東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

ATAL-DEGREMONT-CHINA HARBOUR JOINT VENTURE

CONTRACT NO. DC/2013/10 - DESIGN, BUILD AND OPERATE SAN WAI SEWAGE TREATMENT WORKS – PHASE 1

MONTHLY EM&A REPORT NO. 25

(01 MAY – 31 MAY 2019)

Prepared by: _____
LO, Ting Yi

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Issued Date: 11 May 2019 *Report No.: ENA94306*

ANEWR

Drainage Services Department
Sewage Services Branch
Harbour Area Treatment Scheme
5/F, Western Magistracy
2A Po Fu Lam Road
Hong Kong

Your reference:

Our reference: HKDSD203/50/105817

Date: 17 June 2019

Attention: Mr Albert Wong

BY EMAIL & POST
(email: awong@dsd.gov.hk)

Dear Sirs

Agreement No. HATS 02/2016
Services for Independent Environmental Checker (IEC) for
Contract No. DC/2013/10 – Design, Build and Operate San Wai Sewage Treatment Works – Phase 1
Monthly Environmental Monitoring and Audit Report No.25 (May 2019)

We refer to emails of 11 and 14 May 2019 from ETS-Testconsult Limited attaching the Monthly Environmental Monitoring and Audit Report No.25 (May 2019).

We have no further comment and hereby verify the Monthly Environmental Monitoring and Audit Report No.25 (May 2019) in accordance with Clause 5.4 of the Environmental Permit no. EP-464/2013.

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Francis Lau on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

Adi Lee
Independent Environmental Checker

LYMA/LHYF/lhmh

cc AECOM – Mr Patrick Leung (email: patrick.leung@swstw-aecom.com)
ETS-Testconsult Limited – Mr C L Lau (email: env@ets-testconsult.com)

ANewR Consulting Limited
Unit 517, 5/F, Tower A, Regent Centre
63 Wo Yi Hop Road, Kwai Chung, Hong Kong
Tel: (852) 2618 2831 Fax: (852) 3007 8648
Email: info@anewr.com
Web: www.anewr.com

ISO 9001 : 2015
Certificate No.: CC 3988

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

FIGURES

EXECUTIVE SUMMARY

This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. DC/2013/10 - Design, Build and Operate San Wai Sewage Treatment Works – Stage 1 (the Project) (hereafter referred to as "the Contract"). The Contract was awarded to ATAL-DEGREMONT-CHINA HARBOUR JOINT VENTURE (ADCJV) by the Drainage Services Department (DSD) and ETS-Testconsult Limited was appointed as the Environmental Team (ET) by ADCJV to implement the EM&A program in compliance with the EP and the EM&A Manuals.

According to the Section 25 of the Particular Specification (PS) and the Environmental Permit No. EP-464/2013, an EM&A programme should be implemented in accordance with the procedures and requirements in the EM&A Manual of the approved EIA report (Registration No. AEIAR-072/2003). The scope of monitoring works includes air quality, construction noise, water quality and environmental site audit.

Baseline monitoring was completed in April 2017. Action and Limit Levels were established for air quality, noise and water quality parameters based on the baseline monitoring results.

This is the twenty-fifth Monthly Environmental Monitoring and Audit (EM&A) Report for the Contract which summaries findings of the EM&A works conducted during the reporting period from 01 May 2019 to 31 May 2019.

Site Activities

As informed by the Contractor, site activities were carried out in this reporting month:

- *Backfilling;*
- *Mass Concrete Fill;*
- *Water Tightness Test;*
- *Internal ABWF;*
- *Construction of Footing of Retaining Wall;*
- *Excavation for UU Installation;*
- *PVC Pipe Laying;*
- *Concrete Surround;*
- *Draw Pits;*
- *ELS and Bulk Excavation;*
- *Bedding and Compaction*

Environmental Monitoring and Audit Progress

The monthly EM&A programme was undertaken in accordance with the EM&A Manual for this Contract. The summary of the monitoring activities in this reporting month is listed below:

- *24-hour TSP Monitoring: 5 Occasions at 2 designated locations*
- *1-hour TSP Monitoring: 15 Occasions at 2 designated locations*
- *Noise Monitoring (Day-time): 5 Occasions at 2 designated locations*
- *Water Quality Monitoring: 13 Occasions at 1 designated location*
- *Weekly Site inspection: 5 Occasions*

Air Quality Monitoring

No exceedance of Action and Limit levels was recorded for 1-hr and 24-hr TSP monitoring in the reporting month.

Noise Monitoring

No exceedance of Action and Limit levels for noise monitoring was recorded in the reporting month.

Water Quality Monitoring

According to the summary of water monitoring results, no exceedance of Action and Limit levels was recorded in this reporting month.

Weekly Site Inspections

In general, performance on environmental mitigation measures implemented was found to be satisfactory in this reporting month. The major findings observed during site inspections are presented in the **Section 5.0**.

Complaint Log

There was no complaint received in relation to the environmental impact during the reporting period.

Notifications of Summons and Successful Prosecutions

There were no notifications of summons or prosecutions received during the reporting period.

Reporting Change

There were no reporting changes during the reporting period.

Future Key Issues

The future key issues to be undertaken in the upcoming month are as follows:

- *Chemical and waste management;*
- *Treatment of runoff and wastewater prior to discharge; and*
- *Dust and Noise generated from construction activities*

1. INTRODUCTION

1.1. Basic Project Information

1.1.1. This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. DC/2013/10 - Design, Build and Operate San Wai Sewage Treatment Works – Stage 1 (the Project) (hereafter referred to as "the Contract"). The Contract was awarded to ATAL-DEGREMONT-CHINA HARBOUR JOINT VENTURE (ADCJV) by the Drainage Services Department (DSD) and ETS-Testconsult Limited was appointed as the Environmental Team (ET) by ADCJV to implement the EM&A program in compliance with the EP and the EM&A Manuals.

1.1.2. The project involves expansion of the preliminary treatment works at San Wai STW from 164,000 m^3/d to 200,000 m^3/d Average Dry Weather Flow, upgrading the preliminary treatment level to CEPT and adding centralized disinfection. The site layout plan is shown in **Appendix A**.

1.1.3. According to the Section 25 of the Particular Specification (PS) and the Environmental Permit No. EP-464/2013, an EM&A programme should be implemented by an independent Environmental Team (ET) in accordance with the procedures and requirements in the EM&A Manual of the approved EIA report (Registration No. AEIAR-072/2003).These documents are available through the EIA Ordinance Register. The construction works of the Contract commenced on 16 May 2017.

1.1.4. The scope of monitoring works includes air quality, construction noise, water quality and environmental site audit. The EM&A requirements for each parameter described in the following sections include:

- *All monitoring parameters;*
- *Monitoring schedules for the reporting month and forthcoming months;*
- *Action and Limit levels for all environmental parameters;*
- *Event/Action Plans;*
- *Environmental mitigation measures, as recommended in the Project EIA study final report; and*
- *Environmental requirements in contract documents.*

1.1.5. As part of the project EM&A program, baseline monitoring was conducted from 21 March 2017 to 15 April 2017 to determine the ambient environmental conditions before the project commence any major construction works and it had been verified by IEC and endorsed by EPD.

1.1.6. This is the twenty-fifth Monthly Environmental Monitoring and Audit (EM&A) Report for the Contract which summaries the audit findings of the EM&A programme during the reporting period from 01 May 2019 to 31 May 2019.

1.2. Project Organization

1.2.1. The project organization structure and lines of communication with respect to the on-site environmental management structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1.**

Table 1.1 Contact Information of Key Personnel

Party	Position	Name of Key Staff	Tel. No.	E-mail
Supervising Officer (AECOM Asia Co. Ltd.)	Resident Engineer	Mr. Patrick Leung	5222 6561	patrick.leung@swstw-aecom.com
Independent Environmental Checker (ANewR Consulting Limited)	Technical Director	Mr. Adi Lee	2618 2836	aymlee@anewr.com
Contractor (ATAL-DEGREMONT-CHINA HARBOUR JOINT VENTURE)	Environmental Officer	Mr. Johnny So	9513 8899	johnny.so@c302.chechk.com
Environmental Team (ETS-Testconsult Ltd.)	Environmental Team Leader	Mr. C. L. Lau	2946 7791	env@ets-testconsult.com

1.3. Construction Programme

1.3.1. A copy of the Contractor's construction programme is provided in **Appendix C**.

1.4. Construction Works Undertaken During the Reporting Period

1.4.1. A summary of the construction activities undertaken during this reporting period is shown below:

- *Backfilling;*
- *Mass Concrete Fill;*
- *Water Tightness Test;*
- *Internal ABWF;*
- *Construction of Footing of Retaining Wall;*
- *Excavation for UU Installation;*
- *PVC Pipe Laying;*
- *Concrete Surround;*
- *Draw Pits;*
- *ELS and Bulk Excavation;*
- *Bedding and Compaction*

2. AIR QUALITY MONITORING

2.1. Monitoring Requirements

2.1.1. 1-hr and 24-hr TSP levels were monitored in the reporting month in accordance with the EM&A Manual. Two air monitoring locations were selected which was shown in **Figure 1**.

2.2. Monitoring Equipment

1-hour TSP Monitoring

1-hour TSP levels were measured by using dust meter which are capable of producing comparable results as the by high volume sampling method, to indicate short event impacts. The dust meter is compliant to the clause 1.2.5 of "General Technical Requirement of Environmental Monitoring" and clause 2.2 of "Generic Environmental Monitoring and Audit Manual".

Table 2.1 summarized the dust meter model used during the baseline monitoring. Copies of calibration certificates for dust meters were attached in **Appendix D1**.

Table 2.1 Air Quality Monitoring Equipment

Equipment	Model
Dust Meter	SIBATA LD-3B
High volume sampler (HVS)	Greasby GMW (GS2310)
Calibrator	Tisch TE-5025A

1-hr air quality monitoring (Dust Meter)

Measuring Procedures

The measuring procedures of the dust meter are in accordance with the Manufacturer's instruction Manual as follows:

- Press POWER to ON, check the battery indicator to ensure whether the power supply is enough to conduct the TSP monitoring;
- Press TIMER SET to Manual;
- Press START/STOP SWITCH to start the TSP monitoring;
- Press START/STOP SWITCH to stop the TSP monitoring after monitoring complete;
- Record measured COUNT directly from the dust meter and calculate the TSP level by using the equation of the certificate.

Maintenance & Calibration (QA/QC)

- Dust meter should be checked at 3-month intervals and calibrated at half-year intervals throughout all stages of air quality monitoring.

24-hr air quality monitoring (HVS)

Instrumentation

High volume sampler, as HVS, (Greasby GMWS2310) complete with appropriate sampling inlets were employed for both 1-hour and 24-hour TSP monitoring. The sampler is composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

Installation

The installation of HVS refers to the requirement stated in EM&A Manual.

Operation/Analytical Procedures

Operating/analytical procedures for the operation of HVS are as below:

- Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 0.6m^3/min and 1.7m^3/min.) in accordance with the manufacturer's

instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50. The flow rate was indicated on the flow rate chart.

- For TSP sampling, fiberglass filters (Whatman G653) were used.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated 5 minutes to establish thermal equilibrium before placing any filter media at designated air monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an air-tight seal on the outer edges of the filter. Then the filter holder frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The programmable timer will be set for a sampling month of 1 hour or 24 hours. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number.).
- After sampling, the filter was transferred from the filter holder of the HVS to a sealed plastic bag and sent to the laboratory for weighting. The elapsed time was also recoded.
- Before weighting, all filters were equilibrated in desiccators for 24 hour with the temperature of 25^{o}C $\pm$ 3^{o}C and the relative humidity (RH) <50% $\pm$5%.

Maintenance & Calibration (QA/QC)

- HVS and their accessories should be maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVS should be calibrated at bi-monthly intervals.

Wind Data Monitoring

Wind data (wind speed and wind direction) were directly extracted from Hong Kong Observatory. All wind data during this reporting month are shown in **Appendix G**.

2.3. Monitoring Parameters, Frequency and Duration

2.3.1. **Table 2.2** summarizes the monitoring parameters, monitoring duration and frequencies of impact air quality monitoring.

Table 2.2 Monitoring Parameters, Duration and Frequencies of Impact Air Quality Monitoring

Parameter	Duration	Frequency
1-hr TSP	1 hr (0800-1900)	Three times per 6 days
24-hr TSP	24 hr	Once per 6 days

2.3.2. In this reporting period, a total of 15 occasions of 1-hour TSP monitoring and 5 events of 24-hour TSP monitoring were undertaken and the schedule was shown in **Table 2.3**

Table 2.3 Time Schedule of Impact Air Quality Monitoring

May 2019						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6 ▼	7	8	9	10	11 ▼
12	13	14	15	16	17 ▼	18
19	20	21	22	23 ▼	24	25
26	27	28	29 ▼	30	31	

Remark: (▼) = Air quality monitoring carried out by ET

2.4. Action and Limit Levels

The criteria for Action and Limit levels have been set out in the contract document of the Project as follows:

Table 2.4 The criteria of Action and Limit Levels for Air Quality

Parameters	Action	Limit
1-hour TSP Level ($\mu g/m^3$)	For baseline level $\leq$ 384$\mu g/m^3$, Action level = (baseline level plus*1.3 + Limit Level) / 2	500 $\mu g/m^3$
	For baseline level >384$\mu g/m^3$, Action level = Limit Level	
24-hour TSP Level ($\mu g/m^3$)	For baseline level < 200$\mu g/m^3$, Action level = (baseline level plus*1.3 + Limit Level) / 2	260 $\mu g/m^3$
	For baseline level $\geq$ 200$\mu g/m^3$, Action level = Limit Level	

Following the criteria shown in **Table 2.4**, the Action and Limit levels for 1-hour TSP derived as illustrated in **Table 2.5**.

Table 2.5 Action and Limit Levels for 1-hour TSP and 24-hour TSP

Air Quality Monitoring Station	1-hr TSP ($\mu g/m^3$)		24-hr TSP ($\mu g/m^3$)	
	Action Level	Limit Level	Action Level	Limit Level
ASR1a	309	500	260	260
ASR2b	292	500	228	260

2.5. Results and Observations

2.5.1. 1-hour and 24-hour TSP Monitoring Results

Monitoring data of both 1-hour and 24-hour TSP monitoring carried out in this reporting month are summarized in **Appendix D2**. Graphical presentation of 1-hour and 24-hour TSP monitoring results for the reporting month is shown in **Appendix D3**. Wind data included wind speed and wind direction was extracted from Hong Kong Observatory during this reporting month and is presented in **Appendix G**.

No exceedance of Action and Limit Level of 1-hr TSP and 24-hour TSP monitoring results was recorded during the reporting month.

2.5.2. Observation

Generally, 1-hour TSP and 24-hour TSP monitoring results fluctuated well below the Action Level in this reporting period. The major dust source observed near the monitoring stations was mainly from vehicles passing by the container yards and general earth works. It can be concluded that the contractor implemented sufficient dust mitigation measures during this reporting month.

2.6. Event and Action Plan

If the impact monitoring results exceed the Action and Limit Levels, the actions specified in **Table 2.6** shall be carried out.

Table 2.6 Event and Action Plan for Air Quality (Dust) during Construction Phase

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded for one sample	1. Identify source; 2. Inform IEC 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.
Action Level being exceeded for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. Discuss with IEC and Contractor on remedial actions required; 6. If exceedance continues, arrange meeting with IEC and ER; 7. 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 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 are properly implemented.	1. Submit proposals for remedial actions to IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level being exceeded for one sample	1. Identify source; 2. Inform IEC, ER and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with Contractor on the possible mitigation measures;	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Check monitoring data and Contractor's working methods; 4. Discuss with	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER within 3 working days of notification; 3. Implement the agreed

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	effectiveness of Contractor's remedial actions; 8. Keep EPD and ER informed of the results.	6. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly.	IEC and Contractor on potential remedial actions; 4. Ensure remedial actions properly implemented.	proposals; 4. Amend proposal if appropriate.
Limit Level being exceeded for two or more consecutive samples	1. Identify source; 2. Inform IEC, ER and EPD the causes & actions taken for the exceedances; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Investigate the causes of exceedance; 6. Arrange meeting with EPD and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with Contractor on the possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Supervise the implementation of mitigation measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 4. Discuss with IEC and the Contractor on potential remedial actions; 5. Review Contractor's remedial actions whenever necessary to assure their effectiveness; 6. 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 ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not resolved; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

3. NOISE MONITORING

3.1. Monitoring Requirements

3.1.1. Noise levels (L_{eq}, L_{10} and L_{90}) were monitored in the reporting month in accordance with the EM&A Manual.

3.2. Monitoring Equipment

Sound level meters used for impact noise monitoring were Type 1 sound level meters capable of giving a continuous readout of the noise level reading including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (Lx). They complied with International Electro technical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). **Table 3.1** summarized the noise monitoring equipment model used during the baseline monitoring. Copies of calibration certificates for noise meters and calibrators were attached in **Appendix E1**.

Table 3.1 Noise Monitoring Equipment

Noise Monitoring Equipment	Model
Sound Level Meter	Rion NL-52
Sound Level Calibrator	Rion NC-73 / Castle GA607

3.3. Monitoring Duration and Frequency

3.3.1. Impact noise monitoring for the A-weighted levels L_{eq}, L_{10} and L_{90} in 30-minute interval was recorded once per 6 days.

3.3.2. In this reporting period, a total of 5 occasions of noise monitoring were undertaken and the schedule was shown in **Table 3.2**

Table 3.2 Time Schedule of Impact Noise Monitoring

May 2019						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6 ▼	7	8	9	10	11 ▼
12	13	14	15	16	17 ▼	18
19	20	21	22	23 ▼	24	25
26	27	28	29 ▼	30	31	

Remark: (▼) = Noise monitoring carried out by ET

3.4. Monitoring Locations

Two noise monitoring stations, NSR1a (晉榮貨櫃服務有限公司) and NSR2b (永康貨櫃服務有限公司) which shown in **Figure 1**, were required to perform impact noise monitoring during this reporting peroid.

The impact noise monitoring programme was summarized in **Table 3.3**.

Table 3.3 Noise Monitoring Stations

Noise monitoring station	Type of Measurement
NSR1a	Façade
NSR2b	Façade

3.5. Monitoring Methodology

Instrumentation

Integrating Sound Level Meters were employed for noise monitoring.

Operation/Analysis Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - Frequency weighting : A
  - Time weighting : Fast
  - Time measurement : 30 mins
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000HZ. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat measurement would be required after re-calibration or repair of the equipment.
- During the monitoring period, the L_{eq}, L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- 3dB(A) correction had been added to the results if noise measurements were free-field.
- Noise monitoring would be cancelled in the presence of fog, rain, storm, wind with a steady speed exceeding 5m/s, or wind gusts exceeding 10m/s.

Maintenance and Calibration (QA/QC)

- The microphone head of the sound level meter and calibrator are cleaned with soft cloth at quarterly intervals.
- The meters are sent to the HOKLAS accredited laboratory or equivalent to check and calibrated at yearly intervals.

3.6. Actions and Limit Level

The Action and Limit Levels were established in **Table 3.4** for noise monitoring.

Table 3.4 Action and Limit Levels for Noise Monitoring

Time Period	Action	Limit
0700 –1900 hrs normal weekdays	When one documented complaint is received	75 dB(A)*

Remark: (*)70dB(A) for schools and 65dB(A) for schools during school examination period

3.7. Results and Observations

3.7.1. Results

Monitoring data of noise monitoring carried out in this reporting month are summarized in **Appendix E2**. Graphical presentation of noise monitoring results for the reporting month is shown in **Appendix E3**.

No exceedance of Action and Limit Level of noise monitoring results was recorded during the reporting month.

3.7.2. Observation

The noise monitoring data were found to be lower than the limit level. The major noise source during the monitoring event was the vehicles passing through the container yard entrance and the general earth works inside the construction site.

3.8. Event and Action Plan

If the impact monitoring results exceed the Action and Limit Levels, the actions specified in **Table 3.5** shall be carried out.

Table 3.5 Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC and Contractor; 4. Discuss with the Contractor and formulate remedial measures ; 5. Increase monitoring frequency to check the effectiveness of mitigation measures.	1. Review the analyzed 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 in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; 4. Ensure mitigation measures are properly implemented.	1. Submit noise mitigation proposal to IEC; 2. Implement noise mitigation proposals.
Limit level	1. Notify IEC, ER, EPD & Contractor; 2. Identify source; 3. Repeat measurement 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 IEC, ER and EPD	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 in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; 4. Ensure mitigation measures are properly implemented; 5. If exceedances continues, consider what portion of the	1. Undertake immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC 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

	the causes and actions taken for the exceedances; 7. Assess the effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.		work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	works as determined by ER, until the exceedance is abated.

4. WATER QUALITY MONITORING

4.1. Monitoring Requirements

4.1.1. Water quality was monitored in the reporting month in accordance with the EM&A Manual at one alternative water quality monitoring station, R1b (at Tin Shui Wai Nullah) which shown in **Figure 2.**

4.2. Monitoring Methodology and Equipment

For In-situ Water Quality Measurement

Dissolved Oxygen (DO) measuring equipment

A portable, weatherproof DO-measuring meter with built-in salinity compensation (e.g. YSI 85, YSI Pro 2030 or equivalent) was used in the baseline monitoring. It can be capable for measuring dissolved oxygen level in the range of 0-20 mg/L and 0-200 % saturation.

For Water Sampling and Sample Analysis

Water Sampler

A water sampler comprising a metal bucket was lowered into the water body.

Water Container

The sample container, made by high-density polythene, was rinsed with a portion of the water sample. The water sample was then transferred to the container, labelled with a unique sample ID and sealed with a screw cap. The water samples were stored in a cool box maintained at 4^{o}C. The water samples will then be delivered to Environmental Laboratory of ETS-Testconsult Ltd (HOKLAS Registration No. 022) on the same day for analysis according to the Standard Method APHA 19ed.

The summary of testing methods of testing parameters required was shown in **Table 4.1**.

Table 4.1 Summary of Testing Procedures for water samples

Parameters	Testing Procedure	Detection Limit
Turbidity	Dissolved Oxygen Meter Measurement	0.1 NTU
Dissolved Oxygen	In house method refer to APHA 19th ed 2130 B	0.01 mg/L
Total suspended solids	In house method refer to APHA 19th ed 2540D	0.1 mg/L

4.3. Monitoring Frequency

4.3.1. Water samples were collected 3 times per week in 1 monitoring station. Three parameters including turbidity, dissolved oxygen and total suspended solids would be tested.

Table 4.2 Monitoring Frequency of Water Quality Monitoring

Parameters	Frequency	No. of sampling stations
Turbidity	3 times per week	1 station
Dissolved Oxygen		
Total suspended solids		

4.3.2. In this reporting period, a total of 13 occasions of water quality monitoring were undertaken and the schedule was shown in **Table 4.3**

Table 4.3 Time Schedule of Impact Water Quality Monitoring

May 2019						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2 ▼	3	4 ▼
5	6	7 ▼	8	9 ▼	10	11 ▼
12	13	14 ▼	15	16 ▼	17	18 ▼
19	20	21 ▼	22	23 ▼	24	25 ▼
26	27	28 ▼	29	30 ▼	31	

Remark: (▼) = Water quality monitoring carried out by ET

4.4. Quality Assurance (QA) / Quality Control (QC)

For in-situ measurements, at each measurement / sampling, two consecutive measurements of turbidity and dissolved oxygen (DO) were taken. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. If the difference between the first and second measurement is greater than 25% the reading will be discarded and the measurements will be repeated.

For laboratory analysis of water, test method of all test parameters and the QA/QC samples were carried out in accordance with the requirements of HOKLAS.

For our QA/QC procedure, one QC sample, one duplicate sample and one sample spike of every batch of 20 samples were analyzed.

The calibration certifications of water quality monitoring equipments were shown in **Appendix F1**.

4.5. Actions and Limit Levels

The criteria for Action and Limit Levels have been set out as follows:

Table 4.4 The criteria of Action and Limit Levels for Water Quality

Parameters	Unit	Action Level	Limit Level
Turbidity	NTU	95%ile of baseline data	99%ile of baseline data
Dissolved Oxygen	mg/L	5%ile of baseline data	1%ile of baseline data
Suspended solids	mg/L	95%ile of baseline data	99%ile of baseline data

Following the criteria shown in **Table 4.4**, the Action and Limit Levels for monitoring parameters derived as illustrated in **Table 4.5**.

Table 4.5 Action and Limit Levels for Water Quality

Parameters	Unit	Action	Limit
Turbidity	NTU	19.8	20.5
Dissolved Oxygen	mg/L	1.84	1.81
Suspended Solid	mg/L	17.0	17.8

4.6. Result and Observation

4.6.1. Result

Monitoring data of water quality monitoring carried out in this reporting month are summarized in **Appendix F2**. Graphical presentation of the monitoring results for the reporting month is shown in **Appendix F3**.

No exceedance of Action and Limit Level of water quality monitoring results was recorded during the reporting month.

4.6.2. Observation

Generally, the turbidity and suspended solids were found to be lower than the action level. Besides, all results of dissolved oxygen measured in this reporting month were higher than the action level.

4.7. Event and Action Plan

If the impact monitoring results of the individual parameters exceed the Action and Limit Levels, the actions specified in **Table 4.6** shall be carried out.

Table 4.6 Event and Action Plan for Water Quality

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Repeat	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; 2. make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; 6. Implement the agreed mitigation measures.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
	measurement on next day of exceedance.			
Action Level being exceeded by more than two consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contract	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods;	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment;

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
	or and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level.	the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures.	4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by more than two consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by

Event	Action			
	ET Leader	IEC	ER	Contractor
	implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.		to stop all or part of the marine work until no exceedance of Limit Level.	the ER, to slow down or to stop all or part of the marine work or construction activities.

5. ENVIRONMENTAL SITE INSPECTION AND AUDIT

5.1. Site Inspection

5.1.1. Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control mitigation measures for the project. During the reporting period, site inspections were carried out on 03, 10, 17, 22 & 31 May 2019.

5.1.2. Observations for the site inspections within this reporting period are summarized in **Table 5.1** and inspection checklists are attached in **Appendix H**.

Table 5.1 Summary of observation of site inspections

Date	Observations/ Reminders	Follow-up Action	Closed Date
03 May 2019	1. General refuse was observed at P1.	1. General refuse was collected properly.	10 May 2019
10 May 2019	--	--	--
17 May 2019	1. Fill materials was observed without cover at the Northern side of UV.	1. Cover was provided.	22 May 2019
22 May 2019	--	--	--
31 May 2019	1. Temporarily cover was not fully overspread the drainage at P1. 2. Fill material was observed without cover at the Northern side of UV.	Follow-up actions for outstanding observation will be inspected during the next site inspection.	--

5.2. Landscape and Visual Audit

5.2.1. Landscape and visual audits were undertaken at least once every two weeks throughout the construction period by a competent landscape architect. During the reporting period, audits were carried out on 03, 17 and 31 May 2019.

5.2.2. Observations and reminders were summarized in the landscape and visual impact assessment checklists which are attached in **Appendix I**.

5.3. Advice on the Solid and Liquid Waste Management Status

5.3.1. 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

5.3.2. The quantities of waste for disposal in this Reporting Period are summarized in **Table 5.2** and **Table 5.3** and the Monthly Summary Waste Flow Table is shown in **Appendix J**. Whenever possible, materials were reused on-site as far as practicable.

Table 5.2 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity	Disposal Location
Reused in this Contract (Inert) (m^3)	206	--
Reused in other Projects (Inert) (m^3)	0	--
Disposed as Public Fill (Inert) (m^3)	442	Tuen Mun 38 Fill Bank

Table 5.3 Summary of Quantities of C&D Materials

Type of Waste	Quantity	Disposal Location
Recycled Metal (kg)	0	--
Recycled Paper / Cardboard Packing (kg)	0	--
Recycled Plastic (kg)	0	--
Chemical Wastes (kg)	0	--
General Refuses (m^3)	186,750	North East New Territories (NENT) Landfill

5.3.3. To control over the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are in full compliance with the relevant license/permit requirements, such as the effluent discharge license and the chemical waste producer registration. The Contractor is also reminded to implement the recommended environmental mitigation measures according to the EM&A Manual based on actual site conditions.

5.4. Discharge License and Results of Effluent Monitoring

5.4.1. Effluent quality was monitored in the reporting month in accordance with the EM&A Manual at the discharge point. A discharge license under Water Pollution Control Ordinance was obtained by the Contractor upon commencement of the Project. Self-monitoring would be performed as per the requirement under the discharge license. According to the EM&A Manual, pH, chemical oxygen demand and total suspended solid are required to be analysed at least once every two week.

5.4.2. Effluent water samples were scheduled to be collected on 07 and 21 May 2019. As only Wetsep at P1a was operated on May 2019, the effluent water sample was sampled at P1a only on the reporting month. The required testing parameter including pH, chemical oxygen demand and total suspended solid were carried out in a HOKLAS laboratory. The methods of chemical oxygen demand and total

suspended solid determination follow APHA 19ed 5220 B and APHA 19ed 2540 D respectively. The laboratory reports for the discharge water are presented in **Appendix N**.

5.4.3. For effluent quality monitoring as per the discharge license requirement, the results complied with the discharge license requirement.

5.5. Environmental Licenses and Permits

5.5.1. The valid environmental licenses and permits during the reporting period are summarized in **Appendix K**.

5.6. Implementation Status of Environmental Mitigation Measures

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

Dust Mitigation Measures

a. The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures should be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet;
b. All demolished items (including trees, shrubs, vegetation, boulders, poles, pillars, structures, debris, rubbish and other items arising from site clearance) that may dislodge dust particles should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition;
c. Vehicle washing facilities including a high pressure water jet should be provided at every discernible or designated vehicle exit point;
d. The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;
e. Where a site boundary adjoins a road, street, service and or other area accessible to the public, hoarding of not less than 2.4m from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit;
f. Every main haul road (i.e. any course inside a construction site having a vehicle passing rate of higher than 4 in any 30 minutes) should be paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials; or sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet;
g. The portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit should be kept clear of dusty materials;
h. Immediately before leaving a construction site, every vehicle should be washed to remove any dusty materials from its body and wheels;
i. Where a vehicle leaving a construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle;
j. The working area of any excavation or earth moving operation should be sprayed with water or a dusty suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet;
k. Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabilizer within 6 months after the last construction activity on the construction site or part of the construction site where the exposed earth lies;
l. Any stockpile of dusty material should be either covered entirely by impervious sheeting; placed in an area sheltered on the top and the 3 sides; or sprayed with water or a dust suppression chemical so as to maintain the entire surface wet.

Noise Mitigation Measures

a. Quiet plants should be used in order to reduce the noise impacts to protect the nearby NSRs.
b. Temporary and Movable Noise Barriers should be used in order to reduce the noise impact to the surrounding sensitive receivers
c. The contractor should site noisy equipment and activities as far from sensitive receivers as practical.
d. Idle equipment should be turned off or throttled down.
e. Construction activities should be planned so that parallel operation of several sets of equipment close to a given receiver is avoided
f. Construction plant should be properly maintained and operated.

Water Quality Mitigation Measures

a. Exposed stockpiles should be covered with tarpaulin or impervious sheets before a rainstorm occurs;
b. The exposed soil surfaces should also be properly protected to minimize dust emission;
c. The stockpiles of materials should be placed in the locations away from the drainage channel so as to avoid releasing materials into the channel;
d. Wheel washing facilities should be provided at site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles;
e. Provision of site drainage systems and treatment facilities would be required to minimize the water pollution;
f. A discharge license needs to be applied from EPD for discharging effluent from the construction site;
g. The treated effluent quality is required to meet the requirements specified in the discharge license;
h. Provision of chemical toilets is required to collect sewage from workforce. The chemical toilets should be cleaned on a regular basis;
i. A licensed waste collector should be employed to clean the chemical toilets and temporary storage tank on a regular basis;
j. Illegal disposal of chemicals should be strictly prohibited;
k. Registration as a chemical waste producer is required if chemical wastes are generated and need to be disposed of. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes;
l. Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance should be used as a guideline for handing chemical wastes;
m. The impact from accidental spillage of chemicals can be effectively controlled through good management practices.

Waste Management Mitigation Measures

a. 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;
b. To encourage collection of aluminium cans by individual collectors, separate bins should be provided to segregate this waste from other general refuse generated by the workforce;
c. Any unused chemicals or those with remaining functional capacity should be recycled;
d. Prior to disposal of C&D waste, it is recommended that wood, steel and other metals be separated for re-use and/or recycling and inert waste as fill material to minimize the quantity of waste to be disposed of to landfill;
e. Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and
f. Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.

5.6.2. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in **Appendix L**. Most of the necessary mitigation measures were implemented properly. Any deficiencies were noted in the remarks of the schedule.

5.7. Summary of Exceedance of the Environmental Quality Performance Limit

5.7.1. There was no Action and Limit level exceedance of 1-hour and 24-hr TSP monitoring was recorded at station ASR1a and ASR2b during this reporting month.

5.7.2. There was no Action and Limit Level exceedance for noise recorded at station NSR1a and NSR2b during the reporting period.

5.7.3. There was no Action and Limit Level exceedance for water quality monitoring recorded at station R1b during the reporting period.

5.8. Summary of Complaints, Notification of Summons and Successful Prosecution

5.8.1. There were no complaints received during the reporting period.

5.8.2. There were no notifications of summons or prosecutions received during the reporting period.

5.8.3. A summary of environmental complaints, notifications of summons and successful prosecutions was given in **Table 5.4**.

Table 5.4 Summary of Environmental Complaints Notification of Summons and Successful Prosecution

Reporting Period	Cumulative Statistic		
	Complaints	Notifications of summons	Successful prosecutions
The reporting period	0	0	0
From commencement date of construction to end of reporting month	0	0	0

6. FUTURE KEY ISSUES

6.1. Construction Programme for the Coming Months

6.1.1. As informed by the Contractor, the major construction activities for June 2019 are included:

- *Cast Mass Concrete;*
- *Backfilling;*
- *Water Tightness Test;*
- *Water Removal;*
- *Internal ABWF;*
- *External ABWF;*
- *Dismantle Working Platform;*
- *Construction of Common Outlet Channel;*
- *Construction of SF Channel @ Elevation;*
- *Erection of Working Platform for ABWF Work;*
- *Concrete Protection Coating;*
- *Contingency Remedial Works and Re-Water Tightness Test;*
- *Construction of Pile Cap;*

- *Construction of Retaining Walls and Ground Floor Slab;*
- *Formwork Removal of Wall & Slab;*
- *Construction of Ground Floor Walls and Cantilever Slab;*
- *Construction of Wall, Ground Floor Roof and Beams;*
- *Formwork Removal of Roof & Beams;*
- *Construction of Parapet Wall & Plinth on the Roof;*
- *Formwork Removal of Parapet Wall and Plinth;*
- *Construction of Base Slab;*
- *Formwork Removal of Pile Cap;*
- *Formwork Removal of Base Slab;*
- *Formwork Removal of Ground Slab;*
- *Grout Screed*
- *Removal of ELS;*
- *Construction of Concrete Pipe Support;*
- *Installation of GRP Covers on the roof;*
- *Fill in Void Former in Space Area;*
- *Precast Concrete Beams and Installation;*
- *Construction of Footing of Retaining Wall;*
- *Sheet Piling Installation;*
- *ELS and Bulk Excavation;*
- *Bedding and Compaction;*
- *Excavation for UU Installation;*
- *Foulwater Pipe Manhole*
- *Foulwater Pipe;*
- *PVC Pipe Laying;*
- *Concrete Surround;*
- *Draw Pits;*
- *Bypass Pipe Installation;*
- *Construction of Manholes;*
- *DN 900 Stormwater Pipe Installation;*
- *Installation of Stormwater Manholes;*
- *DN 1400 Pipe between CEPT & UV;*
- *Stormwater Pipe Manhole;*
- *Stormwater Pipe DN750*

6.2. Key Issues for the Coming Month

Key issues to be considered in the coming month include:

- *Chemical and waste management;*
- *Treatment of runoff and wastewater prior to discharge; and*
- *Dust and Noise generated from construction activities;*

Mitigation measures to be required in the coming month:

Air Quality Impact

- To provide adequate water spraying in the worksite;
- To operate and maintain automatic wheel washing facilities properly;
- To provide road sweeping site entrance and public roads outside site entrance;
- To ensure implementation of the dust mitigation measures for the site activities;
- To maintain proper operation of the mist spraying system;
- To provide proper maintenance for vehicles and machines on site; and
  To investigate any other dust sources around the air sensitive receivers

Noise

- To switch off equipment if not in use;
- To operate silent equipment;
- To identify the noise sources inside and outside of the site; and
- To follow up any exceedance caused by the construction work inside the worksite

Water Quality Impact

- To ensure the drainage system was maintained properly;
- To maintain the existing silt trap to ensure good efficiency of wheel wash facilities;
- To avoid stagnant water in the drip trays due to rainfall;
- To avoid any stagnant water or provide insecticide to avoid mosquito breeding

Chemical and Waste Management

- To remove waste from the site regularly;
- To properly store and handle chemical wastes on site;
- To implement trip ticket system for all the imported public fill and general refuse disposal;
- To maintain proper housekeeping;
- To identify C&D material by packaging, labelling, storage, transportation and disposal in accordance with statutory regulations.

6.3. Environmental Monitoring and Site Inspection Schedule for the Coming Month

6.3.1. The tentative schedule for environmental monitoring and site inspection schedule for June 2019 is provided in **Appendix M**.

7. CONCLUSION

7.1. Conclusions

7.1.1. There was no Action and Limit level exceedance of 1-hour and 24-hr TSP monitoring was recorded at station ASR1a and ASR2b during this reporting month.

7.1.2. There was no Action and Limit Level exceedance for noise recorded at station NSR1a and NSR2b during the reporting period.

7.1.3. There was no Action and Limit Level exceedance for water quality monitoring recorded at station R1b during the reporting period.

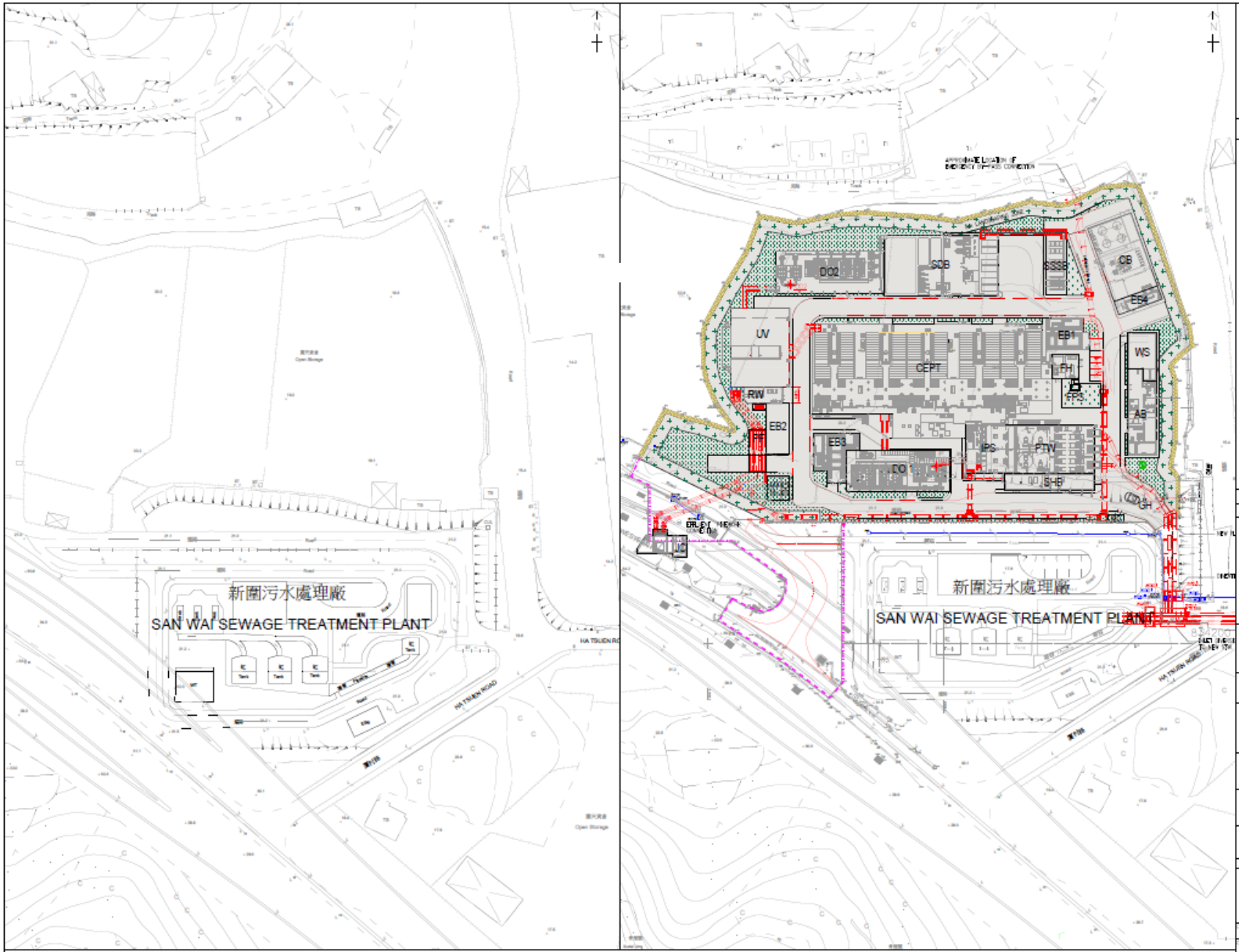
7.1.4. There were no complaints received during the reporting period.

7.1.5. There were no notifications of summons or prosecutions received during the reporting period.

- END OF REPORT –

Appendix A

Location of Works Areas

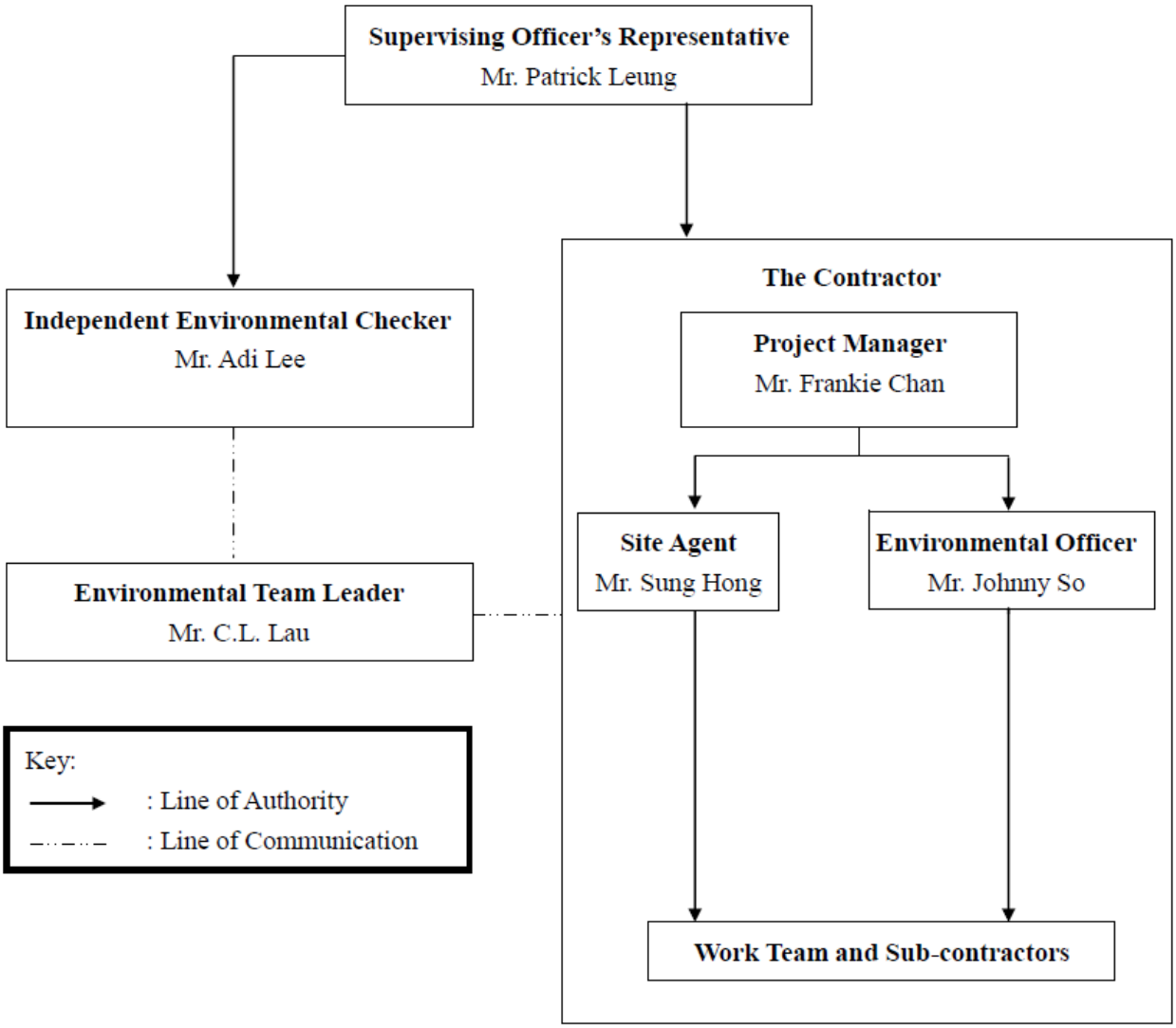


EXISTING SAN WAI SEWAGE TREATMENT WORKS

EXPANDED AND UPGRADED SAN WAI SEWAGE TREATMENT WORKS

Appendix B

Project Organization Chart


Supervising Officer's Representative
Mr. Patrick Leung
Independent Environmental Checker
Mr. Adi Lee
Environmental Team Leader
Mr. C.L. Lau
The Contractor
Project Manager
Mr. Frankie Chan
Site Agent
Mr. Sung Hong
Environmental Officer
Mr. Johnny So
Work Team and Sub-contractors
Key:
: Line of Authority
: Line of Communication

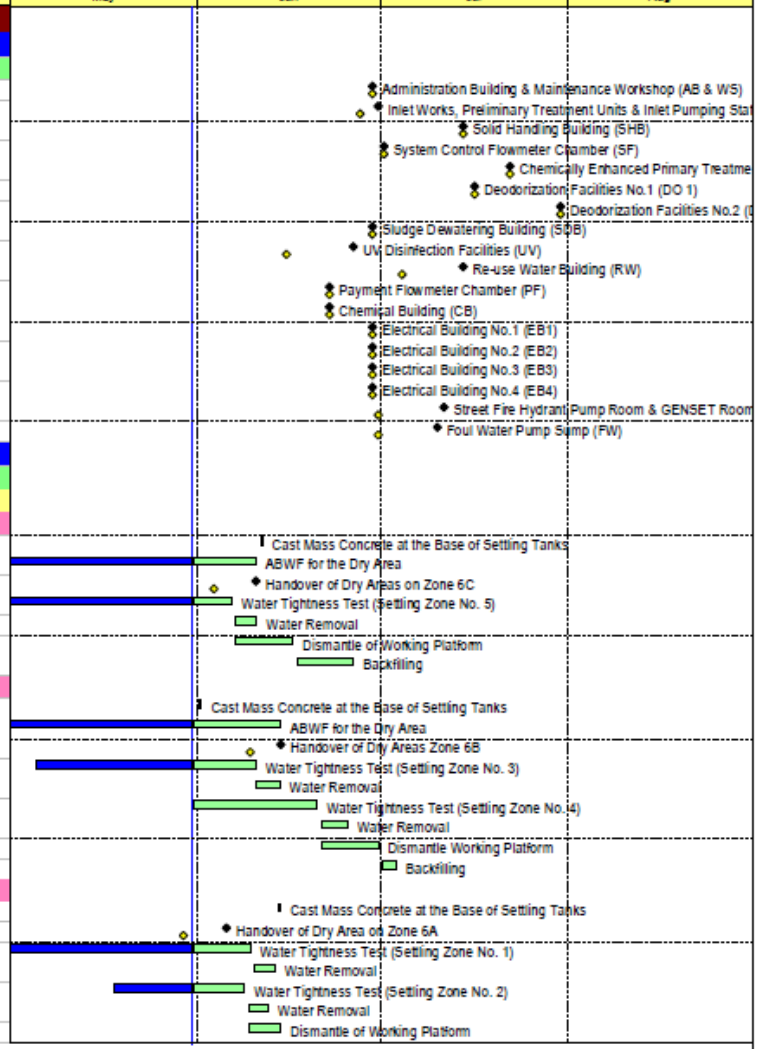
Appendix C

Construction Programme

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) | PAGE 1 OF 10

Activity ID	Activity Name	At Completion Duration	Start	Finish
San Wai Sewage Treatment Works Phase 1 - Rev 11 MP (Update as of 31 May 2019)		**437**	**25-Jun-18 A**	**05-Sep-19**
Key Date		**38**	**22-Jun-19**	**30-Jul-19**
Plant Room Access Dates To E&M Installation		38	22-Jun-19	30-Jul-19
KD300	Administration Building & Maintenance Workshop (AB & WS)	0		29-Jun-19
KD302	Inlet Works, Preliminary Treatment Units & Inlet Pumping Station (PTW & IPS)	0		30-Jun-19
KD304	Solid Handling Building (SHB)	0		14-Jul-19
KD306	System Control Flowmeter Chamber (SF)	0		01-Jul-19
KD308	Chemically Enhanced Primary Treatment (CEPT)	0		22-Jul-19
KD310	Deodorization Facilities No.1 (DO 1)	0		16-Jul-19
KD312	Deodorization Facilities No.2 (DO 2)	0		30-Jul-19
KD314	Sludge Dewatering Building (SDB)	0		29-Jun-19
KD316	UV Disinfection Facilities (UV)	0		26-Jun-19
KD318	Re-use Water Building (RW)	0		14-Jul-19
KD320	Payment Flowmeter Chamber (PF)	0		22-Jun-19
KD324	Chemical Building (CB)	0		22-Jun-19
KD326	Electrical Building No.1 (EB1)	0		29-Jun-19
KD328	Electrical Building No.2 (EB2)	0		29-Jun-19
KD330	Electrical Building No.3 (EB3)	0		29-Jun-19
KD331	Electrical Building No.4 (EB4)	0		29-Jun-19
KD336	Street Fire Hydrant Pump Room & GENSET Room (FH)	0		11-Jul-19
KD341	Foul Water Pump Sump (FW)	0		10-Jul-19
Civil & Structural Works		**420**	**25-Jun-18 A**	**18-Aug-19**
Chemically Enhanced Primary Treatment (CEPT)		**161**	**11-Mar-19 A**	**18-Aug-19**
Super Structure Works		**141**	**11-Mar-19 A**	**29-Jul-19**
PORTION 1 (Bay 1, Bay 2, Bay 7 and Bay 10)		**108**	**11-Mar-19 A**	**26-Jun-19**
SU1033	Cast Mass Concrete at the Base of Settling Tanks	1	11-Jun-19	11-Jun-19
SU1047	ABWF for the Dry Area	92	11-Mar-19 A	10-Jun-19
SU1048	Handover of Dry Areas on Zone 6C	0		10-Jun-19
SU1050	Water Tightness Test (Settling Zone No. 5)	40	28-Apr-19 A	06-Jun-19
SU1055	Water Removal	4	07-Jun-19	10-Jun-19
SU1058	Dismantle of Working Platform	10	07-Jun-19	16-Jun-19
SU1060	Backfilling	10	17-Jun-19	26-Jun-19
PORTION 2 (Bay 3, Bay 4, Bay 8 and Bay 11)		**86**	**09-Apr-19 A**	**03-Jul-19**
SU1097	Cast Mass Concrete at the Base of Settling Tanks	1	01-Jun-19	01-Jun-19
SU1108	ABWF for the Dry Area	67	09-Apr-19 A	14-Jun-19
SU1109	Handover of Dry Areas Zone 6B	0		14-Jun-19
SU1115	Water Tightness Test (Settling Zone No. 3)	37	05-May-19 A	10-Jun-19
SU1120	Water Removal	4	10-Jun-19	14-Jun-19
SU1125	Water Tightness Test (Settling Zone No. 4)	21	31-May-19	20-Jun-19
SU1130	Water Removal	5	21-Jun-19	25-Jun-19
SU1133	Dismantle Working Platform	10	21-Jun-19	30-Jun-19
SU1135	Backfilling	3	01-Jul-19	03-Jul-19
PORTION 3 (Bay 5, Bay 6, Bay 9 and Bay 12)		**54**	**27-Apr-19 A**	**19-Jun-19**
SU1173	Cast Mass Concrete at the Base of Settling Tanks	1	14-Jun-19	14-Jun-19
SU1184	Handover of Dry Area on Zone 6A	0		05-Jun-19
SU1190	Water Tightness Test (Settling Zone No. 1)	44	27-Apr-19 A	09-Jun-19
SU1195	Water Removal	4	10-Jun-19	13-Jun-19
SU1200	Water Tightness Test (Settling Zone No. 2)	22	18-May-19 A	08-Jun-19
SU1205	Water Removal	4	09-Jun-19	12-Jun-19
SU1208	Dismantle of Working Platform	6	09-Jun-19	14-Jun-19



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Baseline Milestone
Milestone

ATAL-Degremont-China Harbour Joint Venture

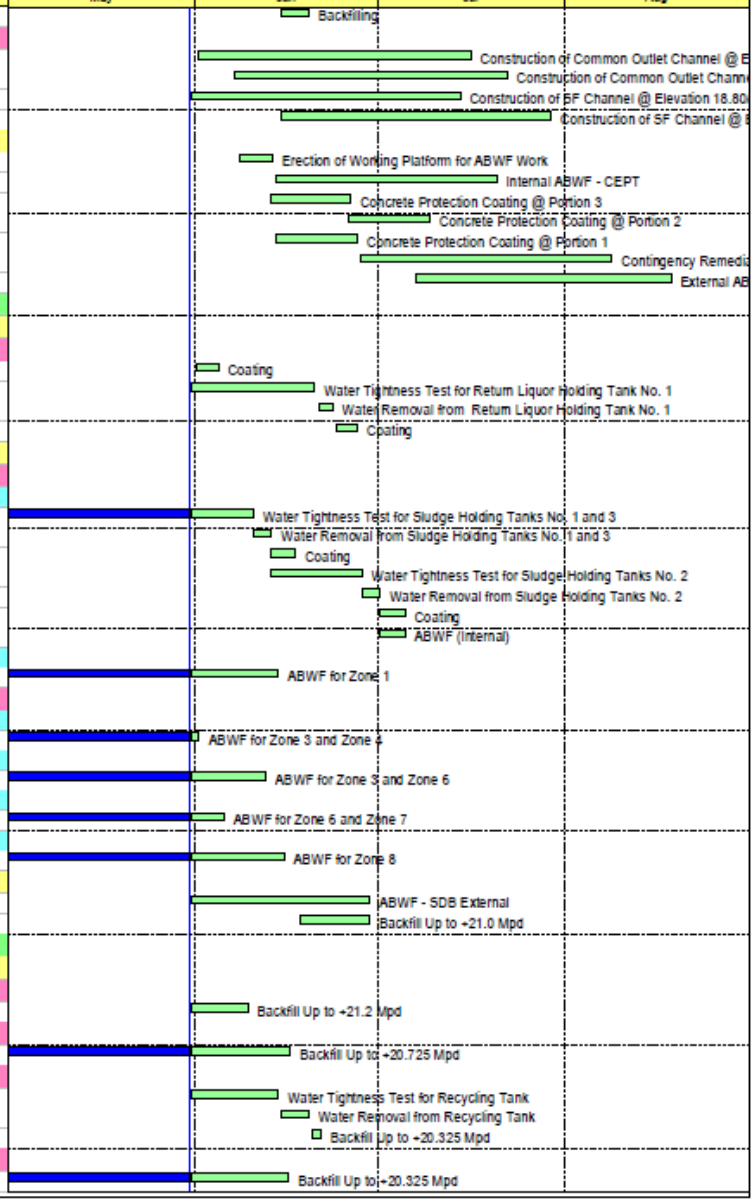
TASK filter: 3 Months Rolling Programme.

CONTRACT NO. DC/2013/10 DESIGN, BUILD & OPERATE
SAN WAI SEWAGE TREATMENT - PHASE 1
Major Civil Activities From May 2019 to Jul 2019

Date	Revision	Checked	Approved
31-May-...	C&S Programme		

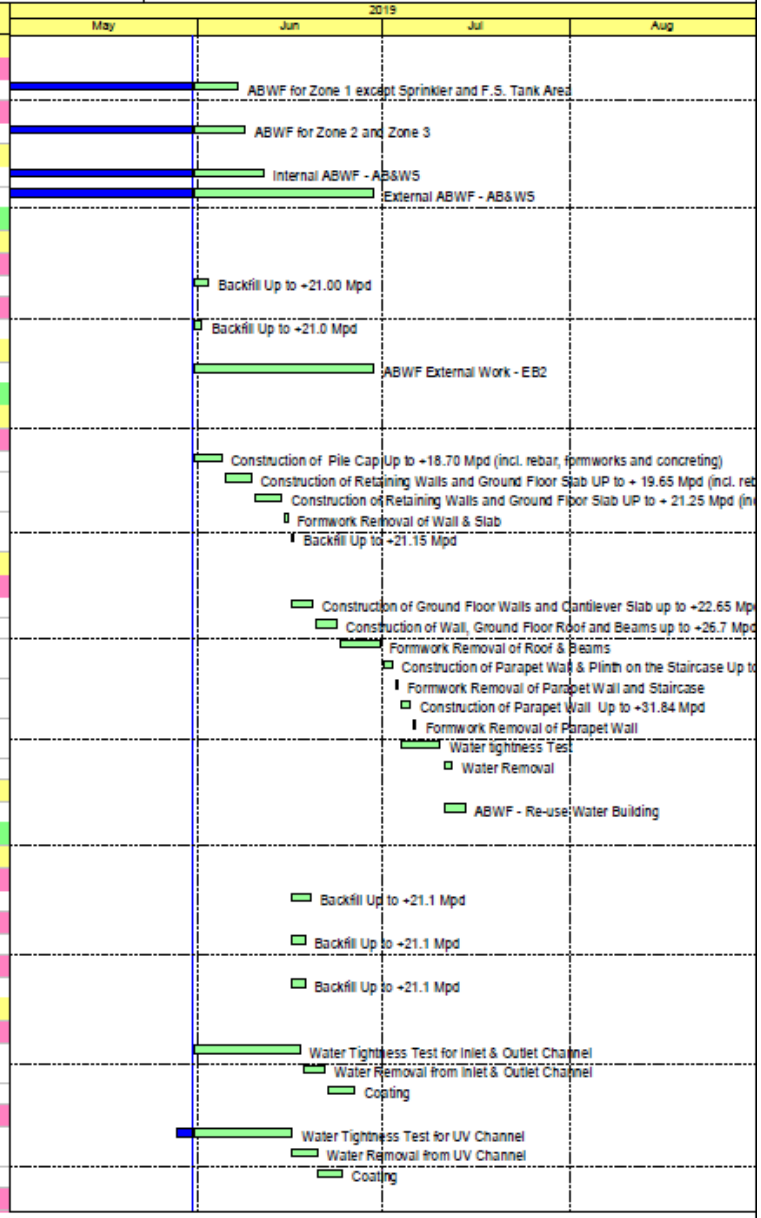
DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
SU1210	Backfilling	5	15-Jun-19	19-Jun-19
Corridor Along Grid A		60	31-May-19	29-Jul-19
SU1215	Construction of Common Outlet Channel @ Elevation 20.75 (Upper Basement)	45	01-Jun-19	16-Jul-19
SU1220	Construction of Common Outlet Channel @ Elevation 23.67 (Ground Floor)	45	07-Jun-19	22-Jul-19
SU1225	Construction of SF Channel @ Elevation 18.80/21.05 (Upper Basement)	45	31-May-19	14-Jul-19
SU1230	Construction of SF Channel @ Elevation 24.57 (Ground Floor)	45	15-Jun-19	29-Jul-19
ABWF		72	08-Jun-19	18-Aug-19
C51029	Erection of Working Platform for ABWF Work	6	08-Jun-19	13-Jun-19
C51030	Internal ABWF - CEPT	37	14-Jun-19	20-Jul-19
C51031	Concrete Protection Coating @ Portion 3	14	13-Jun-19	26-Jun-19
C51032	Concrete Protection Coating @ Portion 2	14	26-Jun-19	09-Jul-19
C51033	Concrete Protection Coating @ Portion 1	14	14-Jun-19	27-Jun-19
C51034	Contingency Remedial Works and Re-Water Tightness Test	42	28-Jun-19	08-Aug-19
C51036	External ABWF - CEPT	42	07-Jul-19	18-Aug-19
Sludge Dewatering Building (SDB)		221	27-Nov-18 A	05-Jul-19
Sub Structure Works		28	31-May-19	27-Jun-19
PORTION 2 (ZONE 2, 3, and ZONE 4)		28	31-May-19	27-Jun-19
SDB1105	Coating	4	01-Jun-19	04-Jun-19
SDB1110	Water Tightness Test for Return Liquor Holding Tank No. 1	21	31-May-19*	20-Jun-19
SDB1115	Water Removal from Return Liquor Holding Tank No. 1	3	21-Jun-19	23-Jun-19
SDB1120	Coating	4	24-Jun-19	27-Jun-19
Super Structure Works		221	27-Nov-18 A	05-Jul-19
PORTION 1 (ZONE 1, ZONE 5 and ZONE 9)		190	28-Dec-18 A	05-Jul-19
Void Over Sludge Holding Tank (ZONE 5 and ZONE 9)		86	11-Apr-19 A	05-Jul-19
SDB1160	Water Tightness Test for Sludge Holding Tanks No. 1 and 3	61	11-Apr-19 A	10-Jun-19
SDB1165	Water Removal from Sludge Holding Tanks No. 1 and 3	3	10-Jun-19	13-Jun-19
SDB1170	Coating	4	13-Jun-19	17-Jun-19
SDB1175	Water Tightness Test for Sludge Holding Tanks No. 2	15	13-Jun-19	28-Jun-19
SDB1180	Water Removal from Sludge Holding Tanks No. 2	3	28-Jun-19	01-Jul-19
SDB1185	Coating	4	01-Jul-19	05-Jul-19
SDB1190	ABWF (Internal)	4	01-Jul-19	05-Jul-19
Sludge Feed Pump Area (ZONE 1 and ZONE 5)		169	28-Dec-18 A	14-Jun-19
SDB1210	ABWF for Zone 1	169	28-Dec-18 A	14-Jun-19
PORTION 2 (ZONE 3, 4, 6, 7 and ZONE 8)		201	27-Nov-18 A	15-Jun-19
Ground Floor (Zone 3 and Zone 4)		151	02-Jan-19 A	01-Jun-19
SDB1250	ABWF for Zone 3 and Zone 4	151	02-Jan-19 A	01-Jun-19
Access Panel (Zone 3 and Zone 6)		198	27-Nov-18 A	12-Jun-19
SDB1280	ABWF for Zone 3 and Zone 6	198	27-Nov-18 A	12-Jun-19
First Floor (Zone 6 and Zone 7)		191	27-Nov-18 A	05-Jun-19
SDB1315	ABWF for Zone 6 and Zone 7	191	27-Nov-18 A	05-Jun-19
Roof (Zone 8)		146	21-Jan-19 A	15-Jun-19
SDB1335	ABWF for Zone 8	146	21-Jan-19 A	15-Jun-19
ABWF		12	18-Jun-19 A	29-Jun-19
SDB1340	ABWF - SDB External	8	22-Jun-19 A	29-Jun-19
SDB1345	Backfill Up to +21.0 Mpd	12	18-Jun-19	29-Jun-19
Administration Building & Maintenance Workshop (AB & WS)		370	25-Jun-18 A	29-Jun-19
Sub Structure Works		362	25-Jun-18 A	21-Jun-19
Portion 1 Administration Building (Zone 1 except Sprinkler Tank)		10	31-May-19	09-Jun-19
ABWS1035	Backfill Up to +21.2 Mpd	10	31-May-19	09-Jun-19
Portion 2 Administration Building (Zone 1 Sprinkler Tank)		357	25-Jun-18 A	16-Jun-19
ABWS1055	Backfill Up to +20.725 Mpd	357	25-Jun-18 A	16-Jun-19
Portion 5 Workshop (Zone 4 Recycling Tank Area)		22	31-May-19	21-Jun-19
ABWS1115	Water Tightness Test for Recycling Tank	15	31-May-19*	14-Jun-19
ABWS1120	Water Removal from Recycling Tank	5	15-Jun-19	19-Jun-19
ABWS1125	Backfill Up to +20.325 Mpd	2	20-Jun-19	21-Jun-19
Portion 4 Workshop (Zone 4 except Recycling Tank Area)		246	13-Oct-18 A	16-Jun-19
ABWS1075	Backfill Up to +20.325 Mpd	246	13-Oct-18 A	16-Jun-19



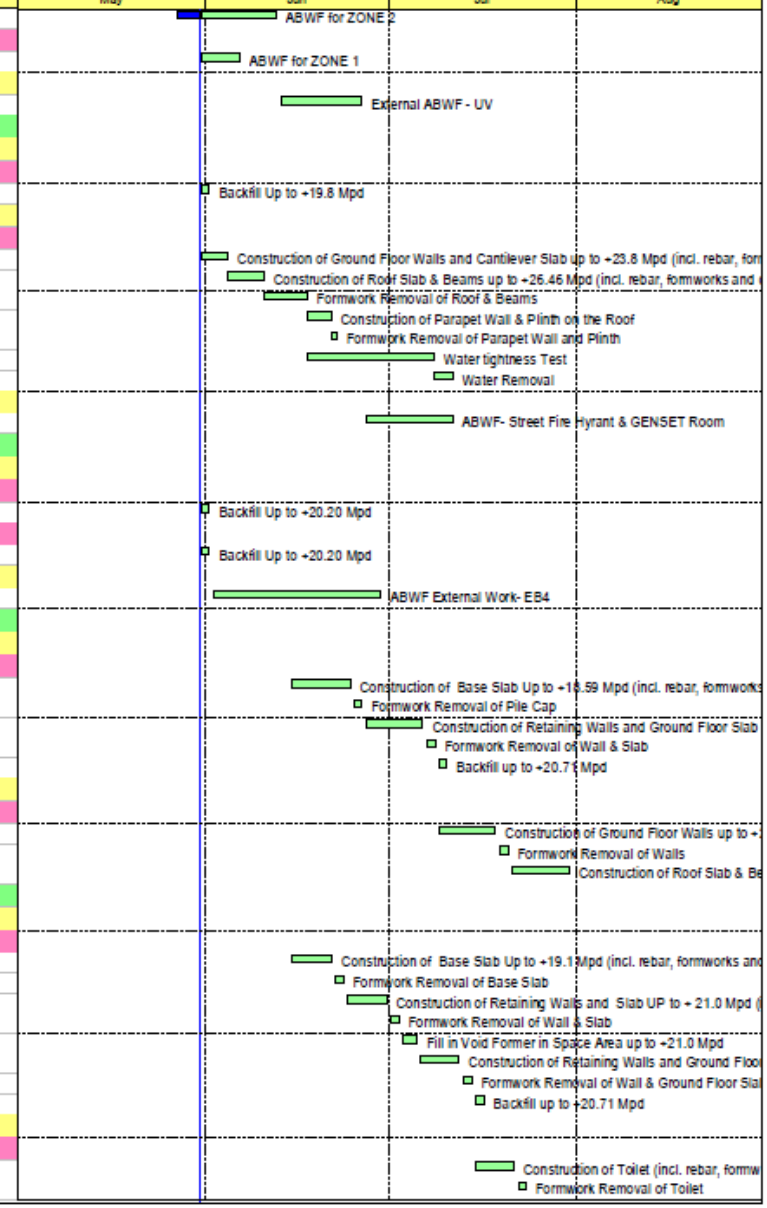
DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
	Super Structure Works	146	14-Jan-19 A	08-Jun-19
	Portion 1 Administration Building (Zone 1 except Sprinkler and F.S. Tank)	145	14-Jan-19 A	07-Jun-19
ABW51150	ABWF for Zone 1 except Sprinkler and F.S. Tank Area	145	14-Jan-19 A	07-Jun-19
	Portion 3 Administration Building (Zone 2 and Zone 3)	139	21-Jan-19 A	08-Jun-19
ABW51225	ABWF for Zone 2 and Zone 3	139	21-Jan-19 A	08-Jun-19
	ABWF	160	21-Jan-19 A	29-Jun-19
ABWS1275	Internal ABWF - AB&WS	142	21-Jan-19 A	11-Jun-19
ABWS1280	External ABWF - AB&WS	139	11-Feb-19 A	29-Jun-19
	Electrical Building No.2 (EB2)	30	31-May-19	29-Jun-19
	Super Structure Works	3	31-May-19	02-Jun-19
	PORTION 1 (ZONE1) Transformer Room	3	31-May-19	02-Jun-19
EB2110	Backfill Up to +21.00 Mpd	3	31-May-19	02-Jun-19
	PORTION 2 (ZONE2) LV Switchroom	2	31-May-19	01-Jun-19
EB2155	Backfill Up to +21.0 Mpd	2	31-May-19	01-Jun-19
	ABWF	30	31-May-19	29-Jun-19
C53848	ABWF External Work - EB2	30	31-May-19	29-Jun-19
	ReUse Water Building (RW)	45	31-May-19	14-Jul-19
	Sub Structure Works	17	31-May-19	16-Jun-19
	PORTION 1 (ZONE 1)	17	31-May-19	16-Jun-19
RW1000	Construction of Pile Cap Up to +18.70 Mpd (incl. rebar, formworks and concreting)	5	31-May-19	04-Jun-19
RW1010	Construction of Retaining Walls and Ground Floor Slab UP to + 19.65 Mpd (incl. rebar, formworks and concre	5	05-Jun-19	09-Jun-19
RW1020	Construction of Retaining Walls and Ground Floor Slab UP to + 21.25 Mpd (incl. rebar, formworks and concre	5	10-Jun-19	14-Jun-19
RW1025	Formwork Removal of Wall & Slab	1	15-Jun-19	15-Jun-19
RW1035	Backfill Up to +21.15 Mpd	1	16-Jun-19	16-Jun-19
	Super Structure Works	27	16-Jun-19	12-Jul-19
	PORTION 1 (ZONE1)	27	16-Jun-19	12-Jul-19
RW1040	Construction of Ground Floor Walls and Cantilever Slab up to +22.65 Mpd (incl. rebar, formworks and concret	4	16-Jun-19	19-Jun-19
RW1060	Construction of Wall, Ground Floor Roof and Beams up to +26.7 Mpd (incl. rebar, formworks and concreting)	4	20-Jun-19	23-Jun-19
RW1065	Formwork Removal of Roof & Beams	7	24-Jun-19	30-Jun-19
RW1070	Construction of Parapet Wall & Plinth on the Staircase Up to +28.185 Mpd	2	01-Jul-19	02-Jul-19
RW1075	Formwork Removal of Parapet Wall and Staircase	1	03-Jul-19	03-Jul-19
RW1080	Construction of Parapet Wall Up to +31.84 Mpd	2	04-Jul-19	05-Jul-19
RW1085	Formwork Removal of Parapet Wall	1	06-Jul-19	06-Jul-19
RW1090	Water tightness Test	7	04-Jul-19	10-Jul-19
RW1095	Water Removal	2	11-Jul-19	12-Jul-19
	ABWF	4	11-Jul-19	14-Jul-19
RW1100	ABWF - Re-use Water Building	4	11-Jul-19	14-Jul-19
	UV Disinfection Facilities (UV)	31	27-May-19 A	26-Jun-19
	Sub Structure Works	3	16-Jun-19	19-Jun-19
	PORTION 1 (ZONE 3 and ZONE 5)	3	16-Jun-19	19-Jun-19
UV1040	Backfill Up to +21.1 Mpd	3	16-Jun-19	19-Jun-19
	PORTION 2 (ZONE 4)	2	16-Jun-19	18-Jun-19
UV1065	Backfill Up to +21.1 Mpd	2	16-Jun-19	18-Jun-19
	PORTION 3 (ZONE 2)	2	16-Jun-19	18-Jun-19
UV1085	Backfill Up to +21.1 Mpd	2	16-Jun-19	18-Jun-19
	Super Structure Works	31	27-May-19 A	26-Jun-19
	PORTION 1 (ZONE 3 and ZONE 5)	27	31-May-19	26-Jun-19
UV1115	Water Tightness Test for Inlet & Outlet Channel	18	31-May-19	17-Jun-19
UV1120	Water Removal from Inlet & Outlet Channel	4	18-Jun-19	21-Jun-19
UV1125	Coating	5	22-Jun-19	26-Jun-19
	PORTION 2 (ZONE 4)	28	28-May-19 A	24-Jun-19
UV1155	Water Tightness Test for UV Channel	19	28-May-19 A	16-Jun-19
UV1160	Water Removal from UV Channel	4	16-Jun-19	20-Jun-19
UV1165	Coating	5	20-Jun-19	24-Jun-19
	PORTION 3 (ZONE 2)	17	27-May-19 A	12-Jun-19



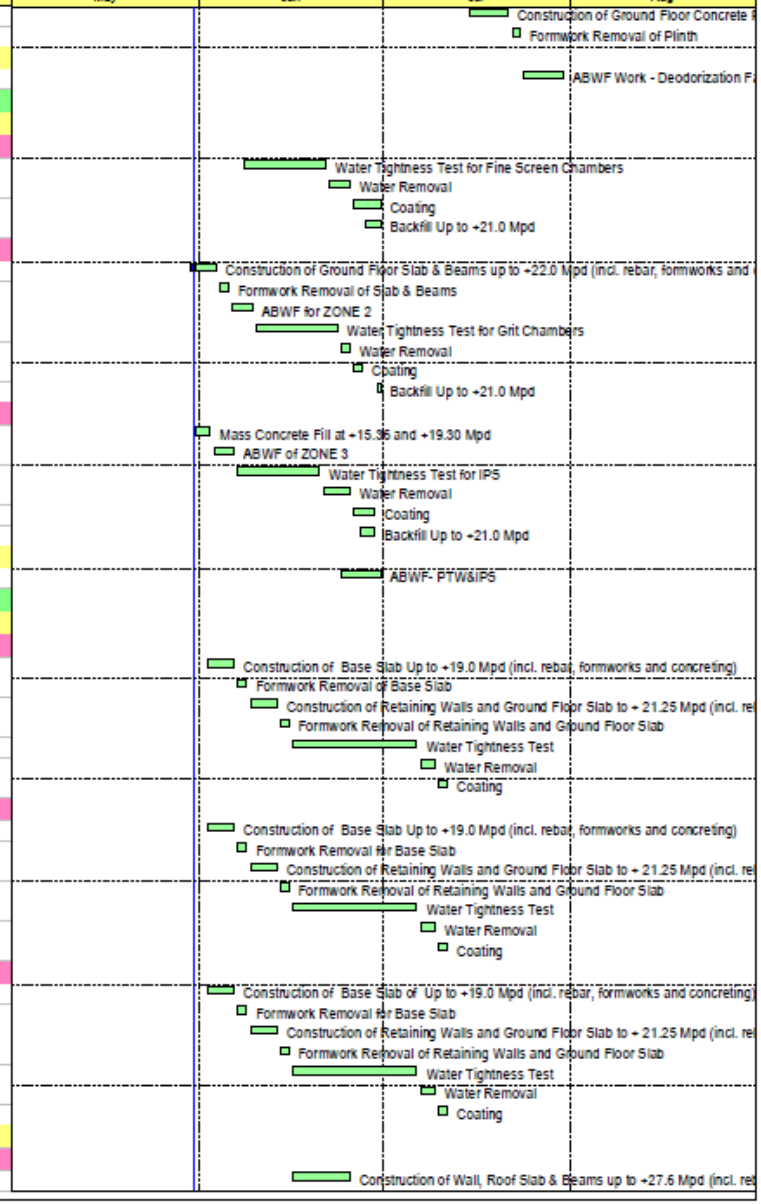
DATA DATE: 31-May-19 | 5W Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
UV1215	ABWF for ZONE 2	17	27-May-19 A	12-Jun-19
PORTION 4 (ZONE 1)		7	31-May-19	06-Jun-19
UV1240	ABWF for ZONE 1	7	31-May-19	06-Jun-19
ABWF		14	13-Jun-19	26-Jun-19
UV1245	External ABWF - UV	14	13-Jun-19	26-Jun-19
Street Fire Hydrant Pump Room & GENSET Room (FH)		42	31-May-19 A	11-Jul-19
Sub Structure Works		2	31-May-19	01-Jun-19
PORTION 1 (ZONE 1)		2	31-May-19	01-Jun-19
FH1025	Backfill Up to +19.8 Mpd	2	31-May-19	01-Jun-19
Super Structure Works		42	31-May-19 A	11-Jul-19
PORTION 1 (ZONE1)		42	31-May-19 A	11-Jul-19
FH1030	Construction of Ground Floor Walls and Cantilever Slab up to +23.8 Mpd (incl. rebar, formworks and concretir	5	31-May-19 A	04-Jun-19
FH1040	Construction of Roof Slab & Beams up to +26.46 Mpd (incl. rebar, formworks and concreting)	6	04-Jun-19	10-Jun-19
FH1045	Formwork Removal of Roof & Beams	7	10-Jun-19	17-Jun-19
FH1050	Construction of Parapet Wall & Plinth on the Roof	4	17-Jun-19	21-Jun-19
FH1055	Formwork Removal of Parapet Wall and Plinth	1	21-Jun-19	22-Jun-19
FH1060	Water tightness Test	21	17-Jun-19	08-Jul-19
FH1065	Water Removal	3	08-Jul-19	11-Jul-19
ABWF		14	27-Jun-19	11-Jul-19
FH1070	ABWF- Street Fire Hyrant & GENSET Room	14	27-Jun-19	11-Jul-19
Electrical Building No.4 (EB4)		30	31-May-19	29-Jun-19
Sub Structure Works		2	31-May-19	01-Jun-19
PORTION 1 (ZONE1) Transformer Room		2	31-May-19	01-Jun-19
EB4030	Backfill Up to +20.20 Mpd	2	31-May-19	01-Jun-19
PORTION 2 (ZONE2) LV Switchroom		2	31-May-19	01-Jun-19
EB4065	Backfill Up to +20.20 Mpd	2	31-May-19	01-Jun-19
ABWF		28	02-Jun-19	29-Jun-19
CS3934	ABWF External Work- EB4	28	02-Jun-19	29-Jun-19
Sludge Skip Storage Building (SSSB)		46	15-Jun-19	30-Jul-19
Sub Structure Works		26	15-Jun-19	10-Jul-19
PORTION 1 (ZONE 1)		26	15-Jun-19	10-Jul-19
SSSB1000	Construction of Base Slab Up to +18.59 Mpd (incl. rebar, formworks and concreting)	10	15-Jun-19	24-Jun-19
SSSB1010	Formwork Removal of Pile Cap	2	25-Jun-19	26-Jun-19
SSSB1020	Construction of Retaining Walls and Ground Floor Slab UP to + 20.59 Mpd (incl. rebar, formworks and concre	10	27-Jun-19	06-Jul-19
SSSB1030	Formwork Removal of Wall & Slab	2	07-Jul-19	08-Jul-19
SSSB1040	Backfill up to +20.71 Mpd	2	09-Jul-19	10-Jul-19
Super Structure Works		22	09-Jul-19	30-Jul-19
PORTION 1 (ZONE1)		22	09-Jul-19	30-Jul-19
SSSB1050	Construction of Ground Floor Walls up to +24.59 Mpd (incl. rebar, formworks and concreting)	10	09-Jul-19	18-Jul-19
SSSB1060	Formwork Removal of Walls	2	19-Jul-19	20-Jul-19
SSSB1070	Construction of Roof Slab & Beams up to +26.44 Mpd (incl. rebar, formworks and concreting)	10	21-Jul-19	30-Jul-19
Deodorization Facilities No. 2 (DO 2)		46	15-Jun-19	30-Jul-19
Sub Structure Works		32	15-Jun-19	16-Jul-19
PORTION 1 (ZONE 1)		32	15-Jun-19	16-Jul-19
DO2000	Construction of Base Slab Up to +19.1 Mpd (incl. rebar, formworks and concreting)	7	15-Jun-19	21-Jun-19
DO2005	Formwork Removal of Base Slab	2	22-Jun-19	23-Jun-19
DO2010	Construction of Retaining Walls and Slab UP to + 21.0 Mpd (incl. rebar, formworks and concreting)	7	24-Jun-19	30-Jun-19
DO2015	Formwork Removal of Wall & Slab	2	01-Jul-19	02-Jul-19
DO2018	Fill in Void Former in Space Area up to +21.0 Mpd	3	03-Jul-19	05-Jul-19
DO2020	Construction of Retaining Walls and Ground Floor Slab UP to + 21.45 Mpd (incl. rebar, formworks and concre	7	06-Jul-19	12-Jul-19
DO2025	Formwork Removal of Wall & Ground Floor Slab	2	13-Jul-19	14-Jul-19
DO2030	Backfill up to +20.71 Mpd	2	15-Jul-19	16-Jul-19
Super Structure Works		9	15-Jul-19	23-Jul-19
PORTION 1 (ZONE1)		9	15-Jul-19	23-Jul-19
DO2035	Construction of Toilet (incl. rebar, formworks and concreting)	7	15-Jul-19	21-Jul-19
DO2040	Formwork Removal of Toilet	2	22-Jul-19	23-Jul-19



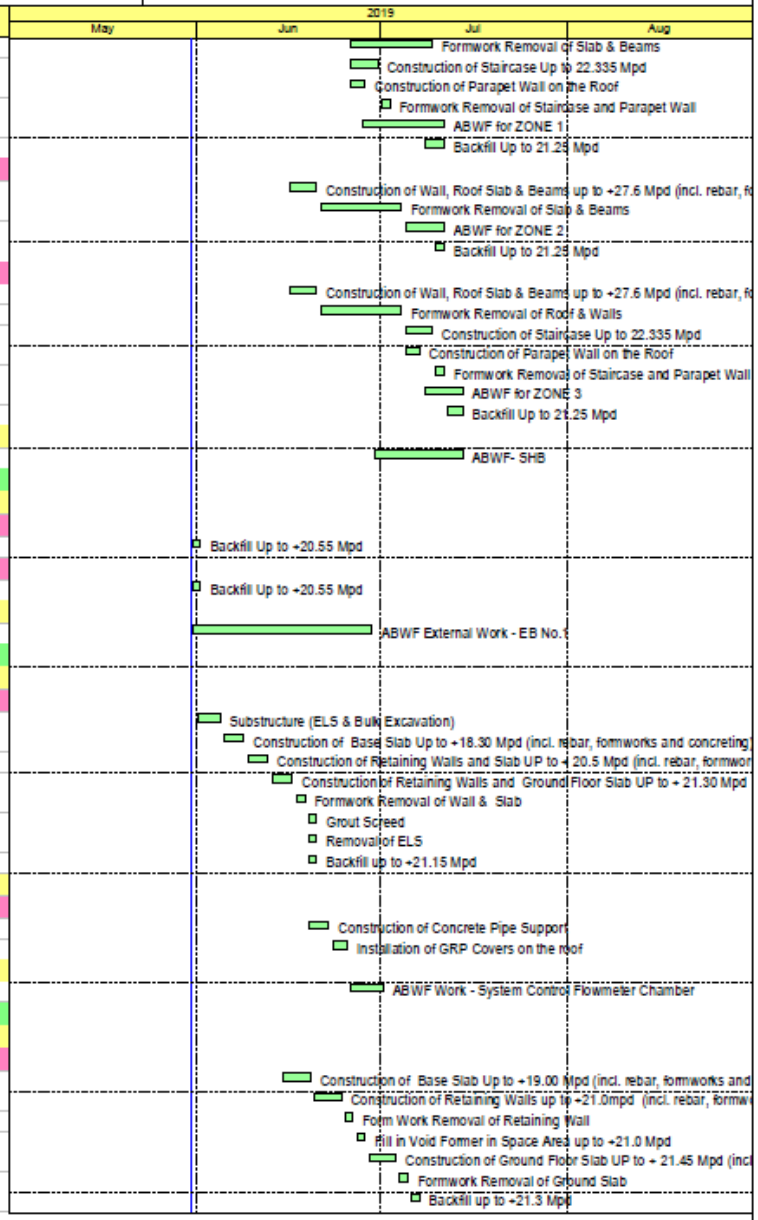
DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
DO2045	Construction of Ground Floor Concrete Plinth up to +21.45 Mpd (incl. rebar, formworks and concreting)	7	15-Jul-19	21-Jul-19
DO2050	Formwork Removal of Plinth	2	22-Jul-19	23-Jul-19
ABWF		7	24-Jul-19	30-Jul-19
DO2055	ABWF Work - Deodorization Facilities No.2	7	24-Jul-19	30-Jul-19
Inlet Work, Preliminary Treatment Works and Inlet Pumping Station (PTW & IPS)		32	30-May-19 A	30-Jun-19
Super Structure Works		32	30-May-19 A	30-Jun-19
PORTION 1 (ZONE1) Fine Screen Chamber		23	08-Jun-19	30-Jun-19
PTWIPS1150	Water Tightness Test for Fine Screen Chambers	14	08-Jun-19	21-Jun-19
PTWIPS1155	Water Removal	4	22-Jun-19	25-Jun-19
PTWIPS1160	Coating	5	26-Jun-19	30-Jun-19
PTWIPS1165	Backfill Up to +21.0 Mpd	3	28-Jun-19	30-Jun-19
PORTION 2 (ZONE2) Grit Chamber		32	30-May-19 A	30-Jun-19
PTWIPS1175	Construction of Ground Floor Slab & Beams up to +22.0 Mpd (incl. rebar, formworks and concreting)	5	30-May-19 A	03-Jun-19
PTWIPS1180	Formwork Removal of Slab & Beams	2	04-Jun-19	05-Jun-19
PTWIPS1185	ABWF for ZONE 2	4	06-Jun-19	09-Jun-19
PTWIPS1190	Water Tightness Test for Grit Chambers	14	10-Jun-19	23-Jun-19
PTWIPS1195	Water Removal	2	24-Jun-19	25-Jun-19
PTWIPS1200	Coating	2	26-Jun-19	27-Jun-19
PTWIPS1205	Backfill Up to +21.0 Mpd	1	30-Jun-19	30-Jun-19
PORTION 3 (ZONE3) Wet Well and IPS Area		30	31-May-19	29-Jun-19
PTWIPS1230	Mass Concrete Fill at +15.36 and +19.30 Mpd	3	31-May-19	02-Jun-19
PTWIPS1235	ABWF of ZONE 3	4	03-Jun-19	06-Jun-19
PTWIPS1240	Water Tightness Test for IPS	14	07-Jun-19	20-Jun-19
PTWIPS1245	Water Removal	5	21-Jun-19	25-Jun-19
PTWIPS1250	Coating	4	26-Jun-19	29-Jun-19
PTWIPS1255	Backfill Up to +21.0 Mpd	3	27-Jun-19	29-Jun-19
ABWF		7	24-Jun-19	30-Jun-19
PTWIPS1260	ABWF- PTW&IPS	7	24-Jun-19	30-Jun-19
Solid Handling Building (SHB)		43	02-Jun-19	14-Jul-19
Sub Structure Works		40	02-Jun-19	11-Jul-19
PORTION 1 (ZONE 1) Screening Handling Room		40	02-Jun-19	11-Jul-19
SHB1000	Construction of Base Slab Up to +19.0 Mpd (incl. rebar, formworks and concreting)	5	02-Jun-19	06-Jun-19
SHB1005	Formwork Removal of Base Slab	2	07-Jun-19	08-Jun-19
SHB1010	Construction of Retaining Walls and Ground Floor Slab to + 21.25 Mpd (incl. rebar, formworks and concreting)	5	09-Jun-19	13-Jun-19
SHB1015	Formwork Removal of Retaining Walls and Ground Floor Slab	2	14-Jun-19	15-Jun-19
SHB1020	Water Tightness Test	21	16-Jun-19	06-Jul-19
SHB1025	Water Removal	3	07-Jul-19	09-Jul-19
SHB1030	Coating	2	10-Jul-19	11-Jul-19
PORTION 2 (ZONE2) Air Blower Room		40	02-Jun-19	11-Jul-19
SHB1035	Construction of Base Slab Up to +19.0 Mpd (incl. rebar, formworks and concreting)	5	02-Jun-19	06-Jun-19
SHB1040	Formwork Removal for Base Slab	2	07-Jun-19	08-Jun-19
SHB1045	Construction of Retaining Walls and Ground Floor Slab to + 21.25 Mpd (incl. rebar, formworks and concreting)	5	09-Jun-19	13-Jun-19
SHB1050	Formwork Removal of Retaining Walls and Ground Floor Slab	2	14-Jun-19	15-Jun-19
SHB1055	Water Tightness Test	21	16-Jun-19	06-Jul-19
SHB1060	Water Removal	3	07-Jul-19	09-Jul-19
SHB1065	Coating	2	10-Jul-19	11-Jul-19
PORTION 3 (ZONE3) Grit Handling Room		40	02-Jun-19	11-Jul-19
SHB1070	Construction of Base Slab of Up to +19.0 Mpd (incl. rebar, formworks and concreting)	5	02-Jun-19	06-Jun-19
SHB1075	Formwork Removal for Base Slab	2	07-Jun-19	08-Jun-19
SHB1080	Construction of Retaining Walls and Ground Floor Slab to + 21.25 Mpd (incl. rebar, formworks and concreting)	5	09-Jun-19	13-Jun-19
SHB1085	Formwork Removal of Retaining Walls and Ground Floor Slab	2	14-Jun-19	15-Jun-19
SHB1090	Water Tightness Test	21	16-Jun-19	06-Jul-19
SHB1095	Water Removal	3	07-Jul-19	09-Jul-19
SHB1100	Coating	2	10-Jul-19	11-Jul-19
Super Structure Works		29	16-Jun-19	14-Jul-19
PORTION 1 (ZONE1) Screening Handling Room		26	16-Jun-19	11-Jul-19
SHB1115	Construction of Wall, Roof Slab & Beams up to +27.6 Mpd (incl. rebar, formworks and concreting)	10	16-Jun-19	25-Jun-19



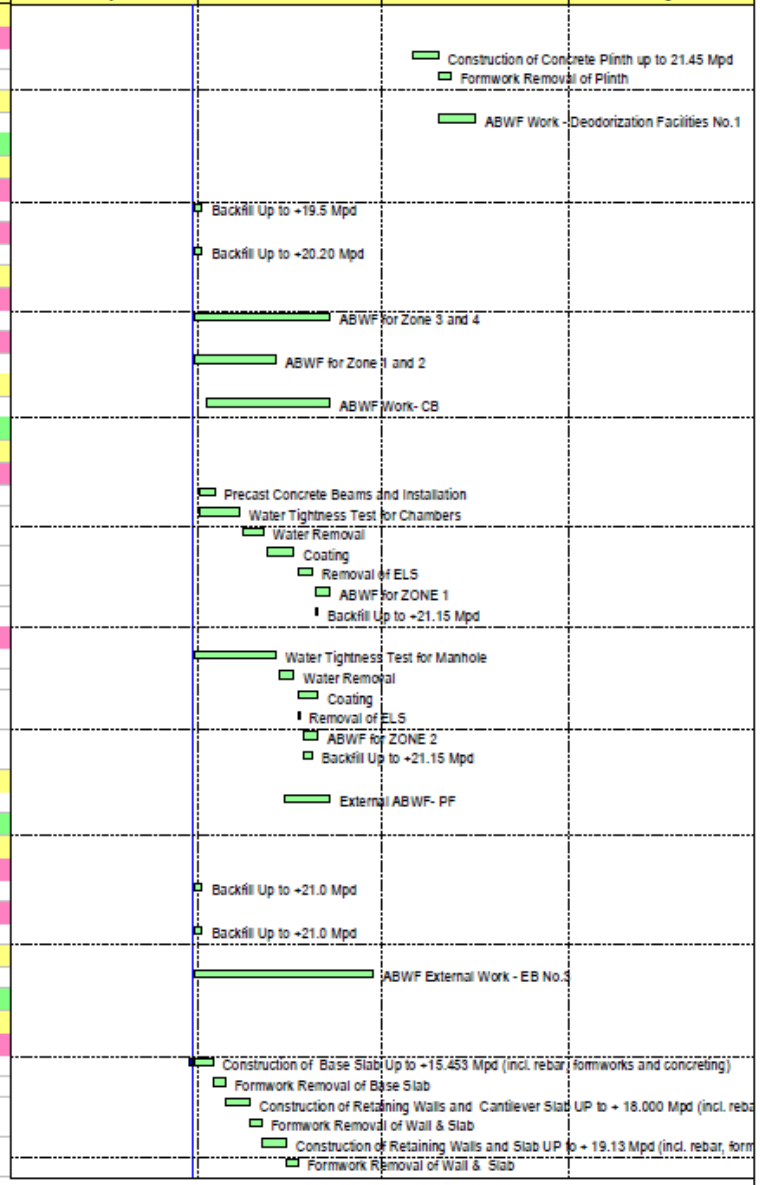
DATA DATE: 31-May-19 | 5W Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
SHB1120	Formwork Removal of Slab & Beams	14	26-Jun-19	09-Jul-19
SHB1125	Construction of Staircase Up to 22.335 Mpd	5	26-Jun-19	30-Jun-19
SHB1130	Construction of Parapet Wall on the Roof	3	26-Jun-19	28-Jun-19
SHB1135	Formwork Removal of Staircase and Parapet Wall	2	01-Jul-19	02-Jul-19
SHB1140	ABWF for ZONE 1	14	28-Jun-19	11-Jul-19
SHB1145	Backfill Up to 21.25 Mpd	4	08-Jul-19	11-Jul-19
PORTION 2 (ZONE2) Air Blower Room		26	16-Jun-19	11-Jul-19
SHB1160	Construction of Wall, Roof Slab & Beams up to +27.6 Mpd (incl. rebar, formworks and concreting)	5	16-Jun-19	20-Jun-19
SHB1165	Formwork Removal of Slab & Beams	14	21-Jun-19	04-Jul-19
SHB1170	ABWF for ZONE 2	7	05-Jul-19	11-Jul-19
SHB1175	Backfill Up to 21.25 Mpd	2	10-Jul-19	11-Jul-19
PORTION 3 (ZONE3) Grit Handling Room		29	16-Jun-19	14-Jul-19
SHB1190	Construction of Wall, Roof Slab & Beams up to +27.6 Mpd (incl. rebar, formworks and concreting)	5	16-Jun-19	20-Jun-19
SHB1195	Formwork Removal of Roof & Walls	14	21-Jun-19	04-Jul-19
SHB1200	Construction of Staircase Up to 22.335 Mpd	5	05-Jul-19	09-Jul-19
SHB1205	Construction of Parapet Wall on the Roof	3	05-Jul-19	07-Jul-19
SHB1210	Formwork Removal of Staircase and Parapet Wall	2	10-Jul-19	11-Jul-19
SHB1215	ABWF for ZONE 3	7	08-Jul-19	14-Jul-19
SHB1220	Backfill Up to 21.25 Mpd	3	12-Jul-19	14-Jul-19
ABWF		15	30-Jun-19	14-Jul-19
SHB1225	ABWF- SHB	15	30-Jun-19	14-Jul-19
Electrical Building No.1 (EB1)		30	31-May-19	29-Jun-19
Super Structure Works		2	31-May-19	01-Jun-19
PORTION 1 (ZONE1) Transformer Room		2	31-May-19	01-Jun-19
EB1100	Backfill Up to +20.55 Mpd	2	31-May-19	01-Jun-19
PORTION 2 (ZONE2) LV Switchroom		2	31-May-19	01-Jun-19
EB1135	Backfill Up to +20.55 Mpd	2	31-May-19	01-Jun-19
ABWF		30	31-May-19	29-Jun-19
C51940	ABWF External Work - EB No.1	30	31-May-19	29-Jun-19
System Control Flowmeter Chamber (SF)		31	01-Jun-19	01-Jul-19
Sub Structure Works		20	01-Jun-19	20-Jun-19
PORTION 1 (ZONE 1)		20	01-Jun-19	20-Jun-19
SF1000	Substructure (ELS & Bulk Excavation)	4	01-Jun-19	04-Jun-19
SF1005	Construction of Base Slab Up to +18.30 Mpd (incl. rebar, formworks and concreting)	4	05-Jun-19	08-Jun-19
SF1015	Construction of Retaining Walls and Slab UP to + 20.5 Mpd (incl. rebar, formworks and concreting)	4	09-Jun-19	12-Jun-19
SF1025	Construction of Retaining Walls and Ground Floor Slab UP to + 21.30 Mpd (incl. rebar, formworks and concr	4	13-Jun-19	16-Jun-19
SF1030	Formwork Removal of Wall & Slab	2	17-Jun-19	18-Jun-19
SF1035	Grout Screed	2	19-Jun-19	20-Jun-19
SF1040	Removal of ELS	2	19-Jun-19	20-Jun-19
SF1045	Backfill up to +21.15 Mpd	2	19-Jun-19	20-Jun-19
Super Structure Works		7	19-Jun-19	25-Jun-19
PORTION 1 (ZONE1)		7	19-Jun-19	25-Jun-19
SF1050	Construction of Concrete Pipe Support	4	19-Jun-19	22-Jun-19
SF1055	Installation of GRP Covers on the roof	3	23-Jun-19	25-Jun-19
ABWF		6	26-Jun-19	01-Jul-19
SF1060	ABWF Work - System Control Flowmeter Chamber	6	26-Jun-19	01-Jul-19
Deodorization Facilities No. 1 (DO 1)		32	15-Jun-19	16-Jul-19
Sub Structure Works		23	15-Jun-19	07-Jul-19
PORTION 1 (ZONE 1)		23	15-Jun-19	07-Jul-19
DO1000	Construction of Base Slab Up to +19.00 Mpd (incl. rebar, formworks and concreting)	5	15-Jun-19	19-Jun-19
DO1007	Construction of Retaining Walls up to +21.0mpd (incl. rebar, formworks and concreting)	5	20-Jun-19	24-Jun-19
DO1008	Form Work Removal of Retaining Wall	2	25-Jun-19	26-Jun-19
DO1009	Fill in Void Former in Space Area up to +21.0 Mpd	2	27-Jun-19	28-Jun-19
DO1010	Construction of Ground Floor Slab UP to + 21.45 Mpd (incl. rebar, formworks and concreting)	5	29-Jun-19	03-Jul-19
DO1015	Formwork Removal of Ground Slab	2	04-Jul-19	05-Jul-19
DO1020	Backfill up to +21.3 Mpd	2	06-Jul-19	07-Jul-19



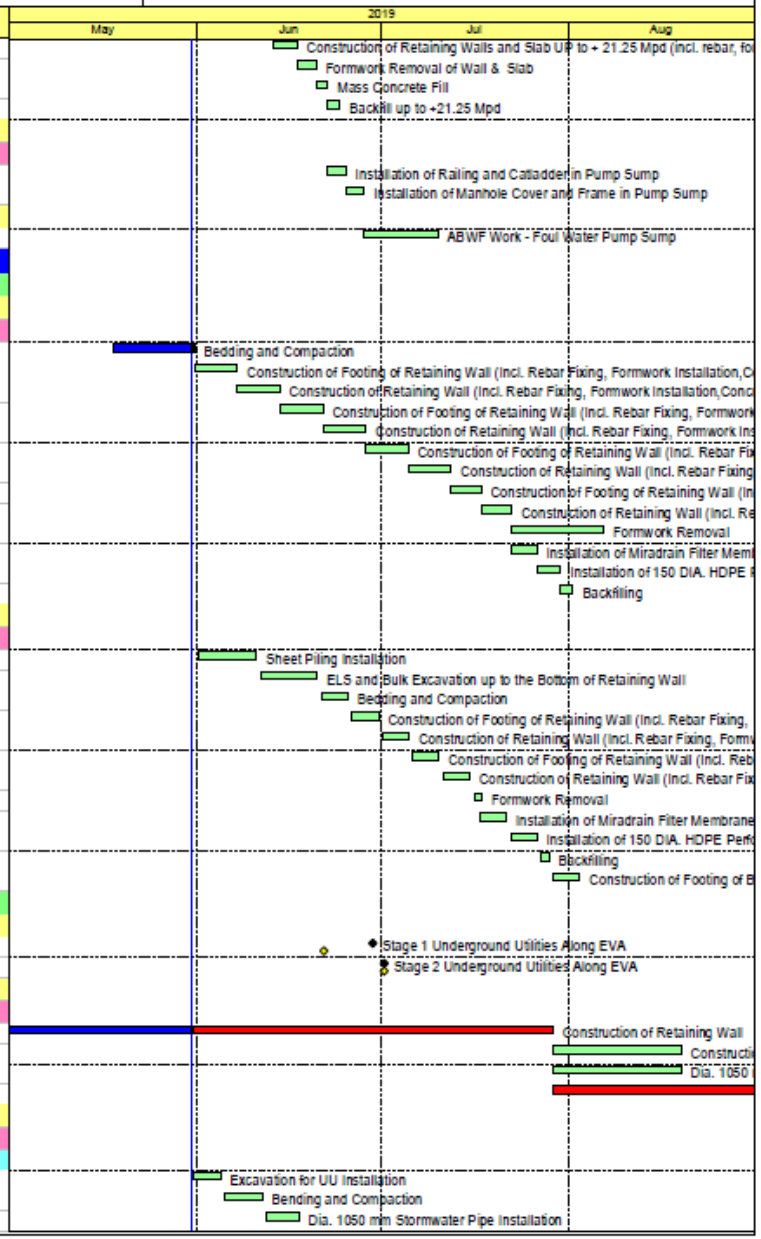
DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
Super Structure Works		7	06-Jul-19	12-Jul-19
PORTION 1 (ZONE1)		7	06-Jul-19	12-Jul-19
DO1025	Construction of Concrete Plinth up to 21.45 Mpd	5	06-Jul-19	10-Jul-19
DO1030	Formwork Removal of Plinth	2	10-Jul-19	12-Jul-19
ABWF		6	10-Jul-19	16-Jul-19
DO1035	ABWF Work - Deodorization Facilities No.1	6	10-Jul-19	16-Jul-19
Chemical Building (CB)		23	31-May-19	22-Jun-19
Sub Structure Works		2	31-May-19	01-Jun-19
PORTION 1 Chemical Storage Tanks Zone 3 & Zone 4		2	31-May-19	01-Jun-19
CB1020	Backfill Up to +19.5 Mpd	2	31-May-19	01-Jun-19
PORTION 2 Plant Room Zone 1 & 2		2	31-May-19	01-Jun-19
CB1045	Backfill Up to +20.20 Mpd	2	31-May-19*	01-Jun-19
Super Structure Works		23	31-May-19	22-Jun-19
PORTION 1 Chemical Storage Tanks Zone 3 & 4		23	31-May-19	22-Jun-19
CB1087	ABWF for Zone 3 and 4	23	31-May-19	22-Jun-19
PORTION 2 Plant Room Zone 1 & 2		14	31-May-19	13-Jun-19
CB1116	ABWF for Zone 1 and 2	14	31-May-19	13-Jun-19
ABWF		21	02-Jun-19	22-Jun-19
CS3922	ABWF Work- CB	21	02-Jun-19	22-Jun-19
Payment Flowmeter Chamber (PF)		23	31-May-19	22-Jun-19
Super Structure Works		23	31-May-19	22-Jun-19
PORTION 1 (ZONE1) PF Chamber		22	01-Jun-19	22-Jun-19
PF1060	Precast Concrete Beams and Installation	3	01-Jun-19	03-Jun-19
PF1065	Water Tightness Test for Chambers	7	01-Jun-19	07-Jun-19
PF1070	Water Removal	4	08-Jun-19	11-Jun-19
PF1075	Coating	5	12-Jun-19	16-Jun-19
PF1080	Removal of EL5	3	17-Jun-19	19-Jun-19
PF1085	ABWF for ZONE 1	3	20-Jun-19	22-Jun-19
PF1090	Backfill Up to +21.15 Mpd	1	20-Jun-19	20-Jun-19
PORTION 2 (ZONE2) Terminal Manhole		21	31-May-19	20-Jun-19
PF1105	Water Tightness Test for Manhole	14	31-May-19	13-Jun-19
PF1110	Water Removal	3	14-Jun-19	16-Jun-19
PF1115	Coating	4	17-Jun-19	20-Jun-19
PF1120	Removal of EL5	1	17-Jun-19	17-Jun-19
PF1125	ABWF for ZONE 2	3	18-Jun-19	20-Jun-19
PF1130	Backfill Up to +21.15 Mpd	2	18-Jun-19	19-Jun-19
ABWF		8	15-Jun-19	22-Jun-19
PF1135	External ABWF- PF	8	15-Jun-19	22-Jun-19
Electrical Building No.3 (EB3)		30	31-May-19	29-Jun-19
Super Structure Works		2	31-May-19	01-Jun-19
PORTION 1 (ZONE1) Transformer Room		2	31-May-19	01-Jun-19
EB3100	Backfill Up to +21.0 Mpd	2	31-May-19	01-Jun-19
PORTION 2 (ZONE2) LV Switchroom		2	31-May-19	01-Jun-19
EB3135	Backfill Up to +21.0 Mpd	2	31-May-19	01-Jun-19
ABWF		30	31-May-19	29-Jun-19
CS3878	ABWF External Work - EB No.3	30	31-May-19	29-Jun-19
Foul Water Pump Sump (FW)		41	30-May-19 A	10-Jul-19
Sub Structure Works		25	30-May-19 A	24-Jun-19
PORTION 1 (ZONE 1)		25	30-May-19 A	24-Jun-19
FW1000	Construction of Base Slab Up to +15.453 Mpd (incl. rebar, formworks and concreting)	4	30-May-19 A	03-Jun-19
FW1005	Formwork Removal of Base Slab	2	03-Jun-19	05-Jun-19
FW1010	Construction of Retaining Walls and Cantilever Slab UP to + 18.000 Mpd (incl. rebar, formworks and concreti	4	05-Jun-19	09-Jun-19
FW1015	Formwork Removal of Wall & Slab	2	09-Jun-19	11-Jun-19
FW1020	Construction of Retaining Walls and Slab UP to + 19.13 Mpd (incl. rebar, formworks and concreting)	4	11-Jun-19	15-Jun-19
FW1025	Formwork Removal of Wall & Slab	2	15-Jun-19	17-Jun-19



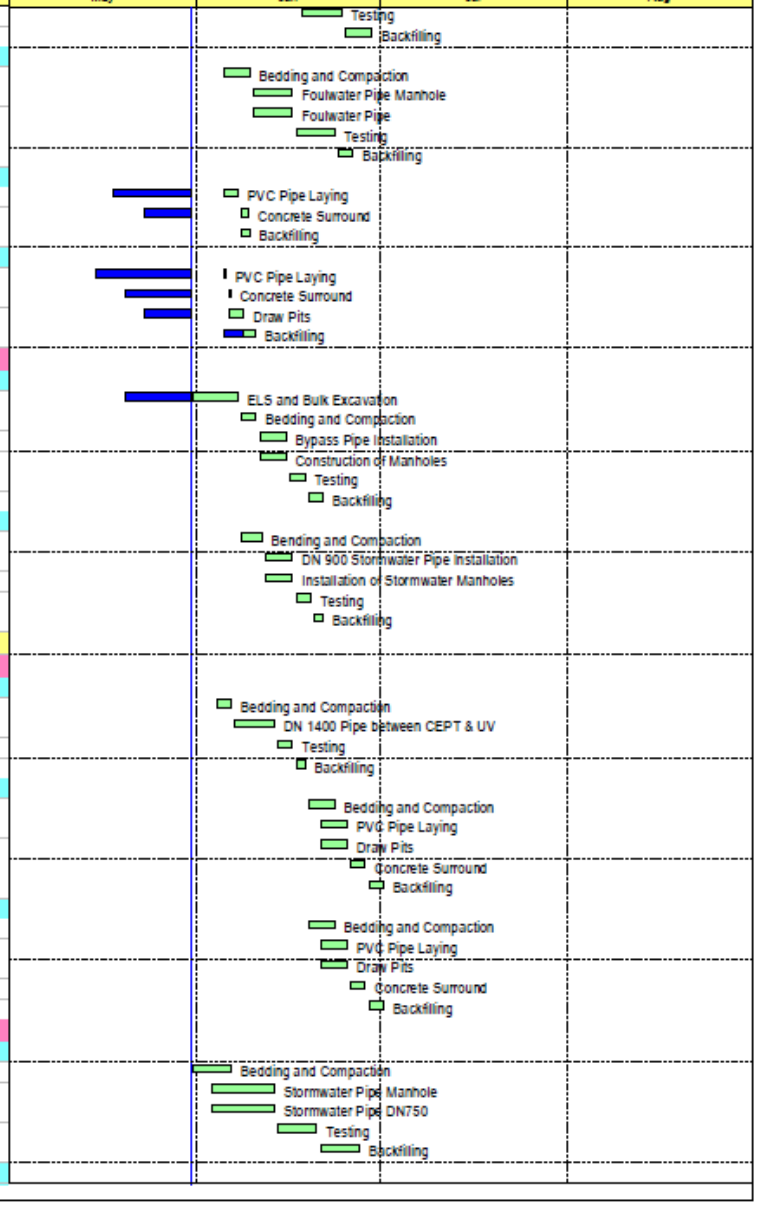
DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
FW1030	Construction of Retaining Walls and Slab UP to + 21.25 Mpd (incl. rebar, formworks and concreting)	4	13-Jun-19	17-Jun-19
FW1035	Formwork Removal of Wall & Slab	3	17-Jun-19	20-Jun-19
FW1040	Mass Concrete Fill	2	20-Jun-19	22-Jun-19
FW1045	Backfill up to +21.25 Mpd	2	22-Jun-19	24-Jun-19
Super Structure Works		6	22-Jun-19	28-Jun-19
PORTION 1 (ZONE1)		6	22-Jun-19	28-Jun-19
FW1050	Installation of Railing and Catladder in Pump Sump	3	22-Jun-19	25-Jun-19
FW1055	Installation of Manhole Cover and Frame in Pump Sump	3	25-Jun-19	28-Jun-19
ABWF		12	28-Jun-19	10-Jul-19
FW1060	ABWF Work - Foul Water Pump Sump	12	28-Jun-19	10-Jul-19
External Works & Miscellaneous		128	30-Apr-19 A	05-Sep-19
Slopes and Retaining Wall		81	18-May-19 A	06-Aug-19
Section 1		81	18-May-19 A	06-Aug-19
North of DO2		81	18-May-19 A	06-Aug-19
RWL-1010	Bedding and Compaction	14	18-May-19 A	31-May-19
RWL-1015	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +16.9 Mpd Typ	7	31-May-19	07-Jun-19
RWL-1020	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 7A	7	07-Jun-19	14-Jun-19
RWL-1025	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +17.35 Mpd Ty	7	14-Jun-19	21-Jun-19
RWL-1030	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 7B	7	21-Jun-19	28-Jun-19
RWL-1035	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +17.35 Mpd Ty	7	28-Jun-19	05-Jul-19
RWL-1040	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 7A	7	05-Jul-19	12-Jul-19
RWL-1045	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +18.00 Mpd Ty	5	12-Jul-19	17-Jul-19
RWL-1050	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 7A	5	17-Jul-19	22-Jul-19
RWL-1055	Formwork Removal	15	22-Jul-19	06-Aug-19
RWL-1060	Installation of Miradrain Filter Membrane	4	22-Jul-19	26-Jul-19
RWL-1065	Installation of 150 DIA. HDPE Perforated Pipe with Grave Surround & Geotextile	4	26-Jul-19	30-Jul-19
RWL-1070	Backfilling	2	30-Jul-19	01-Aug-19
Section 2		63	01-Jun-19	02-Aug-19
North of SSSB		63	01-Jun-19	02-Aug-19
RWL-1085	Sheet Piling Installation	10	01-Jun-19	10-Jun-19
RWL-1090	ELS and Bulk Excavation up to the Bottom of Retaining Wall	10	11-Jun-19	20-Jun-19
RWL-1095	Bedding and Compaction	5	21-Jun-19	25-Jun-19
RWL-1100	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +15.10 Mpd Ty	5	26-Jun-19	30-Jun-19
RWL-1105	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 5B	5	01-Jul-19	05-Jul-19
RWL-1110	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +16.50 Mpd Ty	5	06-Jul-19	10-Jul-19
RWL-1115	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 6A	5	11-Jul-19	15-Jul-19
RWL-1120	Formwork Removal	2	16-Jul-19	17-Jul-19
RWL-1125	Installation of Miradrain Filter Membrane	5	17-Jul-19	21-Jul-19
RWL-1130	Installation of 150 DIA. HDPE Perforated Pipe with Grave Surround & Geotextile	5	22-Jul-19	26-Jul-19
RWL-1135	Backfilling	2	27-Jul-19	28-Jul-19
RWL-1140	Construction of Footing of Boundary Wall	5	29-Jul-19	02-Aug-19
Underground Utilities Along EVA		128	30-Apr-19 A	05-Sep-19
Zone Completion Dates		2	29-Jun-19	01-Jul-19
S1UU	Stage 1 Underground Utilities Along EVA	0		29-Jun-19*
S2UU	Stage 2 Underground Utilities Along EVA	0		01-Jul-19*
P8 Area		128	30-Apr-19 A	05-Sep-19
Retaining Wall, U-Channel & Stormwater Pipe		128	30-Apr-19 A	05-Sep-19
UUP8-1045	Construction of Retaining Wall	90	30-Apr-19 A	29-Jul-19
UUP8-1050	Construction of 900 U-Channel (East Side of Retaining Wall)	21	29-Jul-19	19-Aug-19
UUP8-1055	Dia. 1050 mm Stormwater Pipe Installation	21	29-Jul-19	19-Aug-19
UUP8-1065	Backfilling (Up to the bottom of Rising Main)	38	29-Jul-19	05-Sep-19
Stage 1 Underground Utilities Along EVA		46	15-May-19 A	29-Jun-19
Stage 1A Between SDB & CEPT		46	15-May-19 A	29-Jun-19
Stormwater Pipe		30	31-May-19	29-Jun-19
UU5T1-100	Excavation for UU Installation	5	31-May-19	04-Jun-19
UU5T1-100	Bending and Compaction	7	05-Jun-19	11-Jun-19
UU5T1-101	Dia. 1050 mm Stormwater Pipe Installation	6	12-Jun-19	17-Jun-19



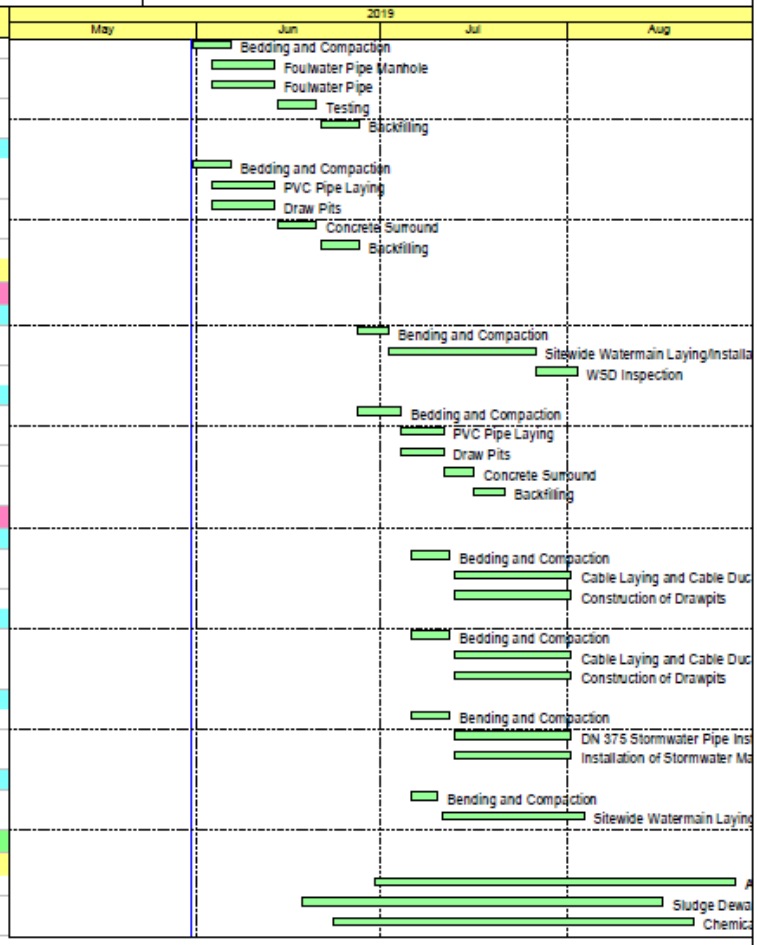
DATA DATE: 31-May-19 | 5W Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
UUST1-101	Testing	7	18-Jun-19	24-Jun-19
UUST1-102	Backfilling	5	25-Jun-19	29-Jun-19
Foulwater Pipe		22	05-Jun-19	26-Jun-19
UUST1-102	Bedding and Compaction	5	05-Jun-19	09-Jun-19
UUST1-103	Foulwater Pipe Manhole	7	10-Jun-19	16-Jun-19
UUST1-103	Foulwater Pipe	7	10-Jun-19	16-Jun-19
UUST1-104	Testing	7	17-Jun-19	23-Jun-19
UUST1-104	Backfilling	3	24-Jun-19	26-Jun-19*
TELECOM Cable Duct and Draw Pits		23	18-May-19 A	09-Jun-19
UUST1-105	PVC Pipe Laying	21	18-May-19 A	07-Jun-19
UUST1-106	Concrete Surround	17	23-May-19 A	09-Jun-19
UUST1-107	Backfilling	2	08-Jun-19	09-Jun-19
LV Cable Duct and Draw Pits		27	15-May-19 A	10-Jun-19
UUST1-108	PVC Pipe Laying	22	15-May-19 A	05-Jun-19
UUST1-108	Concrete Surround	17	20-May-19 A	06-Jun-19
UUST1-109	Draw Pits	17	23-May-19 A	08-Jun-19
UUST1-109	Backfilling	6	05-Jun-19 A	10-Jun-19
Stage 1B South of DO1&IPS&PTW		33	20-May-19 A	21-Jun-19
Bypass Pipe		33	20-May-19 A	21-Jun-19
UUST1-110	ELS and Bulk Excavation	19	20-May-19 A	07-Jun-19
UUST1-110	Bedding and Compaction	3	08-Jun-19	10-Jun-19
UUST1-111	Bypass Pipe Installation	5	11-Jun-19	15-Jun-19
UUST1-111	Construction of Manholes	5	11-Jun-19	15-Jun-19
UUST1-112	Testing	3	16-Jun-19	18-Jun-19
UUST1-112	Backfilling	3	19-Jun-19	21-Jun-19
DN900 Stormwater Pipe		14	08-Jun-19	21-Jun-19
UUST1-113	Bending and Compaction	4	08-Jun-19	11-Jun-19
UUST1-113	DN 900 Stormwater Pipe Installation	5	12-Jun-19	16-Jun-19
UUST1-114	Installation of Stormwater Manholes	5	12-Jun-19	16-Jun-19
UUST1-114	Testing	3	17-Jun-19	19-Jun-19
UUST1-115	Backfilling	2	20-Jun-19	21-Jun-19
Stage 2 Underground Utilities Along EVA		32	31-May-19	01-Jul-19
Stage 2A Between UV & CEPT		28	04-Jun-19	01-Jul-19
DN 1400 Pipe Between UV&CEPT		15	04-Jun-19	18-Jun-19
UUST2-100	Bedding and Compaction	3	04-Jun-19	06-Jun-19
UUST2-100	DN 1400 Pipe between CEPT & UV	7	07-Jun-19	13-Jun-19
UUST2-101	Testing	3	14-Jun-19	16-Jun-19
UUST2-101	Backfilling	2	17-Jun-19	18-Jun-19
LV&ELV Cable Duct and Draw Pits		13	19-Jun-19	01-Jul-19
UUST2-102	Bedding and Compaction	5	19-Jun-19	23-Jun-19
UUST2-102	PVC Pipe Laying	5	21-Jun-19	25-Jun-19
UUST2-103	Draw Pits	5	21-Jun-19	25-Jun-19
UUST2-103	Concrete Surround	3	26-Jun-19	28-Jun-19
UUST2-104	Backfilling	3	29-Jun-19	01-Jul-19
CLP Cable Duct and Draw Pits		13	19-Jun-19	01-Jul-19
UUST2-104	Bedding and Compaction	5	19-Jun-19	23-Jun-19
UUST2-105	PVC Pipe Laying	5	21-Jun-19	25-Jun-19
UUST2-105	Draw Pits	5	21-Jun-19	25-Jun-19
UUST2-106	Concrete Surround	3	26-Jun-19	28-Jun-19
UUST2-106	Backfilling	3	29-Jun-19	01-Jul-19
Stage 2B Between AB & CEPT		28	31-May-19	27-Jun-19
DN750 Stormwater Pipe		28	31-May-19	27-Jun-19
UUST2-109	Bedding and Compaction	7	31-May-19	06-Jun-19
UUST2-110	Stormwater Pipe Manhole	11	03-Jun-19	13-Jun-19
UUST2-110	Stormwater Pipe DN750	11	03-Jun-19	13-Jun-19
UUST2-111	Testing	7	14-Jun-19	20-Jun-19
UUST2-111	Backfilling	7	21-Jun-19	27-Jun-19
DN300 Foulwater Pipe		28	31-May-19	27-Jun-19



DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) | PAGE 10 OF 10

Activity ID	Activity Name	At Completion Duration	Start	Finish
UUST2-112	Bedding and Compaction	7	31-May-19	06-Jun-19
UUST2-113	Foulwater Pipe Manhole	11	03-Jun-19	13-Jun-19
UUST2-113	Foulwater Pipe	11	03-Jun-19	13-Jun-19
UUST2-113	Testing	7	14-Jun-19	20-Jun-19
UUST2-114	Backfilling	7	21-Jun-19	27-Jun-19*
LV&ELV Cable Duct and Draw Pits		28	31-May-19	27-Jun-19
UUST2-114	Bedding and Compaction	7	31-May-19	06-Jun-19
UUST2-115	PVC Pipe Laying	11	03-Jun-19	13-Jun-19
UUST2-115	Draw Pits	11	03-Jun-19	13-Jun-19
UUST2-116	Concrete Surround	7	14-Jun-19	20-Jun-19
UUST2-116	Backfilling	7	21-Jun-19	27-Jun-19
Stage 3 Underground Utilities Along EVA		37	27-Jun-19	03-Aug-19
Stage 3A Between SDB & CEPT		36	27-Jun-19	02-Aug-19
Sitewide Watermain		36	27-Jun-19	02-Aug-19
UUST3-100	Bending and Compaction	5	27-Jun-19	02-Jul-19
UUST3-100	Sitewide Watermain Laying/Installation	24	02-Jul-19	26-Jul-19
UUST3-101	WSD Inspection	7	26-Jul-19	02-Aug-19
ELV Cable Duct and Draw Pits		24	27-Jun-19	21-Jul-19
UUST3-102	Bedding and Compaction	7	27-Jun-19	04-Jul-19
UUST3-102	PVC Pipe Laying	7	04-Jul-19	11-Jul-19
UUST3-103	Draw Pits	7	04-Jul-19	11-Jul-19
UUST3-103	Concrete Surround	5	11-Jul-19	16-Jul-19
UUST3-104	Backfilling	5	16-Jul-19	21-Jul-19
Stage 3B South of DO1&IPS&PTW		29	06-Jul-19	03-Aug-19
LV&ELV Cable Duct and Draw Pits		27	06-Jul-19	01-Aug-19
UUST3-104	Bedding and Compaction	7	06-Jul-19	12-Jul-19
UUST3-105	Cable Laying and Cable Duct	20	13-Jul-19	01-Aug-19
UUST3-105	Construction of Drawpits	20	13-Jul-19	01-Aug-19
CLP Cable Duct and Draw Pits		27	06-Jul-19	01-Aug-19
UUST3-107	Bedding and Compaction	7	06-Jul-19	12-Jul-19
UUST3-107	Cable Laying and Cable Duct	20	13-Jul-19	01-Aug-19
UUST3-108	Construction of Drawpits	20	13-Jul-19	01-Aug-19
DN375 Stormwater Pipe		27	06-Jul-19	01-Aug-19
UUST3-109	Bending and Compaction	7	06-Jul-19	12-Jul-19
UUST3-110	DN 375 Stormwater Pipe Installation	20	13-Jul-19	01-Aug-19
UUST3-110	Installation of Stormwater Manholes	20	13-Jul-19	01-Aug-19
Sitewide Watermain		29	06-Jul-19	03-Aug-19
UUST3-112	Bending and Compaction	5	06-Jul-19	10-Jul-19
UUST3-112	Sitewide Watermain Laying/Installation	24	11-Jul-19	03-Aug-19
Landscape Works		72	18-Jun-19	28-Aug-19
Green Roof		72	18-Jun-19	28-Aug-19
C53340	Administration Building and Maintenance Workshop	60	30-Jun-19	28-Aug-19
C53350	Sludge Dewatering Building	60	18-Jun-19	16-Aug-19
C53360	Chemical Building	60	23-Jun-19	21-Aug-19



Appendix D1

Calibration Certificates for Impact Air Quality Monitoring Equipment

Summary of Calibration Certificates for TSP Monitoring Equipment used in this reporting month

Equip No.	Model	Serial No.	Calib Date	Due Date
ET/EA/001/05	Sibata LD-3B	8X4282	15/04/2019	14/10/2019
ET/EA/001/06	Sibata LD-3B	014746	16/04/2019	15/10/2019
ET/EA/001/08	Sibata LD-3B	135261	21/03/2019	20/09/2019
ET/EA/001/10	Sibata LD-3B	1Z5635	10/04/2019	09/10/2019
ET/EA/001/15	Sibata LD-3B	597227	17/01/2019	16/07/2019
ET/EA/003/12	Greasby GMW (GS2310)	9998	11/04/2019	10/06/2019
ET/EA/003/25	Greasby GMW (GS2310)	1934	11/04/2019	10/06/2019

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Internal Calibration Report of Dust Monitor

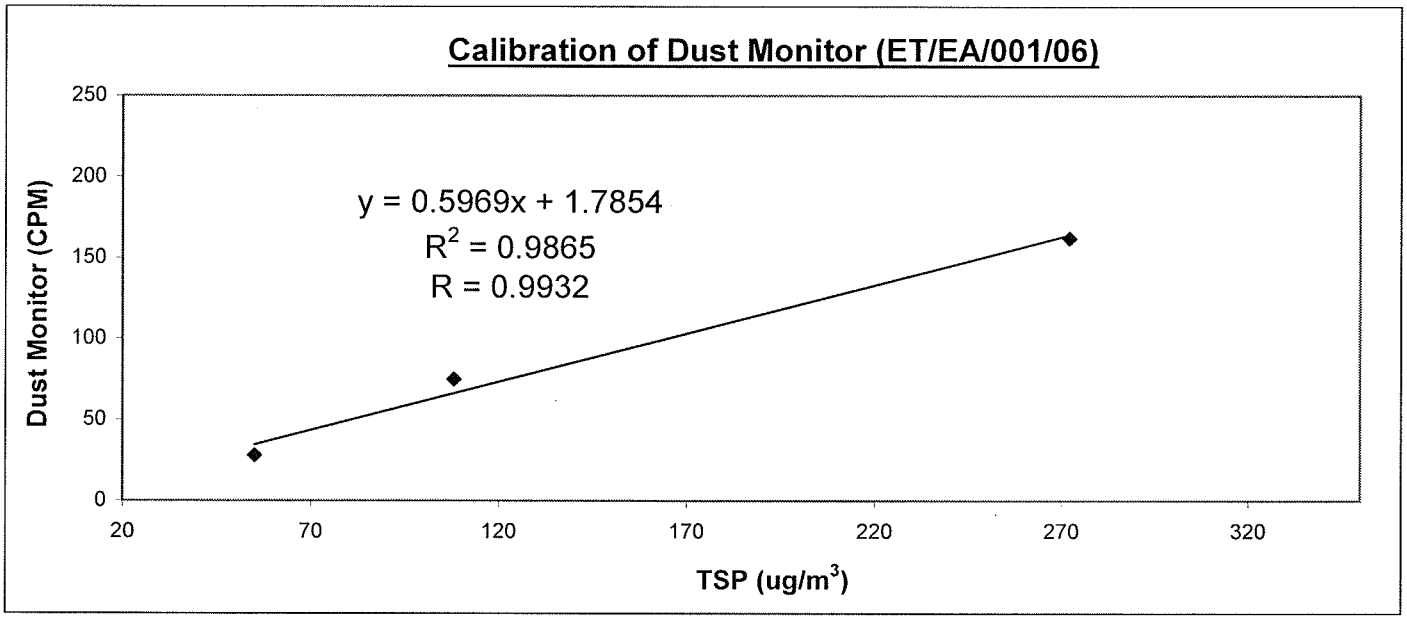
Manufacturer : SIBATA (LD-3B) Date of Calibration : 16 April 2019

Serial No. : 014746 (ET/EA/001/06) Calibration Due Date : 15 October 2019

Method : Parallel measurement (Three-point calibration) by placing the Dust Monitor and High Volume Air Samper together under the same environmental condition

Results :

Dust Monitor (CPM)	28	75	162
TSP (ug/m^3)	55	108	272
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 28 May 2019		



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after three-point calibration.

The Dust Trak Monitor complies * / ~~does not comply~~ * with the internal calibration procedures and is deemed acceptable */ ~~unacceptable~~ * for use.

Calibrated by : _____
LI, Lok Yin
(Technician)

Checked by : _____
LAU, Chi Leung
(Environmental Team Leader)

- END OF REPORT -

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Internal Calibration Report of Dust Monitor

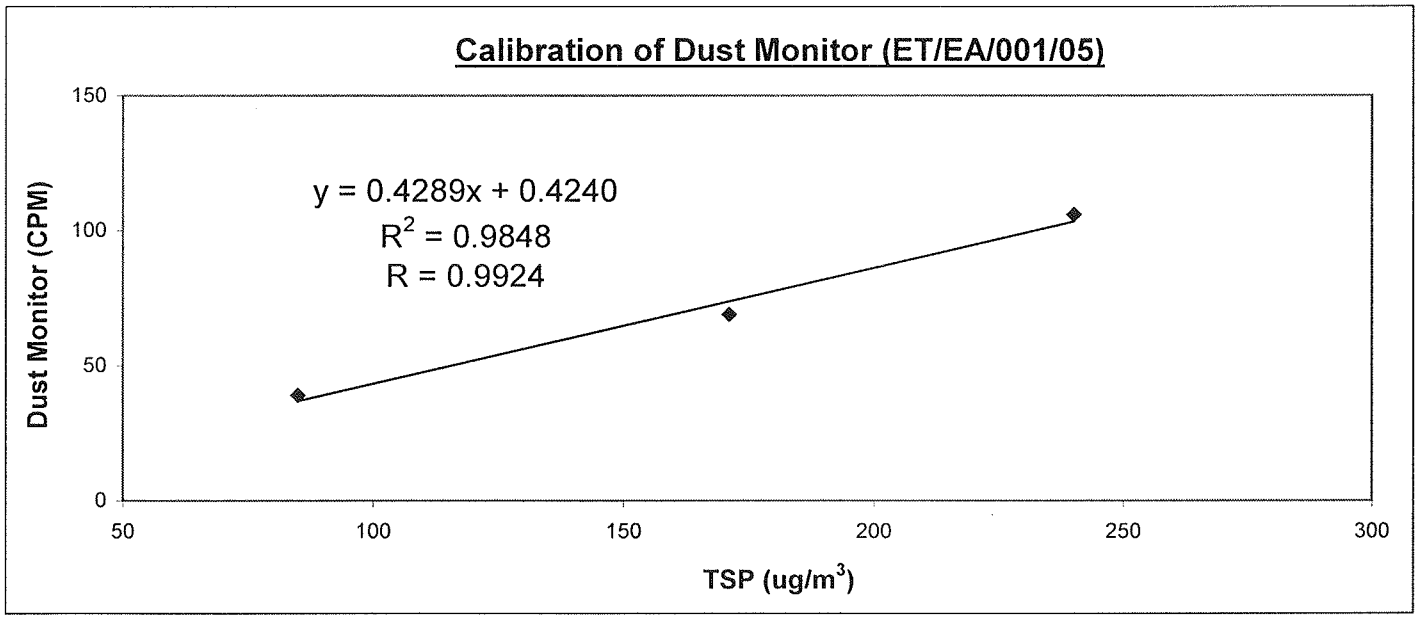
Manufacturer : SIBATA (LD-3B) Date of Calibration : 15 April 2019

Serial No. : 8X4282 (ET/EA/001/05) Calibration Due Date : 14 October 2019

Method : Parallel measurement (Three-point calibration) by placing the Dust Monitor and High Volume Air Samper together under the same environmental condition

Results :

Dust Monitor (CPM)	39	69	106
TSP (ug/m^3)	85	171	240
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 28 May 2019		



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after three-point calibration

The Dust Trak Monitor complies * / ~~does not comply~~ * with the internal calibration procedures and is deemed acceptable */ ~~unacceptable~~ * for use.

Calibrated by : _____
LI, Lok Yin
(Technician)

Checked by : _____
LAU, Chi Leung
(Environmental Team Leader)

- END OF REPORT -

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Internal Calibration Report of Dust Monitor

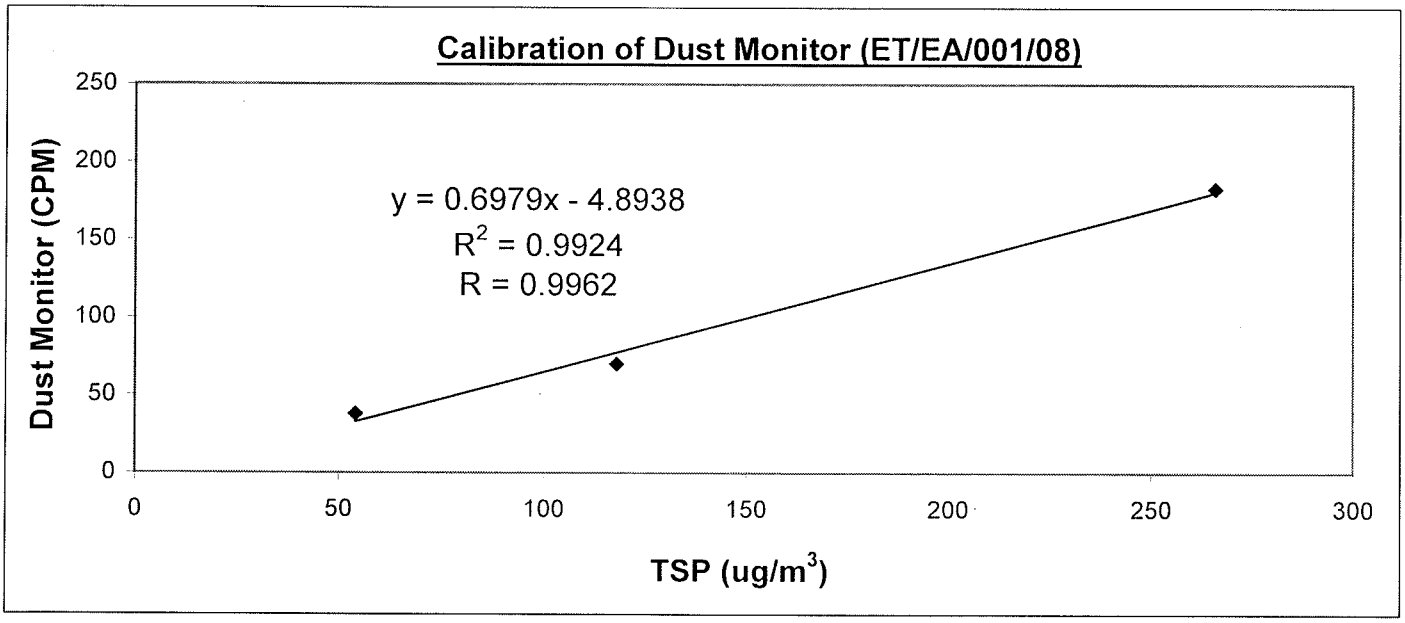
Manufacturer : SIBATA (LD-3B) Date of Calibration : 21 March 2019

Serial No. : 135261 (ET/EA/001/08) Calibration Due Date : 20 September 2019

Method : Parallel measurement (Three-point calibration) by placing the Dust Monitor and High Volume Air Samper together under the same environmental condition

Results :

Dust Monitor (CPM)	38	70	183
High Volume Air Sampler (ug/m^3)	54	118	266
High Volume Air Sampler Serail No.:1177	Calibration Due Date: 29 March 2019		



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after three-pointcalibration

The Dust Trak Monitor complies * / ~~does not comply~~ * with the internal calibration procedures and is deemed acceptable */ ~~unacceptable~~ * for use.

Calibrated by : Li Lok Yin (Technician)

Checked by : LAU, Chi Leung (Environmental Team Leader)

- END OF REPORT -

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Internal Calibration Report of Dust Monitor

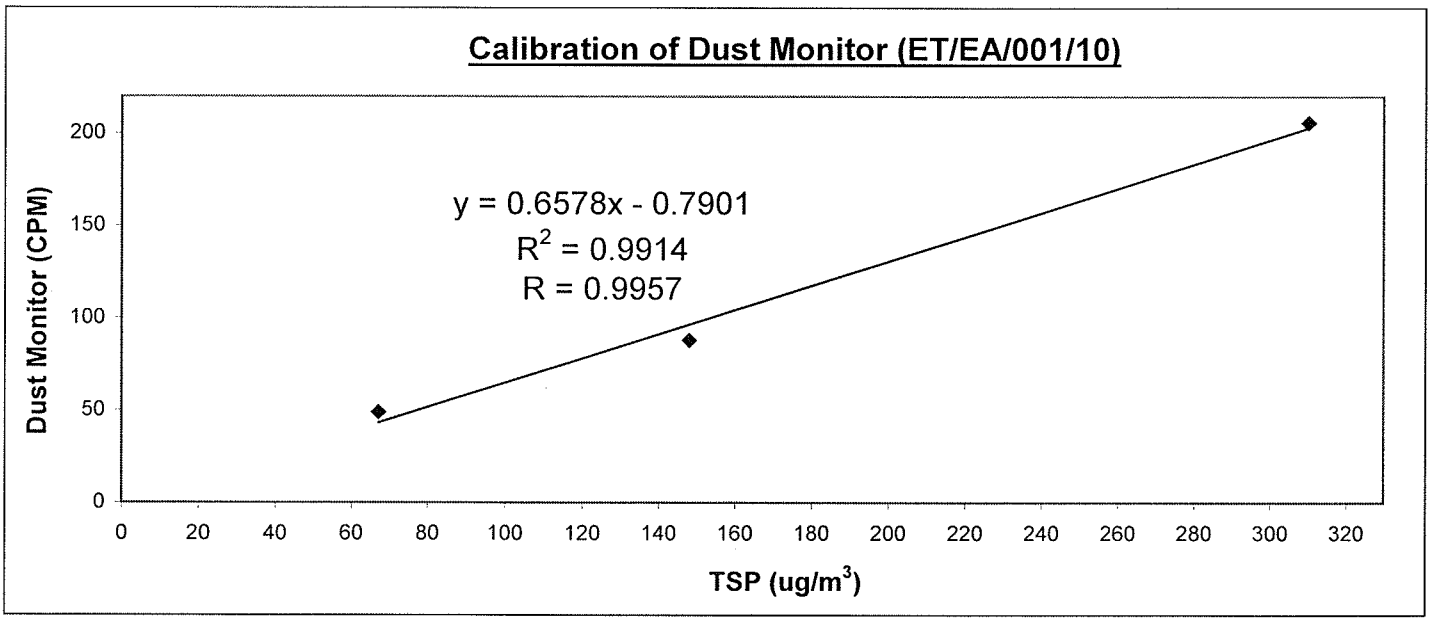
Manufacturer : SIBATA (LD-3B) Date of Calibration : 10 April 2019

Serial No. : 1Z5635 (ET/EA/001/10) Calibration Due Date : 9 October 2019

Method : Parallel measurement (Three-point calibration) by placing the Dust Monitor and High Volume Air Samper together under the same environmental condition

Results :

Dust Monitor (CPM)	49	88	206
TSP (ug/m^3)	67	148	310
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 28 May 2019		



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a three-point calibration

The Dust Trak Monitor complies * / ~~does not comply~~ * with the internal calibration procedures and is deemed acceptable */ ~~unacceptable~~ * for use.

Calibrated by : _____
LI, Lok Yin
(Technician)

Checked by : _____
LAU, Chi Leung
(Environmental Team Leader)

- END OF REPORT -

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Internal Calibration Report of Dust Monitor

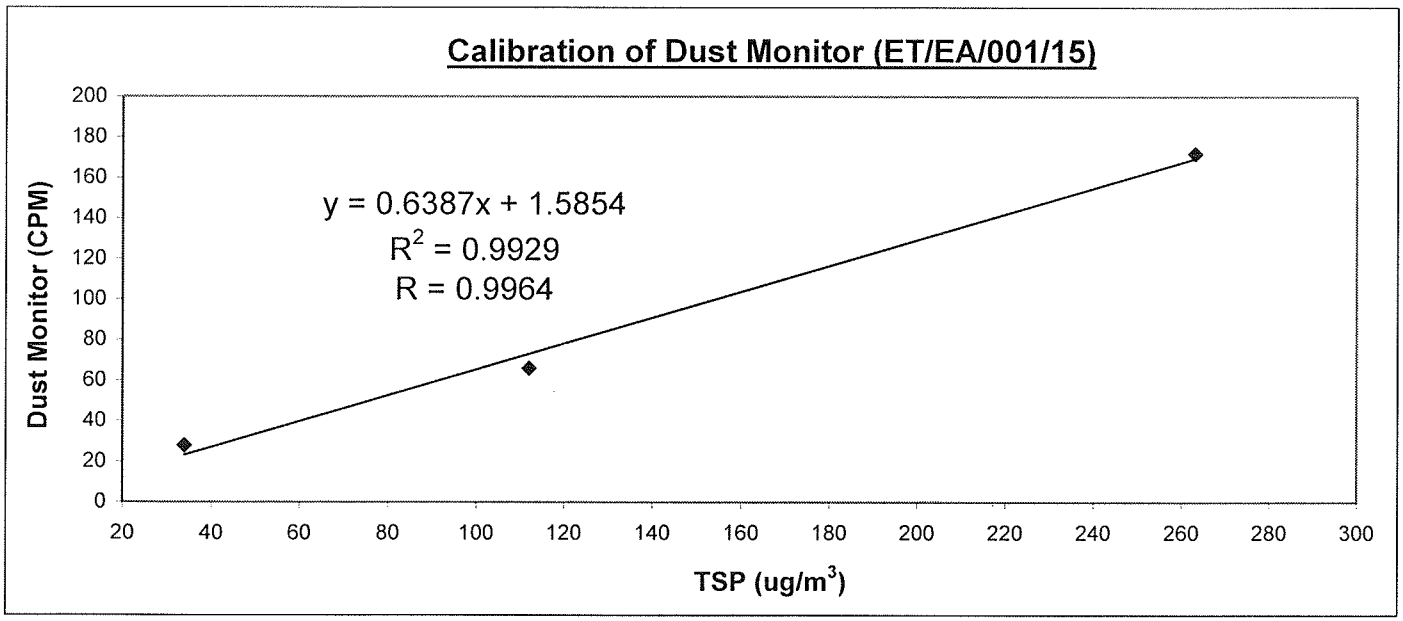
Manufacturer : SIBATA (LD-3B) Date of Calibration : 17 Jan 2019

Serial No. : 597227 (ET/EA/001/15) Calibration Due Date : 16 July 2019

Method : Parallel measurement (Three-point calibration) by placing the Dust Monitor and High Volume Air Samper together under the same environmental condition

Results :

Dust Monitor (CPM)	28	66	172
TSP (ug/m^3)	34	112	263
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 29 January 2019		



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a three-point calibration

The Dust Trak Monitor complies * / ~~does not comply~~ * with the internal calibration procedures and is deemed acceptable */ ~~unacceptable~~ * for use.

Calibrated by : _____
LI, Lok Yin
(Technician)

Checked by : _____
LAU, Chi Leung
(Environmental Team Leader)

- END OF REPORT -

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby (Model No. GS2310) Date of Calibration : 11 April 2019

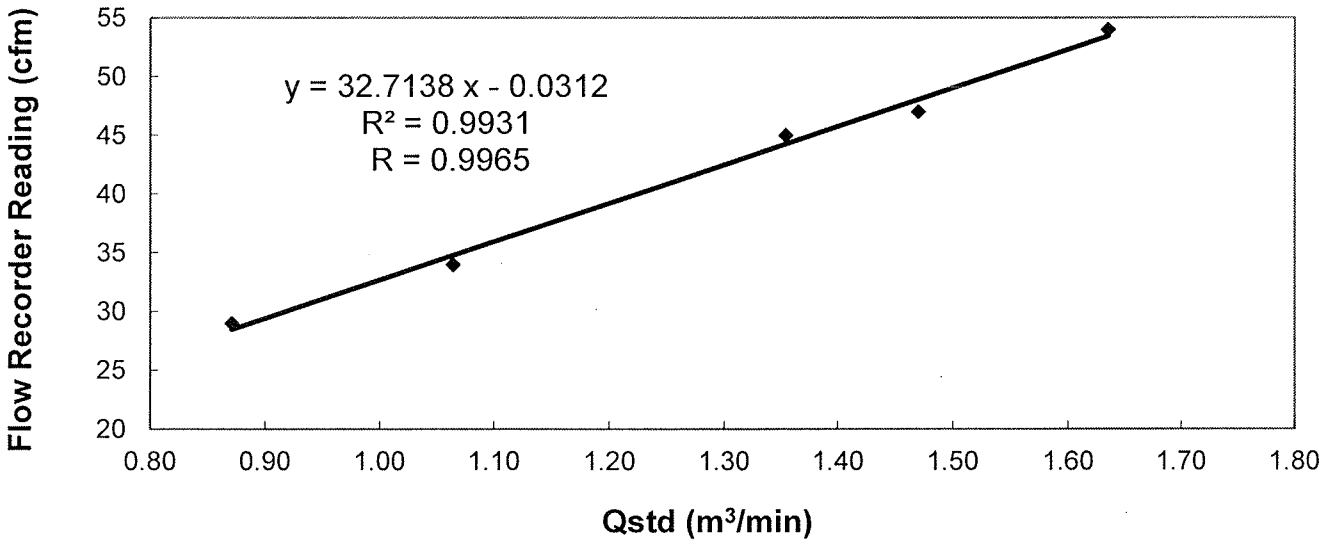
Serial No. : 9998 (ET / EA / 003 / 12) Calibration Due Date : 10 June 2019

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	54	47	45	34	29
Qstd (Actual flow rate, m^3/min)	1.63	1.47	1.35	1.06	0.87
Pressure : 767.31 mm Hg		Temp. : 301 K			

Sampler 9998 Calibration Curve
Site: San Wai (ASR2a)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration.

The high volume sampler complies* / ~~does not comply~~* with the specified requirements and is deemed acceptable* / ~~unacceptable~~* for use.

Calibrated by : _____
MAK, Kei Wai
(Assistant Supervisor)

Checked by : _____
LAU, Chi Leung
(Environmental Team Leader)

- END OF REPORT -

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby (Model No. GS2310) Date of Calibration : 11 April 2019

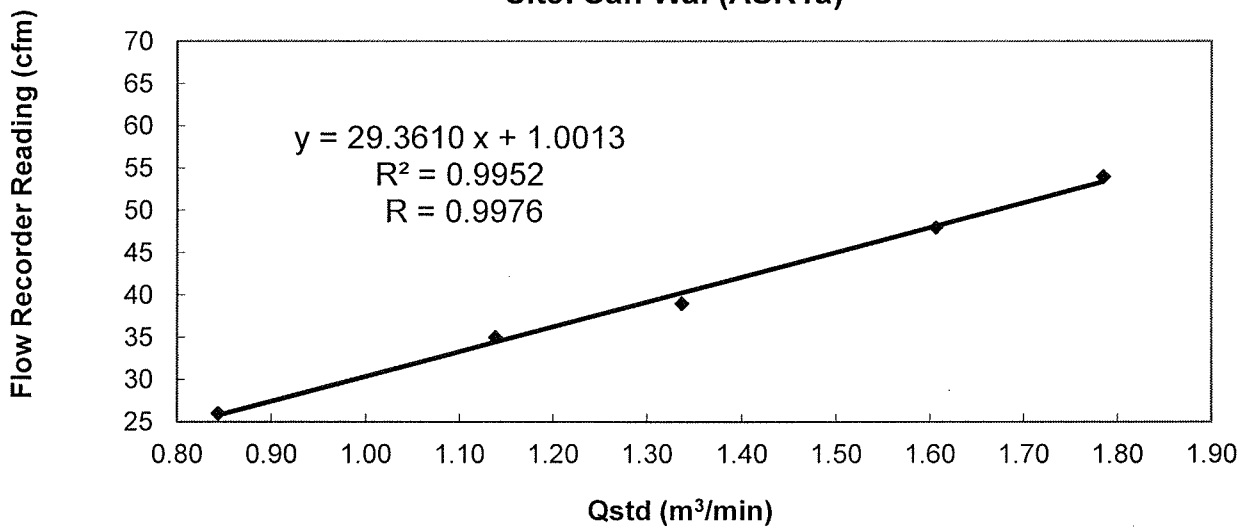
Serial No. : 1934 (ET / EA / 003 / 25) Calibration Due Date : 10 June 2019

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	54	48	39	35	26
Qstd (Actual flow rate, m^3/min)	1.78	1.61	1.34	1.14	0.84
Pressure : 767.31 **mm Hg**		Temp. : 301 K			

Sampler 1934 Calibration Curve
Site: San Wai (ASR1a)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration.

The high volume sampler complies* / ~~does not comply~~* with the specified requirements and is deemed acceptable* / ~~unacceptable~~* for use.

Calibrated by : _____
MAK, Kei Wai
(Assistant Supervisor)

Approved by : _____
LAU, Chi Leung
(Environmental Team Leader)

Appendix D2

Impact Air Quality Monitoring Results

Summary of Impact 1-hour TSP Monitoring Results

Air Quality Monitoring Station : ASR1a

Date	Weather	Temperature (℃)	Monitoring Period		1-hr TSP ($\mu g/m^3$)
			Start	Finish	
06/05/2019	Cloudy	23	09:35	10:35	48
06/05/2019	Cloudy	23	10:35	11:35	46
06/05/2019	Cloudy	24	13:00	14:00	55
11/05/2019	Fine	27	08:53	09:53	104
11/05/2019	Fine	27	09:53	10:53	109
11/05/2019	Fine	28	10:53	11:53	109
17/05/2019	Fine	27	08:59	09:59	90
17/05/2019	Fine	27	09:59	10:59	95
17/05/2019	Fine	27	10:59	11:59	95
23/05/2019	Cloudy	26	08:00	09:00	71
23/05/2019	Cloudy	28	09:00	10:00	46
23/05/2019	Cloudy	28	10:00	11:00	60
29/05/2019	Cloudy	28	09:00	10:00	82
29/05/2019	Cloudy	28	10:00	11:00	81
29/05/2019	Cloudy	28	11:00	12:00	84

Min	46
Max	109
Average	78

Air Quality Monitoring Station : ASR2b

Date	Weather	Temperature (℃)	Monitoring Period		1-hr TSP ($\mu g/m^3$)
			Start	Finish	
06/05/2019	Cloudy	23	09:45	10:45	34
06/05/2019	Cloudy	23	10:45	11:45	36
06/05/2019	Cloudy	24	13:00	14:00	39
11/05/2019	Fine	27	13:12	14:12	118
11/05/2019	Fine	27	14:12	15:12	111
11/05/2019	Fine	28	15:12	16:12	116
17/05/2019	Fine	27	13:04	14:04	109
17/05/2019	Fine	27	14:04	15:04	109
17/05/2019	Fine	27	15:04	16:04	104
23/05/2019	Cloudy	26	08:07	09:07	59
23/05/2019	Cloudy	28	09:07	10:07	51
23/05/2019	Cloudy	28	10:07	11:07	60
29/05/2019	Cloudy	28	08:50	09:50	67
29/05/2019	Cloudy	28	09:50	10:50	71
29/05/2019	Cloudy	28	10:50	11:50	71

Min	34
Max	118
Average	77

Summary of Impact 24-hour TSP Monitoring Results

Air Quality Monitoring Station : ASR1a

Start		Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m^3/min.)		Average (m^3/min.)	Filter Paper Weight (g)		Conc. ($\mu g/m^3$)	Weather Condition
Date	Time	Date	Time	Initial	Final		Initial	Final		Initial	Final		
06/05/2019	09:36	07/05/2019	09:36	25829.64	25853.64	24	1.0898	1.0898	1.0898	2.6143	2.7335	76	Cloudy
11/05/2019	08:54	12/05/2019	08:54	25853.64	25877.64	24	1.0558	1.0558	1.0558	2.5971	2.7217	82	Fine
17/05/2019	09:00	18/05/2019	09:00	25877.64	25901.64	24	1.0558	1.0558	1.0558	2.6110	2.7326	80	Fine
23/05/2019	08:05	24/05/2019	08:05	25901.64	25925.64	24	1.0898	1.0898	1.0898	2.6232	2.7220	63	Cloudy
29/05/2019	09:00	30/05/2019	09:00	25925.64	25949.64	24	1.0898	1.0898	1.0898	2.6177	2.7291	71	Cloudy

Min	60
Max	76
Average	69

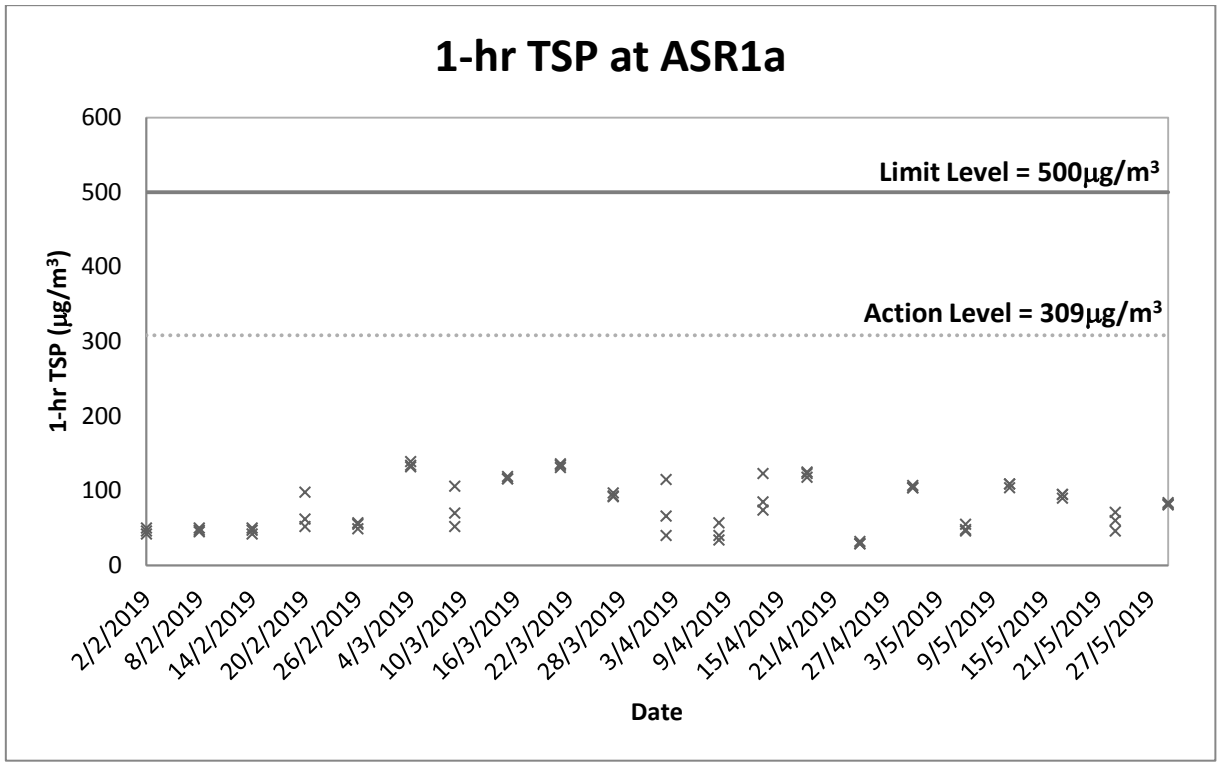
Air Quality Monitoring Station : ASR2b

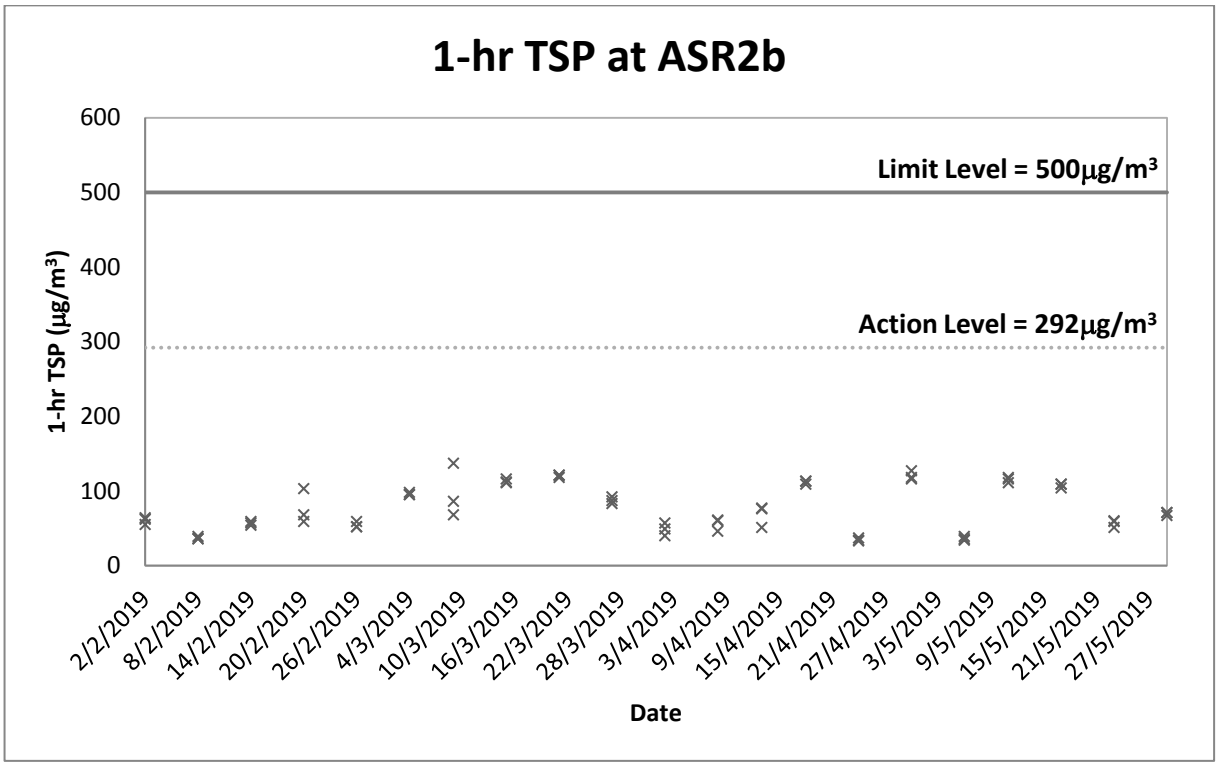
Start		Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m^3/min.)		Average (m^3/min.)	Filter Paper Weight (g)		Conc. ($\mu g/m^3$)	Weather Condition
Date	Time	Date	Time	Initial	Final		Initial	Final		Initial	Final		
06/05/2019	09:48	07/05/2019	09:48	22574.45	22598.45	24	1.0403	1.0403	1.0403	2.6754	2.7817	71	Cloudy
11/05/2019	13:15	12/05/2019	13:15	22598.45	22622.45	24	1.0097	1.0097	1.0097	2.6082	2.7172	75	Fine
17/05/2019	13:05	18/05/2019	13:05	22622.45	22646.45	24	1.0097	1.0097	1.0097	2.6533	2.7536	69	Fine
23/05/2019	08:10	24/05/2019	08:10	22646.45	22670.45	24	1.0403	1.0403	1.0403	2.5891	2.6789	60	Cloudy
29/05/2019	08:50	30/05/2019	08:50	22670.45	22694.45	24	1.0097	1.0097	1.0097	2.6204	2.7149	65	Cloudy

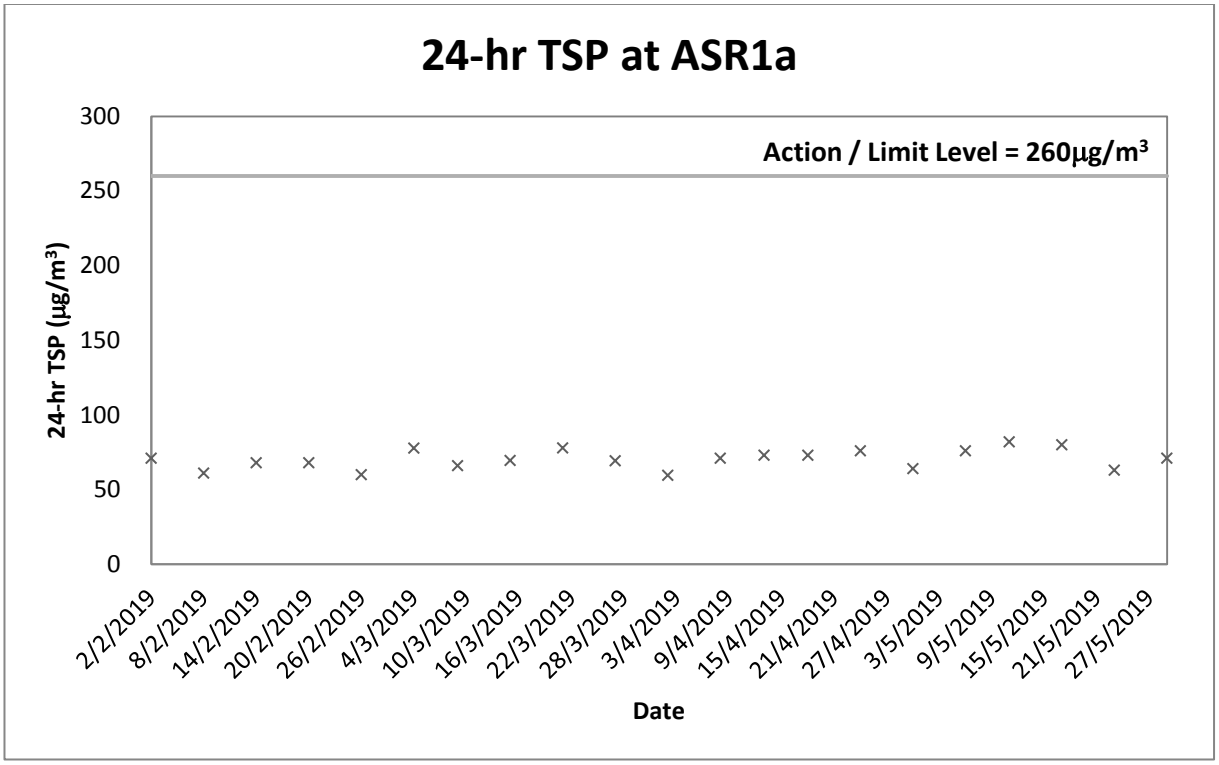
Min	60
Max	75
Average	68

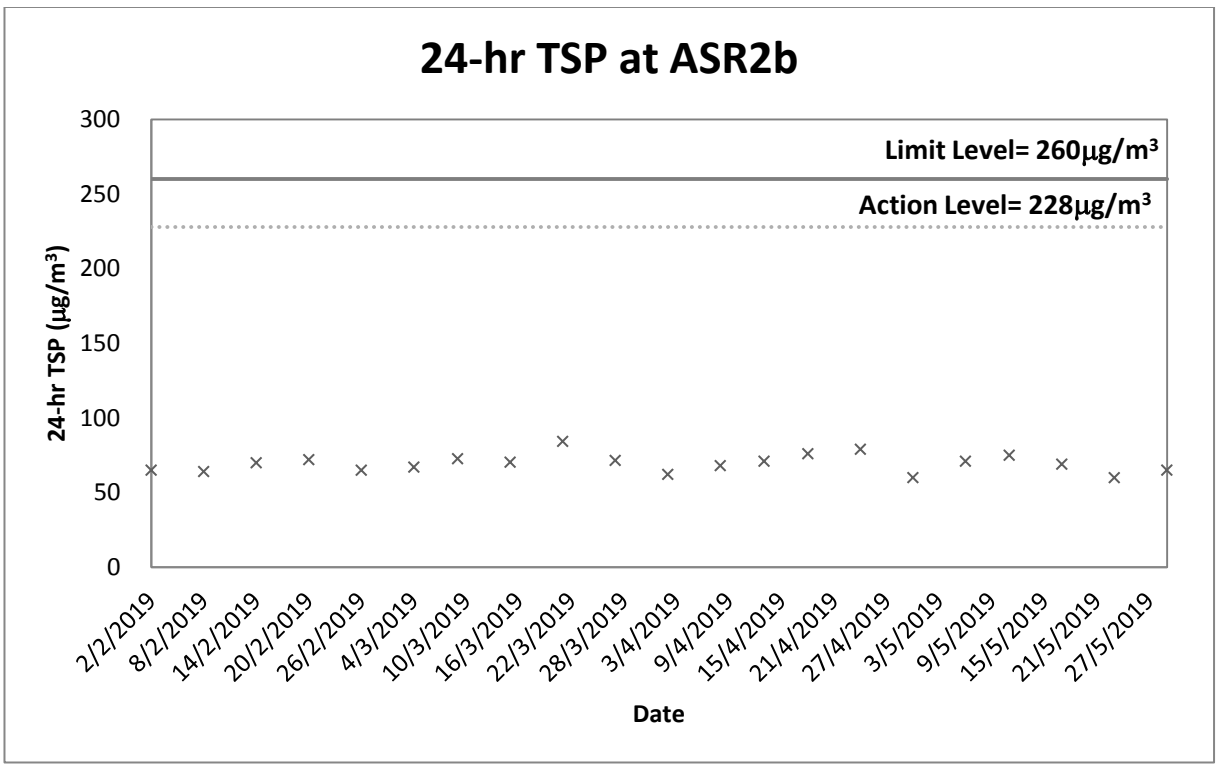
Appendix D3

Graphical Plots of Impact Air Quality Monitoring Results


1-hr TSP at ASR1a
600
500
400
300
200
100
0
1-hr TSP (μg/m³)
Limit Level = 500μg/m³
Action Level = 309μg/m³
2/2/2019
8/2/2019
14/2/2019
20/2/2019
26/2/2019
4/3/2019
10/3/2019
16/3/2019
22/3/2019
28/3/2019
3/4/2019
9/4/2019
15/4/2019
21/4/2019
27/4/2019
3/5/2019
9/5/2019
15/5/2019
21/5/2019
27/5/2019
Date


1-hr TSP at ASR2b
600
500
400
300
200
100
0
1-hr TSP (μg/m³)
Limit Level = 500μg/m³
Action Level = 292μg/m³
2/2/2019
8/2/2019
14/2/2019
20/2/2019
26/2/2019
4/3/2019
10/3/2019
16/3/2019
22/3/2019
28/3/2019
3/4/2019
9/4/2019
15/4/2019
21/4/2019
27/4/2019
3/5/2019
9/5/2019
15/5/2019
21/5/2019
27/5/2019
Date


24-hr TSP at ASR1a
Action / Limit Level = 260μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
2/2/2019
8/2/2019
14/2/2019
20/2/2019
26/2/2019
4/3/2019
10/3/2019
16/3/2019
22/3/2019
28/3/2019
3/4/2019
9/4/2019
15/4/2019
21/4/2019
27/4/2019
3/5/2019
9/5/2019
15/5/2019
21/5/2019
27/5/2019
Date


24-hr TSP at ASR2b
Limit Level= 260μg/m³
Action Level= 228μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
2/2/2019
8/2/2019
14/2/2019
20/2/2019
26/2/2019
4/3/2019
10/3/2019
16/3/2019
22/3/2019
28/3/2019
3/4/2019
9/4/2019
15/4/2019
21/4/2019
27/4/2019
3/5/2019
9/5/2019
15/5/2019
21/5/2019
27/5/2019
Date

Appendix E1

Calibration Certificates for Impact Noise Monitoring Equipment

Summary of Calibration Certificates for Noise Monitoring Equipment used in this reporting month

Equipment	Equip No.	Serial No.	Calib. Date	Due Date
Sound Level Calibrator (Rion NC-73)	ET/EN/002/01	10196943	23/10/2018	22/10/2019
Sound Level Calibrator (Castle GA607)	ET/EN/002/07	038641	06/03/2019	05/03/2020
Sound Level Meter (Rion NL-52)	ET/EN/003/17	00264519	11/04/2019	10/04/2020
Sound Level Meter (Rion NL-52)	ET/EN/003/18	00264520	27/02/2019	26/02/2020
Thermo-Anemometer (AZ 8908)	ET/EN/001/05	1064869	04/03/2019	03/03/2020

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 810241 Page 1 of 2 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q84111 **Date of receipt :** 15-Oct-18

Item Tested

Description : Sound Level Calibrator

Manufacturer : Rion **I.D.** : ET/EN/002/01

Model : NC-73 **Serial No.** : 10196943

Test Conditions

Date of Test : 23-Oct-18 **Supply Voltage :** --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : F21, Z02.

Test Results

All results were within the manufacturer's specification.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S014	Spectrum Analyzer	805025	NIM-PRC & SCL-HKSAR
S240	Sound Level Calibrator	803357	NIM-PRC & SCL-HKSAR
S041	Universal Counter	802061	SCL-HKSAR
S206	Sound Level Meter	805027	SCL-HKSAR

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : Elva Chong

Approved by : Kin Wong

Date: 23-Oct-18

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

1. Level Accuracy (at 1 kHz)

UUT Nominal Value	Measured Value	Mfr's Spec.
94 dB	94.2 dB	± 1 dB

Uncertainty : ± 0.2 dB

2. Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's Spec.
1 kHz	1.017 kHz	± 2 %

Uncertainty : ± 0.1 %

3. Level Stability : 0.0 dB
Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.3 %
Mfr's Spec. : < 3 %
Uncertainty : ± 2.3 % of reading

Remarks: 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1 018 hPa

---------- END ----------

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. **901844** Page 1 of 2 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q90738 **Date of receipt :** 26-Feb-19

Item Tested

Description : Acoustic Calibrator

Manufacturer : Castle **I.D.** : ET/EN/002/07

Model : GA607 **Serial No.** : 038641

Test Conditions

Date of Test : 6-Mar-19 **Supply Voltage** : --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : IEC 60942, F06, F20, Z02.

Test Results

All results were within the IEC 60942 Class 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S014	Spectrum Analyzer	805025	NIM-PRC & SCL-HKSAR
S240	Sound Level Calibrator	803357	NIM-PRC & SCL-HKSAR
S041	Universal Counter	802061	SCL-HKSAR
S206	Sound Level Meter	805027	SCL-HKSAR

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : Elva Chong

Approved by : Kin Wong

Date: 6-Mar-19

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

1. Generated Sound Pressure Level

UUT Nominal Value (dB)	Measured Value (dB)	IEC 60942 Class 1 Spec.
94.0	94.1	± 0.4 dB

Uncertainty : ± 0.2 dB

2. Short-term Level Fluctuation : 0.0 dB
IEC 60942 Class 1 Spec. : ± 0.1 dB
Uncertainty : ± 0.01 dB

3. Frequency

UUT Nominal Value (kHz)	Measured Value (kHz)	IEC 60942 Class 1 Spec.
1	1.000	± 1 %

Uncertainty : $\pm 3.6 \times 10^{-6}$

4. Total Distortion : < 2.9 %
IEC 60942 Class 1 Spec. : < 4 %
Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1 002 hPa.

---------- END ----------

ETW/0317

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. **903391** Page 1 of 3 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q91324 **Date of receipt :** 4-Apr-19

Item Tested

Description : Sound Level Meter
Manufacturer : Rion **I.D.** : --
Model : NL-52 **Serial No.** : 00264519

Test Conditions

Date of Test : 11-Apr-19 **Supply Voltage** : --
Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.
Ref. Document/Procedure: Z01, IEC 61672.

Test Results

All results were within the IEC 61672 Type 1 or manufacturer's specification.
The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S017	Multi-Function Generator	C190926	SCL-HKSAR
S240	Sound Level Calibrator	803357	NIM-PRC & SCL-HKSAR

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : Elva Chong

Approved by : Kin Wong

Date: 11-Apr-19

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

Acoustical signal test

1. **Self-generated noise:** 16.7 dBA (Mfr's Spec ≤ 17 dBA)

2. **Reference Sound Pressure Level**

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range (dB)	Frequency Weighting	Time Weighting	Octave Filter		
20 ~ 130	A	F	OFF	94.0	94.1
		S	OFF		94.0
	C	F	OFF		94.0
	Z	F	OFF		94.0
	A	F	OFF	114.0	114.1
		S	OFF		114.0
	C	F	OFF		114.0
	Z	F	OFF		114.1

IEC 61672 Type 1 Spec. : ± 1.1 dB
Uncertainty : ± 0.1 dB

Electrical signal tests

3. **Electrical signal tests of frequency weightings** (A weighting)

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	-39.7	- 39.4 dB, ± 2 dB
63 Hz	-26.2	- 26.2 dB, ± 1.5 dB
125 Hz	-16.1	- 16.1 dB, ± 1.5 dB
250 Hz	-8.6	- 8.6 dB, ± 1 dB
500 Hz	-3.2	- 3.2 dB, ± 1.4 dB
1 kHz	0.0 (Ref)	0 dB, ± 1.1 dB
2 kHz	+1.2	+ 1.2 dB, ± 1.6 dB
4 kHz	+1.0	+ 1.0 dB, ± 1.6 dB
8 kHz	-1.0	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-8.0	- 6.6 dB, + 3.5 dB ~ - 17.0 dB

Uncertainty : ± 0.1 dB

Calibration Certificate

4. Frequency & Time weightings at 1 kHz

4.1 Frequency Weighting (Fast)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
A	94.0	94.0 (Ref.)	- -	± 0.4 dB
C	94.0	94.0	0.0	
Z	94.0	94.0	0.0	

4.2 Time Weighting (A-weighted)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
Fast	94.0	94.0 (Ref.)	- -	± 0.3 dB
Slow	94.0	94.0	0.0	
Time-averaging	94.0	94.0	0.0	

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 995 hPa.
4. Microphone model: UC-59 , S/N : 03558
5. Preamplifier model : NH-25 , S/N : 64644
6. Firmware Version: 1.7
7. Power Supply Check: OK
8. The UUT was adjusted with the laboratory's sound calibrator at the reference sound pressure level before the calibration.

---------- END ----------

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 901292

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q90546 **Date of receipt :** 14-Feb-19

Item Tested

Description : Sound Level Meter

Manufacturer : Rion **I.D.** : ET/EN/003/18

Model : NL-52 **Serial No.** : 00264520

Test Conditions

Date of Test : 27-Feb-19 **Supply Voltage** : --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01, IEC 61672.

Test Results

All results were within the IEC 61672 Type 1 or manufacturer's specification.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S017	Multi-Function Generator	C190926	SCL-HKSAR
S240	Sound Level Calibrator	803357	NIM-PRC & SCL-HKSAR

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : _____
Elva Chong

Approved by : _____
Kin Wong

Date: 27-Feb-19

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

Acoustical signal test

1. **Self-generated noise:** 15.9 dBA (Mfr's Spec ≤ 17 dBA)

2. **Reference Sound Pressure Level**

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range (dB)	Frequency Weighting	Time Weighting	Octave Filter		
20 ~ 130	A	F	OFF	94.0	94.0
		S	OFF		94.0
	C	F	OFF		94.0
	Z	F	OFF		94.0
	A	F	OFF	114.0	114.0
		S	OFF		114.0
	C	F	OFF		114.0
	Z	F	OFF		114.0

IEC 61672 Type 1 Spec. : ± 1.1 dB
Uncertainty : ± 0.1 Db

Electrical signal tests

3. **Electrical signal tests of frequency weightings** (A weighting)

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	-39.6	- 39.4 dB, ± 2 dB
63 Hz	-26.3	- 26.2 dB, ± 1.5 dB
125 Hz	-16.2	- 16.1 dB, ± 1.5 dB
250 Hz	-8.7	- 8.6 dB, ± 1 dB
500 Hz	-3.3	- 3.2 dB, ± 1.4 dB
1 kHz	0.0 (Ref)	0 dB, ± 1.1 dB
2 kHz	+1.2	+ 1.2 dB, ± 1.6 dB
4 kHz	+1.0	+ 1.0 dB, ± 1.6 dB
8 kHz	-1.1	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-8.0	- 6.6 dB, + 3.5 dB ~ - 17.0 dB

Uncertainty : ± 0.1 dB

Calibration Certificate

4. Frequency & Time weightings at 1 kHz

4.1 Frequency Weighting (Fast)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
A	94.0	94.0 (Ref.)	- -	± 0.4 dB
C	94.0	94.0	0.0	
Z	94.0	94.0	0.0	

4.2 Time Weighting (A-weighted)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
Fast	94.0	94.0 (Ref.)	- -	± 0.3 dB
Slow	94.0	94.0	0.0	
Time-averaging	94.0	94.0	0.0	

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1 001 hPa.
4. Preamplifier model : NH-25 , S/N : 64645
5. Firmware Version: 1.7
6. Power Supply Check: OK
7. The UUT was adjusted with the laboratory's sound calibrator at the reference sound pressure level before the calibration.

---------- END ----------

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. **901843** Page 1 of 2 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q90738 **Date of receipt :** 26-Feb-19

Item Tested

Description : Thermo-Anemometer
Manufacturer : AZ Instrument **I.D.** : ET/EN/001/05
Model : AZ 8908 **Serial No.** : 1064869

Test Conditions

Date of Test : 4-Mar-19 **Supply Voltage** : --
Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.
Calibration procedure : T03, Z04.

Test Results

A correction factor of x 1.1 is required to bring the meter reading to within the manufacturer's specification.
The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S155	Std. Anemometer	809939	NIM-PRC
S223C	Std. Thermometer	805692	NIM-PRC

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : P N Lee **Approved by :** Steve Kwan

Date: 4-Mar-19

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

E

Calibration Certificate

Certificate No. 901843

Results :

1. Velocity

Applied Value (m/s)	UUT Reading (m/s)	Corrected Reading (UUT Rdg. × 1.1)	Mfr's Spec.
0.00	0.0	0.0	± (3 % of reading + 0.2 m/s)
2.50	2.3	2.5	
5.00	* 4.6	5.1	
10.00	* 9.0	9.9	
15.00	* 13.6	15.0	
19.00	* 17.0	18.7	

2. Temperature

Applied Value (°C)	UUT Reading (°C)	Mfr's Spec.
23.49	23.2	± 1 °C

Remark : 1. UUT: Unit-Under-Test
2. Uncertainty : ± (0.9 % + 0.16 m/s) for Velocity, ± 0.1 °C for Temperature, for a confidence probability of not less than 95 %.
3. Atmospheric Pressure : 1 001 hPa
4. * Out of Specification.

---------- END ----------

Appendix E2

Impact Noise Monitoring Results

Day-time Noise Monitoring

Monitoring Station: NSR1a

Date	Weather	Temperature (℃)	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at NSR1a, dB (A)			Wind Speed (m/s)
					Leq (30min)	L10 (30min)	L90 (30min)	
06/05/19	Cloudy	23	09:28	09:58	68.5	70.3	63.4	0.1
11/05/19	Fine	27	08:52	09:22	67.6	70.4	64.1	0.3
17/05/19	Fine	27	08:59	09:29	68.1	71.4	64.2	0.3
23/05/19	Cloudy	26	08:45	09:15	66.8	68.2	60.4	0.2
29/05/19	Cloudy	28	10:10	10:40	68.4	70.7	64.2	0.3

Min	66.8	68.2	60.4
Max	68.5	71.4	64.2
Logarithmic Average for normal weekdays	67.9	70.3	63.5

Monitoring Station: NSR2b

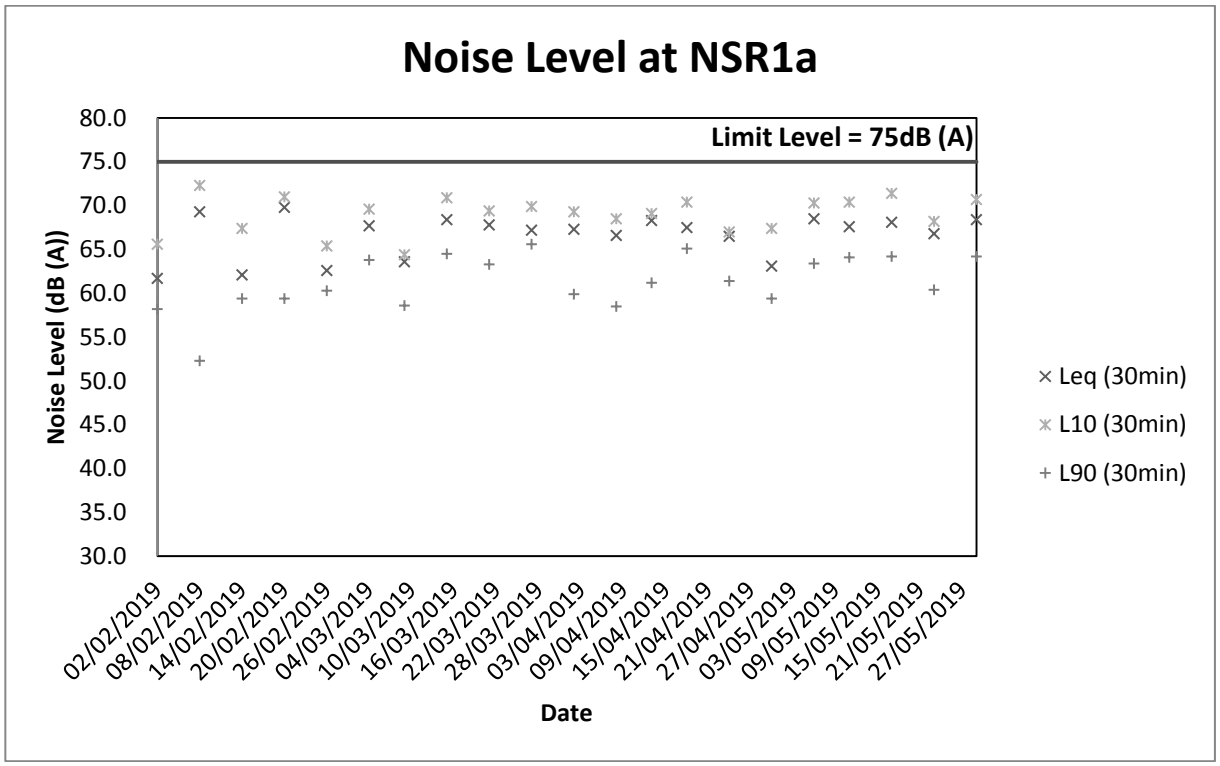
Date	Weather	Temperature (℃)	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at NSR2b, dB (A)			Wind Speed (m/s)
					Leq (30min)	L10 (30min)	L90 (30min)	
06/05/19	Cloudy	23	10:04	10:34	66.8	69.4	64.7	0.1
11/05/19	Fine	27	13:12	13:42	65.9	68.8	62.3	0.4
17/05/19	Fine	27	13:04	13:34	67.2	70.5	63.3	0.5
23/05/19	Cloudy	26	08:07	08:37	66.4	68.3	61.2	0.2
29/05/19	Cloudy	28	08:55	09:25	66.7	68.5	63.4	0.2

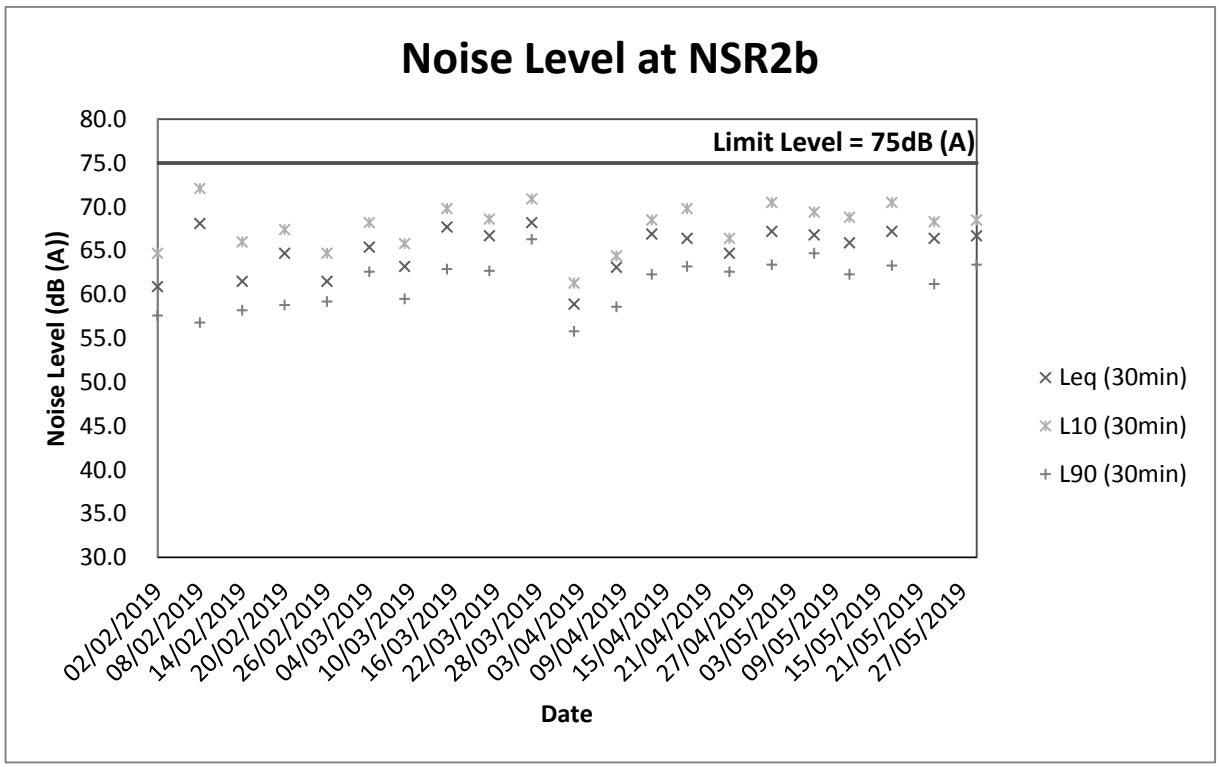
(*) : 3dB(A) correction was added to the results during the free-field noise measurements

Min	65.9	68.3	61.2
Max	67.2	70.5	64.7
Logarithmic Average for normal weekdays	66.6	69.2	63.1

Appendix E3

Graphical Plots of Impact Noise Monitoring Data


Noise Level at NSR1a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
02/02/2019
08/02/2019
14/02/2019
20/02/2019
26/02/2019
04/03/2019
10/03/2019
16/03/2019
22/03/2019
28/03/2019
03/04/2019
09/04/2019
15/04/2019
21/04/2019
27/04/2019
03/05/2019
09/05/2019
15/05/2019
21/05/2019
27/05/2019
Date
Leq (30min)
L10 (30min)
L90 (30min)


Noise Level at NSR2b
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
02/02/2019
08/02/2019
14/02/2019
20/02/2019
26/02/2019
04/03/2019
10/03/2019
16/03/2019
22/03/2019
28/03/2019
03/04/2019
09/04/2019
15/04/2019
21/04/2019
27/04/2019
03/05/2019
09/05/2019
15/05/2019
21/05/2019
27/05/2019
Date
Leq (30min)
L10 (30min)
L90 (30min)

Appendix F1

Calibration Certificates for Impact Water Quality Monitoring Equipments

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Performance Check of Turbidity Meter

Equipment Ref. No. : ET/0505/021 Manufacturer : HACH

Model No. : 2100Q Serial No. : 17020C056013

Date of Calibration : 25/4/2019 Due Date : 24/7/19

Theoretical Value of Turbidity Standard (NTU)	Measured Value (NTU)	Difference % *
20	20.2	1.0%
100	102	2.0%
800	785	-1.9%

(*) Difference = (Measured Value – Theoretical Value) / Theoretical Value x 100

Acceptance Criteria

Difference : -5 % to 5 %

The turbidity meter complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / ~~unacceptable~~ * for use. Measurements are traceable to national standards.

Prepared by : _____ Checked by : _____

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Form E/CE/R/24 Issue 1 (1/1) [01/18]

Calibration Report of Dissolved Oxygen Meter (*In situ* Measurement)

Equipment Ref. No. :	ET/EW/008/006	Manufacturer :	YSI
Model No. :	Pro 2030	Serial No. :	12A100554
Calibration Date :	2/3/2019	Calibration Due Date :	1/6/2019

Temperature Verification by Reference Thermometer (ET/0521/028)

	Temperature Reading (°C)	Correction (°C)	Corrected Temperature (°C)	Difference (°C)
Reference Thermometer	20.2	0.0	20.2	0.1
DO Meter	20.3	0.0	20.3	

Criteria: Difference between corrected temperature from DO meter and reference thermometer : < ± 0.5 °C

Zero Point Checking

DO meter reading (mg/L)	0.01

Criteria: Zero checking: 0.0 mg/L

Linearity Checking of Dissolved Oxygen Content by APHA 19ed 4500-O G

Purging time, min	Expected DO value (mg/L) (ET/0510/012)	DO meter reading (mg/L)	Difference of DO Content (mg/L)
2	6.22	6.41	0.19
5	3.88	3.96	0.08
10	2.15	2.31	0.16

Criteria: Difference between DO meter reading and expected DO value: < ±0.30 mg/L

Salinity Checking by APHA 19ed 2520 B

	Expected Salinity (ppt)	DO meter reading (ppt)
Reagent No. of NaCl (10 ppt): CPE/012/4.7/27	10	9.3
Reagent No. of NaCl (30 ppt): CPE/012/4.8/27	30	28.5

Criteria: Difference between DO meter reading and expected Salinity: ±10.0 %

The equipment complies # / ~~does not comply~~ # with the specified requirements and is deemed acceptable # / ~~unacceptable~~ # for use.

Delete as appropriate

Calibrated by : _____ Approved by : _____

CPE/024/W

Appendix F2

Impact Water Quality Monitoring Results

Impact Water Quality Monitoring

Monitoring Station: R1b

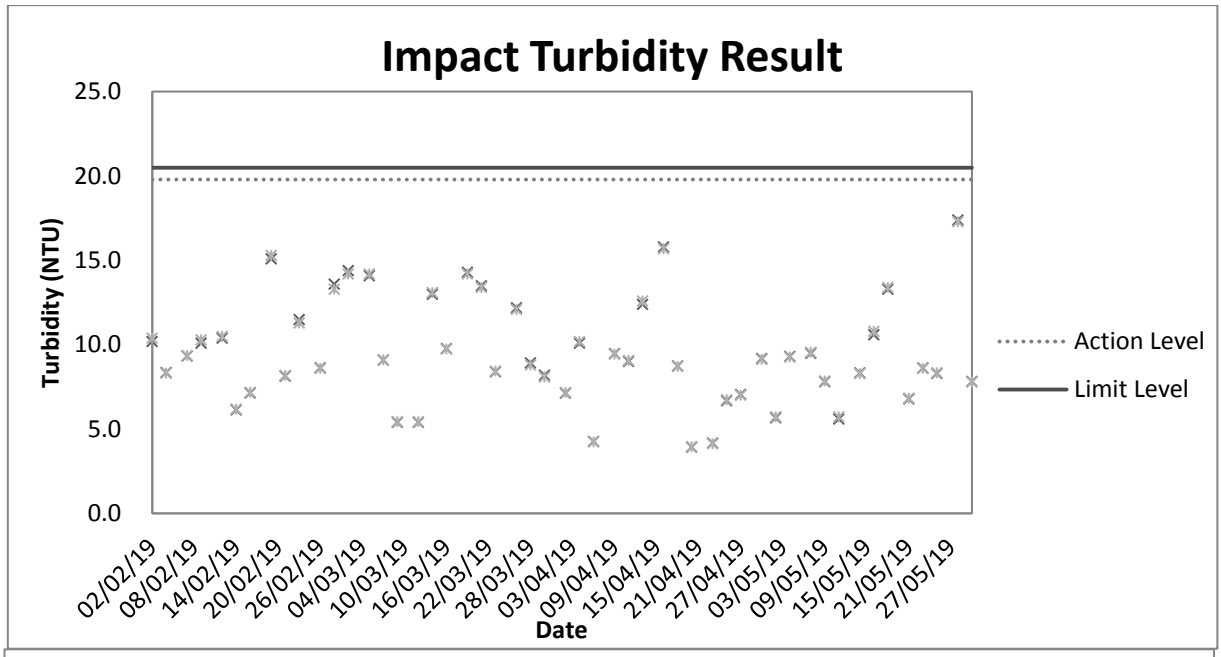
Date	Sampling Duration	Weather Condition	Sampling Level	Turbidity (NTU)			Dissolved Oxygen (DO) (mg/L)			Suspended Solid (SS) (mg/L)		
				1	2	Ave.	1	2	Ave.	1	2	Ave.
02/05/19	12:35-12:40	Cloudy	Mid-Depth	5.7	5.7	5.7	2.57	2.59	2.58	<5	<5	<5
04/05/19	08:53-09:02	Cloudy	Mid-Depth	9.3	9.3	9.3	2.10	2.07	2.09	5	6	5
07/05/19	12:35-12:40	Cloudy	Mid-Depth	9.5	9.6	9.5	2.04	2.08	2.06	<5	<5	<5
09/05/19	13:50-14:01	Cloudy	Mid-Depth	7.8	7.9	7.8	2.15	2.12	2.14	<5	<5	<5
11/05/19	12:55-13:06	Fine	Mid-Depth	5.6	5.7	5.7	2.27	2.29	2.28	<5	<5	<5
14/05/19	12:50-12:55	Fine	Mid-Depth	8.3	8.3	8.3	2.29	2.33	2.31	<5	<5	<5
16/05/19	12:45-12:50	Cloudy	Mid-Depth	10.6	10.8	10.7	2.04	2.08	2.06	<5	<5	<5
18/05/19	08:46-08:55	Cloudy	Mid-Depth	13.3	13.4	13.4	2.06	2.03	2.05	<5	<5	<5
21/05/19	12:30-12:35	Cloudy	Mid-Depth	6.8	6.8	6.8	3.02	3.05	3.04	<5	<5	<5
23/05/19	10:30-10:35	Cloudy	Mid-Depth	8.6	8.6	8.6	2.71	2.75	2.73	<5	<5	<5
25/05/19	13:50-13:55	Cloudy	Mid-Depth	8.3	8.4	8.3	2.02	1.98	2.00	<5	<5	<5
28/05/19	13:15-13:26	Cloudy	Mid-Depth	17.4	17.3	17.4	2.04	2.01	2.03	9	9	9
30/05/19	16:40-16:49	Cloudy	Mid-Depth	7.8	7.8	7.8	2.28	2.30	2.29	<5	<5	<5
				Min		3.9	Min		1.88	Min		<5
				Max		15.8	Max		2.95	Max		9
				Average		8.2	Average		2.29	Average		1

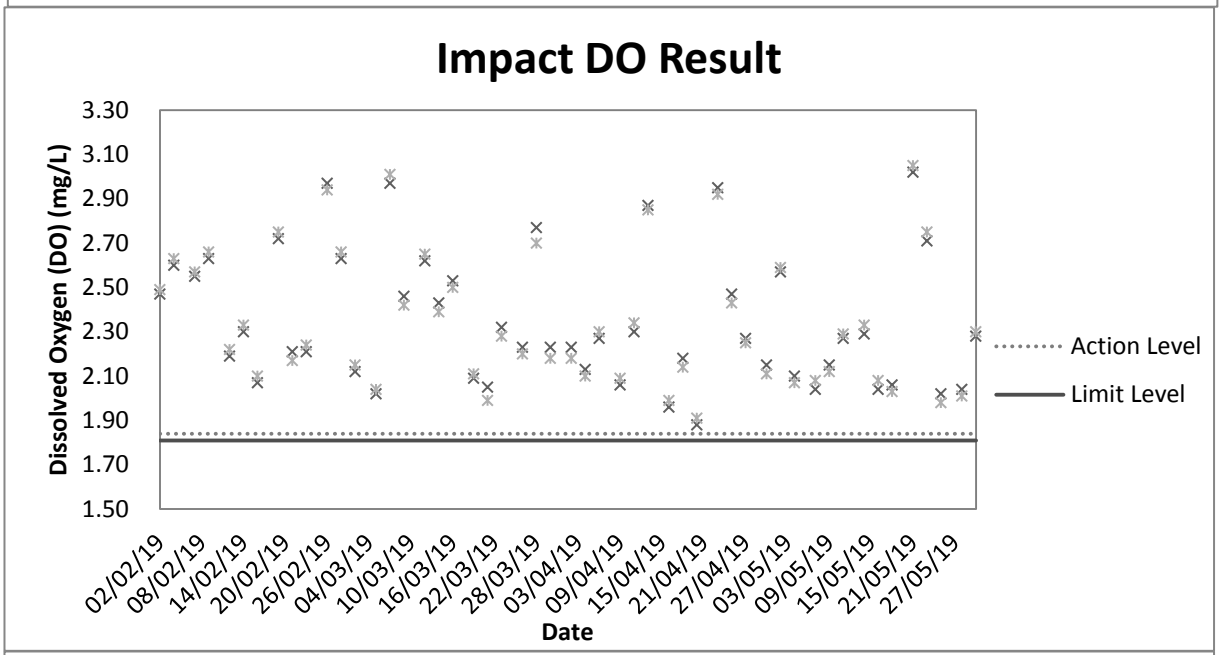
Remark(s):

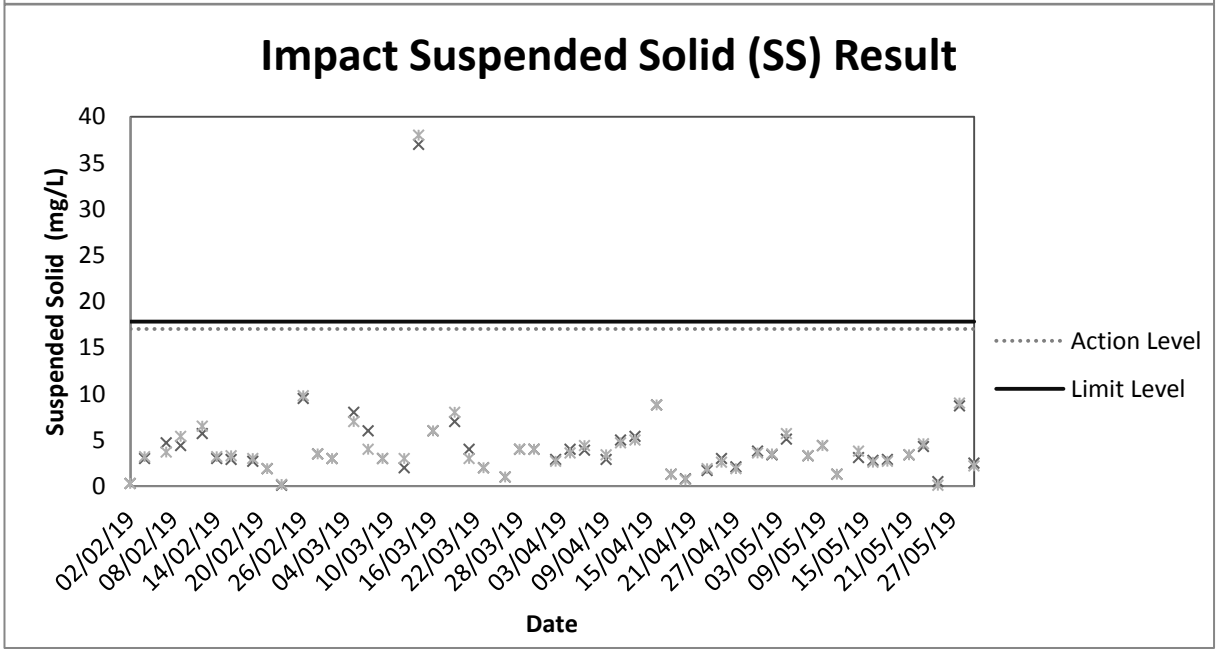
1. (#) 200ml sample was used for Suspended Solids analysis. Practical Quantitation Limit of Suspended Solids reported less than 5 mg/L. The results reported as <5 would be counted as zero for average measurement.

Appendix F3

Graphical Plots of Impact Water Quality Monitoring Data


Impact Turbidity Result
Turbidity (NTU)
25.0
20.0
15.0
10.0
5.0
0.0
02/02/19
08/02/19
14/02/19
20/02/19
26/02/19
04/03/19
10/03/19
16/03/19
22/03/19
28/03/19
03/04/19
09/04/19
15/04/19
21/04/19
27/04/19
03/05/19
09/05/19
15/05/19
21/05/19
27/05/19
Date
Action Level
Limit Level


Impact DO Result
Dissolved Oxygen (DO) (mg/L)
3.30
3.10
2.90
2.70
2.50
2.30
2.10
1.90
1.70
1.50
02/02/19
08/02/19
14/02/19
20/02/19
26/02/19
04/03/19
10/03/19
16/03/19
22/03/19
28/03/19
03/04/19
09/04/19
15/04/19
21/04/19
27/04/19
03/05/19
09/05/19
15/05/19
21/05/19
27/05/19
Date
Action Level
Limit Level


Impact Suspended Solid (SS) Result
Suspended Solid (mg/L)
40
35
30
25
20
15
10
5
0
02/02/19
08/02/19
14/02/19
20/02/19
26/02/19
04/03/19
10/03/19
16/03/19
22/03/19
28/03/19
03/04/19
09/04/19
15/04/19
21/04/19
27/04/19
03/05/19
09/05/19
15/05/19
21/05/19
27/05/19
Date
Action Level
Limit Level

Appendix G

Weather Condition

Daily Extract of Meteorological Observations, May 2019

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)			
01	1009.1	27.1	25.4	23.8	21.1	78	85
02	1012.1	24.4	23.0	21.7	19.2	80	89
03	1014.5	24.0	21.8	19.3	18.2	81	91
04	1013.2	23.6	22.6	21.0	18.1	76	88
05	1009.4	22.3	21.7	20.9	20.6	93	94
06	1008.7	22.8	21.8	20.0	20.1	90	95
07	1010.2	21.4	20.5	18.9	18.3	87	95
08	1009.3	21.2	20.4	19.8	18.3	88	93
09	1008.1	26.3	22.7	20.2	21.1	90	92
10	1010.0	26.7	23.9	22.7	21.6	87	63
11	1011.5	28.9	25.3	22.8	20.8	76	14
12	1011.2	28.9	25.5	23.5	21.7	80	57
13	1010.5	26.3	25.1	23.9	23.1	89	92
14	1009.2	31.1	27.5	25.2	24.4	84	64
15	1009.1	30.9	28.5	26.4	25.6	85	85
16	1007.4	31.5	29.2	27.8	26.0	83	82
17	1005.5	31.6	29.6	28.4	25.9	80	82
18	1005.2	32.3	30.0	28.5	26.1	80	77
19	1006.9	32.3	30.2	29.2	26.3	80	79
20	1008.0	32.0	29.1	25.0	25.9	83	85
21	1010.8	26.5	25.0	22.6	21.6	82	91
22	1010.1	28.3	25.3	22.6	22.1	83	77
23	1010.2	26.8	25.9	24.7	24.1	90	89
24	1011.0	25.8	24.8	23.8	23.4	92	97
25	1008.8	28.9	26.7	25.1	24.9	90	89
26	1007.8	28.1	26.5	24.7	25.0	92	83
27	1008.1	28.0	26.5	25.4	25.2	93	87
28	1008.7	27.7	25.9	23.9	24.6	92	87
29	1009.9	25.7	24.7	23.4	23.1	91	95
30	1010.1	25.9	24.4	23.2	22.5	89	97
31	1008.7	26.7	25.7	25.0	24.4	93	93
Mean/Total	1009.5	27.2	25.3	23.7	22.7	86	83
Normal[§]	1009.3	28.4	25.9	24.1	22.6	83	76

Remark(s):

1. *Trace means rainfall less than 0.05 mm*
2. *§ 1981-2010 Climatological Normal*
3. *The* meteorological observations extracted from Hong Kong Observatory only shown the daily average and may be varied from the weather condition recorded during monitoring.

Appendix H

Environmental Site Inspection Checklist

Environmental Site Inspection Checklist – San Wai

Inspection Date: 03 May 2019 **Inspected By:** Frankie Tang

Time: 14:00 **Weather Condition:** Cloudy

Participants: Patrick Leung, Johnny So, Abby Sham, Jason Leung

1	Permits/Licenses	N/A	Yes	No	Remarks
1.1	Are Environmental Permit, license/ other permit displayed at major site exit and vehicle access?	☐	☑	☐	
1.2	Are Construction Noise Permits available for inspection?	☐	☑	☐	
1.3	Is wastewater discharge license available for inspection?	☐	☑	☐	
1.4	Are trip tickets for chemical waste and construction waste disposal available for inspection?	☐	☑	☐	
1.5	Are relevant license/permits for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	

2	Air Quality	N/A	Yes	No	Remarks
2.1	Is open burning avoided?	☐	☑	☐	
2.2	Are speed controlled at 10 km/h on unpaved site areas?	☐	☑	☐	
2.3	Are plant and equipment well maintained (i.e. without black smoke from powered plant)?	☐	☑	☐	
2.4	Observed dust source(s): ☐ Wind erosion ☐ Vehicle/ Equipment Movements ☐ Loading/ unloading of materials ☑ Others: Not observed				
2.5	Are the work sites wetted with water twice a day?	☐	☑	☐	
2.6	After removal of boulders, poles, pillars or temporary or permanent structures, are the entire surface sprayed with water or a dust suppression chemical immediately?	☐	☑	☐	
2.7	Is the area involved demolished items covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition?	☐	☑	☐	
2.8	Are wheel washing facilities with high pressure water jet provided at all site exits if practicable?	☐	☑	☐	
2.9	Are the areas of washing facilities and the road section between the washing facilities and the exit point paved with concrete, bituminous materials or hardcores?	☐	☑	☐	
2.10	Are hoarding ≧ 2.4m tall provided beside roads or area with public access?	☐	☑	☐	
2.11	Are main haul road paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials; or sprayed with water or a dust suppression chemical?	☐	☑	☐	
2.12	Are construction site that is within 30m of a discernible or designated vehicle entrance or exit kept clear of dusty materials?	☐	☑	☐	
2.13	Are all vehicles and plant cleaned before they leave the construction site?	☐	☑	☐	
2.14	Are loaded dump trucks covered by impervious sheeting appropriately	☐	☑	☐	

	before leaving the site?				
2.15	Are working areas of any excavation or earth moving operation sprayed with water or a dusty suppression chemical immediately?	☐	☑	☐	
2.16	Is exposed earth properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, concrete or other suitable surface stabilizer within 6 months after the last construction activity?	☑	☐	☐	
2.17	Are stockpile of dusty material covered entirely by impervious sheeting; placed in an area sheltered on the top and the 3 sides; or sprayed with water or dust suppression chemical?	☑	☐	☐	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	☐	☑	☐	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	☑	☐	☐	
2.20	Is every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) covered entirely by impervious sheeting or placed in an area sheltered on the top and 3 sides?	☑	☐	☐	
2.21	Are the approval or exempted NRMM labels painted or securely fixed on site machines or vehicles and displayed at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation?	☐	☑	☐	

3	**Noise**	N/A	Yes	No	Remarks
3.1	Are idle plant/equipments turned off or throttled down?	☐	☑	☐	
3.2	Are silenced equipments or quiet plants utilized?	☐	☑	☐	
3.3	Are the silencers or mufflers properly fitted on construction equipments and maintained regularly?	☐	☑	☐	
3.4	Is temporary hoarding installed located on the site boundaries between noisy construction activities and NSRs?	☑	☐	☐	
3.5	Are noise barriers (typically density @14kg/m^2) acoustic mat or full enclosure close to noise plants including air compressor, generators and saw etc. provided to protect NSRs?	☐	☑	☐	
3.6	Do air compressors have valid noise labels?	☑	☐	☐	
3.7	Are compressor operated with doors closed?	☑	☐	☐	
3.8	QPME used with valid noise labels?	☑	☐	☐	
3.9	Are construction activities planned so that parallel operation of several sets of equipment close to a given receiver is avoided?	☑	☐	☐	
3.10	Major noise source(s): ☐ Traffic ☑ Construction activities inside of site ☐ Construction activities outside of site ☐ Others:				

4	**Water Quality**	N/A	Yes	No	Remarks
	Construction Activities				
4.1	Before a rainstorm, are exposed stockpiles covered with tarpaulin or impervious sheets?	☑	☐	☐	
4.2	Are stockpiles of materials placed in the locations away from the drainage channel?	☑	☐	☐	

4.3	Are site drainage systems and treatment facilities provided to minimize the water pollution?	☐	☑	☐	
4.4	Is the treated effluent quality met the requirements specified in the discharge license?	☐	☑	☐	
4.5	Is the sewage generated from toilets collected using a temporary storage system?	☑	☐	☐	
4.6	Are sewage effluent and discharges from on-site kitchen facilities directed to public foul sewers or collected in a temporary storage tank if connection to public foul sewers is not feasible?	☑	☐	☐	
4.7	Is a licensed waste collector employed to clean the chemical toilets and temporary storage tank on a regular basis?	☑	☐	☐	
4.8	Is the storm drainage directed to storm drains via adequately designed sand/ silt removal facilities e.g. sand traps, silt traps and sediment basins?	☐	☑	☐	
4.9	Are measures taken to prevent the washout of construction materials, soil, silt or debris into any drainage system?	☐	☑	☐	
4.10	Are manholes adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and prevent storm run-off getting into foul sewers?	☑	☐	☐	
4.11	Is a wheel washing bay provided at every site exit?	☐	☑	☐	
4.12	Is the wheel wash overflow directed to silt removal facilities before being discharged to the storm drain?	☐	☑	☐	
4.13	Is the section of construction road between the wheel washing bay and the public road surfaced with crushed stone or coarse gravel?	☐	☑	☐	
4.14	Does the surface runoff from bunded areas pass through oil/grease traps prior to discharge to the storm water system?	☑	☐	☐	
4.15	Are sedimentation tanks or package treatment systems provided to treat the large amount of sediment-laden wastewater generated from wheel washing, site runoff and construction works?	☐	☑	☐	

5	**Waste / Chemical Management**	N/A	Yes	No	Remarks
	General Waste				
5.1	Are sufficient waste disposal points provided?	☐	☑	☐	
5.2	Is waste disposed regularly?	☐	☐	☑	i.w.l
5.3	Is the general waste generated on-site stored in enclosed bins or compaction units separately from the construction and chemical wastes?	☐	☐	☑	i.w.l
5.4	Are separated labeled containers/ areas provided for facilitating recycling and waste segregation?	☐	☑	☐	
	Construction Waste				
5.5	Are the temporary stockpiles maintained regularly?	☐	☑	☐	
5.6	Are the C&D materials sorted and recycled on-site?	☐	☑	☐	
5.7	Are the public fill and C&D waste segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal?	☐	☑	☐	
5.8	Is the segregation and storage of C&D wastes undertaken in designated area?	☐	☑	☐	

5.9	Are waste storage area properly cleaned and do not cause windblown litter and dust nuisance?	☐	☑	☐	
5.10	Are surplus insert C&D materials only consist of earth, building debris and broken rock and concrete and free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered unsuitable by the public filling supervisor?	☐	☑	☐	
	Chemical / Fuel Storage Area				
5.11	Are the fuel tanks and chemical storage areas provided with locks and sited on sealed areas?	☑	☐	☐	
5.12	Are the storage areas labeled and separated (if needed)?	☐	☑	☐	
5.13	Do the storage areas have adequate ventilation and be covered to prevent rainfall entering?	☐	☑	☐	
5.14	Are the containers used for the storage of chemical wastes suitable for the substance that are holding, resist to corrosion, maintained in a good condition, and securely closed?	☐	☑	☐	
5.15	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)	☐	☑	☐	
	Chemical Waste / Waste Oil				
5.16	Is chemical waste or waste oil stored and labeled in English and Chinese properly in designated area?	☐	☑	☐	
5.17	Are chemicals and waste oil collected and stored for recycling or proper disposal?	☐	☑	☐	
	Records				
5.18	Is a licensed waste hauler used for waste collection?	☐	☑	☐	
5.19	Are the records of quantities of wastes generated, recycled and disposed properly kept?	☐	☑	☐	
5.20	For the demolition material/ waste, is the number of loads for each day recorded as appropriate?	☐	☑	☐	

		N/A	Yes	No	Remarks
6	**Landscape and Visual Impacts**				
6.1	Is the work site confined within site boundaries?	☐	☑	☐	
6.2	Is damage to surrounding areas avoided?	☐	☑	☐	

		N/A	Yes	No	Remarks
7	**Environmental Complaint**				
7.1	Number of Environmental Complaint received from dd/mm/yyyy to dd/mm/yyyy?	☑	☐	☐	

		N/A	Yes	No	Remarks
8	**General Housekeeping**				
8.1	Are potential stagnant pools cleared and mosquito breeding prevented?	☐	☑	☐	
8.2	Are the defined boundaries of working areas identified to prevent loss of vegetation?	☐	☑	☐	

		N/A	Yes	No	Remarks
9	**Others**				
9.1	Are the portable toilets maintained in a state, which will not deter the workers from utilizing these portable toilets?	☐	☑	☐	

Follow up actions for pervious Site Audit:	Follow up action to item on 26.4.19. All item was improved.
Observations	Item 2: General refuse was observed at P1.
Corrective Actions – Mitigation Measures Implemented or Proposed (if any):	Item 2: To clean the general refuse properly

Signature:
ET's representative

Name: Frankie Tung
Date: 03 May 2019

Signature:
Contractor's representative

Name: Jason Leung
Date: 3/5/19

Signature:
ET Leader

Name: C. M. Lau
Date: 03.05.2019

Signature:
SO's representative

Name: C. Y. CHOW
Date: 3/5/2019

Summary of the Weekly Environmental Site Inspection

Item	Details of observations	Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Proposed Follow up Date
1	 General refuse was observed at P1.	To collect the general refuse properly	190503_001	Yes	10/05/2019

Environmental Site Inspection Checklist – San Wai

Inspection Date: 10 May 2019 **Inspected By:** Ivy Lo

Time: 09:30 **Weather Condition:** Fine

Participants: Patrick Leung, Johnny So, Abby Sham, Jason Leung

1	**Permits/Licenses**	N/A	Yes	No	Remarks
1.1	Are Environmental Permit, license/ other permit displayed at major site exit and vehicle access?	☐	☑	☐	
1.2	Are Construction Noise Permits available for inspection?	☐	☑	☐	
1.3	Is wastewater discharge license available for inspection?	☐	☑	☐	
1.4	Are trip tickets for chemical waste and construction waste disposal available for inspection?	☐	☑	☐	
1.5	Are relevant license/permits for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	

2	**Air Quality**	N/A	Yes	No	Remarks
2.1	Is open burning avoided?	☐	☑	☐	
2.2	Are speed controlled at 10 km/h on unpaved site areas?	☐	☑	☐	
2.3	Are plant and equipment well maintained (i.e. without black smoke from powered plant)?	☐	☑	☐	
2.4	Observed dust source(s): ☐ Wind erosion ☐ Vehicle/ Equipment Movements ☐ Loading/ unloading of materials ☑ Others: Not observed				
2.5	Are the work sites wetted with water twice a day?	☐	☑	☐	
2.6	After removal of boulders, poles, pillars or temporary or permanent structures, are the entire surface sprayed with water or a dust suppression chemical immediately?	☐	☑	☐	
2.7	Is the area involved demolished items covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition?	☐	☑	☐	
2.8	Are wheel washing facilities with high pressure water jet provided at all site exits if practicable?	☐	☑	☐	
2.9	Are the areas of washing facilities and the road section between the washing facilities and the exit point paved with concrete, bituminous materials or hardcores?	☐	☑	☐	
2.10	Are hoarding ≥ 2.4m tall provided beside roads or area with public access?	☐	☑	☐	
2.11	Are main haul road paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials; or sprayed with water or a dust suppression chemical?	☐	☑	☐	
2.12	Are construction site that is within 30m of a discernible or designated vehicle entrance or exit kept clear of dusty materials?	☐	☑	☐	
2.13	Are all vehicles and plant cleaned before they leave the construction site?	☐	☑	☐	
2.14	Are loaded dump trucks covered by impervious sheeting appropriately	☐	☑	☐	

	before leaving the site?				
2.15	Are working areas of any excavation or earth moving operation sprayed with water or a dusty suppression chemical immediately?	☐	☑	☐	
2.16	Is exposed earth properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, concrete or other suitable surface stabilizer within 6 months after the last construction activity?	☑	☐	☐	
2.17	Are stockpile of dusty material covered entirely by impervious sheeting; placed in an area sheltered on the top and the 3 sides; or sprayed with water or dust suppression chemical?	☑	☐	☐	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	☐	☑	☐	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	☑	☐	☐	
2.20	Is every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) covered entirely by impervious sheeting or placed in an area sheltered on the top and 3 sides?	☑	☐	☐	
2.21	Are the approval or exempted NRMM labels painted or securely fixed on site machines or vehicles and displayed at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation?	☐	☑	☐	

3	**Noise**	**N/A**	**Yes**	**No**	**Remarks**
3.1	Are idle plant/equipments turned off or throttled down?	☐	☑	☐	
3.2	Are silenced equipments or quiet plants utilized?	☐	☑	☐	
3.3	Are the silencers or mufflers properly fitted on construction equipments and maintained regularly?	☐	☑	☐	
3.4	Is temporary hoarding installed located on the site boundaries between noisy construction activities and NSRs?	☑	☐	☐	
3.5	Are noise barriers (typically density @14kg/m^2) acoustic mat or full enclosure close to noise plants including air compressor, generators and saw etc. provided to protect NSRs?	☐	☑	☐	
3.6	Do air compressors have valid noise labels?	☑	☐	☐	
3.7	Are compressor operated with doors closed?	☑	☐	☐	
3.8	QPME used with valid noise labels?	☑	☐	☐	
3.9	Are construction activities planned so that parallel operation of several sets of equipment close to a given receiver is avoided?	☑	☐	☐	
3.10	Major noise source(s): ☐ Traffic ☑ Construction activities inside of site ☐ Construction activities outside of site ☐ Others:				

4	**Water Quality**	**N/A**	**Yes**	**No**	**Remarks**
	<u>Construction Activities</u>				
4.1	Before a rainstorm, are exposed stockpiles covered with tarpaulin or impervious sheets?	☑	☐	☐	
4.2	Are stockpiles of materials placed in the locations away from the drainage channel?	☑	☐	☐	

4.3	Are site drainage systems and treatment facilities provided to minimize the water pollution?	☐	☑	☐	
4.4	Is the treated effluent quality met the requirements specified in the discharge license?	☐	☑	☐	
4.5	Is the sewage generated from toilets collected using a temporary storage system?	☑	☐	☐	
4.6	Are sewage effluent and discharges from on-site kitchen facilities directed to public foul sewers or collected in a temporary storage tank if connection to public foul sewers is not feasible?	☑	☐	☐	
4.7	Is a licensed waste collector employed to clean the chemical toilets and temporary storage tank on a regular basis?	☑	☐	☐	
4.8	Is the storm drainage directed to storm drains via adequately designed sand/ silt removal facilities e.g. sand traps, silt traps and sediment basins?	☐	☑	☐	
4.9	Are measures taken to prevent the washout of construction materials, soil, silt or debris into any drainage system?	☐	☑	☐	
4.10	Are manholes adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and prevent storm run-off getting into foul sewers?	☑	☐	☐	
4.11	Is a wheel washing bay provided at every site exit?	☐	☑	☐	
4.12	Is the wheel wash overflow directed to silt removal facilities before being discharged to the storm drain?	☐	☑	☐	
4.13	Is the section of construction road between the wheel washing bay and the public road surfaced with crushed stone or coarse gravel?	☐	☑	☐	
4.14	Does the surface runoff from bunded areas pass through oil/grease traps prior to discharge to the storm water system?	☑	☐	☐	
4.15	Are sedimentation tanks or package treatment systems provided to treat the large amount of sediment-laden wastewater generated from wheel washing, site runoff and construction works?	☐	☑	☐	

5	**Waste / Chemical Management**	**N/A**	**Yes**	**No**	**Remarks**
	General Waste				
5.1	Are sufficient waste disposal points provided?	☐	☑	☐	
5.2	Is waste disposed regularly?	☐	☑	☐	
5.3	Is the general waste generated on-site stored in enclosed bins or compaction units separately from the construction and chemical wastes?	☐	☑	☐	
5.4	Are separated labeled containers/ areas provided for facilitating recycling and waste segregation?	☐	☑	☐	
	Construction Waste				
5.5	Are the temporary stockpiles maintained regularly?	☐	☑	☐	
5.6	Are the C&D materials sorted and recycled on-site?	☐	☑	☐	
5.7	Are the public fill and C&D waste segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal?	☐	☑	☐	
5.8	Is the segregation and storage of C&D wastes undertaken in designated area?	☐	☑	☐	

5.9	Are waste storage area properly cleaned and do not cause windblown litter and dust nuisance?	☐	☑	☐	
5.10	Are surplus insert C&D materials only consist of earth, building debris and broken rock and concrete and free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered unsuitable by the public filling supervisor?	☐	☑	☐	
	Chemical / Fuel Storage Area				
5.11	Are the fuel tanks and chemical storage areas provided with locks and sited on sealed areas?	☑	☐	☐	
5.12	Are the storage areas labeled and separated (if needed)?	☐	☑	☐	
5.13	Do the storage areas have adequate ventilation and be covered to prevent rainfall entering?	☐	☑	☐	
5.14	Are the containers used for the storage of chemical wastes suitable for the substance that are holding, resist to corrosion, maintained in a good condition, and securely closed?	☐	☑	☐	
5.15	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)	☐	☑	☐	
	Chemical Waste / Waste Oil				
5.16	Is chemical waste or waste oil stored and labeled in English and Chinese properly in designated area?	☐	☑	☐	
5.17	Are chemicals and waste oil collected and stored for recycling or proper disposal?	☐	☑	☐	
	Records				
5.18	Is a licensed waste hauler used for waste collection?	☐	☑	☐	
5.19	Are the records of quantities of wastes generated, recycled and disposed properly kept?	☐	☑	☐	
5.20	For the demolition material/ waste, is the number of loads for each day recorded as appropriate?	☐	☑	☐	

6	**Landscape and Visual Impacts**	**N/A**	**Yes**	**No**	**Remarks**
6.1	Is the work site confined within site boundaries?	☐	☑	☐	
6.2	Is damage to surrounding areas avoided?	☐	☑	☐	

7	**Environmental Complaint**	**N/A**	**Yes**	**No**	**Remarks**
7.1	Number of Environmental Complaint received from dd/mm/yyyy to dd/mm/yyyy?	☑	☐	☐	

8	**General Housekeeping**	**N/A**	**Yes**	**No**	**Remarks**
8.1	Are potential stagnant pools cleared and mosquito breeding prevented?	☐	☑	☐	
8.2	Are the defined boundaries of working areas identified to prevent loss of vegetation?	☐	☑	☐	

9	**Others**	**N/A**	**Yes**	**No**	**Remarks**
9.1	Are the portable toilets maintained in a state, which will not deter the workers from utilizing these portable toilets?	☐	☑	☐	

Follow up actions for pervious Site Audit: **Observations** No adverse observations are recorded during this inspection
Corrective Actions – Mitigation Measures Implemented or Proposed (if any):

Signature:
ET's representative

Name: IW Lo
Date: 10/5/2019

Signature:
Contractor's representative

Name: Tsan Leung
Date: 10/5/19

Signature:
ET Leader

Name: C. L. Lau
Date: 10.05.2019

Signature:
SO's representative

Name: C Y WONG
Date: 10/5/2019

Summary of the Weekly Environmental Site Inspection

Item	Details of observations	Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Proposed Follow up Date
--	 Follow up action to Item 1 on 03/05/2019, general refuse was collected properly.	--	190510_001	No	--

Environmental Site Inspection Checklist – San Wai

Inspection Date: 17 May 2019 **Inspected By:** Frankie Tang
Time: 1400 **Weather Condition:** Cloudy
Participants: Patrick Leung, Johnny So, Abby Sham, Joshua Leung

1	Permits/Licenses	N/A	Yes	No	Remarks
1.1	Are Environmental Permit, license/ other permit displayed at major site exit and vehicle access?	☐	☑	☐	
1.2	Are Construction Noise Permits available for inspection?	☐	☑	☐	
1.3	Is wastewater discharge license available for inspection?	☐	☑	☐	
1.4	Are trip tickets for chemical waste and construction waste disposal available for inspection?	☐	☑	☐	
1.5	Are relevant license/permits for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	

2	Air Quality	N/A	Yes	No	Remarks
2.1	Is open burning avoided?	☐	☑	☐	
2.2	Are speed controlled at 10 km/h on unpaved site areas?	☐	☑	☐	
2.3	Are plant and equipment well maintained (i.e. without black smoke from powered plant)?	☐	☑	☐	
2.4	Observed dust source(s): ☐ Wind erosion ☐ Vehicle/ Equipment Movements ☐ Loading/ unloading of materials ☑ Others: Not observed				
2.5	Are the work sites wetted with water twice a day?	☐	☑	☐	
2.6	After removal of boulders, poles, pillars or temporary or permanent structures, are the entire surface sprayed with water or a dust suppression chemical immediately?	☐	☑	☐	
2.7	Is the area involved demolished items covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition?	☐	☑	☐	
2.8	Are wheel washing facilities with high pressure water jet provided at all site exits if practicable?	☐	☑	☐	
2.9	Are the areas of washing facilities and the road section between the washing facilities and the exit point paved with concrete, bituminous materials or hardcores?	☐	☑	☐	
2.10	Are hoarding ≧ 2.4m tall provided beside roads or area with public access?	☐	☑	☐	
2.11	Are main haul road paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials; or sprayed with water or a dust suppression chemical?	☐	☑	☐	
2.12	Are construction site that is within 30m of a discernible or designated vehicle entrance or exit kept clear of dusty materials?	☐	☑	☐	
2.13	Are all vehicles and plant cleaned before they leave the construction site?	☐	☑	☐	
2.14	Are loaded dump trucks covered by impervious sheeting appropriately	☐	☑	☐	

	before leaving the site?				
2.15	Are working areas of any excavation or earth moving operation sprayed with water or a dusty suppression chemical immediately?	☐	☑	☐	
2.16	Is exposed earth properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, concrete or other suitable surface stabilizer within 6 months after the last construction activity?	☑	☐	☐	
2.17	Are stockpile of dusty material covered entirely by impervious sheeting; placed in an area sheltered on the top and the 3 sides; or sprayed with water or dust suppression chemical?	☑	☐	☑	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	☐	☑	☐	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	☐	☐	☑	
2.20	Is every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) covered entirely by impervious sheeting or placed in an area sheltered on the top and 3 sides?	☑	☐	☐	
2.21	Are the approval or exempted NRMM labels painted or securely fixed on site machines or vehicles and displayed at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation?	☐	☑	☐	

3	Noise	N/A	Yes	No	Remarks
3.1	Are idle plant/equipments turned off or throttled down?	☐	☑	☐	
3.2	Are silenced equipments or quiet plants utilized?	☐	☑	☐	
3.3	Are the silencers or mufflers properly fitted on construction equipments and maintained regularly?	☐	☑	☐	
3.4	Is temporary hoarding installed located on the site boundaries between noisy construction activities and NSRs?	☑	☐	☐	
3.5	Are noise barriers (typically density @14kg/m^2) acoustic mat or full enclosure close to noise plants including air compressor, generators and saw etc. provided to protect NSRs?	☐	☑	☐	
3.6	Do air compressors have valid noise labels?	☑	☐	☐	
3.7	Are compressor operated with doors closed?	☑	☐	☐	
3.8	QPME used with valid noise labels?	☑	☐	☐	
3.9	Are construction activities planned so that parallel operation of several sets of equipment close to a given receiver is avoided?	☑	☐	☐	
3.10	Major noise source(s): ☐ Traffic ☑ Construction activities inside of site ☐ Construction activities outside of site ☐ Others:				

4	Water Quality	N/A	Yes	No	Remarks
	Construction Activities				
4.1	Before a rainstorm, are exposed stockpiles covered with tarpaulin or impervious sheets?	☑	☐	☐	
4.2	Are stockpiles of materials placed in the locations away from the drainage channel?	☑	☐	☐	

4.3	Are site drainage systems and treatment facilities provided to minimize the water pollution?	☐	☑	☐	
4.4	Is the treated effluent quality met the requirements specified in the discharge license?	☐	☑	☐	
4.5	Is the sewage generated from toilets collected using a temporary storage system?	☑	☐	☐	
4.6	Are sewage effluent and discharges from on-site kitchen facilities directed to public foul sewers or collected in a temporary storage tank if connection to public foul sewers is not feasible?	☑	☐	☐	
4.7	Is a licensed waste collector employed to clean the chemical toilets and temporary storage tank on a regular basis?	☑	☐	☐	
4.8	Is the storm drainage directed to storm drains via adequately designed sand/ silt removal facilities e.g. sand traps, silt traps and sediment basins?	☐	☑	☐	
4.9	Are measures taken to prevent the washout of construction materials, soil, silt or debris into any drainage system?	☐	☑	☐	
4.10	Are manholes adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and prevent storm run-off getting into foul sewers?	☑	☐	☐	
4.11	Is a wheel washing bay provided at every site exit?	☐	☑	☐	
4.12	Is the wheel wash overflow directed to silt removal facilities before being discharged to the storm drain?	☐	☑	☐	
4.13	Is the section of construction road between the wheel washing bay and the public road surfaced with crushed stone or coarse gravel?	☐	☑	☐	
4.14	Does the surface runoff from bunded areas pass through oil/grease traps prior to discharge to the storm water system?	☑	☐	☐	
4.15	Are sedimentation tanks or package treatment systems provided to treat the large amount of sediment-laden wastewater generated from wheel washing, site runoff and construction works?	☐	☑	☐	

5	**Waste / Chemical Management**	N/A	Yes	No	Remarks
	General Waste				
5.1	Are sufficient waste disposal points provided?	☐	☑	☐	
5.2	Is waste disposed regularly?	☐	☑	☐	
5.3	Is the general waste generated on-site stored in enclosed bins or compaction units separately from the construction and chemical wastes?	☐	☑	☐	
5.4	Are separated labeled containers/ areas provided for facilitating recycling and waste segregation?	☐	☑	☐	
	Construction Waste				
5.5	Are the temporary stockpiles maintained regularly?	☐	☑	☐	
5.6	Are the C&D materials sorted and recycled on-site?	☐	☑	☐	
5.7	Are the public fill and C&D waste segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal?	☐	☑	☐	
5.8	Is the segregation and storage of C&D wastes undertaken in designated area?	☐	☑	☐	

5.9	Are waste storage area properly cleaned and do not cause windblown litter and dust nuisance?	☐	☑	☐	
5.10	Are surplus insert C&D materials only consist of earth, building debris and broken rock and concrete and free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered unsuitable by the public filling supervisor?	☐	☑	☐	
	Chemical / Fuel Storage Area				
5.11	Are the fuel tanks and chemical storage areas provided with locks and sited on sealed areas?	☑	☐	☐	
5.12	Are the storage areas labeled and separated (if needed)?	☐	☑	☐	
5.13	Do the storage areas have adequate ventilation and be covered to prevent rainfall entering?	☐	☑	☐	
5.14	Are the containers used for the storage of chemical wastes suitable for the substance that are holding, resist to corrosion, maintained in a good condition, and securely closed?	☐	☑	☐	
5.15	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)	☐	☑	☐	
	Chemical Waste / Waste Oil				
5.16	Is chemical waste or waste oil stored and labeled in English and Chinese properly in designated area?	☐	☑	☐	
5.17	Are chemicals and waste oil collected and stored for recycling or proper disposal?	☐	☑	☐	
	Records				
5.18	Is a licensed waste hauler used for waste collection?	☐	☑	☐	
5.19	Are the records of quantities of wastes generated, recycled and disposed properly kept?	☐	☑	☐	
5.20	For the demolition material/ waste, is the number of loads for each day recorded as appropriate?	☐	☑	☐	

6	**Landscape and Visual Impacts**	N/A	Yes	No	Remarks
6.1	Is the work site confined within site boundaries?	☐	☑	☐	
6.2	Is damage to surrounding areas avoided?	☐	☑	☐	

7	**Environmental Complaint**	N/A	Yes	No	Remarks
7.1	Number of Environmental Complaint received from dd/mm/yyyy to dd/mm/yyyy?	☑	☐	☐	

8	**General Housekeeping**	N/A	Yes	No	Remarks
8.1	Are potential stagnant pools cleared and mosquito breeding prevented?	☐	☑	☐	
8.2	Are the defined boundaries of working areas identified to prevent loss of vegetation?	☐	☑	☐	

9	**Others**	N/A	Yes	No	Remarks
9.1	Are the portable toilets maintained in a state, which will not deter the workers from utilizing these portable toilets?	☐	☑	☐	

Follow up actions for pervious Site Audit: N/A **Observations** Item I: Fill materials was observed without cover at the Northern side of UV.
Corrective Actions – Mitigation Measures Implemented or Proposed (if any): Item I: Provide the cover for fill material as soon as possible.

Signature:
ET's representative

Name: Frankie Tung
Date: 17 May 2019

Signature:
Contractor's representative

Name: Jason Leung
Date: 17 May 19.

Signature:
ET Leader

Name: C. L. Law
Date: 17.05.2019

Signature:
SO's representative

Name: C.F. Chan
Date: 17/5/2019

Summary of the Weekly Environmental Site Inspection

Item	Details of observations	Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Proposed Follow up Date
1	 Fill materials was observed without cover at the Northern side of UV.	To provide the cover for the fill material	190517_001	Yes	22/05/2019

Environmental Site Inspection Checklist – San Wai

Inspection Date: 22 May 2019 **Inspected By:** Frankie Tse
Time: 14:00 **Weather Condition:** Cloudy
Participants: Richard Leung, Johny So, Abby Shing, Joshua Leung

1	Permits/Licenses	N/A	Yes	No	Remarks
1.1	Are Environmental Permit, license/ other permit displayed at major site exit and vehicle access?	☐	☑	☐	
1.2	Are Construction Noise Permits available for inspection?	☐	☑	☐	
1.3	Is wastewater discharge license available for inspection?	☐	☑	☐	
1.4	Are trip tickets for chemical waste and construction waste disposal available for inspection?	☐	☑	☐	
1.5	Are relevant license/permits for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	

2	Air Quality	N/A	Yes	No	Remarks
2.1	Is open burning avoided?	☐	☑	☐	
2.2	Are speed controlled at 10 km/h on unpaved site areas?	☐	☑	☐	
2.3	Are plant and equipment well maintained (i.e. without black smoke from powered plant)?	☐	☑	☐	
2.4	Observed dust source(s): ☐ Wind erosion ☐ Vehicle/ Equipment Movements ☐ Loading/ unloading of materials ☑ Others: Not observed				
2.5	Are the work sites wetted with water twice a day?	☐	☑	☐	
2.6	After removal of boulders, poles, pillars or temporary or permanent structures, are the entire surface sprayed with water or a dust suppression chemical immediately?	☐	☑	☐	
2.7	Is the area involved demolished items covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition?	☐	☑	☐	
2.8	Are wheel washing facilities with high pressure water jet provided at all site exits if practicable?	☐	☑	☐	
2.9	Are the areas of washing facilities and the road section between the washing facilities and the exit point paved with concrete, bituminous materials or hardcores?	☐	☑	☐	
2.10	Are hoarding ≧ 2.4m tall provided beside roads or area with public access?	☐	☑	☐	
2.11	Are main haul road paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials; or sprayed with water or a dust suppression chemical?	☐	☑	☐	
2.12	Are construction site that is within 30m of a discernible or designated vehicle entrance or exit kept clear of dusty materials?	☐	☑	☐	
2.13	Are all vehicles and plant cleaned before they leave the construction site?	☐	☑	☐	
2.14	Are loaded dump trucks covered by impervious sheeting appropriately	☐	☑	☐	

	before leaving the site?				
2.15	Are working areas of any excavation or earth moving operation sprayed with water or a dusty suppression chemical immediately?	☐	☑	☐	
2.16	Is exposed earth properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, concrete or other suitable surface stabilizer within 6 months after the last construction activity?	☑	☐	☐	
2.17	Are stockpile of dusty material covered entirely by impervious sheeting; placed in an area sheltered on the top and the 3 sides; or sprayed with water or dust suppression chemical?	☑	☐	☐	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	☐	☑	☐	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	☑	☐	☐	
2.20	Is every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) covered entirely by impervious sheeting or placed in an area sheltered on the top and 3 sides?	☑	☐	☐	
2.21	Are the approval or exempted NRMM labels painted or securely fixed on site machines or vehicles and displayed at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation?	☐	☑	☐	

3	**Noise**	**N/A**	**Yes**	**No**	**Remarks**
3.1	Are idle plant/equipments turned off or throttled down?	☐	☑	☐	
3.2	Are silenced equipments or quiet plants utilized?	☐	☑	☐	
3.3	Are the silencers or mufflers properly fitted on construction equipments and maintained regularly?	☐	☑	☐	
3.4	Is temporary hoarding installed located on the site boundaries between noisy construction activities and NSRs?	☑	☐	☐	
3.5	Are noise barriers (typically density @14kg/m^2) acoustic mat or full enclosure close to noise plants including air compressor, generators and saw etc. provided to protect NSRs?	☐	☑	☐	
3.6	Do air compressors have valid noise labels?	☑	☐	☐	
3.7	Are compressor operated with doors closed?	☑	☐	☐	
3.8	QPME used with valid noise labels?	☑	☐	☐	
3.9	Are construction activities planned so that parallel operation of several sets of equipment close to a given receiver is avoided?	☑	☐	☐	
3.10	Major noise source(s): ☐ Traffic ☑ Construction activities inside of site ☐ Construction activities outside of site ☐ Others:				

4	**Water Quality**	**N/A**	**Yes**	**No**	**Remarks**
	Construction Activities				
4.1	Before a rainstorm, are exposed stockpiles covered with tarpaulin or impervious sheets?	☑	☐	☐	
4.2	Are stockpiles of materials placed in the locations away from the drainage channel?	☑	☐	☐	

4.3	Are site drainage systems and treatment facilities provided to minimize the water pollution?	☐	☑	☐	
4.4	Is the treated effluent quality met the requirements specified in the discharge license?	☐	☑	☐	
4.5	Is the sewage generated from toilets collected using a temporary storage system?	☑	☐	☐	
4.6	Are sewage effluent and discharges from on-site kitchen facilities directed to public foul sewers or collected in a temporary storage tank if connection to public foul sewers is not feasible?	☑	☐	☐	
4.7	Is a licensed waste collector employed to clean the chemical toilets and temporary storage tank on a regular basis?	☑	☐	☐	
4.8	Is the storm drainage directed to storm drains via adequately designed sand/ silt removal facilities e.g. sand traps, silt traps and sediment basins?	☐	☑	☐	
4.9	Are measures taken to prevent the washout of construction materials, soil, silt or debris into any drainage system?	☐	☑	☐	
4.10	Are manholes adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and prevent storm run-off getting into foul sewers?	☑	☐	☐	
4.11	Is a wheel washing bay provided at every site exit?	☐	☑	☐	
4.12	Is the wheel wash overflow directed to silt removal facilities before being discharged to the storm drain?	☐	☑	☐	
4.13	Is the section of construction road between the wheel washing bay and the public road surfaced with crushed stone or coarse gravel?	☐	☑	☐	
4.14	Does the surface runoff from bunded areas pass through oil/grease traps prior to discharge to the storm water system?	☑	☐	☐	
4.15	Are sedimentation tanks or package treatment systems provided to treat the large amount of sediment-laden wastewater generated from wheel washing, site runoff and construction works?	☐	☑	☐	

5	**Waste / Chemical Management**	N/A	Yes	No	Remarks
	General Waste				
5.1	Are sufficient waste disposal points provided?	☐	☑	☐	
5.2	Is waste disposed regularly?	☐	☑	☐	
5.3	Is the general waste generated on-site stored in enclosed bins or compaction units separately from the construction and chemical wastes?	☐	☑	☐	
5.4	Are separated labeled containers/ areas provided for facilitating recycling and waste segregation?	☐	☑	☐	
	Construction Waste				
5.5	Are the temporary stockpiles maintained regularly?	☐	☑	☐	
5.6	Are the C&D materials sorted and recycled on-site?	☐	☑	☐	
5.7	Are the public fill and C&D waste segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal?	☐	☑	☐	
5.8	Is the segregation and storage of C&D wastes undertaken in designated area?	☐	☑	☐	

5.9	Are waste storage area properly cleaned and do not cause windblown litter and dust nuisance?	☐	☑	☐	
5.10	Are surplus insert C&D materials only consist of earth, building debris and broken rock and concrete and free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered unsuitable by the public filling supervisor?	☐	☑	☐	
	Chemical / Fuel Storage Area				
5.11	Are the fuel tanks and chemical storage areas provided with locks and sited on sealed areas?	☑	☐	☐	
5.12	Are the storage areas labeled and separated (if needed)?	☐	☑	☐	
5.13	Do the storage areas have adequate ventilation and be covered to prevent rainfall entering?	☐	☑	☐	
5.14	Are the containers used for the storage of chemical wastes suitable for the substance that are holding, resist to corrosion, maintained in a good condition, and securely closed?	☐	☑	☐	
5.15	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)	☐	☑	☐	
	Chemical Waste / Waste Oil				
5.16	Is chemical waste or waste oil stored and labeled in English and Chinese properly in designated area?	☐	☑	☐	
5.17	Are chemicals and waste oil collected and stored for recycling or proper disposal?	☐	☑	☐	
	Records				
5.18	Is a licensed waste hauler used for waste collection?	☐	☑	☐	
5.19	Are the records of quantities of wastes generated, recycled and disposed properly kept?	☐	☑	☐	
5.20	For the demolition material/ waste, is the number of loads for each day recorded as appropriate?	☐	☑	☐	

6	**Landscape and Visual Impacts**	N/A	Yes	No	Remarks
6.1	Is the work site confined within site boundaries?	☐	☑	☐	
6.2	Is damage to surrounding areas avoided?	☐	☑	☐	

7	**Environmental Complaint**	N/A	Yes	No	Remarks
7.1	Number of Environmental Complaint received from dd/mm/yyyy to dd/mm/yyyy?	☑	☐	☐	

8	**General Housekeeping**	N/A	Yes	No	Remarks
8.1	Are potential stagnant pools cleared and mosquito breeding prevented?	☐	☑	☐	
8.2	Are the defined boundaries of working areas identified to prevent loss of vegetation?	☐	☑	☐	

9	**Others**	N/A	Yes	No	Remarks
9.1	Are the portable toilets maintained in a state, which will not deter the workers from utilizing these portable toilets?	☐	☑	☐	

Follow up actions for pervious Site Audit: Follow up action to item on 17-5-19, All item was improved. **Observations** N/A
Corrective Actions – Mitigation Measures Implemented or Proposed (if any): N/A

Signature:
ET's representative

Name: Fatie Tsy
Date: 22-5-19

Signature:
Contractor's representative

Name: Jason Leung
Date: 22/5/19.

Signature:
ET Leader

Name: C. L. Law
Date: 22.05.2019

Signature:
SO's representative

Name: CY Wong
Date: 22/5/2019

Summary of the Weekly Environmental Site Inspection

Item	Details of observations	Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Proposed Follow up Date
--	 Follow up action to Item 1 on 17/05/2019, cover was provided.	--	190522_001	No	--

Environmental Site Inspection Checklist – San Wai

Inspection Date: 31-5-19 **Inspected By:** Frankie Tang

Time: 14:00 **Weather Condition:** Fine

Participants: Johnny So, Abby Shum, Jason Lam, Eric Tang

1	Permits/Licenses	N/A	Yes	No	Remarks
1.1	Are Environmental Permit, license/ other permit displayed at major site exit and vehicle access?	☐	☑	☐	
1.2	Are Construction Noise Permits available for inspection?	☐	☑	☐	
1.3	Is wastewater discharge license available for inspection?	☐	☑	☐	
1.4	Are trip tickets for chemical waste and construction waste disposal available for inspection?	☐	☑	☐	
1.5	Are relevant license/permits for disposal of construction waste or excavated materials available for inspection?	☐	☑	☐	

2	Air Quality	N/A	Yes	No	Remarks
2.1	Is open burning avoided?	☐	☑	☐	
2.2	Are speed controlled at 10 km/h on unpaved site areas?	☐	☑	☐	
2.3	Are plant and equipment well maintained (i.e. without black smoke from powered plant)?	☐	☑	☐	
2.4	Observed dust source(s): ☐ Wind erosion ☐ Vehicle/ Equipment Movements ☐ Loading/ unloading of materials ☑ Others: Not observed				
2.5	Are the work sites wetted with water twice a day?	☐	☑	☐	
2.6	After removal of boulders, poles, pillars or temporary or permanent structures, are the entire surface sprayed with water or a dust suppression chemical immediately?	☐	☑	☐	
2.7	Is the area involved demolished items covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition?	☐	☑	☐	
2.8	Are wheel washing facilities with high pressure water jet provided at all site exits if practicable?	☐	☑	☐	
2.9	Are the areas of washing facilities and the road section between the washing facilities and the exit point paved with concrete, bituminous materials or hardcores?	☐	☑	☐	
2.10	Are hoarding ≧ 2.4m tall provided beside roads or area with public access?	☐	☑	☐	
2.11	Are main haul road paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials; or sprayed with water or a dust suppression chemical?	☐	☑	☐	
2.12	Are construction site that is within 30m of a discernible or designated vehicle entrance or exit kept clear of dusty materials?	☐	☑	☐	
2.13	Are all vehicles and plant cleaned before they leave the construction site?	☐	☑	☐	
2.14	Are loaded dump trucks covered by impervious sheeting appropriately	☐	☑	☐	

	before leaving the site?				
2.15	Are working areas of any excavation or earth moving operation sprayed with water or a dusty suppression chemical immediately?	☐	☑	☐	
2.16	Is exposed earth properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, concrete or other suitable surface stabilizer within 6 months after the last construction activity?	☑	☐	☐	
2.17	Are stockpile of dusty material covered entirely by impervious sheeting; placed in an area sheltered on the top and the 3 sides; or sprayed with water or dust suppression chemical?	☑	☐	☐	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	☐	☑	☐	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	☐	☐	☑	i/w 2
2.20	Is every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) covered entirely by impervious sheeting or placed in an area sheltered on the top and 3 sides?	☑	☐	☐	
2.21	Are the approval or exempted NRMM labels painted or securely fixed on site machines or vehicles and displayed at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation?	☐	☑	☐	

3	**Noise**	**N/A**	**Yes**	**No**	**Remarks**
3.1	Are idle plant/equipments turned off or throttled down?	☐	☑	☐	
3.2	Are silenced equipments or quiet plants utilized?	☐	☑	☐	
3.3	Are the silencers or mufflers properly fitted on construction equipments and maintained regularly?	☐	☑	☐	
3.4	Is temporary hoarding installed located on the site boundaries between noisy construction activities and NSRs?	☑	☐	☐	
3.5	Are noise barriers (typically density @14kg/m^2) acoustic mat or full enclosure close to noise plants including air compressor, generators and saw etc. provided to protect NSRs?	☐	☑	☐	
3.6	Do air compressors have valid noise labels?	☑	☐	☐	
3.7	Are compressor operated with doors closed?	☑	☐	☐	
3.8	QPME used with valid noise labels?	☑	☐	☐	
3.9	Are construction activities planned so that parallel operation of several sets of equipment close to a given receiver is avoided?	☑	☐	☐	
3.10	Major noise source(s): ☑ Traffic ☑ Construction activities inside of site ☐ Construction activities outside of site ☐ Others:				

4	**Water Quality**	**N/A**	**Yes**	**No**	**Remarks**
	Construction Activities				
4.1	Before a rainstorm, are exposed stockpiles covered with tarpaulin or impervious sheets?	☑	☐	☐	
4.2	Are stockpiles of materials placed in the locations away from the drainage channel?	☑	☐	☐	

4.3	Are site drainage systems and treatment facilities provided to minimize the water pollution?	☐	☑	☐	
4.4	Is the treated effluent quality met the requirements specified in the discharge license?	☐	☑	☐	
4.5	Is the sewage generated from toilets collected using a temporary storage system?	☑	☐	☐	
4.6	Are sewage effluent and discharges from on-site kitchen facilities directed to public foul sewers or collected in a temporary storage tank if connection to public foul sewers is not feasible?	☑	☐	☐	
4.7	Is a licensed waste collector employed to clean the chemical toilets and temporary storage tank on a regular basis?	☑	☐	☐	
4.8	Is the storm drainage directed to storm drains via adequately designed sand/ silt removal facilities e.g. sand traps, silt traps and sediment basins?	☐	☑	☐	
4.9	Are measures taken to prevent the washout of construction materials, soil, silt or debris into any drainage system?	☐	☐	☑	
4.10	Are manholes adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and prevent storm run-off getting into foul sewers?	☑	☐	☐	
4.11	Is a wheel washing bay provided at every site exit?	☐	☑	☐	
4.12	Is the wheel wash overflow directed to silt removal facilities before being discharged to the storm drain?	☐	☑	☐	
4.13	Is the section of construction road between the wheel washing bay and the public road surfaced with crushed stone or coarse gravel?	☐	☑	☐	
4.14	Does the surface runoff from bunded areas pass through oil/grease traps prior to discharge to the storm water system?	☑	☐	☐	
4.15	Are sedimentation tanks or package treatment systems provided to treat the large amount of sediment-laden wastewater generated from wheel washing, site runoff and construction works?	☐	☑	☐	

5	**Waste / Chemical Management**	N/A	Yes	No	Remarks
	General Waste				
5.1	Are sufficient waste disposal points provided?	☐	☑	☐	
5.2	Is waste disposed regularly?	☐	☑	☐	
5.3	Is the general waste generated on-site stored in enclosed bins or compaction units separately from the construction and chemical wastes?	☐	☑	☐	
5.4	Are separated labeled containers/ areas provided for facilitating recycling and waste segregation?	☐	☑	☐	
	Construction Waste		☑		
5.5	Are the temporary stockpiles maintained regularly?	☐	☐	☐	
5.6	Are the C&D materials sorted and recycled on-site?	☐	☑	☐	
5.7	Are the public fill and C&D waste segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal?	☐	☑	☐	
5.8	Is the segregation and storage of C&D wastes undertaken in designated area?	☐	☑	☐	

5.9	Are waste storage area properly cleaned and do not cause windblown litter and dust nuisance?	☐	☑	☐	
5.10	Are surplus insert C&D materials only consist of earth, building debris and broken rock and concrete and free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered unsuitable by the public filling supervisor?	☐	☑	☐	
	Chemical / Fuel Storage Area				
5.11	Are the fuel tanks and chemical storage areas provided with locks and sited on sealed areas?	☑	☐	☐	
5.12	Are the storage areas labeled and separated (if needed)?	☐	☑	☐	
5.13	Do the storage areas have adequate ventilation and be covered to prevent rainfall entering?	☐	☑	☐	
5.14	Are the containers used for the storage of chemical wastes suitable for the substance that are holding, resist to corrosion, maintained in a good condition, and securely closed?	☐	☑	☐	
5.15	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)	☐	☑	☐	
	Chemical Waste / Waste Oil				
5.16	Is chemical waste or waste oil stored and labeled in English and Chinese properly in designated area?	☐	☑	☐	
5.17	Are chemicals and waste oil collected and stored for recycling or proper disposal?	☐	☑	☐	
	Records				
5.18	Is a licensed waste hauler used for waste collection?	☐	☑	☐	
5.19	Are the records of quantities of wastes generated, recycled and disposed properly kept?	☐	☑	☐	
5.20	For the demolition material/ waste, is the number of loads for each day recorded as appropriate?	☐	☑	☐	

6	**Landscape and Visual Impacts**	N/A	Yes	No	Remarks
6.1	Is the work site confined within site boundaries?	☐	☑	☐	
6.2	Is damage to surrounding areas avoided?	☐	☑	☐	

7	**Environmental Complaint**	N/A	Yes	No	Remarks
7.1	Number of Environmental Complaint received from dd/mm/yyyy to dd/mm/yyyy?	☑	☐	☐	

8	**General Housekeeping**	N/A	Yes	No	Remarks
8.1	Are potential stagnant pools cleared and mosquito breeding prevented?	☐	☑	☐	
8.2	Are the defined boundaries of working areas identified to prevent loss of vegetation?	☐	☑	☐	

9	**Others**	N/A	Yes	No	Remarks
9.1	Are the portable toilets maintained in a state, which will not deter the workers from utilizing these portable toilets?	☐	☑	☐	

Follow up actions for pervious Site Audit: N/A

Observations Item 1: Temporarily sealed barrier was found damaged at PJ.

Item 2: Fill material was observed without cover at the Northern site of UV.

Corrective Actions – Mitigation Measures Implemented or Proposed (if any):

Item 1: Provide the properly measure to prevent the washout of construction material

Item 2: Provide the cover for fill material properly

Signature:
ET's representative

Name: Fulie Tsy
Date: 31-5-19

Signature:
Contractor's representative

Name: Jason Leung
Date: 31.5.19.

Signature:
ET Leader

Name: C. L. Lau
Date: 31.05.2019

Signature:
SO's representative

Name: [illegible]
Date: 31/5/2019

Summary of the Weekly Environmental Site Inspection

Item	Details of observations	Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Proposed Follow up Date
1	 Temporarily cover was not fully overspread the drainage at P1.	To provide proper mitigation measure	190531_001	Yes	06/06/2019
2	 Fill material was observed without cover at the Northern side of UV.	To provide the cover for the fill material	190531_001	Yes	06/06/2019

Appendix I

Landscape and Visual Impact Assessment Checklist

Landscape and Visual Impact Assessment Checklist for Site Audit

Inspection Date: 3 May 2019 **Weather:** Sunny/ ~~Fine/~~ **Cloudy** ~~/ Rainy~~
Time: 15:00 p.m. **Wind:** ~~Strong/ Breeze/ Light/~~ **Calm**

Item	Description	YES	NO	N/A	Actions/ Remarks
1	**Construction Phase**				
1.1	Is the detailed tree survey completed prior to construction work?	✓			
1.2	Are trees to be transplanted removed to their final positions?		✓		
1.3	Are the transplants and existing trees to be retained properly protected from damage by stout hoarding positioned as directed by a qualified Landscape Architect?	✓			Eastern side trees: Protective fence has been provided at lot. A few nos. of trees are protected near the site entrance
1.4	Is regular inspection of the retained and transplanted trees made to ensure the effectiveness of the hoarding?	✓			
1.5	Are the TPZ clearly demarcated on site and surrounded by strong fences sturdy enough to withstand impacts from the construction activities?	✓			Except trees far beyond the extent of construction activities, protective fence is noted.
1.6	Are warning signs and notices installed at the fences denoting the "tree protection zone" to prohibit the entry of equipment or construction activities?	✓			
1.7	Are tree labels with clear indication of tree no. and status (e.g. "R", "T" or "F") provided for all the trees on site?	✓			
1.8	If protective fencings are not practicable, are the tree root systems adequately protected from soil compaction due to passage of vehicles, equipment or machinery?	✓			
1.9	Are vehicular/foot paths and storage areas designated away from TPZ?	✓			
1.10	Are the trees properly irrigated and sprayed with water to remove the accumulated construction dust during dry season in order to lessen			✓	

	the chances of decline and to maintain the vigour of trees?				
1.11	Are the trees free from any sign of distress, such as dieback, leaf loss, or general decline in tree health or appearance or tree damage with symptoms of construction injury?			✓	Trees in eastern boundary: 1) Dead branches to remove 2) Tear bark/ stubs to be properly pruned.
1.12	Are the trees free from wire or nail and prohibited to be used as anchor for any site activities?	✓			
1.13	Are cutting, trenching, excavating or raising of soil level within the TPZ prohibited?	✓			
1.14	Is improper pruning of the tree branches/roots prohibited?	✓			
1.15	Are the trees free from any tree root damage?	✓			
1.16	Are construction works or operation of machines within the TPZ prohibited?	✓			
1.17	Is the TPZ free from pollution from effluent water, machine petroleum or chemical spillage?	✓			
1.18	Is the excavated topsoil stored and protected on site for reuse for restoration of screen planting works?			✓	The site has previously been reclaimed from ponds. Most of the excavated topsoil is not desirable for reuse due to its inferior quality. Contractor's submitted referencing documents are attached in the checklist dated 4 May, 2018 for information.
1.19	Is the progress of the above activities reported in the monthly EM&A report?	✓			
2	**Operational Phase (12 months period from commissioning of the expanded and upgraded works)**				
2.1	Is a planting reserve, where locates around the site perimeter of approximately 5m wide, provided to allow a continuous belt of trees to be planted as a visual screen?			✓	
2.2	Is the planting reserve complemented the boundary			✓	

	planting to the existing San Wai STW?				
2.3	Is all new planting maintained for 12 months to ensure proper establishment?			✓	
2.4	Are the trees free from sign of deterioration of tree health and/or structure?			✓	
2.5	Are the trees free from insect pests and disease pathogens?			✓	
2.6	Are the irrigation systems functioning properly and well maintained?			✓	
2.7	Are the tree root systems adequately protected from soil compaction due to storage of materials or operation of machinery?			✓	

Summary/ Remarks:

Follow up actions taken by Contractor for previous comments:

1. Trees at eastern boundary – pruning of dead branches has carried out. Contractor is reminded to carry out proper reduction cut to some of the branches in future to meet the current tree care standard.

The contractor was reminded to rectify the following:

1. Generally, contractor was reminded to keep on the tree protection and maintenance.

New Observation:

1. Grade change and construction activities are noted on site. Contractor was reminded not to disturb the TPZ.

Reminders:

1. Contractor was reminded to provide TPZ with robust fence, whenever possible, at the drip line of all retained trees unless the trees are well beyond the extend of construction activities.
2. Contractor was reminded not to disturb trees outside site along the boundary.

Photo Record:

Figure 1	Figure 2
	
General condition of the existing trees at eastern boundary	General condition of the south-west corner of the site. Former trees are removed.

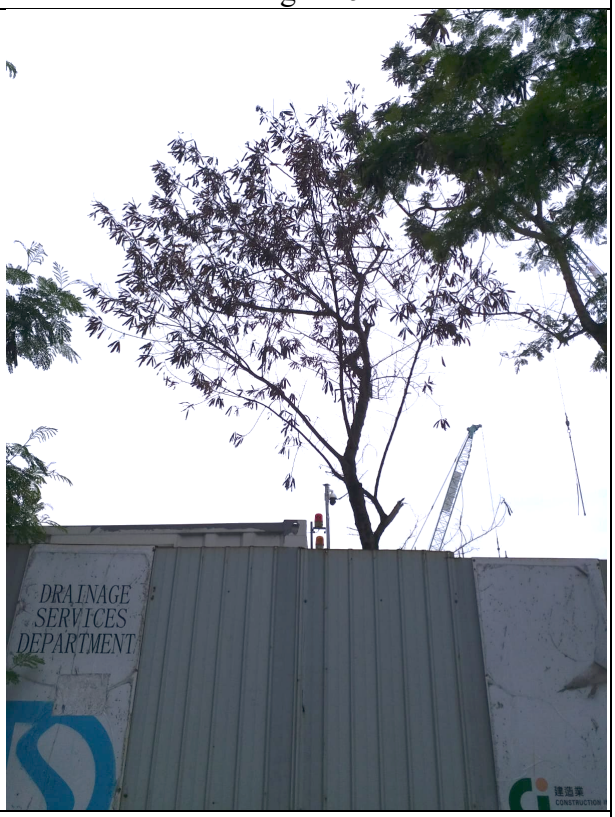
Figure 3	Figure 4
	
Condition of trees at the entrance of the existing treatment plant	All the existing trees near the eastern entrance are removed
Figure 5	Figure 6
	
Existing trees at the site entrance protected by the hoarding fence	The condition of the tree is in poor vigour, contractor is reminded to keep on monitoring

Figure 7	
	
One of the sports of stored piles (debris) under the tree	

Signature:

		Signature	Date
Inspected & Recorded by	Registered Landscape Architect	Xylem Leung	

Landscape and Visual Impact Assessment Checklist for Site Audit

Inspection Date: 17 May 2019 **Weather:** Sunny/ **Fine**/ ~~Cloudy / Rainy~~
Time: 14:30 p.m. **Wind:** ~~Strong/ Breeze/ Light/~~ **Calm**

Item	Description	YES	NO	N/A	Actions/ Remarks
1	**Construction Phase**				
1.1	Is the detailed tree survey completed prior to construction work?	✓			
1.2	Are trees to be transplanted removed to their final positions?		✓		
1.3	Are the transplants and existing trees to be retained properly protected from damage by stout hoarding positioned as directed by a qualified Landscape Architect?	✓			Eastern side trees: Protective fence has been provided at lot. A few nos. of trees are protected near the site entrance
1.4	Is regular inspection of the retained and transplanted trees made to ensure the effectiveness of the hoarding?	✓			
1.5	Are the TPZ clearly demarcated on site and surrounded by strong fences sturdy enough to withstand impacts from the construction activities?	✓			Except trees far beyond the extent of construction activities, protective fence is noted.
1.6	Are warning signs and notices installed at the fences denoting the "tree protection zone" to prohibit the entry of equipment or construction activities?	✓			
1.7	Are tree labels with clear indication of tree no. and status (e.g. "R", "T" or "F") provided for all the trees on site?	✓			
1.8	If protective fencings are not practicable, are the tree root systems adequately protected from soil compaction due to passage of vehicles, equipment or machinery?	✓			
1.9	Are vehicular/foot paths and storage areas designated away from TPZ?	✓			
1.10	Are the trees properly irrigated and sprayed with water to remove the accumulated construction dust during dry season in order to lessen			✓	

	the chances of decline and to maintain the vigour of trees?				
1.11	Are the trees free from any sign of distress, such as dieback, leaf loss, or general decline in tree health or appearance or tree damage with symptoms of construction injury?			✓	Trees in eastern boundary: 1) Dead branches to remove 2) Tear bark/ stubs to be properly pruned.
1.12	Are the trees free from wire or nail and prohibited to be used as anchor for any site activities?	✓			
1.13	Are cutting, trenching, excavating or raising of soil level within the TPZ prohibited?	✓			
1.14	Is improper pruning of the tree branches/roots prohibited?	✓			
1.15	Are the trees free from any tree root damage?	✓			
1.16	Are construction works or operation of machines within the TPZ prohibited?	✓			
1.17	Is the TPZ free from pollution from effluent water, machine petroleum or chemical spillage?	✓			
1.18	Is the excavated topsoil stored and protected on site for reuse for restoration of screen planting works?			✓	The site has previously been reclaimed from ponds. Most of the excavated topsoil is not desirable for reuse due to its inferior quality. Contractor's submitted referencing documents are attached in the checklist dated 4 May, 2018 for information.
1.19	Is the progress of the above activities reported in the monthly EM&A report?	✓			
2	**Operational Phase (12 months period from commissioning of the expanded and upgraded works)**				
2.1	Is a planting reserve, where locates around the site perimeter of approximately 5m wide, provided to allow a continuous belt of trees to be planted as a visual screen?			✓	
2.2	Is the planting reserve complemented the boundary			✓	

	planting to the existing San Wai STW?				
2.3	Is all new planting maintained for 12 months to ensure proper establishment?			✓	
2.4	Are the trees free from sign of deterioration of tree health and/or structure?			✓	
2.5	Are the trees free from insect pests and disease pathogens?			✓	
2.6	Are the irrigation systems functioning properly and well maintained?			✓	
2.7	Are the tree root systems adequately protected from soil compaction due to storage of materials or operation of machinery?			✓	

Summary/ Remarks:

Follow up actions taken by Contractor for previous comments:

1. Trees at eastern boundary – pruning of dead branches has carried out. Contractor is reminded to carry out proper reduction cut to some of the branches in future to meet the current tree care standard.

The contractor was reminded to rectify the following:

1. Generally, contractor was reminded to keep on the tree protection and maintenance.

New Observation:

1. Grade change and construction activities are noted on site. Contractor was reminded not to disturb the TPZ.

Reminders:

1. Contractor was reminded to provide TPZ with robust fence, whenever possible, at the drip line of all retained trees unless the trees are well beyond the extend of construction activities.
2. Contractor was reminded not to disturb trees outside site along the boundary.
3. Death branch is found on T11 (Grevillea robusta). Contractor was reminded to keep on monitoring T11 which is in poor vigour. Tree may need to be replaced upon no other possible remedies.

Photo Record:

Figure 1	Figure 2
	
General condition of the existing trees at eastern boundary	General condition of the south-west corner of the site. Former trees are removed.

Figure 3	Figure 4
	
Condition of trees at the entrance of the existing treatment plant	All the existing trees near the eastern entrance are removed
Figure 5	Figure 6
	
Existing trees at the site entrance protected by the hoarding fence	Clearance of stored piles and proper protective fence are noted

Figure 7	Figure 8
	
The condition of the tree is in poor vigour and death branch is found on T11	Death branch is found on T11, contractor is required to have follow-up and keep on monitoring. Replacement may be needed.

Signature:

		Signature	Date
Inspected & Recorded by	Registered Landscape Architect	Xylem Leung	

Landscape and Visual Impact Assessment Checklist for Site Audit

Inspection Date: 31 May 2019 **Weather:** ~~Sunny/ Fine/~~ **Cloudy** ~~/ Rainy~~
Time: 15:30 p.m. **Wind:** ~~Strong/ Breeze/~~ **Light**/~~ Calm~~

Item	Description	YES	NO	N/A	Actions/ Remarks
1	**Construction Phase**				
1.1	Is the detailed tree survey completed prior to construction work?	✓			
1.2	Are trees to be transplanted removed to their final positions?		✓		
1.3	Are the transplants and existing trees to be retained properly protected from damage by stout hoarding positioned as directed by a qualified Landscape Architect?	✓			Eastern side trees: Protective fence has been provided at lot. A few nos. of trees are protected near the site entrance
1.4	Is regular inspection of the retained and transplanted trees made to ensure the effectiveness of the hoarding?	✓			
1.5	Are the TPZ clearly demarcated on site and surrounded by strong fences sturdy enough to withstand impacts from the construction activities?	✓			Except trees far beyond the extent of construction activities, protective fence is noted.
1.6	Are warning signs and notices installed at the fences denoting the "tree protection zone" to prohibit the entry of equipment or construction activities?	✓			
1.7	Are tree labels with clear indication of tree no. and status (e.g. "R", "T" or "F") provided for all the trees on site?	✓			
1.8	If protective fencings are not practicable, are the tree root systems adequately protected from soil compaction due to passage of vehicles, equipment or machinery?	✓			
1.9	Are vehicular/foot paths and storage areas designated away from TPZ?	✓			
1.10	Are the trees properly irrigated and sprayed with water to remove the accumulated construction dust during dry season in order to lessen the chances of decline and to			✓	

	maintain the vigour of trees?				
1.11	Are the trees free from any sign of distress, such as dieback, leaf loss, or general decline in tree health or appearance or tree damage with symptoms of construction injury?			✓	Trees in eastern boundary: 1) Dead branches to remove 2) Tear bark/ stubs to be properly pruned.
1.12	Are the trees free from wire or nail and prohibited to be used as anchor for any site activities?	✓			
1.13	Are cutting, trenching, excavating or raising of soil level within the TPZ prohibited?	✓			
1.14	Is improper pruning of the tree branches/roots prohibited?	✓			
1.15	Are the trees free from any tree root damage?	✓			
1.16	Are construction works or operation of machines within the TPZ prohibited?	✓			
1.17	Is the TPZ free from pollution from effluent water, machine petroleum or chemical spillage?	✓			
1.18	Is the excavated topsoil stored and protected on site for reuse for restoration of screen planting works?			✓	The site has previously been reclaimed from ponds. Most of the excavated topsoil is not desirable for reuse due to its inferior quality. Contractor's submitted referencing documents are attached in the checklist dated 4 May, 2018 for information.
1.19	Is the progress of the above activities reported in the monthly EM&A report?	✓			
2	**Operational Phase (12 months period from commissioning of the expanded and upgraded works)**				
2.1	Is a planting reserve, where locates around the site perimeter of approximately 5m wide, provided to allow a continuous belt of trees to be planted as a visual screen?			✓	
2.2	Is the planting reserve complemented the boundary planting to the existing San Wai			✓	

	STW?				
2.3	Is all new planting maintained for 12 months to ensure proper establishment?			✓	
2.4	Are the trees free from sign of deterioration of tree health and/or structure?			✓	
2.5	Are the trees free from insect pests and disease pathogens?			✓	
2.6	Are the irrigation systems functioning properly and well maintained?			✓	
2.7	Are the tree root systems adequately protected from soil compaction due to storage of materials or operation of machinery?			✓	

Summary/ Remarks:

Follow up actions taken by Contractor for previous comments:

1. Trees at eastern boundary – pruning of dead branches has carried out. Contractor is reminded to carry out proper reduction cut to some of the branches in future to meet the current tree care standard.

The contractor was reminded to rectify the following:

1. Generally, contractor was reminded to keep on the tree protection and maintenance.

New Observation:

1. Grade change and construction activities are noted on site. Contractor was reminded not to disturb the TPZ.

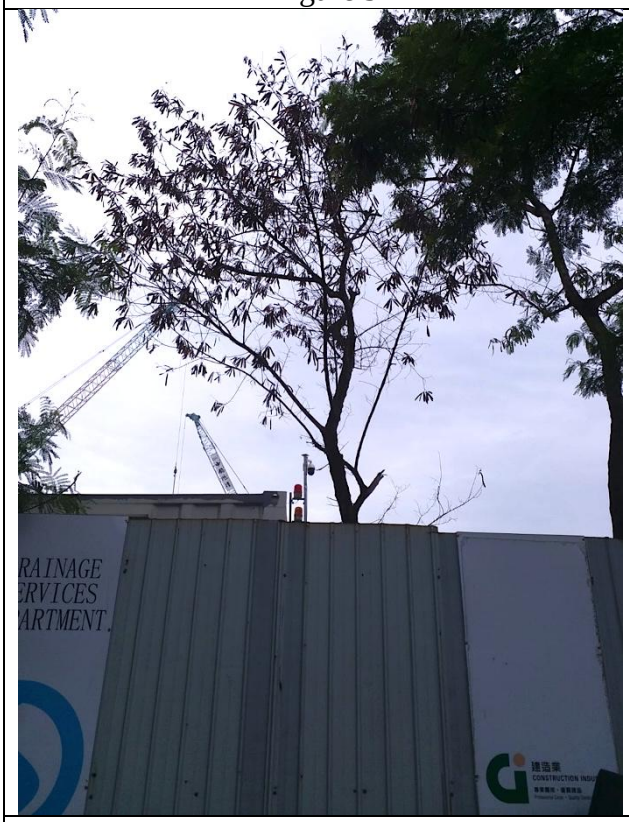
Reminders:

1. Contractor was reminded to provide TPZ with robust fence, whenever possible, at the drip line of all retained trees unless the trees are well beyond the extend of construction activities.
2. Contractor was reminded not to disturb trees outside site along the boundary.
3. Death branch is found on T11 (Leucaena leucocephala). The condition of the tree is found to be in poor condition. Contractor was reminded to keep on monitoring T11 which is in poor vigour. Tree may need to be replaced upon no other possible remedies.

Photo Record:

Figure 1	Figure 2
	
General condition of the existing trees at eastern boundary	General condition of the south-west corner of the site. Former trees are removed.

Figure 3	Figure 4
	
Condition of trees at the entrance of the existing treatment plant	All the existing trees near the eastern entrance are removed
Figure 5	Figure 6
	
Existing trees at the site entrance protected by the hoarding fence	Existing trees at the site entrance protected by the hoarding fence

Figure 7	Figure 8
	
Protective fence is removed. Stored piles are found under the tree.	Death branch is found on T11. Contractor is required to have follow-up and keep on monitoring. Replacement may be needed.
Figure 9	
	
Poor vigour condition of tree T11	

Signature:

		Signature	Date
Inspected & Recorded by	Registered Landscape Architect	Xylem Leung	

Appendix J

Waste Flow Table

Name of Department: DSD

Year: 2019

Project: Design, Build and Operate San Wai Sewage Treatment Works - Phase 1

Contract No.: DC/2013/10

Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Broken Concrete (see Note [3])	Reused in the Contract (see Note)	Reused in other Projects	Disposed as Public Fill (see Note [4])	Imported Fill (see Note [4])	Metals	Paper/ cardboard packaging	Plastics (see Note [2])	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 kg)
Jan	0.988	0.000	0.000	0.000	0.988	0.449	0.000	0.000	0.000	0.000	55.820
Feb	0.632	0.000	0.000	0.000	0.632	0.637	0.000	0.300	0.000	0.000	87.830
Mar	0.750	0.000	0.000	0.000	0.750	0.182	0.000	0.000	0.000	0.000	103.440
Apr	0.625	0.000	0.000	0.000	0.625	0.024	0.000	0.200	0.000	0.000	129.800
May	0.442	0.000	0.206	0.000	0.442	0.032	0.000	0.000	0.000	0.000	186.750
Jun											
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	3.437	0.000	0.206	0.000	3.437	1.324	0.000	0.500	0.000	0.000	563.640

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging materials.

(3) Broken concrete for recycling into aggregates.

(4) Assumption: The densities of subbase, Type A, Type B, Rockfill, Soil, Mix Rock and Soil, Reclaimed Asphalt Pave, Slurry are 2.0 ton/m^3; the densities of Building debris and special fill materials are 2.1 ton/m^3; the densities of Broken Concrete is 2.4 ton/m^3.

Appendix K

Environmental Licenses and Permits

Item No.	Nature of Permit / License / Notification	Permit / License/ Notification No.	Date of Issue / Effective of Permit / License	Date of Expiry of Permit / License	Remark (Validity for reporting period only)
1	Environmental Permit	EP-464/2013	18/10/2013	NA	Valid
2	Billing Account for Disposal of Construction Waste	7025330	07/07/2016	NA	Valid
3	Form NA notification (for APCO)	405489	26/07/2016	25/09/2020	Valid
4	Chemical Waste Producer Registration (for Site)	5218-511-A2823-01	23/01/2017	NA	Valid
5	Wastewater Discharge Licence (for WPCO)	WT00026754-2017	28/04/2017	31/01/2022	Valid
6	Construction Noise Permit (for Site)	GW-RN0698-19	13/12/2018	12/06/2019	Valid

Appendix L

Implementation Schedule for Environmental Mitigation Measures (EMIS)

Environmental Mitigation Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
Air Quality					
• The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures should be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet;	Site Area	√			
• All demolished items (including trees, shrubs, vegetation, boulders, poles, pillars, structures, debris, rubbish and other items arising from site clearance) that may dislodge dust particles should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition;	Site Area	√			
• Vehicle washing facilities including a high pressure water jet should be provided at every discernible or designated vehicle exit point;	Site Entrance	√			
• The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;	Site Exit	√			
• Where a site boundary adjoins a road, street, service and or other area accessible to the public, hoarding of not less than 2.4m from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit;	Site Area	√			
• Every main haul road (i.e. any course inside a construction site having a vehicle passing rate of higher than 4 in any 30 minutes) should be paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials; or sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet;	Main Haul Road	√			
• The portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit should be kept clear of dusty materials;	Site Entrance and Exit	√			
• Immediately before leaving a construction site, every vehicle should be washed to remove any dusty materials from its body and wheels;	Site Exit	√			
• Where a vehicle leaving a construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle;	--	√			
• The working area of any excavation or earth moving operation should be sprayed with water or a dusty suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet;	Site Area	√			
• Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable	Site Area	√			

surface stabilizer within 6 months after the last construction activity on the construction site or part of the construction site where the exposed earth lies;					
• Any stockpile of dusty material should be either covered entirely by impervious sheeting; placed in an area sheltered on the top and the 3 sides; or sprayed with water or a dust suppression chemical so as to maintain the entire surface wet.	Site Area	√			
Noise					
• Quiet plants should be used in order to reduce the noise impacts to protect the nearby NSRs.	Site Area	√			
• Temporary and Movable Noise Barriers should be used in order to reduce the noise impact to the surrounding sensitive receivers	Site Area	√			
• Intermittent noisy activities should be scheduled to minimize exposure of nearby NSRs to high levels of construction noise.	Site Area	√			
• Idle equipment should be turned off or throttled down.	Site Area	√			
• Construction activities should be planned so that parallel operation of several sets of equipment close to a given receiver is avoided	Site Area	√			
• Construction plant should be properly maintained and operated.	Site Area	√			
Water Quality					
• Exposed stockpiles should be covered with tarpaulin or impervious sheets before a rainstorm occurs;	Site Area		√		
• The exposed soil surfaces should also be properly protected to minimize dust emission;	Site Area	√			
• The stockpiles of materials should be placed in the locations away from the drainage channel so as to avoid releasing materials into the channel;	Site Area	√			
• Wheel washing facilities should be provided at site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles;	Site Exit	√			
• Provision of site drainage systems and treatment facilities would be required to minimize the water pollution;	Site Area	√			
• A discharge license needs to be applied from EPD for discharging effluent from the construction site;	--	√			
• The treated effluent quality is required to meet the requirements specified in the discharge license;	--	√			
• Provision of chemical toilets is required to collect sewage from workforce. The chemical toilets should be cleaned on a regular basis;	Chemical Toilet	√			

• A licensed waste collector should be employed to clean the chemical toilets and temporary storage tank on a regular basis;	--	√			
• Illegal disposal of chemicals should be strictly prohibited;	Site Area	√			
• Registration as a chemical waste producer is required if chemical wastes are generated and need to be disposed of. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes;	Site Area	√			
• Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance should be used as a guideline for handing chemical wastes;	Site Area	√			
• The impact from accidental spillage of chemicals can be effectively controlled through good management practices.	Site Area	√			
Waste Management					
• 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;	Site Area	√			
• To encourage collection of aluminium cans by individual collectors, separate bins should be provided to segregate this waste from other general refuse generated by the workforce;	Site Area	√			
• Any unused chemicals or those with remaining functional capacity should be recycled;	Site Area	√			
• Prior to disposal of C&D waste, it is recommended that wood, steel and other metals be separated for re-use and/or recycling and inert waste as fill material to minimize the quantity of waste to be disposed of to landfill;	Site Area		√		
• Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and	Site Area		√		
• Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.	Site Area	√			
Landscape and Visual					
• Detailed tree survey should have been completed	Site Area	√			
• Trees should be transplanted to their final positions clear of the construction site	--			√	
• Erect site hoarding to protect adjacent vegetation from damage	Site Area	√			

• Regular inspections of the transplanted trees should be made to ensure the effectiveness of the hoarding	Site Area	√			
• Any topsoil excavated during the course of the works should be stored and protected on site for reuse for the restoration and screen planting works	Site Area			√	

Appendix M

Environmental Site Inspection Schedule

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Contract No. DC/2013/10 -
Design, Build and Operate San Wai Sewage Treatment Works – Stage 1

Schedule for Environmental Monitoring and Site Inspection

May 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2 **WQM**	3 **SI**	4 **WQM**
5	6 **24hr-TSP** **1hr-TSP x 3** **NM**	7 **Effluent Sampling** **WQM**	8	9 **WQM**	10 **SI**	11 **24hr-TSP** **1hr-TSP x 3** **NM** **WQM**
12	13	14 **WQM**	15	16 **WQM**	17 **24hr-TSP** **1hr-TSP x 3** **NM** **SI**	18 **WQM**
19	20	21 **Effluent Sampling** **WQM**	22	23 **24hr-TSP** **1hr-TSP x 3** **NM** **WQM**	24 **SI**	25 **WQM**
26	27	28 **WQM**	29 **24hr-TSP** **1hr-TSP x 3** **NM**	30 **WQM**	31 **SI**	

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Contract No. DC/2013/10 -
Design, Build and Operate San Wai Sewage Treatment Works – Stage 1

Schedule for Environmental Monitoring and Site Inspection

June 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 **SI** **WQM**
2	3	4 **24hr-TSP** **1hr-TSP x 3** **NM** **Effluent Sampling** **WQM**	5	6 **WQM** **SI**	7	8 **WQM**
9	10 **24hr-TSP** **1hr-TSP x 3** **NM**	11 **WQM**	12	13 **WQM**	14 **SI**	15 **24hr-TSP** **1hr-TSP x 3** **NM** **WQM**
16	17	18 **Effluent Sampling** **WQM**	19	20 **WQM**	21 **24hr-TSP** **1hr-TSP x 3** **NM** **SI**	22 **WQM**
23	24	25 **WQM**	26	27 **24hr-TSP** **1hr-TSP x 3** **NM** **WQM**	28 **SI**	29 **WQM**
30						

Appendix N

Laboratory Report for Discharge Water

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

HOKLAS 022
TEST CAL

TEST REPORT

Testing of Water and Wastewater

Report No. : ENA93919
Date of Issue : 18 May 2019

Information Provided by Customer

Customer Name	:	ATAL-Degremont-China Harbour Joint Venture
Customer Address	:	19/F, China Harbour Building, 370-374 King's Road, North Point, Hong Kong
Sample Source	:	Contract No. DC/2013/10 - Design, Build and Operate San Wai Sewage Treatment Works - Stage 1
Sample Type	:	Wastewater
Date of Sampling	:	07 May 2019
Sample Description	:	Sample was stored in 1L plastic bottle (for pH and Total Suspended Solids). Sample was stored in 500ml plastic bottle (for Chemical Oxygen Demand). Sample for Chemical Oxygen Demand was preserved by adding conc. H_2SO_4 to pH <2. Sample was collected by the customer and refrigerated after received.

Laboratory Information

Date of Received	:	07 May 2019
Date of Testing Period	:	07 to 10 May 2019
Lab Ref. No.	:	W43892

Result

Sample ID	Sample No.	Test	Method Used	Result	Unit
P1a	01	pH	In house method TPE/003/W	8.6	(at 25°C)
		Total Suspended Solids	In house method TPE/006/W	<5*	mg/L
	02	Chemical Oxygen Demand	In house method TPE/002/W	<10	mgO_2/L

Remark(s):
1. The results relate only to the tested sample as received.
2. *200ml sample was used for Total Suspended Solids analysis. PQL of Total Suspended Solids reported less than 5 mg/L.

Approved Signatory :
LAU, Chi Leung

TPE/001/W

- END OF REPORT -

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

HOKLAS 022
TEST CAL

TEST REPORT

Testing of Water and Wastewater

Report No. : ENA94271
Date of Issue : 31 May 2019

Information Provided by Customer

Customer Name	:	ATAL-Degremont-China Harbour Joint Venture
Customer Address	:	19/F, China Harbour Building, 370-374 King's Road, North Point, Hong Kong
Sample Source	:	Contract No. DC/2013/10 - Design, Build and Operate San Wai Sewage Treatment Works - Stage 1
Sample Type	:	Wastewater
Date of Sampling	:	21 May 2019
Sample Description	:	Sample was stored in 1L plastic bottle (for pH and Total Suspended Solids). Sample was stored in 500ml plastic bottle (for Chemical Oxygen Demand). Sample for Chemical Oxygen Demand was preserved by adding conc. H_2SO_4 to pH <2. Sample was collected by the customer and refrigerated after received.

Laboratory Information

Date of Received	:	21 May 2019
Date of Testing Period	:	21 to 23 May 2019
Lab Ref. No.	:	W44003

Result

Sample ID	Sample No.	Test	Method Used	Result	Unit
P1a	01	pH	In house method TPE/003/W	8.5	(at 25°C)
		Total Suspended Solids	In house method TPE/006/W	<5*	mg/L
	02	Chemical Oxygen Demand	In house method TPE/002/W	<10	mgO_2/L

Remark(s):
1. The results relate only to the tested sample as received.
2. *200ml sample was used for Total Suspended Solids analysis. PQL of Total Suspended Solids reported less than 5 mg/L.

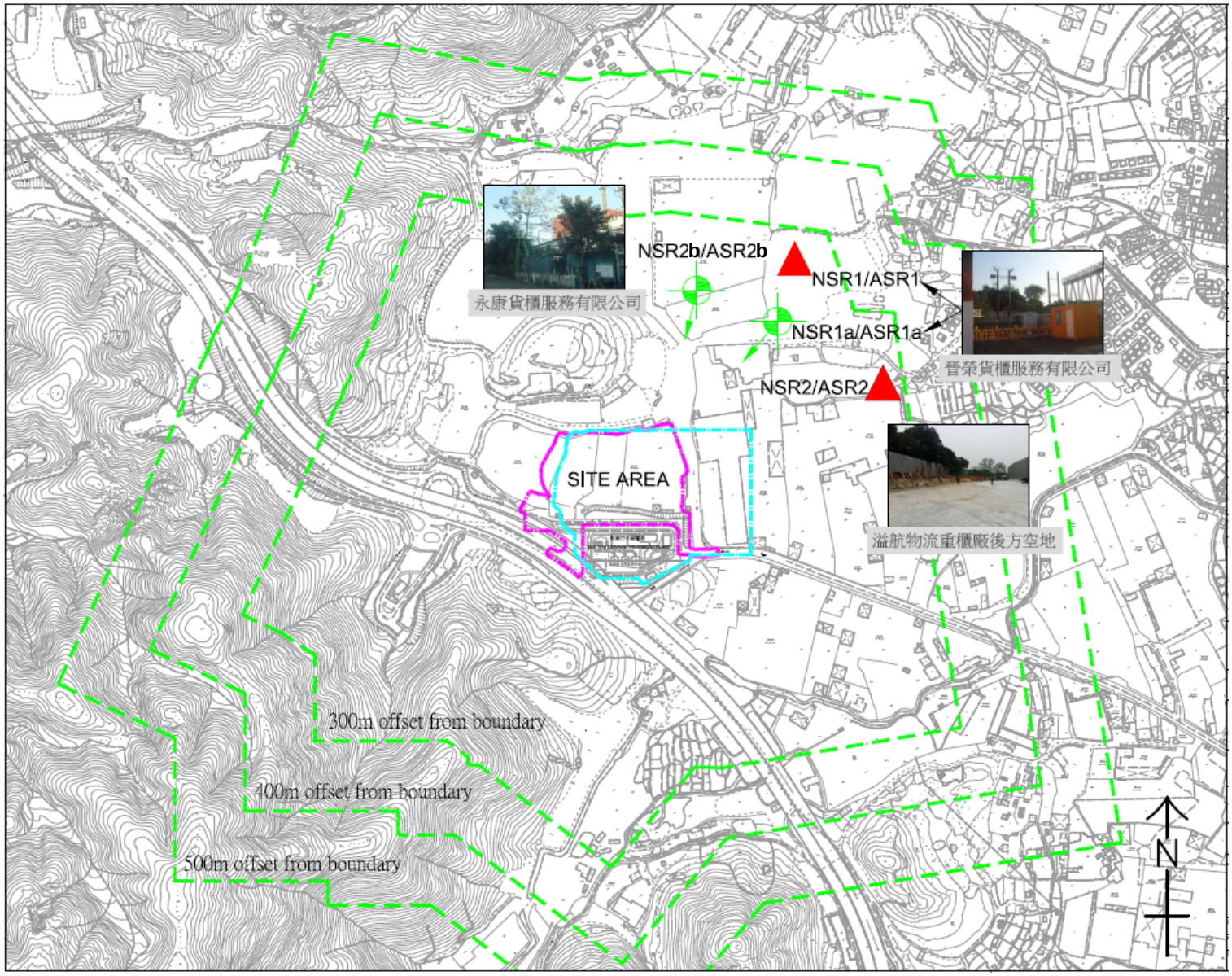
Approved Signatory :
LAU, Chi Leung

TPE/001/W

- END OF REPORT -

Figure 1

Locations of Air Quality and Noise Monitoring Stations

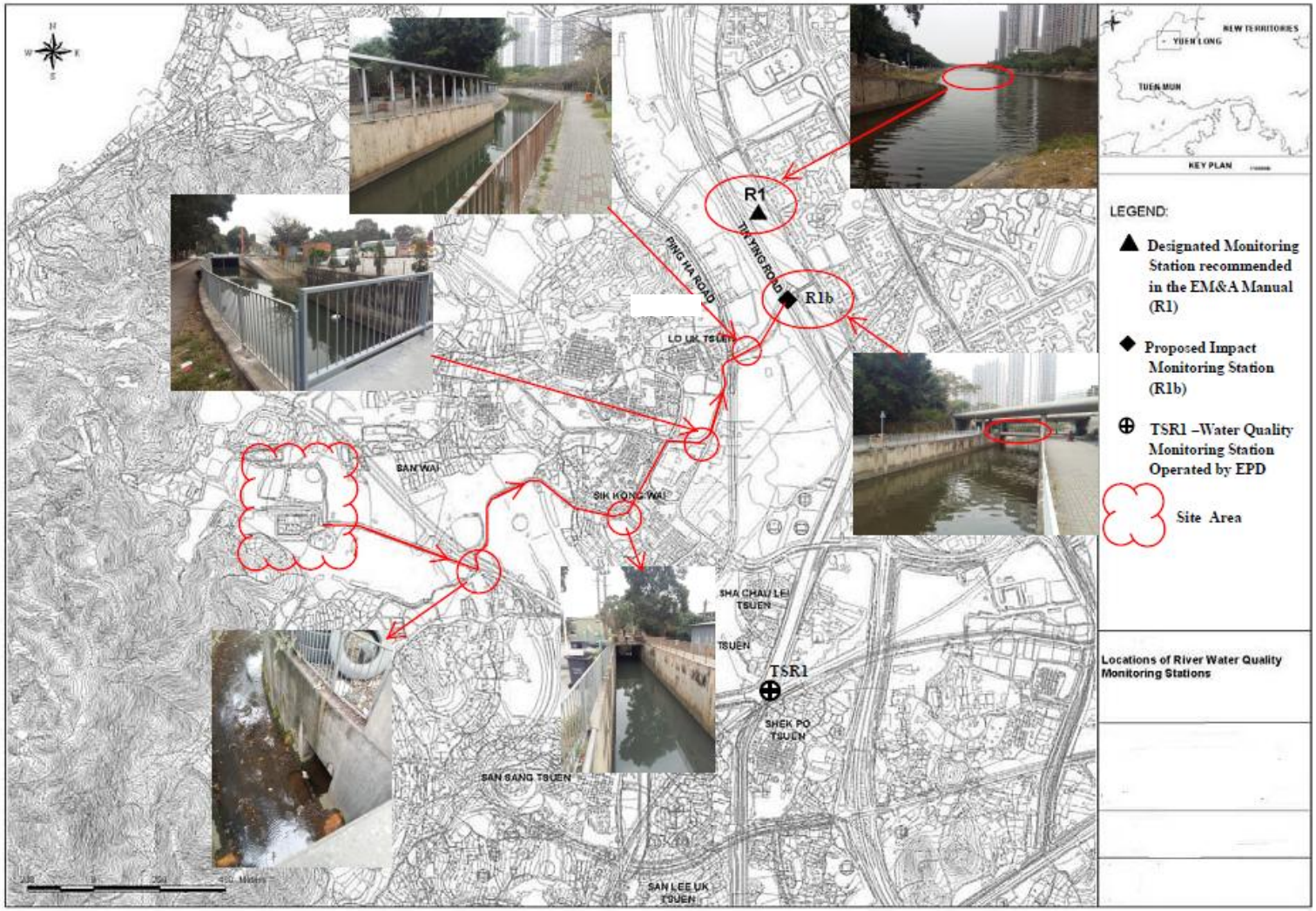


Project: Contract No. DC/2013/10 -Design, Build and Operate San Wai Sewage Treatment Works – Phase 1

Figure 1 Locations of Air Quality and Noise Monitoring Stations

Figure 2

Locations of Water Quality Monitoring Station

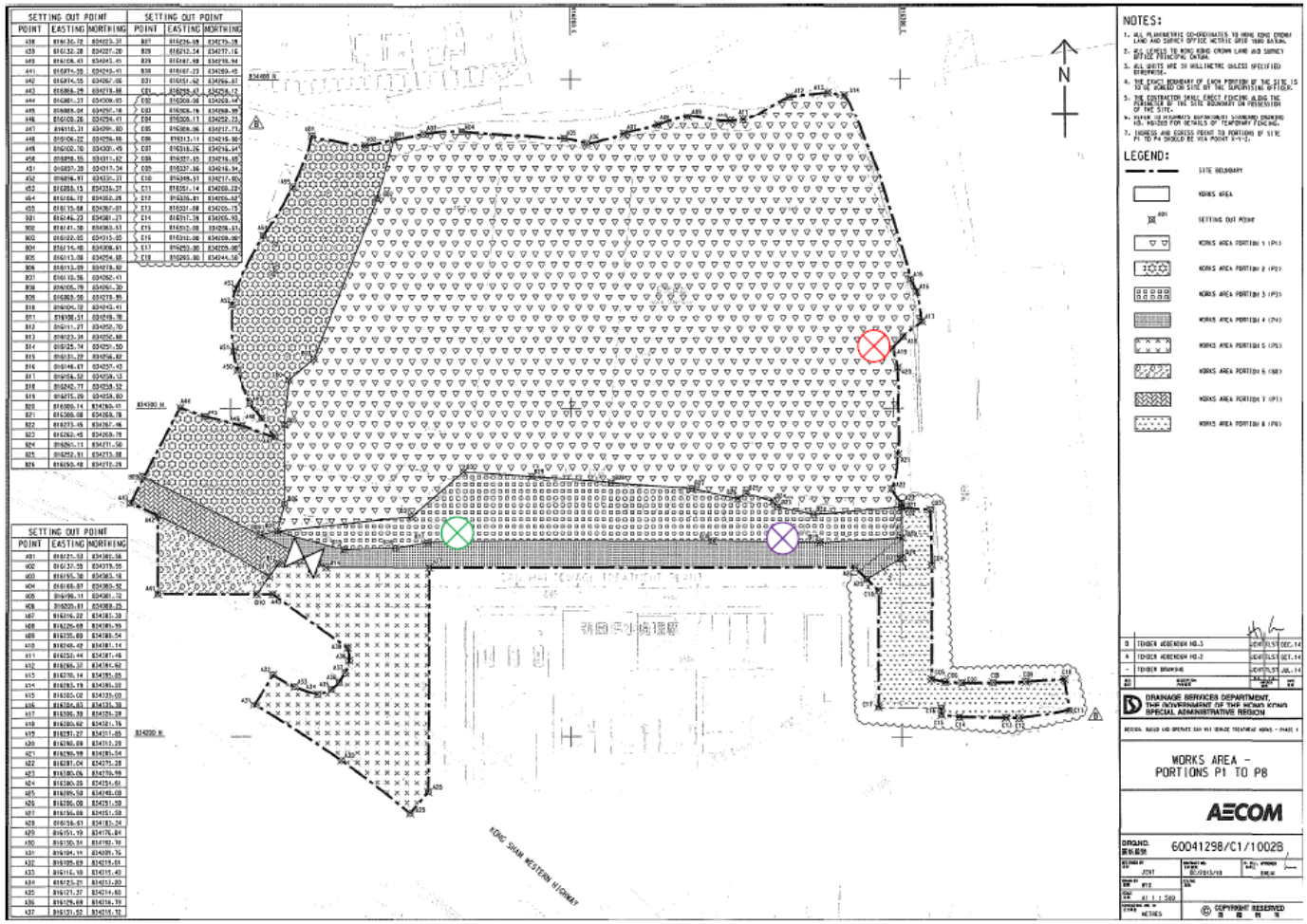


Project: Contract No. DC/2013/10 - Design, Build and Operate San Wai Sewage Treatment Works – Phase 1

Figure 2 Locations of Water Quality Monitoring Station

Figure 3

Location Plan for the Wetsep Treatment Tank



Legend: ⊗ Wetsep treatment tank P1a ⊗ Wetsep treatment tank P1b ⊗ Wetsep treatment tank P8

Project: Contract No. DC/2013/10 - Design, Build and Operate San Wai Sewage Treatment Works – Phase 1

Figure 3 Location Plan for the Wetsep Treatment Tank