)	55	100 05/08/11 A			28/09/11 A					
SKW059414	East Slope Cutting (+27.5mPD to +20mPD)	61	100 29/09/11 A			28/11/11 A					
SKW 059415	East Slope Cutting (+20mPD to +12.5mPD)	39	100 29/11/11 A			06/01/12 A			·		
SKW 059416	East Slope Cutting (+12.5mPD to +4.8mPD)	81	100 07/01/12 A			27/03/12 A					
SKW 05942 SKW 05943	Slope Miscellaneous Works	61 60	100 26/05/12 A 100 03/07/12 A			31/07/12 A 31/07/12 A					
SKW 05943	Buttress & surface Protection (SI No. 31)           Slope Treatment (SI. No. 36)	60	100 03/07/12 A								
SKW05945	Rock Slope Treatment (Sl. No. 68)	60	100 01/08/12 A	-		30/09/12 A					
SKW05946	Rock Slope Treatment (SI. No. 98)	60	100 10/09/12 A	28/02/13		28/02/13 A					
SKW05947	Rock Slope Treatment (Sl. No. 115)	60	100 01/11/12 A			28/02/13 A					
SKW 05948	Soil Nailing Works (VO. No. 52)	300	100 10/02/12 A	28/02/13	A 10/02/12 A	28/02/13 A					
SKW 0595	Rock Meshing	60	80 01/07/14 A	12/01/15	01/07/14 A	05/10/15	Rock Meshing				
SKW 05963	Determine Alignment & Foundation Design of RFB	120	100 10/02/12 A	08/06/12 A	A 10/02/12 A	08/06/12 A					
SKW 059631	GEO Approval of Foundation Design	70	100 09/06/12 A	31/07/12		31/07/12 A					
SKW 05964	Fabrication & Shipping of RFB Material	180	100 09/06/12 A	30/11/12		30/11/12 A					
SKW 05965	Site clearance & Formation of access	62	100 09/06/12 A	31/07/12		31/07/12 A					
SKW 05967	Plant mobilization	14	100 02/01/13 A	15/01/13		15/01/13 A					
SKW 05968	Construction of anchors & pull out test	180	100 16/01/13 A	17/08/13 /		17/08/13 A			· · · · · · · · · · · · · · · · · · ·		
SKW 05969 SKW 05970	Construction of Foundation Proof Load Test	120 60	100 11/07/13 A 100 31/07/13 A			23/08/13 A 28/09/13 A					
SKW05970	Transportation of Material (To the slope crest)	30	100 31/07/13 A			29/09/13 A					
SKW05971	Installation of Flexible barrier	90	100 31/07/13 A			29/00/13 A					
		25	100 20/11/14 A			15/01/15 A	Additional Sk	ope Works (Remove soil debris)			
SKW 05981	Additional Slope Works (Remove soil debris) S. No. 1 in Portion D	23	100 20/11/14 A	15/01/15 /	4 20/11/14 P	15/01/15 A					
Civil & Geotecl											
SKW0651	Site Clearance	7	100 17/05/10 A	23/05/10	A 17/05/10 A	23/05/10 A					
SKW0652	Initial Survey	7	100 24/05/10 A	_							
	· ·			1				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1	1
Start date	05/05/10 Early bar							Date	Revision		Approved
Finish date	12/09/16 Progress bar Critical bar			I			ering Corp. Ltd.	31/12/14	Revision 0	RH	VC
Data date Run date	01/01/15 Onited ball 09/01/15 ▲ Progress point		-				DC/2009/13				
	ZΔ Critical point		Coi				ment Works at YSW & SKW				
c Primavera	Systems, Inc. Start milestone point			ত-mont	n kolling	Program	ne (Jan 2015 - Mar 2015				
	Finish milestone point										

Activity		Original	Percent Ea	rly Early	Late	Late	2014						2015			
ID	Description	Duration	Complete Sta	art Finish		Finish	DEC 30 07 14 21	28	04 11	JAN 18 25	01 08	FEB 15 22	01 08	MAR 15 22		PR 19 26
SKW0661	Transplantation for uncommon vegatation	30	100 31/05/-	I0 A 29/06/10 A	31/05/10 A	29/06/10 A						1111) 1111) 1111)				
SKW 0681	Excavate to lower the working platform to +3mPD	49	100 30/06/	IO A 17/08/10 A	30/06/10 A											
SKW 0691	ELS to +2.2mPD	40	100 18/08/		18/08/10 A				++		+					· · · · · · · · · · · · · · · · · · ·
SKW0721	Excavate to formation	270	100 17/09/*		17/09/10 A											
SKW0722	Construction of Manholes (VO. No. 21A)	107	100 28/10/	I3 A 31/10/14 A	28/10/13 A	31/10/14 A	21A)									
Structural Wo		0.40	100 11/00/		4.4/00/44.4	00/00/40 4									I I I I I I I I	
SKW0741	RC Works for Structure	240		I1 A 08/02/12 A												
SKW0841	ABWF works	60		12 A 08/04/12 A												
SKW0861	300mm U-channel & 675mm Step Channel	30	100 26/01/	14 A 29/10/14 A	26/01/14 A	29/10/14 A	nannel									
E&M Works																
Submission	Submission of Pumps	100	400 17/05/	0.0.00/11.0	17/05/10 0	24/02/11 4										
E&M1001 E&M1002	Submission of Gen-Set	198 198	100 17/05/ <sup>-</sup> 100 17/05/ <sup>-</sup>		17/05/10 A											
E&M1002	Submission of DeO System	198	100 17/05/		17/05/10 A	16/07/13 A										
E&M1004	Submission of LV SB & MCC	180	100 17/05/		17/05/10 A	09/01/12 A										
E&M1005	Submission of Instrumentation	243	100 17/05/		17/05/10 A										I I I I I I I	
E&M1006	Submission of FS System	243		10 A 30/09/12 A												
E&M1007	Submission of BS System	243	100 17/05/		17/05/10 A	07/01/14 A										
E&M1011	Delivery of Pumps	150		I1 A 21/07/11 A												
E&M1012	Delivery of Gen-Set	150		I1 A 23/09/11 A												
E&M1013	Delivery of DeO System	150	100 11/07/*	I1 A 28/10/11 A	11/07/11 A	28/10/11 A										
E&M1014	Delivery of LV SB & MCC	150	100 01/06/	12 A 31/07/12 A	01/06/12 A	31/07/12 A										
E&M1015	Delivery of Instrumentation	90	100 01/11/	I1 A 03/11/11 A	01/11/11 A	03/11/11 A									I I I I I I I	
E&M1016	Delivery of FS Equipment	107	100 01/12/-	I1 A 21/01/14 A	01/12/11 A	21/01/14 A										
E&M1017	Delivery of BS Equipment	107	100 15/11/	I1 A 28/01/14 A	15/11/11 A	28/01/14 A										
Installation,	T&C															
E&M1101	Install Pumps	55	100 02/10/-	12 A 05/01/14 A	02/10/12 A	05/01/14 A										
E&M1102	Install Gen Set	55	100 02/10/	12 A 05/05/13 A	02/10/12 A	05/05/13 A										
E&M1103	Install DeO System	55		12 A 02/01/14 A	-	02/01/14 A										
E&M1104	Install LV SB & MCC	55		13 A 26/03/13 A											I I I I I I I I	
E&M1105	Install Instrumentation	55	100 01/11/		01/11/12 A											
E&M1106	Install FS Equipment	55	100 02/10/		02/10/12 A	30/01/14 A										
E&M1107	Install BS Equipment	55 46	100 02/10/		02/10/12 A											
E&M1110	Install Valves, Pipes & Fittings Form 501 Submission to FSD			I3 A 27/03/13 A												
E&M1130 E&M1140	Cabling Works	28		I5 A 28/01/15 A							Form 501 Subn					
E&M1150	Insulation Tests of Cables and Cable Termination	43		I3 A 09/02/14 A					- $ +$ $    +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $  +$ $+$ $   +$ $+$ $  +$ $+$ $  +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $  +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $   +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $    +$ $+$ $     +$ $+$ $    +$ $+$ $     +$ $+$ $      +$ $+$ $     +$ $+$ $       +$ $+$ $       +$ $+$ $         -$				$- \begin{array}{c} 1\\ +\\ -\\ 1\end{array} $	+ + + + + + + + + + + + + + + + +	$\begin{vmatrix} 1 \\ - \\ - \\ 1 \end{vmatrix}$	
E&M1160	Engergization	3	100 23/00/		01/07/13 A											
E&M1170	Functional and Performance Tests of Equipment	30	100 02/01/		02/01/13 A			i ii ii	Functional a	nd Performance T	Fests of Equipme	nt				
E&M11800	Commissioning Test	60	80 01/10/							Commissioning 1					I I I I I I I I	
	Sewer and PS No.2 in Portions E&H															
	chnical Works															
SKW 0881	Site Clearance	7	100 17/05/	I0 A 23/05/10 A	17/05/10 A	23/05/10 A										
SKW 0891	Plant mobilization	7	100 17/05/*	I0 A 23/05/10 A	17/05/10 A	23/05/10 A										
SKW 0892	Initial Survey	30	100 24/05/	10 A 22/06/10 A	24/05/10 A											
SKW 0901	Tree Transplantation	90	100 23/06/		23/06/10 A											
SKW 0921	Cut Slope & U-Channel	14	100 21/09/		21/09/10 A				1 1 1 1 <del>1</del>							
SKW 0931	Hoarding & Fencing	14	100 05/10/-		05/10/10 A											
SKW 0950	Removal of Rock Boulders before ELS	66	100 19/10/		19/10/10 A											
SKW0951	ELS & Excavate to formation	169	100 24/12/		24/12/10 A											
SKW0961	Mass Conc. Retaining Wall	90	100 16/01/		16/01/13 A	06/01/14 A										
SKW1491	LCS (ChA0+45 to 1+75) VO.7 Twin DN150 DI Rising Main (ChA1+75 - ChA5+79)	90	100 24/03/		24/03/12 A											
SKW15111 SKW15112	Twin DN150 DI Rising Main (ChA1+75 - ChA5+79) Twin DN150 DI Rising Main (ChA0+00 - ChA0+45)	180	100 22/06/ <sup>-</sup> 100 01/02/ <sup>-</sup>		01/02/13 A											
SKW15112 SKW1531	Extent village sewers S163.1 & S164.1	30	100 01/02/		30/11/12 A											
	-		100 30/11/		A	10/01/13 A	<u> </u>									
Start date	05/05/10 Early bar											Date		Revision		Approved
Finish date	12/09/16 Progress bar Critical bar			L			ering Corp. Ltd.					31/12/14	Rev	vision 0	RH	VC
Data date Run date	01/01/15 Summary bar 09/01/15 Progress point						DC/2009/13									
Page number	RΔ Critical point						ment Works at YSW		V							
	Systems, Inc. Start milestone point			3-month	i Kolling	rogram	ne (Jan 2015 - Mar 20	/15			-					
	Finish milestone point															

Start date	05/05/10		Early bar
Finish date	12/09/16		Progress I Critical ba
Data date	01/01/15		Summary
Run date	09/01/15		Progress p
Page number	8A		Critical po Summary
c Primavera	Systems, Inc.	<b></b>	Start miles
		1 🔶 🗌	Finish mile

Activ	try .	Original	Percent Early	Early La	te Late	2014				2015		
ID		Duration		Finish St		DEC 30 07 14 21 28 04	JAN 11 18 25	01 08	FEB 15 22	MAR 01 08 15 22	Al 29 05 12	PR 19 26
SKW 1581	Construct Manhole no. S163 & S164	34	100 11/01/13 A	28/02/13 A 11/01/	13 A 28/02/13 A							
Structural	Works			1 1								
SKW0971	Structural Works (Phase 1)	245	100 11/06/11 A	10/02/12 A 11/06/	11 A 10/02/12 /							
SKW1021	Structural Works (Phase 2)	42	100 11/02/12 A	23/03/12 A 11/02/								
SKW1061	ABWF Works	90	100 24/03/12 A	21/06/12 A 24/03/								
SKW1081	375mm U-channel/catchpits/outfall	30	100 22/06/12 A	31/01/13 A 22/06/	12 A 31/01/13 A							
E&M Work	· · ·											
E&M2001	on & Delivery Submission of Pumps	198	100 17/05/10 A	24/02/11 A 17/05/	10 A 24/02/11 /							
E&M2002		198	100 17/05/10 A	24/02/11 A 17/05/		— i i i i i ii i						
E&M2002		198	100 17/05/10 A	11/07/11 A 17/05/		i i i i i ii i						
E&M2004	,	271	100 17/05/10 A	30/06/12 A 17/05/								
E&M2005		243	100 17/05/10 A	30/06/12 A 17/05/		- ! ! ! ! !!!!!!!						
E&M2006		243	100 17/05/10 A	07/01/14 A 17/05/								
E&M2007	Submission of BS System	243	100 17/05/10 A	07/01/14 A 17/05/	10 A 07/01/14 A							
E&M2011	Delivery of Pumps	150	100 24/02/11 A	21/07/11 A 24/02/	11 A 21/07/11 A							
E&M2012	2 Delivery of Gen-Set	150	100 24/02/11 A	23/09/11 A 24/02/	11 A 23/09/11 A							
E&M2013	Delivery of DeO System	150	100 11/07/11 A	28/10/11 A 11/07/	11 A 28/10/11 /							
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&M2015		90	100 21/06/11 A	03/11/11 A 21/06/	11 A 03/11/11 A							
E&M2016		107	100 01/12/11 A	28/01/14 A 01/12/								
E&M2017		107	100 15/01/11 A	28/01/14 A 15/01/	11 A 28/01/14 A							
Installatio												
E&M2101		55	100 02/10/12 A	10/01/14 A 02/10/		- i i i i ii ii						
E&M2102		55	100 01/09/12 A	05/05/13 A 01/09/		— i i i i i ii i						
E&M2103		55	100 03/12/12 A 100 02/01/13 A	05/01/14 A 03/12/ 31/01/13 A 02/01/		🗕 i i i i i i						
E&M2105		55	100 31/05/13 A	01/02/14 A 31/05/		I I I I I I I I I						
E&M2106		55	100 02/10/12 A	27/02/14 A 02/10/								
E&M2107		55	100 01/09/12 A	05/02/14 A 01/09/								
E&M2110		46	100 02/01/13 A	31/01/13 A 02/01/								
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&M2130	Form 501 Submission to FSD	28	100 01/01/15 A	28/01/15 A 01/01/	15 A 28/01/15 A				omission to FSD			
E&M2140	Cabling Works	43	100 01/02/13 A	08/03/14 A 01/02/	13 A 08/03/14 /							
E&M2150	Insulation Tests of Cables and Cable Termination	7	100 01/02/13 A	11/03/14 A 01/02/	13 A 11/03/14 A							
E&M2160	Engergization	3	100 01/02/13 A	25/03/13 A 01/02/	13 A 25/03/13 A							
E&M2170		30	100 15/01/13 A	01/01/15 A 15/01/	13 A 01/01/15 A	Fun	ctional and Performance Te		I IIII			
E&M2180		60	80 01/10/14 A	12/01/15 * 01/10/	14 A 27/12/14 *		Commissioning Te	Test				
	- SKW STW,Sewer and Submarine Outfall											
Submarine		400	400 47/05/40 4	07/00/40 4 47/05	0.0.07/00/40							
SKW1130	Approval of IHS Consultant	180	100 17/05/10 A	27/08/10 A 17/05/ 28/02/11 A 01/02/								
SKW1131 SKW1141	Hydrographical Survey (SKW) Baseline Monitoring (Water)	300 213	100 01/02/11 A 100 27/07/10 A	31/12/10 A 27/07/								
SKW1141 SKW1151	Set up Temporary Working Platform	90	100 27/07/10 A 100 15/06/11 A	31/12/10 A 27/07/ 30/09/11 A 15/06/								
SKW1131	ELS for HDD Set-up (SKW)	90	100 13/08/11 A	30/09/11 A 01/09/		- ! ! ! ! ! !						
SKW1181	Mobilization of HDD plant & equipment to SKW	8	100 06/01/12 A	07/01/12 A 06/01/		<u> </u>		<u>+</u>				
SKW1191	Setting up at drillhole location	7	100 09/01/12 A	14/01/12 A 09/01/								
SKW 1201	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							
SKW1211	Receiving Pit for HDD (SKW)	13	100 16/01/12 A	29/02/12 A 16/01/	12 A 29/02/12 A							
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							
SKW1231	Removal of Receiving Platform	50	100 01/05/12 A	19/06/12 A 01/05/	12 A 19/06/12 A							
SKW1241	Dredging of MD for Diffuser (PS CL 1.122(3))	16	100 20/06/12 A	05/07/12 A 20/06/		━┫╹╹╹						
SKW 1251	Diffuser Construction	77	100 01/09/12 A	16/11/12 A 01/09/		- ! ! ! ! ! !						
SKW1431	Removal of silt curtain	1	100 17/11/12 A	17/11/12 A 17/11/								
SKW1440	Sewer of Outfall Chamber to connection pit VO37A	90	100 31/12/12 A	04/01/14 A 31/12/								
SKW 1441	Sewer of Connection Pit to Outfall VO45	177	100 05/06/13 A	30/01/14 A 05/06/	13 A 30/01/14							
Start date	05/05/10 Early bar			<b>.</b> -	<b></b>				Date	Revisio		Approved
Finish date Data date	12/09/18 Critical bar					eering Corp. Ltd.			31/12/14	Revision 0	RH	VC
Run date	09/01/15 A Progress point		0			DC/2009/13						
Page numb						tment Works at YSW & SKW me (Jan 2015 - Mar 2015						
	era Systems, Inc.				ng mografi	inic (Jan 2013 - Mai 2013						
									1		1	

Activity	Description	Original Percent Early Early Late	Late 2014 DEC	JAN	2015 FEB	MAR	AP	R
ID		Duration Complete Start Finish Start	t Finish <u>30 07 14 21 28</u>	04 11 18 25 01 08	15 22 01 08	15 22 29	05 12	19 26
SKW STW								
	& 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&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&M3060	Delivery of Fine Screens	136 100 12/09/11 A 30/11/11 A 12/09/11	A 30/11/11 A					
E&M3070	Delivery of Pumps	136 100 23/06/11 A 05/09/11 A 23/06/11 /	A 05/09/11 A					
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&M3090	Delivery of Sludge Dewatering Equipment	210 100 01/09/11 A 03/03/14 A 01/09/11 /	A 03/03/14 A					
E&M3100	Delivery of Valves, Pipes & Fittings	180 100 30/08/11 A 06/07/14 A 30/08/11 /	A 06/07/14 A					
E&M3110	Delivery of Penstocks	180 100 12/08/11 A 24/12/11 A 12/08/11 /						
E&M3130	Delivery of instruments	180 100 21/06/11 A 03/11/11 A 21/06/11 A						
E&M3140	Delivery of MCC LVSB	180 100 01/01/14 A 30/06/14 A 01/01/14 A						
E&M3150	Delivery of BS Equipment	180 100 03/07/12 A 20/07/14 A 03/07/12 A						
E&M3160								
	Delivery of FS Equipment	180 100 30/06/12 A 06/08/14 A 30/06/12 A	2 A 06/08/14 A					
	of Grid A-G					11 I I I I I I I I I I I I I I I I I I		
SKW 1261	Excavate for SKW STW Structure (Grid A -G)	164 100 28/03/12 A 31/08/12 A 28/03/12 /				II         1         1         1           II         1         1         1         1           II         1         1         1         1		
SKW 1271	55 M3 Fire Sprinkle Water Tank (FL +0.9 mPD)	36 100 03/07/12 A 31/07/12 A 03/07/12 /						
SKW 1281	Ground Floor Slab (Grid A-G)	46 100 03/07/12 A 31/07/12 A 03/07/12 /						
SKW 1291	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	2 A 31/07/12 A					
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 /	2 A 31/01/13 A					
SKW1411	ABWF Works	105 99 01/02/13 A 01/01/15 * 01/02/13 A	3 A 05/11/14 *	ABWF Works				
Construction	of Grid G-N							
SKW1311	Excavate for SKW STW Structure (Grid G-N)	90 100 28/03/12 A 25/06/12 A 28/03/12	2 A 25/06/12 A					
SKW 1321	Equalization Tank no.1 & 2 with base slabs (-2.1	42 100 26/06/12 A 30/09/12 A 26/06/12 /	2 A 30/09/12 A					
SKW 1331	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 /	2 A 30/09/12 A					
SKW 1341	Ground Floor Slab (Grid G-N)	35 100 01/09/12 A 17/12/12 A 01/09/12 /						
SKW 1351	Columns & Walls to 1/F & 1/F Slab (Grid G-N)	28 100 01/11/12 A 15/01/13 A 01/11/12						
SKW 1361	Columns & Walls to R/F & R/F Slab (Grid G-N)	35 100 01/11/12 A 03/08/13 A 01/11/12 A						
SKW 1451	ABWF Works		3 A 03/11/14 *	ABWF Works				
Construction		<u> </u>						
	Excavate for SKW STW Structure (Grid N-T)	97 100 03/07/12 A 25/01/13 A 03/07/12 /						
SKW1371	, ,							
SKW1381	Ground Floor Slabs include MBR Tank (Grid N-T)		2 A 31/01/13 A			11 I I I I I I I I I I I I I I I I I I		
SKW1391	Columns & Walls to 1/F & 1/F Slab (Grid N-T)	35 100 31/05/13 A 05/07/13 A 31/05/13 /						
SKW1401	Columns & Walls to R/F & R/F Slab (Grid N-T)	35 100 03/07/13 A 15/09/13 A 03/07/13 /						
SKW1421	ABWF Works	60 99 06/08/13 A 01/01/15 * 06/08/13 /	3 A 10/11/14 *	ABWF Works				
Road and Dr	ainage at Internal EVA							
SKW 1551	Drainage (SSMH1-Outfall)	35 100 15/07/14 A 27/10/14 A 15/07/14 A	4 A 27/10/14 A					
SKW 15611	Sewer (SMFH10-11, SMFH9-4)	22 100 27/03/14 A 10/10/14 A 27/03/14 /	4 A 10/10/14 A					
SKW156111	Underground FS pipes	20 100 23/10/14 A 13/11/14 A 23/10/14 /	4 A 13/11/14 A pes					
SKW15612	Sewer (SFMH9-10, SFMH11-12, SFMH4-6)	17 80 21/11/14 A 04/01/15 21/11/14 /	4 A 12/09/16	Sewer (SFMH9-10, SFMH11-12, SFMH4	-6)			
SKW156121	Rock Breaking at Slope Toe (GL A to J)	25 100 10/11/14 A 05/12/14 A 10/11/14 /	A 05/12/14 A Rock Breaking at Slope Toe (	GLA to J)				
SKW156122	Rock Breaking at Slope Toe (GL J to T)	25 70 01/12/14 A 08/01/15 01/12/14 /		Rock Breaking at Slope Toe (GL J to	T)			
SKW 15613	300UC at EVA (GL A to E)	15 0 01/01/15 * 15/01/15 09/01/15		300UC at EVA (GL A to E)				
SKW 15614	300UC at EVA (GL E to J)	25 70 05/12/14 A 09/01/15 05/12/14 /		300UC at EVA (GL E to J)				
SKW 15615	300UC at EVA (GL J to T)	25 50 09/01/15 A 23/01/15 09/01/15 /		► 300UC at EVA (GL	J to T)			
SKW 15616	400 Box Culvert (GL A to E)	15         0         01/01/15         15/01/15         09/01/15		400 Box Culvert (GL A to E)				
SKW15617	400 Box Culvert (GL E to J)	25 70 01/01/15 A 09/01/15 01/01/15 A		400 Box Culvert (GL E to J)				
SKW 15618	300 Box Culvert (GL J to T)	25 70 01/01/15 A 09/01/15 01/01/15 A		300 Box Culvert (GL J to T)				
SKW 15619	EVA pavement and road kerb (GL A to J)	30         0         16/01/15         14/02/15         24/01/15			EVA pavement and road ke	erh (GLAtol)		
						nd road kerb (GL J to T)		
SKW 15620	EVA pavement and road kerb (GL J to T)	30 0 24/01/15 22/02/15 24/01/15	5 22/02/15					
SKW STW - E					               			
E&M3170	Install Membrane Modules in MBR Tank No. 1 to 2	100 100 14/01/14 A 08/10/14 A 14/01/14 /						
E&M3190	Install Grit Removal Equipment		4 A 15/10/14 A					
E&M3210	Install Fine Screens		4 A 09/10/14 A					
E&M3220	Install Pumps	75 90 15/03/14 A 09/01/15 15/03/14 /	4 A 07/11/14	Install Pumps				
Start date	05/05/10 Early bar				Date	Revision		Approved
Finish date	12/09/10		Civil Engineering Corp. Ltd.		31/12/14 Re	evision 0	RH	VC
Data date	01/01/15 Summary bar 09/01/15 Progress point		ontract No. DC/2009/13					
Run date Page number	10A ▼ Critical point		wage Treatment Works at YSW & SKV	V				
	IDA         Summary point           Systems, Inc.         Start milestone point	3-month Rolling	g Programme (Jan 2015 - Mar 2015					
	Systems, mc. Start milestone point							

Activity		Original	Percent	Early	Early	Late	Late	2014							20	015								
ID	Description		Complete	Start	Finish	Start	Finish	DEC 30 07 14 21 28	04 1	JAN 1 18 :	25 0 <sup>.</sup>	08	FEB		, (	01	08	MAR 15	22	29	05	AP 12	R 19	26
E&M3230	Install Submersible Mixers	45	100	29/05/14 A	01/12/14 A	29/05/14 A	01/12/14 A	Install Submersible Mixers												_				
E&M3240	Install Sludge Dewatering Equipment	74	90	04/03/14 A	08/01/15	04/03/14 A	07/11/14		Ins	tall Sludge Dew	vatering E	quipment	t :				11							
E&M3250	Install Valves, Pipes & Fittings	75	95	13/07/14 A	13/01/15	13/07/14 A	18/11/14			Install Valves	s, Pipes 8	Fittings								1				
E&M3260	Install Penstocks	135	100	05/03/14 A	15/10/14 A	05/03/14 A	15/10/14 A																	
E&M3261	Install SAT of MCC & LVSB	174	100	30/06/14 A	21/12/14 A	30/06/14 A	21/12/14 A		T of MCC & L	/SB														
E&M3270	Install instruments	60	85	26/09/14 A	22/01/15	26/09/14 A	14/12/14				stall instru	uments												
E&M3291	Install BS Equipment	180	90	28/07/14 A	27/01/15	28/07/14 A	16/12/14					BS Equ												
E&M3300	Install FS Equipment	161	80	06/08/14 A	10/02/15	06/08/14 A	16/12/14						Install	FS Equi	ipment		+	т						
E&M3310	Hydraulic Tests of Pipeworks	90	70	01/02/15 A	09/02/15	01/02/15 A	16/12/14				· · · · ·			lic Tests										
E&M3311	Cabling Works	47	95	21/12/14 A	24/01/15	21/12/14 A	16/12/14	иш <b>ь</b>			Cabling \	Vorks	L					₩-1 ₩1 ₩1	1	1				
E&M3320	Cabling Works for Dewatering Equipment	47	30	20/11/14 A	11/02/15	20/11/14 A	10/12/14						Cabl	ing Work	ks for D	Dewater	ring E	quipmer	nt					
E&M3321	Insulation Tests of Cables and Cable Termination	21	70	06/02/14 A	17/02/15	06/02/14 A	16/12/14				+-			Insulat	tion Te	sts of C	Cables	and Ca	able Terr	mination				
E&M3331	Energization	1	100	03/02/14 A	04/02/14 A	03/02/14 A	04/02/14 A																	
E&M3359	Functional and Performance Tests of Equipment	35	60	16/03/15 A	03/03/15	16/03/15 A	30/12/14						1			Fun	nctiona	and Pe	erforma	nce Test	s of Equ	ipment_		
E&M3360	T&C Period	91	40	16/10/14 A	27/04/15	16/10/14 A	22/02/15				· · · · ·													вт 📕
E&M3370	Trial Operation Period	456	0	27/04/15	12/09/16	27/04/15	12/09/16													1				
Rising Main		·	•									1	1		1		-	1	-	1		1	1	
SKW 1481	Subm, Approval & Delivery of DI pipes	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A																	
SKW 1501	LCS (ChB0+00 - ChB1+20)	300	100	14/09/10 A	10/07/11 A	14/09/10 A	10/07/11 A																	
SKW 1521	Twin DN150 DI Rising Main (ChB0+00 - ChA4+55)	250	100	11/07/11 A	13/10/14 A	11/07/11 A	13/10/14 A																	
Section W8 - La	ndscape Softworks in All Portions				·										1					1				
SKW1591	Tree Survey	21	100	17/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A																	
SKW1611	Preservation & Protection of Trees	1053	99	17/05/10 A	11/01/15	17/05/10 A	11/01/15			Preservation &	Protectio	n of Tree	S						1	1				
SKW1621	Transplantation at SKW	90	100	07/06/10 A	04/09/10 A	07/06/10 A	04/09/10 A																	
Section W9 - Es	tablishment Works in All Portions																							
SKW1631	Section W9 - Establishment Works	194	0	12/01/15	24/07/15	12/01/15	24/07/15																	

Start date	05/05/10	Early bar
Finish date	12/09/16	Progress bar
Data date	01/01/15	
Run date	09/01/15	Progress point
Page number	11A	<ul> <li>Critical point</li> <li>Summary point</li> </ul>
c Primavera	Systems, Inc.	<ul> <li>Start milestone point</li> </ul>
		Finish milestone poin

Leader Civil Engineering Corp. Ltd. Contract No. DC/2009/13 Construction of Sewage Treatment Works at YSW & SKW 3-month Rolling Programme (Jan 2015 - Mar 2015

Date
31/12/14

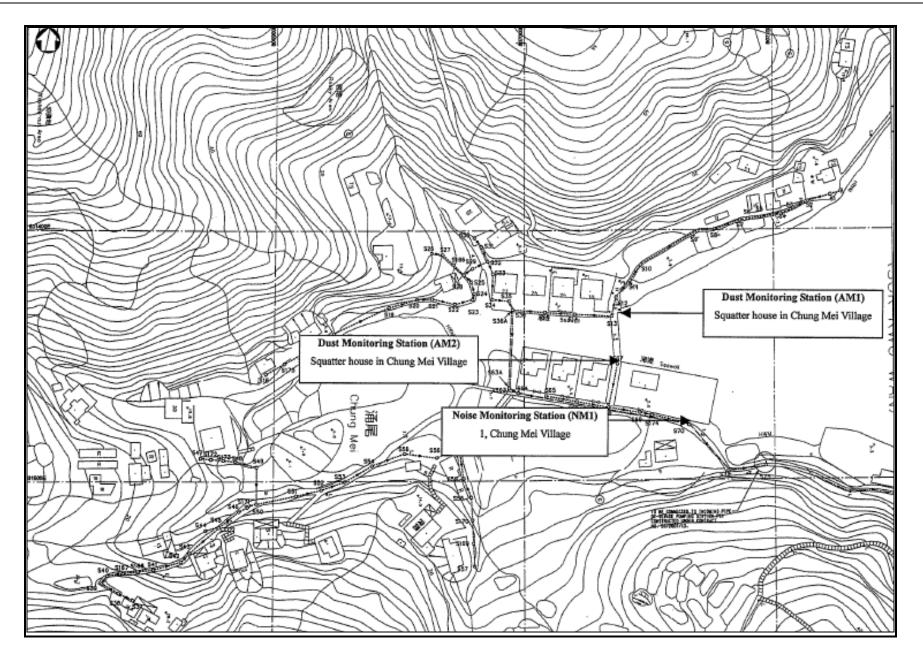
Revision Revision 0	Checked RH	Approved VC



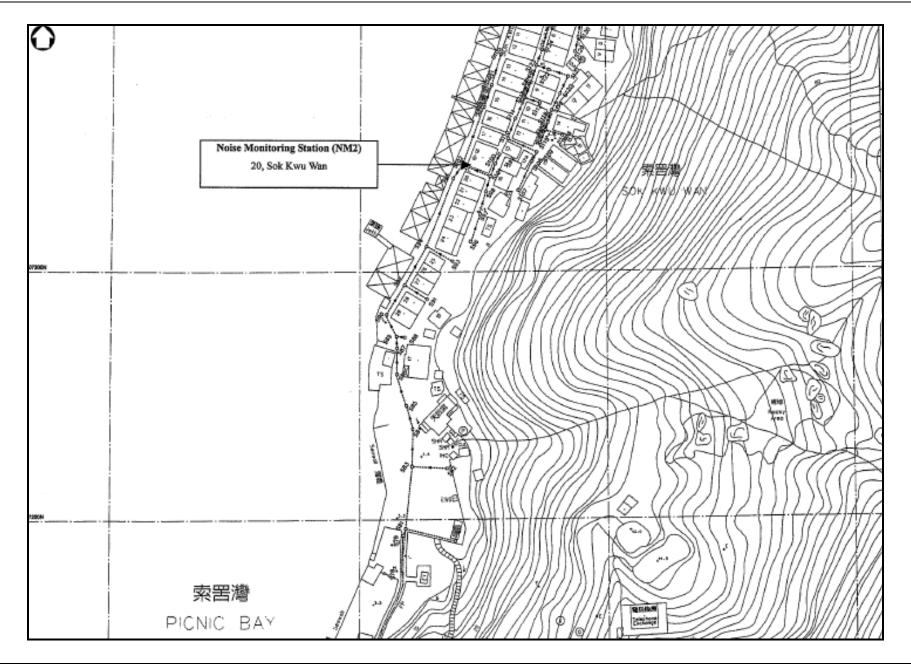
# Appendix D

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



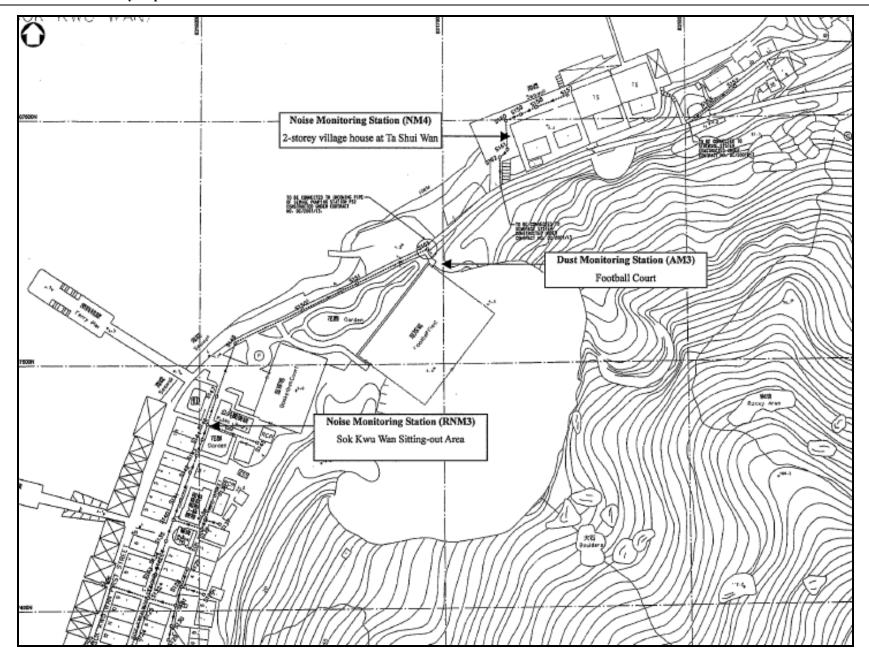






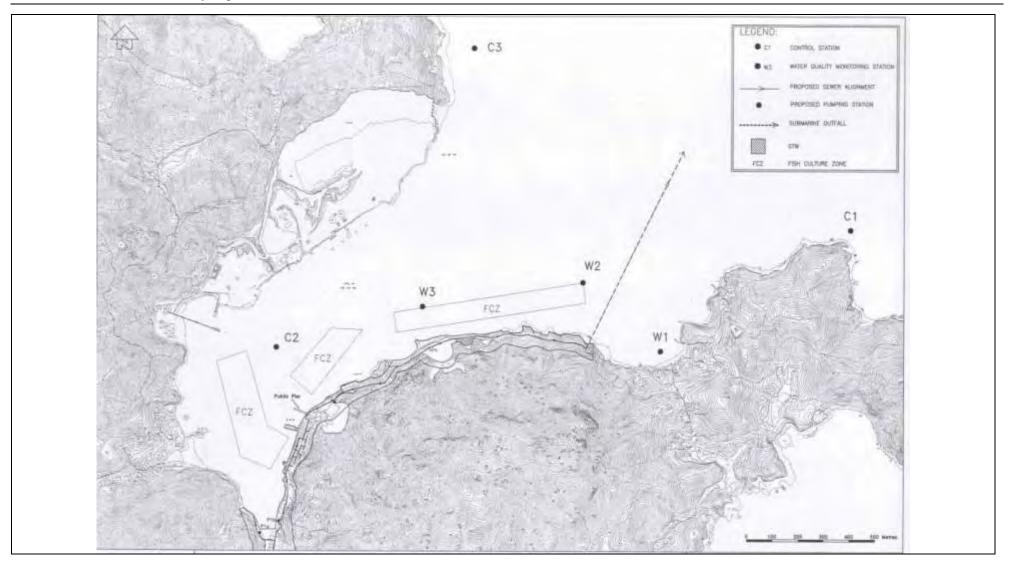
Contract No. DC/2009/13 – Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan Sok Kwu Wan – EM&A Monthly Report – December 2014





Z:\Jobs\2010\TCS00512(DC-2009-13)-Lama\600\EM&A Monthly Report\Sok Kwu Wan\53th December 2014\R0855v1.doc Appendix





# Appendix E

# **Monitoring Equipments Calibration Certificate**

ALS L	Technichem (HK) Ptu aboratory Group	l Ltd	ALS
	SUB-CONTRACTING	<b>GREPORT</b>	
CONTACT	: MR BEN TAM	WORK ORDER	HK1500837
CLIENT ADDRESS	<ul> <li>ACTION UNITED ENVIRO SERVICES</li> <li>RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG</li> </ul>	SUB-BATCH DATE RECEIVED DATE OF ISSUE	: 1 8-JAN-2015 9-JAN-2015
PROJECT	1	NO. OF SAMPLES CLIENT ORDER	1

#### General Comments

• Sample(s) were received in an ambient condition.

1

- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

#### Signatories

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories	, /7	Position	
Richard Fung	Killing	General Manager	
	1		

WORK ORDER : HK150

: HK1500837

SUB-BATCH CLIENT

PROJECT

: 1 : ACTION UNITED ENVIRO SERVICES : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1500837-001	S/N: 2X6146	AIR	08-JAN-2015	S/N: 2X6146	

# **Equipment Calibration Record**

## **Equipment Calibrated:**

Туре:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	2X6146
Equipment Ref:	EQ 106
Job Order	HK1500837

### Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	10 Nov 2014

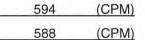
# **Equipment Calibration Results:**

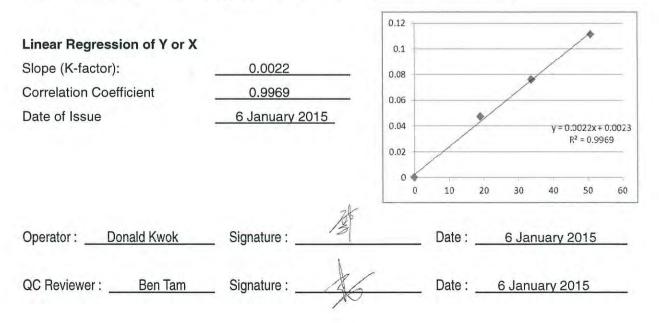
Calibration Date:	4 Janu
	1 0 0111

4 January 2015

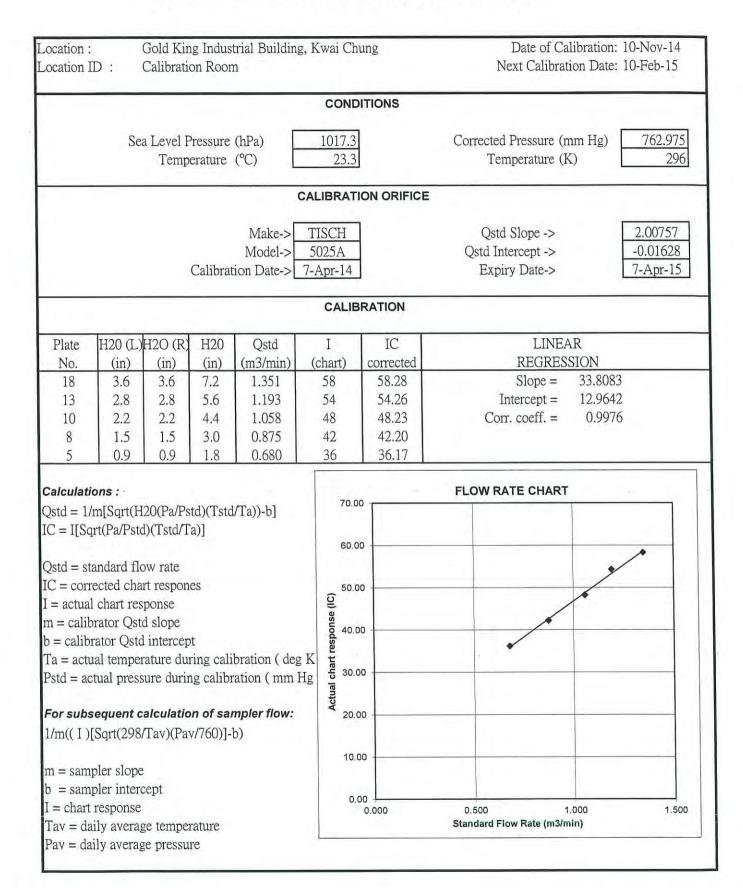
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
1hr19min	10:00 ~ 11:19	17.3	1017.0	0.076	2677	33.8
2hr15min	11:25 ~ 13:40	17.3	1017.0	0.111	6875	50.9
2hr06min	15:40 ~ 17:46	17.3	1017.0	0.047	2399	19.0

Sensitivity Adjustment Scale Setting (Before Calibration) Sensitivity Adjustment Scale Setting (After Calibration)





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET



ALS L	<b>Technichem (HK) Ptu</b> <b>aboratory Group</b> CHEMISTRY & TESTING SERVICES	j Ltd	ALS
	SUB-CONTRACTING	G REPORT	
CONTACT	: MR BEN TAM	WORK ORDER	HK1500973
CLIENT ADDRESS	ACTION UNITED ENVIRO SERVICES RM A 20/F., GOLD KING IND BLDG, NO. 35-41TAI LIN PAI ROAD, KWAI CHUNG,	SUB-BATCH DATE RECEIVED DATE OF ISSUE	1 8-JAN-2015 9-JAN-2015
PROJECT	N.T. HONG KONG	NO. OF SAMPLES CLIENT ORDER	: 1

#### **General Comments**

- Sample(s) were received in an ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

#### Signatories

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories		Position	
Richard Fung	Killton	General Manager	
	1		
	V		

A Campbell Brothers Limited Company

: HK1500973

WORK ORDER SUB-BATCH

CLIENT

PROJECT

: 1 : ACTION UNITED ENVIRO SERVICES : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1500973-001	S/N: 366409	AIR	08-JAN-2015	S/N: 366409	

# **Equipment Calibration Record**

## **Equipment Calibrated:**

Туре:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	366409
Equipment Ref:	EQ 109
Job Order	HK1500973

### Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	10 Nov 2014

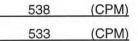
# **Equipment Calibration Results:**

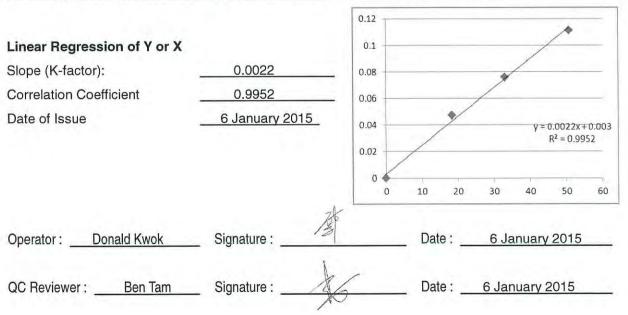
Calibration Date:

4 January 2015

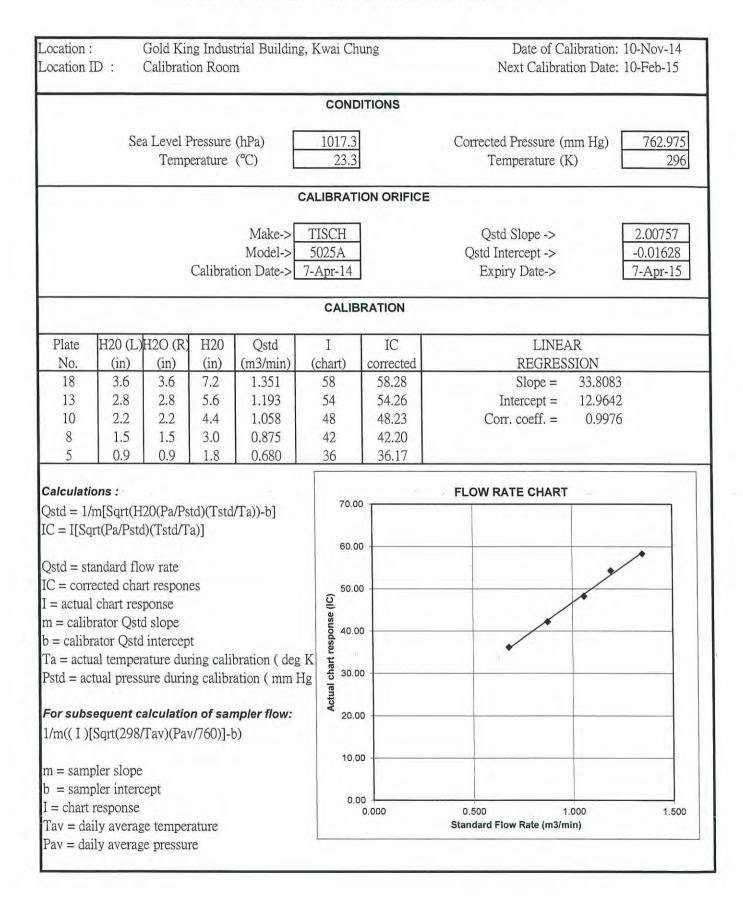
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
1hr19min	10:00 ~ 11:19	17.3	1017.0	0.076	2615	33.0
2hr15min	11:25 ~ 13:40	17.3	1017.0	0.111	6854	50.8
2hr06min	15:40 ~ 17:46	17.3	1017.0	0.047	2319	18.4

Sensitivity Adjustment Scale Setting (Before Calibration) Sensitivity Adjustment Scale Setting (After Calibration)





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET



ALS L	Technichem (HK) Ptu aboratory Group	l Ltd	ALS
	SUB-CONTRACTING	<b>REPORT</b>	( /
CONTACT	: MR BEN TAM	WORK ORDER	HK1500976
CLIENT ADDRESS	ACTION UNITED ENVIRO SERVICES RM A 20/F., GOLD KING IND BLDG, NO. 35-41TAI LIN PAI ROAD, KWAI CHUNG,	SUB-BATCH DATE RECEIVED DATE OF ISSUE	1 8-JAN-2015 9-JAN-2015
PROJECT	N.T. HONG KONG	NO. OF SAMPLES CLIENT ORDER	1

## **General Comments**

- Sample(s) were received in an ambient condition.
- Sample(s) analysed and reported on an as received basis.

Calibration was subcontracted to and analysed by Action United Enviro Services.

#### Signatories

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories		Position	
Richard Fung	Killfin	General Manager	
	)		
	0		

Trading Name: ALS Technichem (HK) Pty Ltd 11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong Tel. +852 2610 1044 Fax. +852 2610 2021www.alsglobal.com A Campbell Brothers Limited Company : HK1500976

WORK ORDER

SUB-BATCH

CLIENT

PROJECT

: 1 : ACTION UNITED ENVIRO SERVICES : -----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1500976-001	S/N: 2X6145	AIR	08-JAN-2015	S/N: 2X6145	

# **Equipment Calibration Record**

## **Equipment Calibrated:**

Туре:	Laser Dust monitor	
Manufacturer:	Sibata LD-3B	
Serial No.	2X6145	
Equipment Ref:	EQ 105	
Job Order	HK1500976	

## Standard Equipment:

Standard Equipment:	Higher Volume Sampler	
Location & Location ID:	AUES office (calibration room)	
Equipment Ref:	HVS 018	
Last Calibration Date:	10 Nov 2014	

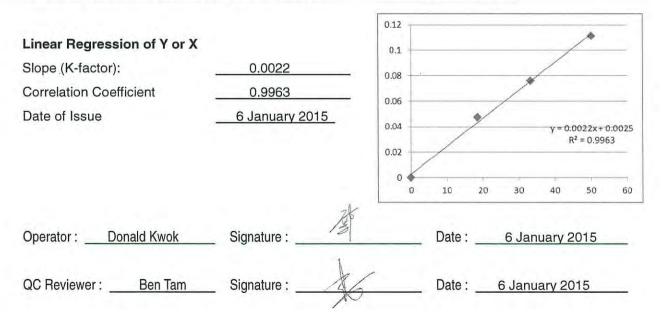
# **Equipment Calibration Results:**

Calibration Date:

4 January 2015

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
1hr19min	10:00 ~ 11:19	17.3	1017.0	0.076	2637	33.3
2hr15min	11:25 ~ 13:40	17.3	1017.0	0.111	6771	50.2
2hr06min	15:40 ~ 17:46	17.3	1017.0	0.047	2331	18.5

Sensitivity Adjustment Scale Setting (Before Calibration) Sensitivity Adjustment Scale Setting (After Calibration) <u>593 (CPM)</u> 592 (CPM)



# TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location Location		Gold Kir Calibrati		strial Buildin m	g, Kwai Ch	ung		bration: 10-Nov-14 on Date: 10-Feb-15
					COND	ITIONS		
	Se	a Level F Temp	Pressure erature		1017.3 23.3		Corrected Pressure (mi Temperature (K)	
					CALIBRATI	ON ORIFICE		
Model-> 5					TISCH 5025A 7-Apr-14		Qstd Slope -> Qstd Intercept -> Expiry Date->	2.00757 -0.01628 7-Apr-15
			a		CALIB	RATION		
Plate		H2O (R)	H20	Qstd (m3/min)	I	IC	LINEAF REGRESSI	
No. 18 13 10 8 5	(in) 3.6 2.8 2.2 1.5 0.9	(in) 3.6 2.8 2.2 1.5 0.9	(in) 7.2 5.6 4.4 3.0 1.8	1.351 1.193 1.058 0.875 0.680	(chart) 58 54 48 42 36	corrected           58.28           54.26           48.23           42.20           36.17	Slope =	33.8083 12.9642 0.9976
C = I[Sc] $Qstd = st$ $C = con$ $I = actua$ $m = calib$ $D = calib$ $Ta = actu$ $Pstd = ac$ $For subs$	/m[Sqrt(H grt(Pa/Psto candard flo rected cha l chart res prator Qsto rator Qsto rator Qsto al temper ctual press	d)(Tstd/Ta ow rate rt respond ponse d slope l intercept rature durin sure durin	a)] es t ing cali g calibr n of sar	bration ( deg ration ( mm I m <b>pler flow:</b>			FLOW RATE CHART	× •
For subsequent calculation of sampler flow: 1/m((I)[Sqrt(298/Tav)(Pav/760)]-b) m = sampler slope b = sampler intercept I = chart response Tav = daily average temperature					10.00 0.01		0.500 1.00 Standard Flow Rate (m3/min	

ALS L	Technichem (HK) Ptu aboratory Group	j Ltd	ALS
	SUB-CONTRACTING	G REPORT	
CONTACT	: MR BEN TAM	WORK ORDER	HK1500975
CLIENT ADDRESS	ACTION UNITED ENVIRO SERVICES RM A 20/F., GOLD KING IND BLDG, NO. 35-41TAI LIN PAI ROAD, KWAI CHUNG,	SUB-BATCH DATE RECEIVED DATE OF ISSUE	1 8-JAN-2015 9-JAN-2015
PROJECT	N.T. HONG KONG	NO. OF SAMPLES CLIENT ORDER	: 1

### **General Comments**

- Sample(s) were received in an ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

#### Signatories

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories	Position	
Richard Fung K. alfm	General Manager	
0		

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.

Trading Name: ALS Technichem (HK) Pty Ltd

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

A Campbell Brothers Limited Company

WORK ORDER : HK1500975

SUB-BATCH CLIENT PROJECT : 1 : ACTION UNITED ENVIRO SERVICES : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1500975-001	S/N: 366410	AIR	08-JAN-2015	S/N: 366410	

# **Equipment Calibration Record**

### **Equipment Calibrated:**

Туре:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	366410
Equipment Ref:	EQ 110
Job Order	HK1500975

## Standard Equipment:

Higher Volume Sampler
AUES office (calibration room)
HVS 018
10 Nov 2014

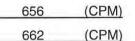
# **Equipment Calibration Results:**

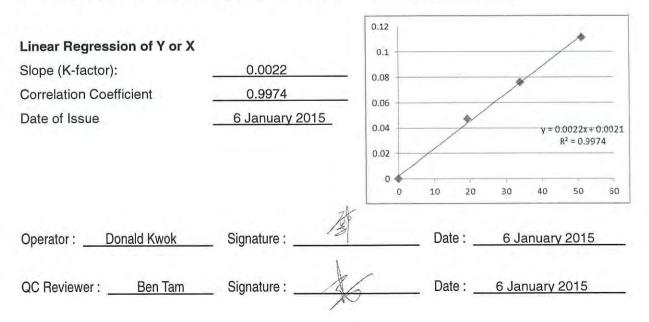
Calibration Date:

4 January 2015

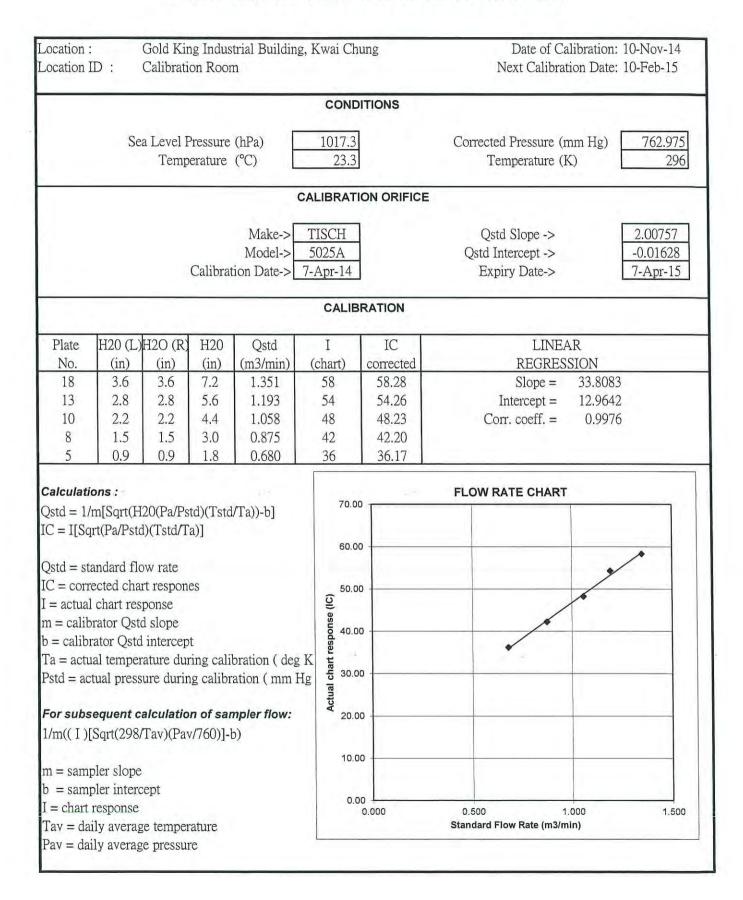
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
1hr19min	10:00 ~ 11:19	17.3	1017.0	0.076	2703	34.1
2hr15min	11:25 ~ 13:40	17.3	1017.0	0.111	6911	51.2
2hr06min	15:40 ~ 17:46	17.3	1017.0	0.047	2437	19.3

Sensitivity Adjustment Scale Setting (Before Calibration) Sensitivity Adjustment Scale Setting (After Calibration)





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET



# EQ064

Environment Condition				
Environment Condition		Model		8520
Temperature	73.0 (22.8) °F (°C	C)		
Relative Humidity	43 %RH	Serial N	umber	2307
Barometric Pressure	29.18 (988.1) inHg	(hPa)		
As Left		⊠ In Tolerance □Out of Tolerar	nce	
7.5		ncentration Linearity	Plot	
	100 100 10	0	D	
	Device Response (mg/m3)	0 0 0.1 1 10	o = In Tolerance $\bullet = Out of Tolera$ 100	
Zero Stability Results	0.01	0	• = Out of Tolera	
Zero Stability Results Average:	0.01 0.01 Aer Minimum:	0 0.1 1 10 cosol Concentration (m. Maximum:	• = Out of Tolera 100 g/m3)	system ID: DTI
Average: $O, O O O$ :mg	0.01 0.01 Aer g/m <sup>3</sup> 0.000	0 0.1 I 10 cosol Concentration (m, cosol Concentration (m, Maximum: C :mg/m <sup>3</sup>	• = Out of Tolera 100 100 100 100 100 100 100 10	System ID: DTI ne: 15:37
Average: O. O. O. C. :mg TSI Incorporated does her- striet-accordance with the performance and acceptand NIST standard for optical n	0.01 0.01 Aer	0 0.1 I 10 cosol Concentration (m, cosol Co	Out of Tolera     100	System ID: DTI ne: 15:27 cture of this equipment published specifications. They a using emery oil and he
Average: O. O. O. C. :mg TSI Incorporated does her- striet-accordance with the performance and acceptand NIST standard for optical n nominally adjusted to resplay Measurement Variable Barometric Pressure Humidity DC Voltage Microbalance	0.01 0.01 0.01 Aer 0.01 0.00 0	0.1     1     10       0.1     1     10       cosol Concentration (m,       cosol Concentration (m,       img/m <sup>3</sup> 0	Out of Tolera     100	System ID: DTI ne: 15:27 clure of this equipment published specification ired specifications. Then a using emery oil and he atio is greater than 1.2: Last Cal. Cal. D 11-05-13 05-05- 01-03-14 01-03- 08-07-14 02-07-

ALS L	Technichem (HK) Ptu aboratory Group	j Ltd	ALS
	SUB-CONTRACTING	G REPORT	
CONTACT	: MR BEN TAM	WORK ORDER	HK1439899
CLIENT ADDRESS	ACTION UNITED ENVIRO SERVICES RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG,	SUB-BATCH DATE RECEIVED DATE OF ISSUE	1 28-NOV-2014 5-DEC-2014
PROJECT	N.T. HONG KONG	NO. OF SAMPLES CLIENT ORDER	<u>1</u>

## **General Comments**

- Sample(s) were received in an ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

#### Signatories

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories	Position	
Richard Fung	General Manager	
p1/	tin	

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.

Trading Name: ALS Technichem (HK) Pty Ltd

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

A Campbell Brothers Limited Company

WORKORDER HK1439899

SUB-BATCH	: 1
CLIENT	: ACTION UNITED ENVIRO SERVICES
PROJECT	:



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1439899-001	S/N.: 23080	Equipments	28-NOV-2014	S/N.: 23080	

### **Equipment Calibration Record**

#### **Equipment Calibrated:**

Туре:	Laser Dust monitor
Manufacturer:	TSI 8520
Serial No.	23080
Equipment Ref:	EQ063
Work Order:	

#### Standard Equipment:

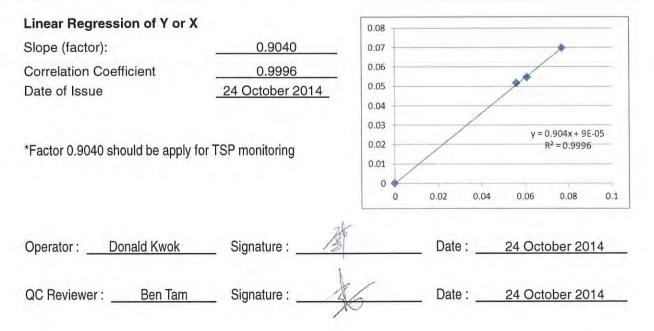
Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	Calibration Room
Equipment Ref:	HVS 018
Last Calibration Date:	19 Aug 2014

### **Equipment Calibration Results:**

Calibration Date:

16 October 2014

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Concentration in mg/m <sup>3</sup> (Calibrated Equipment)	Tolerance (mg/m <sup>3</sup> )
2hr57min	10:05 ~ 13:02	25.4	1017.9	0.070	0.077	+0.007
2hr31min	13:07 ~ 15:38	25.4	1017.9	0.052	0.056	+0.004
1hr57min	15:45 ~ 17:42	25.4	1017.9	0.055	0.061	+0.006



### TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Location I		Gold Kir Calibrati		Date of Calibration: 19-Aug-14 Next Calibration Date: 19-Nov-14				
					COND	ITIONS		
Sea Level Pressure (hPa) Temperature (°C)							Corrected Pressure (r Temperature (1	
					CALIBRATI	ON ORIFICE		_
Make-> T Model-> 5 Calibration Date-> 7-1							Qstd Slope -> Qstd Intercept -> Expiry Date->	2.00757 -0.01628 7-Apr-15
					CALIB	RATION		
Plate No.	and the second second	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC	LINEA REGRES	
18         3.7         3.7         7.4         1.355         58         57.64           13         2.9         2.9         5.8         1.200         54         53.66         1				Slope = Intercept = Corr. coeff. =	28.7870 19.0744 0.9976			
Calculations : Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b] IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)] Qstd = standard flow rate IC = corrected chart respones I = actual chart response m = calibrator Qstd slope b = calibrator Qstd slope b = calibrator Qstd intercept Ta = actual temperature during calibration ( deg K Pstd = actual pressure during calibration ( mm Hg For subsequent calculation of sampler flow:							FLOW RATE CHART	
<pre>1/m(( I )[Sqrt(298/Tav)(Pav/760)]-b) m = sampler slope b = sampler intercept I = chart response Tav = daily average temperature Pav = daily average pressure</pre>				5)	10.00 0.00		0.500 1. Standard Flow Rate (m3/m	000 1.500 in)

ALS L	Technichem (HK) Ptu aboratory Group	j Ltd	ALS
	SUB-CONTRACTING	G REPORT	
CONTACT	: MR T W TAM	WORK ORDER	HK1415927
CLIENT ADDRESS	ACTION UNITED ENVIRO SERVICES RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH DATE RECEIVED DATE OF ISSUE	1 24-MAR-2014 23-MAY-2014
PROJECT	:	NO. OF SAMPLES CLIENT ORDER	1

#### **General Comments**

- Sample(s) were received in an ambient condition.
- Calibration was analysed by Action United Enviro Services.
- Sample(s) analysed and reported on an as received basis.

#### Signatories

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories	,17	Position	
Richard Fung	Rilly	General Manager	
	X		
	0		

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.

> Trading Name: ALS Technichem (HK) Pty Ltd 11F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com A Campbell Brothers Limited Company

> > Page 1 of 2



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1415927-001	S/N: 366418	AIR	22-MAY-2014	S/N: 366418	

### **Equipment Calibration Record**

#### **Equipment Calibrated:**

Туре:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	366418
Equipment Ref:	EQ108
Job Order	

#### Standard Equipment:

Standard Equipment:	Higher Volume Sampler	
Location & Location ID:	AUES office (calibration room)	
Equipment Ref:	HVS 018	
Last Calibration Date:	6 January 2014	

### **Equipment Calibration Results:**

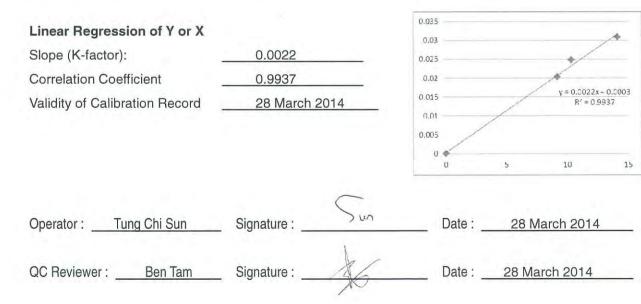
Calibration Date:

24 & 25 March 2014

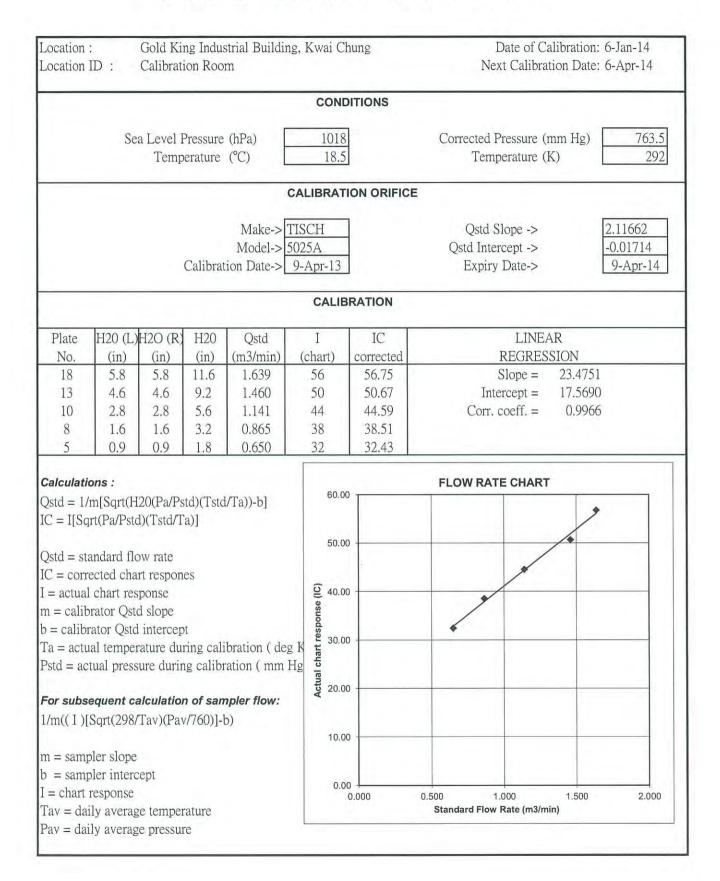
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
14hr43min	18:25 ~ 09:08	19.5	1019.4	0.020	8103	9.2
2hr30min	09:15 ~ 11:45	21.9	1015.5	0.025	1551	10.3
4hr09min	11:55 ~ 16:04	21.9	1015.5	0.031	3522	14.1

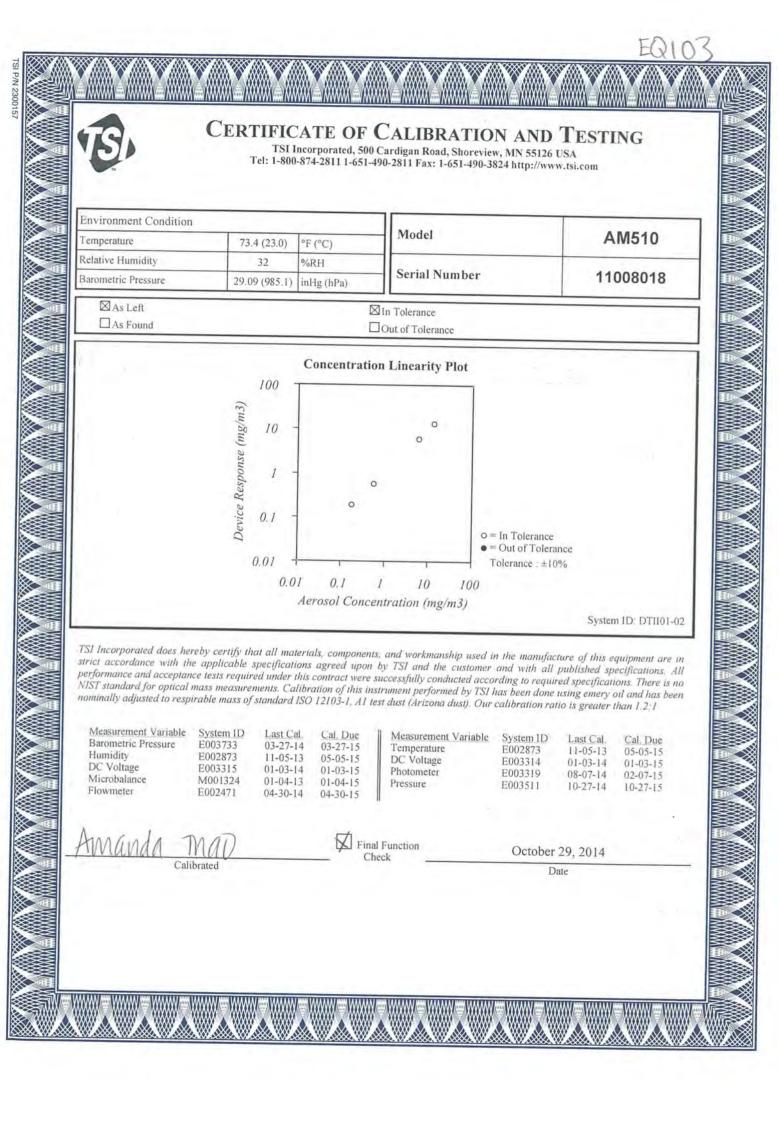
Sensitivity Adjustment Scale Setting (Before Calibration) Sensitivity Adjustment Scale Setting (After Calibration) 660 (CPM)

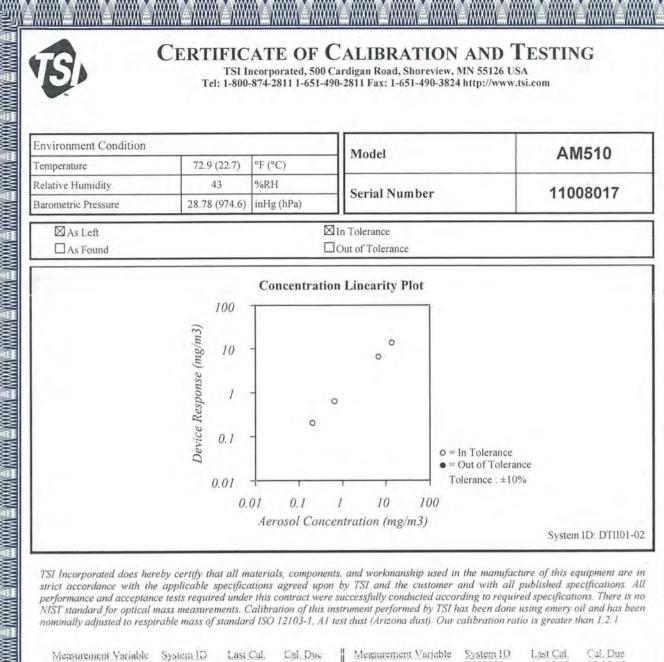




#### TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET







	Measurement Variable Barometric Pressure	System ID E003733	Last Cal. 03-27-14	Cal. Duc 03-27-15	Measurement Variable Temperature	System ID E002873	Last Cal. 11-05-13	Cal. Due 05-05-15	
	Humidity	E002873	11-05-13	05-05-15	DC Voltage	E003314	01-03-14	01-03-15	
	DC Voltage	E003315	01-03-14	01-03-15	Photometer	E003319	08-07-14	02-07-15	
	Microbalance	M001324	01-04-13	01-04-15	Pressure	E003511	11-04-13	11-04-14	
	Flowmeter	E002471	04-30-14	04-30-15					
				1771					
1	Amanda D	rau			al Function heck	Septembe	er 19, 2014		
1						1			

Calibrated

TSI P/N 230015

Date



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C142547 證書編號

ITEM TESTED / 送檢]	項目	(Job No. / 序引編號: IC14-0853)	Date of Receipt / 收件日期: 14 April 2014			
Description / 儀器名稱	1	Sound Level Meter (EQ067)				
Manufacturer / 製造商		Rion				
Model No. / 型號	:	NL-31				
Serial No. / 編號	12	00410221				
Supplied By / 委託者	11	Action-United Environmental Services and	d Consulting			
		Unit A, 20/F., Gold King Industrial Buildin	ng,			
		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 : 26 April 2014

#### 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	: K C Lee Project Engineer				
Certified By 核證	: K M Wu Engineer	Date of Issue 簽發日期	÷	29 April 2014	

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.

本證書所載板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. : C142547 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 was performed before the test.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment :

Equipment ID CL280 CL281 Description 40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator Certificate No. C140016 DC130171

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

UUT Setting			Applied	d Value	UUT	IEC 61672 Class 1	
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec. (dB)
30 - 120	LA	A	Fast	94.00	1	93.8	± 1.1

#### 6.1.2 Linearity

UUT Setting				Applied	Value	UUT
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
30 - 120	LA	A	Fast	94.00	1	93.8 (Ref.)
				104.00	1 - E	103.8
				114.00		113.9

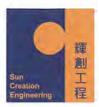
IEC 61672 Class 1 Spec. :  $\pm$  0.6 dB per 10 dB step and  $\pm$  1.1 dB for overall different.

#### 6.2 Time Weighting

	UU	JT Setting		Applied Value		UUT	IEC 61672 Class 1
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec. (dB)
30 - 120	LA	A	Fast	94.00	1	93.8	Ref.
			Slow			93.8	± 0.3

本證書所載枚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。

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.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C142547 證書編號

#### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

	UUT Setting				lied Value	UUT	IEC 61672 Class 1
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	g Spec. (dB)
30 - 120	LA	A	Fast	94.00	63 Hz	67.6	$-26.2 \pm 1.5$
					125 Hz	77.6	$-16.1 \pm 1.5$
				250 Hz	85.1	$-8.6 \pm 1.4$	
					500 Hz	90.5	$-3.2 \pm 1.4$
					1 kHz	93.8	Ref.
					2 kHz	95.1	$+1.2 \pm 1.6$
					4 kHz	94.9	$+1.0 \pm 1.6$
					8 kHz	92.8	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.9	-4.3 (+3.0 ; -6.0)

#### 6.3.2 C-Weighting

	UUT Setting				lied Value	UUT	IEC 61672 Class 1
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Spec. (dB)
30 - 120 L <sub>C</sub> C	Fast	94.00	63 Hz	92.9	$-0.8 \pm 1.5$		
	1.0				125 Hz	93.6	$-0.2 \pm 1.5$
					250 Hz	93.8	$0.0 \pm 1.4$
					500 Hz	93.8	$0.0 \pm 1.4$
					1 kHz	93.8	Ref.
					2 kHz	93.7	$-0.2 \pm 1.6$
					4 kHz	93.2	$-0.8 \pm 1.6$
	· · · · · · · ·				8 kHz	90.9	-3.0 (+2.1 ; -3.1)
	1		L		12.5 kHz	88.0	-6.2 (+3.0 ; -6.0)

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。

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.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C142547 證書編號

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 319734

- Mfr's Spec. : IEC 61672 Class 1	
- Uncertainties of Applied Value : 94 dB	: 63 Hz - 125 Hz : ± 0.35 dB
	250 Hz - 500 Hz ; ± 0.30 dB
	$1 \text{ kHz}$ : $\pm 0.20 \text{ dB}$
	2 kHz - 4 kHz : ± 0.35 dB
	8 kHz : ± 0.45 dB
	12.5 kHz : ± 0.70 dB
104 dB	: 1 kHz : $\pm 0.10 \text{ dB}$ (Ref. 94 dB)
114 dB	: 1 kHz : $\pm 0.10 \text{ dB}$ (Ref. 94 dB)

- 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.

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,

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.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C142224 證書編號

ITEM TESTED / 送檢」	頁目	(Job No./序引編號: IC14-0853)	Date of Receipt / 收件日期: 28 March 2014
Description / 儀器名稱	2	Sound Level Meter (EQ013)	
Manufacturer / 製造商	:	Rion	
Model No. / 型號	:	NL-52	
Serial No./編號	:	00921191	
Supplied By / 委託者	:	Action-United Environmental Services and	d Consulting
		Unit A, 20/F., Gold King Industrial Building	ng,
		35-41 Tai Lin Pai Road, Kwai Chung, N.T	Γ.

#### 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 : 8 April 2014

#### 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	: K C Lee Project Engineer		
Certified By 核證	:K M Wu Engineer	Date of Issue 簽發日期	10 April 2014

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.

本證書所戰校正用之測試器材均可溯源至國際標準,局部復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.: C142224 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 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	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

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

UUT Setting			Applie	d Value	UUT	IEC 61672	
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	93.7	$\pm 1.1$

#### 6.1.2 Linearity

	UU	T Setting	Applie	UUT		
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
30 - 130	LA	A	Fast	94.00	1	93.7 (Ref.)
				104.00		103.7
				114.00		113.7

IEC 61672 Class 1 Spec. :  $\pm$  0.6 dB per 10 dB step and  $\pm$  1.1 dB for overall different.

#### 6.2 Time Weighting

UUT Setting			Applied Value		UUT	IEC 61672	
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	LA	A	Fast	94.00	1	93.7	Ref.
			Slow			93.7	± 0.3

本證書所載校正用之訓試器材均可溯源至國際標準。局部複印本語自需先獲本實驗所書面進准。

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.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C142224 證書編號

#### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

	UUT	Setting		Applied Value		UUT	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Class 1 Spec. (dB)
30 - 130 L <sub>A</sub>	A	Fast	94.00	63 Hz	67.4	$-26.2 \pm 1.5$	
					125 Hz	77.5	$-16.1 \pm 1.5$
					250 Hz	85.0	$-8.6 \pm 1.4$
					500 Hz	90.4	$-3.2 \pm 1.4$
					1 kHz 93	93.7	Ref.
					2 kHz	94.9	$+1.2 \pm 1.6$
					4 kHz	94.7	$+1.0 \pm 1.6$
					8 kHz	92.6	-1.1 (+2.1;-3.1)
					12.5 kHz	89.3	-4.3 (+3.0 ; -6.0)

#### 6.3.2 C-Weighting

	UUT Setting			Applied Value		UUT	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Class 1 Spec. (dB)
30 - 130	LA	C	Fast	94.00	63 Hz	92.8	$-0.8 \pm 1.5$
					125 Hz	93.5	$-0.2 \pm 1.5$
					250 Hz	93.7	$0.0 \pm 1.4$
					500 Hz 93.7 1 kHz 93.7	93.7	$0.0 \pm 1.4$
						Ref.	
					2 kHz	93.5	$-0.2 \pm 1.6$
					4 kHz	92.9	$-0.8 \pm 1.6$
					8 kHz	90.7	-3.0 (+2.1 ; -3.1
	1				12.5 kHz	87.3	-6.2 (+3.0 ; -6.0

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 04223

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :	94 dB : 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	$\pm 0.30 \text{ dB}$
	1 kHz	$\pm 0.20 \text{ dB}$
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
	104 dB : 1 kHz	$\pm 0.10 \text{ dB}$ (Ref. 94 dB)
	114 dB : 1 kHz	$\pm 0.10 \text{ dB}$ (Ref. 94 dB)

- 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 maccable 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制試器材均可溯源至國際標準。局部被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. : C142870 證書編號

ITEM TESTED / 送檢」	項目	(Job No. / 序引編號: IC14-0853)	Date of Receipt / 收件日期	明: 8 May 2014
Description / 儀器名稱		Acoustical Calibrator (EQ082)		
Manufacturer / 製造商	:	Brüel & Kjær		
Model No. / 型號	1	4231		
Serial No. / 編號	2	2713428		
Supplied By / 委託者	÷.	Action-United Environmental Services an	d Consulting	
		Unit A, 20/F., Gold King Industrial Build	ing,	
		35-41 Tai Lin Pai Road, Kwai Chung, N.	Γ.	
TEST CONDITIONS /	10.120		Relative Humidity / 相對濕度	: (55 ± 20)%
Temperature / 溫度 :		$3 \pm 2)^{\circ}C$	telative runnalty / 相對 濕度	$(55 \pm 20)\%$
Line Voltage / 電壓 :				

#### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 13 May 2014

#### 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	:	K C Lee Project Engineer			
Certified By 核證	4 _	K M Wu Engineer	Date of Issue 簽發日期	ł	15 May 2014

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,

Sum Creation Engineering Limited – Calibration & Testing Laboratory e/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 师仰上程有限公司 - 校正及檢測實驗所 e/n 香港新界屯門與安里一號背山潤機樓四樓 Tel:電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電動: callab@provision.com Website/網址: www.suncreation.com



Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C142870 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 Description Universal Counter Multifunction Acoustic Calibrator Measuring Amplifier <u>Certificate No.</u> C133632 DC130171 C141558

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

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.1		

#### 5.2 Frequency Accuracy

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

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.

本設計所載被正用之測試器材均可溯源至國際標準。局部被印本設計需先獲本實驗所書面批准。

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.

## TEST REPORT

## for SOUND CALIBRATOR

Model :	NC - 74

Serial No. : 34246492

Condition : Temperature

**24** ℃

Humidity

38 %RH

.

Date :

۰.

February, 28, 2014

Signature :

Janupuner



NC-74 34246492

1. Sound Pressure Level	$94.0 \pm 0.25  \mathrm{dB}$	94.00 dB
2. Frequency	$1000 \pm 7 \text{ Hz}$	1001.4 Hz
3. Distortion	3 % or less	Pass
4. Alarm Function		Pass
5. Appearance		Pass

Applicable standards

• .

ŧ.-

į,

JIS C 1515:2004 Class1 IEC 60942:2003 Class1



Appendix F

## **Event/Action Plan**



## Air Quality

EVENT	ACTION			
	ET	IC(E)	ER	CONTRACTOR
ACTION LEVEL			-	-
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		ACTIO	DN	
	ET	IC(E)	ER	CONTRACTOR
ACTION LEVEL	·			
<ol> <li>Exceedance for one sampling day</li> </ol>	<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</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

## **Impact Monitoring Schedule**

Z:\Jobs\2010\TCS00512(DC-2009-13)-Lama\600\EM&A Monthly Report\Sok Kwu Wan\53th December 2014\R0855v1.doc Appendix



Date		Air Q	Quality	Noise	Water Quality		
		1-hour TSP	24-hour TSP	Leq (30min)			
Tue	25-Nov-14		✓				
Wed	26-Nov-14	✓		✓			
Thu	27-Nov-14						
Fri	28-Nov-14						
Sat	29-Nov-14						
Sun	30-Nov-14						
Mon	1-Dec-14		✓				
Tue	2-Dec-14	✓		✓			
Wed	3-Dec-14						
Thu	4-Dec-14						
Fri	5-Dec-14						
Sat	6-Dec-14		✓				
Sun	7-Dec-14						
Mon	8-Dec-14	✓		✓			
Tue	9-Dec-14						
Wed	10-Dec-14						
Thu	11-Dec-14						
Fri	12-Dec-14		✓				
Sat	13-Dec-14	✓					
Sun	14-Dec-14						
Mon	15-Dec-14						
Tue	16-Dec-14						
Wed	17-Dec-14						
Thu	18-Dec-14		✓				
Fri	19-Dec-14	✓		✓			
Sat	20-Dec-14						
Sun	21-Dec-14						
Mon	22-Dec-14						
Tue	23-Dec-14	✓		✓			
Wed	24-Dec-14		✓				
Thu	25-Dec-14						

### **Impact Monitoring Schedule for the Reporting Period**

\*Post-Construction Water Quality Monitoring

✓	Monitoring Day				
	Sunday Holiday	or	Public		



Date		Air Q	Quality	Noise	Water Quality	
		1-hour TSP	24-hour TSP	Leq (30min)		
Fri	26-DEC-14					
SAT	27-DEC-14					
SUN	28-DEC-14					
Mon	29-DEC-14	✓		✓		
TUE	30-DEC-14		✓			
WED	31-DEC-14					
THU	1 <b>-</b> JAN-15					
Fri	2-JAN-15					
SAT	3-JAN-15	✓				
SUN	4-JAN-15					
Mon	5-JAN-15		✓			
TUE	6-JAN-15					
WED	7-JAN-15					
Thu	8-JAN-15					
Fri	9-JAN-15	✓		✓		
SAT	10-JAN-15		✓			
SUN	11 <b>-</b> JAN-15					
Mon	12-JAN-15					
TUE	13-JAN-15					
WED	14-JAN-15					
THU	15-JAN-15	✓		✓		
Fri	16-JAN-15		✓			
SAT	17-JAN-15					
SUN	18-JAN-15					
Mon	19-JAN-15					
TUE	20-JAN-15					
WED	21-JAN-15	✓		✓		
THU	22-JAN-15		✓			
Fri	23-JAN-15					
SAT	24-JAN-15					
SUN	25-JAN-15					

### **Impact Monitoring Schedule for next Reporting Period**

✓	Monitoring Day			
	Sunday Holiday	or	Public	
	inoliday			



Appendix H

## **Monitoring Data Sheet**

Z:\Jobs\2010\TCS00512(DC-2009-13)-Lama\600\EM&A Monthly Report\Sok Kwu Wan\53th December 2014\R0855v1.doc Appendix



## 24-hour TSP Monitoring Data Sheet

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

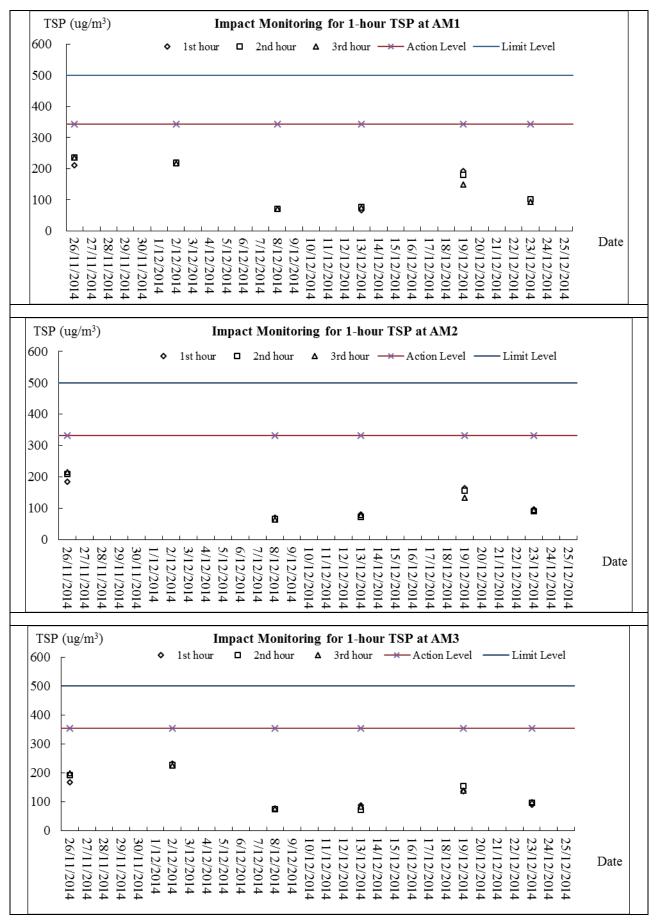
		EI	LAPSED TI	ME	CHA	ART READ	DING			STANDARD	)	INITIAL	FINAL	WEIGHT	DUST
DATE	SAMPLE							AVG	AVG	FLOW	AIR	FILTER	FILTER	DUST	24-hour TSP
	NUMBER	INITIAL	FINAL	ACTUAL	MIN	MAX	AVG	TEMP	PRESS	RATE	VOLUME	WEIGHT	WEIGHT	COLLECTED	IN AIR
				(min)				(oC)	(hPa)	(m3/min)	(std m3)	(g)	(g)	(g)	$(ug/m^3)$
24-hour TSP	Monitoring F	Results - AN	<b>1</b> 1												
1-Dec-14	27464	15645.96	15669.97	1440.60	38	39	38.5	19.3	1020	1.17	1687	2.6832	2.7352	0.0520	31
6-Dec-14	27482	15669.97	15693.97	1440.00	40	41	40.5	18.9	1020.4	1.23	1769	2.7519	2.8614	0.1095	62
12-Dec-14	27503	15693.97	15717.97	1440.00	34	40	37	15.5	1024.2	1.14	1638	2.7597	2.8864	0.1267	77
18-Dec-14	27529	15717.97	15741.97	1440.00	38	39	38.5	17.5	1021.1	1.17	1692	2.8267	2.9129	0.0862	51
24-Dec-14	27548	15741.97	15765.97	1440.00	40	44	42	18.7	1021.4	1.27	1831	2.7966	2.8975	0.1009	55
24-hour TSP	Monitoring R	Results - AN	12												
1-Dec-14	27465	14265.03	14289.04	1440.60	38	39	38.5	19.3	1020	1.39	1999	2.7197	2.7757	0.0560	28
6-Dec-14	27483	14289.04	14313.04	1440.00	39	40	39.5	18.9	1020.4	1.42	2044	2.7506	2.8423	0.0917	45
12-Dec-14	27502	14313.04	14337.04	1440.00	38	42	40	15.5	1024.2	1.44	2080	2.7827	2.9212	0.1385	67
18-Dec-14	27530	14337.04	14361.13	1445.40	40	41	40.5	17.5	1021.1	1.45	2101	2.8024	2.9177	0.1153	55
24-Dec-14	27549	14361.13	14385.25	1447.20	40	42	41	18.7	1021.4	1.47	2123	2.7827	2.9004	0.1177	55
24-hour TSP	Monitoring F	Results - AN	13												
1-Dec-14	27466	9716	9740.37	1462.2	40	41	40.5	19.3	1020	1.46	2135	2.718	2.7931	0.0751	35
6-Dec-14	27481	9740.37	9764.82	1467	40	41	40.5	18.9	1020.4	1.46	2144	2.7652	2.9237	0.1585	74
12-Dec-14	27501	9764.82	9789.35	1471.80	40	41	40.5	15.5	1024.2	1.47	2166	2.779	2.9751	0.1961	91
18-Dec-14	27531	9789.35	9813.83	1468.80	40	41	40.5	17.5	1021.1	1.47	2152	2.8343	3.0826	0.2483	115
24-Dec-14	27547	9813.83	9837.73	1434.00	36	39	37.5	18.7	1021.4	1.36	1952	2.7846	2.9524	0.1678	86



**Appendix I** 

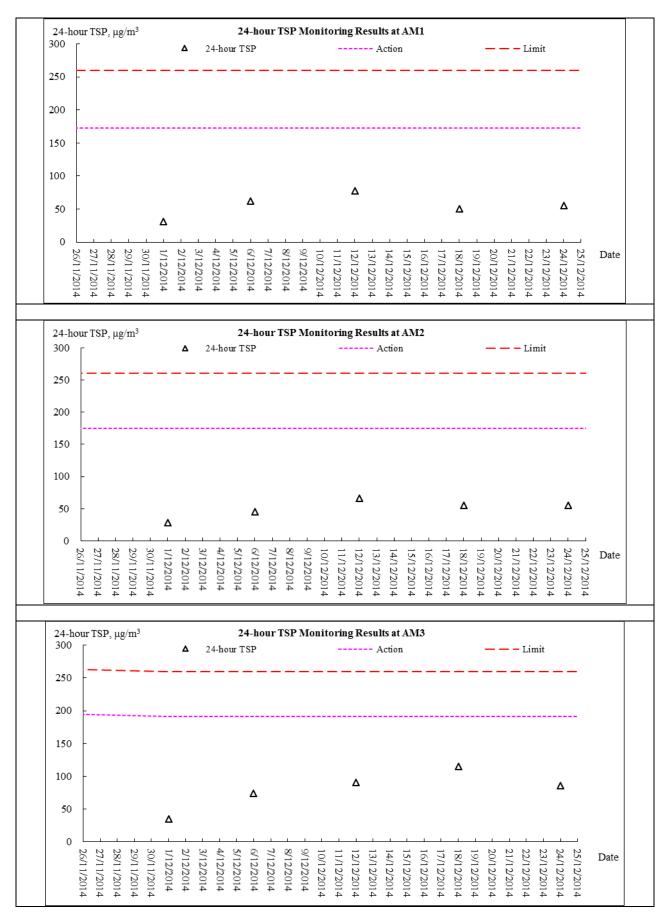
## **Graphical Plots of Monitoring Results**





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

Z:\Jobs\2010\TCS00512(DC-2009-13)-Lama\600\EM&A Monthly Report\Sok Kwu Wan\53th December 2014\R0855v1.doc Appendix



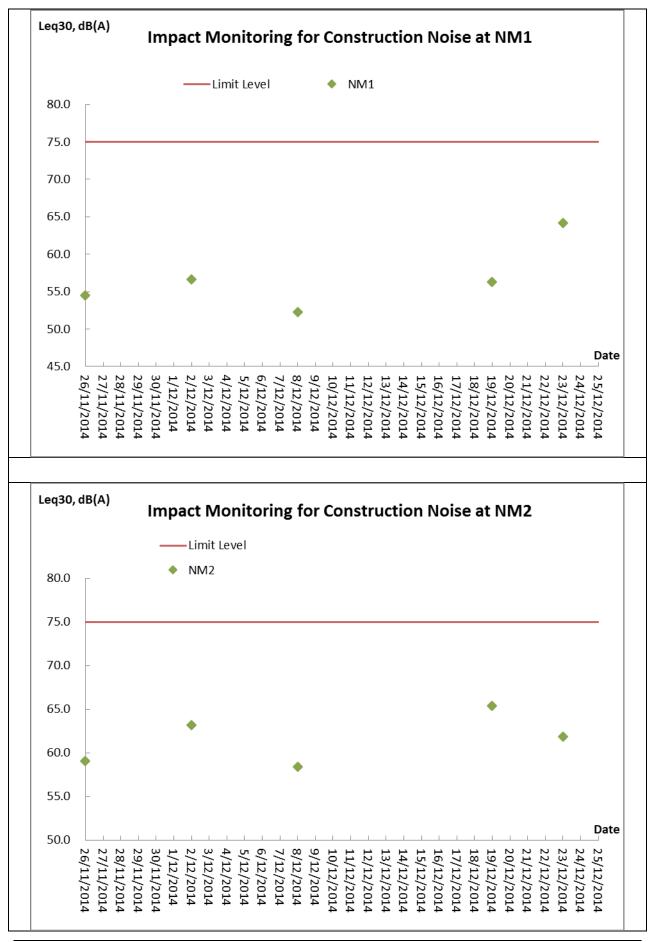
#### Air Quality Monitoring – 24 hour TSP Monitoring

JES

Δ

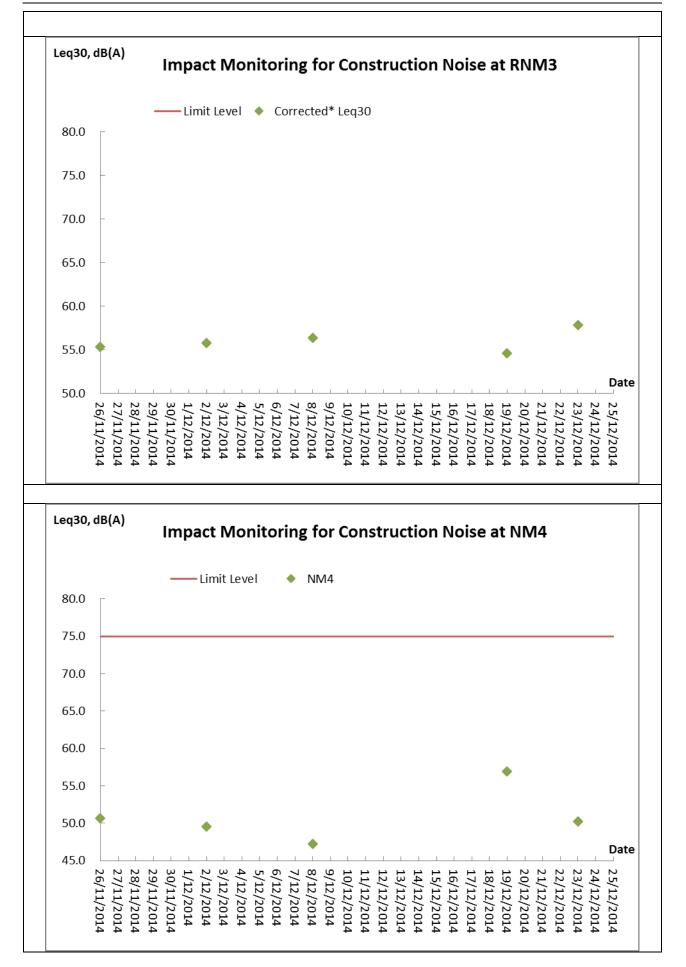


#### **Construction Noise Monitoring**



Z:\Jobs\2010\TCS00512(DC-2009-13)-Lama\600\EM&A Monthly Report\Sok Kwu Wan\53th December 2014\R0855v1.doc Appendix







# Appendix J

## **Meteorological Information**



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

Date		Weather
26-Nov-14	Wed	Cloudy. A few rain patches tomorrow. Fresh easterly winds.
27-Nov-14	Thu	Mainly cloudy. Sunny intervals in the afternoon. Moderate easterly winds, fresh at times.
28-Nov-14	Fri	Fine. Light winds.
29-Nov-14	Sat	Cloudy. A few rain patches tomorrow. Fresh easterly winds.
30-Nov-14	Sun	Mainly fine. Moderate easterly winds.
1-Dec-14	Mon	Cloudy with a few rain patches. Moderate to fresh east to northeasterly winds.
2-Dec-14	Tue	Cloudy with a few rain patches. Moderate to fresh easterly winds.
3-Dec-14	Wed	Cloudy with a few rain patches. Moderate to fresh easterly winds.
4-Dec-14	Thu	Mainly cloudy and rather cool. Moderate northeasterly winds, occasionally fresh offshore.
5-Dec-14	Fri	Mainly cloudy and rather cool. Moderate northeasterly winds, occasionally fresh offshore.
6-Dec-14	Sat	Mainly cloudy. Cool with one or two light rain patches. Moderate to fresh north to northeasterly winds.
7-Dec-14	Sun	Mainly cloudy. Cool with one or two light rain patches. Moderate to fresh north to northeasterly winds.
8-Dec-14	Mon	Mainly fine. Moderate to fresh easterly winds.
9-Dec-14	Tue	Mainly fine. Moderate to fresh easterly winds.
10-Dec-14	Wed	Cloudy with a few rain patches. Moderate to fresh east to northeasterly winds.
11-Dec-14	Thu	Mainly cloudy and dry. Sunny intervals in the afternoon. Moderate northerly winds.
12-Dec-14	Fri	Mainly cloudy and dry. Sunny intervals in the afternoon. Moderate northerly winds.
13-Dec-14	Sat	Mainly cloudy and dry. Sunny intervals in the afternoon. Moderate northerly winds.
14-Dec-14	Sun	Fine and very dry. Cloudy. Fresh north to northeasterly winds.
15-Dec-14	Mon	Fine and very dry. Cloudy. Fresh north to northeasterly winds.
16-Dec-14	Tue	Fine and very dry. It will be cold overnight. Fresh north to northeasterly winds.
17-Dec-14	Wed	Cloudy with a few rain patches. Moderate to fresh north to northeasterly winds.
18-Dec-14	Thu	Cloudy with a few rain patches. Moderate to fresh north to northeasterly winds.
19-Dec-14	Fri	Fine and very dry. It will be cold overnight. Fresh north to northeasterly winds.
20-Dec-14	Sat	Fine and very dry. It will be cold overnight. Fresh north to northeasterly winds.
21-Dec-14	Sun	Mainly cloudy. Moderate northeasterly winds.
22-Dec-14	Mon	Becoming cloudy. Rather cool overnight.Moderate east to northeasterly winds, fresh at first.
23-Dec-14	Tue	Mainly cloudy. Moderate northeasterly winds.
24-Dec-14	Wed	Cloudy. Bright intervals with some haze. Moderate northeasterly winds.
25-Dec-14	Thu	Cloudy. Bright intervals with some haze. Moderate northeasterly winds.



Appendix K

**Monthly Summary Waste Flow Table** 

# Monthly Summary Waste Flow Table for December 2014

			Actu	al Quant	ities of Ir	nert C&D	Material	s Genera	ted Mont	thly				A	Actual Qu	uantities	of C&D	Wastes	Generat	ed Mont	hly	
Month	Total Q Gene (a) = (c)	•	Hard Ro Large I Cono (t	Broken crete	Reused Con	tract	Reused Proj (c	ects	Publi	sed as c Fill e)	Import (1		Me	etals	cardl	per/ board aging	Pla	stics		mical aste		iers, ibbish
	(in '00	$00m^{3})$	(in '00	$00m^{3})$	(in '00	00m <sup>3</sup> )	(in '00	00m <sup>3</sup> )	(in '00	00m <sup>3</sup> )	(in '00	$(0000)^{3}$	(in '0	00kg)	(in '0	00kg)	(in '0	00kg)	(in '0	00kg)	(in to	onne)
	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW
2014	15.933	50.762	0.160	0.432	0.740	2.802	0.000	0.000	15.194	47.960	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	<mark>487.580</mark>	290.030
Jan	0.342	0.325	0.000	0.005	0.000	0.000	0.000	0.000	0.342	0.325	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.480	4.820
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.110	4.300
Mar	0.305	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.305	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.150	4.340
Apr	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.030	3.900
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	35.810	4.180
Jun	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	33.060	5.880
<mark>Sub-total</mark>	16.581	51.087	0.160	0.442	0.740	2.802	0.000	0.000	15.841	48.285	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	588.220	317.450
Jul	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.980	11.520
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.250	3.540
Sep	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.610	3.270
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	28.860	5.490
Nov	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.880	3.890
Dec	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.900	3.450
Total	16.581	51.087	0.160	0.442	0.740	2.802	0.000	0.000	15.841	48.285	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	709.700	348.610
10141	67.6	668	0.6	02	3.5	42	0.0	00	64.1	126	0.0	00	0.0	000	0.0	000	0.0	000	0.0	00	1058	3.310

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

YSW: Yung Shue Wan SKW: Sok Kwu Wan



Appendix L

Weekly Site Inspection Checklist



Project: Date: PART A: Weather: Temperatu Humidity Wind: Area Insp 1 Sc	::       Sunny       ✓ Fine       Cloudy         ure:       16.4       °C         /:       High       Moderate       ✓ Low         Strong       Breeze       ✓ Light       □	An and Sok     RE's Representative     Contractor's Representative     IEC's Representative     Time:     INFORMATION     Cloudy     Rainy     Low				t No. 2 tin Li iel Char . Leung	ntal Permit No.
PART B:	SITE AUDIT						
Note: Not Fol	t Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Ilow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
Section 1.	: Water Quality						
1.01 ls a	an effluent discharge license obtained for the Project?		$\checkmark$				
.02 Is t	the effluent discharged in accordance with the discharge licence?		$\checkmark$				
.03 Is t	the discharge of turbid water avoided?		$\checkmark$				
	e there proper desilting facilities in the drainage systems to duce SS levels in effluent?		$\checkmark$				
	e there channels, sandbags or bunds to direct surface run-off to dimentation tanks?		$\checkmark$				
OG Are	e there any perimeter channels provided at site boundaries to ercept storm runoff from crossing the site?		$\checkmark$				
	drainage system well maintained?		$\checkmark$				
	excavation proceeds, are temporary access roads protected by ushed stone or gravel?					$\checkmark$	
.09 Are	e temporary exposed slopes properly covered?					$\checkmark$	
.10 Are	e earthworks final surfaces well compacted or protected?		$\checkmark$				
.11 Are	e manholes adequately covered or temporarily sealed?		$\checkmark$				
.12 Are	e there any procedures and equipment for rainstorm protection?		$\checkmark$				
.13 Are	e wheel washing facilities well maintained?					$\checkmark$	
	runoff from wheel washing facilities avoided?						
	e there toilets provided on site?		$\overline{\checkmark}$				
.16 Are	e toilets properly maintained?		$\checkmark$				*
	e the vehicle and plant servicing areas paved and located within ofed areas?					$\checkmark$	
.18 lst	the oil/grease leakage or spillage avoided?		$\checkmark$				
	e there any measures to prevent leaked oil from entering the ainage system?		$\checkmark$				
	e there any measures to collect spilt cement and concrete shings during concreting works?		$\checkmark$				
	e there any oil interceptors/grease traps in the drainage systems vehicle and plant servicing areas, canteen kitchen, etc?					$\checkmark$	

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
1.22	Are the oil interceptors/grease traps maintained properly?					$\checkmark$	
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.					$\checkmark$	
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.					$\checkmark$	
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?		$\checkmark$				
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?		$\checkmark$				
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?					$\checkmark$	
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.					$\checkmark$	
Sectio	n 3: Noise						
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?					$\checkmark$	
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?					$\checkmark$	
3.06	Are hand held breakers fitted with valid noise emission labels during operation?					$\checkmark$	
3.07	Are air compressors fitted with valid noise emission labels during operation?					$\checkmark$	



Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
3.08	Are flaps and panels of mechanical equipment closed during operation?					$\checkmark$	
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?					$\checkmark$	
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).					$\checkmark$	
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).					$\checkmark$	
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?					$\checkmark$	
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?		$\checkmark$				
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 No.12/2000 and EWTB TC(W) No. 34/2002.					$\checkmark$	

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	n 5: Landscape & Visual						
5.01	Are retained and transplanted trees in health condition?					$\checkmark$	
5.02	Are retained and transplanted trees properly protected?		$\checkmark$				
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: (2 December 2014)

Follow up ( 2 December 2014 )

No environmental issue was observed during the site inspection

Nil.

IEC's representative

(

RE's representative

ET's representative

ive EO's representative

Contractor's representative

)

AUES

(Mr. Daniel Chau) ) Mr. Martin Li )

(Mr. M.K. Leung)

(



Hum Winc	DC-2009-13:       Construction of Sewage         Treatment Works at Yung Shue Wan and Sok         Kwu Wan         9 December 2014         T A:       GENERAL INFORMATION         ther:       Sunny       ✓         Fine       Cloudy          erature:       19.4       °C         idity:       High       Moderate       ✓ Low	Inspected by ETL/ ET's Representative RE's Representative Contractor's Representative IEC's Representative Time: Rainy Calm			Mr. Marti Mr. Danie Mr. M.K. 11:00	Mr. M.K. Leung 11:00 Environmental Permit No	
PART	B: SITE AUDIT						
Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
<b>Sectio</b> 1.01	on 1: Water Quality Is an effluent discharge license obtained for the Project?		$\overline{\checkmark}$				
1.02	Is the effluent discharged in accordance with the discharge licence?		$\overline{\mathbf{A}}$				
1.03	Is the discharge of turbid water avoided?		$\overline{\mathbf{A}}$				·
1.04	Are there proper desilting facilities in the drainage systems to		$\overline{\mathbf{A}}$				
1.05	reduce SS levels in effluent? Are there channels, sandbags or bunds to direct surface run-off to		$\square$				
1.06	sedimentation tanks? Are there any perimeter channels provided at site boundaries to intercent atom runoff from arcseing the site?						
1.07	intercept storm runoff from crossing the site? Is drainage system well maintained?		$\overline{\checkmark}$				
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?		$\checkmark$				
1.11	Are manholes adequately covered or temporarily sealed?		$\checkmark$				
1.12	Are there any procedures and equipment for rainstorm protection?		$\checkmark$				
1.13	Are wheel washing facilities well maintained?					$\checkmark$	[
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 within roofed areas?					$\checkmark$	1
1.18	Is the oil/grease leakage or spillage avoided?		$\checkmark$				
1.19	Are there any measures to prevent leaked oil from entering the drainage system?		$\checkmark$				
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?		$\checkmark$				
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?					$\checkmark$	

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
1.22	Are the oil interceptors/grease traps maintained properly?					$\checkmark$	
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.					$\checkmark$	
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.					$\checkmark$	
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?		$\checkmark$				
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?		$\checkmark$				
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?					$\checkmark$	
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.					$\checkmark$	
Sectio	n 3: Noise						
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?					$\checkmark$	
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?					$\checkmark$	
3.06	Are hand held breakers fitted with valid noise emission labels during operation?					$\checkmark$	
3.07	Are air compressors fitted with valid noise emission labels during operation?					$\checkmark$	



Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
3.08	Are flaps and panels of mechanical equipment closed during operation?					$\checkmark$	
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?					$\checkmark$	
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).					$\checkmark$	
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).					$\checkmark$	
Sectio	n 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?					$\checkmark$	
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?		$\checkmark$				
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 No.12/2000 and EWTB TC(W) No. 34/2002.					$\checkmark$	

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?		$\checkmark$				
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?					$\checkmark$	

#### (Sok Kwu Wan)

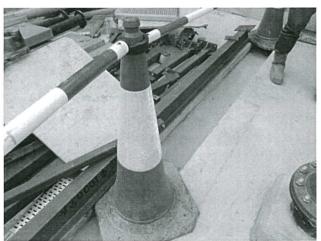
#### Remarks:

#### Findings of Site Inspection: (9 December 2014)



The Contractor was reminded to clean the stagnant water and ensure no obstacle at the U-channel at rooftop of the sewage treatment works.

#### Follow up (9 December 2014)



AUES

Stagnant water was removed and no obstacle was observed at the U-channel.

IEC's representative	RE's representative	ET's representative	EO's representative	Contractor's representat	ive
			0		
		ti t	1		
	Z	Attil			
( )	(Mr. Daniel Chau)	(Mr. Martin Li )	(Mr. M.K. Leung)	(	)



Date: PAR Weat Temp Hum	PART A:       GENERAL INFORMATION         Weather:       Sunny       Fine       Cloudy         Temperature:       16.8       °C         Humidity:       High       Moderate       Low         Wind:       Strong       Breeze       Light       I		l by Representative resentative or's Representative	Mr.	M.K. Leu	hau ng nental Permit No.
Area I	nspected					
1	Sok Kwu Wan					
PART	B: SITE AUDIT					
Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Obs.	Yes N	10	llow N/ Jp	/A Photo/ Remarks
1.01	on 1: Water Quality Is an effluent discharge license obtained for the Project?		$\square$			
1.02	Is the effluent discharged in accordance with the discharge licence?					
1.03	Is the discharge of turbid water avoided?					
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?		$\checkmark$			]
1.05	Are there channels, sandbags or bunds to direct surface run-off to sedimentation tanks?		$\checkmark$			]
1.06	Are there any perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?		$\checkmark$			
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?				V	
1.10	Are earthworks final surfaces well compacted or protected?		$\checkmark$			
1.11	Are manholes adequately covered or temporarily sealed?		$\checkmark$			
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?					
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 within roofed areas?				V	
1.18	Is the oil/grease leakage or spillage avoided?		$\checkmark$			
1.19	Are there any measures to prevent leaked oil from entering the drainage system?		$\square$			
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?		$\checkmark$			
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?				V	7

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
1.22	Are the oil interceptors/grease traps maintained properly?					$\checkmark$	
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.					$\checkmark$	
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.					$\checkmark$	
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?		$\checkmark$				
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?		$\checkmark$				
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?					$\checkmark$	
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.					$\checkmark$	
Sectio	n 3: Noise						
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?					$\checkmark$	
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?					$\checkmark$	
3.06	Are hand held breakers fitted with valid noise emission labels during operation?					$\checkmark$	
3.07	Are air compressors fitted with valid noise emission labels during operation?					$\checkmark$	



Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
3.08	Are flaps and panels of mechanical equipment closed during operation?					$\checkmark$	]
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?					$\checkmark$	
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).					$\checkmark$	
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).					$\checkmark$	
Sectio	n 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?					$\checkmark$	
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?		$\checkmark$				
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.		$\checkmark$				- 1- <sup>1</sup>
4.23	Contaminated sediments will be managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002.					$\checkmark$	

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	n 5: Landscape & Visual						
5.01	Are retained and transplanted trees in health condition?					$\checkmark$	
5.02	Are retained and transplanted trees properly protected?		$\checkmark$				
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: (16 December 2014)



The Contractor was reminded to proper dispose the empty cement bag to reduce dust generation.

#### Follow up (16 December 2014)



AUES

The empty cement bag has been removed.

IEC's representative	RE's representative	ET's representative	EO's representative	Contractor's representati	ve
			/		
	PS	Abl	L		
( )	(Mr. Daniel Chau)	(Mr. Martin Li)	(Mr. M.K. Leung)	(	)



Projec	t: TCS/00512/09	Inspe	cted b	y		Che	cklist No.		512B-22 December
-	DC-2009-13: Construction of Sewage Treatment Works at Yung Shue Wan and Sok	ETL/	ET's R	epresen	tative	Mr.	Martin Li		1
	Kwu Wan		· · .	sentativo		Mr.	Daniel Cl		
				s Repres esentativ	sentative re	Mr.	M.K. Leu	ng	
Date:	22 December 2014	Time				11:0	0		
PAR	CA: GENERAL INFORMATION						Environn	nental	Permit No.
Weat		Rainy				✓ E	EP- 281/20	07A	
Humi	erature: 13.6 ºC dity: ☐ High								
Wind		Calm							
Area I	nspected								
1	Sok Kwu Wan								
PART	B: SITE AUDIT								
Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	- 1 - S.S.	ot os.	Yes	No	Foll U		/A	Photo/ Remarks
	n 1: Water Quality	г				-			
1.01	Is an effluent discharge license obtained for the Project?	L							
1.02	Is the effluent discharged in accordance with the discharge licence?	' L _		$\checkmark$					
1.03	Is the discharge of turbid water avoided?	L		$\checkmark$		L			
1.04	Are there proper desilting facilities in the drainage systems to reduce SS levels in effluent?	L		$\checkmark$					
1.05	Are there channels, sandbags or bunds to direct surface run-off to sedimentation tanks?			$\checkmark$				]	
1.06	Are there any perimeter channels provided at site boundaries to intercept storm runoff from crossing the site?			$\checkmark$					
1.07	Is drainage system well maintained?			$\checkmark$					
1.08	As excavation proceeds, are temporary access roads protected by crushed stone or gravel?	Ĺ							
1.09	Are temporary exposed slopes properly covered?	Ľ					]		
1.10	Are earthworks final surfaces well compacted or protected?	Ľ		$\checkmark$			] [		
1.11	Are manholes adequately covered or temporarily sealed?	Γ		$\checkmark$					
1.12	Are there any procedures and equipment for rainstorm protection?	E		$\checkmark$					
1.13	Are wheel washing facilities well maintained?	Ľ						7	
1.14	Is runoff from wheel washing facilities avoided?	E					] [	7	
1.15	Are there toilets provided on site?	E		$\checkmark$			] [		
1.16	Are toilets properly maintained?	E		$\checkmark$			] [		
1.17	Are the vehicle and plant servicing areas paved and located within roofed areas?	E						⊿ –	
1.18	Is the oil/grease leakage or spillage avoided?	Ľ		$\checkmark$					
1.19	Are there any measures to prevent leaked oil from entering the drainage system?	Ē		$\checkmark$					
1.20	Are there any measures to collect spilt cement and concrete washings during concreting works?			$\checkmark$					
1.21	Are there any oil interceptors/grease traps in the drainage systems for vehicle and plant servicing areas, canteen kitchen, etc?							7 -	

#### ... Environment

tal Team – Weekly Site Inspection and A	Audit Cł	necklist	– Sok	Kwu Wa	n	AUES	
lot Observed; <b>Yes:</b> Compliance; <b>No</b> : Non-Compliance; Observations requiring follow-Up actions <b>N/A</b> : Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks	

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?					$\checkmark$	
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.					$\checkmark$	
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.					$\checkmark$	
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?		$\checkmark$				
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?		$\checkmark$				
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?					$\checkmark$	
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.					$\checkmark$	
Sectio	n 3: Noise						
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?					$\checkmark$	
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?					$\checkmark$	
3.06	Are hand held breakers fitted with valid noise emission labels during operation?					$\checkmark$	
3.07	Are air compressors fitted with valid noise emission labels during operation?					$\checkmark$	

1

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
3.08	Are flaps and panels of mechanical equipment closed during operation?					$\checkmark$	
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?					$\checkmark$	
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).					$\checkmark$	
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).					$\checkmark$	
Sectio	n 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?					$\checkmark$	
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?		$\checkmark$				
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 No.12/2000 and EWTB TC(W) No. 34/2002.					$\checkmark$	

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	n 5: Landscape & Visual						
5.01	Are retained and transplanted trees in health condition?					$\checkmark$	
5.02	Are retained and transplanted trees properly protected?		$\checkmark$				
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: (22 December 2014)

#### Follow up (22 December 2014)

No environmental issue was observed during the site inspection

Nil.

#### IEC's representative

(

RE's representative E

ET's representative

EO's representative Contractor's representative

AUES

(Mr. M.K. Leung) (Mr. Daniel Chau) Mr. Martin Li ) ) ( )



Appendix M

# **Implementation Schedule of Mitigation Measures**



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

EIA	EM&A		Location /	Implementation		lementa Stages**		Relevant Legislation
Ref	Ref	Environmental Protection Measures*	Timing	Agent	D	С	0	& Guidelines
Constr	ruction 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



### **Implementation Schedule of Noise Measures**

EIA	EM&A	Environmental Protection Measures*	Location/Timing	Implementation	-	olementa Stages *		Relevant Legislation &
Ref	Ref			Agent	D	С	0	Guidelines
Construction 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				



EIA	EM&A	Environmental Protection Measures*	Location/Timing	Implementation	Implementation Stages **			Relevant Legislation &
Ref	Ref		Location, Thing	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	Environmental Protection Measures*	Location (duration /completion of	Implementation		lement Stages*		Relevant Legislation
Ref	Ref	Environmental Frotection Weasures"	measures)	Agent	D	С	0	and Guidelines
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.	Marine works site / During construction of submarine outfall	Contractor		√		
5.73 – 5.78	4.36	<ul> <li>Silt curtains will be installed around the exit area of the pilot drill.</li> <li>Dredging Works</li> <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> <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 cleaned from the decks and exposed fittings of barges before the vessel is moved;</li> <li>adequate freeboard (i.e. minimum of 200mm) should be maintained on barges to ensure that decks are not washed by wave action;</li> <li>all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material;</li> <li>loading of barges should be controlled to prevent splashing of dredged material to the surrounding water, and barges should not</li> </ul>	Marine works site and at the identified water sensitive receivers/ During construction	Contractor				



EIA	EM&A	Environmental Protection Measures*	Location (duration /completion of	Implementation	Implementation Stages**			Relevant Legislation
Ref	Ref	Environmental i rotection weasures	measures)	Agent	D	C	0	and Guidelines
		<ul> <li>be filled to a level which will cause the overflow of materials or polluted water during loading or transportation; and</li> <li>the decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard.</li> </ul>						
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	sites					



EIA	EM&A	Environmental Protection Measures*	Location (duration /completion of	Implementation	Implementation Stages**			Relevant Legislation
Ref	Ref	Environmental i rotection wicasures	measures)	Agent	D	С	0	and Guidelines
		disposed of properly to avoid entering the nearby coastal waters and stormwater drains. All fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. Open drainage channels and culverts near the works areas should be covered to block the entrance of large debris and refuse.						
5.81	4.39	<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		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 Sediment Contamination Mitigation Measures

EIA	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation	Implementation Stages**			Relevant Legislation &
Ref		Environmental Protection Measures	Location / Thining	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		

\* 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 Solid Waste Management Measures

EIA	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation		plementa Stages *		Relevant Legislation &	
Ref		Environmental Protection Measures*	Timing	Agent	D	С	0	Guidelines	
Construct	tion Phase		L						
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		N		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	

#### 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 – December 2014



EIA	EM&A Ref	Environmental Protection Measures*	Location /	Implementation		olementa Stages **		Relevant Legislation &
Ref			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><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

#### 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 – December 2014



EIA	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation	Implementation Stages **			Relevant Legislation &	
Ref		Environmental Protection Measures*	Timing	Agent	D	С	0	Guidelines	
		<ul> <li>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.</li> <li>Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should be undertaken within the designated areas equipped control these discharges</li> </ul>							
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> </ul>	During all construction phases	Contractors		V		WBTC No. 4/98, 5/98, 21/2002, 25/99, 12/2000	
		<ul> <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>							

\* 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	Implementation Stages			Relevant Legislation & Guidelines	
			Thing	Agent	D	С	0	Guidennes	
	tion Phase			-	1	, ,	<b>I</b>		
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		~			

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



Appendix N

**Tree Inspection Report** 

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

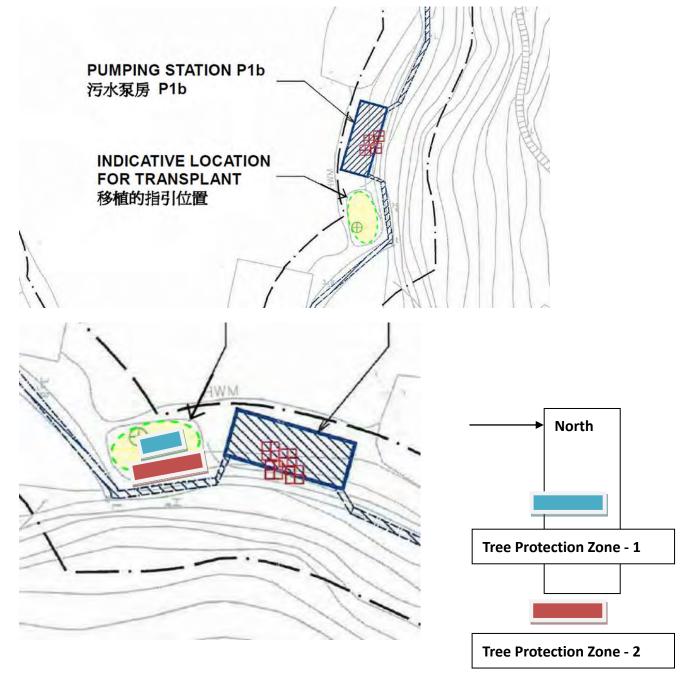
# **Tree Inspection Report for Celtis timorensis**

# Inspection Date : 29-11-2014



# 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



Bi Weekly Tree Inspection Report for *Celtis timorensis* at Sok Kwu Wan Inspection Date: 29 November 2014

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.

Date of Inspection	29 November 2014, around 11:00
Location	A soil ground adjacent to the Pumping
	Station P1b Chung Mei, at Sok Kwu Wan,
	Lamma Island.
Weather	Fine, the vegetations are located under
	the shade of existing tall trees.
The labeled Celtis timorensis	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 and 28 February 2013
March 2013	15 and 30 March 2013
April 2013	15 and 30 April 2013
May 2013	15 and 30 May 2013
June 2013	15 and 29 June 2013

Bi Weekly Tree Inspection Report for *Celtis timorensis* at Sok Kwu Wan Inspection Date: 29 November 2014

-
15 and 31 July 2013
15 and 31 August 2013
14 and 30 September 2013
15 and 31 October 2013
15 and 30 November 2013
14 and 31 December 2013
15 and 30 January 2014
15 and 28 February 2014
15 and 31 March 2014
15 and 30 April 2014
15 and 31 May 2014
16 and 30 June 2014
15 and 31 July 2014
15 and 30 August 2014
15 and 30 September 2014
15 and 31 October 2014
15 and 29 November 2014

### 4. Summary of Inspection Result

Tree No	Speciation	Health Status
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\_5A



### Current Status: Good

Justification: Significant improvement in health. The plant was healthy. Some leaves were damaged by insect.

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 CT2A, CT3A were lost due to typhoon, 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>元朗下牧田村 125 號 125, Ha Yau Tin Tsuen, Yuen Long, N.T.</sup> 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

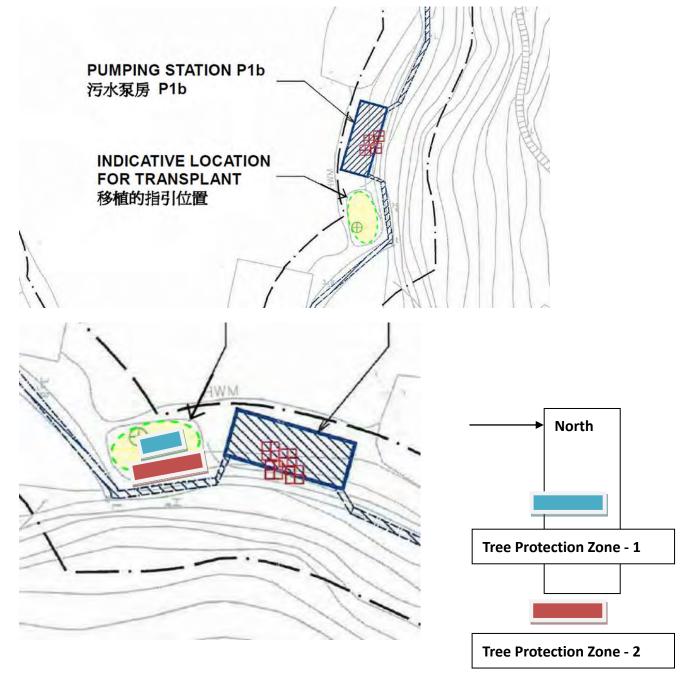
# **Tree Inspection Report for Celtis timorensis**

# Inspection Date : 15-12-2014



# 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



Bi Weekly Tree Inspection Report for *Celtis timorensis* at Sok Kwu Wan Inspection Date: 15 December 2014

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.

Date of Inspection	15 December 2014, around 10:00
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_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 and 28 February 2013			
March 2013	15 and 30 March 2013			
April 2013	15 and 30 April 2013			
May 2013	15 and 30 May 2013			
June 2013	15 and 29 June 2013			

Bi Weekly Tree Inspection Report for *Celtis timorensis* at Sok Kwu Wan Inspection Date: 15 December 2014

July 2013	15 and 31 July 2013
August 2013	15 and 31 August 2013
September 2013	14 and 30 September 2013
October 2013	15 and 31 October 2013
November 2013	15 and 30 November 2013
December 2013	14 and 31 December 2013
January 2014	15 and 30 January 2014
February 2014	15 and 28 February 2014
March 2014	15 and 31 March 2014
April 2014	15 and 30 April 2014
May 2014	15 and 31 May 2014
June 2014	16 and 30 June 2014
July 2014	15 and 31 July 2014
August 2014	15 and 30 August 2014
September 2014	15 and 30 September 2014
October 2014	15 and 31 October 2014
November 2014	15 and 29 November 2014
December 2014	15 December 2014

#### 4. Summary of Inspection Result

Tree No	Speciation	Health Status
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\_5A



#### Current Status: Good

Justification: Significant improvement in health. The plant was healthy. Some leaves were damaged by insect.

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 CT2A, CT3A were lost due to typhoon, compensatory of additional Celtis timorensis is proposed and will be carried out in the coming warm weather season for better growing.