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.46) – JUNE 2014

PREPARED FOR
LEADER CIVIL ENGINEERING CORPORATION LIMITED

Quality Index

Date	Reference No.	Prepared By	Approved By
3 July 2014	TCS00512/09/600/R0794v1		
		Martin Li Assistant Environmental Consultant	T.W. Tam Environmental Team Leader

Version	Date	Description
1	3 July 2014	First Submission
2	10 July 2014	Amended against IEC's comment on 7 July 2014

URS CDM Joint Venture

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

Attention: Mr F.K. Pong

Your reference:

Our reference: 05117/6/16/430804

Date: 15 July 2014

BY FAX

Dear Sir,

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. 46 (June 2014)

We refer to the Monthly EM&A Monitoring Report No. 46 for June 2014 received under cover of the email from the Environmental Team, Action-United Environmental Services and Consulting (AUES), dated on 10 July 2014. We have no comment and have verified the captioned report.

Yours faithfully
URS CDM JOINT VENTURE

Rodney Ip
Independent Environmental Checker

ICWR/CKCH/lykl

Encl

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

EXECUTIVE SUMMARY

ES.01. This is the **46th** 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 May 2014** to **25 June 2014** (hereinafter 'the Reporting Period').

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

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

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	**36**
	24-hour TSP	**10**
Construction Noise	$L_{eq\ (30min)}$ Daytime	**6**
Inspection / Audit	ET Regular Environmental Site Inspection	**4**

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 Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	--	--
	24-hour TSP	0	0	0	--	--
Construction Noise	$L_{eq(30min)}$ Daytime	0	0	0	--	--

Note: NOE – Notification of Exceedance

SITE INSPECTION

ES.05. In this Reporting Period, **4** events of weekly joint inspection by the RE, the Contractor and ET were carried out on **27 May 2014; 4, 10,** and **17 June 2014**.

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 wet season, the Contractor shall pay 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 coral zones of Yung Shue Wan seawall, Shek Kok Tsui and O Tsai should be avoided. Mitigation measures for water quality 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.

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1. INTRODUCTION

PROJECT BACKGROUND

1.01 The Leader Civil Engineering Corporation Limited (Leader) has been awarded the *Contract DC/2009/13 - Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan* (the Project) by the Drainage Services Department (DSD) on 4 May 2010. The Project is part of an overall plan approved under a statutory EIA for Outlying Islands Sewerage Stage 1 Phase 2 Package J – Sok Kwu Wan Sewage Collection and Treatment (Register No. AEIAR-075/2003) and Disposal Facilities and Outlying Islands Sewerage Stage 1 Phase 1 Package C – Yung Shue Wan Sewage Treatment Works and Outfall (Register No. EIA-124/BC). The Environmental Permit (EP) No. EP-281/2007 and EP-282/2007 for the Project have been obtained by the DSD on 29 June 2007 for the relevant works. After July 2009, EP-281/2007/A stead EP-281/2007 is EP for Sok Kwu Wan relevant Works.

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

1.03 According to the Particular Specification (PS) and ***Appendix 25*** of the Project, Leader should establish an Environmental Team (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 **46th** monthly EM&A Report for Yung Shue Wan Portion Area which presenting the monitoring results and inspection findings in the Reporting Period from **26 May 2014** to **25 June 2014**.

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:-

- Excavation,
- Pipe laying,
- Concreting,
- Installation of equipment and finishing works

SUMMARY OF ENVIRONMENTAL SUBMISSIONS

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

Table 2-1 Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Air Pollution Control (Construction Dust) Regulation	Notified 19/5/2010 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 Waste	Issued on 26 May 2010 A/C No: 7010815

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

Table 2-2 Status of EM&A Programme Submission

Item	EM&A Programme Submission	Status
1	Proposed EM&A Programme for Baseline / Impact Monitoring – Yung Shue Wan (TCS00512/09/600/R0011Ver.5)	Verified by IEC and submitted to EPD on 8 July 2010
2	Method Statement for Coral Monitoring – Yung Shue Wan (TCS00512/09/600/R0071Ver.3)	Verified by IEC and submitted to EPD on 25 November 2010
3	Baseline Air and Noise Monitoring Report - Volume 1 (TCS00512/09/600/R0061Ver.3)	Verified by IEC and submitted to EPD on 31 August 2010
4	Baseline Monitoring Report Volume 2 - Water Quality (TCS00512/09/600/R0158Ver.2)	Verified by IEC and submitted to EPD on 10 March 2011
5	Baseline Survey for Coral Monitoring – Yung Shue Wan (TCS00512/09/600/R0132Ver.3)	Verified by IEC and submitted to EPD on 17 February 2011
6	Methodology of Coral Tagging for Impact Monitoring – Yung Shue Wan	Verified by IEC and submitted to EPD on 28 March 2011
7	Coral Tagging Report (TCS00512/09/600/R0214Ver.4)	Verified by IEC and submitted to EPD 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***:

Table 3-1 Summary of the EM&A Requirements

Environmental Issue	Parameters
Air Quality	• 1-hour TSP Monitoring by Real-Time Portable Dust Meter; and • 24-hour TSP Monitoring by High Volume Air Sampler.
Noise	• $L_{eq\ (30min)}$ 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 (℃). ***Laboratory Analysis*** • Suspended Solids (SS) (mg/L)
Ecology	• Coral Monitoring

MONITORING LOCATIONS

Air Quality

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 3-2 Location 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 3-3 Location 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	
		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 Permit

Duration: Throughout the construction period

Marine Water Quality Monitoring

Parameters: Duplicate in-situ measurements: water depth, temperature, dissolved oxygen, pH, turbidity and salinity

HOKLAS-accredited laboratory analysis: suspended solids

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

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

Duration: During the course of marine works

Coral Monitoring

Parameters: 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

Frequency: 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

Duration: 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.

1-hour TSP

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 90^0 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^{o}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 m^3/min.

Noise Monitoring

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 $4^{O}C$ without being frozen), and delivered to HOKLAS accredited laboratory for the chemical analysis as followed APHA *Standard Methods for the Examination of Water and Wastewater* 19ed 2540D, unless otherwise specified.
- The laboratory has be comprehensive quality assurance and quality control programmes. For QA/QC procedures, one duplicate samples of every batch of 20 samples is analyzed as followed the HOKLAS accredited requirement.

3.24 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.

Table 3-5 Action and Limit Levels for Air Quality

Monitoring Station	Action Level (μg /m^3)		Limit Level (μg/m^3)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AC02b	288	161	500	260
AC04c	290	176	500	260

Table 3-6 Action and Limit Levels for Construction Noise

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

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

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

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

Parameter	Performance Criteria	Impact Station		
		WY1	WY2	WY3
(NTU)	Limit Level	17.35	15.20	16.21
Suspended Solids (Depth-Average) (mg/L)	Action Level	17.52	14.04	14.52
	Limit Level	25.62	16.51	16.88

Table 3-8 Action and Limit Levels for Coral Monitoring

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***.

Result

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***.

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

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
26-May-14	NA*	26-May-14	13:45	22	21	28
31-May-14	13	30-May-14	14:19	52	39	56
6-Jun-14	30	5-Jun-14	12:48	30	27	36
12-Jun-14	57	11-Jun-14	12:53	51	43	38
18-Jun-14	33	17-Jun-14	13:55	38	36	36
24-Jun-14	NA*	23-Jun-14	10:00	171	89	85
Average (Range)	TBA	Average (Range)		**50 (21 – 171)**		

**No data collected due to power failure.*

Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results at AC04c

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
26-May-14	31	26-May-14	13:49	28	21	35
31-May-14	26	30-May-14	14:26	64	57	41
6-Jun-14	NA*	5-Jun-14	12:39	22	27	21
12-Jun-14	70	11-Jun-14	12:28	48	41	35
18-Jun-14	49	17-Jun-14	9:50	38	30	39
24-Jun-14	35	23-Jun-14	9:53	120	67	57
Average (Range)	TBA	Average (Range)		**44 (21 – 120)**		

**No data collected due to power failure.*

4.03 There were 3 events of power failure incidents of HVS recorded in this Reporting Period. The power supply has been rectified before the next monitoring event.

4.04 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.

4.05 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***.

Table 5-1 Summarized of Construction Noise Monitoring Results at NC05

Date	Start Time	End Time	1st set L_{eq5}	2nd set L_{eq5}	3rd set L_{eq5}	4th set L_{eq5}	5th set L_{eq5}	6th set L_{eq5}	L_{eq30}	Corrected L_{eq30}*
26-May-14	14:05	14:35	58.2	56.4	58.0	55.8	56.1	57.8	57.2	60.2
30-May-14	14:35	15:05	59.7	56.2	60.6	58.8	61.9	62.7	60.5	63.5
5-Jun-14	11:39	12:09	58.0	54.3	56.6	62.8	54.6	56.2	58.2	61.2
11-Jun-14	15:34	16:04	62.1	56.7	56.9	56.3	54.7	55.1	57.8	60.8
17-Jun-14	9:57	10:27	62.6	57.4	60.6	54.1	58.8	64.2	60.8	63.8
23-Jun-14	13:50	14:20	61.6	65.0	59.8	58.9	59.6	59.8	61.4	64.4
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 8-1 Summary 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	-

Table 8-2 Summary 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)	33.060	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 May 2014; 4, 10,** and **17 June 2014**.

9.02 The findings/ deficiencies that observed during the weekly site inspection are listed in ***Table 9-1*** and the relevant checklists are attached in ***Appendix L***.

Table 9-1 Site Observations

Date	Findings / Deficiencies	Follow-Up Status
27 May 2014	• No environmental issue was observed during the site inspection	NA
4 June 2014	• The Contractor was reminded to cover the stockpile well with tarpaulin sheet to reduce dust generation.	The stockpile was well-covered.
10 June 2014	• The Contractor was reminded to dispose used cement bag properly.	The used cement bag was removed.
17 June 2014	• No environmental issue was observed during the site inspection	NA

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

Reporting Period	Environmental Complaint Statistics		
	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 - December 2013	0	0	NA
January – May 2014	0	0	NA
June 2014	0	0	NA

Table 10-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	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 - December 2013	0	0	NA
January – May 2014	0	0	NA
June 2014	0	0	NA

Table 10-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	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 – December 2013	0	0	NA
January – May 2014	0	0	NA
June 2014	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 55m^3/hr;
- Deployment of 2-layer silt curtains with first layer enclosing the grab and the second layer at around 50, from the dredging area while dredging works are in progress;
- all vessels should be sized such that adequate clearance (i.e. minimum clearance of 0.6m) is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;
- all pipe leakages should be repaired promptly and plant shall not be operated with leaking pipes;
- excess material should be cleaned from the decks and exposed fittings of barges before the vessel is moved;
- adequate freeboard (i.e. minimum of 200m) should be maintained on barges to ensure that decks are not washed by wave action;
- all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material;
- 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***.

Table 11-1 Environmental Mitigation Measures

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

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

12. IMPACT FORECAST

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

Water Quality

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

Air Quality

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

Noise

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

Waste and Chemical Management

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

13. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

13.01 This is the **46th** Monthly EM&A Report covering the construction period from **26 May 2014** to **25 June 2014**.

13.01 No 1-hour and 24-hour TSP result was found to be triggered the Action or Limit Level in this Reporting Period.

13.02 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.

13.03 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.

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

13.05 In this Reporting Period, joint-site visit by RE, the Contractor and ET was carried out on **27 May 2014; 4, 10,** and **17 June 2014**. The environmental performance of the Project was considered as satisfactory.

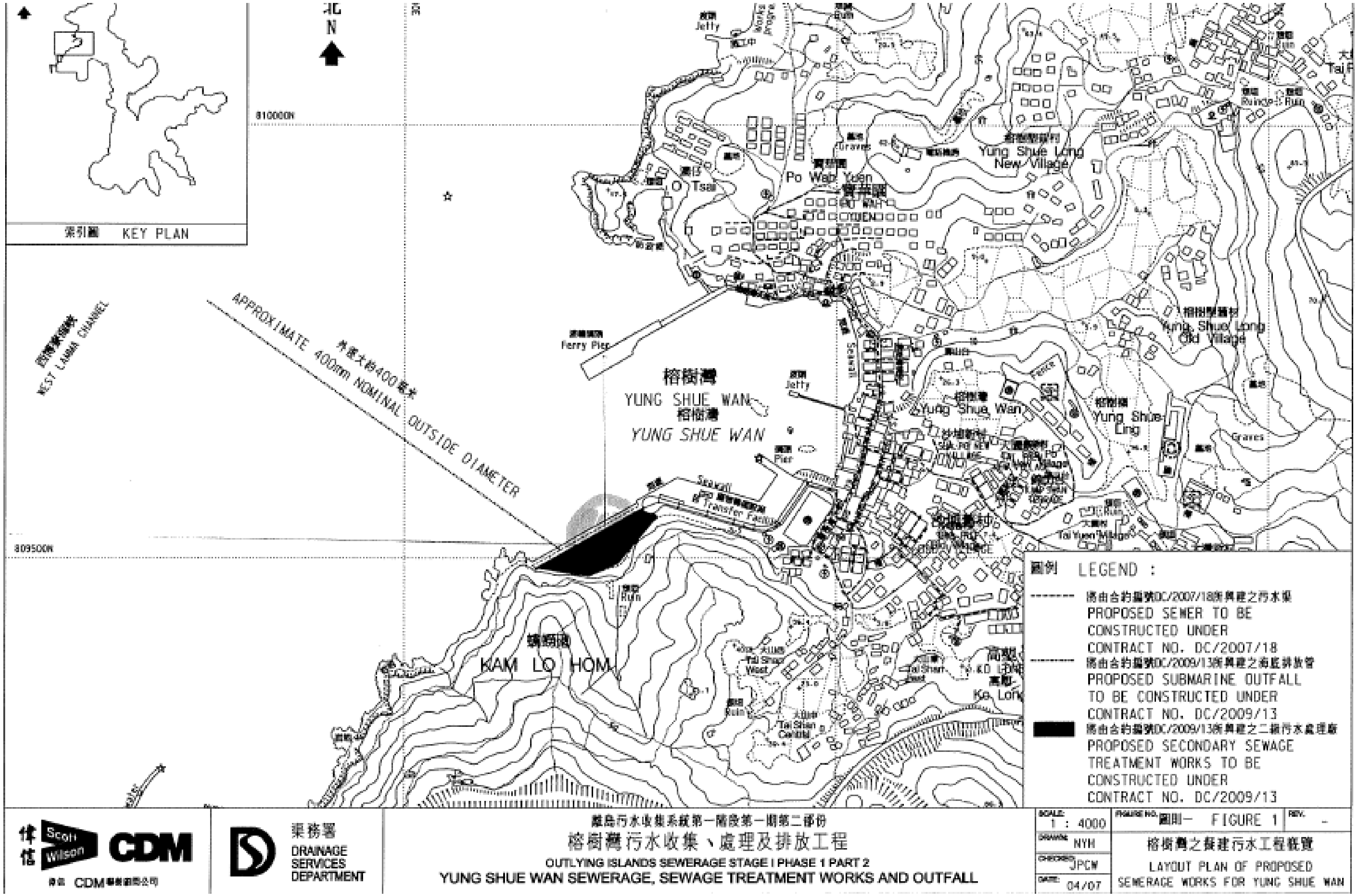
RECOMMENDATIONS

13.06 During wet season, the Contractor shall pay 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 coral zones of Yung Shue Wan seawall, Shek Kok Tsui and O Tsai should be avoided. Mitigation measures for water quality should be fully implemented.

13.07 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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N
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810000N
809500N
西南丫島航道
WEST LAMMA CHANNEL
APPROXIMATE 400mm NOMINAL OUTSIDE DIAMETER
Ferry Pier
榕樹灣
YUNG SHUE WAN
YUNG SHUE WAN
Jetty
Pier
Seawall
Transfer Facility
Po Wah Yuen
Yung Shue Long New Village
Yung Shue Long Old Village
Yung Shue Wan
Yung Shue Ling
Graves
Tai Yuen Village
KAM LO HOM
Ruin
Tai Shan West
Tai Shan Central
Ko Long
圖例 LEGEND :
將由合約編號DC/2007/18所興建之污水渠
PROPOSED SEWER TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2007/18
將由合約編號DC/2009/13所興建之海底排放管
PROPOSED SUBMARINE OUTFALL TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
將由合約編號DC/2009/13所興建之二級污水處理廠
PROPOSED SECONDARY SEWAGE TREATMENT WORKS TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
Scott Wilson
CDM
渠務署
DRAINAGE SERVICES DEPARTMENT
離島污水收集系統第一階段第一期第二部份
榕樹灣污水收集、處理及排放工程
OUTLYING ISLANDS SEWERAGE STAGE I PHASE 1 PART 2
YUNG SHUE WAN SEWERAGE, SEWAGE TREATMENT WORKS AND OUTFALL
SCALE 1 : 4000
DRAWN NYH
CHECKED JPCW
DATE 04/07
圖則一 FIGURE 1
REV. -
榕樹灣之擬建污水工程概覽
LAYOUT PLAN OF PROPOSED SEWERAGE WORKS FOR YUNG SHUE WAN

Appendix B

Organization Structure and Contact Details of Relevant Parties

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. F K Pong	2159-3550	2833-9162
UCJV	Engineer's Representative	Mr. Kenneth W K Kwong	2982 0240	2982 4129
URS	Independent Environmental Checker	Mr. Rodney Ip	2410 3750	2428 9922
Leader	Director	Mr. Wilfred So	2982 1750	2982 1163
Leader	Contracts Manager	Mr. Vincent Chan	2982 1750	2982 1163
Leader	Site Agent	Mr. Ron Hung	2982 1750	2982 1163
Leader	Environmental Officer	Mr. Leung Man Kin	2982 8652	2982 8650
Leader	Sub-Agent	Mr. Leung Man Kin	2982 1750	2982 1163
Leader	Senior Safety Officer	Mr. Andy Lau	2982 1750	2982 1163
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Team Supervisor	Mr. Ben Tam	2959 6059	2959 6079
AUES	Coral Specialist	Mr. Keith Kei	2959 6059	2959 6079

Legend:

DSD (Employer) – Drainage Services Department

UCJV (Engineer) – URS CDM Joint Venture

Leader (Main Contractor) – Leader Civil Engineering Corporation Limited

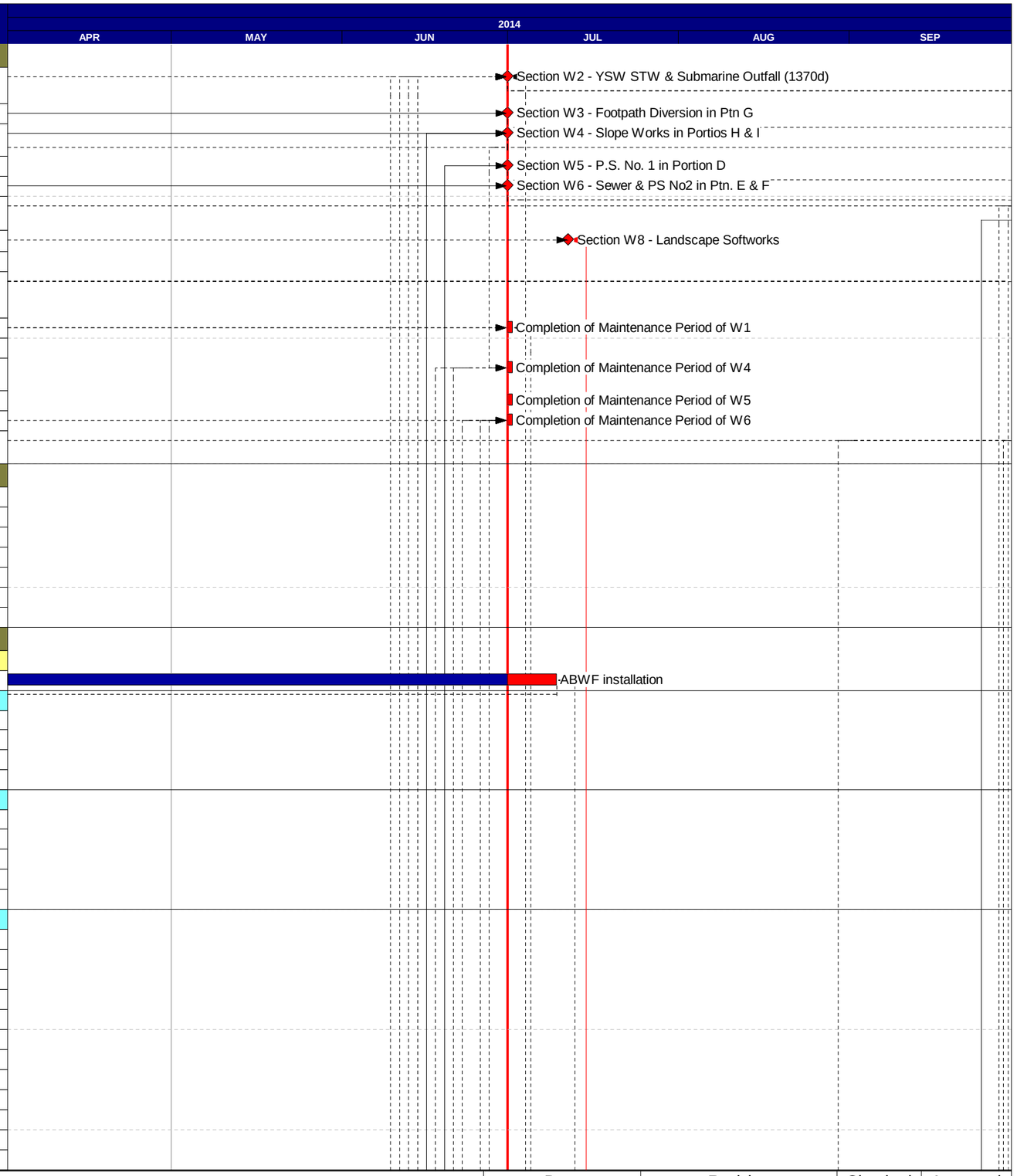
URS (IEC) – URS Hong Kong Limited

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

Appendix C

Three Months Rolling Construction Programme

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
Project Key Date							
KD0040	Section W2 - YSW STW & Submarine Outfall (1370d)	0	0		30/06/14 *		16/06/14 *
KD0050	Section W3 - Footpath Diversion in Ptn G	0	0		30/06/14 *		30/06/14
KD0060	Section W4 - Slope Works in Portios H & I	0	0		30/06/14 *		27/03/12
KD0070	Section W5 - P.S. No. 1 in Portion D	0	0		30/06/14 *		30/06/14
KD0080	Section W6 - Sewer & PS No2 in Ptn. E & F	0	0		30/06/14 *		30/06/14
KD0090	Section W7 - SKW STW, RM & Sm. Outfall	0	0		07/10/14 *		07/10/14 *
KD0100	Section W8 - Landscape Softworks	0	0		11/07/14 *		11/07/14
KD0110	Section W9 - Establishment Works	0	0		21/01/15 *		21/01/15
KD0125	Project Completion	0	0		12/09/15 *		12/09/15 *
KD0130	Completion of Maintenance Period of W1	1	0	01/07/14 *	01/07/14 *	13/10/12	13/10/12 *
KD0132	Completion of Maintenance Period of W2	1	0	15/06/15	15/06/15 *	15/06/15	15/06/15 *
KD0135	Completion of Maintenance Period of W4	1	0	01/07/14	01/07/14 *	27/03/13	27/03/13 *
KD0145	Completion of Maintenance Period of W5	1	0	01/07/14	01/07/14 *	10/02/13	10/02/13 *
KD0155	Completion of Maintenance Period of W6	1	0	01/07/14	01/07/14 *	10/02/13	10/02/13 *
KD0165	Completion of Maintenance period of W7	1	0	06/10/15	06/10/15 *	06/10/15	06/10/15 *
Preliminary (Civil)							
PRE0020	Pre-condition Survey	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A
PRE0040	Erection of Engineer's Site Accommodation at YSW	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A
PRE0050	Taking over the Secondary Engineer's Site Accomm	75	100	17/05/10 A	30/07/10 A	17/05/10 A	30/07/10 A
PRE0060	Application of Consent from Marine Department	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A
PRE0090	Working Group Meeting for Outfall Construction	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A
PRE0100	Application & Consent of XP from HyD (Mo Tat Rd)	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A
PRE0130	Setup Web-site for EM&A Reporting	90	100	17/05/10 A	14/08/10 A	17/05/10 A	14/08/10 A
Preliminary (E&M)							
Technical Submission							
YSW0820	ABWF installation	90	90	15/01/13 A	09/07/14	15/01/13 A	27/05/13
Process Design of SKWSTW & YSWSTW							
E&M0010	Submission	38	100	17/05/10 A	23/06/10 A	17/05/10 A	23/06/10 A
E&M0020	Vetting and Comment by ER	21	100	24/06/10 A	14/07/10 A	24/06/10 A	14/07/10 A
E&M0030	Revision and Resubmission	125	100	15/07/10 A	16/11/10 A	15/07/10 A	16/11/10 A
E&M0080	Approval from the Engineer	14	100	17/11/10 A	30/11/10 A	17/11/10 A	30/11/10 A
Hydraulic Design							
E&M0040	Submission	21	100	15/07/10 A	04/08/10 A	15/07/10 A	04/08/10 A
E&M0050	Vetting and Comment by ER	14	100	05/08/10 A	18/08/10 A	05/08/10 A	18/08/10 A
E&M0060	Revision and Resubmission	97	100	19/08/10 A	10/10/10 A	19/08/10 A	10/10/10 A
E&M0430	Approval from the Engineer	7	100	24/11/10 A	30/11/10 A	24/11/10 A	30/11/10 A
YSW1536	Water tightness test	40	100	12/08/13 A	26/08/13 A	12/08/13 A	26/08/13 A
Equipment Submission & Approval							
E&M0070	Submission of Membrane Module	50	100	17/05/10 A	05/07/10 A	17/05/10 A	05/07/10 A
E&M0090	Vetting and Comment by ER	14	100	06/07/10 A	19/07/10 A	06/07/10 A	19/07/10 A
E&M0100	Revision and Resubmission	14	100	20/07/10 A	24/02/11 A	20/07/10 A	24/02/11 A
E&M0101	Submission of Equipment	90	100	05/08/10 A	30/11/11 A	05/08/10 A	30/11/11 A
E&M0102	Vetting and Comment by ER	60	100	03/11/10 A	30/11/11 A	03/11/10 A	30/11/11 A
E&M0103	Revision and Resubmission	60	100	01/02/11 A	30/11/11 A	01/02/11 A	30/11/11 A
E&M0110	Approval on Coarse Screens	30	100	25/05/11 A	25/05/11 A	25/05/11 A	25/05/11 A
E&M0120	Approval on Fine Screens	30	100	12/09/11 A	12/09/11 A	12/09/11 A	12/09/11 A
E&M0130	Approval on Pumps	30	100	23/06/11 A	23/06/11 A	23/06/11 A	23/06/11 A
E&M0140	Approval on Submersible Mixers	30	100	23/03/11 A	23/03/11 A	23/03/11 A	23/03/11 A
E&M0150	Approval on Grit Removal Equipment	30	100	10/10/11 A	10/10/11 A	10/10/11 A	10/10/11 A
E&M0160	Approval on MBR Membrane Modules (M.M.)	105	100	03/08/10 A	24/02/11 A	03/08/10 A	24/02/11 A



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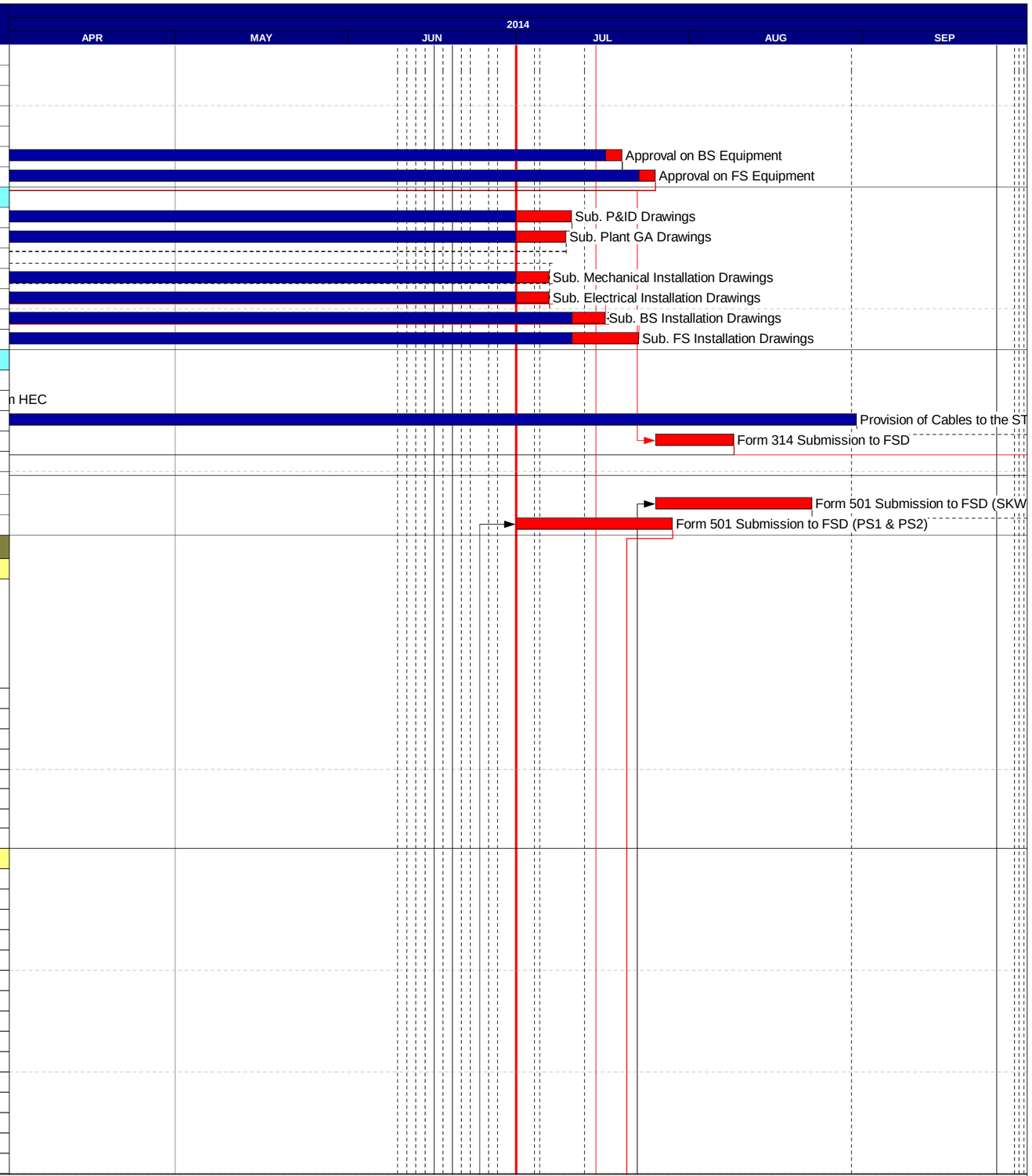
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Jul 2014 - Sep 2014

Date	Revision	Checked	Approved
30/06/14	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
E&M0170	Approval on Sludge Dewatering Equipment	30	100	01/09/11 A	01/09/11 A	01/09/11 A	01/09/11 A
E&M0180	Approval on Valves, Pipes & Fittings	30	100	19/11/11 A	04/08/13 A	19/11/11 A	04/08/13 A
E&M0190	Approval on Penstocks	30	100	15/11/11 A	15/11/11 A	15/11/11 A	15/11/11 A
E&M0200	Approval on Instrumentation	30	100	21/06/11 A	08/03/12 A	21/06/11 A	08/03/12 A
E&M0210	Approval on MCC & LVSB	30	100	19/11/11 A	01/01/14 A	19/11/11 A	01/01/14 A
E&M0220	Approval on BS Equipment	30	90	30/11/11 A	19/07/14	30/11/11 A	22/10/12
E&M0230	Approval on FS Equipment	30	90	30/11/11 A	25/07/14	30/11/11 A	21/12/12
Drawings Submission & Approval							
E&M0235	Sub. P&ID Drawings	100	90	24/06/10 A	10/07/14	24/06/10 A	13/10/12
E&M0240	Sub. Plant GA Drawings	45	80	04/08/10 A	09/07/14	04/08/10 A	13/10/12
E&M0250	Sub. Builder's Works Requirements Drawings	15	100	04/08/10 A	31/01/13 A	04/08/10 A	31/01/13 A
E&M0260	Sub. Mechanical Installation Drawings	60	90	27/09/10 A	06/07/14	27/09/10 A	13/10/12
E&M0270	Sub. Electrical Installation Drawings	60	90	27/09/10 A	06/07/14	27/09/10 A	13/10/12
E&M0280	Sub. BS Installation Drawings	120	95	27/09/10 A	16/07/14	27/09/10 A	19/10/12
E&M0290	Sub. FS Installation Drawings	120	90	13/11/11 A	22/07/14	13/11/11 A	18/12/12
Statutory Submission							
E&M0295	Preparation of Submission to HEC	39	100	01/11/11 A	30/11/11 A	01/11/11 A	30/11/11 A
E&M0300	Application & Approval from HEC	150	100	01/11/11 A	03/03/14 A	01/11/11 A	03/03/14 A
E&M0305	Provision of Cables to the STWs	180	100	03/03/14 A	30/08/14 A	03/03/14 A	30/08/14 A
E&M0320	Form 314 Submission to FSD	14	0	26/07/14	08/08/14	08/06/13	22/06/13
E&M0325	Submission to WSD	14	100	01/11/11 A	29/02/12 A	01/11/11 A	29/02/12 A
E&M0330	Form 501 Submission to FSD (YSW)	28	0	30/04/15	27/05/15	17/03/14	13/04/14
E&M0340	Form 501 Submission to FSD (SKW)	28	0	26/07/14	22/08/14	11/06/14	08/07/14
E&M0350	Form 501 Submission to FSD (PS1 & PS2)	28	0	01/07/14	28/07/14	14/11/12	11/12/12
Yung Shue Wan							
Preliminary							
KD0020	Project Commencement Date	0	100		17/05/10 A		17/05/10 A
KD0030	Section W1 - Slope Works in Portion A & C	0	100		14/10/11 A		14/10/11 A
YSW0020	Approval of Environmental Team	16	100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A
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
YSW0030	Baseline monitoring (Air & Noise)	23	100	31/07/10 A	22/08/10 A	31/07/10 A	22/08/10 A
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
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
YSW0040	Baseline monitoring (Water)	155	100	30/07/10 A	31/12/10 A	30/07/10 A	31/12/10 A
YSW0050	Erect Hoarding and Fencing	60	100	19/05/10 A	17/07/10 A	19/05/10 A	17/07/10 A
Section W1 - Slope Works in Portion A & C							
YSW0075	Mobilization	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A
YSW0080	Site Clearance	30	100	16/06/10 A	15/07/10 A	16/06/10 A	15/07/10 A
YSW0085	Initial Survey	14	100	02/07/10 A	15/07/10 A	02/07/10 A	15/07/10 A
YSW0090	Verify the Rock Boulder required Stablization Wk	249	100	16/07/10 A	21/03/11 A	16/07/10 A	21/03/11 A
YSW0100	Removal of Rock Boulder	257	100	20/09/10 A	03/06/11 A	20/09/10 A	03/06/11 A
YSW0110	Stablizing work for rock boulder	35	100	16/07/11 A	19/08/11 A	16/07/11 A	19/08/11 A
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
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
YSW0132	Erect Scaffold and Working Platform	2	100	26/09/10 A	27/09/10 A	26/09/10 A	27/09/10 A
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
YSW0134	Drilling and Soil Nails Installation	43	100	19/10/10 A	30/11/10 A	19/10/10 A	30/11/10 A
YSW0135	Construction of Nail Heads	12	100	01/12/10 A	12/12/10 A	01/12/10 A	12/12/10 A
YSW0136	Mesh Installation on Cut Slope	3	100	13/12/10 A	15/12/10 A	13/12/10 A	15/12/10 A
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
YSW0140	Construct U-channels & Step Channel on Cut Slope	182	100	13/04/11 A	11/10/11 A	13/04/11 A	11/10/11 A



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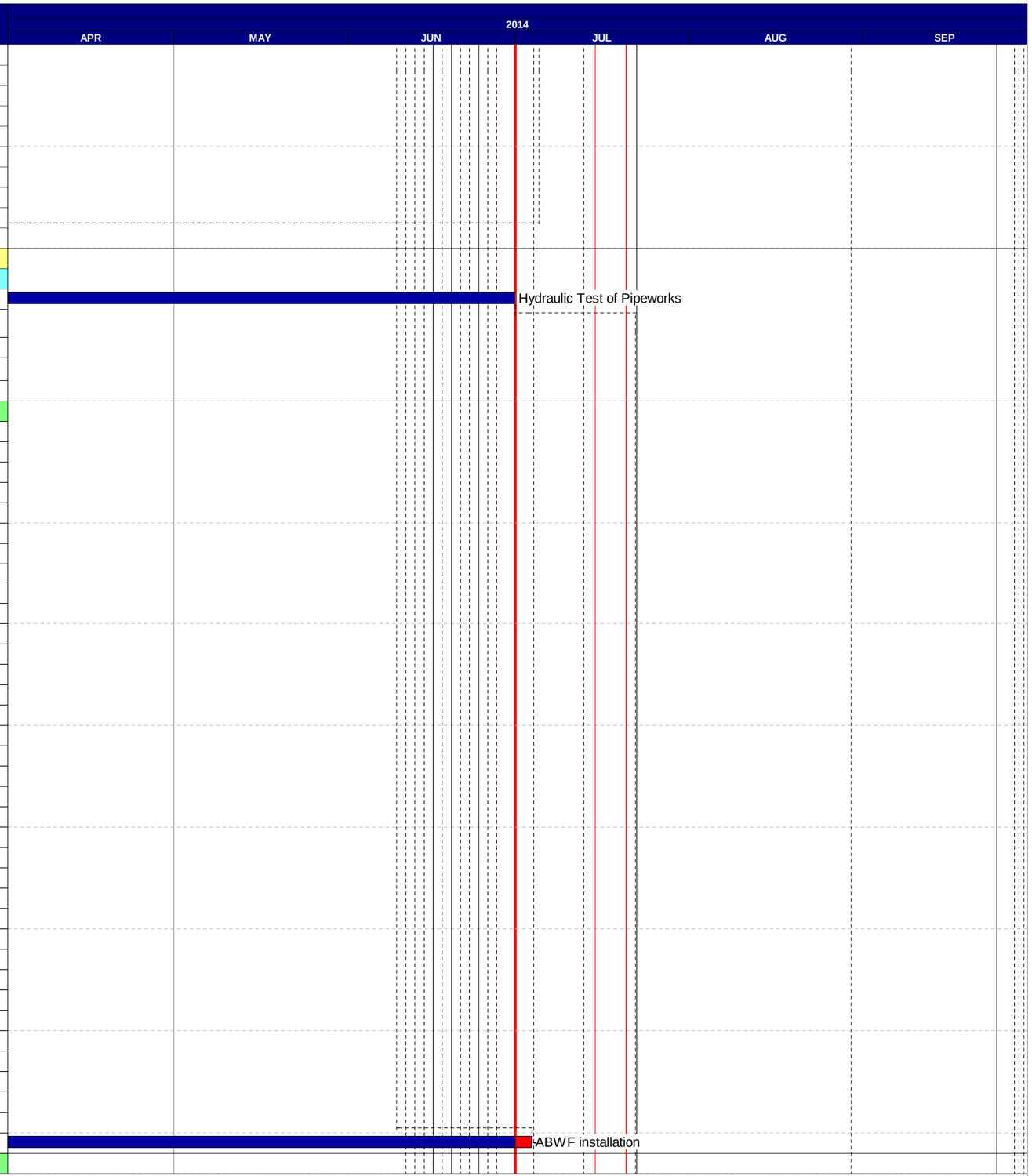
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Jul 2014 - Sep 2014

Date	Revision	Checked	Approved
30/06/14	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
YSW0153	Removal of Ex U-Channel where clash with B. Wall	151	100	10/05/11 A	07/10/11 A	10/05/11 A	07/10/11 A
YSW01545	Temporary Diversion of Drainage	244	100	08/09/10 A	09/05/11 A	08/09/10 A	09/05/11 A
YSW0155	RC Barrier Wall Bay 1-13 (below Ground Level)	256	100	26/09/10 A	08/06/11 A	26/09/10 A	08/06/11 A
YSW0170	RC Barrier Wall Bay 1-13 (above Ground Level)	125	100	09/06/11 A	11/10/11 A	09/06/11 A	11/10/11 A
YSW0175	Construct U-channels and Catchpits (Phase 1)	76	100	09/06/11 A	23/08/11 A	09/06/11 A	23/08/11 A
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
YSW01755	Construct subsoil drain (phase 2)	14	100	06/12/12 A	31/12/12 A	06/12/12 A	31/12/12 A
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
YSW01805	Hydroseeding	14	100	02/03/13 A	02/03/13 A	02/03/13 A	02/03/13 A
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
Section W2 - YSW STW & Submarine Outfall							
Civil & Structural Work							
E&M1120	Hydraulic Test of Pipeworks	7	95	09/05/13 A	30/06/14	09/05/13 A	04/05/14
KD0010	Receive Letter of Acceptance	0	100		05/05/10 A		05/05/10 A
YSW0412	Mobilization	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A
YSW0422	Site Clearance	30	100	17/05/10 A	15/06/10 A	17/05/10 A	15/06/10 A
YSW0432	Initial Survey	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A
YSW STW - GL H - T							
YSW0500	ELS & Excavation for Inlet Pumping Station	105	100	08/09/10 A	21/12/10 A	08/09/10 A	21/12/10 A
YSW0510	Sub-structure construction (Inlet Pumping Stn)	129	100	22/12/10 A	29/04/11 A	22/12/10 A	29/04/11 A
YSW0520	Backfill & Remove ELS (Inlet Pumping Stn)	40	100	30/04/11 A	08/06/11 A	30/04/11 A	08/06/11 A
YSW0530	ELS & Excavation for Equalization Tank	159	100	01/01/11 A	08/06/11 A	01/01/11 A	08/06/11 A
YSW0540	Sub-structure construction (Equalization Tank)	112	100	09/06/11 A	28/09/11 A	09/06/11 A	28/09/11 A
YSW0550	Backfilling & Remove ELS (Equalization Tank)	20	100	29/09/11 A	18/10/11 A	29/09/11 A	18/10/11 A
YSW05701	ELS & Excavation for Grit Chambers	28	100	09/06/11 A	06/07/11 A	09/06/11 A	06/07/11 A
YSW05711	Construct sub-structure for Grit Chambers	106	100	07/07/11 A	20/10/11 A	07/07/11 A	20/10/11 A
YSW05721	Backfill & Remove ELS for Grit Chambers	12	100	21/10/11 A	01/11/11 A	21/10/11 A	01/11/11 A
YSW05731	ELS & Excavation for Grease Separators (GS)	34	100	07/07/11 A	09/08/11 A	07/07/11 A	09/08/11 A
YSW05741	Construct sub-structure for Grease Separators	52	100	10/08/11 A	30/09/11 A	10/08/11 A	30/09/11 A
YSW05751	Install Dia.400 Puddles in Grease Separators	27	100	01/10/11 A	27/10/11 A	01/10/11 A	27/10/11 A
YSW05752	Construct sub-structure for GS (above puddles)	48	100	28/10/11 A	14/12/11 A	28/10/11 A	14/12/11 A
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
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
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
YSW05802	Excavate to formation - Grid GA-H/5-7	10	100	13/02/12 A	22/02/12 A	13/02/12 A	22/02/12 A
YSW05901	G/F to 1/F Construction Grid GA-K/1-5	90	100	29/09/11 A	27/12/11 A	29/09/11 A	27/12/11 A
YSW05911	G/F to 1/F Construction Grid N-S/1-5	80	100	21/10/11 A	08/01/12 A	21/10/11 A	08/01/12 A
YSW05921	G/F to 1/F Construction Grid K-N/1-5	45	100	25/12/11 A	07/02/12 A	25/12/11 A	07/02/12 A
YSW05922	G/F to 1/F Construction for Deodorizer Room	80	100	04/01/12 A	23/03/12 A	04/01/12 A	23/03/12 A
YSW05923	G/F to 1/F Construction for Grid J-N/5-7	60	100	13/02/12 A	12/04/12 A	13/02/12 A	12/04/12 A
YSW05924	G/F to 1/F Construction for Grid GA-H/5-7	50	100	28/05/12 A	16/07/12 A	28/05/12 A	16/07/12 A
YSW06001	1/F to Roof Constuction for Grid GA-K/1-5	87	100	28/12/11 A	23/03/12 A	28/12/11 A	23/03/12 A
YSW06011	1/F to Roof Constuction for Grid N-S/1-5	75	100	09/01/12 A	23/03/12 A	09/01/12 A	23/03/12 A
YSW06021	1/F to Roof Constuction for Grid K-N/1-5	44	100	08/02/12 A	22/03/12 A	08/02/12 A	22/03/12 A
YSW06022	1/F to Roof Constuction for Deodorizer Room	60	100	24/03/12 A	22/05/12 A	24/03/12 A	22/05/12 A
YSW06023	1/F to Roof Constuction for Grid J-N/5-7	45	100	13/04/12 A	27/05/12 A	13/04/12 A	27/05/12 A
YSW06034	1/F to Roof Constuction for Grid GA-H/5-7	28	100	27/07/12 A	13/08/12 A	27/07/12 A	13/08/12 A
YSW06035	Construct buffle walls in Grease Separators	90	100	18/04/12 A	16/07/12 A	18/04/12 A	16/07/12 A
YSW07201	Water tightness test for Inlet Pumping Station	60	100	23/03/12 A	21/05/12 A	23/03/12 A	21/05/12 A
YSW07202	Water tightness test for Equalization Tanks	42	100	22/05/12 A	02/07/12 A	22/05/12 A	02/07/12 A
YSW07203	Water tightness test for Grit Chambers	42	100	17/09/12 A	29/09/12 A	17/09/12 A	29/09/12 A
YSW07204	Water tightness test for Grease Separators	32	100	03/10/12 A	31/10/12 A	03/10/12 A	31/10/12 A
YSW07205	Water tightness test for water channels	21	100	31/08/13 A	23/09/13 A	31/08/13 A	23/09/13 A
YSW0800	ABWF installation	271	99	03/07/12 A	03/07/14	03/07/12 A	16/06/14
YSW STW - GL T - X							



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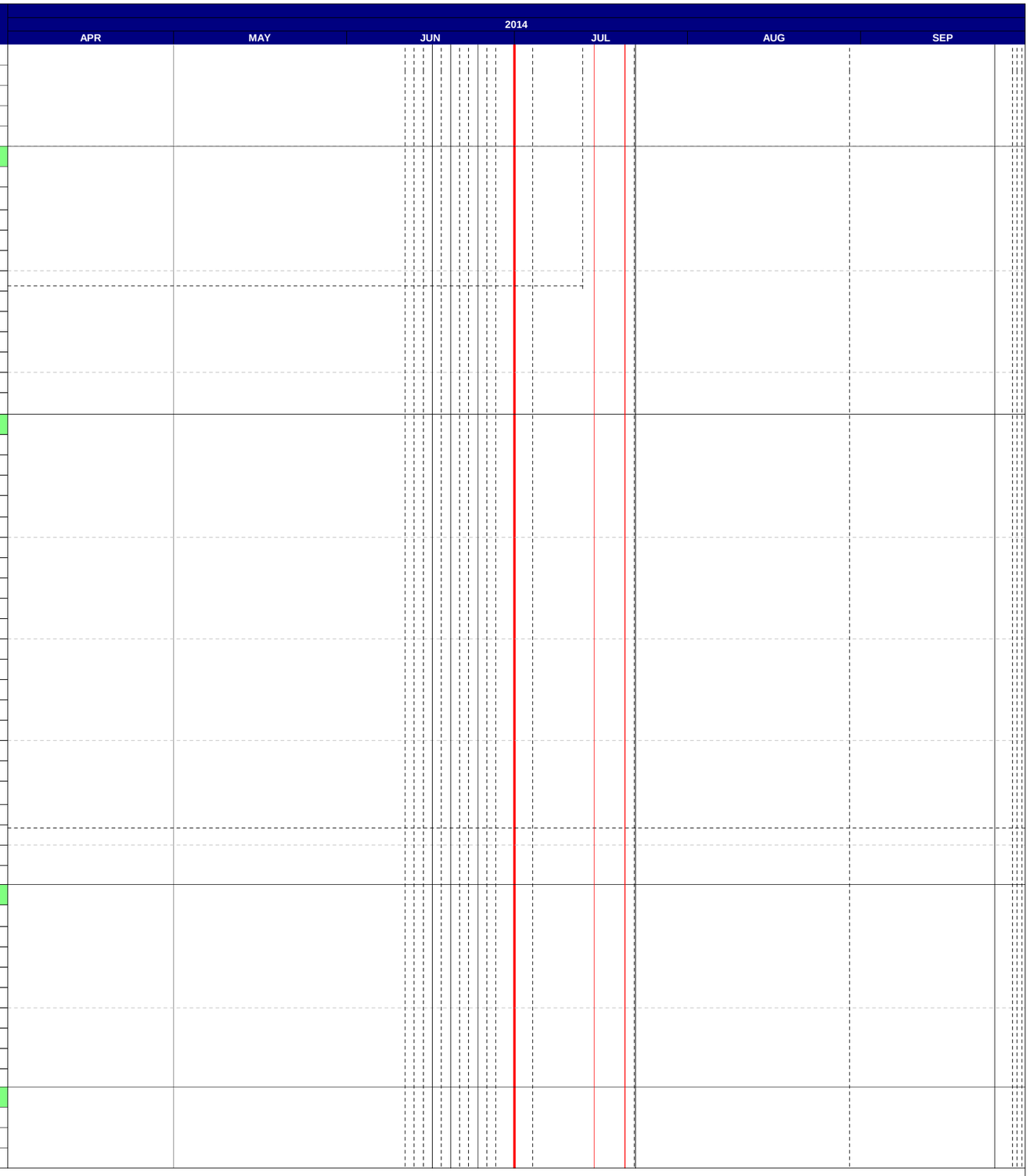
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Jul 2014 - Sep 2014

Date	Revision	Checked	Approved
30/06/14	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
YSW0610	Excavate to formation	10	100	08/09/10 A	17/09/10 A	08/09/10 A	17/09/10 A
YSW0620	Base slab construction	248	100	18/09/10 A	23/05/11 A	18/09/10 A	23/05/11 A
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
YSW0640	1/F to Roof Construction	64	100	15/12/11 A	16/02/12 A	15/12/11 A	16/02/12 A
YSW0810	ABWF installation	80	100	28/12/11 A	16/03/12 A	28/12/11 A	16/03/12 A
YSW STW - 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
YSW0660	Sub-struction construction (DN Tanks)	78	100	15/10/10 A	31/12/10 A	15/10/10 A	31/12/10 A
YSW0670	Backfill & Remove ELS (DN Tanks)	70	100	01/01/11 A	11/03/11 A	01/01/11 A	11/03/11 A
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
YSW0690	Construct Superstructure SD1, SD2 & MBR4	82	100	29/03/11 A	18/06/11 A	29/03/11 A	18/06/11 A
YSW06901	Construct Superstructure of DN Tanks	28	100	15/05/12 A	11/06/12 A	15/05/12 A	11/06/12 A
YSW0705	Water test for MBR 4	47	100	01/10/12 A	16/11/12 A	01/10/12 A	16/11/12 A
YSW07055	Water test for SD1 & SD2	54	100	17/11/12 A	10/01/13 A	17/11/12 A	10/01/13 A
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
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
YSW0830	Water test for DN Tanks	28	100	14/07/13 A	13/09/13 A	14/07/13 A	13/09/13 A
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
YSW STW - GL A - F							
YSW0730	Completion of HDD	0	100	21/01/12 A		21/01/12 A	
YSW0732	Excavate for MBR 2 & 3	20	100	21/01/12 A	09/02/12 A	21/01/12 A	09/02/12 A
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
YSW0735	Construct superstructure of MBR 2	75	100	01/03/12 A	14/05/12 A	01/03/12 A	14/05/12 A
YSW0736	Construct superstructure of MBR 3	100	100	15/05/12 A	14/05/12 A	15/05/12 A	14/05/12 A
YSW0740	ELS & excavate for Outfall Shaft	75	100	01/03/12 A	14/05/12 A	01/03/12 A	14/05/12 A
YSW0750	Construct basement of Outfall Shaft	19	100	15/05/12 A	02/06/12 A	15/05/12 A	02/06/12 A
YSW07501	Connect additional flange to HDPE pipe (VO 042)	5	100	03/06/12 A	07/06/12 A	03/06/12 A	07/06/12 A
YSW07502	Construct sub-structure of Outfall Shaft	16	100	08/06/12 A	23/06/12 A	08/06/12 A	23/06/12 A
YSW0760	Backfill & remove ELS (outfall shaft)	8	100	24/06/12 A	01/07/12 A	24/06/12 A	01/07/12 A
YSW07601	Construct superstructure for Outfall Shaft	30	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A
YSW07603	ELS & excavate for FSH Water Supply Tank	25	100	01/06/12 A	25/06/12 A	01/06/12 A	25/06/12 A
YSW07604	Construct substructure for FSH Water Supply Tank	24	100	26/06/12 A	19/07/12 A	26/06/12 A	19/07/12 A
YSW07605	Backfill & remove ELS for FSH Water Supply Tank	12	100	20/07/12 A	31/07/12 A	20/07/12 A	31/07/12 A
YSW07607	Construct basement of MBR 1 & Workshop	24	100	01/08/12 A	24/08/12 A	01/08/12 A	24/08/12 A
YSW07608	Construct superstructure for FSH Water Supply Tk	37	100	25/08/12 A	30/09/12 A	25/08/12 A	30/09/12 A
YSW07609	Construct superstructure for MBR 1	37	100	25/08/12 A	30/09/12 A	25/08/12 A	30/09/12 A
YSW07610	Construct Workshop, FSSH Pump Rm, PW Pump Rm	31	100	03/10/12 A	31/10/12 A	03/10/12 A	31/10/12 A
YSW08301	Water tightness test for Outfall Shaft	42	100	03/04/13 A	18/04/13 A	03/04/13 A	18/04/13 A
YSW08302	Water tightness test for MBR 2 & 3	95	100	10/08/13 A	24/08/13 A	10/08/13 A	24/08/13 A
YSW08303	Water tightness test for MBR 1	19	100	30/11/12 A	18/12/12 A	30/11/12 A	18/12/12 A
YSW08304	Water tightness test for FSH Water Supply Tank	32	100	31/08/13 A	01/10/13 A	31/08/13 A	01/10/13 A
Fire Hose Reel / Sprinkler Pump Rm							
YSW08305	Apply protective paint	120	100	02/10/12 A	15/08/13 A	02/10/12 A	15/08/13 A
YSW0840	ELS & excavate to formation (+0 mPD approx.)	40	100	25/02/13 A	18/04/13 A	25/02/13 A	18/04/13 A
YSW0860	Sub-structure construction	40	100	19/04/13 A	12/06/13 A	19/04/13 A	12/06/13 A
YSW0880	Backfill & remove ELS	35	100	21/06/13 A	26/08/13 A	21/06/13 A	26/08/13 A
YSW0890	Construction Ground Slab at +5.2mPD	40	100	04/06/13 A	14/07/13 A	04/06/13 A	14/07/13 A
YSW0900	Superstructure construction upto +9.2mPD	35	100	04/06/13 A	01/08/13 A	04/06/13 A	01/08/13 A
YSW0910	Water test	28	100	31/12/13 A	27/01/14 A	31/12/13 A	27/01/14 A
YSW0915	Apply protective paint	14	100	31/12/13 A	13/01/14 A	31/12/13 A	13/01/14 A
YSW0925	ABWF installation	30	100	16/07/13 A	19/01/14 A	16/07/13 A	19/01/14 A
Emergency Storage Tank							
YSW1470	ELS & excavate to formation (-1.5mPD Approx.)	16	100	17/09/12 A	02/10/12 A	17/09/12 A	02/10/12 A
YSW1480	Sub-structure construction	14	100	03/10/12 A	16/10/12 A	03/10/12 A	16/10/12 A
YSW1490	Backfill & extract sheetpile	3	100	17/10/12 A	19/10/12 A	17/10/12 A	19/10/12 A



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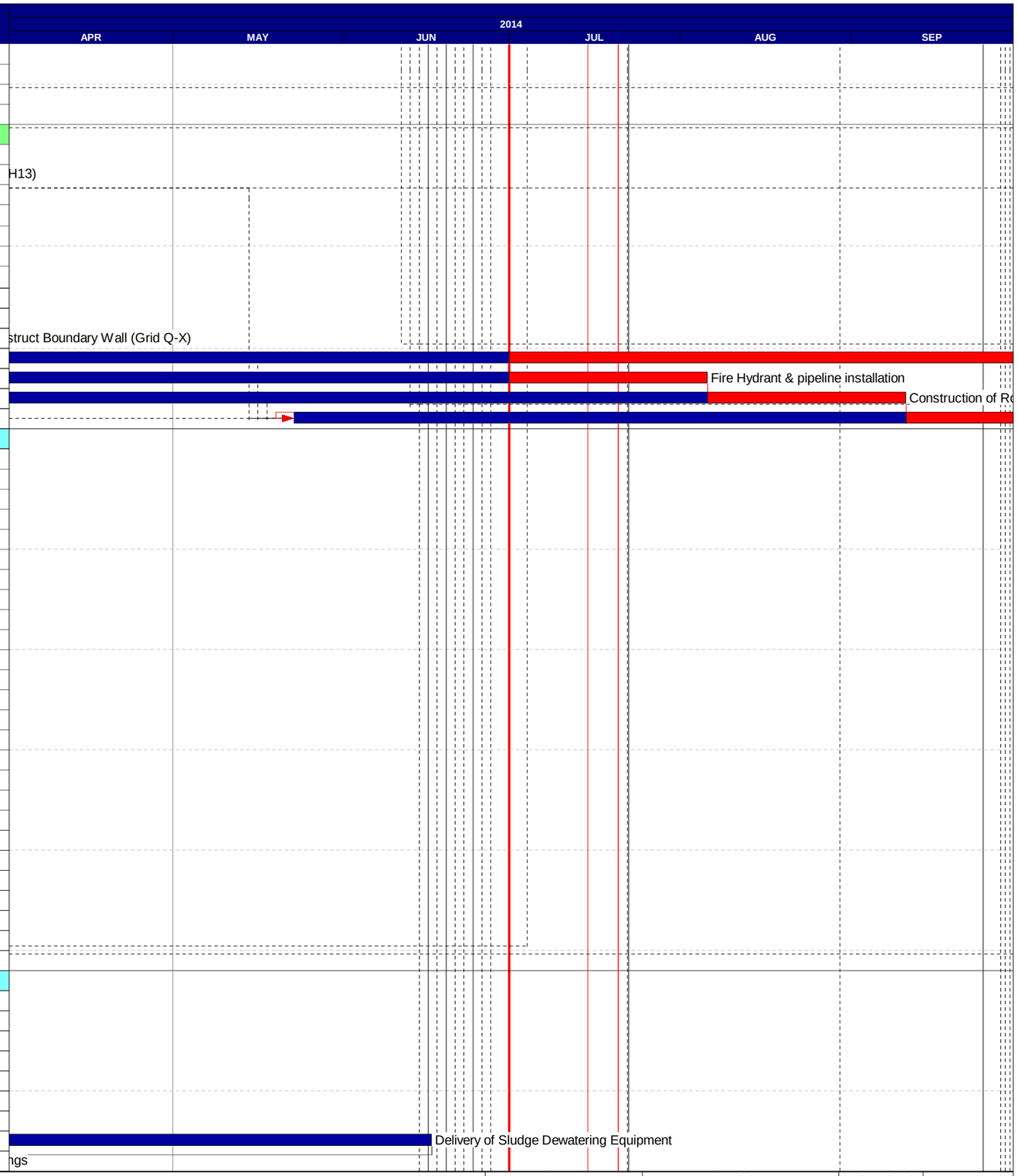
Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
YSW1500	Superstructure construction upto +10.5mPD	41	100	20/10/12 A	29/11/12 A	20/10/12 A	29/11/12 A
YSW1530	Underground pipeline works	40	100	20/07/13 A	01/10/13 A	20/07/13 A	01/10/13 A
YSW1538	Apply protective paint	30	100	04/03/13 A	05/03/13 A	04/03/13 A	05/03/13 A
YSW1540	ABWF installation	40	100	03/04/13 A	01/10/13 A	03/04/13 A	01/10/13 A
Road, Drain, Cable Draw Pits & Ducting							
YSW16601	ELS & excavate 6m deep sewer (FM1 - YFMH13)	90	100	04/08/13 A	15/01/14 A	04/08/13 A	15/01/14 A
YSW16602	Lay pipe & backfill 6m deep sewer (FM1 - YFMH13)	45	100	20/01/14 A	10/02/14 A	20/01/14 A	10/02/14 A
YSW16603	Construct UU & pipes along sea side (Grid Q-X)	60	100	04/03/14 A	29/01/14 A	04/03/14 A	29/01/14 A
YSW16604	Construct UU & pipes along sea side (Grid XA-D)	60	100	22/07/13 A	06/02/14 A	22/07/13 A	06/02/14 A
YSW16606	Construct UU & pipes along hill side (Grid D-Q)	90	100	10/10/12 A	01/09/13 A	10/10/12 A	01/09/13 A
YSW16607	Construct UU & pipes along hill side (Grid Q-X)	72	100	20/08/12 A	01/09/13 A	20/08/12 A	01/09/13 A
YSW16608	Construct UU & pipes along hill side (Grid XA-D)	72	100	30/11/12 A	01/09/13 A	30/11/12 A	01/09/13 A
YSW16701	Construct Boundary Wall (Grid XA-D)	80	100	10/01/13 A	15/12/13 A	10/01/13 A	15/12/13 A
YSW16702	Construct Boundary Wall (Grid D-Q)	80	100	01/01/14 A	31/01/14 A	01/01/14 A	31/01/14 A
YSW16703	Construct Boundary Wall (Grid Q-X)	80	100	21/02/14 A	26/03/14 A	21/02/14 A	26/03/14 A
YSW16704	ABWF installation for Boundary Wall	240	0	31/12/13 A	25/02/15	31/12/13 A	16/06/14
YSW1680	Fire Hydrant & pipeline installation	120	70	26/01/13 A	05/08/14	26/01/13 A	28/03/14
YSW1690	Construction of Road Kerbs, Downpipes, U-channel	180	80	02/01/13 A	10/09/14	02/01/13 A	03/05/14
YSW1700	Road Paving	110	60	23/05/14 A	24/10/14	23/05/14 A	16/06/14
Submarine Outfall							
YSW0180	Coordination of HEC	53	100	17/05/10 A	08/07/10 A	17/05/10 A	08/07/10 A
YSW0200	Submission and Approval of Ecologist	60	100	17/05/10 A	15/07/10 A	17/05/10 A	15/07/10 A
YSW0210	Ecology Survey	211	100	16/07/10 A	11/02/11 A	16/07/10 A	11/02/11 A
YSW0220	Submission and Approval of In. Hydro Survey	103	100	17/05/10 A	27/08/10 A	17/05/10 A	27/08/10 A
YSW0230	Hydrogrophical Survey (YSW)	157	100	28/08/10 A	31/01/11 A	28/08/10 A	31/01/11 A
YSW0240	Material Submission, Approval of HDPE pipe	319	100	17/05/10 A	31/03/11 A	17/05/10 A	31/03/11 A
YSW02401	Clarify Coordinate of Point Y (Reply of RFI 010)	83	100	28/06/10 A	18/09/10 A	28/06/10 A	18/09/10 A
YSW0250	Submit and Approval of Method Statement for HDD	188	100	19/09/10 A	25/03/11 A	19/09/10 A	25/03/11 A
YSW0260	Submission of HDD Method Statement to HEC	14	100	26/03/11 A	08/04/11 A	26/03/11 A	08/04/11 A
YSW0270	Additional G.I. Boreholes (YSW)	123	100	19/09/10 A	19/01/11 A	19/09/10 A	19/01/11 A
YSW0280	Submission of propose alignment	44	100	20/01/11 A	04/03/11 A	20/01/11 A	04/03/11 A
YSW0290	Submission of Marine Notice	69	100	20/01/11 A	29/03/11 A	20/01/11 A	29/03/11 A
YSW0310	Construction of Entry Pit and Preparation Work	27	100	05/03/11 A	31/03/11 A	05/03/11 A	31/03/11 A
YSW0320	Prepare of HDD Drill Rig Set-up (YSW)	28	100	01/04/11 A	28/04/11 A	01/04/11 A	28/04/11 A
YSW0330	Establishment of HDD plant & equipment	6	100	09/04/11 A	14/04/11 A	09/04/11 A	14/04/11 A
YSW0340	Setting up at drillhole location	14	100	15/04/11 A	28/04/11 A	15/04/11 A	28/04/11 A
YSW0350	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
YSW0360	Installation of NS400 HDPE 530m	17	100	14/12/11 A	30/12/11 A	14/12/11 A	30/12/11 A
YSW03601	Demobilization of HDD plant & equipment	7	100	31/12/11 A	06/01/12 A	31/12/11 A	06/01/12 A
YSW03605	Remove Entry pit of HDD	14	100	07/01/12 A	20/01/12 A	07/01/12 A	20/01/12 A
YSW03620	Removal of Receiving Pit	14	100	31/12/11 A	13/01/12 A	31/12/11 A	13/01/12 A
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
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
YSW0370	Dredging of Marine Deposit for Diffuser (YSW)	5	100	24/11/12 A	29/11/12 A	24/11/12 A	29/11/12 A
YSW0380	Diffuser Construction (YSW)	60	100	30/11/12 A	20/06/13 A	30/11/12 A	20/06/13 A
YSW0400	Removal of silt curtain	30	100	30/04/13 A	31/05/13 A	30/04/13 A	31/05/13 A
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&M0370	Delivery 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&M0380	Delivery of Grit Removal Equipment	81	100	10/10/11 A	29/12/11 A	10/10/11 A	29/12/11 A
E&M0390	Delivery of Coarse Screens	129	100	06/09/11 A	12/01/12 A	06/09/11 A	12/01/12 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&M0410	Delivery of Pumps	75	100	23/06/11 A	05/09/11 A	23/06/11 A	05/09/11 A
E&M0420	Delivery of Submersible Mixers	230	100	26/02/11 A	26/02/11 A	26/02/11 A	26/02/11 A
E&M0440	Delivery of Sludge Dewatering Equipment	558	100	31/08/11 A	16/06/14 A	31/08/11 A	16/06/14 A
E&M0450	Delivery of Valves, Pipes & Fittings	560	100	30/08/11 A	26/02/14 A	30/08/11 A	26/02/14 A



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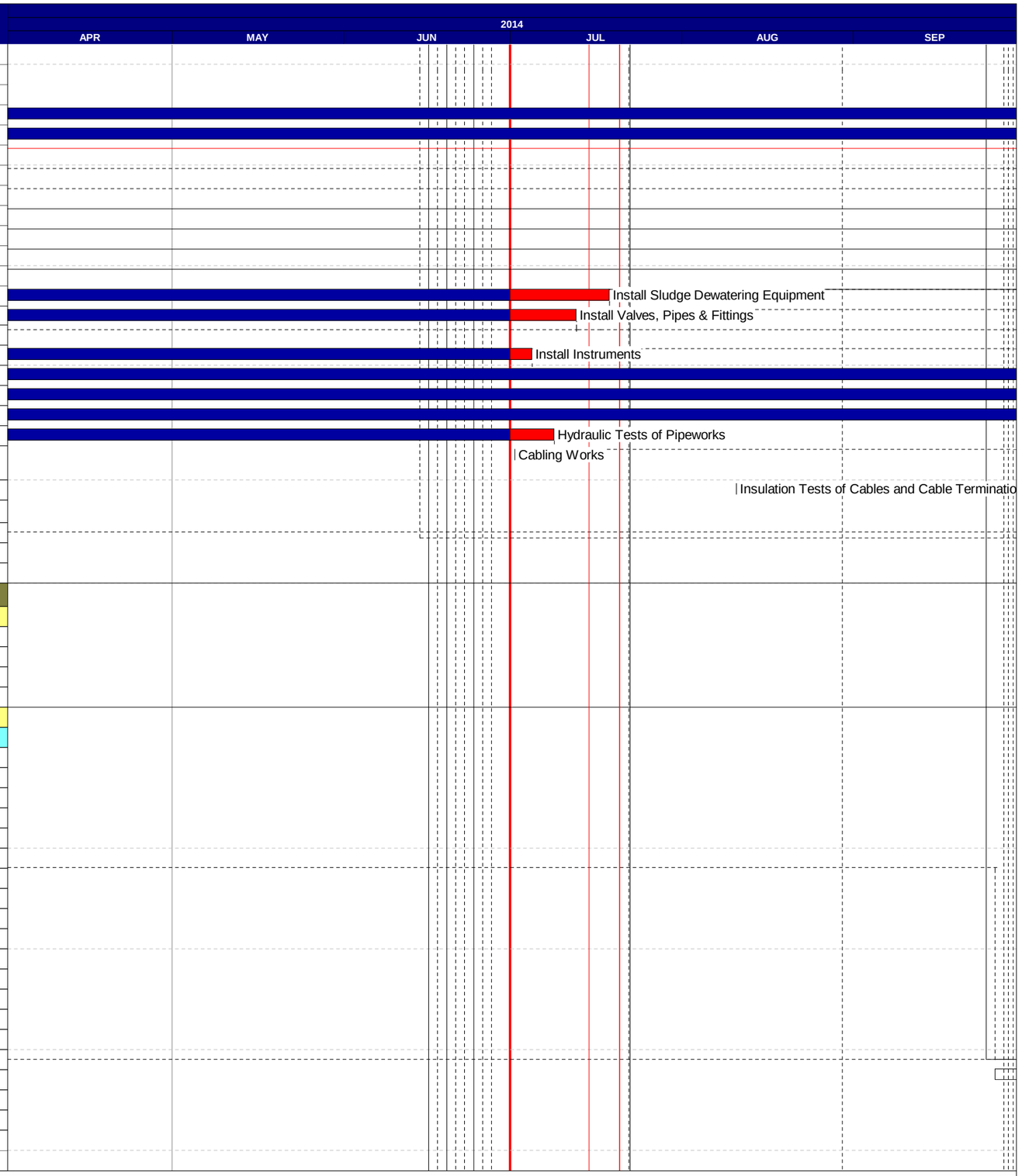
E&M0460	Delivery of Penstocks	135	100	12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A
E&M0470	Delivery of Instruments	232	100	03/11/11 A	21/06/11 A	03/11/11 A	21/06/11 A
E&M0480	Delivery of MCC LVSB	90	100	03/12/12 A	04/03/13 A	03/12/12 A	04/03/13 A
E&M0490	Delivery of BS Equipment	446	100	10/12/11 A	15/04/15 A	10/12/11 A	15/04/15 A
E&M0500	Delivery FS Equipment	507	95	11/12/11 A	29/04/15	11/12/11 A	25/09/13
E&M0510	Install Membrane Modules in MBR Tank no. 4	89	100	03/11/12 A	28/02/13 A	03/11/12 A	28/02/13 A
E&M0520	Install Membrane Modules in MBR Tank No. 1 to 3	57	100	03/12/12 A	28/02/13 A	03/12/12 A	28/02/13 A
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&M0540	Install Coarse Screens	240	100	23/04/12 A	23/08/13 A	23/04/12 A	23/08/13 A
E&M0550	Install Fine Screens	122	100	01/06/12 A	12/08/13 A	01/06/12 A	12/08/13 A
E&M0560	Install Pumps	355	100	23/04/12 A	04/02/14 A	23/04/12 A	04/02/14 A
E&M0570	Install Submersible Mixers	163	100	15/01/13 A	16/01/14 A	15/01/13 A	16/01/14 A
E&M0580	Install Sludge Dewatering Equipment	361	95	29/05/12 A	18/07/14	29/05/12 A	24/06/13
E&M0590	Install Valves, Pipes & Fittings	232	95	15/01/13 A	12/07/14	15/01/13 A	25/06/13
E&M0600	Install Penstocks (Batch 1, GL H - T)	213	100	23/04/12 A	21/05/13 A	23/04/12 A	21/05/13 A
E&M0610	Install Instruments	74	95	02/01/13 A	04/07/14	02/01/13 A	25/06/13
E&M0620	Install SAT, MCC & LVSB	8	100	02/01/13 A	02/01/15 A	02/01/13 A	02/01/15 A
E&M0630	Install BS Equipment	180	85	02/01/13 A	25/04/15	02/01/13 A	29/07/13
E&M0640	Install FS Equipment	180	65	02/01/13 A	02/03/15	02/01/13 A	29/07/13
E&M0650	Hydraulic Tests of Pipeworks	153	95	02/01/13 A	08/07/14	02/01/13 A	30/06/13
E&M0660	Cabling Works	15	95	04/02/15 A	01/07/14	04/02/15 A	22/06/13
E&M0670	Insulation Tests of Cables and Cable Termination	26	95	11/04/15 A	10/08/14	11/04/15 A	23/06/13
E&M0680	Energization	1	100	02/04/15 A	03/04/15 A	02/04/15 A	03/04/15 A
E&M0690	Functional and Performance Tests of Equipment	35	90	25/03/15 A	24/03/15	25/03/15 A	27/06/13 *
E&M0700	T&C Period	137	90	09/12/15 A	10/06/15	09/12/15 A	27/04/14
E&M0730	Trial Operation Period	413	0	11/06/15	13/09/16	28/04/14	14/06/15
Sok Kwu Wan							
Preliminary							
E&M0605	Install Penstocks (Batch 2, GL A - F)	131	100	02/01/13 A	19/01/14 A	02/01/13 A	19/01/14 A
SKW0250	Approval of Environmental Team	16	100	17/05/10 A	01/06/10 A	17/05/10 A	01/06/10 A
SKW0260	Baseline monitoring (Air & Noise)	14	100	02/06/10 A	15/06/10 A	02/06/10 A	15/06/10 A
SKW0265	Baseline Monitoring Submission (A & N)	14	100	16/06/10 A	08/07/10 A	16/06/10 A	08/07/10 A
Section W3 - Footpath Diversion in Portion G							
Civil & Geotechnical Works							
SKW0240	Site Clearance	21	100	17/05/10 A	06/06/10 A	17/05/10 A	06/06/10 A
SKW0241	Initial Survey	9	100	07/06/10 A	15/06/10 A	07/06/10 A	15/06/10 A
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
SKW0461	Utilities Laying and Diversion	70	100	24/12/10 A	03/03/11 A	24/12/10 A	03/03/11 A
SKW0471	Concreting for Pavement	7	100	04/03/11 A	10/03/11 A	04/03/11 A	10/03/11 A
SKW0481	Footpath Diversion - Stage 1	14	100	11/03/11 A	24/03/11 A	11/03/11 A	24/03/11 A
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
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
SKW04831	Cable diversion by HEC	26	100	04/05/11 A	29/05/11 A	04/05/11 A	29/05/11 A
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
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
SKW04861	Concreting for footpath pavement	7	100	15/06/11 A	21/06/11 A	15/06/11 A	21/06/11 A
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
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
SKW04885	Footpath Diversion - Stage 2	7	100	03/01/12 A	09/01/12 A	03/01/12 A	09/01/12 A
SKW0491	Removal of Haul Road after SKW STW	7	0	08/10/14	14/10/14	29/05/15	04/06/15
SKW0501	Concreting for no-fine concrete	14	0	08/10/14	21/10/14	29/05/15	11/06/15
SKW0511	Wall Tie & Stone Facing	14	0	22/10/14	04/11/14	12/06/15	25/06/15
SKW0521	Gabion Wall & Geotextile	30	0	05/11/14	04/12/14	26/06/15	25/07/15
SKW0531	Installation of Flower Pot	7	0	05/12/14	11/12/14	26/07/15	01/08/15
SKW0541	Completion of Outstanding Works	42	0	12/12/14	22/01/15	02/08/15	12/09/15



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Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
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3-month Rolling Programme (Jul 2014 - Sep 2014

Date	Revision	Checked	Approved
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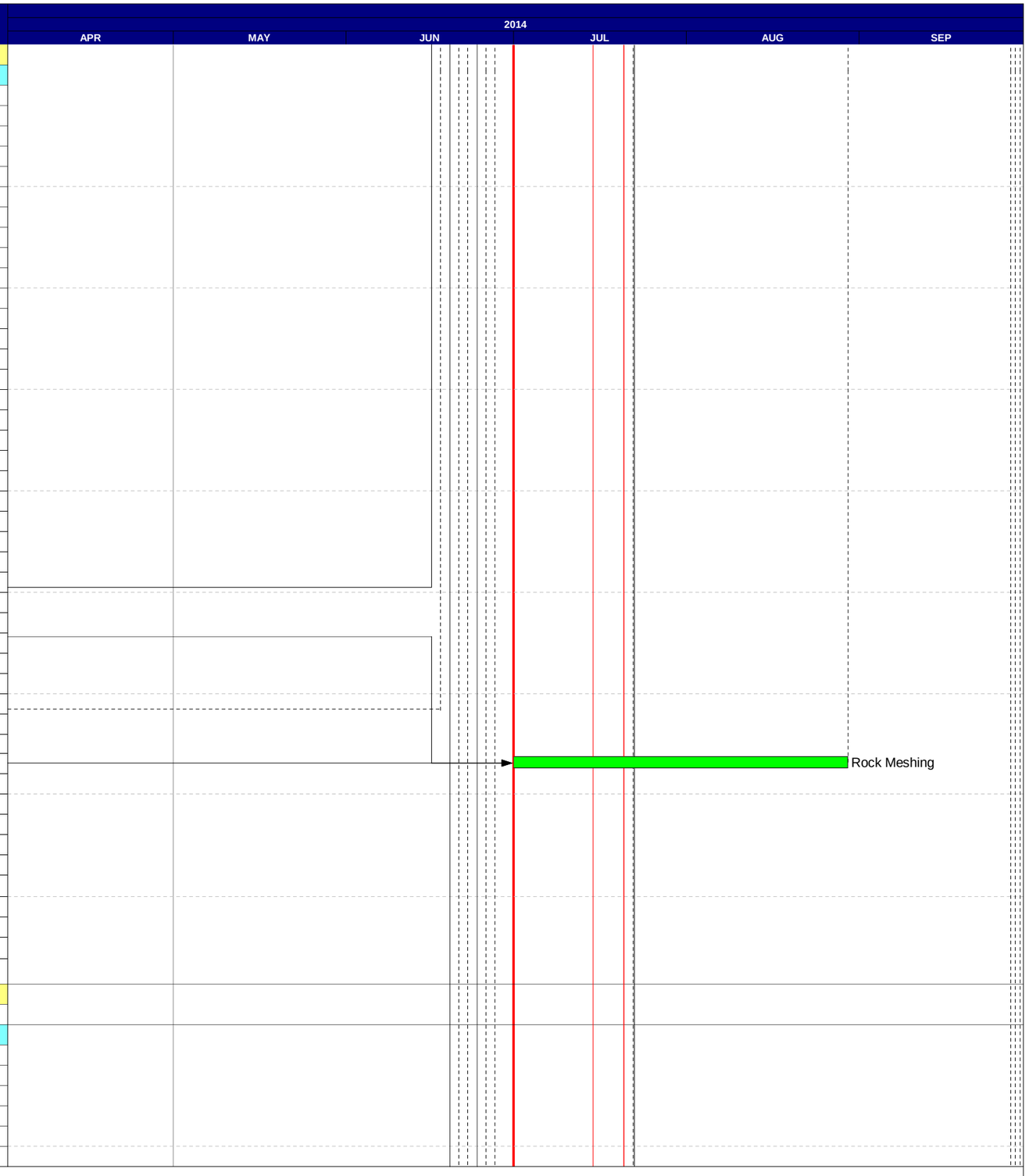
Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
Section W4 - Slope Works in Portions H & I							
Geotechnical Works							
SKW0588	Construct scaffolding access	30	100	15/06/10 A	14/07/10 A	15/06/10 A	14/07/10 A
SKW0590	Site Clearance for Slope	100	100	15/07/10 A	22/10/10 A	15/07/10 A	22/10/10 A
SKW0591	Initial Survey for Slope	28	100	21/09/10 A	18/10/10 A	21/09/10 A	18/10/10 A
SKW0592	Temporary Rockfall fence at ex. Footpath	43	100	31/08/10 A	12/10/10 A	31/08/10 A	12/10/10 A
SKW05931	Construction of Haul Road (To +30mPD)	50	100	03/09/10 A	22/10/10 A	03/09/10 A	22/10/10 A
SKW05932	Construction of Haul Road (To +42.5mPD)	68	100	23/10/10 A	29/12/10 A	23/10/10 A	29/12/10 A
SKW059321	Removal of Boulders (IBG 1 - 119, SI No. 11B)	121	100	03/11/10 A	03/03/11 A	03/11/10 A	03/03/11 A
SKW059322	Add. Site Invest. Works (VO. No. 9,12 &16)	174	100	11/01/11 A	03/07/11 A	11/01/11 A	03/07/11 A
SKW059323	Revised Profile at West Slope (+56 to +42.5mPD)	1	100	17/03/11 A	17/03/11 A	17/03/11 A	17/03/11 A
SKW059324	Construction of Haul Road (+42.5 to +56mPD)	12	100	18/03/11 A	29/03/11 A	18/03/11 A	29/03/11 A
SKW059325	Removal of Boulders (IBG 120-139, SI No. 11C)	17	100	30/03/11 A	15/04/11 A	30/03/11 A	15/04/11 A
SKW05933	West Slope Cutting (+56mPD to +42.5mPD)	2	100	16/04/11 A	17/04/11 A	16/04/11 A	17/04/11 A
SKW059331	Removal of Boulders (IBG 140-189, SI No. 11D)	45	100	18/04/11 A	01/06/11 A	18/04/11 A	01/06/11 A
SKW05934	West Slope Cutting (+42.5mPD to +35mPD)	32	100	02/06/11 A	03/07/11 A	02/06/11 A	03/07/11 A
SKW059341	Revised Profile at West Slope (+20 to +4.8mPD)	1	100	04/07/11 A	04/07/11 A	04/07/11 A	04/07/11 A
SKW05935	West Slope Cutting (+35mPD to +27.5mPD)	83	100	08/07/11 A	28/09/11 A	08/07/11 A	28/09/11 A
SKW05936	West Slope Cutting (+27.5mPD to +20mPD)	61	100	29/09/11 A	28/11/11 A	29/09/11 A	28/11/11 A
SKW05937	West Slope Cutting (+20mPD to +12.5mPD)	39	100	29/11/11 A	06/01/12 A	29/11/11 A	06/01/12 A
SKW05938	West Slope Cutting (+12.5mPD to +4.8mPD)	90	100	07/01/12 A	27/03/12 A	07/01/12 A	27/03/12 A
SKW05941	Slope Stormwater Drainage	300	100	28/03/12 A	25/05/12 A	28/03/12 A	25/05/12 A
SKW059411	East Slope Cutting (+50mPD to +42.5mPD)	72	100	04/03/11 A	14/05/11 A	04/03/11 A	14/05/11 A
SKW059412	East Slope Cutting (+42.5mPD to +35mPD)	82	100	15/05/11 A	04/08/11 A	15/05/11 A	04/08/11 A
SKW059413	East Slope Cutting (+35mPD to +27.5mPD)	55	100	05/08/11 A	28/09/11 A	05/08/11 A	28/09/11 A
SKW059414	East Slope Cutting (+27.5mPD to +20mPD)	61	100	29/09/11 A	28/11/11 A	29/09/11 A	28/11/11 A
SKW059415	East Slope Cutting (+20mPD to +12.5mPD)	39	100	29/11/11 A	06/01/12 A	29/11/11 A	06/01/12 A
SKW059416	East Slope Cutting (+12.5mPD to +4.8mPD)	81	100	07/01/12 A	27/03/12 A	07/01/12 A	27/03/12 A
SKW05942	Slope Miscellaneous Works	61	100	26/05/12 A	31/07/12 A	26/05/12 A	31/07/12 A
SKW05943	Buttress & surface Protection (SI No. 31)	60	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A
SKW05944	Slope Treatment (SI. No. 36)	60	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A
SKW05945	Rock Slope Treatment (SI. No. 68)	60	100	01/08/12 A	30/09/12 A	01/08/12 A	30/09/12 A
SKW05946	Rock Slope Treatment (SI. No. 98)	60	100	10/09/12 A	28/02/13 A	10/09/12 A	28/02/13 A
SKW05947	Rock Slope Treatment (SI. No. 115)	60	100	01/11/12 A	28/02/13 A	01/11/12 A	28/02/13 A
SKW05948	Soil Nailing Works (VO. No. 52)	300	100	10/02/12 A	28/02/13 A	10/02/12 A	28/02/13 A
SKW0595	Rock Meshing	60	0	01/07/14	29/08/14	07/08/15	05/10/15
SKW05963	Determine Alignment & Foundation Design of RFB	120	100	10/02/12 A	08/06/12 A	10/02/12 A	08/06/12 A
SKW059631	GEO Approval of Foundation Design	70	100	09/06/12 A	31/07/12 A	09/06/12 A	31/07/12 A
SKW05964	Fabrication & Shipping of RFB Material	180	100	09/06/12 A	30/11/12 A	09/06/12 A	30/11/12 A
SKW05965	Site clearance & Formation of access	62	100	09/06/12 A	31/07/12 A	09/06/12 A	31/07/12 A
SKW05967	Plant mobilization	14	100	02/01/13 A	15/01/13 A	02/01/13 A	15/01/13 A
SKW05968	Construction of anchors & pull out test	180	100	16/01/13 A	17/08/13 A	16/01/13 A	17/08/13 A
SKW05969	Construction of Foundation	120	100	11/07/13 A	23/08/13 A	11/07/13 A	23/08/13 A
SKW05970	Proof Load Test	60	100	31/07/13 A	28/09/13 A	31/07/13 A	28/09/13 A
SKW05971	Transportation of Material (To the slope crest)	30	100	31/07/13 A	29/08/13 A	31/07/13 A	29/08/13 A
SKW05972	Installation of Flexible barrier	90	100	31/07/13 A	28/10/13 A	31/07/13 A	28/10/13 A
Section W5 - P.S. No. 1 in Portion D							
YSW16605	Construct UU & pipes along sea side (Grid D-Q)	60	100	20/11/13 A	11/01/14 A	20/11/13 A	11/01/14 A
Civil & Geotechnical Works							
SKW0651	Site Clearance	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A
SKW0652	Initial Survey	7	100	24/05/10 A	30/05/10 A	24/05/10 A	30/05/10 A
SKW0661	Transplantation for uncommon vegatation	30	100	31/05/10 A	29/06/10 A	31/05/10 A	29/06/10 A
SKW0681	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
SKW0691	ELS to +2.2mPD	40	100	18/08/10 A	26/09/10 A	18/08/10 A	26/09/10 A
SKW0721	Excavate to formation	270	100	17/09/10 A	13/06/11 A	17/09/10 A	13/06/11 A



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SKW0722	Construction of Manholes (VO. No. 21A)	107	95	28/10/13 A	01/10/14	28/10/13 A	08/07/14
Structural Works							
SKW0741	RC Works for Structure	240	100	14/06/11 A	08/02/12 A	14/06/11 A	08/02/12 A
SKW0841	ABWF works	60	100	09/02/12 A	08/04/12 A	09/02/12 A	08/04/12 A
SKW0861	300mm U-channel & 675mm Step Channel	30	95	26/01/14 A	28/09/14	26/01/14 A	05/10/15
E&M Works (PS1)							
Submission & Delivery							
E&M1001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A
E&M1002	Submission of Gen-Set	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A
E&M1003	Submission of DeO System	198	100	17/05/10 A	16/07/13 A	17/05/10 A	16/07/13 A
E&M1004	Submission of LV SB & MCC	180	100	17/05/10 A	09/01/12 A	17/05/10 A	09/01/12 A
E&M1005	Submission of Instrumentation	243	100	17/05/10 A	12/03/12 A	17/05/10 A	12/03/12 A
E&M1006	Submission of FS System	243	100	17/05/10 A	30/09/12 A	17/05/10 A	30/09/12 A
E&M1007	Submission of BS System	243	100	17/05/10 A	07/01/14 A	17/05/10 A	07/01/14 A
E&M1011	Delivery of Pumps	150	100	24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A
E&M1012	Delivery of Gen-Set	150	100	24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A
E&M1013	Delivery of DeO System	150	100	11/07/11 A	28/10/11 A	11/07/11 A	28/10/11 A
E&M1014	Delivery of LV SB & MCC	150	100	01/06/12 A	31/07/12 A	01/06/12 A	31/07/12 A
E&M1015	Delivery of Instrumentation	90	100	01/11/11 A	03/11/11 A	01/11/11 A	03/11/11 A
E&M1016	Delivery of FS Equipment	107	100	01/12/11 A	21/01/14 A	01/12/11 A	21/01/14 A
E&M1017	Delivery of BS Equipment	107	100	15/11/11 A	28/01/14 A	15/11/11 A	28/01/14 A
Installation, T&C							
E&M1101	Install Pumps	55	100	02/10/12 A	05/01/14 A	02/10/12 A	05/01/14 A
E&M1102	Install Gen Set	55	100	02/10/12 A	05/05/13 A	02/10/12 A	05/05/13 A
E&M1103	Install DeO System	55	100	03/12/12 A	02/01/14 A	03/12/12 A	02/01/14 A
E&M1104	Install LV SB & MCC	55	100	02/01/13 A	26/03/13 A	02/01/13 A	26/03/13 A
E&M1105	Install Instrumentation	55	100	01/11/12 A	28/01/14 A	01/11/12 A	28/01/14 A
E&M1106	Install FS Equipment	55	100	02/10/12 A	30/01/14 A	02/10/12 A	30/01/14 A
E&M1107	Install BS Equipment	55	100	02/10/12 A	08/01/14 A	02/10/12 A	08/01/14 A
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&M1130	Form 501 Submission to FSD	28	0	01/07/14	28/07/14	07/04/14	04/05/14
E&M1140	Cabling Works	43	100	21/05/13 A	07/02/14 A	21/05/13 A	07/02/14 A
E&M1150	Insulation Tests of Cables and Cable Termination	7	100	25/06/13 A	09/02/14 A	25/06/13 A	09/02/14 A
E&M1160	Engergization	3	100	01/07/13 A	02/08/13 A	01/07/13 A	02/08/13 A
E&M1170	Functional and Performance Tests of Equipment	30	60	02/01/13 A	12/07/14	02/01/13 A	04/05/14
E&M11800	Commissioning Test	60	0	29/07/14	26/09/14	05/05/14	03/07/14
Section W6 - Sewer and PS No.2 in Portions E&H							
Civil & Geotechnical Works							
SKW0881	Site Clearance	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A
SKW0891	Plant mobilization	7	100	17/05/10 A	23/05/10 A	17/05/10 A	23/05/10 A
SKW0892	Initial Survey	30	100	24/05/10 A	22/06/10 A	24/05/10 A	22/06/10 A
SKW0901	Tree Transplantation	90	100	23/06/10 A	20/09/10 A	23/06/10 A	20/09/10 A
SKW0921	Cut Slope & U-Channel	14	100	21/09/10 A	04/10/10 A	21/09/10 A	04/10/10 A
SKW0931	Hoarding & Fencing	14	100	05/10/10 A	18/10/10 A	05/10/10 A	18/10/10 A
SKW0950	Removal of Rock Boulders before ELS	66	100	19/10/10 A	23/12/10 A	19/10/10 A	23/12/10 A
SKW0951	ELS & Excavate to formation	169	100	24/12/10 A	10/06/11 A	24/12/10 A	10/06/11 A
SKW0961	Mass Conc. Retaining Wall	90	100	16/01/13 A	06/01/14 A	16/01/13 A	06/01/14 A
SKW1491	LCS (ChA0+45 to 1+75) VO.7	90	100	24/03/12 A	21/06/12 A	24/03/12 A	21/06/12 A
SKW15111	Twin DN150 DI Rising Main (ChA1+75 - ChA5+79)	180	100	22/06/12 A	30/11/12 A	22/06/12 A	30/11/12 A
SKW15112	Twin DN150 DI Rising Main (ChA0+00 - ChA0+45)	30	100	01/02/13 A	03/01/14 A	01/02/13 A	03/01/14 A
SKW1531	Extent village sewers S163.1 & S164.1	34	100	30/11/12 A	10/01/13 A	30/11/12 A	10/01/13 A
SKW1581	Construct Manhole no. S163 & S164	34	100	11/01/13 A	28/02/13 A	11/01/13 A	28/02/13 A
Structural Works							
SKW0971	Structural Works (Phase 1)	245	100	11/06/11 A	10/02/12 A	11/06/11 A	10/02/12 A
SKW1021	Structural Works (Phase 2)	42	100	11/02/12 A	23/03/12 A	11/02/12 A	23/03/12 A

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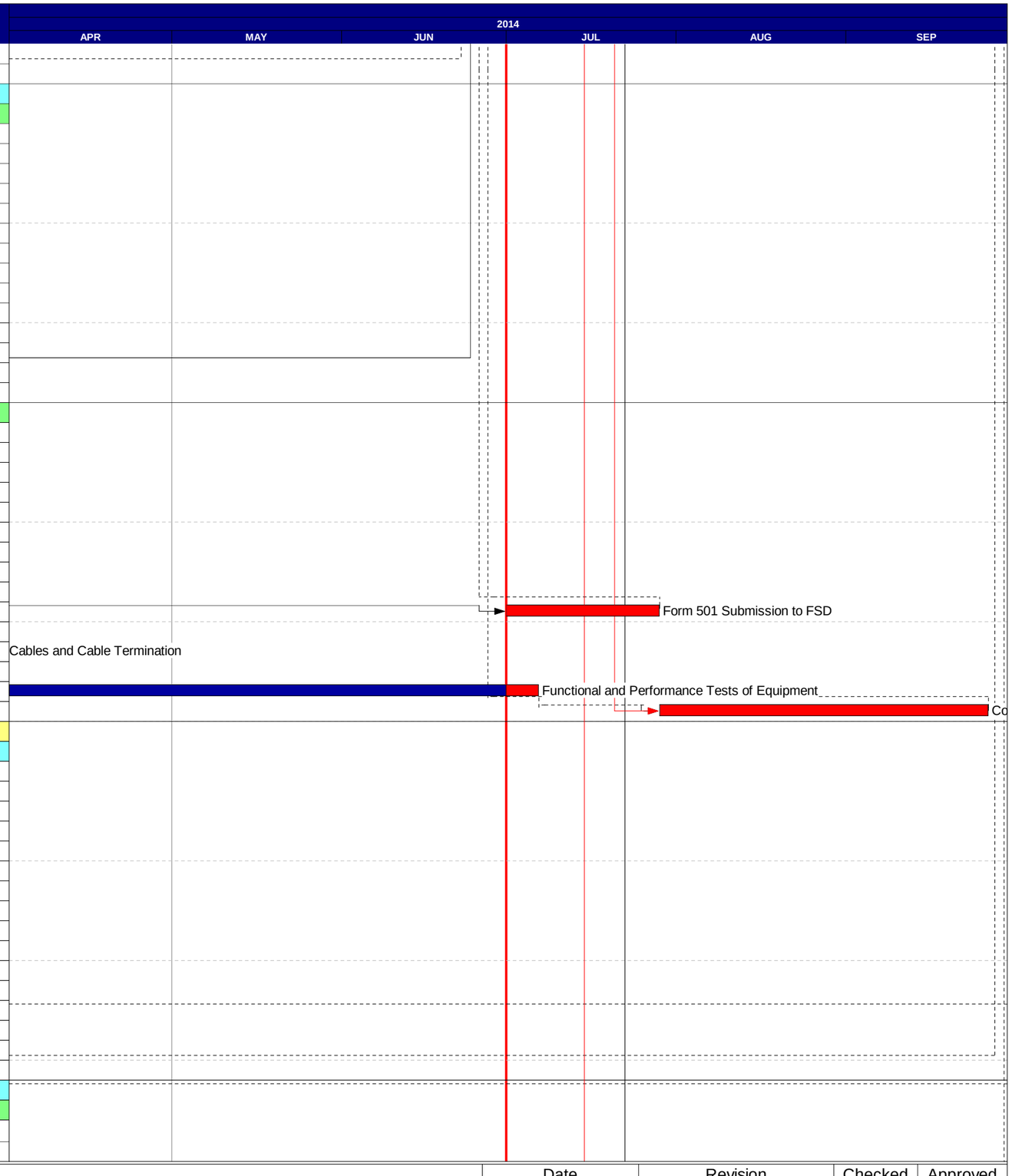
SKW1061	ABWF Works	90	100	24/03/12 A	21/06/12 A	24/03/12 A	21/06/12 A
SKW1081	375mm U-channel/catchpits/outfall	30	100	22/06/12 A	31/01/13 A	22/06/12 A	31/01/13 A
E&M Works (PS2)							
Submission & Delivery							
E&M2001	Submission of Pumps	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A
E&M2002	Submission of Gen-Set	198	100	17/05/10 A	24/02/11 A	17/05/10 A	24/02/11 A
E&M2003	Submission of DeO System	198	100	17/05/10 A	11/07/11 A	17/05/10 A	11/07/11 A
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&M2005	Submission of Instrumentation	243	100	17/05/10 A	30/06/12 A	17/05/10 A	30/06/12 A
E&M2006	Submission of FS System	243	100	17/05/10 A	07/01/14 A	17/05/10 A	07/01/14 A
E&M2007	Submission of BS System	243	100	17/05/10 A	07/01/14 A	17/05/10 A	07/01/14 A
E&M2011	Delivery of Pumps	150	100	24/02/11 A	21/07/11 A	24/02/11 A	21/07/11 A
E&M2012	Delivery of Gen-Set	150	100	24/02/11 A	23/09/11 A	24/02/11 A	23/09/11 A
E&M2013	Delivery of DeO System	150	100	11/07/11 A	28/10/11 A	11/07/11 A	28/10/11 A
E&M2014	Delivery of LV SB & MCC	150	100	29/02/12 A	31/07/12 A	29/02/12 A	31/07/12 A
E&M2015	Delivery of Instrumentation	90	100	21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A
E&M2016	Delivery of FS Equipment	107	100	01/12/11 A	28/01/14 A	01/12/11 A	28/01/14 A
E&M2017	Delivery of BS Equipment	107	100	15/01/11 A	28/01/14 A	15/01/11 A	28/01/14 A
Installation, T&C							
E&M2101	Install Pumps	55	100	02/10/12 A	10/01/14 A	02/10/12 A	10/01/14 A
E&M2102	Install Gen Set	55	100	01/09/12 A	05/05/13 A	01/09/12 A	05/05/13 A
E&M2103	Install DeO System	55	100	03/12/12 A	05/01/14 A	03/12/12 A	05/01/14 A
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&M2105	Install Instrumentation	55	100	31/05/13 A	01/02/14 A	31/05/13 A	01/02/14 A
E&M2106	Install FS Equipment	55	100	02/10/12 A	27/02/14 A	02/10/12 A	27/02/14 A
E&M2107	Install BS Equipment	55	100	01/09/12 A	05/02/14 A	01/09/12 A	05/02/14 A
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&M2120	Hydraulic Test of Pipeworks	7	100	02/01/13 A	31/01/13 A	02/01/13 A	31/01/13 A
E&M2130	Form 501 Submission to FSD	28	0	01/07/14	28/07/14	13/01/13	09/02/13
E&M2140	Cabling Works	43	100	01/02/13 A	08/03/14 A	01/02/13 A	08/03/14 A
E&M2150	Insulation Tests of Cables and Cable Termination	7	100	01/02/13 A	11/03/14 A	01/02/13 A	11/03/14 A
E&M2160	Engergization	3	100	01/02/13 A	25/03/13 A	01/02/13 A	25/03/13 A
E&M2170	Functional and Performance Tests of Equipment	30	80	15/01/13 A	06/07/14	15/01/13 A	11/12/12
E&M2180	Commissioning Test	60	0	29/07/14	26/09/14	12/12/12	09/02/13
Section W7 - SKW STW,Sewer and Submarine Outfall							
Submarine Outfall							
SKW1130	Approval of IHS Consultant	180	100	17/05/10 A	27/08/10 A	17/05/10 A	27/08/10 A
SKW1131	Hydrographical Survey (SKW)	300	100	01/02/11 A	28/02/11 A	01/02/11 A	28/02/11 A
SKW1141	Baseline Monitoring (Water)	213	100	27/07/10 A	31/12/10 A	27/07/10 A	31/12/10 A
SKW1151	Set up Temporary Working Platform	90	100	15/06/11 A	30/09/11 A	15/06/11 A	30/09/11 A
SKW1171	ELS for HDD Set-up (SKW)	90	100	01/09/11 A	30/09/11 A	01/09/11 A	30/09/11 A
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
SKW1191	Setting up at drillhole location	7	100	09/01/12 A	14/01/12 A	09/01/12 A	14/01/12 A
SKW1201	Drill pilot hole and reaming hole - NS280 - 750m	33	100	16/01/12 A	16/02/12 A	16/01/12 A	16/02/12 A
SKW1211	Receiving Pit for HDD (SKW)	13	100	16/01/12 A	29/02/12 A	16/01/12 A	29/02/12 A
SKW1221	Installaiton of NS280 HDPE 450mm dia. pipe	61	100	31/03/12 A	30/04/12 A	31/03/12 A	30/04/12 A
SKW1231	Removal of Receiving Platform	50	100	01/05/12 A	19/06/12 A	01/05/12 A	19/06/12 A
SKW1241	Dredging of MD for Diffuser (PS CL 1.122(3))	16	100	20/06/12 A	05/07/12 A	20/06/12 A	05/07/12 A
SKW1251	Diffuser Construction	77	100	01/09/12 A	16/11/12 A	01/09/12 A	16/11/12 A
SKW1431	Removal of silt curtain	1	100	17/11/12 A	17/11/12 A	17/11/12 A	17/11/12 A
SKW1440	Sewer of Outfall Chamber to connection pit VO37A	90	100	31/12/12 A	04/01/14 A	31/12/12 A	04/01/14 A
SKW1441	Sewer of Connection Pit to Outfall VO45	177	100	05/06/13 A	30/01/14 A	05/06/13 A	30/01/14 A
SKW STW							
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&M3030	Delivery of Grit Removal Equipment	180	100	10/10/11 A	29/12/11 A	10/10/11 A	29/12/11 A



Start date	05/05/10
Finish date	14/11/16
Data date	01/07/14
Run date	02/07/14
Page number	9A
c Primavera Systems, Inc.	

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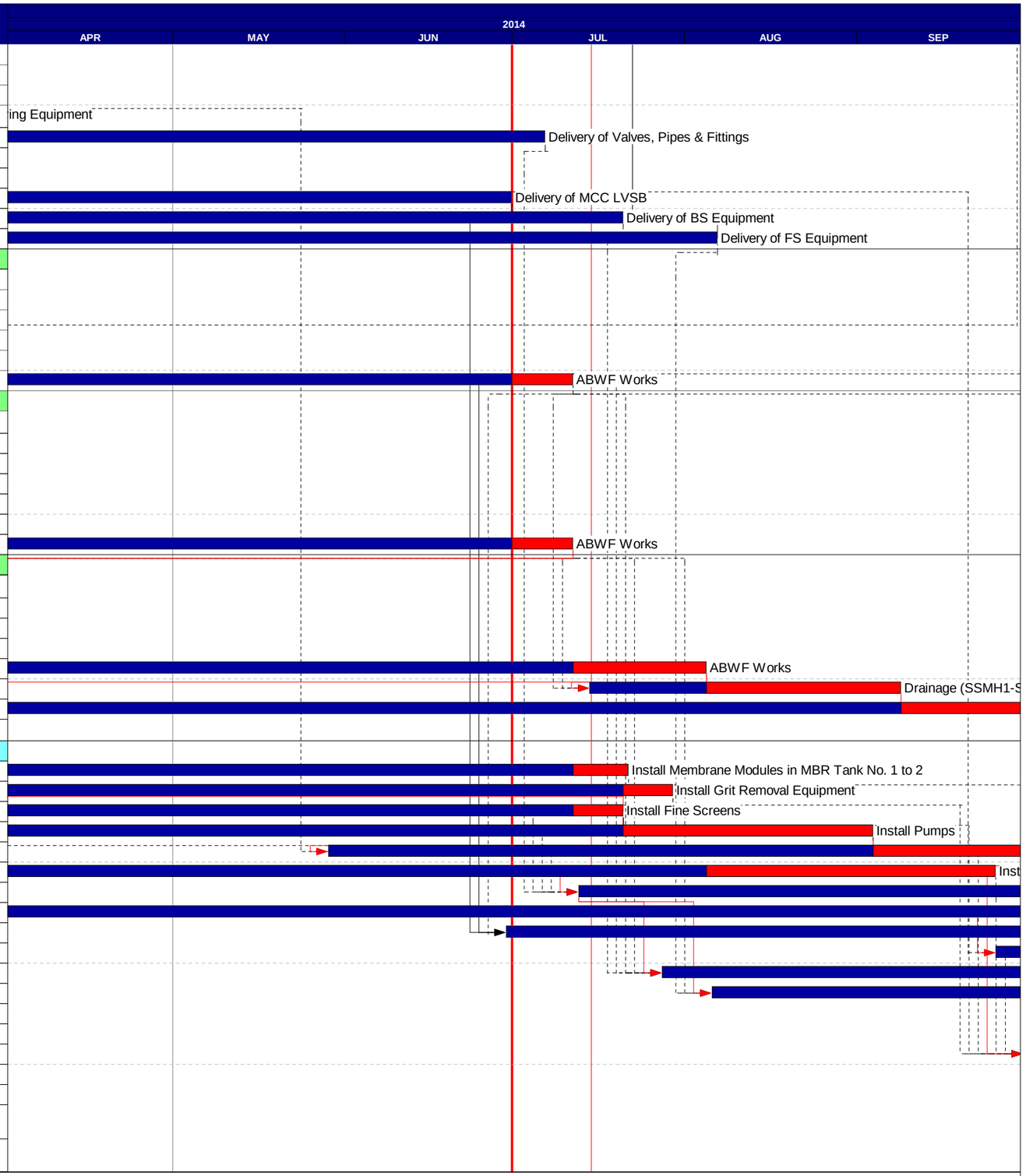
Summary point
Start milestone point
Finish milestone point

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Jul 2014 - Sep 2014

Date	Revision	Checked	Approved
30/06/14	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
E&M3060	Delivery of Fine Screens	136	100	12/09/11 A	30/11/11 A	12/09/11 A	30/11/11 A
E&M3070	Delivery of Pumps	136	100	23/06/11 A	05/09/11 A	23/06/11 A	05/09/11 A
E&M3080	Delivery of Submersible Mixers	180	100	26/07/11 A	17/11/11 A	26/07/11 A	17/11/11 A
E&M3090	Delivery of Sludge Dewatering Equipment	210	100	01/09/11 A	03/03/14 A	01/09/11 A	03/03/14 A
E&M3100	Delivery of Valves, Pipes & Fittings	180	100	30/08/11 A	06/07/14 A	30/08/11 A	06/07/14 A
E&M3110	Delivery of Penstocks	180	100	12/08/11 A	24/12/11 A	12/08/11 A	24/12/11 A
E&M3130	Delivery of instruments	180	100	21/06/11 A	03/11/11 A	21/06/11 A	03/11/11 A
E&M3140	Delivery of MCC LVSB	180	100	01/01/14 A	30/06/14 A	01/01/14 A	30/06/14 A
E&M3150	Delivery of BS Equipment	180	100	03/07/12 A	20/07/14 A	03/07/12 A	20/07/14 A
E&M3160	Delivery of FS Equipment	180	100	30/06/12 A	06/08/14 A	30/06/12 A	06/08/14 A
Construction of Grid A-G							
SKW1261	Excavate for SKW STW Structure (Grid A -G)	164	100	28/03/12 A	31/08/12 A	28/03/12 A	31/08/12 A
SKW1271	55 M3 Fire Sprinkle Water Tank (FL +0.9 mPD)	36	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A
SKW1281	Ground Floor Slab (Grid A-G)	46	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A
SKW1291	Columns & Walls to 1/F & 1/F Slab (Grid A-G)	50	100	03/07/12 A	31/07/12 A	03/07/12 A	31/07/12 A
SKW1301	Columns & Walls to R/F & R/F Slab (Grid A-G)	50	100	01/09/12 A	31/01/13 A	01/09/12 A	31/01/13 A
SKW1411	ABWF Works	105	90	01/02/13 A	11/07/14	01/02/13 A	29/10/13
Construction of Grid G-N							
SKW1311	Excavate for SKW STW Structure (Grid G-N)	90	100	28/03/12 A	25/06/12 A	28/03/12 A	25/06/12 A
SKW1321	Equalization Tank no.1 & 2 with base slabs (-2.1	42	100	26/06/12 A	30/09/12 A	26/06/12 A	30/09/12 A
SKW1331	Columns & Walls from B/S to G/F Slab (Grid G-N)	35	100	01/09/12 A	30/09/12 A	01/09/12 A	30/09/12 A
SKW1341	Ground Floor Slab (Grid G-N)	35	100	01/09/12 A	17/12/12 A	01/09/12 A	17/12/12 A
SKW1351	Columns & Walls to 1/F & 1/F Slab (Grid G-N)	28	100	01/11/12 A	15/01/13 A	01/11/12 A	15/01/13 A
SKW1361	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
SKW1451	ABWF Works	54	80	05/06/13 A	11/07/14	05/06/13 A	05/10/13
Construction of Grid N-T							
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
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
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
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
SKW1421	ABWF Works	60	60	06/08/13 A	04/08/14	06/08/13 A	29/10/13
SKW1551	Drainage (SSMH1-SSMH7)	35	0	15/07/14 A	08/09/14	15/07/14 A	03/12/13
SKW1561	Sewer (SMFH1-SMFH2, SMFH3-SMFH7)	220	60	27/03/14 A	05/12/14	27/03/14 A	01/03/14
SKW1571	Roadwork & Drainage Channel (SKW)	220	0	06/12/14	13/07/15	02/03/14	07/10/14
SKW STW - E&M Works							
E&M3170	Install Membrane Modules in MBR Tank No. 1 to 2	100	90	14/01/14 A	21/07/14	14/01/14 A	30/04/14
E&M3190	Install Grit Removal Equipment	60	85	15/03/14 A	29/07/14	15/03/14 A	26/01/14
E&M3210	Install Fine Screens	60	85	14/01/14 A	20/07/14	14/01/14 A	15/11/13
E&M3220	Install Pumps	75	40	15/03/14 A	03/09/14	15/03/14 A	30/12/13
E&M3230	Install Submersible Mixers	45	40	29/05/14 A	30/09/14	29/05/14 A	26/01/14
E&M3240	Install Sludge Dewatering Equipment	74	30	04/03/14 A	25/09/14	04/03/14 A	30/03/14
E&M3250	Install Valves, Pipes & Fittings	75	50	13/07/14 A	07/11/14	13/07/14 A	05/03/14
E&M3260	Install Penstocks	135	100	05/03/14 A	15/10/14 A	05/03/14 A	15/10/14 A
E&M3261	Install SAT of MCC & LVSB	174	100	30/06/14 A	21/12/14 A	30/06/14 A	21/12/14 A
E&M3270	Install instruments	60	20	26/09/14 A	25/12/14	26/09/14 A	30/04/14
E&M3291	Install BS Equipment	180	50	28/07/14 A	13/01/15	28/07/14 A	02/06/14
E&M3300	Install FS Equipment	161	50	06/08/14 A	04/01/15	06/08/14 A	02/06/14
E&M3310	Hydraulic Tests of Pipeworks	90	0	08/11/14	05/02/15	06/03/14	03/06/14
E&M3311	Cabling Works	47	30	21/12/14 A	27/01/15	21/12/14 A	02/06/14
E&M3320	Cabling Works for Dewatering Equipment	47	0	01/10/14	16/11/14	31/03/14	16/05/14
E&M3321	Insulation Tests of Cables and Cable Termination	21	20	06/02/15 A	03/12/14	06/02/15 A	02/06/14
E&M3331	Energization	1	0	28/01/15	28/01/15	03/06/14	03/06/14
E&M3359	Functional and Performance Tests of Equipment	35	0	06/02/15	12/03/15	04/06/14	08/07/14
E&M3360	T&C Period	91	0	13/03/15	11/06/15	09/07/14	07/10/14



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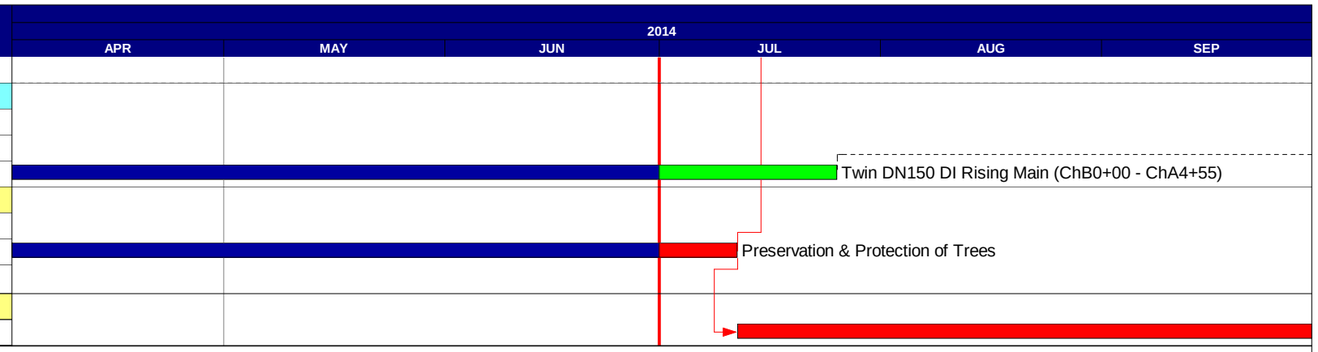
Run date	02/07/14
Page number	10A
c Primavera Systems, Inc.	

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

Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Jul 2014 - Sep 2014

Date	Revision	Checked	Approved
30/06/14	Revision 0	RH	VC

Activity ID	Description	Original Duration	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
E&M3370	Trial Operation Period	456	0	12/06/15	14/11/16	12/06/15	14/11/16
Rising Main							
SKW1481	Subm, Approval & Delivery of DI pipes	120	100	17/05/10 A	13/09/10 A	17/05/10 A	13/09/10 A
SKW1501	LCS (ChB0+00 - ChB1+20)	300	100	14/09/10 A	10/07/11 A	14/09/10 A	10/07/11 A
SKW1521	Twin DN150 DI Rising Main (ChB0+00 - ChA4+55)	250	90	11/07/11 A	25/07/14	11/07/11 A	07/10/14
Section W8 - Landscape 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
SKW1611	Preservation & Protection of Trees	1053	99	17/05/10 A	11/07/14	17/05/10 A	11/07/14
SKW1621	Transplantation at SKW	90	100	07/06/10 A	04/09/10 A	07/06/10 A	04/09/10 A
Section W9 - Establishment Works in All Portions							
SKW1631	Section W9 - Establishment Works	194	0	12/07/14	21/01/15	12/07/14	21/01/15



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Run date	02/07/14
Page number	11A
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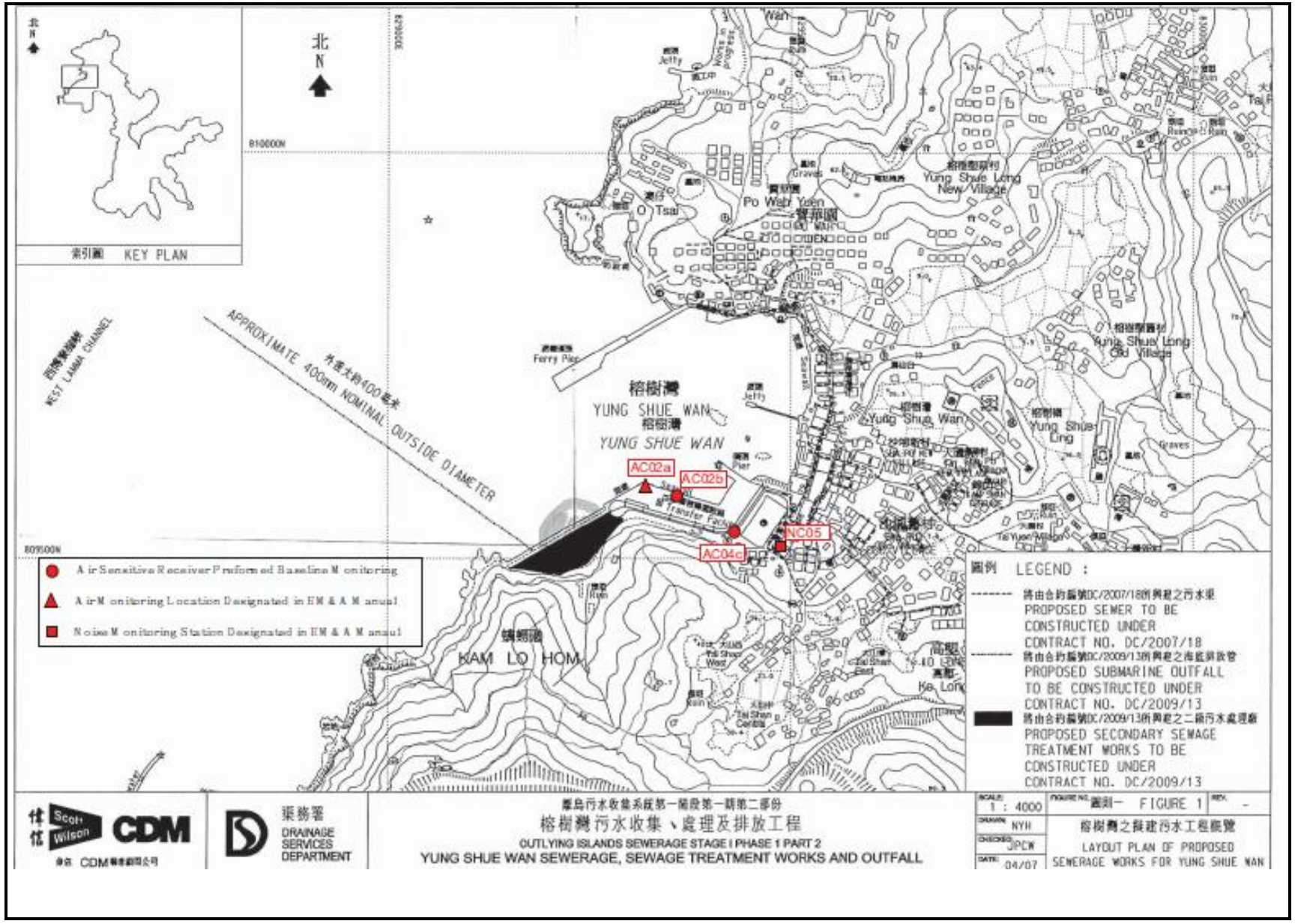
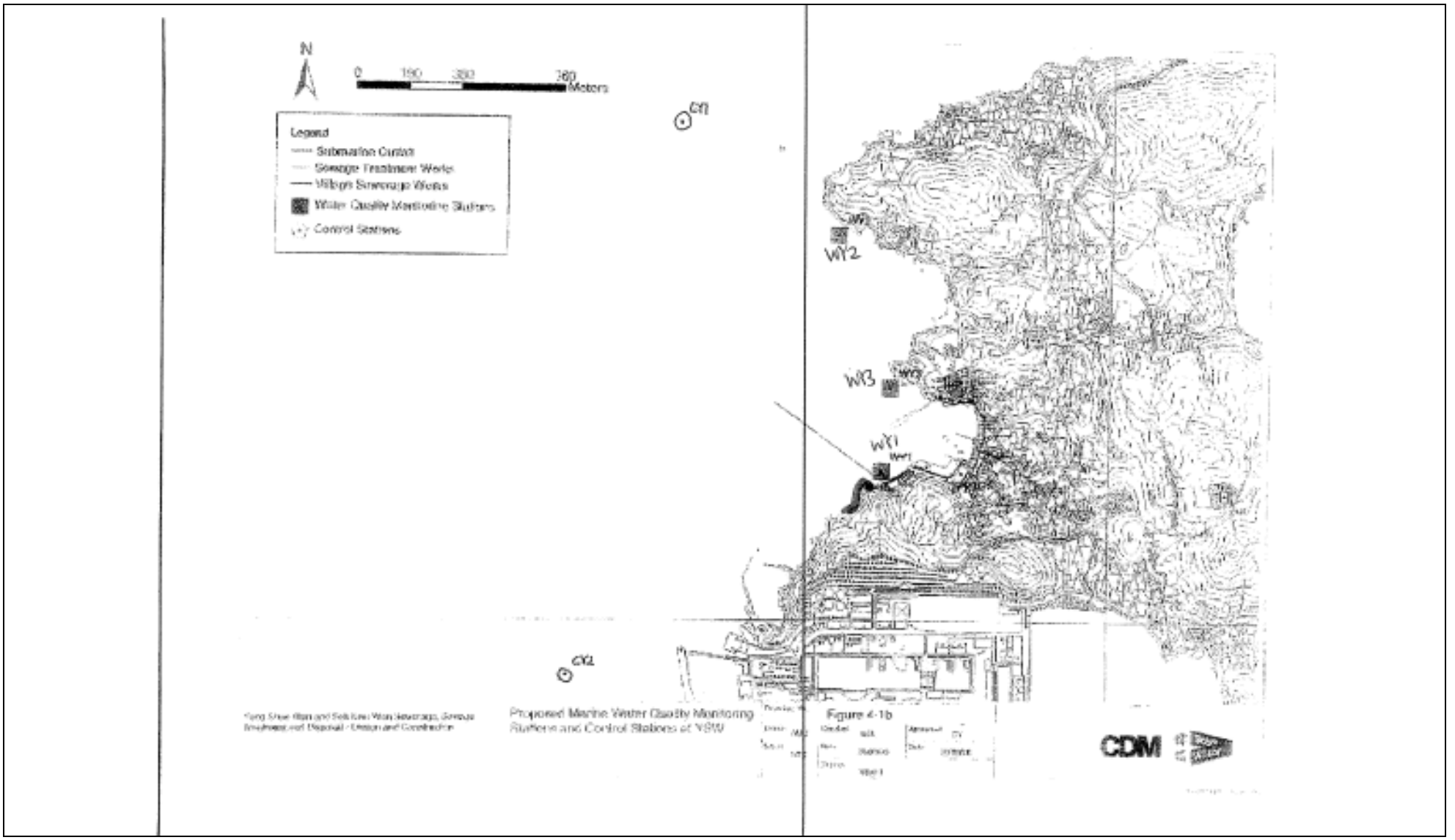
Leader Civil Engineering Corp. Ltd.
Contract No. DC/2009/13
Construction of Sewage Treatment Works at YSW & SKW
3-month Rolling Programme (Jul 2014 - Sep 2014

Date	Revision	Checked	Approved
30/06/14	Revision 0	RH	VC

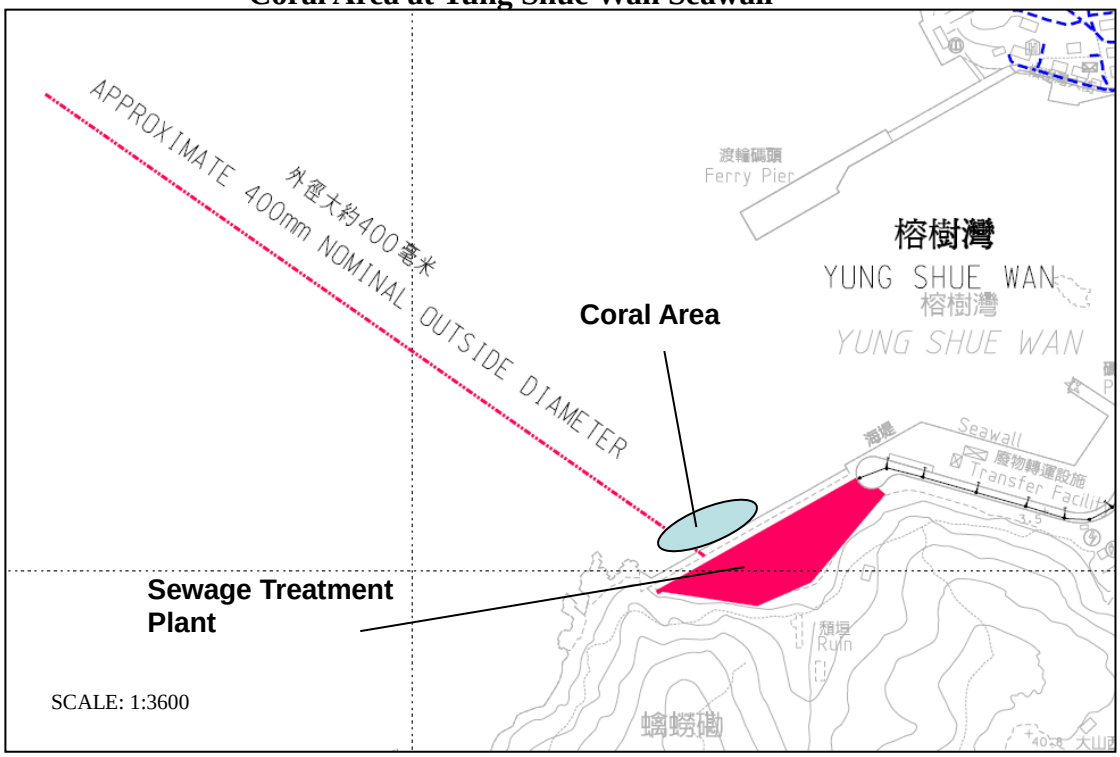
Appendix D

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

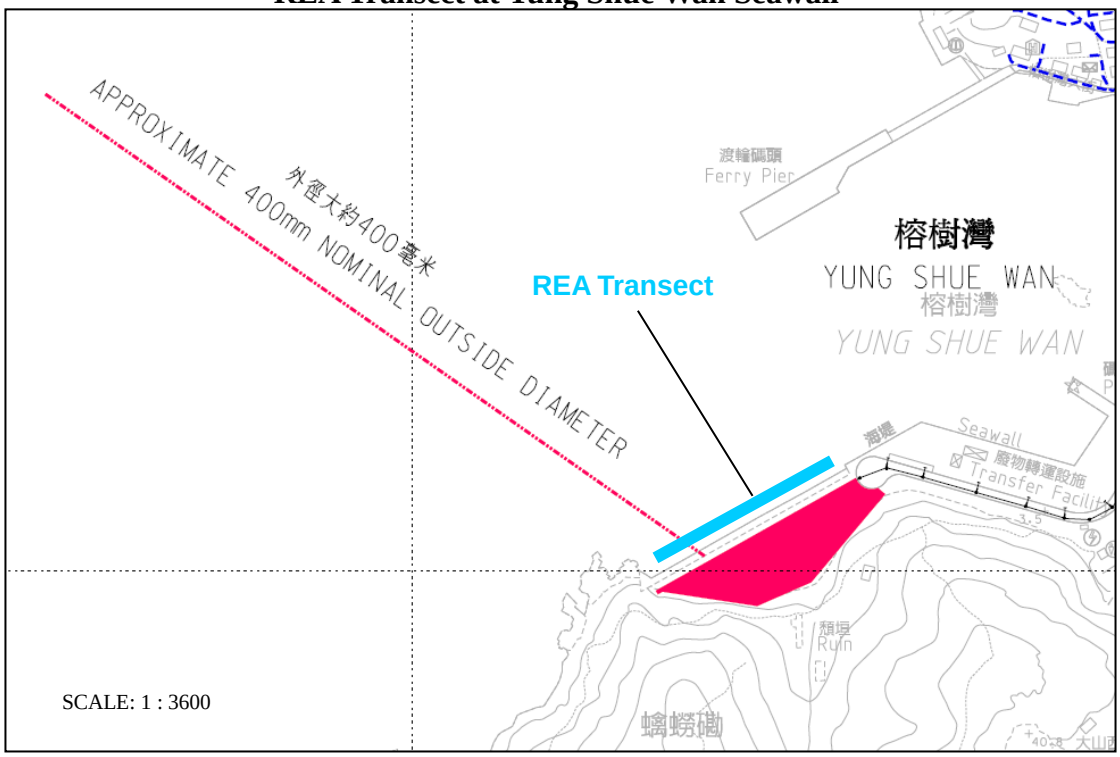

北 N
索引圖 KEY PLAN
APPROXIMATE 400mm NOMINAL OUTSIDE DIAMETER
榕樹灣 YUNG SHUE WAN
YUNG SHUE WAN
AC02a
AC02b
NC05
AC04c
Air Sensitive Receiver Performed Baseline Monitoring
Air Monitoring Location Designated in EM & A Manual
Noise Monitoring Station Designated in EM & A Manual
KAM LO HOM
圖例 LEGEND :
PROPOSED SEWER TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2007/18
PROPOSED SUBMARINE OUTFALL TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
PROPOSED SECONDARY SEWAGE TREATMENT WORKS TO BE CONSTRUCTED UNDER CONTRACT NO. DC/2009/13
DRAINAGE SERVICES DEPARTMENT
榕樹灣污水收集、處理及排放工程
OUTLYING ISLANDS SEWERAGE STAGE I PHASE 1 PART 2
YUNG SHUE WAN SEWERAGE, SEWAGE TREATMENT WORKS AND OUTFALL
1 : 4000
圖則一 FIGURE 1
榕樹灣之擬建污水工程概覽
LAYOUT PLAN OF PROPOSED SEWERAGE WORKS FOR YUNG SHUE WAN


N
0
190
380
760
Meters
Legend
Submarine Outfall
Sewage Treatment Works
Village Sewerage Works
Water Quality Monitoring Stations
Control Stations
CR1
CR2
WR1
WR2
WR3
Proposed Marine Water Quality Monitoring Stations and Control Stations at YSW
Figure 4-1b
CDM

Coral Area at Yung Shue Wan Seawall



REA Transect at Yung Shue Wan Seawall



Coral Area at Sham Wan

REA Transect at Sham Wan

Appendix E

Monitoring Equipments Calibration Certificate

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : YSW RE Offices
Location ID : AC02b

Date of Calibration: 5-Jun-14
Next Calibration Date: 5-Aug-14
Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1003.6	Corrected Pressure (mm Hg)	752.7
Temperature (ºC)	29.9	Temperature (K)	303

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00757
Model->	5025A	Qstd Intercept ->	-0.01628
Serial # ->	1612		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12	1.711	59	58.24	Slope = 27.4989
13	4.7	4.7	9.4	1.516	53	52.32	Intercept = 10.6658
10	3.5	3.5	7	1.309	46	45.41	Corr. coeff. = 0.9968
7	2.1	2.1	4.2	1.016	40	39.48	
5	1.3	1.3	2.6	0.801	33	32.57	

Calculations :

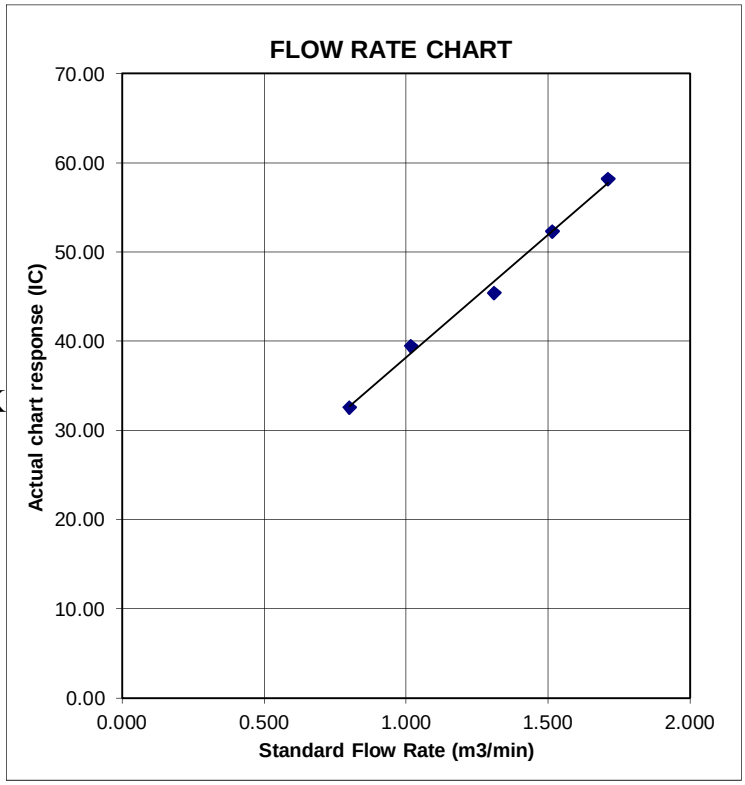
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : YSW Playground
Location ID : AC04c

Date of Calibration: 5-Jun-14
Next Calibration Date: 5-Aug-14
Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1003.6	Corrected Pressure (mm Hg)	752.7
Temperature (°C)	29.9	Temperature (K)	303

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00757
Model->	5025A	Qstd Intercept ->	-0.01628
Serial # ->	1612		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.7	5.7	11.4	1.668	58	57.25	Slope = 31.2547
13	4.1	4.1	8.2	1.416	51	50.34	Intercept = 5.3362
10	3.1	3.1	6.2	1.232	44	43.43	Corr. coeff. = 0.9990
7	2.2	2.2	4.4	1.039	38	37.51	
5	1.2	1.2	2.4	0.770	30	29.61	

Calculations :

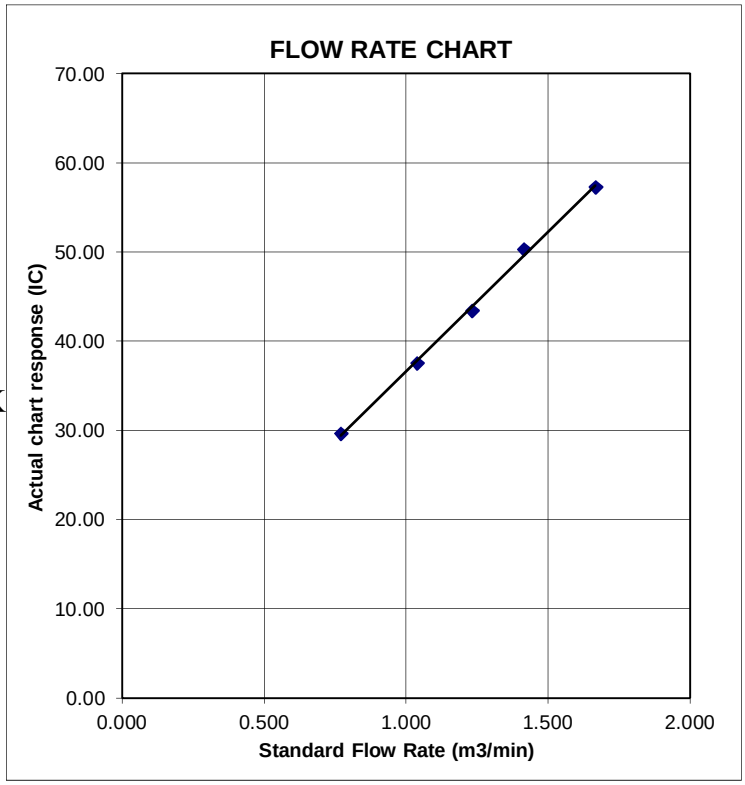
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



SIBATA

EQ114

SIBATA SCIENTIFIC TECHNOLOGY LTD.
1-1-62, Nakane, Soka, Saitama, 340-0005 Japan
TEL : 048-933-1582 FAX : 048-933-1591

CALIBRATION CERTIFICATE

Date: December 18, 2013

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	3Y6505
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	591 CPM
Calibration Date	:	November 12, 2013

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

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Kentaro Togo
Section Manager
Overseas Sales Division

SIBATA

EQ113

SIBATA SCIENTIFIC TECHNOLOGY LTD.
1-1-62, Nakane, Soka, Saitama, 340-0005 Japan
TEL : 048-933-1582 FAX : 048-933-1591

CALIBRATION CERTIFICATE

Date: February 26, 2014

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	3Y6502
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	563 CPM
Scale Setting	:	February 25, 2014

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

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Susumu Egashira
Overseas Sales Division

EQ 063

CERTIFICATE OF CALIBRATION AND TESTING

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

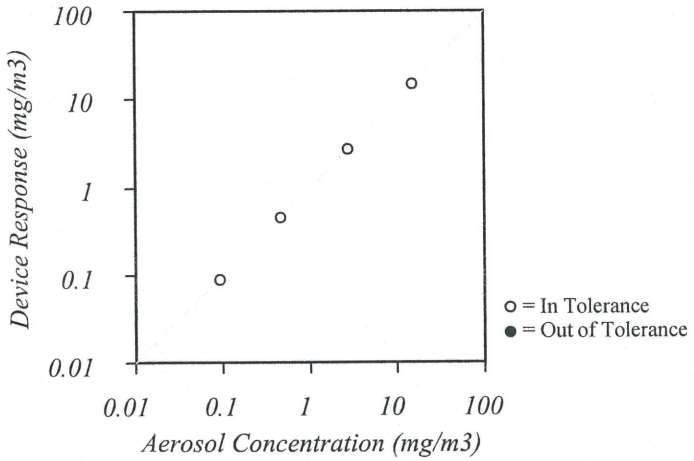
Environment Condition		
Temperature	74.8 (23.8)	°F (°C)
Relative Humidity	27	%RH
Barometric Pressure	28.96 (980.7)	inHg (hPa)

Model	**8520**
Serial Number	**23080**

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

Zero Stability Results

Average:	Minimum:	Maximum:	Time:
0.000 :mg/m³	0.000 :mg/m³	0.001 :mg/m³	17:00 :hrs.

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

Measurement Variable	System ID	Last Cal.	Cal. Due
Barometric Pressure	E003733	03-12-13	03-12-14
Humidity	E002873	11-08-12	11-08-13
DC Voltage	E003315	01-02-13	01-02-14
Microbalance	M001324	01-04-13	01-04-15
Flowmeter	E002006	03-05-13	03-05-14

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E002873	11-08-12	11-08-13
DC Voltage	E003314	01-02-13	01-02-14
Photometer	E003319	08-14-13	02-14-14
Pressure	E003511	11-07-12	11-07-13

Calibrated

☒ Final Function Check

October 22, 2013
Date

TSI P/N 2300157

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

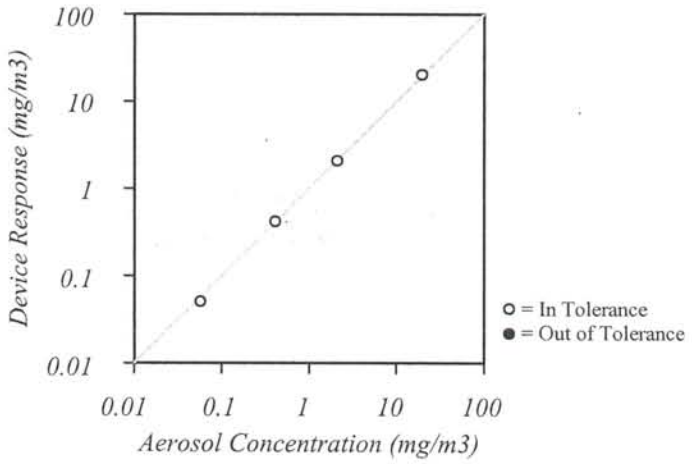
TSI Instruments Ltd, Stirling Road, Cressex Business Park
High Wycombe Bucks HP12 3ST England
Tel: (Int +44) (UK 0) 1494 459200 Fax: (Int +44) (UK 0) 1494 459700 http://www.tsiinc.co.uk

Environment Condition		
Temperature	23.5	°C
Relative Humidity	41.92	%RH
Barometric Pressure	996.6	hPa

Model	**8520**
Serial Number	**23079**

☒ As Left ☐ As Found ☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII02-01

Zero Stability Results

Average:	Minimum:	Maximum:	Time:
0.000 :mg/m³	0.000 :mg/m³	0.001 :mg/m³	4.00 :hrs.

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

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Barometric Pressure	E006013	18-03-13	18-03-14	Temperature	E006014	18-03-13	18-03-14
Humidity	E006014	18-03-13	18-03-14	Photometer	E003336	06-03-13	06-09-13
Microbalance	UK 23403008	07-01-13	07-01-14	Flow and Temperature	E006128	29-01-13	29-01-14
Pressure	E006013	18-03-13	18-03-14	DC Voltage	E003323	19-10-12	19-10-13

S. L
Calibrated

☑ Final Function Check

17 June, 2013
Date

EQ021

CERTIFICATE OF CALIBRATION AND TESTING

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

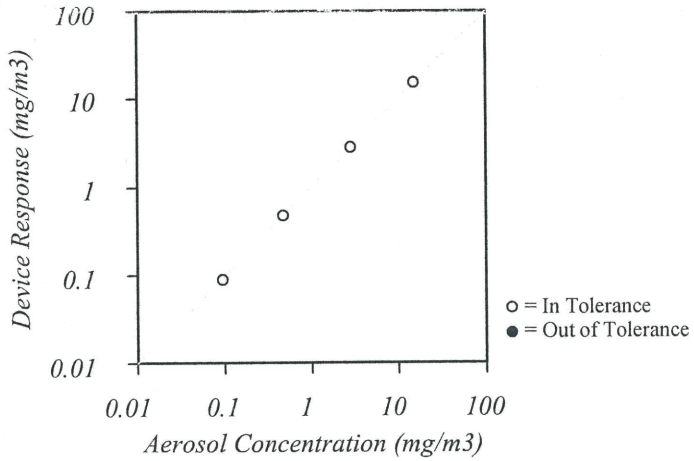
Environment Condition		
Temperature	74.7 (23.7)	°F (°C)
Relative Humidity	27	%RH
Barometric Pressure	28.97 (981.0)	inHg (hPa)

Model	**8520**
Serial Number	**21060**

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

Zero Stability Results

Average:	Minimum:	Maximum:	Time:
0.000 :mg/m³	0.000 :mg/m³	0.000 :mg/m³	2.07 :hrs.

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

Measurement Variable	System ID	Last Cal.	Cal. Due
Barometric Pressure	E003733	03-12-13	03-12-14
Humidity	E002873	11-08-12	11-08-13
DC Voltage	E003315	01-02-13	01-02-14
Microbalance	M001324	01-04-13	01-04-15
Flowmeter	E002006	03-05-13	03-05-14

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E002873	11-08-12	11-08-13
DC Voltage	E003314	01-02-13	01-02-14
Photometer	E003319	08-14-13	02-14-14
Pressure	E003511	11-07-12	11-07-13

Calibrated

☑ Final Function Check

October 22, 2013
Date

TSI P/N 2300157

TSI P/N 2380157

CERTIFICATE OF CALIBRATION AND TESTING

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

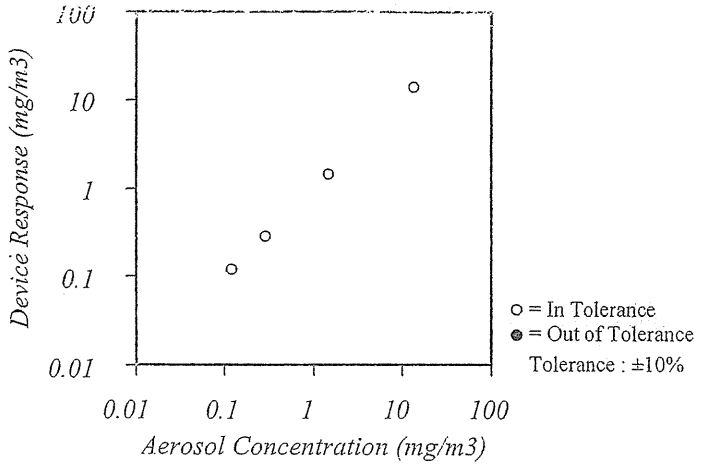
Environment Condition		
Temperature	69.1 (20.6)	°F (°C)
Relative Humidity	46	%RH
Barometric Pressure	29.07 (984.4)	in Hg (hPa)

Model	AM510
Serial Number	11008017

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID. DTII01-02

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

Measurement Variable	System ID	Last Cal	Cal. Due
Barometric Pressure	E003733	03-12-13	03-12-14
Humidity	E002873	11-08-12	11-08-13
DC Voltage	E003315	01-02-13	01-02-14
Microbalance	M001324	01-04-13	01-04-15
Flowmeter	E002006	03-05-13	03-05-14

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E002873	11-08-12	11-08-13
DC Voltage	E003314	01-02-13	01-02-14
Photometer	E003319	02-19-13	08-19-13
Pressure	E003511	11-07-12	11-07-13

Amanda Mac
Calibrated

☒ Final Function Check

June 18, 2013
Date

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR T W TAM	WORK ORDER	: **HK1415926**
CLIENT	: **ACTION UNITED ENVIRO SERVICES**		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH DATE RECEIVED DATE OF ISSUE	: 1 : 24-MAR-2014 : 23-MAY-2014
PROJECT	: ----	NO. OF SAMPLES CLIENT ORDER	: 1 : ----

General Comments

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

Signatories

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

Signatories	*Position*
Richard Fung	General Manager

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

WORK ORDER	: HK1415926
SUB-BATCH	: 1
CLIENT	: ACTION UNITED ENVIRO SERVICES
PROJECT	: ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1415926-001	S/N: 366407	AIR	24-MAR-2014	S/N: 366407

Equipment Calibration Record

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	366407
Equipment Ref:	EQ107
Job Order	

Standard Equipment:

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

Equipment Calibration Results:

Calibration Date: 24 & 25 March 2014

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
14hr43min	18:25 ~ 09:08	19.5	1019.4	0.020	8154	9.2
2hr30min	09:15 ~ 11:45	21.9	1015.5	0.025	1801	12.0
4hr09min	11:55 ~ 16:04	21.9	1015.5	0.031	3420	13.7

Sensitivity Adjustment Scale Setting (Before Calibration) 566 (CPM)

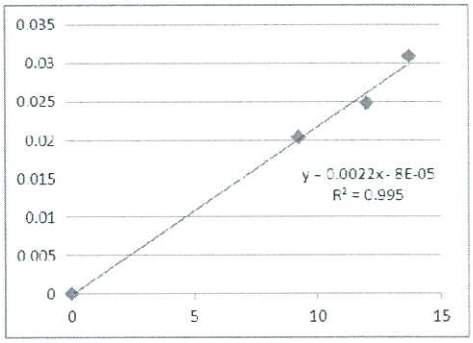
Sensitivity Adjustment Scale Setting (After Calibration) 564 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9995

Validity of Calibration Record 28 March 2014



Operator : Tung Chi Sun Signature : Sun Date : 28 March 2014

QC Reviewer : Ben Tam Signature : Date : 28 March 2014

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	6-Jan-14
Location ID :	Calibration Room	Next Calibration Date:	6-Apr-14

CONDITIONS

Sea Level Pressure (hPa)	1018	Corrected Pressure (mm Hg)	763.5
Temperature (°C)	18.5	Temperature (K)	292

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11662
Model->	5025A	Qstd Intercept ->	-0.01714
Calibration Date->	9-Apr-13	Expiry Date->	9-Apr-14

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.639	56	56.75	Slope = 23.4751
13	4.6	4.6	9.2	1.460	50	50.67	Intercept = 17.5690
10	2.8	2.8	5.6	1.141	44	44.59	Corr. coeff. = 0.9966
8	1.6	1.6	3.2	0.865	38	38.51	
5	0.9	0.9	1.8	0.650	32	32.43	

Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

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

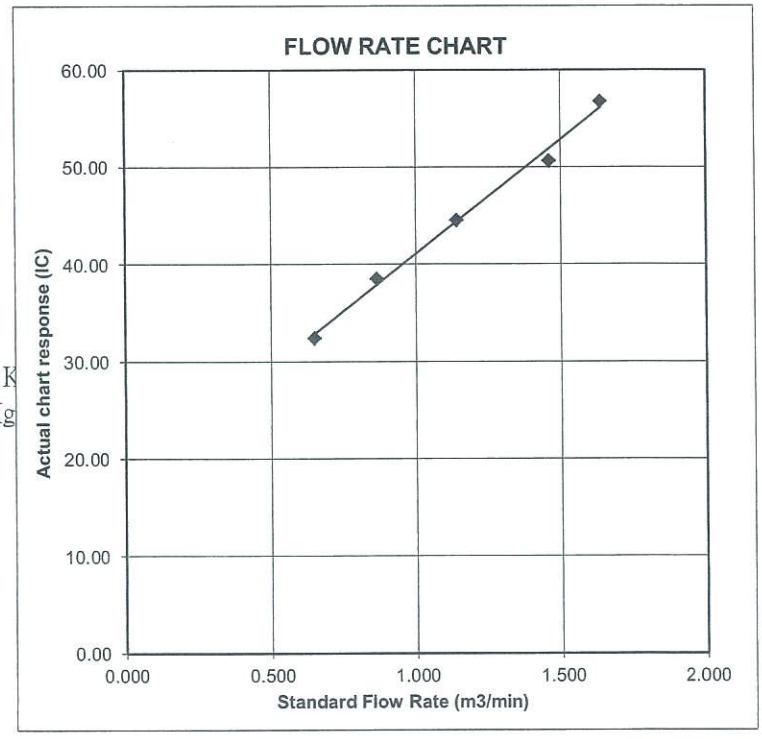
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR T W TAM	**WORK ORDER**	: **HK1415129**
CLIENT	: **ACTION UNITED ENVIRO SERVICES**		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH DATE RECEIVED DATE OF ISSUE	: 1 : 16-JAN-2014 : 16-MAY-2014
PROJECT	: ----	NO. OF SAMPLES CLIENT ORDER	: 1 : ----

General Comments

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

Signatories

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

Signatories	*Position*
Richard Fung	General Manager

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

WORK ORDER	: HK1415129
SUB-BATCH	: 1
CLIENT	: ACTION UNITED ENVIRO SERVICES
PROJECT	: ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1415129-001	S/N: 2X6146	AIR	16-JAN-2014	S/N: 2X6146

Equipment Calibration Record

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	2X6146
Equipment Ref:	EQ106
Job Order	

Standard Equipment:

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

Equipment Calibration Results:

Calibration Date: 16 & 17 January 2014

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
4hr23min	10:20 ~ 14:43	19.5	1024.3	0.031	3410	12.9
2hr55min	14:55 ~ 17:50	19.5	1024.3	0.052	3701	21.1
5hr19min	12:45 ~ 18:04	20.1	1023.3	0.102	14533	45.5

Sensitivity Adjustment Scale Setting (Before Calibration) 589 (CPM)

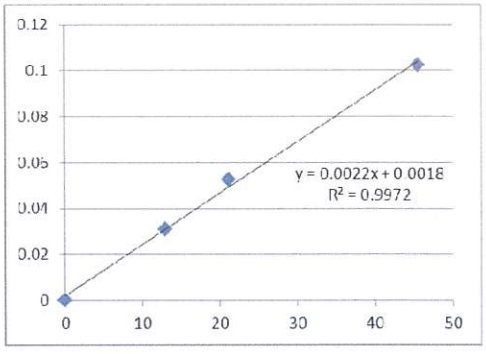
Sensitivity Adjustment Scale Setting (After Calibration) 593 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9972

Validity of Calibration Record 22 Jan 2014



Operator : Tung Chi Sun Signature : Sun Date : 22 January 2014

QC Reviewer : Ben Tam Signature : Date : 22 January 2014

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	6-Jan-14
Location ID :	Calibration Room	Next Calibration Date:	6-Apr-14

CONDITIONS

Sea Level Pressure (hPa)	1018	Corrected Pressure (mm Hg)	763.5
Temperature (°C)	18.5	Temperature (K)	292

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11662
Model->	5025A	Qstd Intercept ->	-0.01714
Calibration Date->	9-Apr-13	Expiry Date->	9-Apr-14

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.639	56	56.75	Slope = 23.4751
13	4.6	4.6	9.2	1.460	50	50.67	Intercept = 17.5690
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8	1.6	1.6	3.2	0.865	38	38.51	
5	0.9	0.9	1.8	0.650	32	32.43	

Calculations :

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

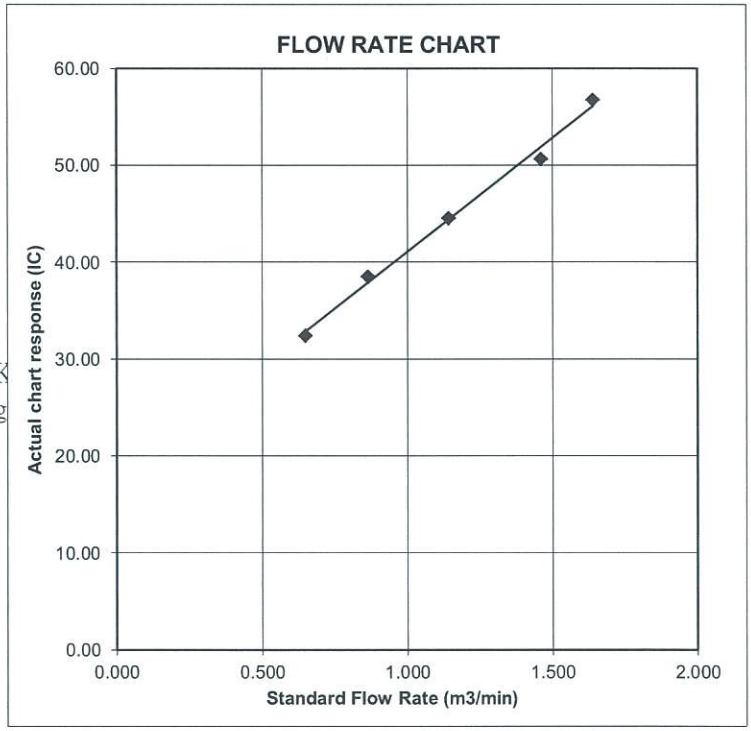
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TEST REPORT
for
PRECISION
SOUND LEVEL METER
(NX-42EX installed)

Model : NL－52

Serial No. : 00142581

Microphone No. : 06015

Preamplifier No. : 32609

Condition : Temperature 25 ℃

Humidity 30 %RH

Date : March, 12, 2014

Signature :

RION CO., LTD.

1. Frequency weightings (Fig. 1) Pass

Frequency weighting A

Frequency weighting C

Frequency weighting Z

2. Level linearity error (dB)

Reference signal level (Ref.) : 94.0 dB (at 1 kHz, 8 kHz), 74.0 dB (at 31.5 Hz)

Frequency weighting : A

Indicated value / Frequency	Difference with Reference signal level (dB)						
	25.0	74.0	94.0	98.0	114.0	136.0	138.0
31.5 Hz	−0.2	Ref.	—	−0.1	—	—	—
1 kHz	−0.1	—	Ref.	—	0.0	—	0.0
8 kHz	0.1	—	Ref.	—	—	0.0	—
Tolerance limit	±0.3	—	—	±0.3	±0.2	±0.3	±0.3

3. Toneburst response (Time weighted sound level)

Input signal level : 127 dB

Toneburst : Frequency : 4 kHz, duration : 0.25 ms

Frequency weighting : A, Time-weighting : F

(dB)			
Design goal	Indicated value	Difference	Tolerance limit
100.0	99.9	−0.1	±1.0

4. Time weighting I (impulse)

Input signal level : 120 dB

Toneburst : Frequency : 4 kHz, duration : 5 ms, period : 500 ms

Frequency weighting : A

(dB)			
Design goal	Indicated value	Difference	Tolerance limit
111.2	110.3	−0.9	±2.0

*When the optional Extended Function Program NX-42EX is installed, time weighting I(impulse) can be selected in only sub-channel.

5. Peak sound level (dB)

Frequency weighting : C

Frequency (Hz)	Number of cycles in test signal	(dB)				
		Input signal level	Design goal	Indicated value	Difference	Tolerance limit
			L_C	Lcpeak		
31.5	1 cycle	137.0	136.5	137.3	0.8	±2.0
500	Positive half cycle	137.0	139.4	139.2	−0.2	±1.0
	Negative half cycle	137.0	139.4	139.1	−0.3	±1.0

6. Response to repeated to toneburst

Input signal level : 130.0 dB + 8 dB

Frequency weighting : A, Time-weighting : S

Toneburst : Frequency : 2 kHz, duration : 5 ms, period : 25 ms

(dB)				
Peak-to-rms ratio	Design goal	Indicated value	Difference	Tolerance limit
3.16	131.0	130.9	−0.1	±0.5

7. Inherent noise level (dB)

(dB)		
Frequency weighting	Indicated value	Tolerance limit
A	11.0	17 or less
C	15.5	25 or less
Z	21.1	30 or less

8. Instrumental error

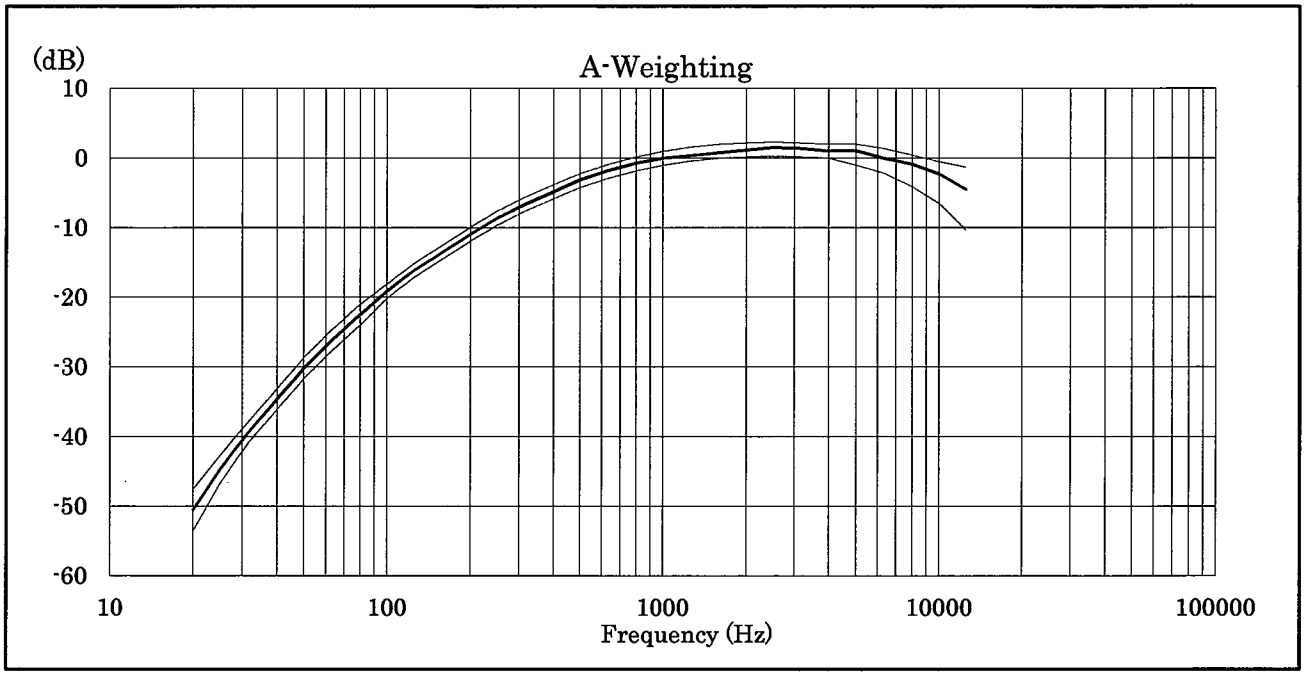
84.0 dB ± 0.7 dB 0.0 dB

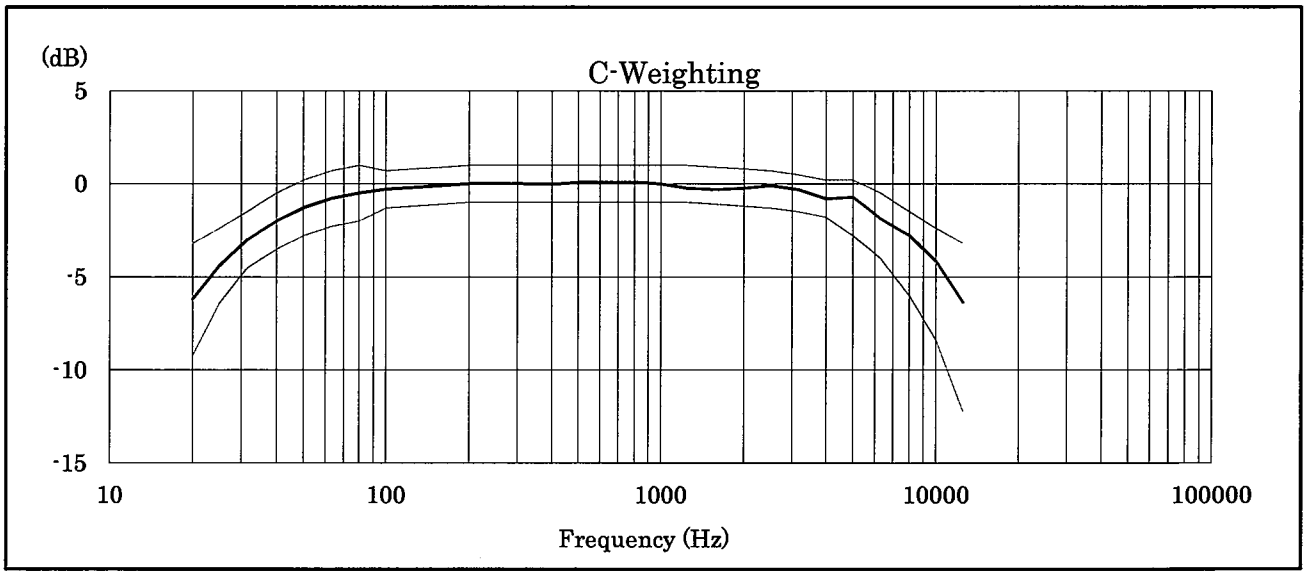
Applicable standards

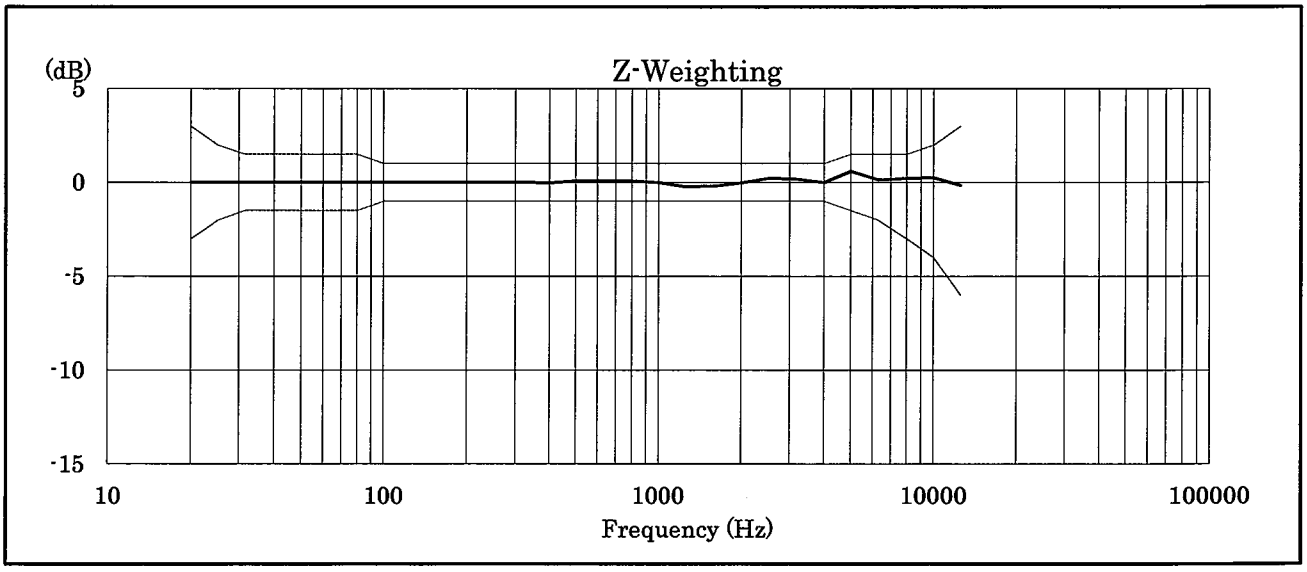
JIS C 1509-1 : 2005 Class 1
IEC 61672-1 : 2002 Class 1
ANSI S1.4-1983 Type 1
ANSI S1.43-1997 Type 1
CE marking (EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC)
WEEE Directive (2002/96/EC)
Chinese RoHS

RION

Relative free field frequency response







TEST REPORT
for
PRECISION
SOUND LEVEL METER
(NX-42EX installed)

Model : NL－52

Serial No. : 00142580

Microphone No. : 06011

Preamplifier No. : 32608

Condition : Temperature 25 ℃

Humidity 30 %RH

Date : March, 12, 2014

Signature : 

RION CO., LTD.

1. Frequency weightings (Fig. 1) Pass

Frequency weighting A

Frequency weighting C

Frequency weighting Z

2. Level linearity error (dB)

Reference signal level (Ref.) : 94.0 dB (at 1 kHz, 8 kHz), 74.0 dB (at 31.5 Hz)

Frequency weighting : A

Frequency \ Indicated value	Difference with Reference signal level (dB)						
	25.0	74.0	94.0	98.0	114.0	136.0	138.0
31.5 Hz	−0.2	Ref.	—	−0.1	—	—	—
1 kHz	0.0	—	Ref.	—	0.0	—	0.0
8 kHz	0.0	—	Ref.	—	—	0.0	—
Tolerance limit	±0.3	—	—	±0.3	±0.2	±0.3	±0.3

3. Toneburst response (Time weighted sound level)

Input signal level : 127 dB

Toneburst : Frequency : 4 kHz, duration : 0.25 ms

Frequency weighting : A, Time-weighting : F

(dB)			
Design goal	Indicated value	Difference	Tolerance limit
100.0	99.7	−0.3	±1.0

4. Time weighting I (impulse)

Input signal level : 120 dB

Toneburst : Frequency : 4 kHz, duration : 5 ms, period : 500 ms

Frequency weighting : A

(dB)			
Design goal	Indicated value	Difference	Tolerance limit
111.2	110.3	−0.9	±2.0

*When the optional Extended Function Program NX-42EX is installed, time weighting I(impulse) can be selected in only sub-channel.

5. Peak sound level (dB)

Frequency weighting : C

Frequency (Hz)	Number of cycles in test signal	(dB)				
		Input signal level	Design goal	Indicated value	Difference	Tolerance limit
			L_C	Lcpeak		
31.5	1 cycle	137.0	136.5	137.3	0.8	±2.0
500	Positive half cycle	137.0	139.4	139.2	−0.2	±1.0
	Negative half cycle	137.0	139.4	139.2	−0.2	±1.0

6. Response to repeated to toneburst

Input signal level : 130.0 dB + 8 dB

Frequency weighting : A, Time-weighting : S

Toneburst : Frequency : 2 kHz, duration : 5 ms, period : 25 ms

(dB)				
Peak-to-rms ratio	Design goal	Indicated value	Difference	Tolerance limit
3.16	131.0	131.0	0.0	±0.5

7. Inherent noise level (dB)

(dB)		
Frequency weighting	Indicated value	Tolerance limit
A	10.5	17 or less
C	15.0	25 or less
Z	20.6	30 or less

8. Instrumental error

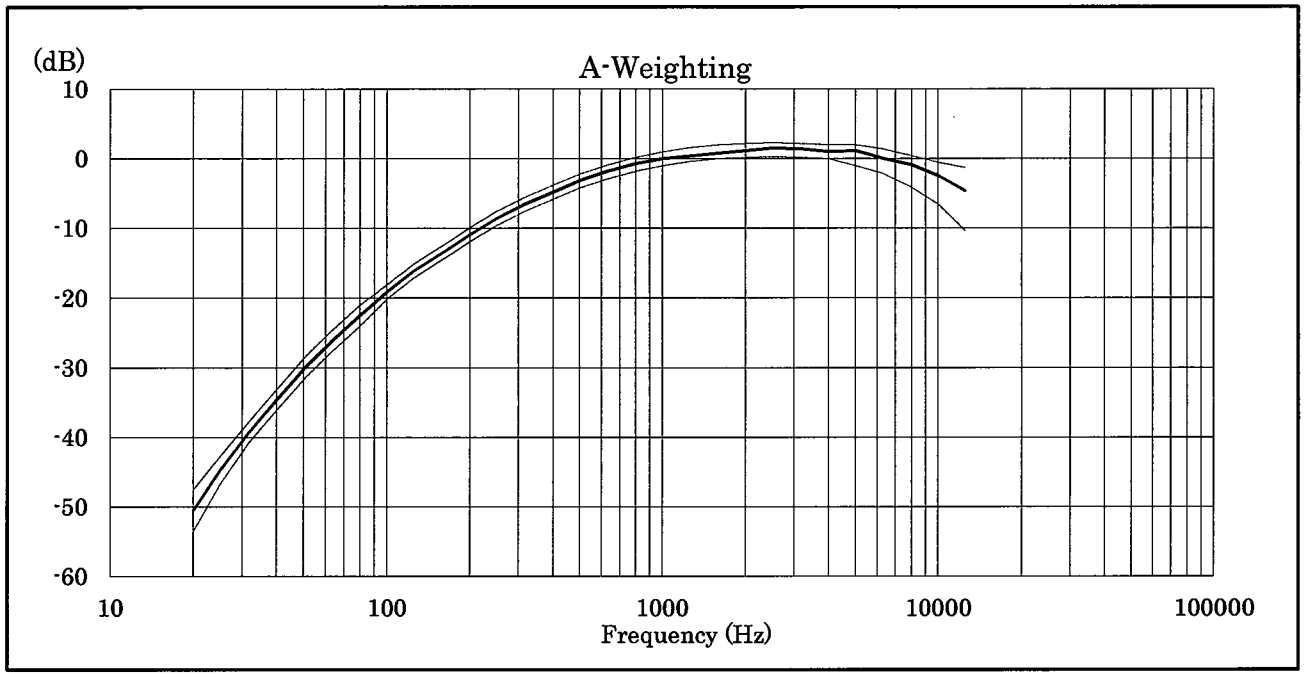
84.0 dB ± 0.7 dB 0.0 dB

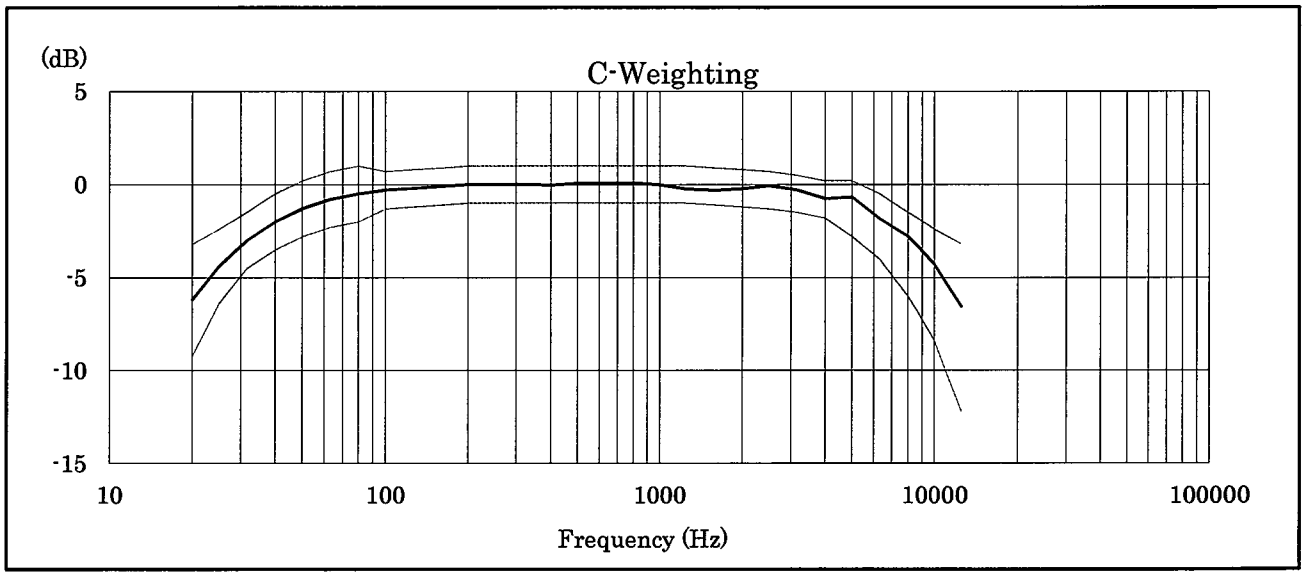
Applicable standards

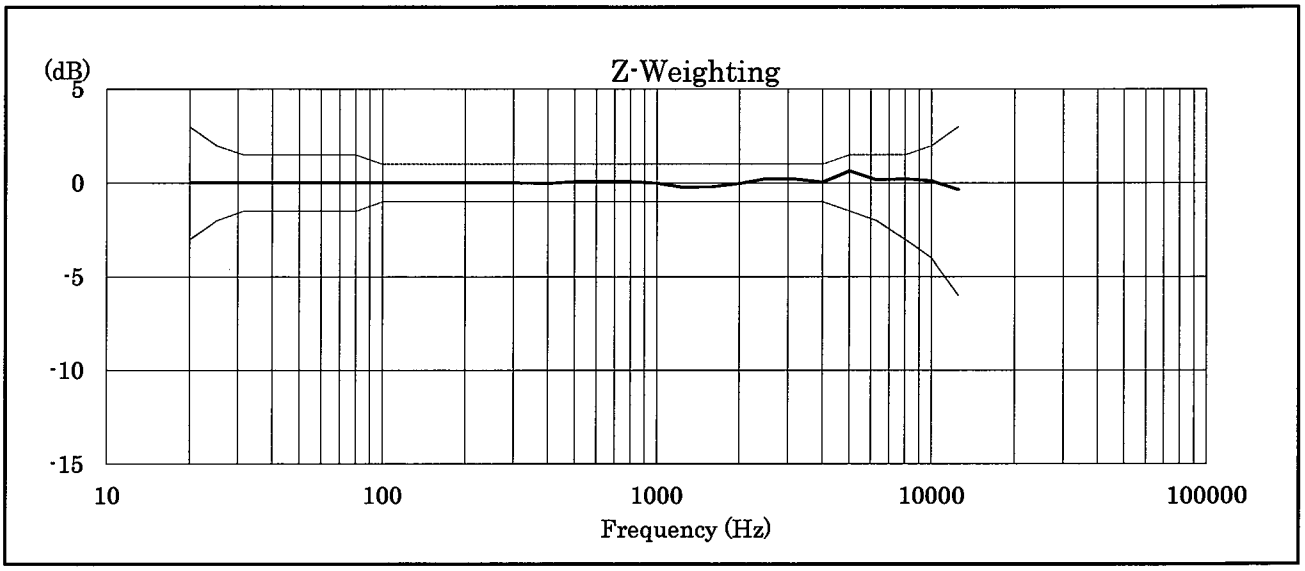
JIS C 1509-1 : 2005 Class 1
IEC 61672-1 : 2002 Class 1
ANSI S1.4-1983 Type 1
ANSI S1.43-1997 Type 1
CE marking (EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC)
WEEE Directive (2002/96/EC)
Chinese RoHS

RION

Relative free field frequency response







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

Certificate of Calibration
校正證書

Certificate No. : C142870
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0853) Date of Receipt / 收件日期 : 8 May 2014

Description / 儀器名稱 : Acoustical Calibrator (EQ082)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 4231
Serial No. / 編號 : 2713428
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 13 May 2014

TEST RESULTS / 測試結果

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

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

Tested By 測試 : K C Lee
Project Engineer

Certified By 核證 : K M Wu
Engineer

Date of Issue 簽發日期 : 15 May 2014

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@ tion.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C142870
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

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

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C133632
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

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

5.2 Frequency Accuracy

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

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

Note :
The values given in this 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.

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
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Appendix F

Event and Action Plan

Air Quality

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

Construction Noise

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

Water Quality

EVENT	ACTION			
	ET	IC(E)	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sampling day	1. Repeat in-situ measurement on the next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform ICE, Contractor, ER, EPD and AFCD; and 4. Check monitoring data, all plant, equipment and Contractor's working methods.	1. Check monitoring data submitted by ET and Contractor's working methods	1. Confirm receipt of notification of non-compliance in writing; and 2. Notify Contractor	1. Information the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; and 3. Amend working methods if appropriate
2. Exceedance for two or more consecutive sampling days	1. Same as the above; 2. Inform ICE, Contractor, ER, EPD and AFCD; 3. Discuss mitigation measures with IC(E), RE and Contractor; 4. Ensure well implementation of mitigation measures; and 5. Increase the monitoring frequency to daily until no exceedance of Action Level	1. Same as the above; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; and 4. Supervise the implementation of mitigation measures.	1. Discuss with IC(E) on the proposed mitigation measures; 2. Ensure well implementation of mitigation measures; and 3. Assess the effectiveness of the implemented mitigation measures	1. Same as the above; 2. Check all plant and equipment and consider changes of working methods; 3. Submit proposal of additional mitigation measures to ER within 3 working days of notification and discuss with ET, IC(E), and ER; and 4. Implement the agreed mitigation measures
LIMIT LEVEL				
1. Exceedance for one sampling day	1. Repeat in-situ measurement on the next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform ICE, Contractor, ER, EPD and AFCD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; and 5. Discuss mitigation measures with IC(E), RE and Contractor	1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ER and Contractor on possible remedial actions; and 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly	1. Confirm receipt of notification failure in writing; and 2. Discuss with IC(E), ET and 3. Contractor on the proposed mitigation measures; and 4. Request Contractor to review the working methods	1. Inform the ER and confirm notification of the failure in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; and 4. 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	1. Same as the above; 2. Ensure mitigation measures are implemented; and 3. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days	1. Same as the above; and 2. Supervise the Implementation of mitigation measures	1. Same as the above; 2. Ensure well implementation of mitigation measures 3. Make agreement on the mitigation measures to be implemented; and 4. 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	1. Same as the above; 2. Take immediate action to avoid further exceedance; 3. Implement the agreed mitigation measures; 4. Resubmit proposals of mitigation measures if problem still not under control; and 5. 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		
	ET	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 measures.
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.	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	Water Quality
		1-hour TSP	24-hour TSP	Leq (30min)	
Mon	26-May-14	✓	✓	✓	
Tue	27-May-14				
Wed	28-May-14				
Thu	29-May-14				
Fri	30-May-14	✓		✓	
Sat	31-May-14		✓		
Sun	1-Jun-14				
Mon	2-Jun-14				
Tue	3-Jun-14				
Wed	4-Jun-14				
Thu	5-Jun-14	✓		✓	
Fri	6-Jun-14		✓		
Sat	7-Jun-14				
Sun	8-Jun-14				
Mon	9-Jun-14				
Tue	10-Jun-14				
Wed	11-Jun-14	✓		✓	
Thu	12-Jun-14		✓		
Fri	13-Jun-14				
Sat	14-Jun-14				
Sun	15-Jun-14				
Mon	16-Jun-14				
Tue	17-Jun-14	✓		✓	
Wed	18-Jun-14		✓		
Thu	19-Jun-14				
Fri	20-Jun-14				
Sat	21-Jun-14				
Sun	22-Jun-14				
Mon	23-Jun-14	✓		✓	
Tue	24-Jun-14		✓		
Wed	25-Jun-14				

✓	Monitoring Day
	Sunday or Public Holiday

Impact Monitoring Schedule for next Reporting Period

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

✓	Monitoring Day
	Sunday or Public Holiday

Appendix H

Monitoring Data Sheet

24-hour TSP Monitoring Data Sheet

24-hour TSP Monitoring Results

Monitoring Location : AC02b

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (oC)	STANDARD			INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (g)	WEIGHT DUST COLLECTED (g)	DUST 24-hour TSP IN AIR (ug/m^3)
		INITIAL	FINAL	ACTUAL (min)	MIN	MAX	AVG		AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)				
26-May-14	power failure	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
31-May-14	26809	7815.12	7839.11	1439.40	36	38	37.0	27	1007.2	0.91	1306	2.7298	2.747	0.0172	13
6-Jun-14	26815	7839.11	7863.12	1440.60	45	46	45.5	27.3	1006.7	1.25	1808	2.7148	2.7698	0.0550	30
12-Jun-14	26883	7863.12	7887.13	1440.60	45	46	45.5	27.6	1006.7	1.25	1807	2.7652	2.8685	0.1033	57
18-Jun-14	26906	7887.13	7911.13	1440.00	48	50	49.0	28.2	1005.8	1.38	1984	2.7249	2.7899	0.0650	33
24-Jun-14	power failure	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Action Level: 161µg/m3
Limit Level: 260µg/m3

Monitoring Location : AC04c

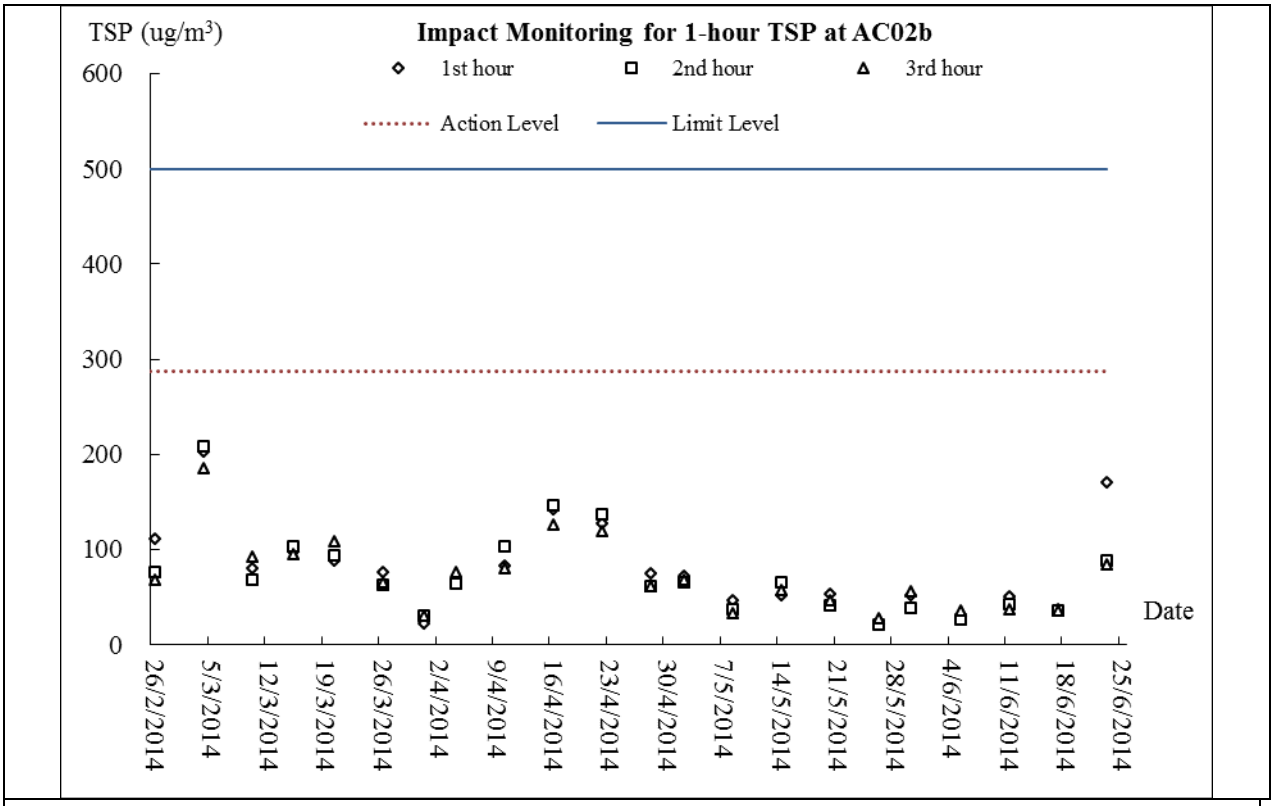
DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (oC)	STANDARD			INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (g)	WEIGHT DUST COLLECTED (g)	DUST 24-hour TSP IN AIR (ug/m^3)
		INITIAL	FINAL	ACTUAL (min)	MIN	MAX	AVG		AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)				
26-May-14	26810	13572.7	13596.69	1439.4	28	36	32	29.6	1010	0.76	1098	2.7028	2.7373	0.0345	31
31-May-14	26827	13596.69	13620.68	1439.4	40	42	41	27	1007.2	1.06	1526	2.7131	2.7521	0.0390	26
6-Jun-14	power failure	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12-Jun-14	26855	13620.88	13645.74	1491.6	34	35	34.5	27.6	1006.7	0.92	1379	2.7042	2.8008	0.0966	70
18-Jun-14	26902	13645.74	13670.02	1456.80	37	39	38.0	28.2	1005.8	1.03	1506	2.7314	2.8058	0.0744	49
24-Jun-14	26901	13670.02	13694.08	1443.60	36	36	36.0	28.6	1004.7	0.97	1399	2.7006	2.7496	0.0490	35

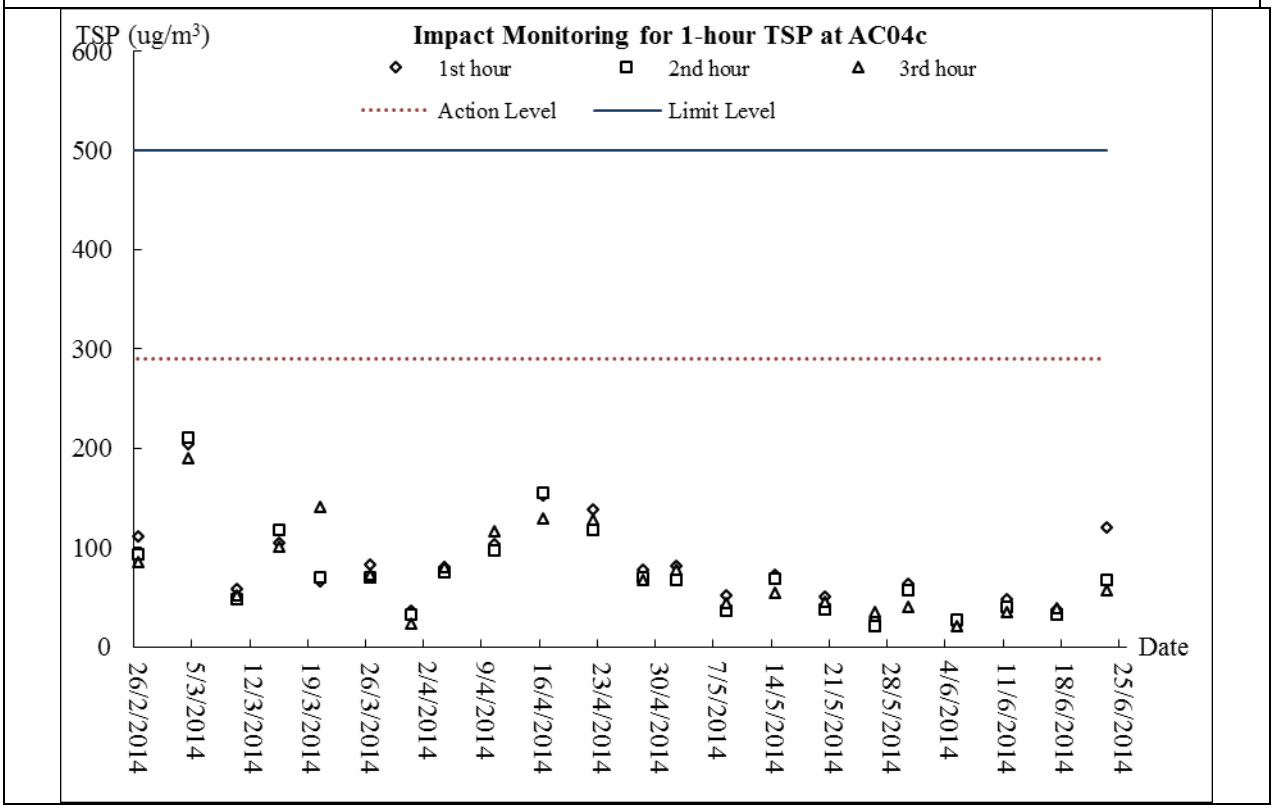
Action Level: 176µg/m3
Limit Level: 260µg/m3

Appendix I

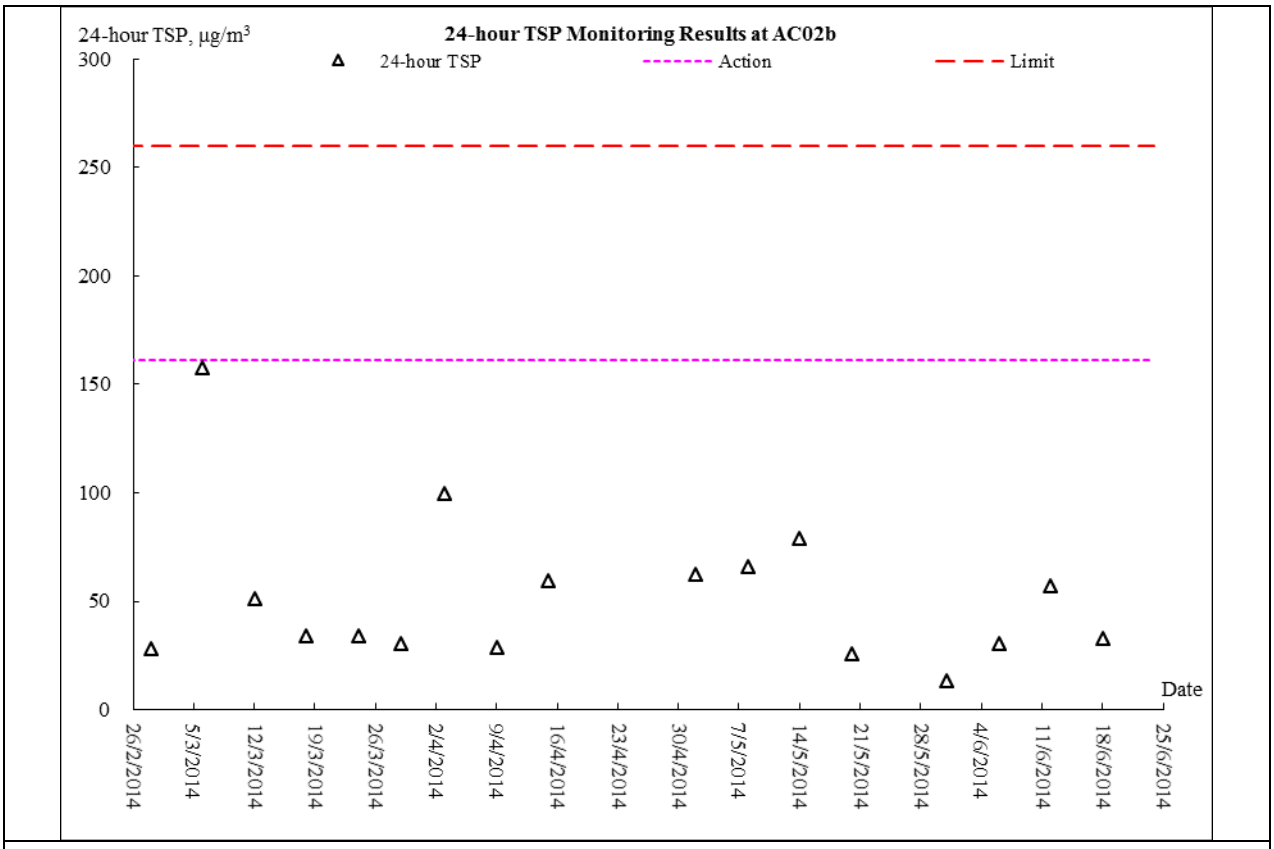
Graphical Plots of Monitoring Results

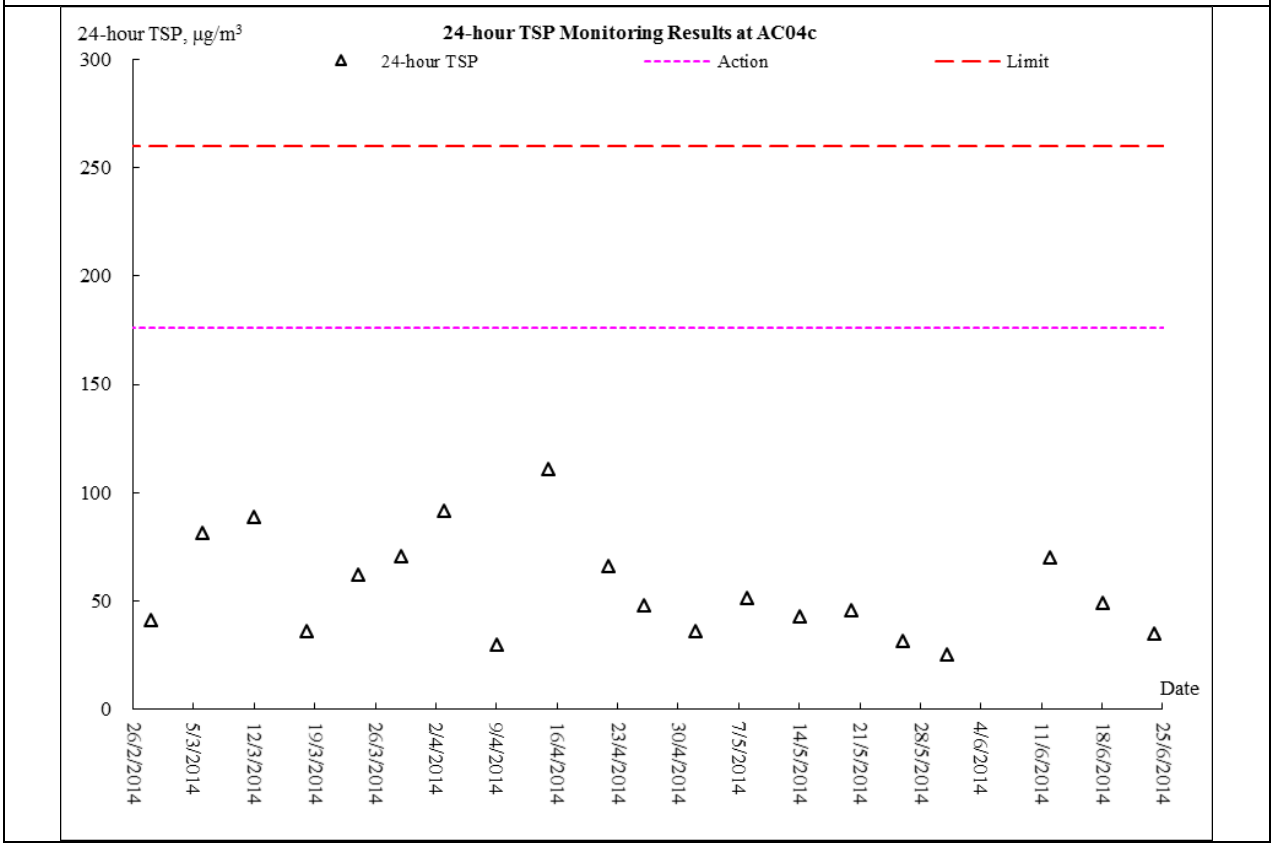
1-hour TSP Monitoring



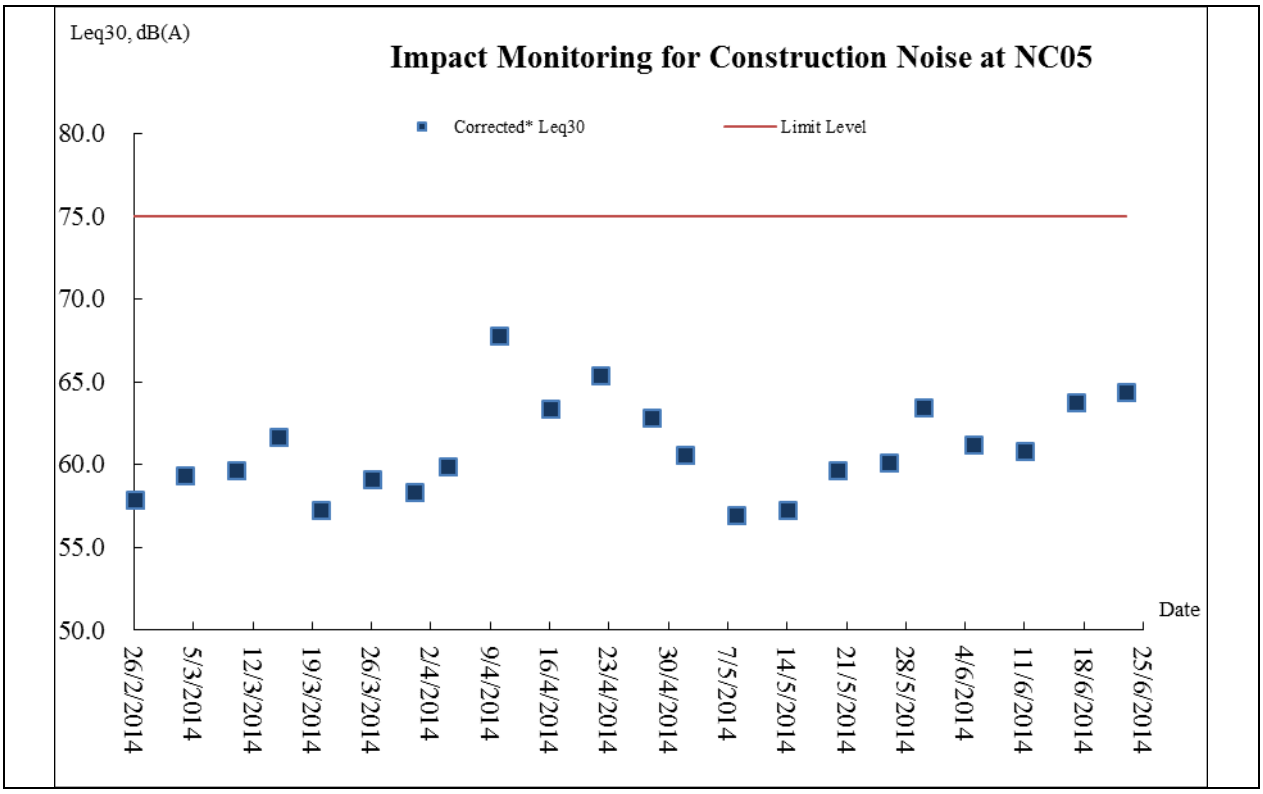


24-hour TSP Monitoring





Noise Monitoring



Appendix J

Meteorological Information

Meteorological Data Extracted from HKO during the Reporting Period

Date		Weather
26-May-14	Mon	Mainly fine apart from isolated showers, very hot. Moderate southwesterly winds.
27-May-14	Tue	Mainly cloudy and hot apart from isolated showers. Moderate west to southwesterly winds.
28-May-14	Wed	Mainly fine and very hot with isolated showers. Moderate to fresh west to southwesterly winds.
29-May-14	Thu	Hot. Mainly fine in the afternoon apart from isolated showers. Moderate southwesterly winds, fresh at times.
30-May-14	Fri	Mainly fine and very hot apart from isolated showers in the afternoon. Moderate southwesterly winds.
31-May-14	Sat	Mainly fine and very hot apart from isolated showers in the afternoon. Moderate southwesterly winds.
1-Jun-14	Sun	Mainly fine apart from isolated showers. Very hot in the afternoon. Light to moderate southwesterly winds.
2-Jun-14	Mon	Mainly fine apart from isolated showers. Very hot in the afternoon. Light to moderate southwesterly winds.
3-Jun-14	Tue	Mainly fine apart from isolated showers. Very hot in the afternoon. Light to moderate southwesterly winds.
4-Jun-14	Wed	Mainly fine apart from isolated showers. Very hot in the afternoon. Light to moderate southwesterly winds.
5-Jun-14	Thu	Mainly cloudy with showers and a few squally thunderstorms. Moderate to fresh south to southwesterly winds.
6-Jun-14	Fri	Mainly cloudy with a few showers and squally thunderstorms. Moderate southwesterly winds.
7-Jun-14	Sat	Mainly cloudy with a few showers. Moderate easterly winds, occasionally fresh offshore.
8-Jun-14	Sun	Mainly cloudy with sunny intervals. Moderate easterly winds, occasionally fresh offshore.
9-Jun-14	Mon	Mainly cloudy with sunny intervals and a few showers. Moderate easterly winds, occasionally fresh offshore.
10-Jun-14	Tue	Mainly cloudy with one or two showers. Moderate easterly winds, occasionally fresh offshore.
11-Jun-14	Wed	Mainly cloudy with a few showers. Moderate to fresh easterly winds.
12-Jun-14	Thu	Mainly fine. Moderate to fresh easterly winds.
13-Jun-14	Fri	Fine and hot apart from some haze. Very dry during the day. Moderate east to northeasterly winds.
14-Jun-14	Sat	Fine and hot apart from some haze. Very dry during the day. Moderate east to northeasterly winds.
15-Jun-14	Sun	Hot with sunny periods. There will also be a few showers. Moderate southwesterly winds.
16-Jun-14	Mon	Cloudy at first. Sunny intervals in the afternoon. Moderate southwesterly winds.
17-Jun-14	Tue	Hot with sunny periods. There will also be a few showers. Moderate southwesterly winds.
18-Jun-14	Wed	Hot with sunny periods. There will also be a few showers. Moderate southwesterly winds.
19-Jun-14	Thu	Hot with sunny intervals in the afternoon. Moderate south to southwesterly winds.
20-Jun-14	Fri	Mainly cloudy with scattered showers. Moderate to fresh south to southwesterly winds.
21-Jun-14	Sat	Mainly cloudy with a few showers. Light to moderate southerly winds.
22-Jun-14	Sun	Mainly cloudy with a few showers. Light to moderate southerly winds.
23-Jun-14	Mon	Mainly cloudy with showers. A few thunderstorms at first. Light to moderate southerly winds, gusty at times.
24-Jun-14	Tue	Mainly cloudy with scattered showers and isolated thunderstorms. Light to moderate southerly winds.
25-Jun-14	Wed	Mainly cloudy with a few showers. A few thunderstorms at first. Moderate southerly winds.

Appendix K

Monthly Summary Waste Flow Table

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

Monthly Summary Waste Flow Table for May 2014

Month	Actual Quantities of Inert C&D Materials Generated Monthly												Actual Quantities of C&D Wastes Generated Monthly									
	Total Quantity Generated (a) = (c)+(d)+(e)		Hard Rock and Large Broken Concrete (b)		Reused in the Contract (c)		Reused in other Projects (d)		Disposed as Public Fill (e)		Imported Fill (f)		Metals		Paper/ cardboard packaging		Plastics		Chemical Waste		Others, e.g. rubbish	
	(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in tonne)	
	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW	YSW	SKW
2014	15.933	50.762	0.160	0.432	0.740	2.802	0.000	0.000	15.194	47.960	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	487.580	290.030
Jan	0.342	0.325	0.000	0.005	0.000	0.000	0.000	0.000	0.342	0.325	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.480	4.820
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.110	4.300
Mar	0.305	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.305	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.150	4.340
Apr	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.030	3.900
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	35.810	4.180
Jun	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	33.060	5.900
Sub-total	16.581	51.087	0.160	0.442	0.740	2.802	0.000	0.000	15.841	48.285	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	588.220	317.470
Jul																						
Aug																						
Sep																						
Oct																						
Nov																						
Dec																						
Total	16.581	51.087	0.160	0.442	0.740	2.802	0.000	0.000	15.841	48.285	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	588.220	317.470
	67.668		0.602		3.542		0.000		64.126		0.000		0.000		0.000		0.000		0.000		905.690	

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

Environmental Team – Weekly Site Inspection and Audit Checklist – Yung Shue Wan

AUES

Project:	TCS/00512/09 *DC-2009-03: Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan*	**Inspected by**	**Checklist No.** TCS512A-27 May 2014
		ETL/ ET's Representative:	Mr. Martin Li
		RE's Representative:	Mr. Daniel Chau
		Contractor's Representative:	Mr. M. K. Leung
		IEC's Representative:	
Date:	27 May 2014	**Time:**	09:30

PART A: **GENERAL INFORMATION**

Environmental Permit No.

Weather: ☐ Sunny ☑ Fine ☐ Cloudy ☐ Rainy

☑ EP- 282/2007

Temperature: 29.7 °C

Humidity: ☐ High ☐ Moderate ☑ Low

Wind: ☐ Strong ☑ Breeze ☐ Light ☐ Calm

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

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

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

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

Remarks

Findings of Site Inspection (27 May 2014):	**Follow up (27 May 2014):**
No environmental issue was observed during the site inspection	Nil.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(Mr. Daniel Chau)	(Mr. Martin Li)	(Mr. M. K. Leung)	( )

Environmental Team – Weekly Site Inspection and Audit Checklist – Yung Shue Wan

AUES

Project:	TCS/00512/09 *DC-2009-03: Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan*	**Inspected by**	**Checklist No.** TCS512A-4 June 2014
		ETL/ ET's Representative:	Mr. Martin Li
		RE's Representative:	Mr. Daniel Chau
		Contractor's Representative:	Mr. M. K. Leung
		IEC's Representative:	
Date:	4 June 2014	**Time:**	09:30

PART A: **GENERAL INFORMATION**

Environmental Permit No.

Weather: ☑ Sunny ☐ Fine ☐ Cloudy ☐ Rainy

☑ EP- 282/2007

Temperature: 29.7 °C

Humidity: ☐ High ☐ Moderate ☑ Low

Wind: ☐ Strong ☑ Breeze ☐ Light ☐ Calm

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

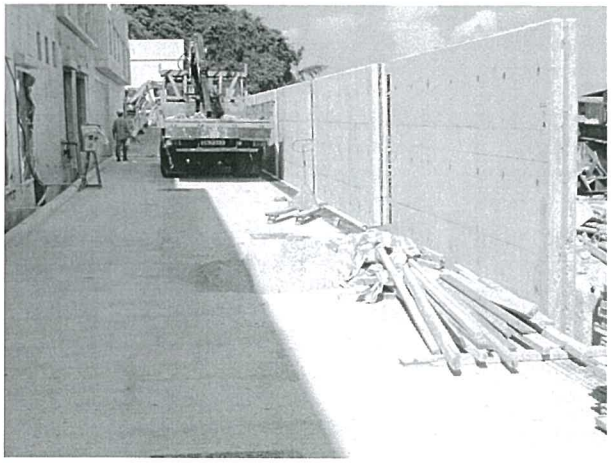
Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☐	☐	☐	☑	
1.23	Is used bentonite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

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

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

Remarks

Findings of Site Inspection (4 June 2014):



The Contractor was reminded to cover the stockpile well with tarpaulin sheet to reduce dust generation.

Follow up (4 June 2014):

The stockpile was well-covered.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(Mr. Daniel Chau)	(Mr. Martin Li)	(Mr. M. K. Leung)	( )

Environmental Team – Weekly Site Inspection and Audit Checklist – Yung Shue Wan

AUES

Project:	TCS/00512/09 *DC-2009-03: Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan*	**Inspected by**	**Checklist No.** TCS512A-10 June 2014
		ETL/ ET's Representative:	Mr. Martin Li
		RE's Representative:	Mr. Daniel Chau
		Contractor's Representative:	Mr. M. K. Leung
		IEC's Representative:	
Date:	10 June 2014	**Time:**	09:30

PART A: **GENERAL INFORMATION**

Environmental Permit No.

☑ EP- 282/2007

Weather: ☐ Sunny ☑ Fine ☐ Cloudy ☐ Rainy

Temperature: 28.2 °C

Humidity: ☐ High ☐ Moderate ☑ Low

Wind: ☐ Strong ☑ Breeze ☐ Light ☐ Calm

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

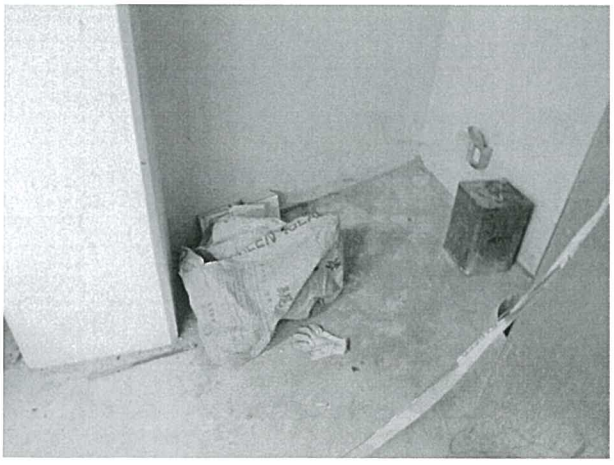
Note:	**Not Obs.**: Not Observed; **Yes**: Compliance; **No**: Non-Compliance; **Follow Up**: Observations requiring follow-Up actions **N/A**: Not Applicable	Not Obs.	Yes	No	Follow Up	N/A	Photo/ Remarks
1.22	Are the oil interceptors/grease traps maintained properly?	☐	☐	☐	☐	☑	
1.23	Is used bentonite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

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

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

Remarks

Findings of Site Inspection (10 June 2014):



The Contractor was reminded to dispose the used cement bag properly.

Follow up (10 June 2014):

The used cement bag was removed.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(Mr. Daniel Chau)	(Mr. Martin Li)	(Mr. M. K. Leung)	( )

Environmental Team – Weekly Site Inspection and Audit Checklist – Yung Shue Wan

AUES

Project:	TCS/00512/09 *DC-2009-03: Construction of Sewage Treatment Works at Yung Shue Wan and Sok Kwu Wan*	**Inspected by**	**Checklist No.** TCS512A-17 June 2014
		ETL/ ET's Representative:	Mr. Martin Li
		RE's Representative:	Mr. Daniel Chau
		Contractor's Representative:	Mr. M. K. Leung
		IEC's Representative:	
Date:	17 June 2014	**Time:**	09:30

PART A: **GENERAL INFORMATION**

Environmental Permit No.

Weather: ☐ Sunny ☑ Fine ☐ Cloudy ☐ Rainy

☑ EP- 282/2007

Temperature: 30.2 °C

Humidity: ☐ High ☐ Moderate ☑ Low

Wind: ☐ Strong ☐ Breeze ☑ Light ☐ Calm

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

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

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

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

Remarks

Findings of Site Inspection (17 June 2014):	**Follow up (17 June 2014):**
No environmental issue was observed during the site inspection	Nil.

IEC's representative	*RE's representative*	*ET's representative*	*EO's representative*	*Contractor's representative*
( )	(Mr. Daniel Chau)	(Mr. Martin Li)	(Mr. M. K. Leung)	( )

Appendix M

Implementation Schedule of Mitigation Measures

Implementation Schedule of Air Quality Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
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		√		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		√		EM&A Manual

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** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Noise Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location/Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
\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, NCO
2.10.5 to 2.10.9	Section 35	Noise monitoring	Designated noise monitoring locations / throughout construction period	Contractor/ Environmental Team		√		EM&A Manual

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N/A Not applicable

Implementation Schedule of Water Quality Control Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location (duration /completion of measures)	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines
					D	C	O	
Construction Phase								
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		√		
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 55m^3/hr; • deployment of 2-layer silt curtains with the first layer enclosing the grab and the second layer at around 50m from the dredging area while dredging works are in progress; • dredging operation should be undertaken during ebb tide only; • all vessels should be sized such that adequate clearance (i.e. minimum clearance of 0.6m) is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; • all pipe leakages should be repaired promptly and plant should not be operated with leaking pipes; • excess material should be cleaned from the decks and exposed fittings of barges before the vessel is moved; • adequate freeboard (i.e. minimum of 200mm) should be maintained on barges to ensure that decks are not washed by wave action; • all barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; • loading of barges should be controlled to prevent splashing of dredged material to the surrounding water, and barges should not 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 Ref	EM&A Ref	Environmental Protection Measures*	Location (duration /completion of measures)	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines
					D	C	O	
		• 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	<u>Construction Run-off and Drainage</u> Implementation of the following site practices outlined in ProPECC PN 1/94 for "Construction Site Drainage" • Provision of perimeter channels to intercept storm-runoff from outside the site. These should be constructed in advance of site formation works and earthworks. • Works programmes should be designed to minimize works areas at any one time, thus minimizing exposed soil areas and reducing the potential for increased siltation and runoff. • Sand / silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove the sand / silt particles from run-off. These facilities should be properly and regularly maintained. These facilities should be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site. • Careful programming of the works to minimise soil excavation works during rainy seasons. • Exposed soil surface should be protected by paving or hydroseeding as soon as possible to reduce the potential of soil erosion. • Trench excavation should be avoided in the wet season, and if necessary, these should be excavated and backfilled in short sections. • Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric	Construction works sites	Contractor		√		ProPECC PN 1/94
2.5.39	4.12.5	<u>General Construction Activities</u> • Debris and rubbish generated on-site should be collected, handled and disposed of properly to avoid entering the nearby coastal waters and stormwater drains.	Construction works sites	Contractor		√		

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

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N/A Not applicable

Implementation Schedule of Sediment Contamination Mitigation Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
2.9.24	5.2.1	Carrying out Sediment Quality Investigation	Marine works site / prior to construction	DSD	√			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		√		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		√		
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		√		

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** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Solid Waste Management Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
2.9.14	6.6.2	Good site practices • Nomination of an approved person, such as a site manager, to be responsible for implementation of good site practices, arranging for collection and effective disposal to an appropriate facility, of all wastes generated at the site • Training (proper waste management and chemical handling procedure) should be provided for site staffs • Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. • Provision of sufficient waste disposal points and regular collection for disposal. • Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility. • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. • Maintain records of the quantities of wastes generated, recycled and disposed.	Work sites/During construction	Contractor		√		Waste Disposal Ordinance (Cap.54)
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		√		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		√		WBTC No. 4/98, 5/98

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
		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.						
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 • An enclosed and covered area for the collection of the waste is recommended to reduce 'wind blow' of light material	Work sites/During construction	Contractor		√		Public Health and Municipal Services Ordinance (Cap. 132)
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 • Waste should be properly stored on site within suitably designed containers and should be collected by an approved licensed waste collectors for disposal at the Chemical Waste Treatment Facility or other licenced facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordance.	Work sites/During construction	Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation, Code of Practice on the Packaging Labelling and Storage of Chemical Wastes

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

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** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Ecological Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
2.10.11 and 2.10.12	7.2 and 7.3	Carry out monitoring of corals before, during and after marine works.	Work sites / during construction phase	Contractor		√		
2.6.45 to 2.6.48	7.6.1	Use horizontal directional drilling to avoid direct disturbance to corals	Marine works site / during dredging works	Contractor		√		
2.6.57 to 2.6.58	4.12.3	Deploying 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 progress	All work sites / during construction phase	Contractor		√		
2.6.51	7.6.1	Fence 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 the requirements of the works.	STW/ During construction	Contractor		√		

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** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Fisheries Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines
					D	C	O	
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	Marine works site, during dredging works	Contractor		√		TM on EIA Process

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** D=Design, C=Construction, O=Operation
N/A Not applicable

Implementation Schedule of Landscape and Visual Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines
					D	C	O	
Construction Phase								
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 *Macaranga tanarius* and is located at the proposed Pumping Station P2 location).	All sites	Contractor		√		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		√		
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		√		
2.8.30	9.2.2	Night-time light source from marine fleets should be directed away from the residential units.	Outfall area.	Contractor		√		

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** D=Design, C=Construction, O=Operation
N/A Not applicable