

PROJECT NO.: TCS/00512/09

DSD CONTRACT NO. DC/2009/13 CONSTRUCTION OF SEWAGE TREATMENT WORKS AT YUNG SHUE WAN AND SOK KWU WAN

YUNG SHUE WAN PORTION AREA MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT (NO.37) – SEPTEMBER 2013

PREPARED FOR LEADER CIVIL ENGINEERING CORPORATION LIMITED

Quality Index			
Date	Reference No.	Prepared By	Approved By
9 October 2013	TCS00512/09/600/R0695v1	Anh	Am
		Nicola Hon Environmental Consultant	T.W. Tam Environmental Team Leader

Version	Date	Description
1	9 October 2013	First Submission

URS CDM Joint Venture

Chief Engineer/Harbour Area Treatment Scheme	Your reference:	
Drainage Services Department 5/F, Western Magistracy	Our reference:	05117/6/16/418389
2A, Pok Fu Lam Road Hong Kong	Date:	21 Oct 2013
Attention: Ms. Jacky C M Wong		BY FAX

Dear Madam

Contract No. DC/2009/13 Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan Yung Shue Wan Portion Area Monthly Environmental Monitoring and Audit (EM&A) Report No. 37 (September 2013)

We refer to the Monthly EM&A Monitoring Report No. 37 for September 2013 received under cover of the email from the Environmental Team, Action-United Environmental Services and Consulting (AUES), dated on 21 October 2013. We have no comment and have verified the captioned report.

Yours faithfully URS CDM JOINT VENTURE

Rodney Ip Independent Environmental Checker

ICWR/KKK/lykl

Encl

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



EXECUTIVE SUMMARY

ES.01. This is the **37th** monthly Environmental Monitoring and Audit (EM&A) for Yung Shue Wan (hereinafter 'this Report') for the designated works under Environmental Permit [EP-282/2007], covering a period from **26** August to **25** September 2013 (hereinafter 'the Reporting Period').

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

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

Issues Environmental Monitoring Parameters / Inspection		Occasions
Air Quality	1-hour TSP	36
All Quality	24-hour TSP	12
Construction Noise	L _{eg (30min)} Daytime	6
Inspection / Audit	ET Regular Environmental Site Inspection	5

ES.03. According to the construction information provided by the Contractor, the marine works in Yung Shue Wan has been completed on 22 April 2013. As agreed by the Contractor, IEC and RE, the ecology was ceased in May 2013 due to no ecological impact and concern since the completion of marine work, whereas impact marine water quality monitoring was terminated in July 2013. In this regards, an associated letter ref. TCS00512/10/300/L0656 dated 28 June 2013 has been issued to EPD for approval and no comment was received.

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.04. No exceedance in air quality and construction noise monitoring was 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		l
Issues	Parameters	Level	Level	NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0		
The Quality	24-hour TSP	0	0	0		
Construction Noise	L _{eq(30min)} Daytime	0	0	0		

Note: NOE – Notification of Exceedance

SITE INSPECTION

ES.05. In this Reporting Period, 5 events of weekly joint inspection by the RE, the Contractor and ET were carried out on 27 August and 2, 10, 17 and 25 September 2013.

ENVIRONMENTAL COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

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

REPORTING CHANGE

ES.07. In this Reporting Period, no reporting changes were made.

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. Nevertheless, the Contractor shall keep paying attention on the potential water impact as the



construction site is adjacent to the coastline. Muddy water and other water quality pollutants via site surface water runoff into the sea body within Fish culture zone at Picnic Bay and the Secondary recreation contact subzone at Mo Tat Wan should be avoided. Therefore, mitigation measures for water quality should be fully implemented.



TABLE OF CONTENTS

1	INTRODUCTION Project Background Report Structure	1 1 1
2	PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS Project Organization and Management Structure Construction Progress Summary of Environmental Submissions	2 2 2 2
3	 SUMMARY OF BASELINE MONITORING REQUIREMENTS ENVIRONMENTAL ASPECT MONITORING LOCATIONS MONITORING FREQUENCY AND PERIOD MONITORING EQUIPMENT EQUIPMENT CALIBRATION METEOROLOGICAL INFORMATION DATA MANAGEMENT AND DATA QA/QC CONTROL REPORTING DETERMINATION OF ACTION/LIMIT (A/L) LEVELS 	3 3 4 5 8 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	IMPACT MONITORING RESULTS – ECOLOGY MONITORING	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	25 25 25



LIST OF TABLES

- Table 2-1
 Status of Environmental Licenses and Permits
- Table 2-2Status of EM&A Programme Submission
- Table 3-1
 Summary of EM&A Requirements
- Table 3-2Location of Air Quality Monitoring Station
- Table 3-3
 Location of Construction Noise Monitoring Station
- Table 3-4
 Location 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 3-8
 Action and Limit Levels for Coral Monitoring
- Table 4-1Summary of 24-hour and 1-hour TSP Monitoring Results at AC02b
- Table 4-2Summary of 24-hour and 1-hour TSP Monitoring Results at AC04c
- Table 5-1
 Summarized of Construction Noise Monitoring Results at NC05
- Table 8-1
 Summary of Quantities of Inert C&D Materials
- Table 8-2Summary of Quantities of C&D Wastes
- Table 9-1Site 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 11-1
 Environmental Mitigation Measures

LIST OF APPENDICES

- Appendix A Site Layout Plan Yung Shue 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/ Dive Surveys of Coral)
- 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



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 Shue Wan with a capacity of 1,430m³/day and 2,850m³/day respectively to provide secondary treatment, construction of 2 pumping stations at Sok Kwu Wan and 1 pumping station at Yung Shue Wan, construction of submarine outfall from the coastline and 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 EM&A Manual. This EM&A Manual is referred to the Appendix D of the Review Report on EIA Study Yung Shue 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 This is the **37**th monthly EM&A Report for Yung Shue Wan Portion Area which presenting the monitoring results and inspection findings in the Reporting Period from **26 August to 25 September 2013**.

REPORT STRUCTURE

1.06 The Monthly Environmental Monitoring and Audit (EM&A) Report – Yung Shue Wan is structured into the following sections:-

SECTION 1	INTRODUCTION
SECTION 2	PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS
SECTION 3	SUMMARY OF MONITORING REQUIREMENTS
SECTION 4	AIR QUALITY MONITORING RESULTS
SECTION 5	CONSTRUCTION NOISE MONITORING RESULTS
SECTION 6	WATER QUALITY MONITORING RESULTS
SECTION 7	ECOLOGY MONITORING RESULTS
SECTION 8	WASTE MANAGEMENT
SECTION 9	SITE INSPECTIONS
SECTION 10	ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE
SECTION 11	IMPLEMENTATION STATUES OF MITIGATION MEASURES
SECTION 12	IMPACT FORECAST
SECTION 13	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:-
 - Construction of road and drainage works in yard area
 - Rebar fixing, formwork erection/ removal
 - Backfilling and soil compaction
 - E&M installation
 - Plumb and Drain installation
 - Plastering, painting, placing wall tiles and 5 legged concrete tiles
 - Construction of road pavement
 - Casting concrete for floor finishing
 - Installation of louvres, doors, FRP cover and cat ladders
 - Construction of pipe pile wall and grout pipes

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 19/5/2010
	Regulation	Case No: 317486
2	Chemical Waste Producer Registration	Issued on 8/6/2010
		WPN 5213-912-L2720-01
3	Water Pollution Control Ordinance	Issued on 22/9/2010
		WT00007566-2010
4	Billing Account for Disposal of Construction	Issued on 26 May 2010
	Waste	A/C No: 7010815

2.04 Summary of the report submission for EM&A Programme is presented in *Table 2-2*.

Table 2-2Status of EM&A Programme Submission

Item	EM&A Programme Submission	Status
1	Proposed EM&A Programme for Baseline / Impact	Verified by IEC and submitted to EPD
	Monitoring – Yung Shue Wan	on 8 July 2010
	(TCS00512/09/600/R0011Ver.5)	
2	Method Statement for Coral Monitoring – Yung Shue Wan	Verified by IEC and submitted to EPD
	(TCS00512/09/600/R0071Ver.3)	on 25 November 2010
3	Baseline Air and Noise Monitoring Report - Volume 1	Verified by IEC and submitted to EPD
	(TCS00512/09/600/R0061Ver.3)	on 31 August 2010
4	Baseline Monitoring Report Volume 2 - Water Quality	Verified by IEC and submitted to EPD
	(TCS00512/09/600/R0158Ver.2)	on 10 March 2011
5	Baseline Survey for Coral Monitoring – Yung Shue Wan	Verified by IEC and submitted to EPD
	(TCS00512/09/600/R0132Ver.3)	on 17 February 2011
6	Methodology of Coral Tagging for Impact Monitoring –	Verified by IEC and submitted to EPD
	Yung Shue Wan	on 28 March 2011
7	Coral Tagging Report	Verified by IEC and submitted to EPD
	(TCS00512/09/600/R0214Ver.4)	on 3 August 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;
 - Marine water quality; and
 - Ecology monitoring
- 3.02 The ET implements the EM&A programme in accordance with the aforementioned requirements. Detailed air quality, construction noise, water quality and ecology of the EM&A programme are presented in the following sub-sections.
- 3.03 A summary of the air, noise, marine water and ecology monitoring parameters is presented in *Table 3-1*:

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

 Table 3-1
 Summary of the EM&A Requirements

MONITORING LOCATIONS

<u>Air Quality</u>

- 3.04 Two designated monitoring stations, AC02a located at Yung Shue Wan Refuse Transfer Station and AC04 located at residential area nearby Yung Shue Wan football pitch, were recommended in the *EM&A Manual Section 2.5*. In order to identify and seek for the access of the air monitoring locations designated in the EM&A Manual, site visit was conducted by Leader and ET.
- 3.05 At the site visit, all designated monitoring locations were identified however the premises for high volume sampler installation were objected by the owner or the residents of nearby. So, alternative air monitoring locations were proposed in accordance with the criteria set out in *EM&A manual Section 2.5.2 and 2.5.3*. The proposed alternative air monitoring stations were accepted by the Engineer Representative (ER) and Independent Environmental Checker (IEC) and EPD for endorsement. Details of renewed air monitoring stations are described in *Table 3-2*. The graphical of air monitoring stations is shown in *Appendix D*.

Table 3-2Location of Air Quality Monitoring Station

Sensitive Receiver	Location
AC02b	The entrance of RE's site office
AC04c	Next to a power transformer station TP208 Yung Shue Wan and adjacent to the road direct to the construction site



Construction Noise

3.06 According to *EM&A Manual Section 3.4*, one noise sensitive receivers (NC05) designated for the construction noise monitoring was recommended at Yung Shue Wan Portion Area of the Project. The designated monitoring station is identified and successfully granted the premises. The detailed construction noise monitoring station is described in *Table 3-3* and graphical is shown in *Appendix D*.

Table 3-3Location of Construction Noise Monitoring Station

Sensitive Receiver	Location
NC05	North Lamma Clinic

Marine Water Quality

3.07 Two control stations (CY1 and CY2) and three impact stations (WY1-WY3) were recommended in the *EM&A Manual Section 4.5*. Impact stations WY1-WY3 were identified close to the sensitive receivers (the coral colonies in the vicinity of Yung Shue Wan, and secondary contact recreation subzone). It is proposed to monitor the impacts from the construction of the submarine outfall as well as the effluent discharge from the proposed STW on water quality. Two control stations: CY1 and CY2 were recommended at locations representative of the project site in its undisturbed condition and located at upstream and downstream of the works area. The marine water quality monitoring stations to be performed under the Project is described in *Table 3-4* and shown in *Appendix D*.

Table 3-4 Location of Marine Water Quality Monitoring Station

Station	Description	Coordinates		
Station	Description	Easting	Northing	
WY1	Coral colonies on seawall at STW site	829 170	809 550	
WY2	Coral colonies at Shek kok Tsui	829 000	810 400	
WY3	Coral colonies at O Tsai (headland N at SW ferry pier)	829 200	809 850	
CY1 (flood)	Control Station	828 400	810 800	
CY2 (ebb)	Control Station	828 000	808 800	

Coral Monitoring

3.08 The coral monitoring stations to be performed under the Project is show in *Appendix D*. The ecology monitoring was ceased since the completion of marine work on 22 April 2013.

MONITORING FREQUENCY AND PERIOD

3.09 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, 4.8, 7.3 and 7.4*. The monitoring requirements are listed as follows:

Air Quality Monitoring

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

Noise Monitoring

Parameters:	$L_{eq 30min}$ & $L_{eq(5min)}$, L_{10} and L_{90} .
	$L_{eq(15min)}$ & $L_{eq(5min)}$, L_{10} and L_{90} during the construction undertaken during
	Restricted hours (19:00 to 07:00 hours next of normal working day and full day
	of public holiday and Sunday)
Frequency:	Once per week during 0700-1900 hours on normal weekdays. Restricted hour



monitoring should depend on conditions stipulated in Construction Noise PermitDuration:Throughout the construction period

Marine Water Quality Monitoring

Parameters:	Duplicate in-situ measurements: water depth, temperature, dissolved oxygen, pH, turbidity and salinity
	HOKLAS-accredited laboratory analysis: suspended solids
Frequency:	Three days a week, at mid ebb and mid flood tides. The interval between 2 sets of monitoring will be more than 36 hours
<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

Coral Monitoring

- <u>Parameters</u>: Presence and coverage of hard and soft corals such as diversity, abundance and health status of the corals in the general area, plus other physical and biological condition at the underwater environment
- <u>Frequency</u>: One per week for the first three months of the marine works. If no exceedances are reported during the first three months, the frequency may be reduced to twice every month
- <u>Duration</u>: During the course of marine works

Post-Construction Monitoring – Marine Water

3.10 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.

Post-Construction Monitoring – Ecology Monitoring

3.11 Following completion of the marine works, post project monitoring should be carried out within two weeks of completion of the marine works (HDD and dredging), and should comprise the same two-tier Rapid Assessment Ecological Assessment (REA) method adopted for the baseline survey.

MONITORING EQUIPMENT

Air Quality Monitoring

3.12 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.

<u>1-hour TSP</u>

- 3.13 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 90⁰ 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

- 3.14 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
- 3.15 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.
- 3.16 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.
- 3.17 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 m³/min.

<u>Noise Monitoring</u>

- 3.18 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.
- 3.19 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.
- 3.20 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.
- 3.21 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.
- 3.22 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

- 3.23 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^oC 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.
- 3.24 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.
- 3.25 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.

Coral Monitoring

3.26 The monitoring equipments used for the coral monitoring could be referred to *Impact Coral Monitoring report.*

EQUIPMENT CALIBRATION

- 3.27 Calibration of the High Volume Sampler (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.
- 3.28 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.
- 3.29 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.
- 3.30 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.
- 3.31 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

3.32 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

- 3.33 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.
- 3.34 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

3.35 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 26th of the last month and the end day, the 25th of that month.

DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.36 According to the Yung Shue Wan Environmental Monitoring and Audit Manual, the air quality, construction noise, marine water quality and coral monitoring were established, namely Action and Limit levels are listed in *Tables 3-5* to *3-8* as below.

Action Level (µg/m³) Limit Level (µg/m³)						
Monitoring Station	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP		
AC02b	288	161	500	260		
AC04c	290	176	500	260		

Table 3-5Action and Limit Levels for Air Quality

	Table 3-6	Action and Limit Levels for Construction Noise
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Recommended Action & Limit Levels of Construction Noise					
Monitoring	toring Action Level Limit Level				
Location	0700-1900 hours on normal weekdays				
NC05 When one or more documented complaints are received		75 dB(A) *			

Note: * *Reduces to* 70*dB*(*A*) *for schools and* 65*dB*(*A*) *during the school examination periods.*

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

Devementer	Performance	Impact Station		
Parameter	Criteria	WY1	WY2	WY3
DO Concentration (Surface and Middle)	Action Level	3.63	3.53	3.61
(mg/L)	Limit Level	3.32	3.47	3.42
DO Concentration (Bottom)	Action Level	3.33	2.92	3.36
(mg/L)	Limit Level	3.23	2.63	3.14
Turbidity (Depth-Average)	Action Level	10.94	14.16	14.99
(NTU)	Limit Level	17.35	15.20	16.21



Devementar	Performance		Impact Station		
Parameter	Criteria	WY1	WY2	WY3	
Suspended Solids (Depth-Average)	Action Level	17.52	14.04	14.52	
(mg/L)	Limit Level	25.62	16.51	16.88	

Table 3-8 Action and Limit Levels for Coral Monitoring
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Step	Action
1	Commence tagged coral monitoring at the impact site. If no increase in sedimentation cover/bleaching/partial mortality is observed on the hard corals or partial mortality no the soft/black corals, no action is required. If an increase in sedimentation cover/bleaching/partial mortality is observed on the hard corals or partial mortality on the soft/black corals at one or more impact monitoring stations Step 3 should be enacted, if not, Step 2.
2	If non actions are triggered a formal report should be issued along with evidentiary photographs following completion of the survey. Meanwhile monitoring work and construction works should continue uninterrupted.
3	If during the impact monitoring a 15% increase in the percentage of sedimentation on the hard corals occurs at more than 20% of the tagged coral colonies at the Impact Monitoring Station that is not reported at the Control Monitoring Station, then the Action Level is exceeded (Step 4).
4	If the Action Level is exceeded the IC(E) should inform all parties. The data from the water quality monitoring should also be reviewed. If the water quality monitoring shows no attributable effects of the installation works, then the Action Level is not triggered. If the water quality data indicate exceedances (for SS and/or turbidity) the IC(E) should discus with the Contractor the most appropriate method of reducing suspended solids during construction (e.g. reduce rate of dredging). The water quality data reviewed should then be enacted on the next working day.
5	Monitoring should proceed the following day as per Step 1. If during the Impact Monitoring a 25% increase in the percentage of sedimentation on the hard corals at more than 20% of the tagged coral colonies at the Impact Monitoring Station that is not reported at the Control Monitoring Station, then the Limit Level is exceeded (Step 6). If the Limit Level is not exceeded Step 2 is enacted and work continues according to the mitigated method.
6	If the Limit Level is exceeded the Inspector Officer should inform all parties immediately. Should the Limit Level be exceeded, the Contractor should stop works immediately and work out a solution to the satisfaction of the IC(E), EPD and AFCD. The IC(E) should inform the Contractor to suspend marine construction works until an effective solution is identified. Once the solution has identified and agreed with all parties, backfilling works may re-commence.

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



4 IMPACT MONITORING RESULTS - AIR QUALITY

4.01 As informed by the Contractor, the construction of relevant land works at Yung Shue Wan was commenced on 14 September 2010. The impact EM&A programme was begun as compliance with the contract Particular Specification, Yung Shue Wan EM&A Manual and the EP. The impact monitoring schedule for the Reporting Period and next Reporting Period are presented in *Appendix G*.

<u>Result</u>

4.02 In this Reporting Period, the results for 24-hour and 1-hour TSP monitoring are tabulated in *Tables 4-1 and 4-2*. The 24-hour TSP monitoring data are shown in *Appendix H* and the graphical plots are shown in *Appendix I*.

	24-hour TSP	1-hour TSP (µg/m ³)					
Date	$(\mu g/m^3)$	Date	Start Time	1 st hour measured	2 nd hour measured	3 rd hour measured	
26-Aug-13	39	27-Aug-13	13:45	152	158	161	
31-Aug-13	24	2-Sep-13	11:12	104	93	111	
6-Sep-13	44	7-Sep-13	14:38	97	106	92	
12-Sep-13	138	11-Sep-13	9:46	89	102	87	
18-Sep-13	56	17-Sep-13	10:11	129	138	104	
24-Sep-13	71	24-Sep-13	14:55	107	112	97	
Average	62	Averag	ge	113			
(Range)	(24 - 138)	(Rang	e)		(87–161)		

Table 4-1Summary of 24-hour and 1-hour TSP Monitoring Results at AC02b

	24-hour		1-]	-hour TSP (μg/m ³)			
Date	TSP (µg/m ³)	Date	Start Time	1 st hour measured	2 nd hour measured	3 rd hour measured	
26-Aug-13	19	27-Aug-13	10:40	162	173	160	
31-Aug-13	55	2-Sep-13	8:55	131	155	149	
6-Sep-13	18	7-Sep-13	10:41	151	140	133	
12-Sep-13	156	11-Sep-13	13:12	117	108	102	
18-Sep-13	38	17-Sep-13	13:18	112	127	119	
24-Sep-13	114	24-Sep-13	11:48	148	159	179	
Average (Range)	67 (18 - 156)	Average (Range)			140 (102 - 179)		

4.03 As shown in *Tables 4-1 and 4-2*, the 1-hour and 24-hour TSP monitoring results fluctuated below the Action Level during this Reporting Period. No Notification of Exceedance (NOE) of air quality criteria or corrective action was therefore required.

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

Result

5.02 In this report period, **6** construction noise monitoring events were undertaken at designated location NC05. The results for $L_{eq(30min)}$ are tabulated in *Tables 5-1* and the graphical plots are shown in *Appendix I*.

Date	Start Time	End Time	${1^{st}} {set} \ {L_{eq5}}$	2 nd set L _{eq5}	3 rd set L _{eq5}	$\begin{array}{c} 4^{th} set \\ L_{eq5} \end{array}$	$5^{th} set \ L_{eq5}$	6 th set L _{eq5}	L _{eq30}	Corrected L _{eq30} *
27-Aug-13	11:22	11:52	60.5	62.4	60.8	64.7	62.9	58.8	62.1	65.1
2-Sep-13	9:12	9:42	53.0	51.2	53.8	48.5	52.8	56.6	53.3	56.3
7-Sep-13	14:50	15:20	61.7	59.2	53.8	61.4	55.5	58.0	59.1	62.1
11-Sep-13	13:16	13:46	47.6	49.4	46.0	49.0	48.8	47.2	48.2	51.2
17-Sep-13	13:22	13:52	56.3	54.9	57.2	57.1	55.9	54.3	56.1	59.1
24-Sep-13	11:45	12:15	59.2	59.5	57.4	51.4	55.5	56.0	57.2	60.2
Lim	Limit Level -			75 dB(A)						

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

5.03 It was noted that no noise complaint (which is an Action Level exceedance) was received. In view of the results shown in *Table 5-1*, all the values are well below 75dB(A), therefore, no Action or Limit Level exceedance was triggered during this Reporting Period.



6 IMPACT MONITORING RESULTS – WATER QULAITY

6.01 According to the EM&A Manual of Yung Shue Wan, water quality monitoring should be carried out during the course of marine work. As informed by the Contractor in June 2013, the marine works in Yung Shue Wan has been completed on 22 April 2013. Marine water quality monitoring was therefore terminated in July 2013 after consent was obtained with IEC. In this regards, an associated letter ref. TCS00512/10/300/L0656 dated 28 June 2013 has been issued to EPD for approval and no comment was received.



7 IMPACT MONITORING RESULTS – ECOLOGY MONITORING

7.01 According to the EM&A Manual of Yung Shue Wan, ecology monitoring should be carried out during the course of marine work. As informed by the Contractor in June 2013, the marine works in Yung Shue Wan has been completed on 22 April 2013. Ecology monitoring was therefore terminated in June 2013 after consent was obtained with IEC. In this regards, an associated letter ref. TCS00512/10/300/L0656 dated 28 June 2013 has been issued to EPD for approval and no comment was received.



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 *Tables 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 ³)	0	-
Reused in this Contract (Inert) ('000m ³)	0	-
Reused in other Projects (Inert) ($(000m^3)$)	0	-
Disposal as Public Fill (Inert) ('000m ³)	0.531	Tuen Mun Area 38

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

Type of Waste	Quantity	Disposal Location
Metals (kg)	0	-
Paper / Cardboard Packing (kg)	0	-
Plastics (kg)	0	-
Chemical Wastes (kg)	0	-
General Refuses (tonne)	6.330	Yung Shue Wan RTS

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



9 SITE INSPECTION

- 9.01 According to the Environmental Monitoring and Audit Manual, the environmental site inspection should been formulation 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 visit by RE, the Contractor and ET was carried out on 27 August and 2, 10, 17 and 25 September 2013.
- 9.02 The findings/ deficiencies that observed during the weekly site inspection are listed in *Table 9-1* and the relevant checklists are attached in *Appendix L*.

Date	Findings / Deficiencies	Follow-Up Status
27 August 2013	 No adverse environmental impacts were observed. 	N.A.
2 September 2013	• Oil leakage on the ground was observed at Yung Shue Wan pumping station	Oil leakage on the ground at Yung Shue Wan pumping station was cleared on 10 September 2013.
10 September 2013	• No adverse environmental impacts were observed.	N.A.
17 September 2013	• Waste packages were observed at Yung Shue Wan pumping station.	Waste packages were removed on 25 September 2013
25 September 2013	• Stagnant water was found at the drip tray, the contractor was reminded to clean up for mosquito breeding prevention.	Stagnant water was clear on 2 October 2013

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
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Depending Devied	Environmental Complaint Statistics				
Reporting Period	Frequency	Cumulative	Complaint Nature		
14 Sep – 30 September 2011	0	0	NA		
October – December 2011	0	0	NA		
January –December 2012	0	0	NA		
January - August 2013	0	0	NA		
September 2013	0	0	NA		

Table 10-2Statistical Summary of Environmental Summons

Departing Davied	Environmental Summons Statistics				
Reporting Period	Frequency	Cumulative	Complaint Nature		
14 Sep – 30 September 2011	0	0	NA		
October – December 2011	0	0	NA		
January –December 2012	0	0	NA		
January - August 2013	0	0	NA		
September 2013	0	0	NA		

Table 10-3 Statistical Summary of Environmental Prosecution

Departing Davied	Environmental Prosecution Statistics					
Reporting Period	Frequency	Cumulative	Complaint Nature			
14 Sep – 30 September 2011	0	0	NA			
October – December 2011	0	0	NA			
January –December 2012	0	0	NA			
January - August 2013	0	0	NA			
September 2013	0	0	NA			



11 IMPLEMENTATION STATUS OF MITIGATION MEASURES

11.01 The environmental mitigation measures that recommended in the Yung Shue Wan Environmental Monitoring and Audit Manual covered the issues of dust, noise, water and waste and they are summarized as following:

Dust Mitigation Measure

- 11.02 Installation of 2m high solid fences around the construction site of Pumping Station P2 is recommended. Implementation of the requirements stipulated in the Air Pollution Control (Construction Dust) Regulation and the following good site practices are recommended to control dust emission from the site:
 - Stockpiles of imported material kept on site should be contained within hoardings, dampened and / or covered during dry and windy weather;
 - Material stockpiled alongside trenches should be covered with tarpaulins whenever works are close to village houses;
 - Water sprays should be used during the delivery and handling of cement, sands, aggregates and the like.
 - Any vehicle used for moving sands, aggregates and construction waste shall have properly fitting side and tail boards. Materials should not be loaded to a level higher than the side and tail boards, and should be covered by a clean tarpaulin.

Noise Mitigation Measure

- 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 55m³/hr;
 - Deployment of 2-layer silt curtains with first layer enclosing the grab and the second layer at around 50, from the dredging area while dredging works are in progress;
 - all vessels should be sized such that adequate clearance (i.e. minimum clearance of 0.6m) is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;
 - all pipe leakages should be repaired promptly and plant shall not be operated with leaking pipes;
 - excess material should be cleaned from the decks and exposed fittings of barges before the vessel is moved;
 - adequate freeboard (i.e. minimum of 200m) should be maintained on barges to ensure that decks are not washed by wave action;
 - all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material;
 - 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

- 11.20 The following general good practice measures should be adopted to mitigate ecological impacts during marine works (including dredging and HOD);
 - Excess material from vessel loading should be cleaned from the decks and exposed fittings before vessels are moved to the backfilling location;
 - Dredging should cause no foam, oil, grease, scum, litter or other objectionable matter to be present on the water;
 - Adequate freeboard should be maintained to ensure that decks are not washed by wave action;

- All pie leakages should be repaired promptly and plant Should not be operated with leaking pipes; and
- All banges and other vessels should maintain adequate clearance between vessels and the seabed at all stats of the tide and reduce operational speeds to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.
- 11.21 In the event of exceedances of ecological action or limit level, the Contractor will be required to revise his operations as a further mitigation measure. Revisions to the operation method may include (but not be limited to):
 - Reduction in dredging rate'
 - Restriction of dredging in particular areas to specific periods in the tidal cycle
- 11.22 Should repeated non-compliances with limit level(s) occur the Contractor shall modify his working method until he is able to achieve the required compliances with the limit levels to the satisfaction of the IC(E)

Fisheries Mitigation Measure

11.23 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

- 11.24 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;
 - 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
- 11.25 The implementation schedule of mitigation measures is presented in *Appendix M*.
- 11.26 Leader had been implementing the required environmental mitigation measures according to the Yung Shue 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 Quality	 Drainage channels were provided to convey run-off into the treatment facilities; and Drainage systems were regularly and adequately maintained.
Air Quality	 Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet; Public roads around the site entrance/exit had been kept clean and free from dust; and Tarpaulin covering of any dusty materials on a vehicle leaving the site.

 Table 11-1
 Environmental Mitigation Measures



Issues	Environmental Mitigation Measures
Noise	• Good site practices to limit noise emissions at the sources;
	• Use of quite plant and working methods;
	• Use of site hoarding or other mass materials as noise barrier to screen noise at
	ground level of NSRs; and
	• To minimize plant number use at the worksite.
Waste and	• Excavated material should be reused on site as far as possible to minimize off-site
$C1 \cdot 1$	disposal Scrap metals or abandoned equipment should be recycled if possible:
Management	• Waste arising should be kept to a minimum and be handled, transported and disposed arising should be kept to a minimum and be handled.
wianagement	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 **37**th Monthly EM&A Report covering the construction period from **26** August to **25** September 2013.
- 13.02 No 1-hour and 24-hour TSP result was found to be triggered the Action or Limit Level in this Reporting Period.
- 13.03 No noise complaint (an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this Reporting Period.
- 13.04 According to the construction information provided by the Contractor, the marine works in Yung Shue Wan has been completed on 22 April 2013. As agreed by the Contractor, IEC and RE, the ecology was ceased in May 2013 due to no ecological impact and concern since the completion of marine work, whereas impact marine water quality monitoring was terminated in July 2013.
- 13.05 No documented complaint, notification of summons or successful prosecution was received.
- 13.06 In this Reporting Period, joint-site visit by RE, the Contractor and ET was carried out on 27 August and 2, 10, 17 and 25 September 2013. The environmental performance of the Project was considered as satisfactory.
- 13.07 No site inspection was undertaken by external parties i.e. Environmental Protection Department (EPD) or Agriculture, Fisheries and Conservation Department (AFCD) within the Reporting Period.

RECOMMENDATIONS

- 13.08 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.
- 13.09 Nevertheless, the Contractor shall keep paying attention on the potential water impact as the construction site is adjacent to the coastline. Muddy water and other water quality pollutants via site surface water runoff into the sea body within Fish culture zone at Picnic Bay and the Secondary recreation contact subzone at Mo Tat Wan should be avoided. Therefore, mitigation measures for water quality should be fully implemented.

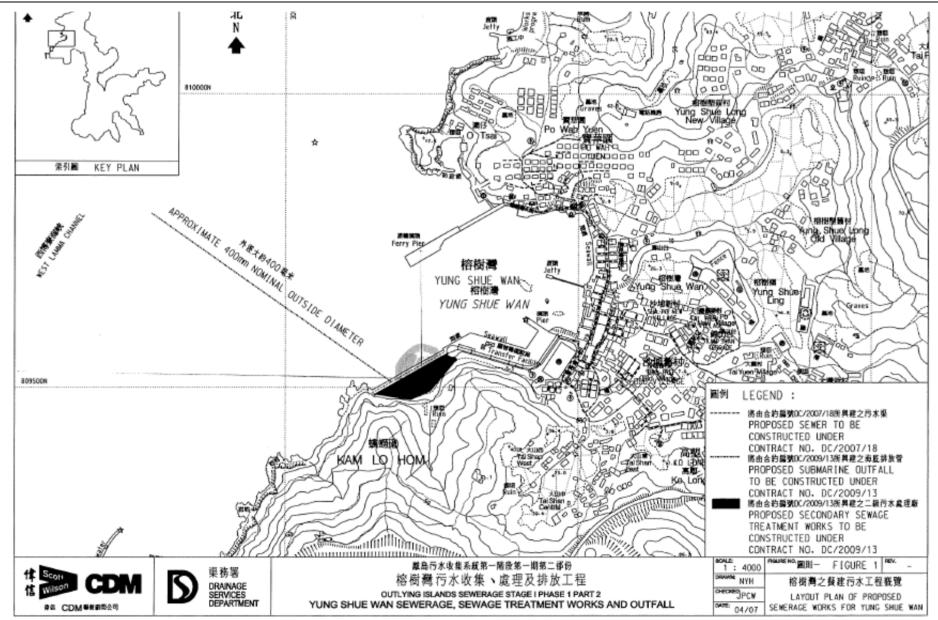


Appendix A

Site Layout Plan – Yung Shue Wan Portion Area

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







Appendix B

Organization Structure and Contact Details of Relevant Parties



Contact Details of Key Personnel

AUES

Legend:

DSD (Employer) – Drainage Services Department

CDM (Engineer) – Scott Wilson 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 Pe Duration Co		Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	MAY JUN	2013 JUL	AUG	SEP	ост
Project Key D	Date											002	Aud		001
KD0010	Receive Letter of Acceptance	0	100		05/05/10 A		05/05/10 A			KD0125					
KD0020	Project Commencement Date	0	100		17/05/10 A		17/05/10 A			E&M0010, E&M0070, E&M1001, E&M2001, KD0125, PRE0020, PRE0040, PRE0050, PRE0060, PRE0090, PRE0100, PRE0130, SKW0250, SKW0588, SKW0651, SKW0881, SKW1131, SKW1481, SKW1591, SKW1611, YSW0020, YSW0250, YSW0075, YSW0180, YSW0200, YSW0220, YSW0240, YSW02401, YSW0412, YSW0422					
KD0030	Section W1 - Slope Works in Portion A & C	0	100		14/10/11 A		14/10/11 A		YSW0100, YSW0110, YSW0140,	KD0125, KD0130, YSW01755					
KD0040	Section W2 - YSW STW & Submarine Outfall (1370d)	0	0		16/06/14 *		16/06/14 *	0 *	E&M0700, YSW0400, YSW0800, YSW0925, YSW16704, YSW1700	KD0125, KD0132					
KD0050	Section W3 - Footpath Diversion in Ptn G	0	0		30/08/13 *		24/03/11 *	-890d *	SKW0481	KD0125			† 种	Section W3 - Fo	otpath Diversion
KD0060	Section W4 - Slope Works in Portios H & I	0	0		30/08/13 *		27/03/12 *	-521d *	SKW05938, SKW059416	KD0125, KD0135, SKW05941				Section W4 - Slo	
KD0070	Section W5 - P.S. No. 1 in Portion D	0	0		30/08/13 *		10/02/12 *		SKW0741	KD0125			· · · · · · · · ·	Section W5 - P.S	
KD0080	Section W6 - Sewer & PS No2 in Ptn. E & F	0	0		30/08/13 *		10/02/12 *		SKW0971	KD0125				Section W6 - Se	
KD0090	Section W7 - SKW STW, RM & Sm. Outfall	0	0		07/10/14 *		07/10/14 *		E&M3360, SKW1221, SKW1291, SKW1431, SKW1441, SKW1521,	KD0125, KD0165, SKW0491					
KD0100	Section W8 - Landscape Softworks	0	0		30/08/13 *		05/04/13 *	-	SKW1611, SKW1621					Section W8 - La	ndscape Softwo
KD0110 KD0125	Section W9 - Establishment Works Project Completion	0	0		03/04/14 * 12/09/15 *		03/04/14 * 12/09/15 *	-	SKW1631 KD0010, KD0020, KD0030, KD0040, KD0050, KD0060, KD0070, KD0080,	KD0125					
KD0130	Completion of Maintenance Period of W1	1	0 31/	/08/13	31/08/13 *	13/10/12	13/10/12 *	-322d	KD0090, KD0110, SKW0541 KD0030, YSW01755, YSW01805, YSW01810					Completion of Ma	aintenance Peric
KD0132	Completion of Maintenance Period of W2	1	0 15/	5/06/15	15/06/15 *	15/06/15	15/06/15 *	0	E&M0730, KD0040						
KD0135	Completion of Maintenance Period of W2	1			31/08/13 *	27/03/13	27/03/13 *	-	KD0060, SKW05947, SKW1581				· ►	Completion of Ma	aintenance Peric
KD0145	Completion of Maintenance Period of W5	1	0 31/	/08/13	31/08/13 *	10/02/13	10/02/13 *	-202d						Completion of Ma	aintenance Peric
KD0155	Completion of Maintenance Period of W6	1			31/08/13 *	10/02/13	10/02/13 *		E&M2130, E&M2180, SKW0961,					Completion of Ma	
KD0165	Completion of Maintenance period of W7	1	0 06/		06/10/15 *	06/10/15	06/10/15 *	0 *	KD0090, SKW0595, SKW05972, SKW0861						ri- !!
Preliminary (0	Ċivil)	l l				L	1								
PRE0020	Pre-condition Survey	60	100 17/	7/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020						
PRE0040	Erection of Engineer's Site Accommodation at YSW	60	100 17/	7/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A		KD0020						
PRE0050	Taking over the Secondary Engineer's Site Accomm	75				17/05/10 A	30/07/10 A		KD0020						
PRE0060	Application of Consent from Marine Department	60				17/05/10 A			KD0020						
PRE0090	Working Group Meeting for Outfall Construction	120					13/09/10 A		KD0020	SKW1151					
PRE0100	Application & Consent of XP from HyD (Mo Tat Rd)	120				17/05/10 A			KD0020	SKW1491, SKW1501					11 11 11
PRE0130	Setup Web-site for EM&A Reporting	90	100	/05/10 A	14/08/10 A	17/05/10 A	14/08/10 A		KD0020						
Preliminary (E															
E&M1120	Hydraulic Test of Pipeworks	7	70 09/	9/05/13 A	08/10/13	09/05/13 A	29/04/14	202d	E&M1110	E&M11800					Hydraulic T
	n of SKWSTW & YSWSTW		70 03/	, 03/10/X	00/10/10	03/03/10/1	23/04/14	2020							
E&M0010	Submission	38	100 17/	7/05/10 A	23/06/10 A	17/05/10 A	23/06/10 A		KD0020	E&M0020, E&M0040, E&M0235					
E&M0020	Vetting and Comment by ER	21				24/06/10 A			E&M0010	E&M0030, E&M0040					ii ii
E&M0030	Revision and Resubmission	125	100 15/	5/07/10 A	16/11/10 A	15/07/10 A	16/11/10 A		E&M0020	E&M0080					
E&M0080	Approval from the Engineer	14	100 17/	7/11/10 A	30/11/10 A	17/11/10 A	30/11/10 A		E&M0030	E&M0295					
Hydraulic Desig	-														
E&M0040	Submission	21				15/07/10 A			E&M0010, E&M0020	E&M0050, E&M0101, E&M0240, E&M0260,					
E&M0050 E&M0060	Vetting and Comment by ER Revision and Resubmission	97				05/08/10 A 19/08/10 A			E&M0040 E&M0050	E&M0060 E&M0430					
E&M0430	Approval from the Engineer					24/11/10 A			E&M0050	E&M0295					
	pmission & Approval	· · · ·	100										11111111		11 11 11
E&M0070	Submission of Membrane Module	50	100 17/	7/05/10 A	05/07/10 A	17/05/10 A	05/07/10 A		KD0020	E&M0090				11 I 11 I 11 I	
E&M0090	Vetting and Comment by ER	14				06/07/10 A			E&M0070	E&M0100					
E&M0100	Revision and Resubmission	14				20/07/10 A			E&M0090	E&M0160					
E&M0101	Submission of Equipment	90	100 05/	5/08/10 A	30/11/11 A	05/08/10 A	30/11/11 A		E&M0040	E&M0102					
Finish date Data date Run date	05/05/10 Early bar 15/06/17 Progress bar 31/08/13 Critical bar 23/09/13 Progress point 1A Critical point			Co		Со	ntract No	. DC/2	g Corp. Ltd. 009/13 : Works at YSW & SKW	,	Date 31/08/13	Revis Revision 0	ion	Checked RH	Approved VC

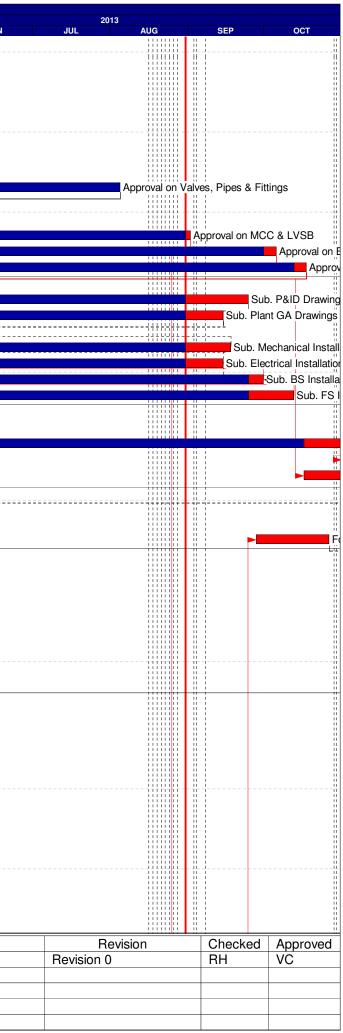
 Summary bar
 Progress point
 Critical point
 Summary point
 Start milestone point
 Finish milestone point Page number 1A c Primavera Systems, Inc.

Contract No. DC/2009/13 Construction of Sewage Treatment Works at YSW & SKW 3-month Rolling Programme (Sept 2013 - Nov 2013

Revision	Checked	Approved
Revision 0	RH	VC

	Activity ID	Description		Percent Early Complete Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	
	E&M0102	Vetting and Comment by ER	60		30/11/11 A		30/11/11 A	Tioat	E&M0101	E&M0103	MAY JUN
	E&M0103	Revision and Resubmission	60		30/11/11 A		30/11/11 A		E&M0102	E&M0110, E&M0120, E&M0130, E&M0140,	
	E&M0110	Approval on Coarse Screens	30		25/05/11 A		25/05/11 A		E&M0103	E&M0390	-
	E&M0120	Approval on Fine Screens	30		12/09/11 A				E&M0103	E&M0400, E&M3060	-
	E&M0130	Approval on Pumps	30		23/06/11 A				E&M0103	E&M0410, E&M3070	-
									E&M0103	E&M0420, E&M3080	-
	E&M0140	Approval on Submersible Mixers	30		23/03/11 A		23/03/11 A				
	E&M0150	Approval on Grit Removal Equipment	30		10/10/11 A				E&M0103	E&M0380, E&M3030	-
	E&M0160	Approval on MBR Membrane Modules (M.M.)	105		24/02/11 A		24/02/11 A		E&M0100	E&M0360, E&M0370, E&M3010	-
	E&M0170	Approval on Sludge Dewatering Equipment	30		01/09/11 A		01/09/11 A		E&M0103	E&M0440, E&M3090 E&M0450, E&M3100	_
	E&M0180	Approval on Valves, Pipes & Fittings	30		04/08/13 A		04/08/13 A		E&M0103	,	-
	E&M0190	Approval on Penstocks	30		15/11/11 A				E&M0103 E&M0103	E&M0460, E&M3110	
	E&M0200	Approval on Instrumentation	30		08/03/12 A		08/03/12 A	704 1		E&M0470, E&M3130	_
	E&M0210	Approval on MCC & LVSB	30		01/09/13	19/11/11 A			E&M0103	E&M0480, E&M3140	
	E&M0220	Approval on BS Equipment	30		05/10/13	30/11/11 A	10/05/12		E&M0103, E&M0280 E&M0103, E&M0290	E&M0490, E&M3150	_
	E&M0230	Approval on FS Equipment	30	85 30/11/11 A	17/10/13	30/11/11 A	20/11/11	-697d	E&M0103, E&M0290	E&M0295, E&M0320, E&M0500, E&M3160	
		nission & Approval					00/10/11	007.1	Falloato	FaM0050	-
	E&M0235	Sub. P&ID Drawings	100		24/09/13	24/06/10 A			E&M0010	E&M0250	-
	E&M0240	Sub. Plant GA Drawings	45		14/09/13	04/08/10 A		-686d	E&M0040	E&M0250, E&M0280, E&M0290	
	E&M0250	Sub. Builder's Works Requirements Drawings	15		31/01/13 A		31/01/13 A		E&M0235, E&M0240, E&M0260,	E&M0280, E&M0290	
	E&M0260	Sub. Mechanical Installation Drawings	60		17/09/13	27/09/10 A			E&M0040	E&M0250	-
	E&M0270	Sub. Electrical Installation Drawings	60		14/09/13	27/09/10 A			E&M0040	E&M0250, E&M0280	
	E&M0280	Sub. BS Installation Drawings	120		30/09/13	27/09/10 A	06/05/12		E&M0240, E&M0250, E&M0270	E&M0220	
	E&M0290	Sub. FS Installation Drawings	120	85 13/11/11 A	12/10/13	13/11/11 A	15/11/11	-697d	E&M0240, E&M0250	E&M0230	
	Statutory Submi	ission	1	I I	1				T	I	-
	E&M0295	Preparation of Submission to HEC	39		30/11/11 A	01/11/11 A	30/11/11 A		E&M0080, E&M0230, E&M0430	E&M0300	-
	E&M0300	Application & Approval from HEC	150	90 01/11/11 A	01/11/13	01/11/11 A	22/11/12		E&M0295	E&M0305	
	E&M0305	Provision of Cables to the STWs	180	0 01/11/13	30/04/14	22/11/12	21/05/13		E&M0300	E&M0680	-
	E&M0320	Form 314 Submission to FSD	14	0 17/10/13	31/10/13	07/05/13	21/05/13	-163d	E&M0230	E&M0325, E&M0670	_
	E&M0325	Submission to WSD	14	100 01/11/11 A	29/02/12 A	01/11/11 A	29/02/12 A		E&M0320	E&M0670, E&M0680	
	E&M0330	Form 501 Submission to FSD (YSW)	28	0 12/07/15	09/08/15	14/11/13	11/12/13		E&M0500	E&M0700	
	E&M0340	Form 501 Submission to FSD (SKW)	28	0 06/04/14	04/05/14	11/06/14	08/07/14		E&M3160	E&M3360	_
	E&M0350	Form 501 Submission to FSD (PS1 & PS2)	28	0 28/09/13	26/10/13	14/11/12	11/12/12	-319d	E&M2016	E&M11800, E&M2180	
١	Yung Shue W	/an									
	Preliminary										
	YSW0020	Approval of Environmental Team	16	100 17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A		KD0020	YSW00201, YSW0030, YSW00351,	
	YSW00201	Change Baseline Monitoring Location (Air&Noise)	59	100 02/06/10 A	30/07/10 A	02/06/10 A	30/07/10 A		YSW0020	YSW0030	
	YSW0030	Baseline monitoring (Air & Noise)	23	100 31/07/10 A	22/08/10 A	31/07/10 A	22/08/10 A		YSW0020, YSW00201	YSW0035	
	YSW0035	Baseline Monitoring Report Submission (A & N)	16	100 23/08/10 A	07/09/10 A	23/08/10 A	07/09/10 A		YSW0030	YSW0120, YSW01545, YSW0500,	
	YSW00351	Submission & Approval for Monitoring Method (W)	58	100 02/06/10 A	29/07/10 A	02/06/10 A	29/07/10 A		YSW0020	YSW0040	
	YSW0040	Baseline monitoring (Water)	155	100 30/07/10 A	31/12/10 A	30/07/10 A	31/12/10 A		YSW0020, YSW00351	YSW0350	
	YSW0050	Erect Hoarding and Fencing	60	100 19/05/10 A	17/07/10 A	19/05/10 A	17/07/10 A		KD0020	YSW0155	
		ope Works in Portion A & C									
	YSW0075	Mobilization	30		15/06/10 A	17/05/10 A	15/06/10 A		KD0020	YSW0080, YSW0100	
	YSW0080	Site Clearance	30		15/07/10 A	16/06/10 A	15/07/10 A		YSW0075	YSW0085, YSW0090, YSW0120	
	YSW0085	Initial Survey	14		15/07/10 A	02/07/10 A	15/07/10 A		YSW0080	YSW0120	
	YSW0090	Verify the Rock Boulder required Stablization Wk	249		21/03/11 A	16/07/10 A	21/03/11 A		YSW0080	YSW0100, YSW0110	
	YSW0100	Removal of Rock Boulder	257	100 20/09/10 A	03/06/11 A	20/09/10 A	03/06/11 A		YSW0075, YSW0090	KD0030	
	YSW0110	Stablizing work for rock boulder	35	100 16/07/11 A	19/08/11 A	16/07/11 A	19/08/11 A		YSW0090	KD0030	
	YSW0120	Cut the slope to design profile	2	100 24/09/10 A	25/09/10 A	24/09/10 A	25/09/10 A		YSW0035, YSW0080, YSW0085	YSW0131, YSW0155, YSW0170	
	YSW0131	Mobilization of Plant and Material of Soil Nails	14	100 12/09/10 A	25/09/10 A	12/09/10 A	25/09/10 A		YSW0120	YSW0132	
	YSW0132	Erect Scaffold and Working Platform	2	100 26/09/10 A	27/09/10 A	26/09/10 A	27/09/10 A		YSW0131	YSW0133	
	YSW0133	Setting out and Verify Locations of Soil Nails	45	100 28/09/10 A	11/11/10 A	28/09/10 A	11/11/10 A		YSW0132	YSW0134	
	YSW0134	Drilling and Soil Nails Installation	43	100 19/10/10 A	30/11/10 A	19/10/10 A	30/11/10 A		YSW0133	YSW0135	
	YSW0135	Construction of Nail Heads	12	100 01/12/10 A	12/12/10 A	01/12/10 A	12/12/10 A		YSW0134	YSW0136	
	YSW0136	Mesh Installation on Cut Slope	3	100 13/12/10 A	15/12/10 A	13/12/10 A	15/12/10 A		YSW0135	YSW01361	
	YSW01361	Verify alignment of access & channels on slope	118	100 16/12/10 A	12/04/11 A	16/12/10 A	12/04/11 A		YSW0136	YSW0140	
5	Start date	05/05/10 Early bar									Date
		15/06/17 Progress bar Critical bar				Leader (Civil Enai	neerin	g Corp. Ltd.		31/08/13
		31/08/13 —— Summary bar					ntract No				
		23/09/13 ▲ Progress point ▼ Critical point		С	onstructi				t Works at YSW & SKW		
F	Page number	ZA Summary point		-					ept 2013 - Nov 2013		
		Systems Inc 🔶 Start milestone point					-	•			

c Primavera Systems, Inc.

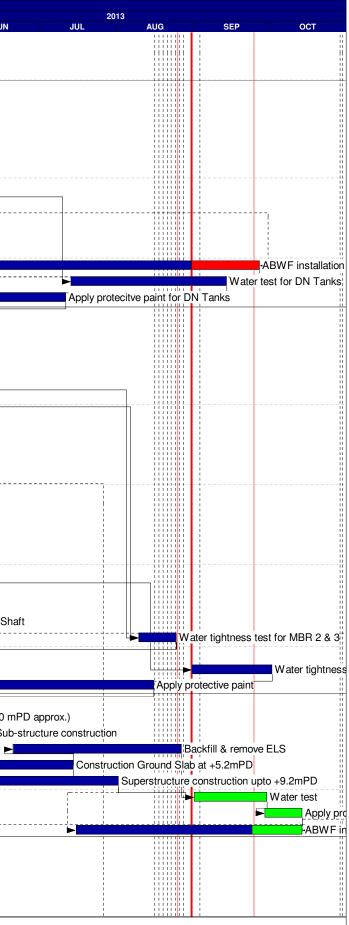


Activity ID	Description		Percent Early Complete Start	Early Finish	Late Start	Late Finish	Total Predecessors	Successors		2013			
YSW0140	Construct U-channels & Step Channel on Cut Slope	182		11/10/11 A		11/10/11 A	YSW01361	KD0030	MAY JUN	JUL	AUG	SEP	OCT
YSW0153	Removal of Ex U-Channel where clash with B. Wall	152		07/10/11 A		07/10/11 A	YSW01545	YSW01750			J I I I I I I I I I I I I I I I I I		
YSW01545	Temporary Diversion of Drainage	244		09/05/11 A	08/09/10 A	09/05/11 A	YSW0035	YSW0153					11
YSW0155	RC Barrier Wall Bay 1-13 (below Ground Level)	256		08/06/11 A		08/06/11 A	YSW0050, YSW0120	KD0030, YSW0170, YSW0175, YSW01750					
YSW0170	RC Barrier Wall Bay 1-13 (above Ground Level)	125		11/10/11 A	09/06/11 A	11/10/11 A	YSW0120, YSW0155	KD0030					
YSW0175	Construct U-channels and Catchpits (Phase 1)	76		23/08/11 A	09/06/11 A	23/08/11 A	YSW0155	KD0030					
YSW01750	Construction of subsoil drain (phase 1)	7	100 12/10/11 A	08/02/12 A	12/10/11 A	08/02/12 A	YSW0153, YSW0155	KD0030					
YSW01755	Construct subsoil drain (phase 2)	14	100 06/12/12 A	31/12/12 A	06/12/12 A	31/12/12 A	KD0030, YSW01800	KD0130					
YSW01800	RC Barrier Wall Bay 14 (below & above Ground)	87	100 03/09/12 A	28/11/12 A	03/09/12 A	28/11/12 A	YSW0760	YSW01755, YSW01810					
YSW01805	Hydroseeding	14	100 02/03/13 A	02/03/13 A	02/03/13 A	02/03/13 A	YSW01810	KD0130			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
YSW01810	Construct U-channels and Catchpits (Phase 2)	30	100 29/11/12 A	22/12/12 A	29/11/12 A	22/12/12 A	YSW01800	KD0130, YSW01805					
Section W2 - Y	SW STW & Submarine Outfall												
Civil & Structu	ral Work		1	1	1	1	1 1						
YSW0412	Mobilization	30		15/06/10 A		15/06/10 A	KD0020	YSW0422					
YSW0422	Site Clearance	30	100 17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A	KD0020, YSW0412	YSW0432, YSW0500, YSW0610,					
YSW0432	Initial Survey	14	100 02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A	YSW0422	YSW0510					
YSW STW -						1							
YSW0500	ELS & Excavation for Inlet Pumping Station	105		21/12/10 A	08/09/10 A		YSW0035, YSW0422	YSW0510					
YSW0510	Sub-structure construction (Inlet Pumping Stn)	129		29/04/11 A	22/12/10 A	29/04/11 A	YSW0432, YSW0500	YSW0520					
YSW0520	Backfill & Remove ELS (Inlet Pumping Stn)	40		08/06/11 A	30/04/11 A	08/06/11 A	YSW0510	YSW05701					
YSW0530	ELS & Excavation for Equalization Tank	159		08/06/11 A	01/01/11 A	08/06/11 A	YSW0660 YSW0530	YSW0540, YSW05701 YSW0550, YSW05901					
YSW0540 YSW0550	Sub-structure construction (Equalization Tank) Backfilling & Remove ELS (Equalization Tank)	112		28/09/11 A	09/06/11 A	28/09/11 A 18/10/11 A	YSW0530 YSW0540	YSW0550, YSW05901 YSW05901			·		
YSW0550 YSW05701	ELS & Excavation for Grit Chambers	20		18/10/11 A 06/07/11 A	29/09/11 A 09/06/11 A	06/07/11 A	YSW0520, YSW0530	YSW05901 YSW05711, YSW05731					
YSW05711	Construct sub-structure for Grit Chambers	106		20/10/11 A	07/07/11 A		YSW05701	YSW05721, YSW05911					
YSW05721	Backfill & Remove ELS for Grit Chambers	100			21/10/11 A		YSW05711	YSW05911					
YSW05731	ELS & Excavation for Grease Separators (GS)	34		09/08/11 A	07/07/11 A		YSW05701	YSW05741					
YSW05741	Construct sub-structure for Grease Separators	52		30/09/11 A	10/08/11 A		YSW05731	YSW05751			·		
YSW05751	Install Dia 400 Puddles in Grease Separators	27		27/10/11 A	01/10/11 A	27/10/11 A	YSW05741	YSW05752					11
YSW05752	Construct sub-structure for GS (above puddles)	48	100 28/10/11 A	14/12/11 A	28/10/11 A	14/12/11 A	YSW05751	YSW05761					
YSW05761	Backfill & remove ELS for Grease Separators	10	100 15/12/11 A	24/12/11 A	15/12/11 A	24/12/11 A	YSW05752	YSW0580, YSW05921					
YSW0580	Excavate to Formation for Deodorizer Room	10	100 25/12/11 A	03/01/12 A	25/12/11 A	03/01/12 A	YSW05761	YSW05801, YSW05922					
YSW05801	Excavate to formation - Grid J-N/5-7	40	100 04/01/12 A	12/02/12 A	04/01/12 A	12/02/12 A	YSW0580	YSW05802, YSW05923			·		
YSW05802	Excavate to formation - Grid GA-H/5-7	10		22/02/12 A		22/02/12 A	YSW05801	YSW05924					
YSW05901	G/F to 1/F Construction Grid GA-K/1-5	90	100	27/12/11 A	29/09/11 A	27/12/11 A	YSW0540, YSW0550	YSW06001					
YSW05911	G/F to 1/F Construction Grid N-S/1-5	80		08/01/12 A	21/10/11 A	08/01/12 A	YSW05711, YSW05721	YSW06011, YSW06035					
YSW05921	G/F to 1/F Construction Grid K-N/1-5	45		07/02/12 A	25/12/11 A		YSW05761	YSW06021			·		
YSW05922	G/F to 1/F Construction for Deodorizer Room	80			04/01/12 A		YSW0580	YSW06022					
YSW05923	G/F to 1/F Construction for Grid J-N/5-7	60		12/04/12 A		12/04/12 A	YSW05801	E&M0530, E&M0540, E&M0550, E&M0560,					11 11 11
YSW05924	G/F to 1/F Construction for Grid GA-H/5-7	50			28/05/12 A	16/07/12 A	YSW05802, YSW06023	YSW06034					
YSW06001	1/F to Roof Constuction for Grid GA-K/1-5	87				23/03/12 A	YSW05901	YSW0800					
YSW06011	1/F to Roof Constuction for Grid N-S/1-5	75 44		23/03/12 A	09/01/12 A	23/03/12 A	YSW05911 YSW05921	YSW0800 YSW07201			·		
YSW06021 YSW06022	1/F to Roof Constuction for Grid K-N/1-5 1/F to Roof Constuction for Deodorizer Room	60	100	22/03/12 A 22/05/12 A	08/02/12 A 24/03/12 A	22/03/12 A 22/05/12 A	YSW05921 YSW05922	YSW07201 YSW0800					
YSW06022 YSW06023	1/F to Roof Constuction for Deodonzer Room	45		22/05/12 A 27/05/12 A	24/03/12 A 13/04/12 A	22/05/12 A 27/05/12 A	YSW05922	E&M0580, YSW05924					
YSW06023	1/F to Roof Constuction for Grid GA-H/5-7	28		13/08/12 A	27/07/12 A	13/08/12 A	YSW05924	YSW0800					
YSW06035	Construct buffle walls in Grease Separators	90		16/07/12 A	18/04/12 A	16/07/12 A	YSW05911	YSW07204					
YSW07201	Water tightness test for Inlet Pumping Station	60		21/05/12 A	23/03/12 A	21/05/12 A	YSW06021	YSW07202, YSW0800			·		
YSW07201	Water tightness test for Equalization Tanks	42		02/07/12 A	22/05/12 A	02/07/12 A	YSW07201	E&M0600, YSW07203, YSW0800					
YSW07203	Water tightness test for Grit Chambers	42		29/09/12 A	17/09/12 A	29/09/12 A	YSW07202	YSW07204, YSW0800					
YSW07204	Water tightness test for Grease Separators	32		31/10/12 A	03/10/12 A		YSW06035, YSW07203	E&M0570, YSW07205, YSW0800					
YSW07205	Water tightness test for water channels	21		23/09/13 A		23/09/13 A	YSW07204	YSW0800				Wa	ter tightness test
YSW0800	ABWF installation	271		07/09/13	03/07/12 A		282d YSW06001, YSW06011, YSW06022,	KD0040				ABWF insta	· · · · · · · · · · · · · · · · · · ·
YSW STW -	GLT-X		· · ·	·			· · ·	·					11 11 11
YSW0610	Excavate to formation	10	100 08/09/10 A	17/09/10 A	08/09/10 A	17/09/10 A	YSW0035, YSW0422	YSW0620					
YSW0620	Base slab construction	248	100 18/09/10 A	23/05/11 A	18/09/10 A	23/05/11 A	YSW0610	YSW0630					
Start date	05/05/10 Early bar								Date	Revisi	on	Checked	Approved
Finish date	15/06/17 Progress bar Critical bar						neering Corp. Ltd.		31/08/13	Revision 0		RH	VC
Data date	31/08/13 —— Summary bar				Со	ntract No	. DC/2009/13						
Run date Page number	23/09/13 Progress point 3A Critical point		C				atment Works at YSW & SKW						
c Primavera	V Summary point			3-month	Rolling	Program	me (Sept 2013 - Nov 2013						
	Finish milestone point												

Activity ID	Description		Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	MAY JUN
YSW0630	G/F to 1/F construction	205	100	24/05/11 A	14/12/11 A	24/05/11 A	14/12/11 A		YSW0620	YSW0640	
YSW0640	1/F to Roof Construction	64	100	15/12/11 A	16/02/12 A	15/12/11 A	16/02/12 A		YSW0630	YSW0810	
YSW0810	ABWF installation	80	100	28/12/11 A	16/03/12 A	28/12/11 A	16/03/12 A		YSW0640	E&M0610, E&M0620, E&M0630, E&M0640	
YSW STW - 0	GL F - H & DN Tanks										
YSW0650	ELS & Excavation for DN Tanks	37	100	08/09/10 A	14/10/10 A	08/09/10 A	14/10/10 A		YSW0035, YSW0422	YSW0660	
YSW0660	Sub-struction construction (DN Tanks)	78	100	15/10/10 A	31/12/10 A	15/10/10 A	31/12/10 A		YSW0650	YSW0530, YSW0670	
YSW0670	Backfill & Remove ELS (DN Tanks)	70	100	01/01/11 A	11/03/11 A	01/01/11 A	11/03/11 A		YSW0660	YSW0680	
YSW0680	Base slab construction (SD1, SD2 & MBR4)	17	100	12/03/11 A	28/03/11 A	12/03/11 A	28/03/11 A		YSW0670	YSW0690	
YSW0690	Construct Superstructure SD1, SD2 & MBR4	82	100	29/03/11 A	18/06/11 A	29/03/11 A	18/06/11 A		YSW0680	YSW0710, YSW0820	
YSW06901	Construct Superstructure of DN Tanks	28	100	15/05/12 A	11/06/12 A	15/05/12 A	11/06/12 A		YSW0735	YSW0830	
YSW0705	Water test for MBR 4	47	100	01/10/12 A	16/11/12 A	01/10/12 A	16/11/12 A		YSW0710	E&M0510, E&M0640, YSW07055,	-
YSW07055	Water test for SD1 & SD2	54	100	17/11/12 A	10/01/13 A	17/11/12 A	10/01/13 A		YSW0705, YSW07105	E&M0610	
YSW0710	Apply protective paint for MBR 4	7	100	24/09/12 A	30/09/12 A	24/09/12 A	30/09/12 A		YSW0690	YSW0705, YSW07105	
YSW07105	Apply protective paint for SD1 & SD2	7	100	01/10/12 A	07/10/12 A	01/10/12 A	07/10/12 A		YSW0710	YSW07055	
YSW0820	ABWF installation	90	70	15/01/13 A	26/09/13	15/01/13 A	15/04/13	-164d	YSW0690, YSW0705	E&M0630, E&M0640	
YSW0830	Water test for DN Tanks	28	100	14/07/13 A	13/09/13 A	14/07/13 A	13/09/13 A		YSW06901	YSW0850	
YSW0850	Apply protecitve paint for DN Tanks	6	100	27/04/13 A	11/07/13 A	27/04/13 A	11/07/13 A		YSW0830	E&M0610	
YSW STW - 0	GLA-F							<u> </u>			
YSW0730	Completion of HDD	0	100	21/01/12 A		21/01/12 A			YSW03601, YSW03605	YSW0732	
YSW0732	Excavate for MBR 2 & 3	20		21/01/12 A	09/02/12 A	21/01/12 A	09/02/12 A		YSW0730	YSW0733	
YSW0733	Construct basement of MBR 2 & 3	20	100	10/02/12 A	29/02/12 A	10/02/12 A	29/02/12 A		YSW0732	YSW0735, YSW0740	
YSW0735	Construct superstructure of MBR 2	75		01/03/12 A		01/03/12 A	14/05/12 A		YSW0733	YSW06901, YSW0736, YSW08302,	
YSW0736	Construct superstructure of MBR 3	100		15/05/12 A	14/05/12 A	15/05/12 A	14/05/12 A		YSW0735	YSW08302, YSW08305	
YSW0740	ELS & excavate for Outfall Shaft	75		01/03/12 A	14/05/12 A	01/03/12 A	14/05/12 A		YSW0733	YSW0750	
YSW0750	Construct basement of Outfall Shaft	19		15/05/12 A	02/06/12 A	15/05/12 A	02/06/12 A		YSW0740	YSW07501	
YSW07501	Connect additional flange to HDPE pipe (VO 042)	5		03/06/12 A	07/06/12 A		07/06/12 A		YSW0750	YSW07502	
YSW07502	Construct sub-structure of Outfall Shaft	16		08/06/12 A		08/06/12 A			YSW07501	YSW0760	
YSW0760	Backfill & remove ELS (outfall shaft)	8		24/06/12 A		24/06/12 A			YSW07502	YSW01800, YSW07601, YSW07603,	
YSW07601	Construct superstructure for Outfall Shaft	30		03/07/12 A		03/07/12 A			YSW0760	YSW08301, YSW08305	
YSW07603	ELS & excavate for FSH Water Supply Tank	25		01/06/12 A		01/06/12 A			YSW0760	YSW07604	
YSW07604	Construct substructure for FSH Water Supply Tank	23		26/06/12 A		26/06/12 A	19/07/12 A		YSW07603	YSW07605	
YSW07605	Backfill & remove ELS for FSH Water Supply Tank	12		20/07/12 A		20/00/12 A			YSW07604	YSW07607	
YSW07607	Construct basement of MBR 1 & Workshop	24		01/08/12 A		01/08/12 A			YSW07605	YSW07608, YSW07609	
YSW07608	Construct superstructure for FSH Water Supply Tk	37		25/08/12 A		25/08/12 A			YSW07607	YSW08304, YSW08305	
YSW07609		37				25/08/12 A			YSW07607	YSW07610, YSW08303, YSW1470	
YSW07609	Construct superstructure for MBR 1 Construct Workshop, FSSH Pump Rm, PW Pump Rm	31		25/08/12 A		03/10/12 A			YSW07609	YSW0840, YSW16606, YSW16607,	
				03/10/12 A							tinhtenen tent for Outfall Cha
YSW08301	Water tightness test for Outfall Shaft	42		03/04/13 A		03/04/13 A			YSW0380, YSW07601	E&M0690	tightness test for Outfall Sha
YSW08302	Water tightness test for MBR 2 & 3	95		10/08/13 A		10/08/13 A			YSW0735, YSW0736	E&M0520, E&M0590, E&M0605, E&M0650	
YSW08303	Water tightness test for MBR 1	19		30/11/12 A		30/11/12 A			YSW07609	E&M0520	
YSW08304	Water tightness test for FSH Water Supply Tank	32		31/08/13 A		31/08/13 A			YSW07608	E&M0610	
YSW08305	Apply protective paint	120	100	02/10/12 A	15/08/13 A	02/10/12 A	15/08/13 A		YSW0735, YSW0736, YSW07601,	E&M0610	
	el / Sprinkler Pump Rm									VOWARDA	
YSW0840	ELS & excavate to formation (+0 mPD approx.)	40		25/02/13 A		25/02/13 A			YSW07610, YSW16606	YSW0860	excavate to formation (+0 m
YSW0860	Sub-structure construction	40		19/04/13 A		19/04/13 A			YSW0840	YSW0890	Sub-
YSW0880	Backfill & remove ELS	35		21/06/13 A		21/06/13 A			YSW0890	YSW0910	
YSW0890	Construction Ground Slab at +5.2mPD	40		04/06/13 A			14/07/13 A		YSW0860	YSW0880, YSW0900	
YSW0900	Superstructure construction upto +9.2mPD	35		04/06/13 A			01/08/13 A		YSW0890	YSW0910, YSW0925	
YSW0910	Water test	28	-	01/09/13	29/09/13	30/10/13	27/11/13		YSW0880, YSW0900	YSW0915	
YSW0915	Apply protective paint	14	-	29/09/13	13/10/13	27/11/13	11/12/13		YSW0910	E&M0640, YSW0925	
YSW 0925	ABWF installation	30	35	16/07/13 A	13/10/13	16/07/13 A	16/06/14	246d	YSW0900, YSW0915	KD0040	
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YSW1470	ELS & excavate to formation (-1.5mPD Approx.)	16		17/09/12 A		17/09/12 A			YSW07609	YSW1480	
YSW1480	Sub-structure construction	14		03/10/12 A		03/10/12 A			YSW1470	YSW1490	
	Backfill & extract sheetpile	3	100	17/10/12 A	19/10/12 A	17/10/12 A	19/10/12 A		YSW1480	YSW1500	
YSW1490 YSW1500	Backin a chiract sheetpile			20/10/12 A		20/10/12 A			YSW1490	YSW1530, YSW1536	

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YSW0200 Hydrographical Survey (YSW) 157 100 2809/10.A 3100/11.A YSW020 YSW0200 YSW0240 Material Submission. Approval of HDP pipe 316 100 1705/10.A 3100/11.A YSW0240 YSW0240 </td <td></td>	
Y8/00230 Hydrogophical Survey (Y8W) 157 100 2808/10 3101/11 Y8W0230 Y8W0230 Wardial Suttimised, Approval of Methol Statement for HDD 83 100 2808/10 3103/11 X808/10 K00020 Y8W0230 Y8W02401 Clarity Coordinate of Point Y (Reply of RF1010) 83 100 2808/10 A 109/10 2808/11 Y8W0240 Y8W0240 Submitsion of HOmbed Statement for HDD 188 100 2808/11 2808/11 Y8W0260 Y8W0240 Y8W0220 Submitsion of HOmbed Statement for HDD 188 1000 2808/11 2808/11 Y8W0260 Y8W0280 Y8W0220 Submitsion of Hombed Statement for HDD 188 1000 2808/11 2808/11 Y8W0280 Y8W0280 Y8W0220 Submission of Marine Notice 68 1000 2809/11 2809/11 2809/11 Y8W0280 Y8W0280 Y8W0230 Submission of Marine Notice 68 1000 2809/11 2809/11 2809/11 2809/11 Y8W0280 Y8W0280 Y8W0230	
YSW02040 Material Submission, Approval of HDEP Epige 319 100 1705/10.4 3103/11.4 YC0023 YSW0306 YSW0241 Carly Coordinate of Point Y (Repy of RF1010) 83 100 2800/10.4 2800/10.4 YSW0240 YSW0240 YSW0250	
YSW02401 Clarify Coordinate of Point Y (Reply of FIF 1010) 83 100, 280610A 180910A 480610A 180910A YSW0250	
YSW02b0 Submitsion of Lob Method Statement to HEC 148 100 1909/10 A 2500/11 A 1909/10 A 2500/11 A 1909/10 A 2500/11 A 1909/10 A 1900/11 A 1909/10 A 1900/11 A 1909/10 A 1900/11 A 1900/10 A 1900/11 A 1900/11 A 1900/10 A 1900/11 A 1900/11 A 1900/10 A 1900/11 A <	
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YSW0280 Submission of propose alignment 44 100 2001/11 A 0400/11 A 2001/11	
YSW030 Construction of Entry Pit and Preparation Work 27 100 05/03/11 A 31/03/11 A 05/03/11 A 31/03/11 A VSW020 YSW0320 Prepare of HDD Dill Rig Set-up (YSW) 28 100 01/04/11 A 20/04/11 A 01/04/11 A 20/04/11 A 01/04/11 A VSW0330 YSW0330 YSW0330 YSW0330 YSW0330 YSW0330 YSW0340 YSW0340 YSW0340 YSW0340 Setting up at dillible location 14 100 15/04/11 A 28/04/11 A 15/04/11 A YSW0340 YSW0340 YSW0350 Drill pilot hole and reaming hole - NS400 - S30m 229 100 29/04/11 A 31/21/1 A 13/12/11 A YSW0340 YSW0360 <	
YSW0320 Prepare of HDD Dnill Rig Set-up (YSW) 28 100 01/04/11 A 28/04/11 A 01/04/11 A 28/04/11 A VSW0330 YSW0330 Establishment of HDD plant & equipment 6 100 09/04/11 A 14/04/11 A 08/04/11 A 14/04/11 A VSW0330 YSW0330	
YSW0330 Establishment of HDD plant & equipment 6 100 09/04/11 A 14/04/11 A 09/04/11 A 14/04/11 A VSW0320 YSW0320 YSW0340 YSW0340 Setting up at drillhole location 14 100 15/04/11 A 28/04/11 A 15/02/11 A	
YSW0300 Establishment of HDD plant & equipment 6 100 09/04/11 A 14/04/11 A 14/04/11 A 14/04/11 A YSW0320 YSW0320 YSW0340 Setting up at drillhole location 14 100 15/04/11 A 28/04/11 A 13/02/11 A 28/04/11 A 13/02/11 A YSW0320 YSW0350 YSW0350 Drill pliot hole and reaming hole - NS400 - S30m 22 100 29/04/11 A 13/12/11 A 09/04/11 A 13/12/11 A YSW0350 SKW1181, YSW03801, YSW0320, YSW0360 Installation of NS400 HDPE 530m 17 100 14/12/11 A 30/12/11 A 10/12/12 A 10/12/12 A YSW0350 SKW1181, YSW03801, YSW0380, YSW03601 Demobilization of HDD plant & equipment 7 100 31/12/11 A 06/01/12 A YSW0360 YSW0360 YSW0360, YSW0360, YSW0361, YSW0360, YSW03602 Removal of Receiving Pit 14 100 07/01/12 A 00/11/2 A 10/12/14 YSW0360 YSW0360 YSW0370 YSW0361 Prepare backfilling material under VO 046A 120 100 07/01/12 A 05/05/12 A 07/01/12 A SKW1431, YSW03620, YSW03641 YSW0370	
Y8V0340 Setting up at drillhole location 14 100 16/4/11 A 28/04/11 A 15/04/11 A 28/04/11 A Y8W0250, Y8W0260, Y8W0260, Y8W0260, Y8W0260, Y8W0360 Y8W0350 Drill pilot hole and reaming hole - NS400 - 530m 229 100 29/04/11 A 13/12/11 A 29/04/11 A 13/12/11 A 29/04/11 A 13/12/11 A 13/12/	
YSW 0350 Drill pilot hole and reaming hole - NS400 - 530m 229 100 29/(4/11 A 13/12/11 A 29/(4/11 A 13/12/11 A YSW 0360 Installation of NS400 HDPE 530m 17 100 14/12/11 A 30/12/11 A 14/12/11 A 10/0 10/12 A 20/01/12 A 13/00/12 A	
YSW 03601 Demobilization of HDD plant & equipment 7 100 31/12/11 A 06/01/12 A 31/12/11 A 06/01/12 A 95W 0360 YSW 03605 YSW 03601 YSW 03601 YSW 03601 YSW 03605 YSW 03601 YSW 03	
VSW03605 Remove Entry pit of HDD 14 100 07/01/12 A 20/01/12 A 07/01/12 A	
YSW03620 Removal of Receiving Pit 14 100 31/12/11 A 13/01/12 A 31/12/11 A 13/01/12 A YSW0360 YSW0365 YSW03641 Prepare backfilling material under VO 046A 120 100 07/01/12 A 05/05/12 A 07/01/12 A 05/05/12 A YSW03601 YSW0365 YSW0365 Set up of Silt Curtain as per EP 2 100 23/11/12 A 24/11/12 A 23/11/12 A 24/11/12 A YSW0360. YSW0361 YSW0370 Dredging of Marine Deposit for Diffuser (YSW) 5 100 24/11/12 A 24/11/12 A 24/11/12 A 24/11/12 A YSW0365. YSW0380 YSW0380 YSW0365 YSW0380 YSW0360 YSW0360 YSW0360 YSW0360 YSW0360 YSW0380 YSW03801 YSW0380 YSW0380 YSW0380 YSW0380 YSW0380 YSW0380 YSW0380 YSW0380 YSW03801 YSW0380 YSW0380 YSW0380 YSW0380 YSW0380 YSW0380	
YSW 03641 Prepare backfilling material under VO 046A 120 100 07/01/12 A 05/05/12 A 07/01/12 A 05/05/12 A YSW 03601 YSW 0365 YSW 0365 Set up of Silt Curtain as per EP 2 100 23/11/12 A 24/11/12 A 24/11/12 A SKW 1431, YSW 03620, YSW 03641 YSW 0370 YSW 0370 Dredging of Marine Deposit for Diffuser (YSW) 5 100 24/11/12 A 29/11/12 A 29/11/12 A YSW 0360, YSW 0365 YSW 0380 YSW 0380 Diffuser Construction (YSW) 60 100 30/11/12 A 20/06/13 A 30/01/13 A YSW 0380 E&M 0690, YSW 0400, YSW 04301 Diffuser Construction (YSW) YSW 0400 Removal of silt curtain 30 00 30/04/13 A 31/05/13 A YSW 0380 KD0040 Telemoval of silt curtain E&M Works - YSW STW 5 5 5 5 5 5 5 5 100 24/17/12 A 20/06/13 A YSW 0370 E&M 0690, YSW 0400, YSW 08301 Telemoval of silt curtain Telemoval of silt curtain Telemoval of silt curtain	
YSW0365 Set up of Silt Curtain as per EP 2 100 23/11/12 23/11/12 23/11/12 24/11/12 SKW1431, YSW03620, YSW03641 YSW0370 YSW0370 Dredging of Marine Deposit for Diffuser (YSW) 5 100 24/11/12 29/11/12 29/11/12 YSW0360, YSW0365 YSW0380 YSW0380 Diffuser Construction (YSW) 60 100 30/11/12 20/06/13 A YSW0370 E&M0690, YSW0400, YSW08301 Emoval of silt curtain Diffuser Construction (YSW) YSW0400 Removal of silt curtain 30 100 30/04/13 31/05/13 A YSW0380 KD040 Removal of silt curtain E&M Works - YSW STW 5 5 5 5 5 6 100 30/04/13 31/05/13 4 YSW0370 E&M0400, YSW0400, YSW0400, YSW0400, YSW08301 E Construction (YSW) Diffuser Construction (YSW) Di	
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YSW 0380 Diffuser Construction (YSW) 60 100 30/11/12 A 20/06/13 A 30/11/12 A 20/06/13 A VSW 0370 E&M 0690, YSW 0400, YSW 08301 Diffuser Construction (YSW) YSW 0400 Removal of silt curtain 30 100 30/04/13 A 31/05/13 A 31/05/13 A VSW 0380 More than 100 mm of the than 100 mm of than 100 mm of the than 100 mm of the than 100 mm of tha	
YSW 0400 Removal of silt curtain 30 100 30/04/13 A 31/05/13 A 31/05/13 A YSW 0380 KD 0040 More and a filt curtain E&M Works - YSW STW 5000000000000000000000000000000000000	
E&M Works - YSW STW	
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&M0160 E&M0510	
Earlier of MBR Membrane Modules - 2nd Shipment 236 100 24/02/11 A 17/10/11 A 24/02/11 A 17/10/11 A E&M0370 Delivery of MBR Membrane Modules - 2nd Shipment 236 100 24/02/11 A 17/10/11 A E&M0160 E&M0520	
Earlier Delivery of Mich Merring are woodless 2 in officient 230 100 24/02/11 A 17/07/14 24/02/11 A 10/07/14 10/07/14 10/07/14 <t< td=""><td></td></t<>	
Earlier Delivery of Charge Screens 129 100 06/09/11 A 12/01/12 A 06/09/11 A 12/01/12 A E&M0540	
Ealities Delivery of Coalse concents 120 100 00/00/11 A 12/01/12 A 00/00/11 A 12/01/12 A 00/00/11 A E&M0400 Delivery of Fine Screens 80 100 12/09/11 A 30/11/11 A 12/09/11 A 30/11/11 A E&M0550	
ExM0410 Delivery of Pumps 75 100 23/06/11 & 05/09/11 & 05/09/11 & E&M0560	
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Data date 31/08/13	

 Run date
 23/09/13
 Progress point

 Page number
 5A
 Summary point

 c Primavera Systems, Inc.
 Start milestone point

Construction of Sewage Treatment Works at YSW & SKW 3-month Rolling Programme (Sept 2013 - Nov 2013

Activity ID	Description	Original Percent Duration Complete	Early Start	Early Finish	Late Start	Late Finish	Total Predecessors	Successors	MAY JUN	2013 JUL AUG	SEP	ост
E&M0440	Delivery of Sludge Dewatering Equipment	558 70	31/08/11 A	14/02/14	31/08/11 A	30/10/13	-107d E&M0170	E&M0580				
E&M0450	Delivery of Valves, Pipes & Fittings	560 90	30/08/11 A	26/02/14	30/08/11 A	01/01/14	-56d E&M0180	E&M0590				
E&M0460	Delivery of Penstocks	135 100	12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A	E&M0190	E&M0600, E&M0605		111	L L L L L L L L L L L L L L L L L L L	
E&M0470	Delivery of Instruments	232 100	03/11/11 A	21/06/11 A	03/11/11 A	21/06/11 A	E&M0200	E&M0610		111		·
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&M0210 E&M0620			111		
E&M0490	Delivery of BS Equipment	446 65	10/12/11 A	18/11/14	10/12/11 A	23/06/13	-513d E&M0220	E&M0630				
E&M0500	Delivery FS Equipment	507 25	11/12/11 A	12/07/15	11/12/11 A	14/08/13	-697d E&M0230	E&M0330, E&M0640				
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&M0360, YSW0705	E&M0690	R Tank no. 4	111		
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	E&M0370, YSW08302, YSW	8303 E&M0690	R Tank No. 1 to 3			
E&M0530	Install Grit Removal Equipment	122 100	01/06/12 A	30/09/12 A	01/06/12 A	30/09/12 A	E&M0380, YSW05923	E&M0590, E&M0660		111		······································
E&M0540	Install Coarse Screens	240 100	23/04/12 A	23/08/13 A	23/04/12 A	23/08/13 A	E&M0390, YSW05923	E&M0660			Install Coarse Scr	ii.
E&M0550	Install Fine Screens	122 100	01/06/12 A	12/08/13 A	01/06/12 A	12/08/13 A	E&M0400, YSW05923	E&M0590, E&M0660		Inst	all Fine Screens	ii
E&M0560	Install Pumps	355 90	23/04/12 A	05/10/13	23/04/12 A	12/05/13	-146d E&M0410, YSW05923	E&M0660				Install Pumps
E&M0570	Install Submersible Mixers	163 90	15/01/13 A	16/09/13	15/01/13 A	12/05/13	-127d E&M0420, YSW07204	E&M0660, E&M0690		111	Insta	II Submersible Mixe
E&M0580	Install Sludge Dewatering Equipment	361 60	29/05/12 A	22/01/14	29/05/12 A	09/06/13	-227d E&M0440, YSW06023	E&M0690				
E&M0590	Install Valves, Pipes & Fittings		15/01/13 A	04/10/13	15/01/13 A	10/06/13	-116d E&M0450, E&M0530, E&M05					Install Valves,
E&M0600	Install Penstocks (Batch 1, GL H - T)		23/04/12 A	21/05/13 A	23/04/12 A	21/05/13 A	E&M0460, YSW07202	E&M0690	Install Penstocks (E	Batch 1, GL H - T)	L	
E&M0605	Install Penstocks (Batch 2, GL A - F)		02/01/13 A	19/09/13	02/01/13 A	08/06/13	-103d E&M0460, YSW08302	E&M0690			Inst	tall Penstocks (Bate
E&M0610	Install Instruments		02/01/13 A	09/11/13	02/01/13 A	10/06/13	-152d E&M0470, YSW07055, YSW					
E&M0620	Install SAT, MCC & LVSB		02/01/13 A	02/01/15 A	02/01/13 A	02/01/15 A	E&M0480, YSW0810	E&M0660, E&M0680			nii <mark>ni I</mark> ni	
E&M0630	Install BS Equipment		02/01/13 A	09/12/14	02/01/13 A	14/07/13	-513d E&M0490, YSW0810, YSW0			111		
E&M0640	Install FS Equipment		02/01/13 A	11/06/15	02/01/13 A	14/07/13	-697d E&M0500, YSW0705, YSW0					
E&M0650	Hydraulic Tests of Pipeworks		02/01/13 A	31/10/13	02/01/13 A	15/06/13	-138d E&M0590, YSW08302	E&M0690				
E&M0660	Cabling Works	15 42	04/02/15 A	12/05/15	04/02/15 A	21/05/13	-721d E&M0530, E&M0540, E&M05 E&M0560, E&M0570, E&M06				iiiii ii	
E&M0670	Insulation Tests of Cables and Cable Termination	26 30	11/04/15 A	30/05/15	11/04/15 A	08/06/13	-721d E&M0320, E&M0325, E&M06	60, E&M0690		111		
E&M0680	Energization	1 100	02/04/15 A	03/04/15 A	02/04/15 A	03/04/15 A	E&M0305, E&M0325, E&M06	20, E&M0670		111		
E&M0690	Functional and Performance Tests of Equipment	35 45	25/03/15 A	18/06/15	25/03/15 A	27/06/13 *	-721d E&M0510, E&M0520, E&M05 E&M0580, E&M0590, E&M06 E&M0605, E&M0610, E&M06 E&M0640, E&M0650, E&M06 YSW0380, YSW08301, YSW YSW1540	00, 30, 70,				
E&M0700	T&C Period	137 0	09/08/15	24/12/15	12/12/13	27/04/14	-606d E&M0330, E&M0690	E&M0730, KD0040				11 11 11
E&M0730	Trial Operation Period	413 0	24/12/15	15/06/17	28/04/14	14/06/15	-606d E&M0700	KD0132		111		
Sok Kwu Wa	n									111		
Preliminary											iii i i	i
SKW0250	Approval of Environmental Team	16 100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A	KD0020	SKW0260		111		
SKW0260	Baseline monitoring (Air & Noise)				02/06/10 A		SKW0250	SKW0242, SKW0265, SKW0592,		111		
SKW0265	Baseline Monitoring Submission (A & N)	14 100	16/06/10 A	08/07/10 A	16/06/10 A	08/07/10 A	SKW0260	SKW0242, SKW0592, SKW0681,		111		
Section W3 - Fo	ootpath Diversion in Portion G									111		
Civil & Geotecl	nnical Works											
SKW0240	Site Clearance	21 100	17/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A		SKW0241		111		ü
SKW0241	Initial Survey	9 100	07/06/10 A	15/06/10 A	07/06/10 A	15/06/10 A	SKW0240	SKW0242		111		
SKW0242	Retaining Wall Bay 0-10 (Incl. VO. 001A)	177 100	30/06/10 A	23/12/10 A	30/06/10 A	23/12/10 A	SKW0241, SKW0260, SKW0	265 SKW0461		111		
SKW0461	Utilities Laying and Diversion	70 100	24/12/10 A		24/12/10 A	03/03/11 A	SKW0242	SKW0471		iii		
SKW0471	Concreting for Pavement	7 100	04/03/11 A	10/03/11 A	04/03/11 A	10/03/11 A	SKW0461	SKW0481				
SKW0481	Footpath Diversion - Stage 1	14 100	11/03/11 A	24/03/11 A	11/03/11 A	24/03/11 A	SKW0471	KD0050, SKW04811, SKW0491		111		·
SKW04811	Excavate for FP transition at CH0-35 &CH130-141	37 100	25/03/11 A	30/04/11 A	25/03/11 A	30/04/11 A	SKW0481	SKW04821				11 11 11
SKW04821	Construction of Drainage outfall near bay 10	3 100	01/05/11 A	03/05/11 A	01/05/11 A	03/05/11 A	SKW04811	SKW04831		111		
SKW04831	Cable diversion by HEC	26 100	04/05/11 A	29/05/11 A	04/05/11 A	29/05/11 A	SKW04821	SKW04841				
SKW04841	Diversion of Ducting and Drawpit by PCCW	12 100	20/05/11 A	31/05/11 A	20/05/11 A	31/05/11 A	SKW04831	SKW04851				11 11 11
SKW04851	Soil backfilling behind FP retaining wall	14 100	01/06/11 A	14/06/11 A	01/06/11 A	14/06/11 A	SKW04841	SKW04861		111 111 111		II II II
SKW04861	Concreting for footpath pavement	7 100	15/06/11 A	21/06/11 A	15/06/11 A	21/06/11 A	SKW04851	SKW04871				
SKW04871	Relocation of Temp Safety Fence at SKW STW A-G	57 100	22/06/11 A	17/08/11 A	22/06/11 A	17/08/11 A	SKW04861	SKW04881				
SKW04881	Disposal of excavation material at A-G SKW STW	138 100	18/08/11 A	02/01/12 A	18/08/11 A	02/01/12 A	SKW04871	SKW04885				
SKW04885	Footpath Diversion - Stage 2	7 100	03/01/12 A	09/01/12 A	03/01/12 A	09/01/12 A	SKW04881	SKW1261				
SKW0491	Removal of Haul Road after SKW STW	7 0	08/10/14	14/10/14	29/05/15	04/06/15	233d KD0090, SKW0481, SKW140	1 SKW0501				
Start date	05/05/10 Early bar								Date	Revision	Checke	d Approved
Finish date Data date Run date Page number	15/06/17 Progress bar 31/08/13 Critical bar 23/09/13 Progress point 6A Summary point		C	onstructio	Co on of Sev	ntract No wage Trea	neering Corp. Ltd. . DC/2009/13 atment Works at YSW & me (Sept 2013 - Nov 20 ⁻	SKW 3	31/08/13	Revision 0	RH	
c Primavera	Systems, Inc. Start milestone point Finish milestone point					-						

Start date	05/05/10		Early bar
Finish date	15/06/17		Progress ba Critical bar
Data date	31/08/13		- Summary b
Run date	23/09/13		Progress po
Page number	6A		Critical poin Summary p
c Primavera	Systems, Inc.		Start mileste
		1 🔶 👘	Finish miles

Activity ID	Description	Original Percen Duration Comple		Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors		2013	055	007
SKW0501	Concreting for no-fine concrete	14	0 08/10/14	21/10/14	29/05/15	11/06/15		SKW0491	SKW0511	MAY JUN	JUL AUG	SEP	OCT
SKW0511	Wall Tie & Stone Facing	14	0 22/10/14	04/11/14	12/06/15	25/06/15		SKW0501	SKW0521	-			
SKW0521	Gabion Wall & Geotextile	30	0 05/11/14	04/12/14	26/06/15	25/07/15	233d	SKW0511	SKW0531				ii ii
SKW0531	Installation of Flower Pot	7	0 05/12/14	11/12/14	26/07/15	01/08/15	233d	SKW0521	SKW0541	-			
SKW0541	Completion of Outstanding Works	42	0 12/12/14	22/01/15	02/08/15	12/09/15	233d	SKW0531	KD0125		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		
Section W4 - S	ope Works in Portions H & I												11 11 11
Geotechnical \	Vorks												
SKW 0588	Construct scaffolding access		100 15/06/10 A	14/07/10 A	15/06/10 A	14/07/10 A		KD0020	SKW0590	_			i i
SKW 0590	Site Clearance for Slope		100 15/07/10 A	22/10/10 A	15/07/10 A			SKW0588	SKW0591	_			
SKW0591	Initial Survey for Slope		100 21/09/10 A		21/09/10 A			SKW0590	SKW0592	_			
SKW 0592	Temporary Rockfall fence at ex. Footpath		00 31/08/10 A		31/08/10 A			SKW0260, SKW0265, SKW0591	SKW05931	-			i i i
SKW05931	Construction of Haul Road (To +30mPD)		100 03/09/10 A	22/10/10 A				SKW0592 SKW05931	SKW05932 SKW059322				
SKW 05932 SKW 059321	Construction of Haul Road (To +42.5mPD) Removal of Boulders (IBG 1 - 119, SI No. 11B)		00 23/10/10 A		23/10/10 A 03/11/10 A			3KW 05931	SKW059322 SKW059411	_			
SKW059321 SKW059322	Add. Site Invest. Works (VO. No. 9,12 &16)		100 03/11/10 A		11/01/11 A			SKW05932	SKW059341	-			
SKW 059322	Revised Profile at West Slope (+56 to +42.5mPD)		100 17/03/11 A		17/03/11 A			000002	SKW059324	-			
SKW 059324	Construction of Haul Road (+42.5 to +56mPD)		00 18/03/11 A		18/03/11 A			SKW059323	SKW059325	-			
SKW 059325	Removal of Boulders (IBG 120-139, SI No. 11C)		00 30/03/11 A		30/03/11 A			SKW059324	SKW05933				
SKW05933	West Slope Cutting (+56mPD to +42.5mPD)		00 16/04/11 A		16/04/11 A			SKW059325	SKW059331	-			ü
SKW059331	Removal of Boulders (IBG 140-189, SI No. 11D)	45 1	100 18/04/11 A	01/06/11 A	18/04/11 A	01/06/11 A		SKW05933	SKW05934				
SKW 05934	West Slope Cutting (+42.5mPD to +35mPD)	32 1	100 02/06/11 A	03/07/11 A	02/06/11 A	03/07/11 A		SKW059331	SKW059341	-			
SKW059341	Revised Profile at West Slope (+20 to +4.8mPD)	1 1	00 04/07/11 A	04/07/11 A	04/07/11 A	04/07/11 A		SKW059322, SKW05934	SKW05935				i i i
SKW 05935	West Slope Cutting (+35mPD to +27.5mPD)	83 1	00 08/07/11 A	28/09/11 A	08/07/11 A	28/09/11 A		SKW059341	SKW05936				
SKW 05936	West Slope Cutting (+27.5mPD to +20mPD)	61 1	00 29/09/11 A	28/11/11 A	29/09/11 A	28/11/11 A		SKW05935	SKW05937				
SKW 05937	West Slope Cutting (+20mPD to +12.5mPD)	39 1	100 29/11/11 A	06/01/12 A	29/11/11 A	06/01/12 A		SKW05936	SKW05938				
SKW 05938	West Slope Cutting (+12.5mPD to +4.8mPD)	90 1	00 07/01/12 A	27/03/12 A	07/01/12 A	27/03/12 A		SKW05937	KD0060, SKW1261, SKW1311, SKW1371	_			ii ii
SKW05941	Slope Stormwater Drainage		00 28/03/12 A	25/05/12 A	28/03/12 A	25/05/12 A		KD0060	SKW05942				11 11
SKW059411	East Slope Cutting (+50mPD to +42.5mPD)		00 04/03/11 A		04/03/11 A			SKW059321	SKW059412	_			11 11 11
SKW059412	East Slope Cutting (+42.5mPD to +35mPD)		00 15/05/11 A		15/05/11 A			SKW059411	SKW059413	-			ii ii
SKW059413	East Slope Cutting (+35mPD to +27.5mPD)		00 05/08/11 A		05/08/11 A			SKW059412	SKW059414	-			ii ii
SKW059414	East Slope Cutting (+27.5mPD to +20mPD)				29/09/11 A			SKW059413	SKW059415	-			
SKW059415	East Slope Cutting (+20mPD to +12.5mPD)		100 29/11/11 A		29/11/11 A			SKW059414 SKW059415	SKW059416 KD0060, SKW1311, SKW1371				
SKW 059416 SKW 05942	East Slope Cutting (+12.5mPD to +4.8mPD) Slope Miscellaneous Works		00 07/01/12 A		07/01/12 A 26/05/12 A			SKW059415	SKW05943, SKW0595	_			ii ii
SKW 05942	Buttress & surface Protection (SI No. 31)	-	100 20/03/12 A					SKW05942	SKW05944	-	11111 11111 11111		
SKW 05944	Slope Treatment (SI. No. 36)		00 03/07/12 A	31/07/12 A				SKW05943	SKW05945	-			
SKW 05945	Rock Slope Treatment (SI. No. 68)		00 01/08/12 A	30/09/12 A				SKW05944	SKW05946	-			ii ii
SKW05946	Rock Slope Treatment (SI. No. 98)		00 10/09/12 A		10/09/12 A			SKW05945	SKW05947	в)	14 UU		
SKW05947	Rock Slope Treatment (SI. No. 115)		00 01/11/12 A		01/11/12 A			SKW05946	KD0135	5)			
SKW 05948	Soil Nailing Works (VO. No. 52)	300 1	100 10/02/12 A	28/02/13 A	10/02/12 A	28/02/13 A			SKW05963				
SKW 0595	Rock Meshing	60	0 31/08/13	29/10/13	07/08/15	05/10/15	706d	SKW05942, SKW05972	KD0165	-			, and the second se
SKW 05963	Determine Alignment & Foundation Design of RFB	120 1	100 10/02/12 A	08/06/12 A	10/02/12 A	08/06/12 A		SKW05948	SKW059631, SKW05964, SKW05965	1			
SKW 059631	GEO Approval of Foundation Design	70 1	00 09/06/12 A	31/07/12 A	09/06/12 A	31/07/12 A		SKW05963	SKW05968				
SKW 05964	Fabrication & Shipping of RFB Material	180 1	00 09/06/12 A	30/11/12 A	09/06/12 A	30/11/12 A		SKW05963	SKW05972				
SKW 05965	Site clearance & Formation of access		00 09/06/12 A	31/07/12 A				SKW05963	SKW05967				
SKW 05967	Plant mobilization		00 02/01/13 A	15/01/13 A				SKW05965	SKW05968				
SKW 05968	Construction of anchors & pull out test		100 16/01/13 A	17/08/13 A				SKW059631, SKW05967	SKW05969		Const	ruction of anchors	s & pull out test
SKW 05969	Construction of Foundation		100 11/07/13 A	23/08/13 A	11/07/13 A			SKW05968	SKW05970	_		Instruction of Four	ndation
SKW 05970	Proof Load Test		100 31/07/13 A	28/09/13 A				SKW05969	SKW05971	-		Transportation of	Proof Load Test
SKW05971	Transportation of Material (To the slope crest)		00 31/07/13 A		31/07/13 A			SKW05970	SKW05972	-		I ransportation of	Material (1 o the
SKW05972	Installation of Flexible barrier	90 1	100 31/07/13 A	28/10/13 A	31/07/13 A	28/10/13 A		SKW05964, SKW05971	KD0165, SKW0595				
	S. No. 1 in Portion D												
Civil & Geotec										_			
SKW0651	Site Clearance		100 17/05/10 A					KD0020	SKW0652	_			
SKW0652	Initial Survey	7 1	00 24/05/10 A	30/05/10 A	24/05/10 A	30/05/10 A		SKW0651	SKW0661, SKW0681				
Start date	05/05/10 Early bar									Date	Revision	Checked	Approved
Finish date	15/06/17 Progress bar				l eader (ivil Engi	neerin	g Corp. Ltd.		31/08/13	Revision 0	RH	VC
Data date	31/08/13 Critical bar Summary bar					ntract No	. DC/2	009/13		01/00/10			
Run date	23/09/13 A Progress point		C	onstructi				t Works at YSW & SKV	V				
Page number			•										

 Page number
 7A
 Critical point

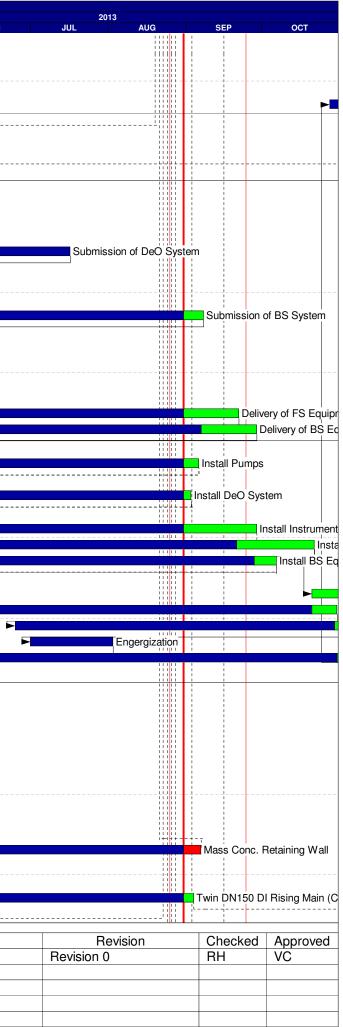
 c Primavera Systems, Inc.
 Start milestone point

3-month Rolling Programme (Sept 2013 - Nov 2013

Activity ID	Description		Percent Complete	Early Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	MAY JUN
KW0661	Transplantation for uncommon vegatation	30		31/05/10 A	29/06/10 A	31/05/10 A	29/06/10 A		SKW0652	SKW0681	MAT JON
<w0681< td=""><td>Excavate to lower the working platform to +3mPD</td><td>49</td><td>100</td><td>30/06/10 A</td><td>17/08/10 A</td><td>30/06/10 A</td><td>17/08/10 A</td><td></td><td>SKW0260, SKW0265, SKW0652,</td><td>SKW0691</td><td>-</td></w0681<>	Excavate to lower the working platform to +3mPD	49	100	30/06/10 A	17/08/10 A	30/06/10 A	17/08/10 A		SKW0260, SKW0265, SKW0652,	SKW0691	-
W0691	ELS to +2.2mPD	40	100	18/08/10 A	26/09/10 A	18/08/10 A	26/09/10 A		SKW0681	SKW0721	-
KW0721	Excavate to formation	270	100	17/09/10 A	13/06/11 A	17/09/10 A	13/06/11 A		SKW0691	SKW0741	
KW0722	Construction of Manholes (VO. No. 21A)	107	90	28/10/13 A	06/02/14	28/10/13 A	08/07/14	153d	E&M11800	E&M3360	-
ructural Work	Ś	!		1	1		1				
SKW0741	RC Works for Structure	240	100	14/06/11 A	08/02/12 A	14/06/11 A	08/02/12 A		SKW0721	KD0070, SKW0841	
KW0841	ABWF works	60	100	09/02/12 A	08/04/12 A	09/02/12 A	08/04/12 A		SKW0741	E&M1101, E&M1102, E&M1103, E&M1104,	
SKW0861	300mm U-channel & 675mm Step Channel	30	20	26/01/14 A	19/02/14	26/01/14 A	05/10/15	593d	E&M11800, SKW0841	KD0165	
&M Works (P	S1)			1							
Submission &	·										
E&M1001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A		KD0020	E&M1011	
E&M1002	Submission of Gen-Set	198		17/05/10 A	24/02/11 A	17/05/10 A				E&M1012	-
E&M1003	Submission of DeO System	198		17/05/10 A	16/07/13 A	17/05/10 A				E&M1013	
E&M1004	Submission of LV SB & MCC	180		17/05/10 A	09/01/12 A	17/05/10 A				E&M1014	
E&M1005	Submission of Instrumentation	243		17/05/10 A	12/03/12 A	17/05/10 A				E&M1015	-
E&M1006	Submission of FS System	243		17/05/10 A	30/09/12 A	17/05/10 A				E&M1016	
E&M1007	Submission of BS System	243		17/05/10 A	07/09/13	17/05/10 A		167d		E&M1017	
E&M1011	Delivery of Pumps	150	÷.	24/02/11 A	21/07/11 A		21/02/14 21/07/11 A	10/0	E&M1001	E&M1101	-
E&M1012	Delivery of Gen-Set	150		24/02/11 A	23/09/11 A		23/09/11 A		E&M1002	E&M1102	-
E&M1013	Delivery of DeO System	150		11/07/11 A	28/10/11 A	-	28/10/11 A		E&M1003	E&M1103	-
E&M1014	Delivery of LV SB & MCC	150		01/06/12 A	31/07/12 A		31/07/12 A		E&M1004	E&M1104	
E&M1015	Delivery of Instrumentation	90		01/00/12 A	03/11/11 A		03/11/11 A		E&M1005	E&M1105	-
											_
E&M1016	Delivery of FS Equipment	107		01/12/11 A	21/09/13	01/12/11 A			E&M1006	E&M1106	
E&M1017	Delivery of BS Equipment	107	80	15/11/11 A	28/09/13	15/11/11 A	14/03/14	167d	E&M1007	E&M1107	
nstallation, Ta	&C			T	T	1	1	1	F		
&M1101	Install Pumps	55	90	02/10/12 A	05/09/13	02/10/12 A	23/03/14	199d	E&M1011, SKW0841	E&M1110, E&M1140	-
&M1102	Install Gen Set	55		02/10/12 A	05/05/13 A	02/10/12 A	05/05/13 A		E&M1012, SKW0841	E&M1110, E&M1140	Install Gen Set
&M1103	Install DeO System	55	95	03/12/12 A	02/09/13	03/12/12 A	23/03/14	202d	E&M1013, SKW0841	E&M1110, E&M1140	=
&M1104	Install LV SB & MCC	55	100	02/01/13 A	26/03/13 A	02/01/13 A	26/03/13 A		E&M1014, SKW0841	E&M1140	C
&M1105	Install Instrumentation	55	48	01/11/12 A	28/09/13	01/11/12 A	23/03/14	176d	E&M1015, SKW0841	E&M1140	
E&M1106	Install FS Equipment	55	45	02/10/12 A	21/10/13	02/10/12 A	23/03/14	153d	E&M1016, SKW0841	E&M1130, E&M1140	
E&M1107	Install BS Equipment	55	85	02/10/12 A	06/10/13	02/10/12 A	23/03/14	167d	E&M1017, SKW0841	E&M1110, E&M1140	
E&M1110	Install Valves, Pipes & Fittings	46	100	02/01/13 A	27/03/13 A	02/01/13 A	27/03/13 A		E&M1101, E&M1102, E&M1103,	E&M1120	es & Fittings
E&M1130	Form 501 Submission to FSD	28	0	21/10/13	18/11/13	01/04/14	29/04/14	162d	E&M1106	E&M11800	
E&M1140	Cabling Works	43	80	21/05/13 A	30/10/13	21/05/13 A	31/03/14	153d	E&M1101, E&M1102, E&M1103,	E&M1150	
E&M1150	Insulation Tests of Cables and Cable Termination	7	80	25/06/13 A	31/10/13	25/06/13 A	02/04/14	153d	E&M1140	E&M1160	
E&M1160	Engergization	3		01/07/13 A	02/08/13 A	01/07/13 A	02/08/13 A		E&M1150	E&M1170	
E&M1170	Functional and Performance Tests of Equipment	30	10	02/01/13 A	27/11/13	02/01/13 A	29/04/14	153d	E&M1160	E&M11800	
&M11800	Commissioning Test	60	0	27/11/13	26/01/14	29/04/14	28/06/14	153d	E&M0350, E&M1120, E&M1130,	SKW0722, SKW0861	
ion W6 - Se	wer and PS No.2 in Portions E&H										
vil & Geotech	inical Works										
<w0881< td=""><td>Site Clearance</td><td>7</td><td>100</td><td>17/05/10 A</td><td>23/05/10 A</td><td>17/05/10 A</td><td>23/05/10 A</td><td></td><td>KD0020</td><td>SKW0891</td><td>-</td></w0881<>	Site Clearance	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A		KD0020	SKW0891	-
<w0891< td=""><td>Plant mobilization</td><td>7</td><td>100</td><td>17/05/10 A</td><td>23/05/10 A</td><td>17/05/10 A</td><td>23/05/10 A</td><td></td><td>SKW0881</td><td>SKW0892</td><td>-</td></w0891<>	Plant mobilization	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A		SKW0881	SKW0892	-
KW 0892	Initial Survey	30		24/05/10 A	22/06/10 A	24/05/10 A	22/06/10 A		SKW0891	SKW0901	-
<w0901< td=""><td>Tree Transplantation</td><td>90</td><td></td><td>23/06/10 A</td><td>20/09/10 A</td><td>23/06/10 A</td><td>20/09/10 A</td><td></td><td>SKW0892</td><td>SKW0921</td><td>-</td></w0901<>	Tree Transplantation	90		23/06/10 A	20/09/10 A	23/06/10 A	20/09/10 A		SKW0892	SKW0921	-
(W0921	Cut Slope & U-Channel	14		21/09/10 A	04/10/10 A		04/10/10 A		SKW0260, SKW0265, SKW0901	SKW0931, SKW0951	-
(W0931	Hoarding & Fencing	14		05/10/10 A	18/10/10 A				SKW0921	SKW0950, SKW0951	
(W 0950	Removal of Rock Boulders before ELS	66		19/10/10 A	23/12/10 A		23/12/10 A		SKW0931	SKW0951	-
KW 0951	ELS & Excavate to formation	169		24/12/10 A	10/06/11 A	24/12/10 A			SKW0921, SKW0931, SKW0950	SKW0971	-
(W0961	Mass Conc. Retaining Wall	90		16/01/13 A	06/09/13	16/01/13 A		-2084	SKW1081	KD0155	
(W 1491	LCS (ChA0+45 to 1+75) VO.7	90		24/03/12 A	21/06/12 A		21/06/12 A	2000	PRE0100, SKW1021	SKW15111	-
W 1491	Twin DN150 DI Rising Main (ChA1+75 - ChA5+79)			22/03/12 A	30/11/12 A	-	30/11/12 A		SKW1491	SKW15111	
W 15111 W 15112		180		01/02/13 A	03/09/13	01/02/13 A		2004	SKW1581	E&M3360	
	Twin DN150 DI Rising Main (ChA0+00 - ChA0+45)	30						3080	SKW15111	SKW1581	_
(W1531	Extent village sewers S163.1 & S164.1	34	100	30/11/12 A	10/01/13 A	30/11/12 A	10/01/13 A			G(W 1301	<u> </u>
date	05/05/10 Early bar										Date
	15/06/17 Progress bar Critical bar					Leader (Civil Enai	neerin	g Corp. Ltd.		31/08/13
									v i		

Start date	05/05/10	Early bar
Finish date	15/06/17	Progress bar
Data date	31/08/13	- Summary bar
Run date	23/09/13	Progress point
Page number	8A	Critical point
c Primavera	Systems, Inc.	 Start milestone point
		Finish milestone point

Leader Civil Engineering Corp. Ltd. Contract No. DC/2009/13 Construction of Sewage Treatment Works at YSW & SKW 3-month Rolling Programme (Sept 2013 - Nov 2013 31/08/13



Activity ID	Description	Original Perce Duration Comp		Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	МАҮ	JUN
SKW1581	Construct Manhole no. S163 & S164	34	100 11/01/13 A	28/02/13 A	11/01/13 A	28/02/13 A		SKW1531	KD0135, SKW15112	164	001
tructural Work	KS						1				
SKW 0971	Structural Works (Phase 1)	245	100 11/06/11 A	10/02/12 A	11/06/11 A	10/02/12 A		SKW0951	KD0080, SKW1021		
SKW 1021	Structural Works (Phase 2)	42	100 11/02/12 A	23/03/12 A	11/02/12 A	23/03/12 A		SKW0971	SKW1061, SKW1081, SKW1491		
SKW 1061	ABWF Works	90	100 24/03/12 A	21/06/12 A	24/03/12 A	21/06/12 A		SKW1021	E&M2101, E&M2102, E&M2103, E&M2104,]	
KW1081	375mm U-channel/catchpits/outfall	30	100 22/06/12 A	31/01/13 A	22/06/12 A	31/01/13 A		SKW1021, SKW1061	KD0155, SKW0961		1
&M Works (P	S2)										
Submission &	Delivery				1	1					
E&M2001	Submission of Pumps	198	100 17/05/10 A	24/02/11 A	17/05/10 A	-		KD0020	E&M2011	_	
E&M2002	Submission of Gen-Set	198	100 17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A			E&M2012	_	
E&M2003	Submission of DeO System	198	100 17/05/10 A	11/07/11 A	17/05/10 A	11/07/11 A			E&M2013	_	
E&M2004	Submission of LV SB & MCC	271	100 17/05/10 A	30/06/12 A	17/05/10 A	30/06/12 A			E&M2014 E&M2015	_	
E&M2005	Submission of Instrumentation	243	100 17/05/10 A	30/06/12 A	17/05/10 A	30/06/12 A	2504		E&M2015		
E&M2006 E&M2007	Submission of FS System Submission of BS System	243	97 17/05/10 A 97 17/05/10 A	07/09/13	17/05/10 A 17/05/10 A	12/09/12 04/10/12	-359d -337d		E&M2017	-	
E&M2007	Delivery of Pumps	150	100 24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A	-3370	E&M2001	E&M2101		-
E&M2012	Delivery of Gen-Set	150	100 24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A		E&M2002	E&M2102	-	
E&M2013	Delivery of DeO System	150	100 11/07/11 A	28/10/11 A	11/07/11 A			E&M2003	E&M2103	-	
E&M2014	Delivery of LV SB & MCC	150	100 29/02/12 A	31/07/12 A	29/02/12 A	31/07/12 A		E&M2004	E&M2104		
E&M2015	Delivery of Instrumentation	90	100 21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A		E&M2005	E&M2105	-	
E&M2016	Delivery of FS Equipment	107	80 01/12/11 A	28/09/13	01/12/11 A	04/10/12	-359d	E&M2006	E&M0350, E&M2106		
E&M2017	Delivery of BS Equipment	107	80 15/01/11 A	28/09/13	15/01/11 A			E&M2007	E&M2107	_	
Installation, T&					1						+
E&M2101	Install Pumps	55	80 02/10/12 A	10/09/13	02/10/12 A	12/01/13	-241d	E&M2011, SKW1061	E&M2110		
E&M2102	Install Gen Set	55	100 01/09/12 A	05/05/13 A	01/09/12 A	05/05/13 A		E&M2012, SKW1061	E&M2110	Install Ger	1 Set
E&M2103	Install DeO System	55	90 03/12/12 A	05/09/13	03/12/12 A	12/01/13	-236d	E&M2013, SKW1061	E&M2110		
E&M2104	Install LV SB & MCC	55	100 02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A		E&M2014, SKW1061	E&M2140		+
E&M2105	Install Instrumentation	55	40 31/05/13 A	02/10/13	31/05/13 A	03/11/12	-333d	E&M2015, SKW1061	E&M2140		
E&M2106	Install FS Equipment	55	45 02/10/12 A	28/10/13	02/10/12 A	03/11/12	-359d	E&M2016, SKW1061	E&M2140		
E&M2107	Install BS Equipment	55	85 01/09/12 A	06/10/13	01/09/12 A	03/11/12	-337d	E&M2017, SKW1061	E&M2110, E&M2140		
E&M2110	Install Valves, Pipes & Fittings	46	100 02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A		E&M2101, E&M2102, E&M2103,	E&M2120		
E&M2120	Hydraulic Test of Pipeworks	7	100 02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A		E&M2110	E&M2130	_	
E&M2130	Form 501 Submission to FSD	28	0 06/10/13	03/11/13	13/01/13	09/02/13		E&M2120	KD0155		
E&M2140	Cabling Works	43	80 01/02/13 A	06/11/13	01/02/13 A	12/11/12		E&M2104, E&M2105, E&M2106,	E&M2150	_	
E&M2150	Insulation Tests of Cables and Cable Termination	7	60 01/02/13 A	-	01/02/13 A	14/11/12	-359d	E&M2140	E&M2160		
E&M2160	Engergization	3	100 01/02/13 A	-	01/02/13 A	25/03/13 A		E&M2150	E&M2170	_	
E&M2170	Functional and Performance Tests of Equipment	30	10 15/01/13 A	06/12/13	15/01/13 A	11/12/12		E&M2160	E&M2180 KD0155	_	
E&M2180	Commissioning Test	60	0 06/12/13	04/02/14	12/12/12	09/02/13	-3590	E&M0350, E&M2170			
Submarine Out	KW STW,Sewer and Submarine Outfall									-	
SKW1130	Approval of IHS Consultant	180	100 17/05/10 A	27/08/10 4	17/05/10 A	27/08/10 4			SKW1131		
SKW 1130 SKW 1131	Hydrographical Survey (SKW)	300	100 01/02/11 A		01/02/11 A			KD0020, SKW1130	SKW1131	-	
SKW1131	Baseline Monitoring (Water)	213	100 27/07/10 A		27/07/10 A			SKW0260, SKW0265	SKW1151	-	
SKW1151	Set up Temporary Working Platform	90	100 15/06/11 A	30/09/11 A		30/09/11 A		PRE0090, SKW1141	SKW1171	_	
SKW1171	ELS for HDD Set-up (SKW)	90	100 01/09/11 A	-	01/09/11 A	30/09/11 A		SKW1151	SKW1181	-	
SKW1181	Mobilization of HDD plant & equipment to SKW	8	100 06/01/12 A	07/01/12 A	06/01/12 A	07/01/12 A		SKW1171, YSW0360	SKW1191	+	
SKW1191	Setting up at drillhole location	7	100 09/01/12 A	14/01/12 A	09/01/12 A	14/01/12 A		SKW1181	SKW1201	1	
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		SKW1191	SKW1211	1	
SKW1211	Receiving Pit for HDD (SKW)	13	100 16/01/12 A	29/02/12 A	16/01/12 A	29/02/12 A		SKW1201	SKW1221	1	
SKW1221	Installaiton of NS280 HDPE 450mm dia. pipe	61	100 31/03/12 A	30/04/12 A	31/03/12 A	30/04/12 A		SKW1211	KD0090, SKW1231, SKW1441	1	
SKW1231	Removal of Receiving Platform	50	100 01/05/12 A	19/06/12 A	01/05/12 A	19/06/12 A		SKW1131, SKW1221	SKW1241	+	
SKW1241	Dredging of MD for Diffuser (PS CL 1.122(3))	16	100 20/06/12 A	05/07/12 A	20/06/12 A	05/07/12 A		SKW1231	E&M3359, SKW1251	1	
SKW 1251	Diffuser Construction	77	100 01/09/12 A	16/11/12 A	01/09/12 A	16/11/12 A		SKW1241	SKW1431	+	
SKW 1431	Removal of silt curtain	1	100 17/11/12 A	17/11/12 A	17/11/12 A	17/11/12 A		SKW1251	KD0090, SKW1440, YSW0365	1	
SKW1440	Sewer of Outfall Chamber to connection pit VO37A	90	95 31/12/12 A	04/09/13	31/12/12 A	08/05/14	246d	SKW1431	SKW1441		
SKW1441	Sewer of Connection Pit to Outfall VO45	177	85 05/06/13 A	30/09/13	05/06/13 A	03/06/14	246d	SKW1221, SKW1440	E&M3359, KD0090		· ►
	05/05/10 Early bar										Date
ish date	15/06/17 Progress bar Critical bar				Leader C	Civil Engi	neerin	g Corp. Ltd.		31	/08/13
	31/08/13 Summary bar					ntract No					
	23/09/13 Progress point 9A Critical point		C					t Works at YSW & SKW	1		
	Systems, Inc.			3-month	n Rolling	Program	me (Se	ept 2013 - Nov 2013			
	Finish milestone point										

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		S	ubmiss	ion of	BS System
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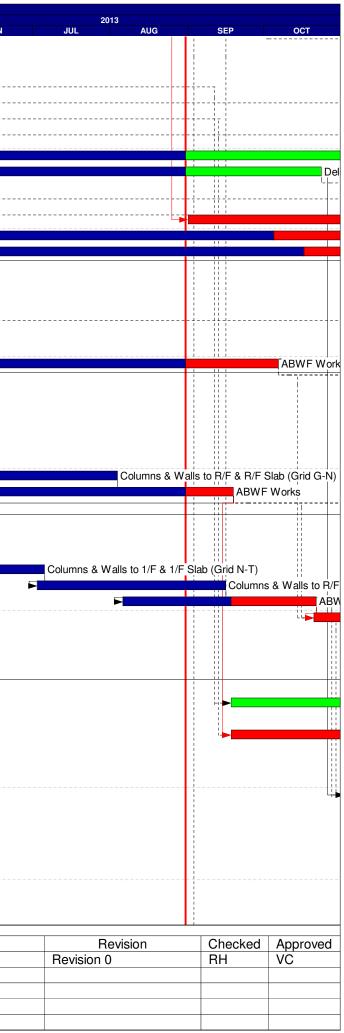
Activity ID	Description		Percent Early Complete Start	Early Finish	Late Start	Late Finish	Total Float	Predecessors	Successors	MAY
SKW STW										MAY JUN
Submission &	Delivery (E&M)									
E&M3010	Delivery of MBR M.M 1st shipment for Temp STP	150	100 24/02/11 A	17/10/11 A	24/02/11 A	17/10/11 A		E&M0160	E&M3170	
E&M3030	Delivery of Grit Removal Equipment	180	100 10/10/11 A	29/12/11 A	10/10/11 A	29/12/11 A		E&M0150	E&M3190	
E&M3060	Delivery of Fine Screens	136	100 12/09/11 A	30/11/11 A	12/09/11 A	30/11/11 A		E&M0120	E&M3210	
E&M3070	Delivery of Pumps	136	100 23/06/11 A	05/09/11 A	23/06/11 A	05/09/11 A		E&M0130	E&M3220	
E&M3080	Delivery of Submersible Mixers	180	100 26/07/11 A	17/11/11 A	26/07/11 A	17/11/11 A		E&M0140	E&M3230	
E&M3090	Delivery of Sludge Dewatering Equipment	210	70 01/09/11 A	01/11/13	01/09/11 A	11/01/14	71d	E&M0170	E&M3240	
E&M3100	Delivery of Valves, Pipes & Fittings	180	70 30/08/11 A	23/10/13	30/08/11 A	19/11/13	27d	E&M0180	E&M3250	
E&M3110	Delivery of Penstocks	180	100 12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A		E&M0190	E&M3260	
E&M3130	Delivery of instruments	180	100 21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A		E&M0200	E&M3270	
E&M3140	Delivery of MCC LVSB	180	0 01/09/13	28/02/14	07/04/13	03/10/13	-148d	E&M0210	E&M3261	
E&M3150	Delivery of BS Equipment	180	8 03/07/12 A	20/03/14	03/07/12 A	04/12/13	-105d	E&M0220	E&M3291	
E&M3160	Delivery of FS Equipment	180	5 30/06/12 A	06/04/14		23/12/13		E&M0230	E&M0340, E&M3300	
Construction of			0 00,00,1211							
SKW 1261	Excavate for SKW STW Structure (Grid A -G)	164	100 28/03/12 A	31/08/12 A	28/03/12 A	31/08/12 A		SKW04885, SKW05938	SKW1271, SKW1371	
SKW1271	55 M3 Fire Sprinkle Water Tank (FL +0.9 mPD)	36	100 03/07/12 A		03/07/12 A			SKW1261	SKW1281	
SKW1281	Ground Floor Slab (Grid A-G)	46	100 03/07/12 A	_	03/07/12 A			SKW1271	SKW1291	
SKW 1291	Columns & Walls to 1/F & 1/F Slab (Grid A-G)	50	100 03/07/12 A	_	03/07/12 A			SKW1281	KD0090, SKW1301	
SKW 1301	Columns & Walls to R/F & R/F Slab (Grid A-G)	50	100 01/09/12 A	31/01/13 A		31/01/13 A		SKW1291	E&M3261, E&M3291, E&M3311, SKW1411	
SKW1411	ABWF Works	105	65 01/02/13 A	06/10/13	01/02/13 A	19/06/13	-109d	SKW1301	E&M3261, E&M3291, E&M3311, SKW1551	
Construction of		100	03 01/02/10/1	00/10/10	01/02/10/1	10/00/10	1000		,	
SKW1311	Excavate for SKW STW Structure (Grid G-N)	90	100 28/03/12 A	25/06/12 4	28/03/12 A	25/06/12 4		SKW05938, SKW059416	SKW1321, SKW1371	
SKW1311	Equalization Tank no.1 & 2 with base slabs (-2.1	42	100 26/06/12 A		26/06/12 A	30/09/12 A		SKW1311	SKW1331	
SKW 1321	Columns & Walls from B/S to G/F Slab (Grid G-N)	35	100 20/00/12 A		01/09/12 A	30/09/12 A		SKW1321	SKW1341	
SKW1341	Ground Floor Slab (Grid G-N)	35	100 01/09/12 A		01/09/12 A	17/12/12 A		SKW1331	SKW1351	
SKW1351	Columns & Walls to 1/F & 1/F Slab (Grid G-N)	28	100 01/03/12 A	-	01/03/12 A	15/01/13 A		SKW1341	SKW1361	
SKW1351	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	03/08/13 A		SKW1351	SKW1451	
	ABWF Works						1044		E&M3170, E&M3190, E&M3210, E&M3291,	
SKW1451	ADWF WORKS	54	65 05/06/13 A	18/09/13	05/06/13 A	17/05/13	-1240	SKW1361	E&M3300, SKW1391, SKW1551	
Construction of	of Grid N-T			1				I		
SKW1371	Excavate for SKW STW Structure (Grid N-T)	97	100 03/07/12 A	25/01/13 A	03/07/12 A	25/01/13 A		SKW05938, SKW059416, SKW1261,	SKW1381	
SKW1381	Ground Floor Slabs include MBR Tank (Grid N-T)	58	100 02/10/12 A	31/01/13 A	02/10/12 A	31/01/13 A		SKW1371	SKW1391)
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 A	05/07/13 A		SKW1381, SKW1451	SKW1401	······
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 A	15/09/13 A		SKW1391	E&M3240, SKW0491, SKW1421	
SKW1421	ABWF Works	60	45 06/08/13 A	21/10/13	06/08/13 A	19/06/13	-124d	SKW1401	E&M3240, SKW1551	
SKW1551	Drainage (SSMH1-SSMH7)	35	0 21/10/13	25/11/13	20/06/13	24/07/13		SKW1411, SKW1421, SKW1451	SKW1561	
SKW1561	Sewer (SMFH1-SMFH2, SMFH3-SMFH7)	220	0 25/11/13	03/07/14	25/07/13	01/03/14	.1044	SKW1551	SKW1571	
SKW1561 SKW1571			-		02/03/14			SKW1551	KD0090	
	Roadwork & Drainage Channel (SKW)	220	0 03/07/14	08/02/15	02/03/14	07/10/14	-1240			
SKW STW - E8			0 40/00/40	07/10/10	07/01/11	10/04/11	4401		E9M2011	
E&M3170	Install Membrane Modules in MBR Tank No. 1 to 2	100	0 18/09/13	27/12/13	07/01/14	16/04/14		E&M3010, SKW1451	E&M3311	
E&M3190	Install Grit Removal Equipment	60	0 17/11/13	16/01/14	21/09/13	19/11/13		E&M3030, E&M3210, SKW1451	E&M3250, E&M3320	
E&M3210	Install Fine Screens	60	0 18/09/13	17/11/13	24/05/13	22/07/13	-118d	E&M3060, SKW1451	E&M3190, E&M3220, E&M3250, E&M3260, E&M3320	
E&M3220	Install Pumps	75	0 17/11/13	31/01/14	23/07/13	05/10/13	-118d	E&M3070, E&M3210	E&M3230, E&M3250, E&M3260, E&M3320	
E&M3230	Install Submersible Mixers	45	0 31/01/14	17/03/14	06/10/13	19/11/13		E&M3080, E&M3220	E&M3250, E&M3260, E&M3311, E&M3320	
E&M3240	Install Sludge Dewatering Equipment	74	0 02/11/13	14/01/14	12/01/14	26/03/14		E&M3090, SKW1401, SKW1421	E&M3320	
E&M3250	Install Sludge Dewatering Equipment	74	0 17/03/14	31/05/14	20/11/13	02/02/14	-	E&M3100, E&M3190, E&M3210,	E&M3270, E&M3291, E&M3300, E&M3310	
		10	0 17/03/14	01/03/14	20/11/13	52/02/14	DOLLS	E&M3220, E&M3230	, Europer, Europer, Europer, Europer,	
E&M3260	Install Penstocks	135	10 05/03/14 A	17/07/14	05/03/14 A	16/04/14	-91d	E&M3110, E&M3210, E&M3220,	E&M3311	
E&M3261	Install SAT of MCC & LVSB	174	0 28/02/14	21/08/14	04/10/13	26/03/14	-148d	E&M3140, SKW1301, SKW1411	E&M3311, E&M3320	
	Install instruments	60	0 31/05/14	30/07/14	16/02/14	16/04/14	-105d	E&M3130, E&M3250	E&M3311	
E&M3270				1	1	1	1	1		
E&M3270 E&M3291	Install BS Equipment	180	0 01/04/14	28/09/14	05/12/13	02/06/14	-118d	E&M3150, E&M3250, SKW1301,	E&M3331, E&M3359	
	Install BS Equipment	180	0 01/04/14	28/09/14	05/12/13	02/06/14	-118d	E&M3150, E&M3250, SKW1301, SKW1411, SKW1451	E&M3331, E&M3359	

Start date 05/05/10 Early bar Progress bar Critical bar Finish date 15/06/17 Data date 31/08/13 Run date 23/09/13 -Page number 10A c Primavera Systems, Inc. Ò

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

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

Date 31/08/13



Activity		Original Percent Early Early Late Late Total Predecessors Successor															
ID	Description	Duration	Complete	Start	Finish	Start	Finish	Float	Predecessors	Successors	MAY	JUN	J	2013 UL	AUG	SEP	ОСТ
E&M3310	Hydraulic Tests of Pipeworks	90	0 31	/05/14	29/08/14	06/03/14	03/06/14	-87d	E&M3250	E&M3359							
E&M3311	Cabling Works	47	0 21/	/08/14	07/10/14	17/04/14	02/06/14	-127d	E&M3170, E&M3230, E&M3260, E&M3261, E&M3270, SKW1301,	E&M3331, E&M3359							
E&M3320	Cabling Works for Dewatering Equipment	47	0 21/	/08/14	07/10/14	27/03/14	12/05/14	-148d	E&M3190, E&M3210, E&M3220, E&M3230, E&M3240, E&M3261	E&M3321							
E&M3321	Insulation Tests of Cables and Cable Termination	21	0 07/	/10/14	28/10/14	13/05/14	02/06/14	-148d	E&M3320	E&M3331							
E&M3331	Energization	1	0 28	/10/14	29/10/14	03/06/14	03/06/14	-148d	E&M3291, E&M3300, E&M3311,	E&M3359							
E&M3359	Functional and Performance Tests of Equipment	35	0 29,	/10/14	03/12/14	04/06/14	08/07/14	-148d	E&M3291, E&M3300, E&M3310, E&M3311, E&M3331, SKW1241,	E&M3360							
E&M3360	T&C Period	91	0 03/	/12/14	04/03/15	09/07/14	07/10/14	-148d	E&M0340, E&M3359, SKW0722, SKW15112	E&M3370, KD0090							
E&M3370	Trial Operation Period	456	0 04	/03/15	28/06/16	11/11/15	15/06/17	252d	E&M3360								
Rising Main		I			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		KD0020	SKW1501							
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		PRE0100, SKW1481	SKW1521							
SKW 1521	Twin DN150 DI Rising Main (ChB0+00 - ChA4+55)	250			24/09/13	11/07/11 A	07/10/14	378d	SKW1501	KD0090							Twin DN150 DI Ris
Section W8 - La	andscape Softworks in All Portions																
SKW1591	Tree Survey	21	100 17	/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A		KD0020	SKW1621							
SKW1611	Preservation & Protection of Trees	1053	99 17	/05/10 A	10/09/13	17/05/10 A	03/04/13	-160d	KD0020	KD0100, SKW1631						Preser	vation & Protection of
SKW1621	Transplantation at SKW	90	100 07	/06/10 A	04/09/10 A	07/06/10 A	04/09/10 A		SKW1591	KD0100							
Section W9 - E	stablishment Works in All Portions		1														
SKW1631	Section W9 - Establishment Works	365	0 10	/09/13	10/09/14	04/04/13	03/04/14	-160d	SKW1611	KD0110							

Start date	05/05/10	Early bar
Finish date	15/06/17	Progress bar Critical bar
Data date	31/08/13	
Run date	23/09/13	Progress point
Page number	11A	 Critical point Summary point
c Primavera	Systems, Inc.	Start milestone point
		Finish milestone point

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

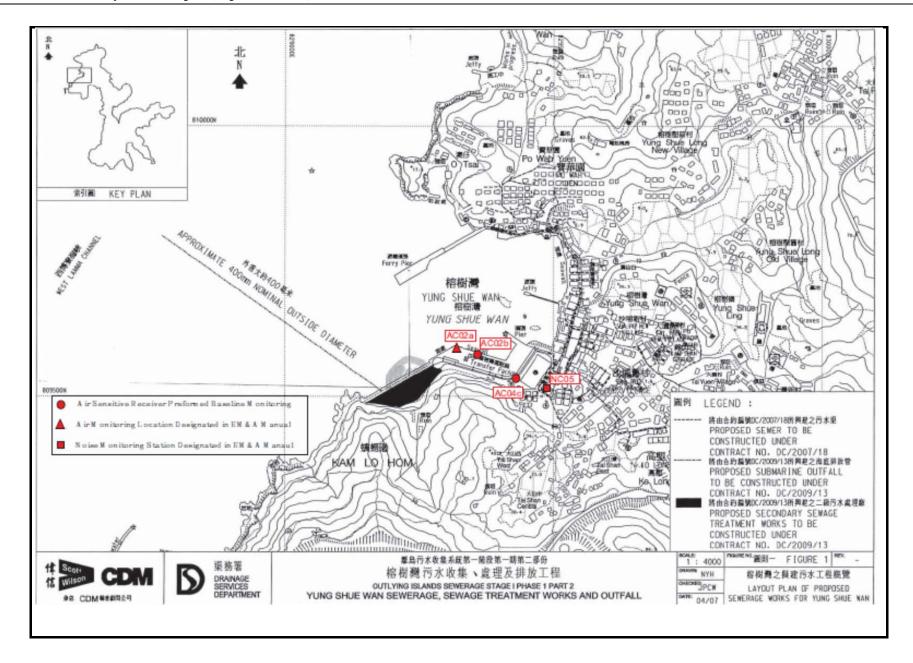
Date
31/08/13

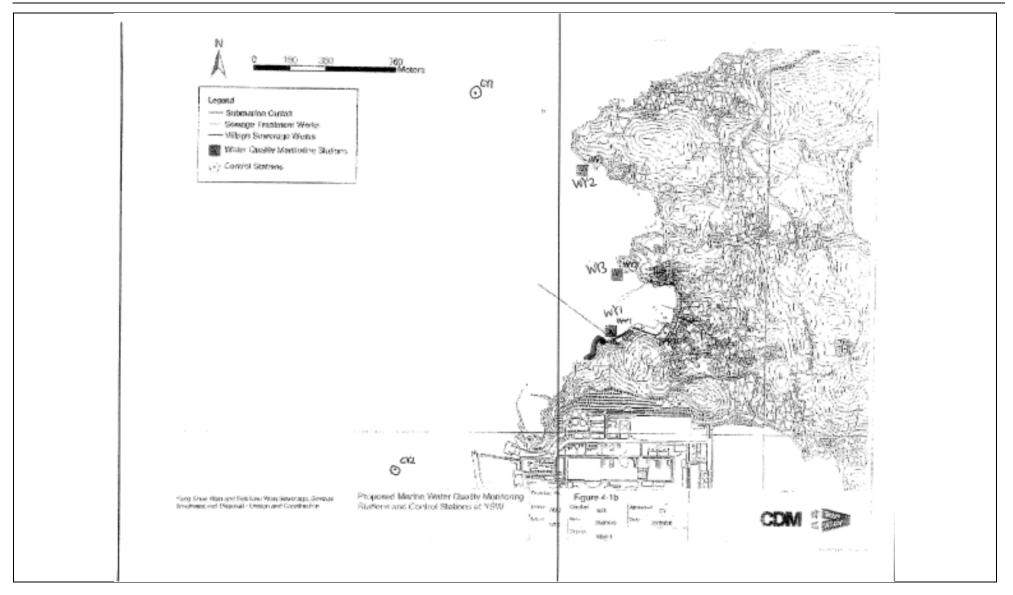
Revision	Checked	Approved
Revision 0	RH	VC

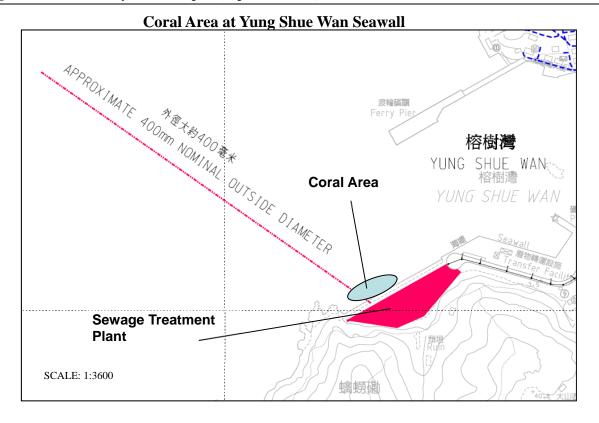


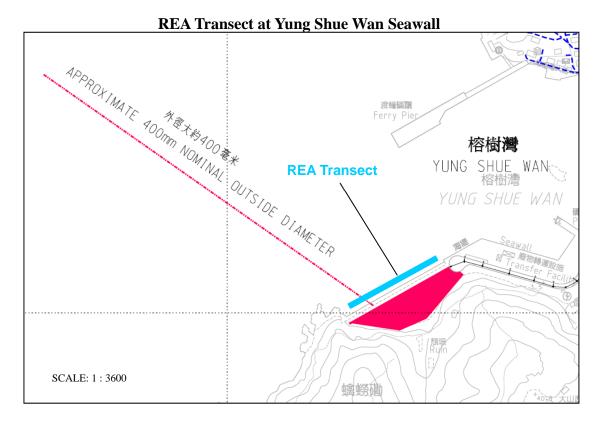
Appendix D

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









Coral Area at Sham Wan



REA Transect at Sham Wan

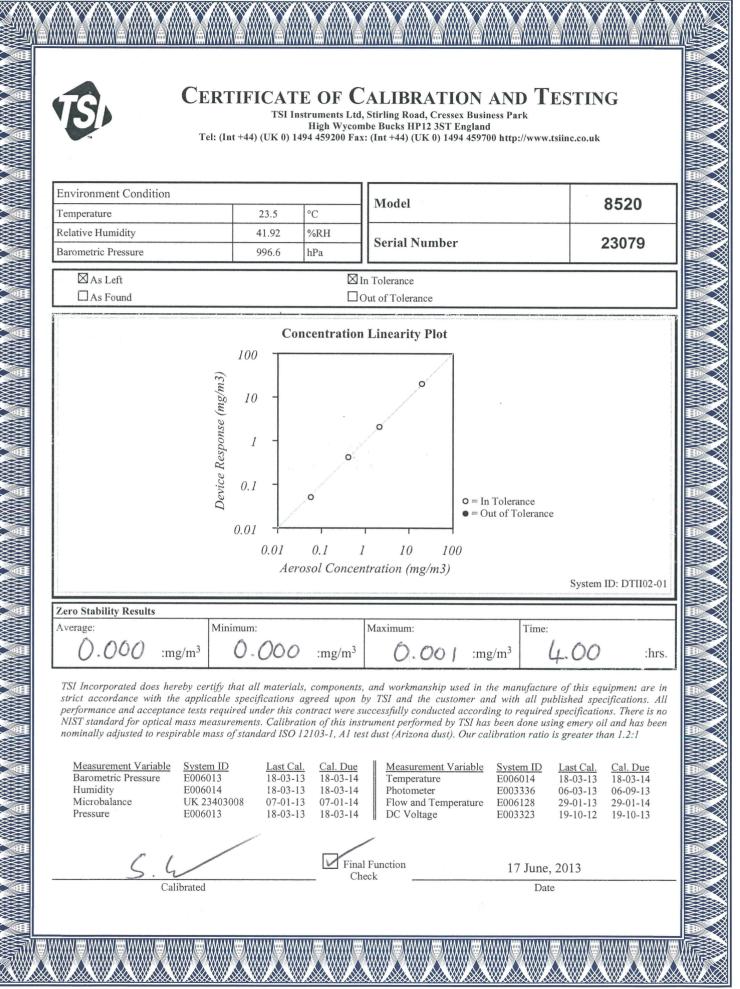


Appendix E

Monitoring Equipments Calibration Certificate

Certificate of Calibration and Testing

P/N 230015



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17/06/2013

SIBATA SCIENTIFIC TECHNOLOGY LTD.

1-1-62, Nakane, Soka, Saitama, 340-0005 Japan TEL: 048-933-1582 FAX: 048-933-1591

CALIBRATION CERTIFICATE

Date: June 20, 2013

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	366418
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	664 CPM
Scale Setting	:	June 17, 2013

We hereby certify that the avobe mentioned instrment has been calibrated satisfactory.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

<

Kentaro Togo Overseas Sales Division

Certificate Number:50105786 Issue Date:09/03/2013

CALIBRATION CERTIFICATE

Customer Name: Science International Corporation Description: Sound Level Meter Model Name: N L - 3 1 Serial Number: 0 0 4 1 0 2 2 1 Calibration Date: 08/03/2013(DD/MM/YYYY) Ambient condition: Temperature 18°C Relative Humidity 44%

We hereby certify that the above product was tested and calibrated according to the prescribed RION procedures, and that it fulfills all specification requirements, as listed on the appended sheet.

The measuring equipment and reference devices used for testing and calibrating this unit are managed under the RION traceability system and are traceable according to official Japanese standards and official standards of countries belonging to the International Committee of Weights and Measures.

RSC.RION PRIMARY STANDARDS

Model Description	Model Number	Serial Number	Cal Due Date MM/YYYY
(Acoustic)			
Condenser microphone	MR103	7582	6/2013
(Electric)			
DC Reference standards	732B	6265015	9/2014
Standard resistor	742A-1	6480018	11/2013
Standard resistor	742A-10k	6390001	6/2014
Digital multimeter	3458A	2823A13632	3/2013
Universal counter	53132A	3404A01375	3/2013

RSC WORK STANDARDS

Model Description	Model Number	Serial Number	Cal Due Date MM/YYYY
(Acoustic) Condenser microphone	UC-33P	1363	10/2013
(Electric)			
Sound level meter Unit	UN-04	10491087	10/2013
Sound level meter Unit	UN-04	10491053	10/2013
Digital multimeter	34401A	MY47047316	10/2013
Attenuator	984C	11072569	10/2013
Burst signal generator	KTG-11	10350007	1/2014
Frequency synthesizer	FS-1301	01CX861W	10/2013

RION SERVICE CENTER CO., LTD.

Manager, Service Dept. O. Soyana



Certificate of Calibration 校正證書

Certificate No. : C132228 證書編號

ITEM TESTED / 送檢項目		(Job No. / 序引編號:IC13-0878)
Description / 儀器名稱	;	Acoustical Calibrator (EQ081)
Manufacturer / 製造商	:	Brüel & Kjær
Model No. / 型號	:	4231
Serial No. / 編號	;	2326408
Supplied By / 委託者	:	Action-United Environmental Services and Consulting
		Unit A, 20/F., Gold King Industrial Building,
		35-41 Tai Lin Pai Road, Kwai Chung, N.T.
1. 		

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 : 15 April 2013

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			
Certified By 核證	:	Date of Issue 簽發日期	:	16 April 2013

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

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 – 校正及檢測實驗所 c/o 香港新界屯門興安里一號青山灣機樓四樓 Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com



Certificate of Calibration 校正證書

Certificate No. : C132228 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 :

Description	Certificate No.
Universal Counter	C123541
Multifunction Acoustic Calibrator	DC110233
Measuring Amplifier	C120886
	Universal Counter Multifunction Acoustic Calibrator

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

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

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.

Appendix F

Event and Action Plan

Air Quality

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

Construction Noise

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

Water Quality

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



Coral Monitoring

EVENT	ACTION		
	ЕТ	CONTRACTOR	ER/ IC(E)
Action Level being exceeded	Inform contractor, AFCD and EPD immediately; Discuss mitigation measure with ER/IC(E) and Contractor; Ensure mitigation measures are implemented.	Inform the Engineer and confirm notification of the non-compliance in writing; Propose mitigation measure to ER/IC€ within 1 working day and discuss with Et and ER/IC(E); Ensure mitigation measures are implemented.	Inform contractor, Review water quality monitoring data; Determine whether water quality monitoring data shows effects attributable to the backfilling works; If water quality monitoring data indicates effects attributable to backfilling works, then make agreement on mitigation measures to be implemented; If water quality monitoring data indicates no effects attributable to backfilling works then Action Level is not triggered; Assess the effectiveness of the implemented mitigation
Limit Level	Inform contractor, AFCD and EPD immediately; Discuss mitigation measure with ER/IC(E) and Contractor; Ensure mitigation measures are implemented.	Inform the Engineer and confirm notification of the non-compliance in writing; Suspend backfilling operations; Propose mitigation measure to ER/IC(E) within 3 working days and discuss with Et and ER/IC(E); Implement the agreed mitigation measures.	measures. Inform contractor to suspend backfilling operations; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures.



Appendix G

Impact Monitoring Schedule



Impact Monitoring Schedule for the Reporting Period

Date		Air Quality		Noise
		1-hour TSP	24-hour TSP	Leq (30min)
Mon	26-August-13		✓	
Tue	27-August-13	✓		\checkmark
Wed	28-August-13			
Thu	29-August-13			
Fri	30-August-13			
Sat	31-August-13		✓	
Sun	1-September-13			
Mon	2-September-13	✓		\checkmark
Tue	3-September-13			
Wed	4-September-13			
Thu	5-September-13			
Fri	6-September-13		✓	
Sat	7-September-13	✓		\checkmark
Sun	8-September-13			
Mon	9-September-13			
Tue	10-September-13			
Wed	11-September-13	✓		\checkmark
Thu	12-September-13		✓	
Fri	13-September-13			
Sat	14-September-13			
Sun	15-September-13			
Mon	16-September-13			
Tue	17-September-13	✓		\checkmark
Wed	18-September-13		✓	
Thu	19-September-13			
Fri	20-September-13			
Sat	21-September-13			
Sun	22-September-13			
Mon	23-September-13			
Tue	24-September-13	✓	✓	✓
Wed	25-September-13			

✓	Monitoring Day
	Sunday or Public Holiday



Impact Monitoring Schedule for next Reporting Period

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

✓	Monitoring Day
	Sunday or Public Holiday



Appendix H

Monitoring Data Sheet



24-hour TSP Monitoring Data Sheet

Air Quality Monitoring - 24-hour TSP monitoring data for Yung Shue Wan

24-hour TSP Monitoring Results - AC02b

	ELAPSED TIME CHART READING						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)
26-Aug-13	50361	6734.87	6758.86	1439.40	35	40	37.5	28.8	1006.8	0.84	1211	3.5941	3.6416	0.0475	39
31-Aug-13	50364	6758.86	6782.85	1439.40	34	39	36.5	26.4	1008.4	0.81	1170	3.5968	3.6244	0.0276	24
6-Sep-13	50365	6782.85	6806.84	1439.40	35	40	37.5	26.3	1013.2	0.85	1225	3.5998	3.6542	0.0544	44
12-Sep-13	33732	6806.84	6830.83	1439.40	36	40	38.0	28.5	1011.1	0.86	1241	3.5862	3.7572	0.1710	138
18-Sep-13	33714	6830.83	6854.82	1439.40	33	40	36.5	27.7	1008.3	0.81	1166	3.7166	3.7815	0.0649	56
24-Sep-13	50368	6854.82	6878.81	1439.40	33	39	36.0	28.1	1006.7	0.79	1138	3.598	3.6784	0.0804	71

Action Level: 161ug/m³

Limit Level: 260ug/m³

24-hour TSP Monitoring Results - AC04c

	ELAPSED TIME CHART READING					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)
26-Aug-13	50359	9727.99	9751.98	1439.40	29	31	30.0	28.8	1006.8	0.67	971	3.5993	3.6177	0.0184	19
31-Aug-13	50362	9751.98	9775.97	1439.40	30	32	31.0	26.4	1008.4	0.71	1019	3.5973	3.653	0.0557	55
6-Sep-13	50363	9775.97	9799.96	1439.40	32	36	34.0	26.3	1013.2	0.80	1148	3.6046	3.6251	0.0205	18
12-Sep-13	33723	9799.96	9823.95	1439.40	35	40	37.5	28.5	1011.1	0.90	1288	3.7271	3.9286	0.2015	156
18-Sep-13	50366	9823.95	9847.94	1439.40	33	40	36.5	27.7	1008.3	0.87	1246	3.5943	3.6413	0.0470	38
24-Sep-13	26069	9847.94	9871.93	1439.40	35	40	37.5	28.1	1006.7	0.89	1286	2.7349	2.8818	0.1469	114

Action Level: 176ug/m³

Limit Level: 260ug/m³

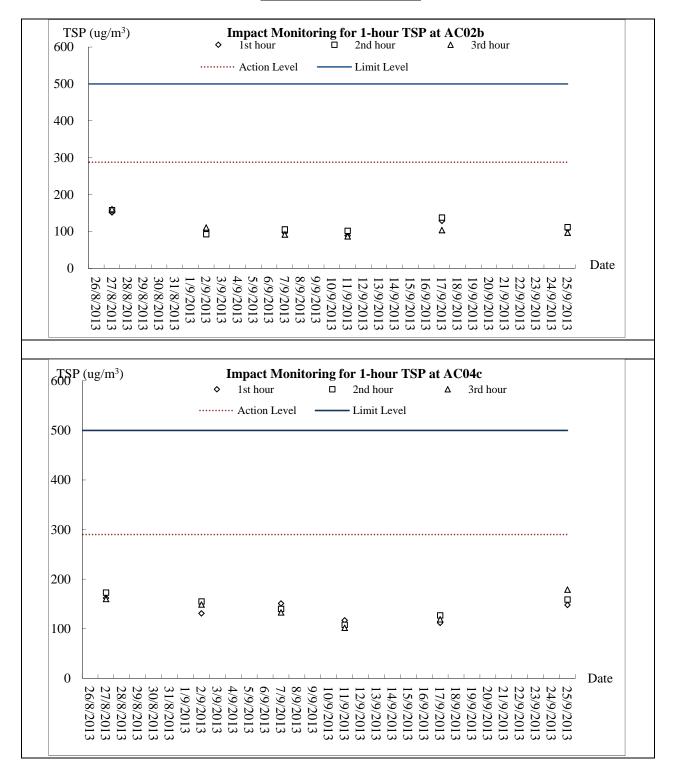


Appendix I

Graphical Plots of Monitoring Results

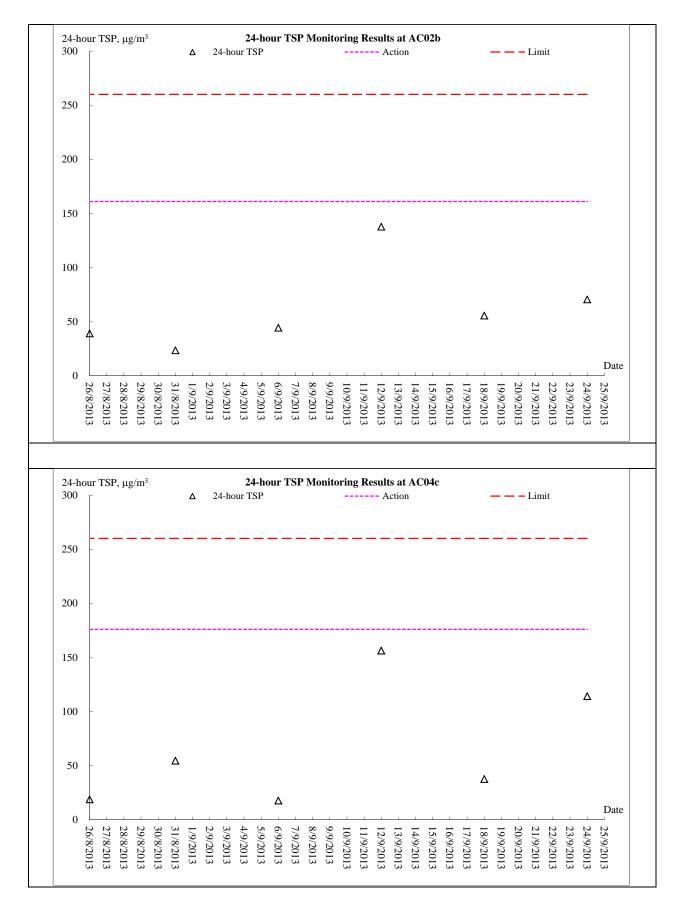


<u>1-hour TSP Monitoring</u>



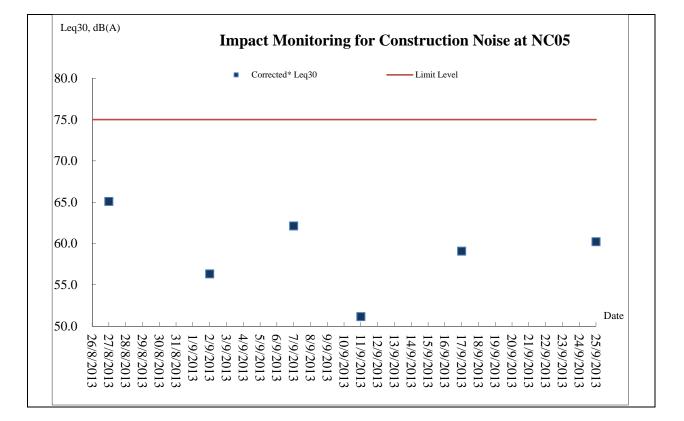


24-hour TSP Monitoring





Noise Monitoring





Appendix J

Meteorological Information



Meteorological Data Extracted from HKO during the Reporting Period

Date		Weather
26-Aug-13	Mon	Very hot, isolated showers, Light to moderate east to southeasterly winds.
27-Aug-13	Tue	Fine, very hot, isolated showers. Light to moderate southerly winds.
28-Aug-13	Wed	Fine, very hot, isolated showers. Light to moderate southerly winds.
29-Aug-13	Thu	Fine, very hot, isolated showers. Light to moderate southerly winds.
30-Aug-13	Fri	Cloudy, showers, thunderstorms. Moderate west to southwesterly winds.
31-Aug-13	Sat	Cloudy, showers, thunderstorms. Moderate west to southwesterly winds.
1-Sep-13	Sun	Cloudy, showers, a few thunderstorms. Light to moderate southerly winds.
2-Sep-13	Mon	Rain, fine, showers. Light to moderate southerly winds.
3-Sep-13	Tue	Cloudy, rami, few squally thunderstorms. Moderate to fresh easterly winds.
4-Sep-13	Wed	Rain, fine, showers. Light to moderate southerly winds.
5-Sep-13	Thu	Cloudy, rain, few squally thunderstorms. Moderate to fresh easterly winds.
6-Sep-13	Fri	Fine, Hot, Moderate easterly winds.
7-Sep-13	Sat	Fine, Hot, Moderate easterly winds.
8-Sep-13	Sun	Fine, Hot, Moderate easterly winds.
9-Sep-13	Mon	Sunny periods, showers. Moderate easterly winds.
10-Sep-13	Tue	Sunny periods, cloudy. Moderate easterly winds.
11-Sep-13	Wed	Sunny intervals, a few showers, isolated thunderstorms. Moderate east to northeasterly winds.
12-Sep-13	Thu	Sunny intervals, a few showers, isolated thunderstorms. Moderate east to northeasterly winds.
13-Sep-13	Fri	Fine, Hot, Moderate easterly winds.
14-Sep-13	Sat	Sunny periods, cloudy. Moderate easterly winds.
15-Sep-13	Sun	Sunny periods, cloudy. Moderate to fresh easterly winds.
16-Sep-13	Mon	Cloud, fine, dry.Fresh easterly winds.
17-Sep-13	Tue	Sunny intervals, a few showers, isolated thunderstorms. Moderate east to northeasterly winds.
18-Sep-13	Wed	Fine, Hot, Moderate easterly winds.
19-Sep-13	Thu	Sunny periods, cloudy. Moderate to fresh easterly winds.
20-Sep-13	Fri	Fine, cloudy. Moderate to fresh northeasterly winds.
21-Sep-13	Sat	Fine, cloudy. Moderate to fresh northeasterly winds.
22-Sep-13	Sun	Fine, Hot, Moderate easterly winds.
23-Sep-13	Mon	Cloud, fine, dry. Fresh easterly winds.
24-Sep-13	Tue	Sunny periods, cloudy. Moderate to fresh easterly winds.
25-Sep-13	Wed	Sunny periods, cloudy. Moderate to fresh easterly winds.



Appendix K

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table for September 2013

			Actu	ıal Quant	ities of Ir	nert C&D	Material	s Genera	ted Mont	hly				A	Actual Qu	uantities	of C&D	Wastes	Generate	ed Montl	hly	
Month	h Total Quantity Generated (a) = (c)+(d)+(e)		Hard Rock and Large Broken Concrete (b)		Reused in the Contract (c)				Publi	Disposed as Public Fill (e) Imported Fill (f)			Metals		Paper/ cardboard packaging		Plastics		Chemical Waste		Others, e.g. rubbish	
	(in '00	$00m^3$)	(in '00	$00m^3$)	(in '00	$00m^{3})$	(in '00	$00m^{3})$	(in '00	00m ³)	(in '00	$00m^{3}$)	(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
2013	13.341	50.328	0.160	0.410	0.740	2.802	0.000	0.000	12.601	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	400.410	103.440
Jan	0.332	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.332	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.040	9.840
Feb	0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.530	6.530
Mar	0.056	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.430	4.920
Apr	0.425	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.425	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.800	32.200
May	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	1.790	4.650
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	10.430	48.240
<mark>Sub-total</mark>	14.236	50.328	0.160	0.417	0.740	2.802	0.000	0.000	13.497	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	443.430	209.820
Jul	0.871	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.871	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.550	33.520
Aug	0.000	0.000	0.000	0.002	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	9.930	23.050
Sep	0.531	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.531	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.330	5.090
Oct																						
Nov																						
Dec																						
Total	15.639	50.328	0.160	0.432	0.740	2.802	0.000	0.000	14.900	47.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	468.240	271.480
	65.9	967	0.5	91	3.5	42	0.0	00	62.4	425	0.0	00	0.0	00	0.0	00	0.0	00	0.0	00	739.	.720

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

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Project: TCS/00512/09 DC-2009-03: Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan Date: 27 Aug 2013 PART A: GENERAL INFORMAT Weather: ✓ Y Sunny Fine Cloudy Temperature 29.3 °C Humidity: High Y Moderate Low Wind: Strong Breeze Light Area Inspected 1 Yung Shue Wan SITE AUDIT				ET RE Co IEC Tin	's Repre ntractor C's Repr	Represen	e: sentative:	Mr. Al Kwok Mr. M 11:00						
PART	В:				SITE AUDIT									
I ().				npliance; No: Noi follow-Up action	n-Compliance; s N/A : Not Applicabl	le	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks		
Sectio	n 1: Wa	ater Quality												
1.01	ls an e	ffluent discha	arge license	obtained for tl	ne Project?			\checkmark						
1.02	Is the o	effluent disch	arged in ac	cordance with t	he discharge licen	ce?		\square						
1.03	Is the	discharge of f	turbid wate	avoided?				\checkmark						
1.04	reduce	e SS levels in	effluent?		drainage systems			\checkmark						
1.05		ere channels entation tanks		or bunds to di	rect surface run-of	ff to		\checkmark						
1.06				inels provided ssing the site?	at site boundaries	s to		\checkmark						
1.07	ls drai	nage system	well mainta	ained?				\checkmark						
1.08		cavation proc ed stone or gr		emporary acce	ss roads protected	d by		\checkmark						
1.09	Are te	mporary expo	osed slopes	properly cove	red?			\checkmark						
1	Are ea	arthworks fina	al surfaces v	well compacted	l or protected?			\checkmark						
1.11	Are m	anholes adec	quately cov	ered or tempor	arily sealed?			\checkmark						
1.12	Are th	ere any proce	edures and	equipment for	rainstorm protectio	on?		\checkmark						
1.13	Are w	heel washing	facilities w	ell maintained?							\checkmark			
1.14	ls run	off from whee	el washing f	acilities avoide	d?						\checkmark	2), (* 2), (* 2), (* 2))		
1.15	Are th	ere toilets pro	ovided on s	ite?				\checkmark						
1.16	Are to	ilets properly	maintaineo	1?				\checkmark						
1.17		e vehicle and I areas?	d plant serv	ricing areas pa	ved and located wi	ithin					\checkmark			
1.18	ls the	oil/grease lea	akage or sp	illage avoided	?			\checkmark						
1.19		nere any me age system?	asures to	prevent leaked	oil from entering	the		\checkmark						
1.20		here any mo			cement and conc	rete		\checkmark						
1.21				grease traps ir areas, canteer	the drainage systen kitchen, etc?	ems					\checkmark			

L

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	\bigcirc
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	on 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	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		\checkmark				

Contaminated sediments will be managed according to WBTC No.12/2000 and EWTB TC(W) No. 34/2002. 4.23



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					
6.02	Are the warning sign or larvicidal oil record shown clearly at the construction site?		\checkmark								
	Remarks Findings of Site Inspection (27 August 2013): Follow up (27 August 2013):										
No e	nvironmental Issue was observed during the Nil Nil			-							
IEC's	representative RE's representative ET's representa	ative	EO's re	presentat	ive	Contracto	r's representative				
() (CY Keyr	ng)	(Mr. M	.K. Leur	 Ig)	(Vincent	$\frac{1}{1}$ chan $\frac{1}{1}$,				

Kwok Kwai Ming)

Environmental Team – Weekly Site I 1 4 ×. ~ 4. - -

Inspection and Audit Checklist – Yun	g Shue Wan	AUE
	Checklist	

Project:		FCS/00512/09	Inspecte	-		No.	······································					
			struction of Sewage Yung Shue Wan and	ETL/ ET	's Repres	entative:		Y Keung	ına/			
		Sok Kwu Wan			presentat		Kwoł	k Kwai Min	9 Josephnici			
					tor's Repi epresenta	resentative: tive:	. <u>Mr. N</u>	Mr. M. K. Leung ' 				
Date:	- 2	2 September 2013		Time:	presenta		11:00					
PAR	T A:		GENERAL INFORMAT	ION				Environmental Permit No.				
Weat	her:	Sunny	Fine Cloudy	Rai	лу		✓ E	P- 282/200	7			
Temp	perature	27.5	°c									
Humi	idity:	High	Moderate Low									
Wind	1:	Strong	Breeze 🗸 Light	Cal	m							
Area I 1	Inspecte Yung S	ed Shue Wan										
PART	В:		SITE AUDIT	<u>ar ar an </u>	antelon attant panta ing ana ang ang		4467-967 (1995) AND		n an			
Note:			npliance; No : Non-Compliance; follow-Up actions N/A : Not Applicable	e Obs	20.1	No	Follow Up	N/A	Photo/ Remarks			
Sectio		ter Quality										
1.01	ls an ef	ffluent discharge license	obtained for the Project?									
1.02	Is the e	ffluent discharged in ac	cordance with the discharge licenc	e?	\checkmark							
1.03		lischarge of turbid water			\checkmark							
1.04		ere proper desilting fa SS levels in effluent?	cilities in the drainage systems	to	\checkmark							
1.05		ere channels, sandbags entation tanks?	or bunds to direct surface run-off	to	\checkmark							
1.06		ere any perimeter chan pt storm runoff from cro	nels provided at site boundaries ssing the site?	to	\checkmark							
1.07	ls drair	nage system well mainta	ined?		\checkmark							
1.08		avation proceeds, are to d stone or gravel?	emporary access roads protected	by	\checkmark							
1.09	Are ten	nporary exposed slopes	properly covered?		\checkmark							
1.10	Are ea	rthworks final surfaces v	vell compacted or protected?		\checkmark							
1.11	Are ma	anholes adequately cove	ered or temporarily sealed?		\checkmark							
1.12	Are the	ere any procedures and	equipment for rainstorm protection	n?								
1.13	Are wh	eel washing facilities w	ell maintained?					\checkmark				
1.14	ls runo	ff from wheel washing f	acilities avoided?					\checkmark				
1.15	Are the	ere toilets provided on s	te?									
1.16 [.]	Are toi	lets properly maintained	?									
1.17		e vehicle and plant serv areas?	icing areas paved and located wit	hin				\checkmark				
1.18	Is the o	oil/grease leakage or sp	illage avoided?				\checkmark		Remark 1			
1.19		ere any measures to p ge system?	prevent leaked oil from entering	the								
1.20	Are th		collect spilt cement and concr orks?	ete								
1.21	Are the	ere any oil interceptors/	grease traps in the drainage syste areas, canteen kitchen, etc?	ems				\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
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.						
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				
Secti	on 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	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	on 6: Others						
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?					\checkmark	
6.02	Are the warning sign or larvicidal oil record shown clearly at the construction site?		\checkmark				

Remarks

Findings of Site Inspection (2 September 2013):



Oil leakage on the ground was observed at Yung Shue Wan pumping station, the contractor was requested to clean as soon as possible and provide proper mitigation measures to prevent further leakage.

IEC's representative RE's representative ET's representative EO's representative Contractor's representative () (Joseph Ng ') (CY Keeing) (Mr. M. K. Leung) (Vincent Charp)



Oil leakage at the Yung Shue Wan pumping station was cleared and no further leakage was observed.

Projec	t: TCS/00512/09 DC-2009-03: Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan 10 September 2013	Inspected I ETL/ ET's F RE's Repre Contractor IEC's Repr Time:	Represen esentative 's Repres	e: sentative:	Checklist No. <u>TCS512A-10 Sep 2013</u> Mr Ben Tam Mr. Alfred Cheung/ Kwok Kwai Ming/Joseph UC. Mr. M. K. Leung 11:00					
PART	A: GENERAL INFORMATIO	ИС			E	Invironme	ntal Permit No.			
Weat	ner: Sunny 🖌 Fine Cloudy	Rainy			✓ EF	P- 282/200	7			
Temp :	erature 28.6 °C									
Humi										
Wind:		Calm								
Area II 1	nspected Yung Shue Wan									
PART	B: SITE AUDIT		21		<u></u>					
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 1: Water Quality			<u>.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>						
1.01	Is an effluent discharge license obtained for the Project?		\checkmark							
1.02	Is the effluent discharged in accordance with the discharge licence	∋? □	\checkmark							
1.03	Is the discharge of turbid water avoided?		\checkmark							
1.04	Are there proper desilting facilities in the drainage systems reduce SS levels in effluent?	to	\checkmark							
1.05	Are there channels, sandbags or bunds to direct surface run-off sedimentation tanks?	to	\checkmark							
1.06	Are there any perimeter channels provided at site boundaries intercept storm runoff from crossing the site?	to	\checkmark							
1.07	Is drainage system well maintained?		\checkmark							
1.08	As excavation proceeds, are temporary access roads protected	by	\checkmark				1			
1.09	crushed stone or gravel? Are temporary exposed slopes properly covered?		$\overline{\mathbf{A}}$							
1.10	Are earthworks final surfaces well compacted or protected?		$\overline{\mathbf{A}}$			П				
	Are manholes adequately covered or temporarily sealed?		$\overline{\mathbf{A}}$							
1.11		2 □	$\overline{\mathbf{A}}$							
1.12	Are there any procedures and equipment for rainstorm protection					\square				
1.13	Are wheel washing facilities well maintained?					$\overline{\mathbf{A}}$				
1.14	Is runoff from wheel washing facilities avoided?									
1.15	Are there toilets provided on site?		\square							
1.16	Are toilets properly maintained?		\checkmark							
1.17	Are the vehicle and plant servicing areas paved and located with roofed areas?	hin				\checkmark				
1.18	Is the oil/grease leakage or spillage avoided?		\checkmark							
1.19	Are there any measures to prevent leaked oil from entering t drainage system?	the	\checkmark							
1.20	Are there any measures to collect spilt cement and concrewashings during concreting works?	ete	\checkmark							
1.21	Are there any oil interceptors/grease traps in the drainage system for vehicle and plant servicing areas, canteen kitchen, etc?	ms				\checkmark				

A	Plana.	L.	S

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	on 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				

AU	ES
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Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
3.08	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	
6.02	Are the warning sign or larvicidal oil record shown clearly at the construction site?		\checkmark				
Rema	ırks			*****			a a da
Findi	ngs of Site Inspection (10 September 2013): Foll	ow up (10 Sep	otembei	r 2013):		
	nvironmental issue was observed during the Nil spection.						

IEC's representative	RE's representative	ET's representative	EO's representative	Contractor's representative
	Joseph .			\mathcal{A}
()	(. Joseph Ng	(Ben Tàm)	(Mr. M. K. Leung)	(Vincent chark))

Projec	TCS/00512/09 Inspected by					Checklist No. <u>TCS512A-17 Sep 2013</u>				
Fi0jeu	DC-2009-03: Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan	ET RE	L/ ET's R 's Repres	epresent sentative	:	Mr Ben Tam/ Martin Li Mr. Alfred Cheung/ Kwok Kwai Ming Mr. M. K. Leung				
			ntractor's			Mr. M.	K. Leung	l		
			C's Repre	sentative	:	11:00				
Date:	17 September 2013	Tin						ntal Permit No.		
PART		·	Rainy				- 282/2007			
Weat		′ L				L				
: :	erature 27.8 °C									
Humi			Calm							
Wind:		L	J Cann							
Area Inspected 1 Yung Shue 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 Applica	ible	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks		
Sectio	n 1: Water Quality			 *	,		·····			
1.01	Is an effluent discharge license obtained for the Project?			\checkmark			L.			
1.02	Is the effluent discharged in accordance with the discharge lice	nce?		\checkmark						
1.03	Is the discharge of turbid water avoided?			\square						
1.04	Are there proper desilting facilities in the drainage system reduce SS levels in effluent?			$\mathbf{\nabla}$						
1.05	Are there channels, sandbags or bunds to direct surface run- sedimentation tanks?	off to		\square						
1.06	Are there any perimeter channels provided at site boundari intercept storm runoff from crossing the site?	es to		\checkmark						
1.07	Is drainage system well maintained?			\checkmark						
1.08	As excavation proceeds, are temporary access roads protector crushed stone or gravel?	ed by		\square						
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 protect	tion?		\checkmark						
1.13	Are wheel washing facilities well maintained?						\checkmark			
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 roofed areas?	within					$\mathbf{\nabla}$			
1.18	Is the oil/grease leakage or spillage avoided?			\checkmark						
1.19	Are there any measures to prevent leaked oil from enterir drainage system?			\checkmark						
1.20	Are there any measures to collect spilt cement and co washings during concreting works?	ncrete		\checkmark				••••••		
1.21	Are there any oil interceptors/grease traps in the drainage sy for vehicle and plant servicing areas, canteen kitchen, etc?	/stems					\checkmark			

AUES	AIIES
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Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
1.22	Are the oil interceptors/grease traps maintained properly?					\checkmark	
1.23	Is used bentonite recycled where appropriate?					\square	
1.24	Designated settlement area for runoff/wheel wash waste is provide and located at the streambed with 1-2m deep, 12m long and around 50m3 capacities for sedimentation.						
1.25	No excavation is undertaken in the settlement area.					\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?		\square				
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?		\square				
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				
Secti	on 3: Noise						
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?		\square				******
3.02	Is silenced equipment adopted?		\square				
3.03	Is idle equipment turned off or throttled down?	\square					
3.04	Are all plant and equipment well maintained and in good condition?		\checkmark				
3.05	Are noise barriers or enclosures provided at areas where construction activities cause noise impact on sensitive receivers?					\square	······
3.06	Are hand held breakers fitted with valid noise emission labels during operation?					\square	
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		$\overline{\mathbf{A}}$				
3.09	operation? Are Construction Noise Permit(s) applied for percussive piling					\square	
3.10	works? Are Construction Noise Permit(s) applied for general construction works during restricted hours?					$\overline{\mathbf{A}}$	
3.11	Are valid Construction Noise Permit(s) posted at site entrances?					$\mathbf{\nabla}$	
	Use of quiet plant had been used on site to minimise the construction noise impact to the surrounding residences/dwellings					$\overline{\mathbf{A}}$	
3.12	(Level 1 mitigation measures). Temporary/Moveable noise barrier or site hoarding are provide or		اا	ليسيا	اسب	لتــا	
3.13	erect at the site boundary to minise 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).						
Sectio	on 4: Waste/Chemical Management		_				
4.01	Waste Management Plan had been submit to Engineer for approval.						
4.02	Are receptacles available for general refuse collection?		\square				
4.03	Is general refuse sorting or recycling implemented?		\checkmark				
4.04	is general refuse disposed of properly and regularly?				\checkmark		Remark 1
4.05	Is the Contractor registered as a chemical waste producer?		\checkmark				
4.06	Are the chemical waste containers and storage area properly labelled?		\square				
4.07	Are the chemical wastes stored in proper storage areas?		\checkmark				
4.08	Is the chemical container or equipment provided with drip tray?		$\mathbf{\overline{A}}$				
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?					\square	
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?					\square	
Sectio	on 6: Others						
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?					\checkmark	
6.02	Are the warning sign or larvicidal oil record shown clearly at the construction site?		\checkmark				
	• • • •						

Remarks



Follow up (17 September 2013): The waste packages were removed and no other waste was observed.

Waste packages were observed at Yung Shue Wan pumping station, the contractor was requested to clean as soon as possible.

IEC's representative	RE's representative	ET's representative	EO's representative	Contractor's representative
	Jeseph.	Trach		M
()	(Joseph Hg 1	(Martin Li)	(Mr. M. K. Leung)	(Vincent cheen)
	RION.			

Projec	ct: TCS/00512/09	Ins	spected b	у		Checkl No.		512A-25 Sep 2013
	DC-2009-03: Construction of Sewage	ET	'L/ ET's R	epresent	ative:		rtin Li /	
	Treatment Works at Yung Shue Wan and Sok Kwu Wan	RE	's Repres	sentative	:	Kwok-	red-Cheu Kwai-Ming	JosephNCn
			ontractor'	•		<u>Mr. M</u> .	K. Leung	
	05.0		C's Repre ne:	sentativo	9:	11:00		
Date:	25 September 2013						nvironmei	ntal Permit No.
PART		····	Rainy				- 282/2007	
Weat						است		
:	20.2 °C							
Humi Wind		······	Calm					
	Inspected	• ـ						
1	Yung Shue Wan							
PART	B: SITE AUDI	T						
Note:	Not Obs.: Not Observed; Yes: Compliance; No: Non-Compliance; Follow Up: Observations requiring follow-Up actions N/A: Not Appli	cable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
Sectio	on 1: Water Quality							
1.01	Is an effluent discharge license obtained for the Project?			\checkmark				
1.02	Is the effluent discharged in accordance with the discharge li	cence?		\square				
1.03	Is the discharge of turbid water avoided?			\checkmark				
1.04	Are there proper desilting facilities in the drainage system reduce SS levels in effluent?	ems to		\checkmark				400 - 2411 - 201 -
1.05	Are there channels, sandbags or bunds to direct surface ru sedimentation tanks?	n-off to		\square				
1.06	Are there any perimeter channels provided at site bounda intercept storm runoff from crossing the site?	aries to		\checkmark				······································
1.07	Is drainage system well maintained?			\checkmark				
1.08	As excavation proceeds, are temporary access roads prote crushed stone or gravel?	cted by		\checkmark				
1.09	Are temporary exposed slopes properly covered?			\checkmark				······
1.10	Are earthworks final surfaces well compacted or protected?			\square				
1,11	Are manholes adequately covered or temporarily sealed?			\checkmark				
1.12	Are there any procedures and equipment for rainstorm prote	ection?		\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?			\square				
1.16	Are toilets properly maintained?			\checkmark				
1.17	Are the vehicle and plant servicing areas paved and locate roofed areas?	d within					$\mathbf{\overline{A}}$	
1.18	Is the oil/grease leakage or spillage avoided?			\checkmark				
1.19	Are there any measures to prevent leaked oil from ente drainage system?	ring the		\checkmark				
1.20	Are there any measures to collect spilt cement and o washings during concreting works?	concrete		\checkmark				·····
1.21	Are there any oil interceptors/grease traps in the drainage for vehicle and plant servicing areas, canteen kitchen, etc?	systems					\checkmark	

nection and Audit Checklist - Vung Shue Wan VAL. Environmen

ntal Team – Weekly Site Inspection and A	Audit Ch	necklis	st – Yun	g Shue V	Van	
Not Observed: Yes: Compliance: No: Non-Compliance:	Not			Follow		Photo

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 tollets 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		Photo 1
Sectio	on 2: Air Quality						
2.01	Are there wheel washing facilities with high pressure jets provided at every vehicle exit point?					\checkmark	
2.02	Are vehicles washed to remove any dusty materials from their bodies and wheels before leaving construction sites?		\checkmark				
2.03	Are the excavated materials sprayed with water during handling?		\checkmark				
2.04	Are stockpiles of dusty materials sprayed with water, covered or placed in sheltered areas?		\checkmark				
2.05	Is the exposed earth properly treated within six months after the last construction activities?	\checkmark					
2.06	Are the access roads sprayed with water to maintain the entire road surface wet or paved?		\checkmark				
2.07	Is the surface where any drilling, cutting, polishing or breaking operation continuously sprayed with water?					\checkmark	
2.08	Is the load on vehicles covered entirely by clean impervious sheeting?					\checkmark	
2.09	Is the loading of materials to a level higher than the side and tail boards during transportation by vehicles avoided?					\checkmark	
2.10	Is the road leading to the construction site within 30m of the vehicle entrance kept clear of dusty materials?		\checkmark				
2.11	Is dark smoke emission from plant/equipment avoided?		\checkmark				
2.12	Are de-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement?					\checkmark	
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.		$\mathbf{\overline{A}}$				
Secti	on 3: Noise						
3.01	Are noisy equipment and activities positioned as far as practicable from the sensitive receivers?		\square				
3.02	Is silenced equipment adopted?		\square				
3.03	Is idle equipment turned off or throttled down?	\square					
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?						
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?		\square				
4.05	Is the Contractor registered as a chemical waste producer?		\square				
4.06	Are the chemical waste containers and storage area properly labelled?		\checkmark				
4.07	Are the chemical wastes stored in proper storage areas?		\square				
4.08	Is the chemical container or equipment provided with drip tray?		\square				~~~~~
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?		\square				
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?					\square	
Sectio	on 6: Others						
6.01	Are relevant Environmental Permits posted at all vehicle site entrances/exits?					\checkmark	
6.02	Are the warning sign or larvicidal oil record shown clearly at the construction site?		\checkmark				

Remarks

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Findings of Site Inspection (25 September 2013):

Follow up (25 September 2013): The stragnant water at the drip tray was

removed.

Stagnant water was found at the drip tray, the contractor was reminded to clean up for mosquito breeding prevention.

IEC's representative	RE's representative	ET's representative	EO's representative	Contractor's representative
	Your Ala		i	\land
	Joseph.			in
		Muha	\bigvee	U V
()	(Joseph Ng.	(Martin Li)	(Mr. M. K. Leung)	(Vincent/chan)
	I O.			Į



Appendix M

Implementation Schedule of Mitigation Measures



Implementation Schedule of Air Quality Measures

EIA	EM&A		Location /	Implementation	Implementation Stages**			Relevant Legislation
Ref	Ref		Timing	Agent	D	C	0	& Guidelines
Constr	uction Phase							
2.3.18	2.10.2	 Adopting the following good site practices and follow the dust control requirements of the Air Pollution Control (Construction Dust) Regulation: Stockpiles of imported material kept on site should be contained within hoardings, dampened and / or covered during dry and windy weather; Material stockpiled alongside trenches should be covered with tarpaulins whenever works are close to village houses; Water sprays should be used during the delivery and handling of cement, sands, aggregates and the like. Any vehicle used for moving sands, aggregates and construction waste should have properly fitting side and tail boards. Materials should not be loaded to a level higher than the side and tail boards, and should be covered by a clean tarpaulin. 	Work site / during construction	All contractors		\checkmark		TM- EIAO, APCO, Air Pollution Control (Construction Dust) Regulation
2.10.3	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	Implementation Stages **			Relevant Legislation &
Ref	Ref		Location, Thing	Agent	D	С	0	Guidelines
Construc	tion Phase							
2.4.16	3.8.2	 Implementation of following measures during the sewer construction: Use of quiet PME or method; Restriction on the number plant (1 item for each type of plant); and Good Site Practices > Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction 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 utilized, wherever practicable, in screening noise from on-site construction activities. 	Work site /during the construction of Sewer.	Contractor				EIAO-TM, NCC
2.10.5 to 2.10.9	Section 35	Noise monitoring	Designated noise monitoring locations / throughout construction period	Contractor/ Environmental Team		V		EM&A Manual

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



Implementation Schedule of Water Quality Control Measures

EIA	EM&A	Environmental Protection Measures*	Location (duration	Implementation		lement Stages*		Relevant Legislation
Ref	Ref	Environmental Protection Measures*	/completion of measures)	Agent	D	C	0	and Guidelines
2.5.23	4.12.1	No-dig method using Horizontal Directional Drilling (HDD) would be used for the installation of main portion of outfall pipes	Marine works site / During construction of submarine outfall	Contractor		V		
4.5.38	4.12.3	 Dredging Works Implementation of following measures during the dredging works: dredging should be undertaken using closed grab dredgers with a maximum total production rate of 55m³/hr; deployment of 2-layer silt curtains with the first layer enclosing the grab and the second layer at around 50m from the dredging area while dredging works are in progress; dredging operation should be undertaken during ebb tide only; all vessels should be sized such that adequate clearance (i.e. minimum clearance of 0.6m) is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; all pipe leakages should be cleaned from the decks and exposed fittings of barges before the vessel is moved; adequate freeboard (i.e. minimum of 200mm) should be maintained on barges to ensure that decks are not washed by wave action; all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; loading of barges should be controlled to prevent splashing of dredged material to the surrounding water, and barges should not be filled to a level which will cause the overflow of materials or polluted water during loading or transportation; and 	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		measures)	Agent	D	C	0	and Guidelines
		• the decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard.						
2.5.39	4.12.4	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						
2.5.39	4.12.5	General Construction Activities	Construction works	Contractor				
		• Debris and rubbish generated on-site should be collected, handled and disposed of properly to avoid entering the nearby coastal waters and stormwater drains.	sites					



EIA	EM&A	Environmental Protection Measures*	Location (duration /completion of	Implementation	Implementation Stages**			Relevant Legislation
Ref	Ref	Environmental r lotection weasures	measures)	Agent	D	С	0	and Guidelines
		• 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.						
2.5.39	4.12.6	<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		\checkmark		
2.10.10	Section 4	Water quality monitoring	Designated water monitoring locations/ throughout construction period	Contractor		\checkmark		EM&A Manual

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Implementation Schedule of Sediment Contamination Mitigation Measures

EIA	EM&A	Engineering and a Drade string Managers	Lessting (Timing	Implementation	Implemen	tation Sta	nges**	Relevant Legislation &
Ref	Ref	Environmental Protection Measures*	Location / Timing	Agent	D	С	0	Guidelines
2.9.24	5.2.1	Carrying out Sediment Quality Investigation	Marine works site / prior to construction	DSD	\checkmark			WBTC No. 34/2002
2.9.23	5.2.1	Follow the requirement and procedures for dredged mud disposal specified under the WBTC No. 34/2002.	Marine works site / during dredging works	Contractor		\checkmark		WBTC No. 34/2002
2.9.23	5.2.2	Implement appropriate dredging methods which have been incorporated into the recommended water quality mitigation measures.	Marine works site, during dredging works	Contractor		V		
2.9.23	5.2.3	 During the transportation and disposal of the dredged sediment, the following measures should be taken: Bottom opening of barges should be fitted with tight fitting seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved. Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels should be equipped with automatic self monitoring devices as specified by the DEP. 	Marine works site and at the identified sensitive receivers	Contractor		V		

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Implementation Schedule of Solid Waste Management Measures

EIA	EM&A	A Environmental Protection Measures*	Location /	Implementation	Implementation Stages **			Relevant Legislation &
Ref	Ref		Timing	Agent	D	С	0	Guidelines
Construct	ion Phase					•		
2.9.14	6.6.2	 <u>Good site practices</u> Nomination of an approved person, such as a site manager, to be responsible for implementation of good site practices, arranging for collection and effective disposal to an appropriate facility, of all wastes generated at the site Training (proper waste management and chemical handling procedure) should be provided for site staffs Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. Provision of sufficient waste disposal points and regular collection for disposal. Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility. Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. Maintain records of the quantities of wastes generated, recycled and disposed. 	Work sites/During construction	Contractor				Waste Disposal Ordinance (Cap.54)
2.9.15	6.2.3	The Contractor will be required to open a billing account under the Construction Waste Disposal Charging Scheme, and to pay for disposal of all construction waste. The construction waste will be sent to a designated reception facility, which in this case will be YSW RTS, where drivers must present a valid chit for disposal of each load.	Work sites/During construction	Contractor		V		Waste disposal (Amendment) Ordinance 2004
2.9.16	6.2.4	 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 	Work sites/During construction	Contractor		V		WBTC No. 4/98, 5/98



EIA	EM&A	EM&A Ref Environmental Protection Measures*	Location /	Implementation	Implementation Stages **			Relevant Legislation &
Ref			Timing	Agent	D	С	0	Guidelines
		 segregate this waste from other general refuse generated by the work force; any unused chemicals or those with remaining functional 						
		• 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.						
2.9.18	6.2.5	 <u>General Site Wastes</u> A collection area for construction site waste should be provided where waste can be stored prior to removal from site 	Work sites/During construction	Contractor		\checkmark		Public Health and Municipal Services Ordinance (Cap. 132)
		• An enclosed and covered area for the collection of the waste is recommended to reduce 'wind blow' of light material						
2.9.19	6.2.6 and 6.2.7	 <u>Chemical Wastes</u> After use, chemical waste should be handled according to the Code of Practice on the Package, Labelling and Storage of Chemical Wastes Any unused chemicals or those with remaining functional capacity should be recycled 	Work sites/During construction	Contractor		V		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical
		 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. 						Wastes



EIA	EM&A Ref	Environmental Protection Measures*	Location /	Implementation	Implementation Stages **			Relevant Legislation &
Ref			Timing	Agent	D	С	0	Guidelines
		• Any service shop and minor maintenance facilities should be located on hard standing within a bunded area, and sumps and oil interceptors should be provided.						
		• Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should be undertaken within the designated areas equipped control these discharges						
2.9.21 and 2.9.22	6.2.8 and 6.2.9	 Construction and Demolition Material The C&D waste should be separated on-site into three categories: > public fill, the inert portion of the C&D material (e.g. concrete and rubble), which should be re-used on-site or disposed of at a public filling area; > C&D waste for re-use and / or recycling, the non-inert portion of the C&D material, (e.g. steel and other metals, woods, glass and plastic); > C&D waste which cannot be re-used and / or recycled (e.g. wood, glass and plastic) • Where possible, inert material should be re-used on-site • Where practicable, steel and other metals should be separated for re-use and/or recycling prior to disposal of C&D material 	During all construction phases	Contractors		V		WBTC No. 4/98, 5/98, 21/2002, 25/99, 12/2000

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Implementation Schedule of Ecological Impact Measures

EM&A	Environmental Protection Measures*	Location /	Implementation	Implementation Stages			Relevant Legislation &	
Kei		Timing	Agent	D	С	0	Guidelines	
tion Phase			•		•	·		
7.2 and	Carry out monitoring of corals before, during and after	Work sites /	Contractor					
7.3	marine works.	during						
		construction						
		phase						
7.6.1	Use horizontal directional drilling to avoid direct	Marine works	Contractor					
	disturbance to corals	site / during						
		dredging works						
4.12.3	Deploying of 2-layer silt curtains with the first layer	All work sites /	Contractor		\checkmark			
	enclosing the grab an the second layer at around 50m from	during						
	the dredging area while dredging works are in progress	construction						
		phase						
7.6.1	Fence off the slope stabilisation works area from	STW/ During	Contractor		\checkmark			
	surrounding shrubland and/ woodland, to prevent access to	construction						
	or disturbance of adjacent habitats. The works area							
	should be as small as is possible, consistent with the							
	requirements of the works.							
	Ref ion Phase 7.2 and 7.3 7.6.1 4.12.3	RefEnvironmental Protection Measures*ion Phase7.2 and 7.3Carry out monitoring of corals before, during and after marine works.7.6.1Use horizontal directional drilling to avoid direct disturbance to corals4.12.3Deploying of 2-layer silt curtains with the first layer 	RefEnvironmental Protection Measures*Timingion Phase7.2 and 7.3Carry out monitoring of corals before, during and after marine works.Work sites / during construction phase7.6.1Use horizontal directional drilling to avoid direct disturbance to coralsMarine works site / during dredging works4.12.3Deploying of 2-layer silt curtains with the first layer enclosing the grab an the second layer at around 50m from the dredging area while dredging works area in progressAll work sites / during construction phase7.6.1Fence off the slope stabilisation works area from surrounding shrubland and/ woodland, to prevent access to or disturbance of adjacent habitats. The works area should be as small as is possible, consistent with theSTW/ During construction	RefEnvironmental Protection Measures*TimingAgention Phase7.2 and 7.3Carry out monitoring of corals before, during and after marine works.Work sites / during construction phaseContractor7.6.1Use horizontal directional drilling to avoid direct disturbance to coralsMarine works site / during dredging worksContractor4.12.3Deploying of 2-layer silt curtains with the first layer enclosing the grab an the second layer at around 50m from the dredging area while dredging works area in progressAll work sites / during construction phaseContractor7.6.1Fence off the slope stabilisation works area from surrounding shrubland and/ woodland, to prevent access to or disturbance of adjacent habitats. The works area should be as small as is possible, consistent with theSTW/ During constructionContractor	LM&A Ref Environmental Protection Measures* Location / Timing Implementation Agent Implementation Agent ion Phase	LM&A Ref Environmental Protection Measures* Location / Timing Implementation Agent Stages D ion Phase	EM&A RefEnvironmental Protection Measures*Location / TimingImplementation Agent \overline{Stages} ion Phase7.2 and marine works.Carry out monitoring of corals before, during and after marine works.Work sites / during construction phaseContractor $$ 7.6.1Use horizontal directional drilling to avoid direct disturbance to coralsMarine works site / during dredging worksContractor $$ 4.12.3Deploying of 2-layer silt curtains with the first layer enclosing the grab an the second layer at around 50m from the dredging area while dredging works are in progressAll work sites / during construction phaseContractor $$ 7.6.1Fence off the slope stabilisation works area from surrounding shrubland and/ woodland, to prevent access to or disturbance of adjacent habitats. The works area should be as small as is possible, consistent with theSTW/ During construction phaseContractor $$	

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Implementation Schedule of Fisheries Impact Measures

EIA Ref	EM&A	Environmental Protection Measures*	Location /	Implementation Agent	Implementation Stages**			Relevant Legislation
	Ref		Timing		D	С	0	& Guidelines
2.5.37	4.12.4	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		Contractor		\checkmark		TM on EIA Process

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Implementation Schedule of Landscape and Visual Impact Measures

EIA Ref	EM&A Ref	A Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation &
NCI	Kei		Timing	Agent	D	С	0	Guidelines
Constru	iction Pha	se						
2.8.37	9.2.2	Careful and efficient transplanting of affected trees to temporary or final transplant location (the proposed tree to be transplanted is a semi-mature <i>Macaranga tanarius</i> and is located at the proposed Pumping Station P2 location).	All sites	Contractor		\checkmark		WBTC No. 14/2002
2.8.37	9.2.2	Short excavation and immediate backfilling sections upon completion of works to reduce active site area.	All sites	Contractor		V		
2.8.37	9.2.2	Screening of site construction works by use of hoarding that is appropriate to its site.	All sites	Contractor				WBTC No. 19/2001
2.8.37	9.2.2	Conservation of topsoil for reuse.	All sites	Contractor		\checkmark		
2.8.30	9.2.2	Night-time light source from marine fleets should be directed away from the residential units.	Outfall area.	Contractor		\checkmark		

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