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. 5

(01 SEPTEMBER – 30 SEPTEMBER 2017)

Prepared by: _____
LO, Ting Yi

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Issued Date: 10 October 2017 *Report No.: ENA75846*

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: HKDSD203/50/104620

Date: 18 October 2017

Attention: Ms Carol Ho

BY EMAIL & POST
(email: carolho@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.5 (September 2017)

We refer to emails of 11 and 18 October 2017 from ETS-Testconsult Limited attaching the Monthly Environmental Monitoring and Audit Report No.5 (September 2017).

We have no further comment and hereby verify the Monthly Environmental Monitoring and Audit Report No.5 (September 2017) 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 Nic Lam on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

Adi Lee
Independent Environmental Checker

LYMA/LHHN/WCKJ/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 : 2008
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 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 September 2017 to 30 September 2017.

Site Activities

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

- *Pile Loading Test*
- *Post-Drilling (Investigation and verification of the quality of socketed H-piles);*
- *Sheet Piling (ELS);*
- *Piling Foundation (Prebored H-pile);*
- *Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber)*

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: 6 Occasions at 2 designated locations*
- *1-hour TSP Monitoring: 18 Occasions at 2 designated locations*
- *Noise Monitoring (Day-time): 6 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:

- *Sheet Piling (ELS);*
- *Substructure (ELS & Bulk excavation);*
- *Substructure (rc structure);*
- *Removal of ELS*

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 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 September to 30 September 2017.

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
	Senior Environmental Consultant	Mr. Nic Lam	2618 2836	nhhlam@anewr.com
Contractor (ATAL-DEGREMONT-CHINA HARBOUR JOINT VENTURE)	Environmental Officer	Mr. Johnny So	9513 8899	johnny.so@c302.chechk.com
	Environmental Supervisor	Ms Cherry Ye	6237 1125	cherry.ye@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:

- *Pile Loading Test*
- *Post-Drilling (Investigation and verification of the quality of socketed H-piles);*
- *Sheet Piling (ELS);*
- *Piling Foundation (Prebored H-pile);*
- *Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber)*

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^oC $\pm$ 3^oC 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 Wetland Park Station of 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 18 occasions of 1-hour TSP monitoring and 6 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

September 2017						
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 ▼

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
ASR2a	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 Wetland Park Station of 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 effectiveness	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with Contractor on the possible mitigation measures; 3. Review the	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Check monitoring data and Contractor's working methods; 4. Discuss with IEC and	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;

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	of Contractor's remedial actions; 6. Keep EPD and ER informed of the results.	proposed mitigation measures submitted by Contractor and advise the ER accordingly.	Contractor on potential remedial actions; 5. Ensure remedial actions properly implemented.	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-31 / 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 6 occasions of noise monitoring were undertaken and the schedule was shown in **Table 3.2**

Table 3.2 Time Schedule of Impact Noise Monitoring

September 2017						
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 ▼

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 NSR2a (永康貨櫃服務有限公司) which shown in **Figure 1**, were required to perform impact noise monitoring.

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
NSR2a	Free Field

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 the causes	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 work is	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 works as

	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.		responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	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

September 2017						
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 ▼

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.

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;	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**
	6. Repeat 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 implemented;	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 to stop all 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 the ER, to

Event	Action			
	ET Leader	IEC	ER	Contractor
	7. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.		part of the marine work until no exceedance of Limit Level.	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 01, 08, 15, 22 & 29 September 2017.

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
25 August 2017	1. Dusty material was found without impervious sheeting. 2. General refuse was observed.	1. Impervious sheet was provided to cover the dusty material. 2. General refuse was collected	01 September 2017
01 September 2017	1. Stagnant pool was found accumulated in the drip tray.	1. Stagnant pool in the drip tray was cleared.	08 September 2017
08 September 2017	1. Oil container was found without drip tray at Portion P1.	1. The oil container was placed in the drip tray.	15 September 2017
15 September 2017	No items were observed.	--	--
22 September 2017	No items were observed.	--	--
29 September 2017	No items were observed.	--	--

5.2. Advice on the Solid and Liquid Waste Management Status

5.2.1. 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

5.2.2. 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 I**. 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)	94	--
Reused in other Projects (Inert) (m^3)	0	--
Disposed as Public Fill (Inert) (m^3)	4,043	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)	8,710	North East New Territories (NENT) Landfill

5.2.3. 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.

5.3. Discharge License and Results of Effluent Monitoring

5.3.1. 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.

5.3.2. Effluent water samples were sampled by the Contractor on 04 September 2017. Since there is no discharge from 16 September 2017 to 30 September 2017, only one water sample was collected on September 2017. 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 M**. For the future effluent monitoring, the laboratory analysis work will start within 24 hours after collection of the samples.

5.3.3. For effluent quality monitoring as per the discharge license requirement, the parameter complied with the discharge license requirement.

5.4. Environmental Licenses and Permits

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

5.5. Implementation Status of Environmental Mitigation Measures

5.5.1. The environmental mitigation measures that recommended in the Environmental Monitoring and Audit Manual covered the issues of dust, noise 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.

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

5.6. Summary of Exceedance of the Environmental Quality Performance Limit

5.6.1. There was no Action and Limit level exceedance of 1-hour and 24-hr TSP monitoring was recorded at station ASR1a and ASR2a during this reporting month.

5.6.2. There was no Action and Limit Level exceedance for noise recorded at station NSR1a and NSR2a during the reporting period.

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

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

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

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

5.7.3. 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 October 2017 are included:

- *Sheet Piling (ELS);*
- *Substructure (ELS & Bulk excavation);*
- *Substructure (rc structure);*
- *Removal of ELS*

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 October 2017 is provided in **Appendix L**.

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 ASR2a during this reporting month.

7.1.2 There was no Action and Limit Level exceedance for noise recorded at station NSR1a and NSR2a 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.

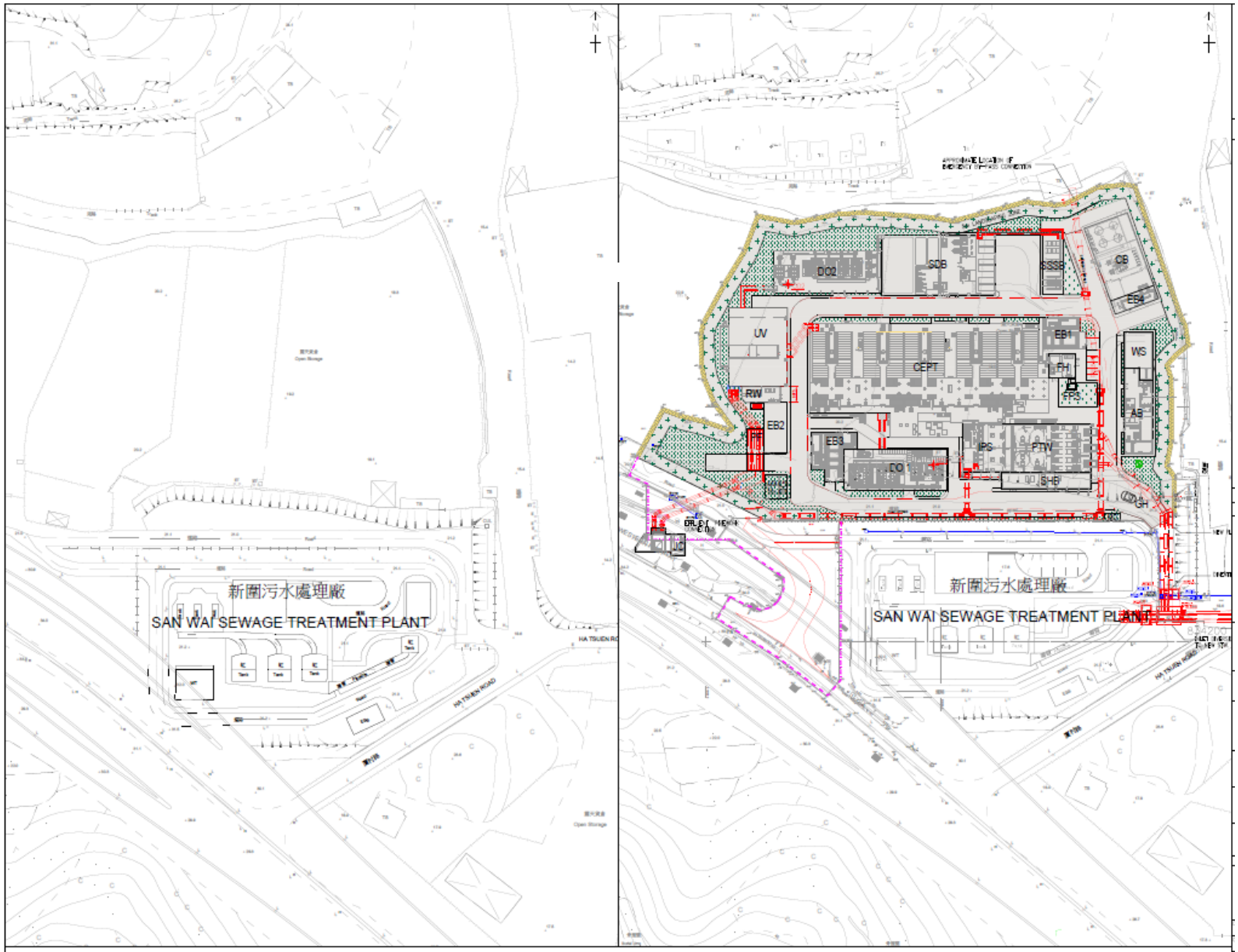
7.1.4 There were no complaints received during the reporting period.

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

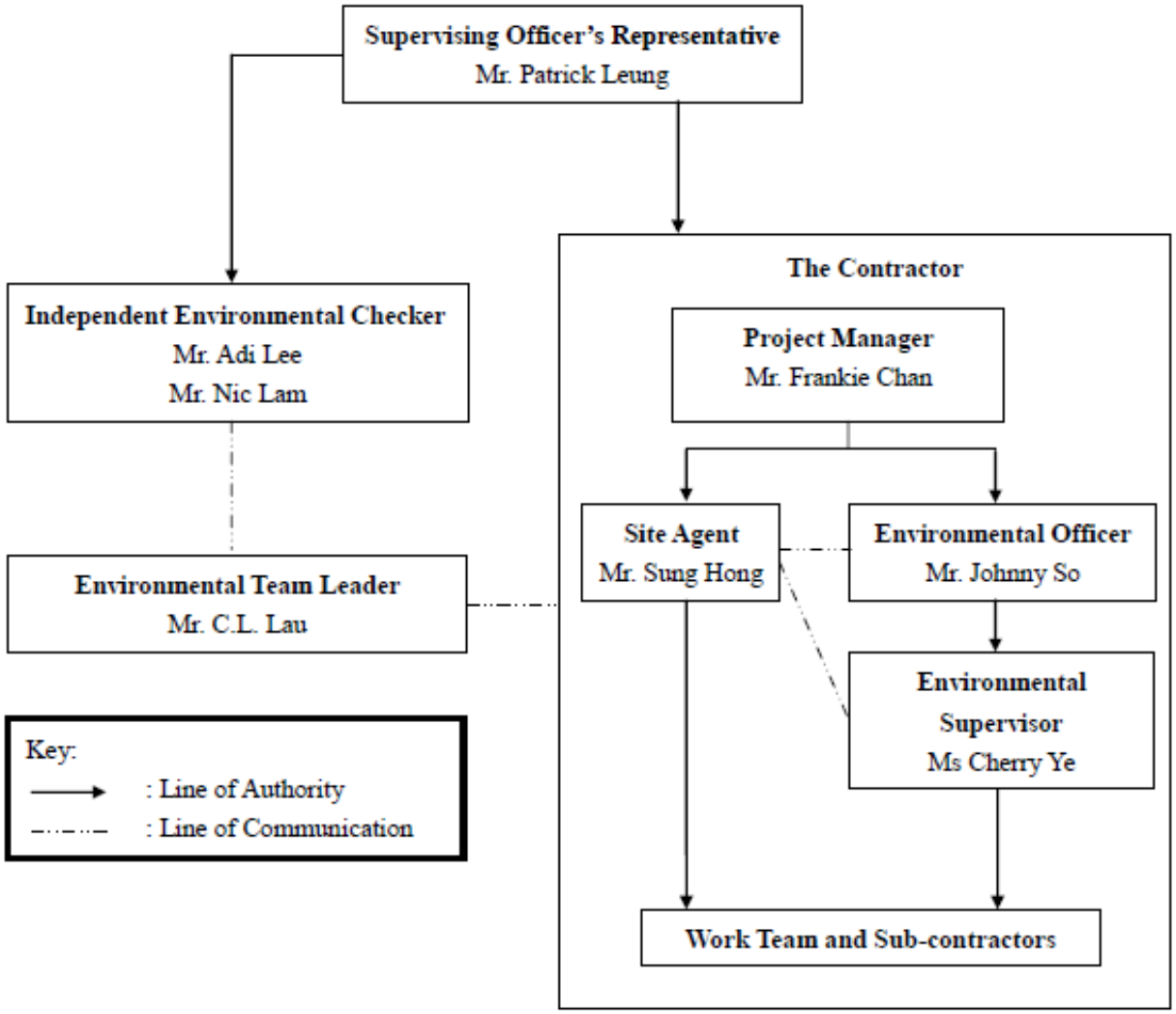


EXISTING SAN WAI SEWAGE TREATMENT WORKS

EXPANDED AND UPGRADED SAN WAI SEWAGE TREATMENT WORKS

Appendix B

Project Organization Chart

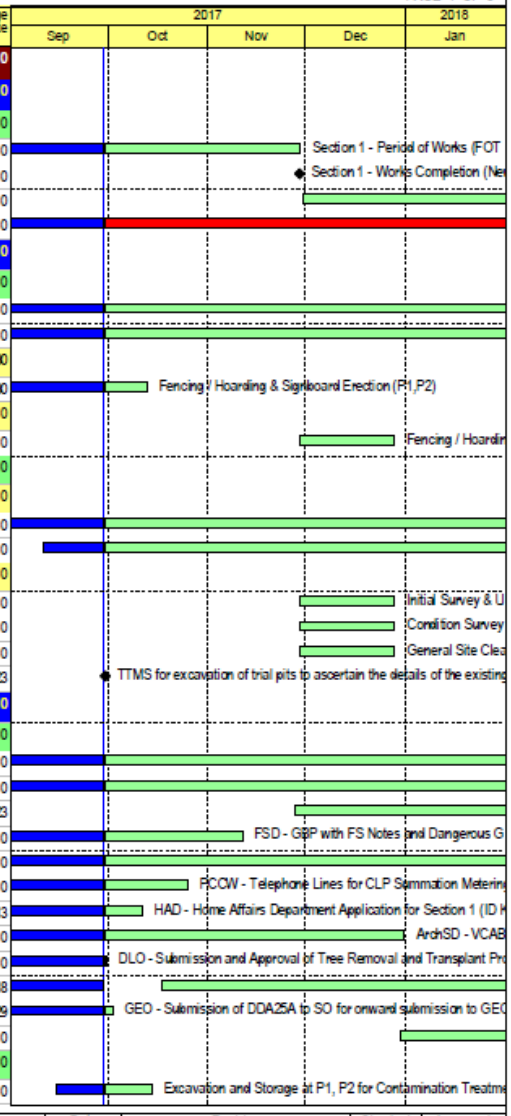

Supervising Officer's Representative
Mr. Patrick Leung
Independent Environmental Checker
Mr. Adi Lee
Mr. Nic Lam
Environmental Team Leader
Mr. C.L. Lau
The Contractor
Project Manager
Mr. Frankie Chan
Site Agent
Mr. Sung Hong
Environmental Officer
Mr. Johnny So
Environmental Supervisor
Ms Cherry Ye
Work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

Appendix C

Construction Programme

DATA DATE: 30-Sep-17 | LAYOUT: SW Project PHase 1 Rev 7 (3M 30Sep17) | PAGE 1 OF 9

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 7 BL Start	Rev 7 BL Finish	Slippage Start Date	Slippage Finish Date
San Wai Sewage Treatment Works Phase 1 - Rev 7 MP (Update as of 30 Sep 2017)		1585	27-May-16 A	27-Sep-20	27-May-16	27-Sep-20	0	0
Key Date		1585	27-May-16 A	27-Sep-20	27-May-16	27-Sep-20	0	0
Commencement & Completion of Works		1585	27-May-16 A	27-Sep-20	27-May-16	27-Sep-20	0	0
KD130	Section 1 - Period of Works (FOT P.3 cl 67,71) - Including 1.5 Days Granted EOT	552	27-May-16 A	29-Nov-17	27-May-16	29-Nov-17	0	0
KD140	Section 1 - Works Completion (New Access Road) - Including 1.5 Days Granted EOT	0		29-Nov-17*		29-Nov-17	0	0
KD150	Section 1 - Handover to Home Affairs Department for Maintenance	1033	30-Nov-17	27-Sep-20	30-Nov-17	27-Sep-20	0	0
KD160	Section 2 - Period of Works (FOT P.3 cl 67, 71) - Including 1.5 Days Granted EOT	1585	27-May-16 A	27-Sep-20	27-May-16	27-Sep-20	0	0
Preliminaries & General Requirement		1529	22-Nov-16 A	25-Sep-20	22-Nov-16	25-Sep-20	0	0
Contractor Requirement		1529	22-Nov-16 A	25-Sep-20	22-Nov-16	25-Sep-20	0	0
PS465	Impact Monitoring	1186	27-Jun-17 A	25-Sep-20	27-Jun-17	24-Sep-20	0	0
PS485	Site Drainage Plan Implementation	1274	01-Apr-17 A	25-Sep-20	01-Apr-17	25-Sep-20	0	0
Contractor Requirement for Working Area Portion (P1-P2)		295	22-Nov-16 A	13-Oct-17	22-Nov-16	12-Sep-17	0	-30
PS105	Fencing / Hoarding & Signboard Erection (P1,P2)	295	22-Nov-16 A	13-Oct-17	22-Nov-16	12-Sep-17	0	-30
Contractor Requirement for Working Area Portion (P8)		30	29-Nov-17	28-Dec-17	29-Nov-17	28-Dec-17	0	0
PS160	Fencing / Hoarding & Signboard Erection (P8)	30	29-Nov-17	28-Dec-17	29-Nov-17	28-Dec-17	0	0
Site Establishment		198	27-Aug-17 A	24-Feb-18	27-Aug-17	24-Feb-18	0	0
Site Establishment for Working Area Portion (P1-P2)		198	27-Aug-17 A	24-Feb-18	27-Aug-17	24-Feb-18	0	0
PS322	Submission of CSD and CBWD 3D Model in LD3	167	27-Aug-17 A	09-Feb-18	27-Aug-17	09-Feb-18	0	0
PS323	Submission of Clash Analysis Report	167	11-Sep-17 A	24-Feb-18	11-Sep-17	24-Feb-18	0	0
Site Establishment for Working Area Portion (P8)		90	30-Sep-17	28-Dec-17	07-Sep-17	28-Dec-17	-23	0
PS370	Initial Survey & UU detection	30	29-Nov-17	28-Dec-17	29-Nov-17	28-Dec-17	0	0
PS375	Condition Survey (Submission & Approval)	30	29-Nov-17	28-Dec-17	29-Nov-17	28-Dec-17	0	0
PS385	General Site Clearance	30	29-Nov-17	28-Dec-17	29-Nov-17	28-Dec-17	0	0
PS390	TTMS for excavation of trial pits to ascertain the details of the existing rising mains - Submission to SO	0	30-Sep-17		07-Sep-17		-23	-23
Design & Design Checking of Permanent Works		887	26-Jun-16 A	19-Dec-18	26-Jun-16	18-Dec-18	0	0
Statutory Submission		826	01-Nov-16 A	19-Dec-18	01-Nov-16	18-Dec-18	0	0
DS160	WSD - Water Supply & Plumbing	578	02-Feb-17 A	03-Sep-18	02-Feb-17	02-Sep-18	0	0
DS165	CLP - Power Supply	751	01-Nov-16 A	22-Nov-18	01-Nov-16	21-Nov-18	0	0
DS166	CLP - Photovoltaic Panel Connection	90	27-Nov-17	25-Feb-18	05-Nov-17	02-Feb-18	-23	-23
DS170	FSD - GBP with FS Notes and Dangerous Goods (DG)	283	02-Feb-17 A	11-Nov-17	02-Feb-17	11-Nov-17	0	0
DS173	PCCW - Telephone Lines and Megalink	540	27-Jun-17 A	19-Dec-18	27-Jun-17	18-Dec-18	0	0
DS174	PCCW - Telephone Lines for CLP Summation Metering	90	28-Jul-17 A	25-Oct-17	28-Jul-17	25-Oct-17	0	0
DS185	HAD - Home Affairs Department Application for Section 1 (ID KD150)	60	31-Jul-17 A	11-Oct-17	31-Jul-17	28-Sep-17	0	-13
DS200	ArchSD - VCAB and DAP Submission and Approval	396	15-Mar-17 A	31-Dec-17	01-Dec-16	31-Dec-17	-104	0
DS210	DLO - Submission and Approval of Tree Removal and Transplant Proposals	243	31-Jan-17 A	30-Sep-17	31-Jan-17	30-Sep-17	0	0
DS230	GEO - Submission of DDA28A to SO for onward submission to GEO for Checking Certificate	283	03-Aug-17 A	27-May-18	31-Jul-17	09-May-18	-3	-18
DS232	GEO - Submission of DDA25A to SO for onward submission to GEO for Checking Certificate	270	08-Dec-16 A	02-Oct-17	08-Dec-16	03-Sep-17	0	-29
DS280	TPB - Submission of Landscape Proposal to TPB for Approval	60	30-Dec-17	27-Feb-18	30-Dec-17	27-Feb-18	0	0
Site Investigation		195	15-Sep-17 A	05-Apr-18	15-Sep-17	05-Apr-18	0	0
DS370	Excavation and Storage at P1, P2 for Contamination Treatment	30	15-Sep-17 A	14-Oct-17	15-Sep-17	14-Oct-17	0	0



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

ATAL-Degremont-China Harbour Joint Venture

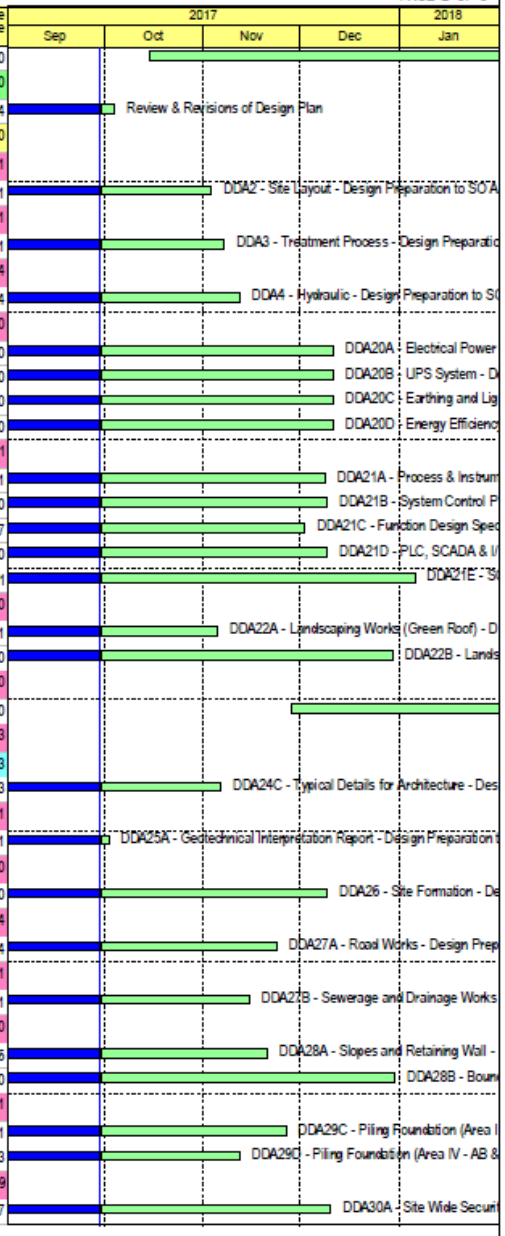
TASK filter: 3 Months Rolling Programme.

CONTRACT NO. DC/2013/10 DESIGN, BUILD & OPERATE
SAN WAI SEWAGE TREATMENT - PHASE 1
MASTER SCHEDULE Rev 7 (30 September 2017)
THREE (3) MONTHS ROLLING PROGRAMME

Date	Revision	Checked	Approved
30-Sep-17	Three (3) Months Rolling Programme...		

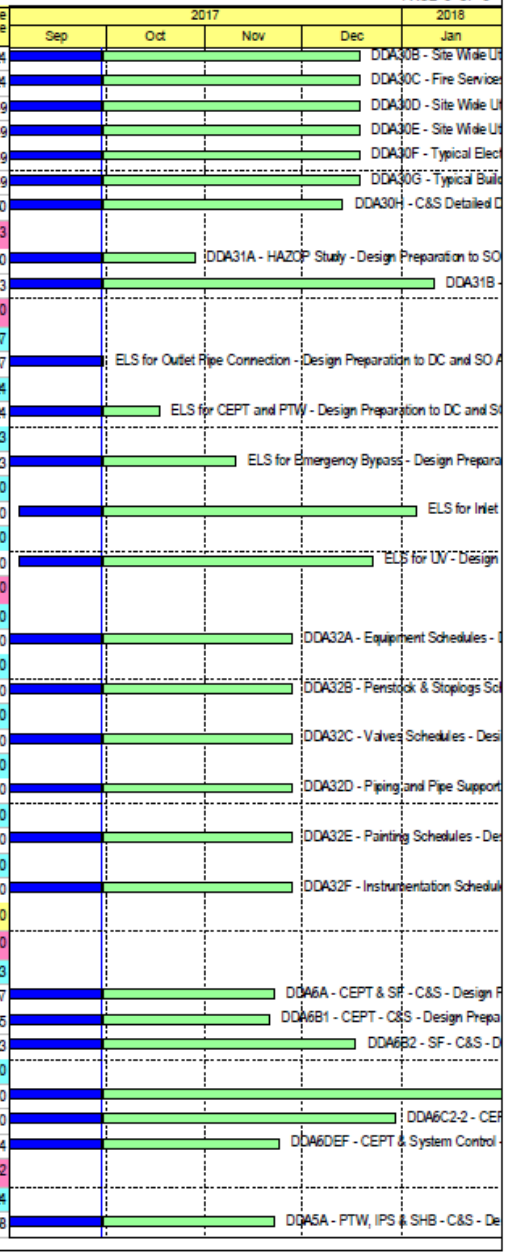
DATA DATE: 30-Sep-17 | LAYOUT: SW Project PHase 1 Rev 7 (3M 30Sep17) | PAGE 2 OF 9

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 7 BL Start	Rev 7 BL Finish	Slippage Start Date	Slippage Finish Date
DS380	Contamination Treatment (Biopile)	173	15-Oct-17	05-Apr-18	15-Oct-17	05-Apr-18	0	0
AIP / DDA Submission & Approval		577	26-Jun-16 A	09-May-18	26-Jun-16	09-May-18	0	0
DS410	Review & Revisions of Design Plan	431	26-Jun-16 A	04-Oct-17	26-Jun-16	30-Aug-17	0	-34
Global Design		546	02-Sep-16 A	21-Apr-18	02-Sep-16	21-Apr-18	0	0
Site Layout (AIP2 / DDA2)		294	21-Oct-16 A	03-Nov-17	21-Oct-16	22-Sep-17	0	-41
DG390	DDA2 - Site Layout - Design Preparation to SO Approval	294	21-Oct-16 A	03-Nov-17	21-Oct-16	22-Sep-17	0	-41
Treatment Process (AIP3 / DDA3)		363	02-Sep-16 A	07-Nov-17	02-Sep-16	27-Sep-17	0	-41
DG130	DDA3 - Treatment Process - Design Preparation to SO Approval	363	02-Sep-16 A	07-Nov-17	02-Sep-16	27-Sep-17	0	-41
Hydraulic (AIP4 / DDA4)		366	02-Sep-16 A	12-Nov-17	02-Sep-16	18-Sep-17	0	-54
DG162	DDA4 - Hydraulic - Design Preparation to SO Approval	366	02-Sep-16 A	12-Nov-17	02-Sep-16	18-Sep-17	0	-54
Electrical Power Supply System (AIP20 / DDA20ABCD)		302	24-Apr-17 A	11-Dec-17	24-Apr-17	10-Nov-17	0	-30
DG1891	DDA20A - Electrical Power Supply System - Design Preparation to SO Approval	170	24-Apr-17 A	11-Dec-17	24-Apr-17	10-Nov-17	0	-30
DG3880	DDA20B - UPS System - Design Preparation to SO Approval	246	24-Apr-17 A	11-Dec-17	24-Apr-17	10-Nov-17	0	-30
DG3896	DDA20C - Earthing and Lightning System - Design Preparation to SO Approval	246	24-Apr-17 A	11-Dec-17	24-Apr-17	10-Nov-17	0	-30
DG3912	DDA20D - Energy Efficiency - Design Preparation to SO Approval	246	24-Apr-17 A	11-Dec-17	24-Apr-17	10-Nov-17	0	-30
Control and Monitoring System (AIP21 / DDA21ABCDE)		502	12-Jan-17 A	05-Jan-18	12-Jan-17	04-Jan-18	0	-1
DG1924	DDA21A - Process & Instrumentation Diagram (P&ID) - Design Preparation to SO Approval	300	12-Jan-17 A	08-Dec-17	12-Jan-17	09-Dec-17	0	1
DG1940	DDA21B - System Control Philosophy - Design Preparation to SO Approval	233	20-Mar-17 A	09-Dec-17	20-Mar-17	09-Dec-17	0	0
DG1956	DDA21C - Function Design Specification - Design Preparation to SO Approval	234	03-Apr-17 A	02-Dec-17	03-Apr-17	09-Dec-17	0	7
DG1972	DDA21D - PLC, SCADA & I/O Allocation Schedules - Design Preparation to SO Approval	199	23-Apr-17 A	09-Dec-17	23-Apr-17	09-Dec-17	0	0
DG1988	DDA21E - SCADA Graphic Interface - Design Preparation to SO Approval	201	01-Jul-17 A	05-Jan-18	01-Jul-17	04-Jan-18	0	-1
Landscaping Works (AIP22 / DDA22AB)		411	06-Jan-17 A	29-Dec-17	06-Jan-17	29-Dec-17	0	0
DG1260	DDA22A - Landscaping Works (Green Roof) - Design Preparation to SO Approval	262	06-Jan-17 A	05-Nov-17	06-Jan-17	24-Sep-17	0	-41
DG1274	DDA22B - Landscaping Works (Site Wide) - Design Preparation to SO Approval	187	03-Jul-17 A	29-Dec-17	03-Jul-17	29-Dec-17	0	0
Testing and Commissioning Plan (AIP23 / DDA23)		145	28-Nov-17	21-Apr-18	28-Nov-17	21-Apr-18	0	0
DG3270	AIP23 - Outline Testing & Commissioning Plan - Design Preparation to SO Approval	145	28-Nov-17	21-Apr-18	28-Nov-17	21-Apr-18	0	0
General Notes Drawings for Foundation and Civil & Structural (AIP24AB / DDA24AB)		215	22-Feb-17 A	06-Nov-17	22-Feb-17	24-Sep-17	0	-43
General Notes Drawings for Civil & Structural (AIP24B / DDA24BC)		215	22-Feb-17 A	06-Nov-17	22-Feb-17	24-Sep-17	0	-43
DG3706	DDA24C - Typical Details for Architecture - Design Preparation to SO Approval	215	22-Feb-17 A	06-Nov-17	22-Feb-17	24-Sep-17	0	-43
Geotechnical Report (AIP25 / DDA25A)		315	09-Oct-16 A	02-Oct-17	09-Oct-16	21-Sep-17	0	-11
DG3445	DDA25A - Geotechnical Interpretation Report - Design Preparation to SO Approval	315	09-Oct-16 A	02-Oct-17	09-Oct-16	21-Sep-17	0	-11
Site Formation (AIP26 / DDA26)		276	14-Jan-17 A	09-Dec-17	14-Jan-17	09-Nov-17	0	-30
DG660	DDA26 - Site Formation - Design Preparation to SO Approval	276	14-Jan-17 A	09-Dec-17	14-Jan-17	09-Nov-17	0	-30
Road Works (AIP27A / DDA27A)		201	23-Mar-17 A	23-Nov-17	23-Mar-17	09-Nov-17	0	-14
DG1060	DDA27A - Road Works - Design Preparation to SO Approval	201	23-Mar-17 A	23-Nov-17	23-Mar-17	09-Nov-17	0	-14
Sewerage and Drainage Works (AIP27B / DDA27B)		226	21-Feb-17 A	15-Nov-17	21-Feb-17	04-Oct-17	0	-41
DG960	DDA27B - Sewerage and Drainage Works - Design Preparation to SO Approval	226	21-Feb-17 A	15-Nov-17	21-Feb-17	04-Oct-17	0	-41
Boundary Wall & Entrance (AIP28 / DDA28AB)		398	03-Feb-17 A	30-Dec-17	03-Feb-17	29-Dec-17	0	0
DG1160	DDA28A - Slopes and Retaining Wall - Design Preparation to SO Approval	255	03-Feb-17 A	20-Nov-17	03-Feb-17	15-Oct-17	0	-36
DG1195	DDA28B - Boundary Wall & Entrance - Design Preparation to SO Approval	203	17-Jun-17 A	30-Dec-17	17-Jun-17	29-Dec-17	0	0
Foundation & Piling Design (AIP29 / DDA29ABC)		198	30-Mar-17 A	26-Nov-17	30-Mar-17	25-Oct-17	0	-31
DG510	DDA29C - Piling Foundation (Area III - UV) - Design Preparation to SO Approval	198	30-Mar-17 A	26-Nov-17	30-Mar-17	25-Oct-17	0	-31
DG524	DDA29D - Piling Foundation (Area IV - AB & WS) - Design Preparation to SO Approval	161	01-May-17 A	12-Nov-17	01-May-17	29-Sep-17	0	-43
Site Wide Utility (AIP30 / DDA30ABCDEFGH)		478	30-Jan-17 A	18-Dec-17	30-Jan-17	09-Dec-17	0	-9
DG3515	DDA30A - Site Wide Security Access Control - Design Preparation to SO Approval	258	30-Jan-17 A	10-Dec-17	30-Jan-17	14-Oct-17	0	-57



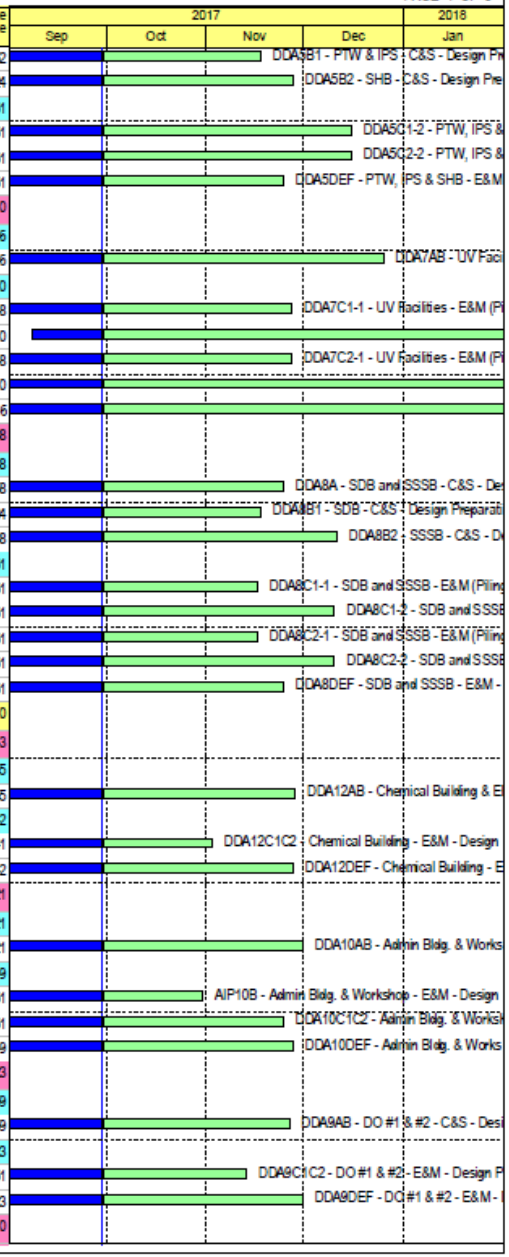
DATA DATE: 30-Sep-17 | LAYOUT: SW Project PHase 1 Rev 7 (3M 30Sep17) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 7 BL Start	Rev 7 BL Finish	Slippage Start Date	Slippage Finish Date
DG3774	DDA30B - Site Wide Utility (U/G Pipework and Ductwork) - Design Preparation to SO Approval	177	08-Jun-17 A	18-Dec-17	08-Jun-17	24-Nov-17	0	-24
DG3788	DDA30C - Fire Services System and Street Fire Hydrant System - Design Preparation to SO Approval	177	08-Jun-17 A	18-Dec-17	08-Jun-17	24-Nov-17	0	-24
DG3802	DDA30D - Site Wide Utility (Cable Route and Cable Draw Pit) - Design Preparation to SO Approval	177	23-Jun-17 A	18-Dec-17	23-Jun-17	09-Dec-17	0	-9
DG3816	DDA30E - Site Wide Utility (Road Lighting & Communication System) - Design Preparation to SO Approval	177	23-Jun-17 A	18-Dec-17	23-Jun-17	09-Dec-17	0	-9
DG3830	DDA30F - Typical Electrical Installation Drawings - Design Preparation to SO Approval	192	08-Jun-17 A	18-Dec-17	08-Jun-17	09-Dec-17	0	-9
DG3844	DDA30G - Typical Building Services Installation Drawings - Design Preparation to SO Approval	177	23-Jun-17 A	18-Dec-17	23-Jun-17	09-Dec-17	0	-9
DG3858	DDA30H - C&S Detailed Design Report for Pipe Trenches - Design Preparation to SO Approval	177	08-May-17 A	13-Dec-17	08-May-17	24-Oct-17	0	-50
HAZOP Report (DDA31AB)		356	01-Dec-16 A	10-Jan-18	01-Dec-16	28-Dec-17	0	-13
DG3530	DDA31A - HAZOP Study - Design Preparation to SO Approval	309	01-Dec-16 A	28-Oct-17	01-Dec-16	28-Sep-17	0	-30
DG3545	DDA31B - Hazardous Zoning Classification Report - Design Preparation to SO Approval	119	01-Sep-17 A	10-Jan-18	01-Sep-17	28-Dec-17	0	-13
ELS / Bulk Excavation (Temporary Works)		178	27-Mar-17 A	05-Jan-18	27-Mar-17	04-Jan-18	0	0
ELS for Outlet Pipe Connection		80	27-Mar-17 A	30-Sep-17	27-Mar-17	24-Aug-17	0	-37
DG3710	ELS for Outlet Pipe Connection - Design Preparation to DC and SO Approval	80	27-Mar-17 A	30-Sep-17	27-Mar-17	24-Aug-17	0	-37
ELS for CEPT and PTW		80	07-Apr-17 A	17-Oct-17	07-Apr-17	23-Sep-17	0	-24
DG3725	ELS for CEPT and PTW - Design Preparation to DC and SO Approval	80	07-Apr-17 A	17-Oct-17	07-Apr-17	23-Sep-17	0	-24
ELS for Emergency Bypass		80	12-Jun-17 A	10-Nov-17	12-Jun-17	18-Oct-17	0	-23
DG3740	ELS for Emergency Bypass - Design Preparation to DC and SO Approval	80	12-Jun-17 A	10-Nov-17	12-Jun-17	18-Oct-17	0	-23
ELS for Inlet Pipe Connection		123	04-Sep-17 A	05-Jan-18	04-Sep-17	04-Jan-18	0	0
DG3755	ELS for Inlet Pipe Connection - Design Preparation to DC and SO Approval	123	04-Sep-17 A	05-Jan-18	04-Sep-17	04-Jan-18	0	0
ELS for UV		110	04-Sep-17 A	22-Dec-17	04-Sep-17	22-Dec-17	0	0
DG3769	ELS for UV - Design Preparation to DC and SO Approval	110	04-Sep-17 A	22-Dec-17	04-Sep-17	22-Dec-17	0	0
Miscellaneous Design		155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
Equipment Schedules (DDA32A)		155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
DG2012	DDA32A - Equipment Schedules - Design Preparation to SO Approval	155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
Penstock & Stoplogs Schedules (DDA32B)		155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3216	DDA32B - Penstock & Stoplogs Schedules - Design Preparation to SO Approval	155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
Valves Schedules (DDA32C)		155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3222	DDA32C - Valves Schedules - Design Preparation to SO Approval	155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
Piping and Pipe Support Schedules (DDA32D)		155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3864	DDA32D - Piping and Pipe Support Schedules - Design Preparation to SO Approval	155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
Painting Schedules (DDA32E)		155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3228	DDA32E - Painting Schedules - Design Preparation to SO Approval	155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
Instrumentation Schedules (DDA32F)		155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3234	DDA32F - Instrumentation Schedules - Design Preparation to SO Approval	155	03-Jul-17 A	27-Nov-17	03-Jul-17	27-Nov-17	0	0
LOT #1 - Building / Facilities Design : CEPT+SF, PTW+IPS+SHB, UV, SDB+SSSB		551	25-Sep-16 A	09-May-18	25-Sep-16	09-May-18	0	0
CEPT and System Control Flowmeter Chamber		399	24-Dec-16 A	08-Feb-18	24-Dec-16	08-Feb-18	0	0
Civil and Structural Design (AIP6A / DDA6AB)		396	24-Dec-16 A	17-Dec-17	24-Dec-16	24-Nov-17	0	-23
DB1123	DDA6A - CEPT & SF - C&S - Design Preparation to SO Approval	277	24-Dec-16 A	22-Nov-17	24-Dec-16	25-Sep-17	0	-57
DB4914	DDA6B1 - CEPT - C&S - Design Preparation to SO Approval	277	24-Dec-16 A	20-Nov-17	24-Dec-16	26-Sep-17	0	-55
DB4930	DDA6B2 - SF - C&S - Design Preparation to SO Approval	216	26-Mar-17 A	17-Dec-17	26-Mar-17	24-Nov-17	0	-23
Electrical and Mechanical Design (AIP6B / DDA6C1C2DEF)		397	25-Jan-17 A	08-Feb-18	25-Jan-17	08-Feb-18	0	0
DB1160	DDA6C1-2 - CEPT & SF - E&M (Super Structural Design) - Design Preparation to SO Approval	185	08-Aug-17 A	08-Feb-18	08-Aug-17	08-Feb-18	0	0
DB1188	DDA6C2-2 - CEPT & SF - E&M (Super Structural Design) - Design Preparation to SO Approval	192	28-Jun-17 A	29-Dec-17	28-Jun-17	29-Dec-17	0	0
DB4508	DDA6DEF - CEPT & System Control - E&M - Design Preparation to SO Approval	297	25-Jan-17 A	23-Nov-17	25-Jan-17	09-Nov-17	0	-14
Inlet Work, Preliminary Treatment Works, IPS and SHB		452	26-Nov-16 A	15-Dec-17	26-Nov-16	03-Nov-17	0	-42
Civil and Structural Design (AIP5A / DDA5AB1B2)		318	26-Nov-16 A	27-Nov-17	26-Nov-16	03-Nov-17	0	-24
DB1223	DDA5A - PTW, IPS & SHB - C&S - Design Preparation to SO Approval	303	26-Nov-16 A	22-Nov-17	26-Nov-16	24-Sep-17	0	-58



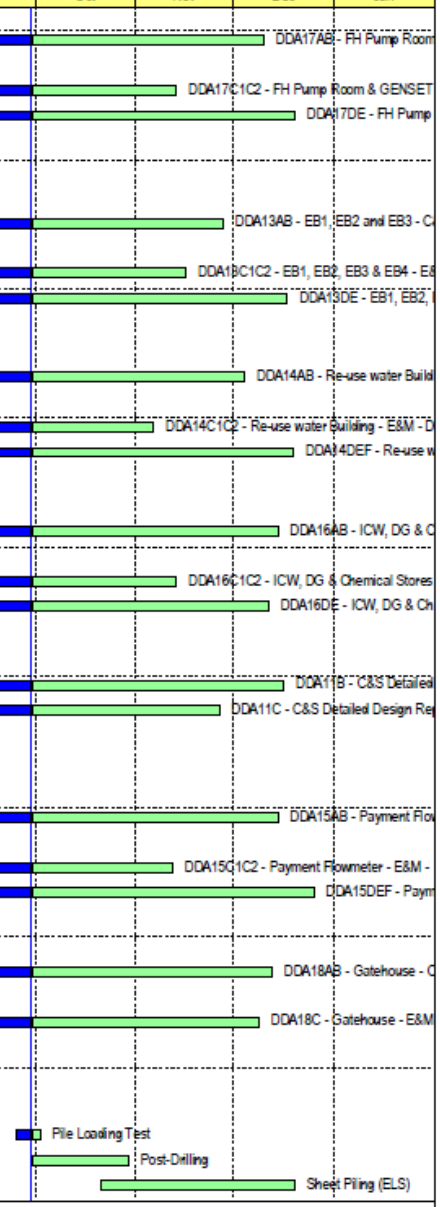
DATA DATE: 30-Sep-17 | LAYOUT: SW Project PHase 1 Rev 7 (3M 30Sep17) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 7 BL Start	Rev 7 BL Finish	Slippage Start Date	Slippage Finish Date
DB4814	DDA5B1 - PTW & IPS - C&S - Design Preparation to SO Approval	284	17-Dec-16 A	17-Nov-17	17-Dec-16	26-Sep-17	0	-52
DB4830	DDA5B2 - SHB - C&S - Design Preparation to SO Approval	246	06-Feb-17 A	27-Nov-17	06-Feb-17	03-Nov-17	0	-24
	Electrical and Mechanical Design (AIP5B / DDA5C1C2DEF)	394	27-Nov-16 A	15-Dec-17	27-Nov-16	15-Oct-17	0	-61
DB1264	DDA5C1-2 - PTW, IPS & SHB - E&M (Super Structural Design) - Design Preparation to SO Approval	198	01-Apr-17 A	15-Dec-17	01-Apr-17	15-Oct-17	0	-61
DB1296	DDA5C2-2 - PTW, IPS & SHB - E&M (Super Structural Design) - Design Preparation to SO Approval	229	01-Mar-17 A	15-Dec-17	01-Mar-17	15-Oct-17	0	-61
DB4524	DDA5DEF - PTW, IPS & SHB - E&M - Design Preparation to SO Approval	302	27-Nov-16 A	24-Nov-17	27-Nov-16	24-Sep-17	0	-61
	UV Disinfection Facilities	475	22-Dec-16 A	09-May-18	22-Dec-16	09-May-18	0	0
	Civil and Structural Design (AIP7A / DDA7AB)	166	25-May-17 A	25-Dec-17	25-May-17	09-Nov-17	0	-46
DB1325	DDA7AB - UV Facilities - C&S - Design Preparation to SO Approval	166	25-May-17 A	25-Dec-17	25-May-17	09-Nov-17	0	-46
	Electrical and Mechanical Design (AIP7B / DDA7C1C2DEF)	475	22-Dec-16 A	09-May-18	22-Dec-16	09-May-18	0	0
DB1352	DDA7C1-1 - UV Facilities - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	292	22-Dec-16 A	27-Nov-17	22-Dec-16	09-Oct-17	0	-48
DB1368	DDA7C1-2 - UV Facilities - E&M (Super Structural Design) - Design Preparation to SO Approval	243	08-Sep-17 A	09-May-18	08-Sep-17	09-May-18	1	0
DB1384	DDA7C2-1 - UV Facilities - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	292	22-Dec-16 A	27-Nov-17	22-Dec-16	09-Oct-17	0	-48
DB1399	DDA7C2-2 - UV Facilities - E&M (Super Structural Design) - Design Preparation to SO Approval	261	01-Jul-17 A	10-Mar-18	01-Jul-17	10-Mar-18	0	0
DB4540	DDA7DEF - UV Facilities - E&M - Design Preparation to SO Approval	314	30-Mar-17 A	05-Feb-18	30-Mar-17	29-Jan-18	0	-6
	Sludge Dewatering Building and Sludge Skip Storage Building	506	25-Sep-16 A	11-Dec-17	25-Sep-16	02-Nov-17	0	-38
	Civil and Structural Design (AIP8A / DDA8AB1B2)	295	24-Dec-16 A	11-Dec-17	24-Dec-16	02-Nov-17	0	-38
DB1433	DDA8A - SDB and SSSB - C&S - Design Preparation to SO Approval	278	24-Dec-16 A	24-Nov-17	24-Dec-16	27-Sep-17	0	-58
DB4844	DDA8B1 - SDB - C&S - Design Preparation to SO Approval	253	04-Feb-17 A	17-Nov-17	04-Feb-17	14-Oct-17	0	-34
DB4858	DDA8B2 - SSSB - C&S - Design Preparation to SO Approval	253	04-Feb-17 A	11-Dec-17	04-Feb-17	02-Nov-17	0	-38
	Electrical and Mechanical Design (AIP8B / DDA8C1C2DEF)	502	25-Sep-16 A	10-Dec-17	25-Sep-16	10-Oct-17	0	-61
DB1460	DDA8C1-1 - SDB and SSSB - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	357	25-Sep-16 A	16-Nov-17	25-Sep-16	16-Sep-17	0	-61
DB1476	DDA8C1-2 - SDB and SSSB - E&M (Super Structural Design) - Design Preparation to SO Approval	165	29-Apr-17 A	10-Dec-17	29-Apr-17	10-Oct-17	0	-61
DB1492	DDA8C2-1 - SDB and SSSB - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	357	25-Sep-16 A	16-Nov-17	25-Sep-16	16-Sep-17	0	-61
DB1508	DDA8C2-2 - SDB and SSSB - E&M (Super Structural Design) - Design Preparation to SO Approval	165	29-Apr-17 A	10-Dec-17	29-Apr-17	10-Oct-17	0	-61
DB4556	DDA8DEF - SDB and SSSB - E&M - Design Preparation to SO Approval	302	27-Nov-16 A	24-Nov-17	27-Nov-16	24-Sep-17	0	-61
	LOT #2 - Building / Facilities Design : AB+WS, DO, CB+EB4, FH	570	01-Sep-16 A	19-Dec-17	01-Sep-16	09-Dec-17	0	-10
	Chemical Building and EB 4	394	28-Sep-16 A	28-Nov-17	28-Sep-16	16-Oct-17	0	-43
	Civil and Structural Design for CB & EB4 (AIP12A / DDA12AB)	252	31-Jan-17 A	28-Nov-17	31-Jan-17	04-Oct-17	0	-55
DB2123	DDA12AB - Chemical Building & EB4 - C&S - Design Preparation to SO Approval	252	31-Jan-17 A	28-Nov-17	31-Jan-17	04-Oct-17	0	-55
	Electrical and Mechanical Design for CB only (AIP12B / DDA12C1C2DEF)	384	28-Sep-16 A	27-Nov-17	28-Sep-16	16-Oct-17	0	-42
DB2148	DDA12C1C2 - Chemical Building - E&M - Design Preparation to SO Approval	336	28-Sep-16 A	02-Nov-17	28-Sep-16	22-Sep-17	0	-41
DB4602	DDA12DEF - Chemical Building - E&M - Design Preparation to SO Approval	254	05-Feb-17 A	27-Nov-17	05-Feb-17	16-Oct-17	0	-42
	Administration Building & Maintenance Workshop	506	01-Sep-16 A	30-Nov-17	01-Sep-16	09-Nov-17	0	-21
	Civil and Structural Design (AIP10A / DDA10AB)	266	22-Jan-17 A	30-Nov-17	22-Jan-17	09-Nov-17	0	-21
DB2234	DDA10AB - Admin Bldg. & Workshop - C&S - Design Preparation to SO Approval	266	22-Jan-17 A	30-Nov-17	22-Jan-17	09-Nov-17	0	-21
	Electrical and Mechanical Design (AIP10B / DDA10C1C2DEF)	404	01-Sep-16 A	27-Nov-17	01-Sep-16	09-Oct-17	0	-49
DB2273	AIP10B - Admin Bldg. & Workshop - E&M - Design Preparation to SO Approval	364	01-Sep-16 A	30-Oct-17	01-Sep-16	30-Aug-17	0	-61
DB2286	DDA10C1C2 - Admin Bldg. & Workshop - E&M - Design Preparation to SO Approval	357	03-Oct-16 A	24-Nov-17	03-Oct-16	24-Sep-17	0	-61
DB4618	DDA10DEF - Admin Bldg. & Workshop - E&M - Design Preparation to SO Approval	252	31-Jan-17 A	27-Nov-17	31-Jan-17	09-Oct-17	0	-49
	Deodorization Facilities No.1 and No.2	328	15-Dec-16 A	30-Nov-17	15-Dec-16	07-Nov-17	0	-23
	Civil and Structural Design (AIP9A / DDA9AB)	249	26-Jan-17 A	26-Nov-17	26-Jan-17	28-Sep-17	0	-59
DB2323	DDA9AB - DO #1 & #2 - C&S - Design Preparation to SO Approval	249	26-Jan-17 A	26-Nov-17	26-Jan-17	28-Sep-17	0	-59
	Electrical and Mechanical Design (AIP9B / DDA9C1C2DEF)	328	15-Dec-16 A	30-Nov-17	15-Dec-16	07-Nov-17	0	-23
DB2348	DDA9C1C2 - DO #1 & #2 - E&M - Design Preparation to SO Approval	273	15-Dec-16 A	13-Nov-17	15-Dec-16	13-Sep-17	0	-61
DB4634	DDA9DEF - DO #1 & #2 - E&M - Design Preparation to SO Approval	286	26-Jan-17 A	30-Nov-17	26-Jan-17	07-Nov-17	0	-23
	Street Fire Hydrant Pump Room & GENSET Room	376	07-Dec-16 A	19-Dec-17	07-Dec-16	09-Dec-17	0	-10



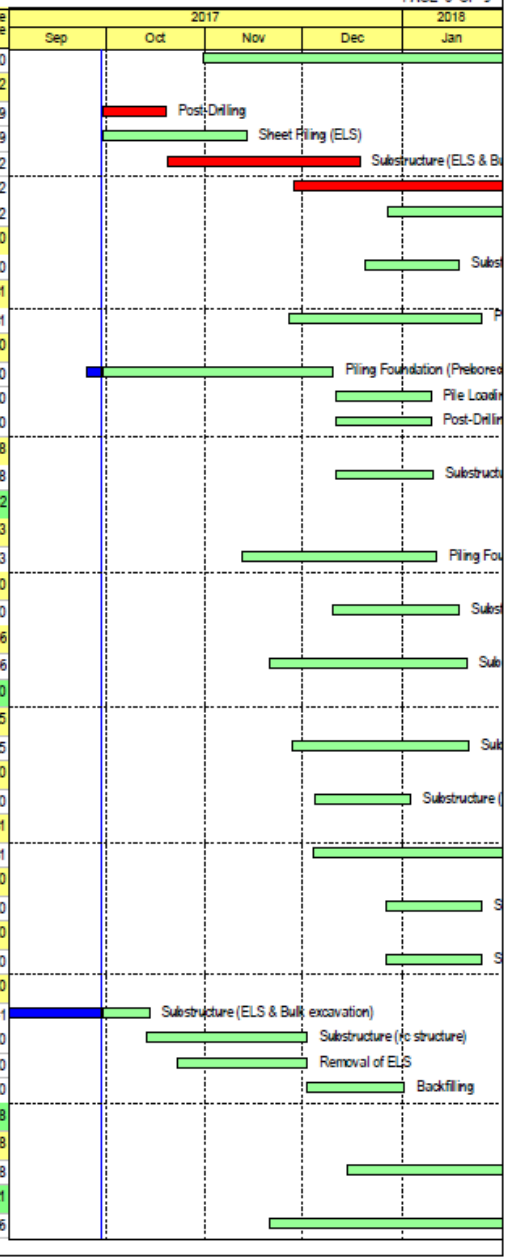
DATA DATE: 30-Sep-17 | LAYOUT: SW Project PHase 1 Rev 7 (3M 30Sep17) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 7 BL Start	Rev 7 BL Finish	Slippage Start Date	Slippage Finish Date
	Civil and Structural Design (AIP17A / DDA17AB)	239	23-Mar-17 A	10-Dec-17	23-Mar-17	09-Nov-17	0	-30
DB2423	DDA17AB - FH Pump Room & GENSET Room - C&S - Design Preparation to SO Approval	239	23-Mar-17 A	10-Dec-17	23-Mar-17	09-Nov-17	0	-30
	Electrical and Mechanical Design (AIP17B / DDA17C1C2DE)	376	07-Dec-16 A	19-Dec-17	07-Dec-16	09-Dec-17	0	-10
DB2448	DDA17C1C2 - FH Pump Room & GENSET Room - E&M - Design Preparation to SO Approval	292	07-Dec-16 A	13-Nov-17	07-Dec-16	24-Sep-17	0	-50
DB4648	DDA17DE - FH Pump Room & GENSET Room - E&M - Design Preparation to SO Approval	270	23-Mar-17 A	19-Dec-17	23-Mar-17	09-Dec-17	0	-10
	LOT #3 - Building / Facilities Design : EB1, EB2, EB3, EB4, RW, DG+ICW, Inlet/Outlet Connectic	492	16-Sep-16 A	19-Dec-17	16-Sep-16	08-Dec-17	0	-10
	Electrical Building No.1, No.2, No.3, No.4	423	16-Sep-16 A	17-Dec-17	16-Sep-16	02-Nov-17	0	-45
	Civil and Structural Design for EB123 (AIP13A / DDA13AB)	172	08-Apr-17 A	27-Nov-17	08-Apr-17	02-Nov-17	0	-25
DB3123	DDA13AB - EB1, EB2 and EB3 - C&S - Design Preparation to SO Approval	172	08-Apr-17 A	27-Nov-17	08-Apr-17	02-Nov-17	0	-25
	Electrical and Mechanical Design for EB1234 (AIP13B / DDA13C1C2DE)	392	16-Sep-16 A	17-Dec-17	16-Sep-16	17-Oct-17	0	-61
DB3148	DDA13C1C2 - EB1, EB2, EB3 & EB4 - E&M - Design Preparation to SO Approval	366	16-Sep-16 A	16-Nov-17	16-Sep-16	16-Sep-17	0	-61
DB4664	DDA13DE - EB1, EB2, EB3 & EB4 - E&M - Design Preparation to SO Approval	237	23-Feb-17 A	17-Dec-17	23-Feb-17	17-Oct-17	0	-61
	Re-use Water Building	400	03-Dec-16 A	19-Dec-17	03-Dec-16	18-Nov-17	0	-30
	Civil and Structural Design (AIP14A / DDA14AB)	196	13-Apr-17 A	04-Dec-17	13-Apr-17	03-Nov-17	0	-31
DB3223	DDA14AB - Re-use water Building - C&S - Design Preparation to SO Approval	196	13-Apr-17 A	04-Dec-17	13-Apr-17	03-Nov-17	0	-31
	Electrical and Mechanical Design (AIP14B / DDA14C1C2DEF)	358	03-Dec-16 A	19-Dec-17	03-Dec-16	18-Nov-17	0	-30
DB3248	DDA14C1C2 - Re-use water Building - E&M - Design Preparation to SO Approval	299	03-Dec-16 A	06-Nov-17	03-Dec-16	27-Sep-17	0	-40
DB4680	DDA14DEF - Re-use water Building - E&M - Design Preparation to SO Approval	227	13-Apr-17 A	19-Dec-17	13-Apr-17	18-Nov-17	0	-30
	ICW and DG Store & Chemical Waste Storage Building	367	30-Nov-16 A	14-Dec-17	30-Nov-16	08-Dec-17	0	-6
	Civil and Structural Design (AIP16A / DDA16AB)	206	11-Mar-17 A	14-Dec-17	11-Mar-17	16-Oct-17	0	-59
DB3323	DDA16AB - ICW, DG & Chemical Stores - C&S - Design Preparation to SO Approval	206	11-Mar-17 A	14-Dec-17	11-Mar-17	16-Oct-17	0	-59
	Electrical and Mechanical Design (AIP16B / DDA16C1C2DE)	359	30-Nov-16 A	11-Dec-17	30-Nov-16	08-Dec-17	0	-3
DB3348	DDA16C1C2 - ICW, DG & Chemical Stores - E&M - Design Preparation to SO Approval	299	30-Nov-16 A	13-Nov-17	30-Nov-16	24-Sep-17	0	-50
DB4694	DDA16DE - ICW, DG & Chemical Stores - E&M - Design Preparation to SO Approval	212	24-May-17 A	11-Dec-17	24-May-17	08-Dec-17	0	-3
	Inlet & Outlet Pipe Connections and Diversion Pipeworks	270	31-Dec-16 A	16-Dec-17	31-Dec-16	19-Nov-17	0	-27
	Civil and Structural Design (AIP11 / DDA11)	270	31-Dec-16 A	16-Dec-17	31-Dec-16	19-Nov-17	0	-27
DB3438	DDA11B - C&S Detailed Design Report for Inlet Connections Pipework - Design Preparation to SO Approval	188	08-Apr-17 A	16-Dec-17	08-Apr-17	19-Nov-17	0	-27
DB3452	DDA11C - C&S Detailed Design Report for Emergency Bypass - Design Preparation to SO Approval	270	31-Dec-16 A	26-Nov-17	31-Dec-16	26-Sep-17	0	-61
	LOT #4 - Building / Facilities Design : GH, PF	524	25-Nov-16 A	25-Dec-17	25-Nov-16	25-Dec-17	0	0
	Payment Flowmeter Chamber	413	25-Nov-16 A	25-Dec-17	25-Nov-16	25-Dec-17	0	0
	Civil and Structural Design (AIP15A / DDA15AB)	180	13-Apr-17 A	14-Dec-17	13-Apr-17	03-Nov-17	0	-41
DB4323	DDA15AB - Payment Flowmeter - C&S - Design Preparation to SO Approval	180	13-Apr-17 A	14-Dec-17	13-Apr-17	03-Nov-17	0	-41
	Electrical and Mechanical Design (AIP15B / DDA15C1C2DEF)	367	25-Nov-16 A	25-Dec-17	25-Nov-16	25-Dec-17	0	0
DB4348	DDA15C1C2 - Payment Flowmeter - E&M - Design Preparation to SO Approval	307	25-Nov-16 A	12-Nov-17	25-Nov-16	27-Sep-17	0	-46
DB4740	DDA15DEF - Payment Flowmeter - E&M - Design Preparation to SO Approval	216	31-May-17 A	25-Dec-17	31-May-17	25-Dec-17	0	0
	Gatehouse	488	24-Apr-17 A	12-Dec-17	24-Apr-17	09-Dec-17	0	-3
	Civil and Structural Design (AIP18A / DDA18AB)	167	18-Jul-17 A	12-Dec-17	18-Jul-17	29-Nov-17	0	-13
DB4424	DDA18AB - Gatehouse - C&S - Design Preparation to SO Approval	167	18-Jul-17 A	12-Dec-17	18-Jul-17	29-Nov-17	0	-13
	Electrical and Mechanical Design (AIP18B / DDA18C)	237	24-Apr-17 A	08-Dec-17	24-Apr-17	09-Dec-17	0	1
DB4754	DDA18C - Gatehouse - E&M - Design Preparation to SO Approval	237	24-Apr-17 A	08-Dec-17	24-Apr-17	09-Dec-17	0	1
	Civil & Structural Works	853	01-Jun-17 A	16-Oct-19	01-Jun-17	25-Sep-19	0	-21
	LOT #1 - Bldg / Facilities Const. (Arch'l & Struct'l) : CEPT+SF, PTW+IPS+SHB, UV, SDB+SSSB	133	25-Sep-17 A	09-Feb-18	23-Aug-17	07-Feb-18	-33	-2
	Chemically Enhanced Primary Treatment (CEPT)	131	25-Sep-17 A	07-Feb-18	01-Oct-17	07-Feb-18	6	0
CS1505	Pile Loading Test	30	25-Sep-17 A	02-Oct-17	01-Oct-17	30-Oct-17	6	28
CS1507	Post-Drilling	30	30-Sep-17	29-Oct-17	01-Oct-17	30-Oct-17	1	1
CS1508	Sheet Piling (ELS)	60	21-Oct-17	19-Dec-17	21-Oct-17	19-Dec-17	0	0



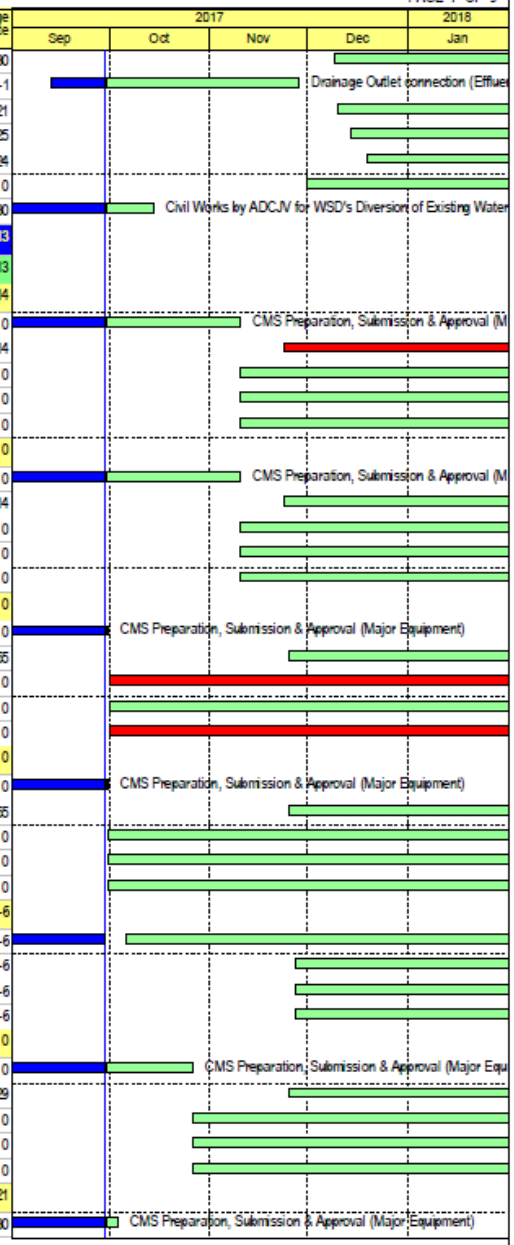
DATA DATE: 30-Sep-17 | LAYOUT: SW Project PHase 1 Rev 7 (3M 30Sep17) | PAGE 6 OF 9

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 7 BL Start	Rev 7 BL Finish	Slippage Start Date	Slippage Finish Date
CS1510	Substructure (ELS & Bulk excavation)	100	31-Oct-17	07-Feb-18	31-Oct-17	07-Feb-18	0	0
Inlet Work, Preliminary Treatment Works and Inlet Pumping Station (PTW & IPS)		133	30-Sep-17	09-Feb-18	01-Sep-17	18-Jan-18	-29	-22
CS1207	Post-Drilling	20	30-Sep-17	19-Oct-17	01-Sep-17	20-Sep-17	-29	-29
CS1208	Sheet Piling (ELS)	45	30-Sep-17	13-Nov-17	11-Sep-17	25-Oct-17	-19	-19
CS1210	Substructure (ELS & Bulk excavation)	60	20-Oct-17	18-Dec-17	28-Sep-17	26-Nov-17	-22	-22
CS1220	Substructure (rc structure)	74	28-Nov-17	09-Feb-18	06-Nov-17	18-Jan-18	-22	-22
CS1224	Removal of ELS	45	27-Dec-17	09-Feb-18	05-Dec-17	18-Jan-18	-22	-22
Solid Handling Building (SHB)		30	20-Dec-17	18-Jan-18	20-Dec-17	18-Jan-18	0	0
CS1300	Substructure (rc structure)	30	20-Dec-17	18-Jan-18	20-Dec-17	18-Jan-18	0	0
UV Disinfection Facility (UV)		60	26-Nov-17	25-Jan-18	26-Oct-17	24-Dec-17	-31	-31
CS1900	Piling Foundation (Prebored H-pile) 33	60	26-Nov-17	25-Jan-18	26-Oct-17	24-Dec-17	-31	-31
Sludge Dewatering Building (SDB)		102	25-Sep-17 A	09-Jan-18	23-Aug-17	10-Dec-17	-33	-30
CS1800	Piling Foundation (Prebored H-pile) 66 (E3)	80	25-Sep-17 A	10-Dec-17	23-Aug-17	10-Nov-17	-33	-30
CS1815	Pile Loading Test	30	11-Dec-17	09-Jan-18	11-Nov-17	10-Dec-17	-30	-30
CS1817	Post-Drilling	30	11-Dec-17	09-Jan-18	11-Nov-17	10-Dec-17	-30	-30
Sludge Skip Storage Building (SSSB)		30	11-Dec-17	10-Jan-18	03-Nov-17	02-Dec-17	-38	-38
CS2900	Substructure (rc structure)	30	11-Dec-17	10-Jan-18	03-Nov-17	02-Dec-17	-38	-38
LOT #2 - Bldg / Facilities Const. (Arch'l & Struct'l) : AB+WS, DO, CB, FH		69	12-Nov-17	20-Jan-18	30-Sep-17	18-Jan-18	-43	-2
Administration Building & Maintenance Workshop (AB & WS)		60	12-Nov-17	11-Jan-18	30-Sep-17	28-Nov-17	-43	-43
CS1100	Piling Foundation (Driven H-pile) 52	60	12-Nov-17	11-Jan-18	30-Sep-17	28-Nov-17	-43	-43
Deodorization Facilities No. 1 (DO 1)		40	10-Dec-17	18-Jan-18	10-Dec-17	18-Jan-18	0	0
CS1610	Substructure (rc structure)	40	10-Dec-17	18-Jan-18	10-Dec-17	18-Jan-18	0	0
Chemical Building (CB)		61	20-Nov-17	20-Jan-18	15-Nov-17	14-Jan-18	-6	-6
CS2310	Substructure (rc structure)	61	20-Nov-17	20-Jan-18	15-Nov-17	14-Jan-18	-6	-6
LOT #3 - Bldg / Facilities Const. (Arch'l & Struct'l) : EB, RW, DG, ICW, JC		155	21-Aug-17 A	04-Feb-18	25-Aug-17	25-Jan-18	4	-10
Electrical Building No.2 (EB2)		55	27-Nov-17	21-Jan-18	03-Nov-17	27-Dec-17	-25	-25
CS2510	Substructure (rc structure)	55	27-Nov-17	21-Jan-18	03-Nov-17	27-Dec-17	-25	-25
Electrical Building No.4 (EB4)		30	04-Dec-17	03-Jan-18	05-Dec-17	03-Jan-18	0	0
CS2710	Substructure (rc structure)	30	04-Dec-17	03-Jan-18	05-Dec-17	03-Jan-18	0	0
Re-use Water Building (RW)		62	04-Dec-17	04-Feb-18	04-Nov-17	04-Jan-18	-31	-31
CS2010	Substructure (rc structure)	62	04-Dec-17	04-Feb-18	04-Nov-17	04-Jan-18	-31	-31
DG Store and Chemical Waste Storage Building (DG)		30	26-Dec-17	25-Jan-18	27-Dec-17	25-Jan-18	0	0
CS2800	Substructure (rc structure)	30	26-Dec-17	25-Jan-18	27-Dec-17	25-Jan-18	0	0
Irrigation & Cleansing Water Pump Room (ICW)		30	26-Dec-17	25-Jan-18	27-Dec-17	25-Jan-18	0	0
CS3370	Substructure (rc structure)	30	26-Dec-17	25-Jan-18	27-Dec-17	25-Jan-18	0	0
Existing Junction Chamber (JC)		121	21-Aug-17 A	01-Jan-18	25-Aug-17	01-Jan-18	4	0
CS2190	Substructure (ELS & Bulk excavation)	50	21-Aug-17 A	14-Oct-17	25-Aug-17	13-Oct-17	4	-1
CS2200	Substructure (rc structure)	50	13-Oct-17	02-Dec-17	14-Oct-17	02-Dec-17	0	0
CS2202	Removal of ELS	40	23-Oct-17	02-Dec-17	24-Oct-17	02-Dec-17	0	0
CS2205	Backfilling	30	02-Dec-17	01-Jan-18	03-Dec-17	01-Jan-18	0	0
LOT #4 - Bldg / Facilities Const. (Arch'l & Struct'l) : GH, PF		90	14-Dec-17	14-Mar-18	27-Nov-17	24-Feb-18	-18	-18
Payment Flowmeter Chamber (PF)		90	14-Dec-17	14-Mar-18	27-Nov-17	24-Feb-18	-18	-18
CS2100	Substructure (rc structure)	90	14-Dec-17	14-Mar-18	27-Nov-17	24-Feb-18	-18	-18
External Works & Miscellaneous		853	01-Jun-17 A	16-Oct-19	01-Jun-17	25-Sep-19	0	-21
CS3201	Slope works and Retaining Wall (Eastern Portion)	197	20-Nov-17	05-Jun-18	16-Oct-17	30-Apr-18	-36	-36



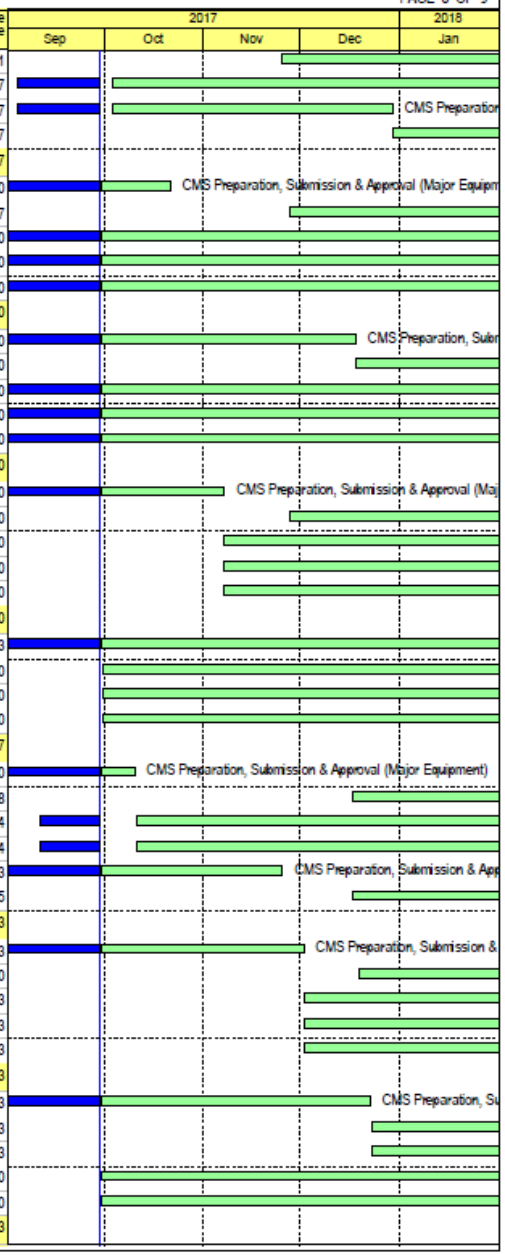
DATA DATE: 30-Sep-17 | LAYOUT: SW Project PHase 1 Rev 7 (3M 30Sep17) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 7 BL Start	Rev 7 BL Finish	Slippage Start Date	Slippage Finish Date
CS3203	Slope works (Northern Portion)	180	09-Dec-17	07-Jun-18	10-Nov-17	08-May-18	-30	-30
CS3220	Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber)	75	13-Sep-17 A	28-Nov-17	13-Sep-17	27-Nov-17	1	-1
CS3250	EVA (Road & Drainage)	675	10-Dec-17	16-Oct-19	20-Nov-17	25-Sep-19	-21	-21
CS3252	RC Trench and Odour Pipe (DO1, DO2)	120	14-Dec-17	12-Apr-18	19-Nov-17	18-Mar-18	-25	-25
CS3254	Process Pipe	180	19-Dec-17	16-Jun-18	25-Nov-17	23-May-18	-24	-24
CS3284	Diversion of Existing Watermains by WSD	89	30-Nov-17	27-Feb-18	01-Dec-17	28-Feb-18	0	0
CS3286	Civil Works by ADCJV for WSD's Diversion of Existing Watermains	106	01-Jun-17 A	14-Oct-17	01-Jun-17	14-Sep-17	0	-30
E&M Works		**682**	**27-Nov-16 A**	**30-Dec-18**	**27-Nov-16**	**17-Dec-18**	**0**	**-13**
Procurement		682	27-Nov-16 A	30-Dec-18	27-Nov-16	17-Dec-18	0	-13
Chemically Enhanced Primary Treatment (CEPT)		515	25-Jan-17 A	26-Sep-18	25-Jan-17	12-Sep-18	0	-14
EM3110	CMS Preparation, Submission & Approval (Major Equipment)	289	25-Jan-17 A	10-Nov-17	25-Jan-17	09-Nov-17	0	0
EM3112	Manufacturing & Logistic (Major Equipment)	307	23-Nov-17	26-Sep-18	10-Nov-17	12-Sep-18	-14	-14
EM3114	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	219	10-Nov-17	17-Jun-18	10-Nov-17	16-Jun-18	0	0
EM3118	CMS Preparation, Submission & Approval (Electrical)	219	10-Nov-17	17-Jun-18	10-Nov-17	16-Jun-18	0	0
EM3122	CMS Preparation, Submission & Approval (Building Services)	278	10-Nov-17	15-Aug-18	10-Nov-17	14-Aug-18	0	0
System Control Flowmeter Chamber (SF)		506	25-Jan-17 A	18-Sep-18	25-Jan-17	17-Sep-18	0	0
EM3132	CMS Preparation, Submission & Approval (Major Equipment)	289	25-Jan-17 A	10-Nov-17	25-Jan-17	09-Nov-17	0	0
EM3134	Manufacturing & Logistic (Major Equipment)	210	23-Nov-17	21-Jun-18	10-Nov-17	07-Jun-18	-14	-14
EM3136	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	187	10-Nov-17	16-May-18	10-Nov-17	15-May-18	0	0
EM3140	CMS Preparation, Submission & Approval (Electrical)	288	10-Nov-17	25-Aug-18	10-Nov-17	24-Aug-18	0	0
EM3144	CMS Preparation, Submission & Approval (Building Services)	312	10-Nov-17	18-Sep-18	10-Nov-17	17-Sep-18	0	0
Inlet Work, Preliminary Treatment Units and Inlet Pumping Station (PTW & IPS)		418	04-Jan-17 A	07-Sep-18	04-Jan-17	07-Sep-18	0	0
EM3135	CMS Preparation, Submission & Approval (Major Equipment)	270	04-Jan-17 A	30-Sep-17	04-Jan-17	30-Sep-17	0	0
EM3137	Manufacturing & Logistic (Major Equipment)	280	25-Nov-17	31-Aug-18	01-Oct-17	07-Jul-18	-55	-55
EM3635	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	225	01-Oct-17	13-May-18	01-Oct-17	13-May-18	0	0
EM3655	CMS Preparation, Submission & Approval (Electrical)	288	01-Oct-17	15-Jul-18	01-Oct-17	15-Jul-18	0	0
EM3675	CMS Preparation, Submission & Approval (Building Services)	342	01-Oct-17	07-Sep-18	01-Oct-17	07-Sep-18	0	0
Solid Handling Building (SHB)		232	12-Apr-17 A	18-May-18	12-Apr-17	18-May-18	0	0
EM3145	CMS Preparation, Submission & Approval (Major Equipment)	172	12-Apr-17 A	30-Sep-17	12-Apr-17	30-Sep-17	0	0
EM3150	Manufacturing & Logistic (Major Equipment)	173	25-Nov-17	16-May-18	01-Oct-17	22-Mar-18	-55	-55
EM3695	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	227	30-Sep-17	15-May-18	01-Oct-17	15-May-18	0	0
EM3715	CMS Preparation, Submission & Approval (Electrical)	178	30-Sep-17	27-Mar-18	01-Oct-17	27-Mar-18	0	0
EM3735	CMS Preparation, Submission & Approval (Building Services)	230	30-Sep-17	18-May-18	01-Oct-17	18-May-18	0	0
UV Disinfection Facility (UV)		524	30-Mar-17 A	06-Oct-18	30-Mar-17	29-Sep-18	0	-6
EM3185	CMS Preparation, Submission & Approval (Major Equipment)	318	30-Mar-17 A	17-Feb-18	30-Mar-17	10-Feb-18	0	-6
EM3755	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	250	27-Nov-17	04-Aug-18	21-Nov-17	28-Jul-18	-6	-6
EM3775	CMS Preparation, Submission & Approval (Electrical)	265	27-Nov-17	19-Aug-18	21-Nov-17	12-Aug-18	-6	-6
EM3795	CMS Preparation, Submission & Approval (Building Services)	313	27-Nov-17	06-Oct-18	21-Nov-17	29-Sep-18	-6	-6
Sludge Dewatering Building (SDB)		477	27-Nov-16 A	10-Nov-18	27-Nov-16	10-Nov-18	0	0
EM3175	CMS Preparation, Submission & Approval (Major Equipment)	334	27-Nov-16 A	26-Oct-17	27-Nov-16	26-Oct-17	0	0
EM3180	Manufacturing & Logistic (Major Equipment)	322	25-Nov-17	12-Oct-18	27-Oct-17	13-Sep-18	-29	-29
EM3815	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	345	26-Oct-17	06-Oct-18	27-Oct-17	06-Oct-18	0	0
EM3835	CMS Preparation, Submission & Approval (Electrical)	270	26-Oct-17	23-Jul-18	27-Oct-17	23-Jul-18	0	0
EM3855	CMS Preparation, Submission & Approval (Building Services)	380	26-Oct-17	10-Nov-18	27-Oct-17	10-Nov-18	0	0
Sludge Skip Storage Building (SSSB)		270	08-Dec-16 A	02-May-18	08-Dec-16	11-Apr-18	0	-21
EM3265	CMS Preparation, Submission & Approval (Major Equipment)	270	08-Dec-16 A	03-Oct-17	08-Dec-16	03-Sep-17	0	-30



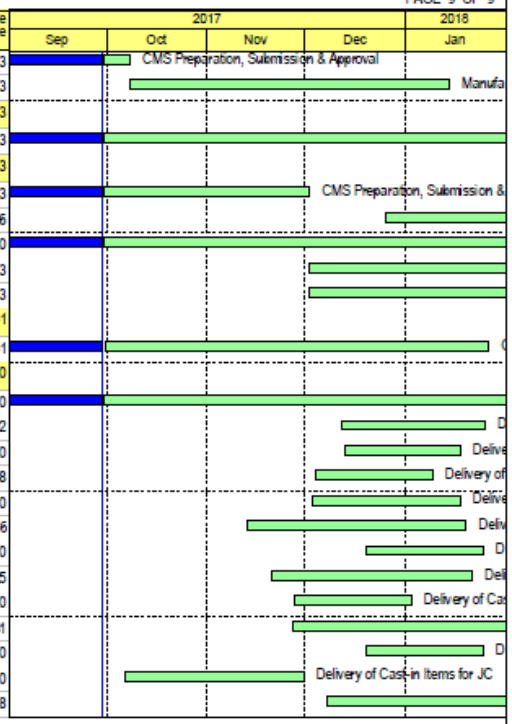
DATA DATE: 30-Sep-17 | LAYOUT: SW Project PHase 1 Rev 7 (3M 30Sep17) | PAGE 8 OF 9

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 7 BL Start	Rev 7 BL Finish	Slippage Start Date	Slippage Finish Date
EM3270	Manufacturing & Logistic (Major Equipment)	159	25-Nov-17	02-May-18	25-Sep-17	02-Mar-18	-61	-61
EM3875	CMS Preparation, Submission & Approval (Electrical)	220	04-Sep-17 A	28-Apr-18	04-Sep-17	11-Apr-18	0	-17
EM3895	CMS Preparation, Submission & Approval (Building Services)	100	04-Sep-17 A	29-Dec-17	04-Sep-17	12-Dec-17	0	-17
EM3905	Manufacturing & Logistic (Building Services)	120	29-Dec-17	28-Apr-18	13-Dec-17	11-Apr-18	-17	-17
Administration Building & Maintenance Workshop (AB & WS)		462	31-Jan-17 A	04-Aug-18	31-Jan-17	28-Jun-18	0	-37
EM3125	CMS Preparation, Submission & Approval (Major Equipment)	264	31-Jan-17 A	21-Oct-17	31-Jan-17	21-Oct-17	0	0
EM3130	Manufacturing & Logistic (Major Equipment)	250	27-Nov-17	04-Aug-18	22-Oct-17	28-Jun-18	-37	-37
EM3915	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	176	30-Aug-17 A	22-Feb-18	30-Aug-17	22-Feb-18	1	0
EM3935	CMS Preparation, Submission & Approval (Electrical)	204	30-Aug-17 A	22-Mar-18	30-Aug-17	22-Mar-18	1	0
EM3955	CMS Preparation, Submission & Approval (Building Services)	182	30-Aug-17 A	28-Feb-18	30-Aug-17	28-Feb-18	1	0
Deodorization Facilities No. 1 & 2 (DO 1 & DO 2)		535	10-Jan-17 A	07-Dec-18	10-Jan-17	07-Dec-18	0	0
EM3165	CMS Preparation, Submission & Approval (Major Equipment)	342	10-Jan-17 A	18-Dec-17	10-Jan-17	17-Dec-17	0	0
EM3170	Manufacturing & Logistic (Major Equipment)	120	18-Dec-17	17-Apr-18	18-Dec-17	16-Apr-18	0	0
EM3172	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	249	30-Aug-17 A	05-May-18	30-Aug-17	05-May-18	0	0
EM3975	CMS Preparation, Submission & Approval (Electrical)	327	30-Aug-17 A	22-Jul-18	30-Aug-17	22-Jul-18	0	0
EM3995	CMS Preparation, Submission & Approval (Building Services)	465	30-Aug-17 A	07-Dec-18	30-Aug-17	07-Dec-18	0	0
Chemical Building (CB)		541	05-Feb-17 A	22-Oct-18	05-Feb-17	22-Oct-18	0	0
EM3225	CMS Preparation, Submission & Approval (Major Equipment)	276	05-Feb-17 A	07-Nov-17	05-Feb-17	07-Nov-17	0	0
EM3230	Manufacturing & Logistic (Major Equipment)	168	27-Nov-17	14-May-18	08-Nov-17	24-Apr-18	-20	-20
EM4015	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	349	07-Nov-17	22-Oct-18	08-Nov-17	22-Oct-18	0	0
EM4035	CMS Preparation, Submission & Approval (Electrical)	227	07-Nov-17	22-Jun-18	08-Nov-17	22-Jun-18	0	0
EM4055	CMS Preparation, Submission & Approval (Building Services)	295	07-Nov-17	29-Aug-18	08-Nov-17	29-Aug-18	0	0
Street Fire Hydrant Pump Room & GENSET Room (FH)		455	23-Mar-17 A	06-Dec-18	23-Mar-17	06-Dec-18	0	0
EM3275	CMS Preparation, Submission & Approval (Major Equipment)	455	23-Mar-17 A	04-Jul-18	23-Mar-17	20-Jun-18	0	-13
EM4075	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	432	30-Sep-17	06-Dec-18	01-Oct-17	06-Dec-18	0	0
EM4095	CMS Preparation, Submission & Approval (Electrical)	325	30-Sep-17	21-Aug-18	01-Oct-17	21-Aug-18	0	0
EM4115	CMS Preparation, Submission & Approval (Building Services)	378	30-Sep-17	13-Oct-18	01-Oct-17	13-Oct-18	0	0
Electrical Buildings (EB1, EB2, EB3 & EB4)		417	23-Feb-17 A	14-Sep-18	23-Feb-17	09-Jul-18	0	-67
EM3235	CMS Preparation, Submission & Approval (Major Equipment)	200	23-Feb-17 A	10-Oct-17	23-Feb-17	10-Sep-17	0	-30
EM3240	Manufacturing & Logistic (Major Equipment)	271	17-Dec-17	14-Sep-18	11-Sep-17	08-Jun-18	-98	-98
EM3300	CMS Preparation, Submission & Approval (Electrical)	182	11-Sep-17 A	04-Apr-18	11-Sep-17	11-Mar-18	0	-24
EM3310	CMS Preparation, Submission & Approval (Control & Instrument)	302	11-Sep-17 A	02-Aug-18	11-Sep-17	09-Jul-18	0	-24
EM3320	CMS Preparation, Submission & Approval (Building Services)	95	09-Aug-17 A	25-Nov-17	09-Aug-17	12-Nov-17	1	-13
EM3325	Manufacturing & Logistic (Building Services)	112	17-Dec-17	08-Apr-18	12-Nov-17	04-Mar-18	-35	-35
Re-use Water Building (RW)		428	13-Apr-17 A	02-Jul-18	13-Apr-17	18-Jun-18	0	-13
EM3195	CMS Preparation, Submission & Approval (Major Equipment)	220	13-Apr-17 A	02-Dec-17	13-Apr-17	18-Nov-17	0	-13
EM3200	Manufacturing & Logistic (Major Equipment)	140	19-Dec-17	08-May-18	19-Nov-17	07-Apr-18	-30	-30
EM4135	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	199	02-Dec-17	19-Jun-18	19-Nov-17	05-Jun-18	-13	-13
EM4155	CMS Preparation, Submission & Approval (Electrical)	136	02-Dec-17	17-Apr-18	19-Nov-17	03-Apr-18	-13	-13
EM4175	CMS Preparation, Submission & Approval (Building Services)	212	02-Dec-17	02-Jul-18	19-Nov-17	18-Jun-18	-13	-13
DG Store & Chemical Waste Storage Building (DG) and Irrigation & Cleansing Water Pump Roc		510	24-May-17 A	21-Sep-18	24-May-17	08-Sep-18	0	-13
EM3255	CMS Preparation, Submission & Approval (Major Equipment)	200	24-May-17 A	22-Dec-17	24-May-17	09-Dec-17	0	-13
EM3260	Manufacturing & Logistic (Major Equipment)	98	23-Dec-17	30-Mar-18	10-Dec-17	17-Mar-18	-13	-13
EM4195	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	273	23-Dec-17	21-Sep-18	10-Dec-17	08-Sep-18	-13	-13
EM4215	CMS Preparation, Submission & Approval (Electrical)	146	30-Sep-17	22-Feb-18	30-Sep-17	22-Feb-18	0	0
EM4235	CMS Preparation, Submission & Approval (Building Services)	237	30-Sep-17	24-May-18	30-Sep-17	24-May-18	0	0
Existing Junction Chamber (JC)		261	07-Jan-17 A	14-Jan-18	07-Jan-17	31-Dec-17	0	-13



DATA DATE: 30-Sep-17 | LAYOUT: SW Project PHase 1 Rev 7 (3M 30Sep17) | PAGE 9 OF 9

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 7 BL Start	Rev 7 BL Finish	Slippage Start Date	Slippage Finish Date
EM3215	CMS Preparation, Submission & Approval	261	07-Jan-17 A	08-Oct-17	07-Jan-17	24-Sep-17	0	-13
EM3220	Manufacturing & Logistic	98	08-Oct-17	14-Jan-18	25-Sep-17	31-Dec-17	-13	-13
Gatehouse (GH)		450	24-Apr-17 A	31-Jul-18	24-Apr-17	17-Jul-18	0	-13
EM3285	CMS Preparation, Submission & Approval (Building Services)	450	24-Apr-17 A	31-Jul-18	24-Apr-17	17-Jul-18	0	-13
Payment Flowmeter Chamber (PF)		610	25-Jan-17 A	30-Dec-18	25-Jan-17	17-Dec-18	0	-13
EM3205	CMS Preparation, Submission & Approval (Major Equipment)	299	25-Jan-17 A	02-Dec-17	25-Jan-17	19-Nov-17	0	-13
EM3210	Manufacturing & Logistic (Major Equipment)	203	25-Dec-17	16-Jul-18	20-Nov-17	10-Jun-18	-36	-36
EM4255	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	157	01-Sep-17 A	05-Feb-18	01-Sep-17	04-Feb-18	0	0
EM4275	CMS Preparation, Submission & Approval (Electrical)	333	02-Dec-17	31-Oct-18	20-Nov-17	18-Oct-18	-13	-13
EM4295	CMS Preparation, Submission & Approval (Building Services)	393	02-Dec-17	30-Dec-18	20-Nov-17	17-Dec-18	-13	-13
SCADA and CMMS Systems		209	01-Jul-17 A	26-Jan-18	01-Jul-17	25-Jan-18	0	-1
EM3330	CMS Preparation, Submission & Approval	209	01-Jul-17 A	26-Jan-18	01-Jul-17	25-Jan-18	0	-1
Cast - In Items		416	01-Feb-17 A	24-Mar-18	01-Feb-17	23-Mar-18	0	0
EM3520	CMS Preparation, Submission & Approval	416	01-Feb-17 A	24-Mar-18	01-Feb-17	23-Mar-18	0	0
EM3530	Delivery of Cast-in Items for PTW and IPS	45	12-Dec-17	25-Jan-18	20-Nov-17	03-Jan-18	-22	-22
EM3535	Delivery of Cast-in Items for SHB	36	13-Dec-17	17-Jan-18	13-Dec-17	17-Jan-18	0	0
EM3550	Delivery of Cast-in Items for SSSB	36	04-Dec-17	09-Jan-18	27-Oct-17	01-Dec-17	-38	-38
EM3560	Delivery of Cast-in Items for DO No. 1	46	03-Dec-17	17-Jan-18	03-Dec-17	17-Jan-18	0	0
EM3570	Delivery of Cast-in Items for CB	67	13-Nov-17	19-Jan-18	08-Nov-17	13-Jan-18	-6	-6
EM3580	Delivery of Cast-in Items for ICW	36	19-Dec-17	24-Jan-18	20-Dec-17	24-Jan-18	0	0
EM3590	Delivery of Cast-in Items for EB2	62	20-Nov-17	21-Jan-18	27-Oct-17	27-Dec-17	-25	-25
EM3600	Delivery of Cast-in Items for EB4	36	27-Nov-17	02-Jan-18	28-Nov-17	02-Jan-18	0	0
EM3605	Delivery of Cast-in Items for RW	67	27-Nov-17	02-Feb-18	28-Oct-17	02-Jan-18	-31	-31
EM3610	Delivery of Cast-in Items for DG	36	19-Dec-17	24-Jan-18	20-Dec-17	24-Jan-18	0	0
EM3615	Delivery of Cast-in Items for JC	55	06-Oct-17	30-Nov-17	07-Oct-17	30-Nov-17	0	0
EM3625	Delivery of Cast-in Items for PF	96	07-Dec-17	13-Mar-18	20-Nov-17	23-Feb-18	-18	-18



Appendix D1

Calibration Certificates for Impact Air Quality Monitoring Equipment

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

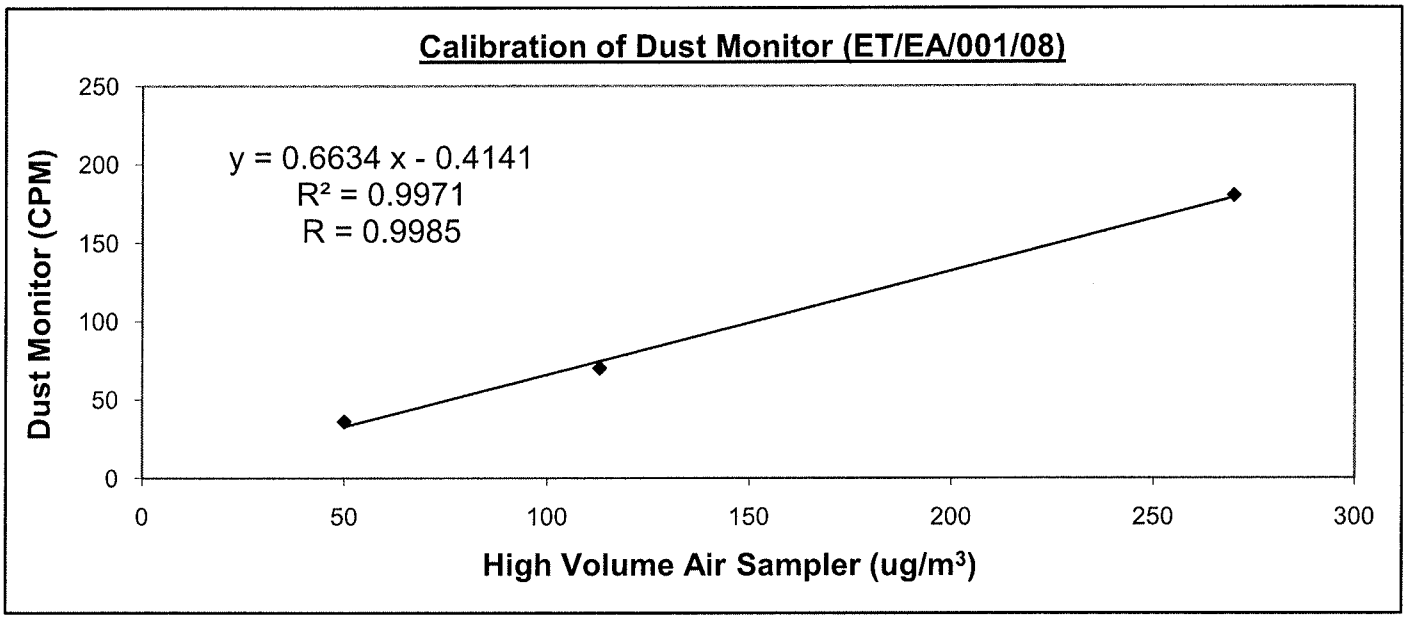
Manufacturer : SIBATA (LD-3B) Date of Calibration : 31 March 2017

Serial No. : 135261 (ET/EA/001/08) Calibration Due Date : 30 September 2017

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)	36	70	180
High Volume Air Sampler (ug/m^3)	50	113	270
High Volume Air Sampler Serail No.:1177	Calibration Due Date: 23 April 2017		



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 : _____
Chung Ka Ho
(Technician)

Checked by : _____
LAW, Sau Yee
(Senior Environmental Officer)

- 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

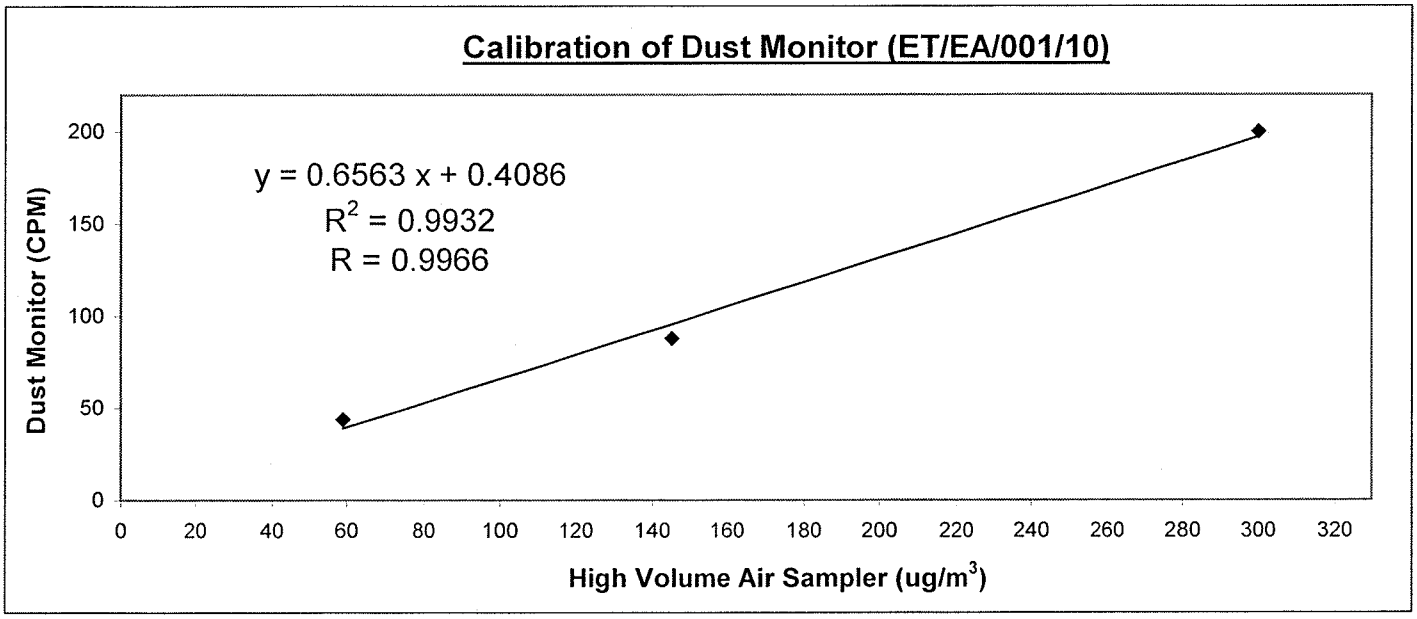
Manufacturer : SIBATA (LD-3B) Date of Calibration : 24 June 2017

Serial No. : 1Z5635 (ET/EA/001/10) Calibration Due Date : 23 December 2017

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)	44	88	200
High Volume Air Sampler (ug/m^3)	59	145	300
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 16 August 2017		



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 : _____
CHUNG, Ka Ho
(Technician)

Checked by : _____
LAW, Sau Yee
(Senior Environmental Officer)

- 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

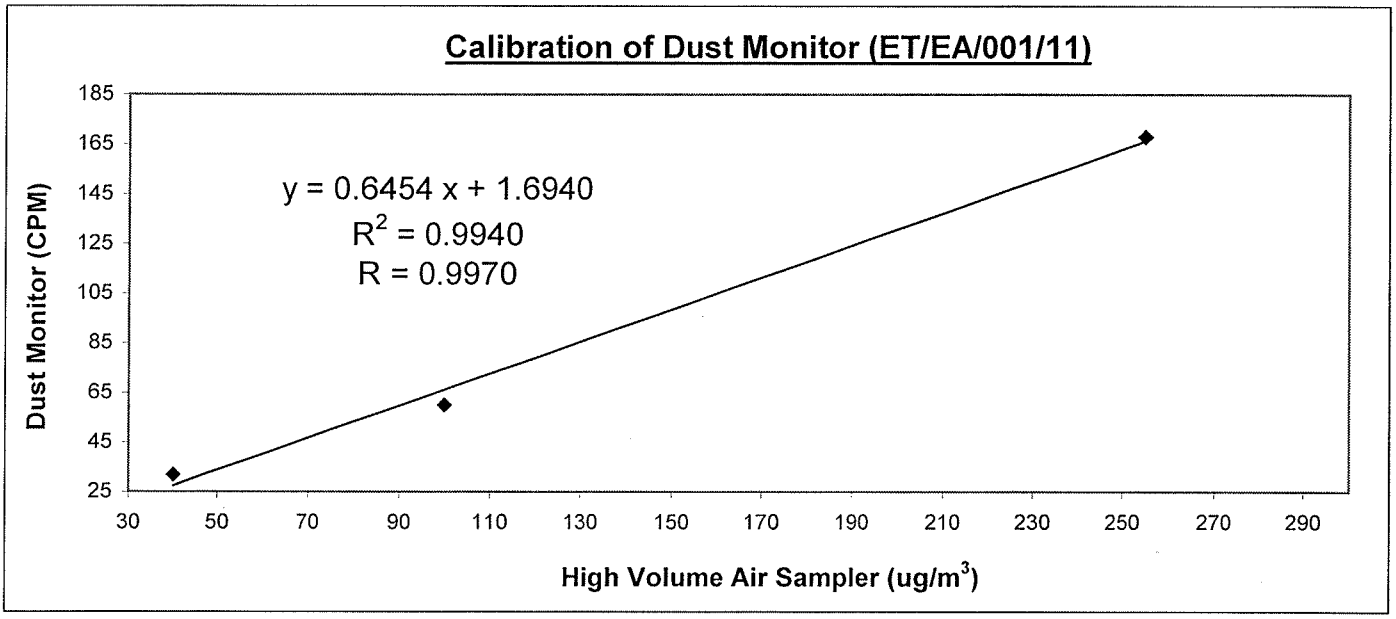
Manufacturer : SIBATA (LD-3B) Date of Calibration : 19 May 2017

Serial No. : 255863 (ET/EA/001/11) Calibration Due Date : 18 Novermber 2017

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)	32	60	168
High Volume Air Sampler (ug/m^3)	40	100	255
High Volume Air Sampler Serail No.:1177	Calibration Due Date: 18 June 2017		



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 : _____
CHUNG, Ka Ho
(Technician)

Checked by : _____
LAW, Sau Yee
(Senior Environmental Officer)

- 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

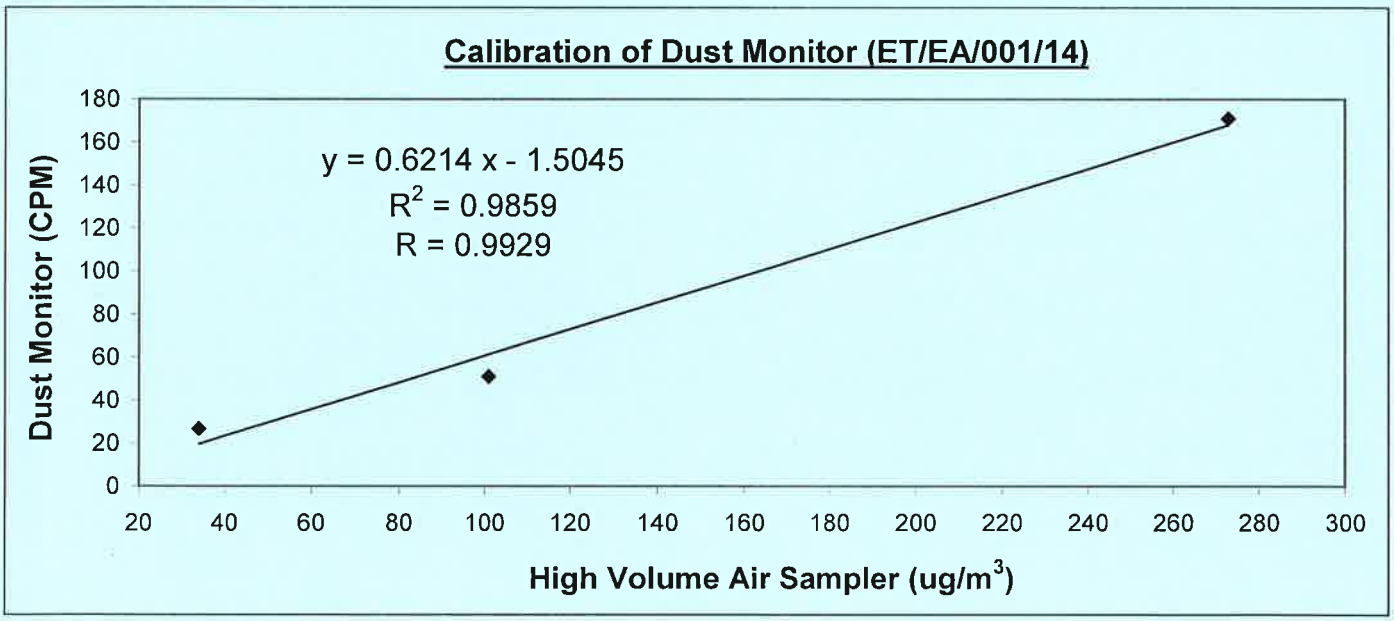
Manufacturer : SIBATA (LD-3B) Date of Calibration : 22 July 2017

Serial No. : 597340 (ET/EA/001/14) Calibration Due Date : 21 January 2018

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)	27	51	171
High Volume Air Sampler (ug/m^3)	34	101	273
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 16 August 2017		



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 : _____
CHUNG, Ka Ho
(Technician)

Checked by : _____
LAW, Sau Yee
(Senior Environmental Officer)

- 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

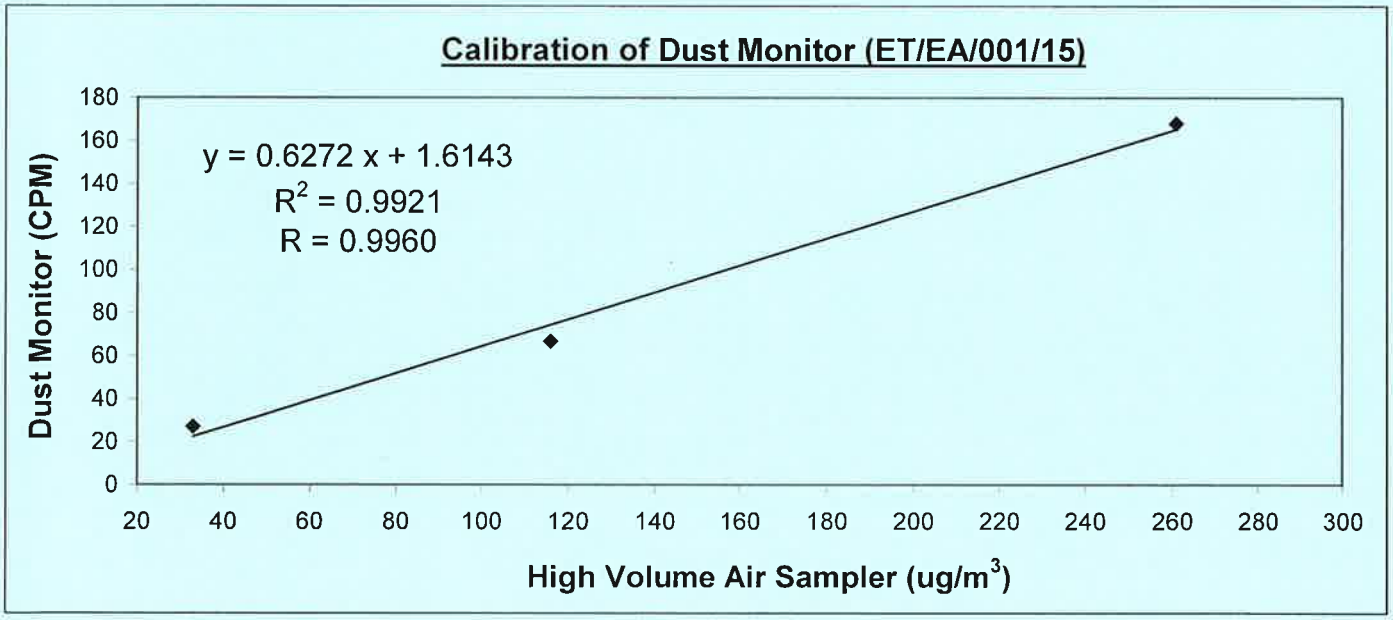
Manufacturer : SIBATA (LD-3B) Date of Calibration : 22 July 2017

Serial No. : 597227 (ET/EA/001/15) Calibration Due Date : 21 January 2018

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)	27	67	168
High Volume Air Sampler (ug/m^3)	33	116	261
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 16 August 2017		



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 : _____
CHUNG, Ka Ho
(Technician)

Checked by : _____
LAW, Sau Yee
(Senior Environmental Officer)

- 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 GMW

Date of Calibration : 22 July 2017

Serial No. : 1934 (ET / EA / 003 / 25)

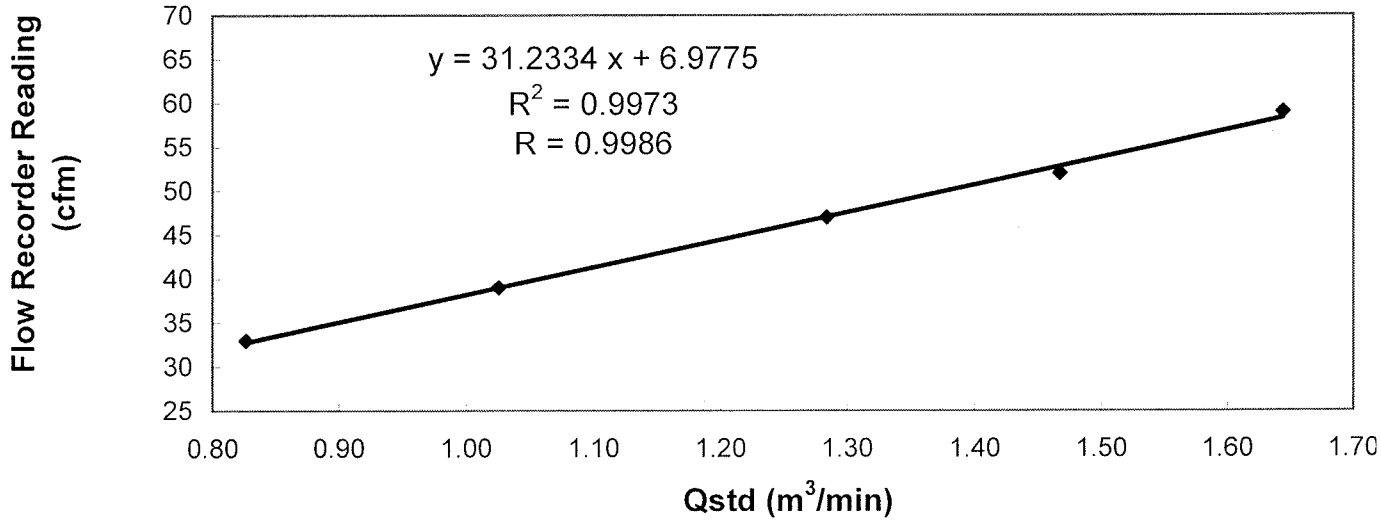
Calibration Due Date : 21 September 2017

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

Results :

Flow recorder reading (cfm)	59	52	47	39	33
Qstd (Actual flow rate, m^3/min)	1.64	1.47	1.28	1.03	0.83
Pressure : 770.31 **mm Hg**		Temp. : 302 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 : _____
CHAN, Wai Man
(Technician)

Approved by : _____
LAW, Sau Yee
(Senior Environmental Officer)

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 GMW

Date of Calibration : 19 September 2017

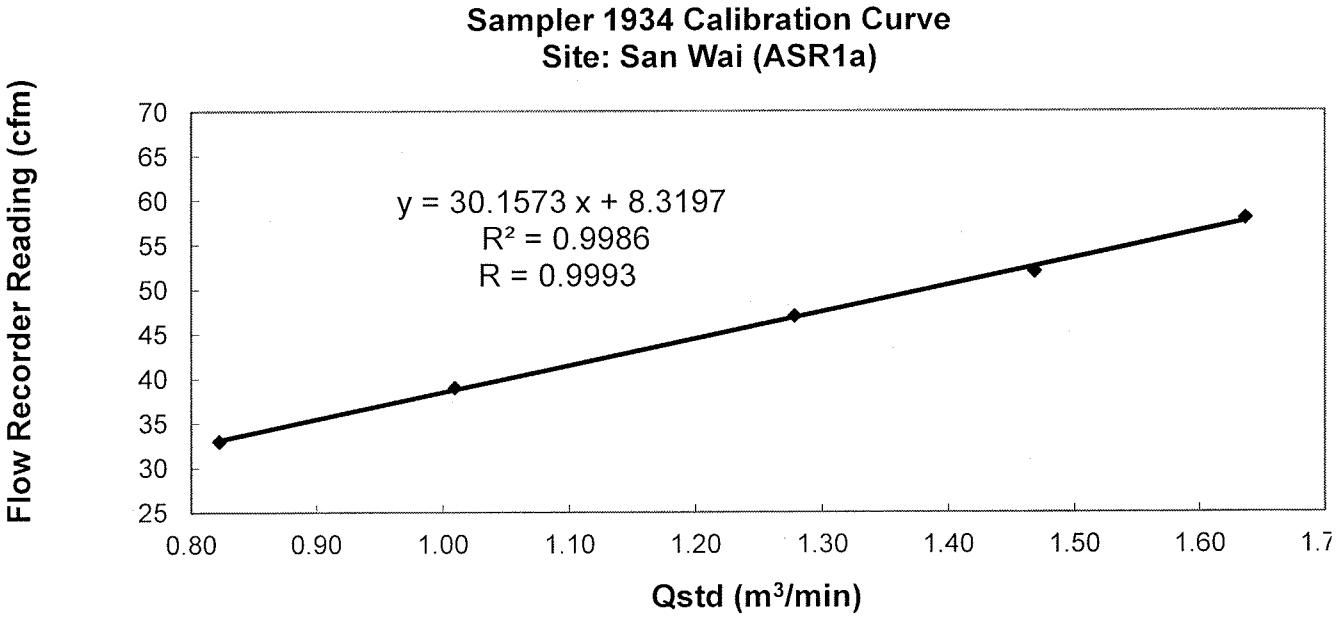
Serial No. : 1934 (ET / EA / 003 / 25)

Calibration Due Date : 18 November 2017

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

Results :

Flow recorder reading (cfm)	58	52	47	39	33
Qstd (Actual flow rate, m^3/min)	1.64	1.47	1.28	1.01	0.82
Pressure : 768.06 **mm Hg**		Temp. : 304 K			



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
MAK, Kei Wai
(Assistant Supervisor)

Approved by :
LAW, Sau Yee
(Senior Environmental Officer)

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

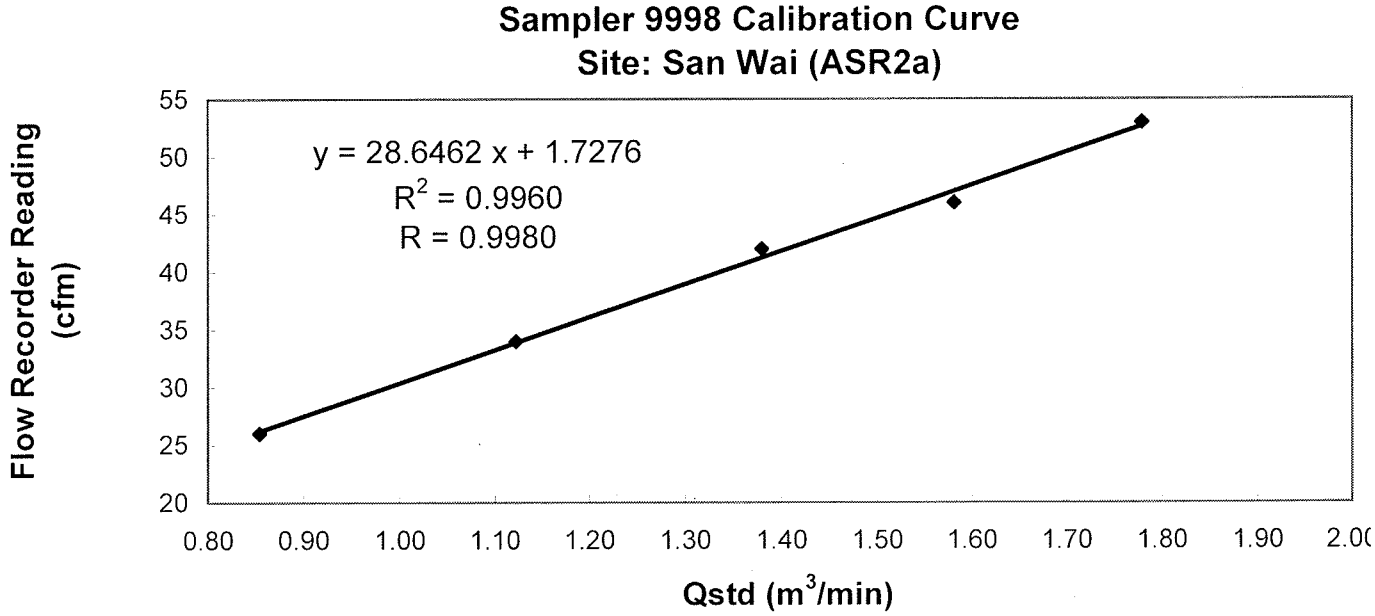
Manufacturer : Graseby (Model No. GS2310) Date of Calibration : 22 July 2017

Serial No. : 9998 (ET / EA / 003 / 12) Calibration Due Date : 21 September 2017

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

Results :

Flow recorder reading (cfm)	53	46	42	34	26
Qstd (Actual flow rate, m^3/min)	1.78	1.58	1.38	1.12	0.85
Pressure : 771.06 mm Hg		Temp. : 302 K			



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 : _____
CHAN, Wai Man
(Technician)

Checked by : _____
LAW, Sau Yee
(Senior Environmental Officer)

- 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

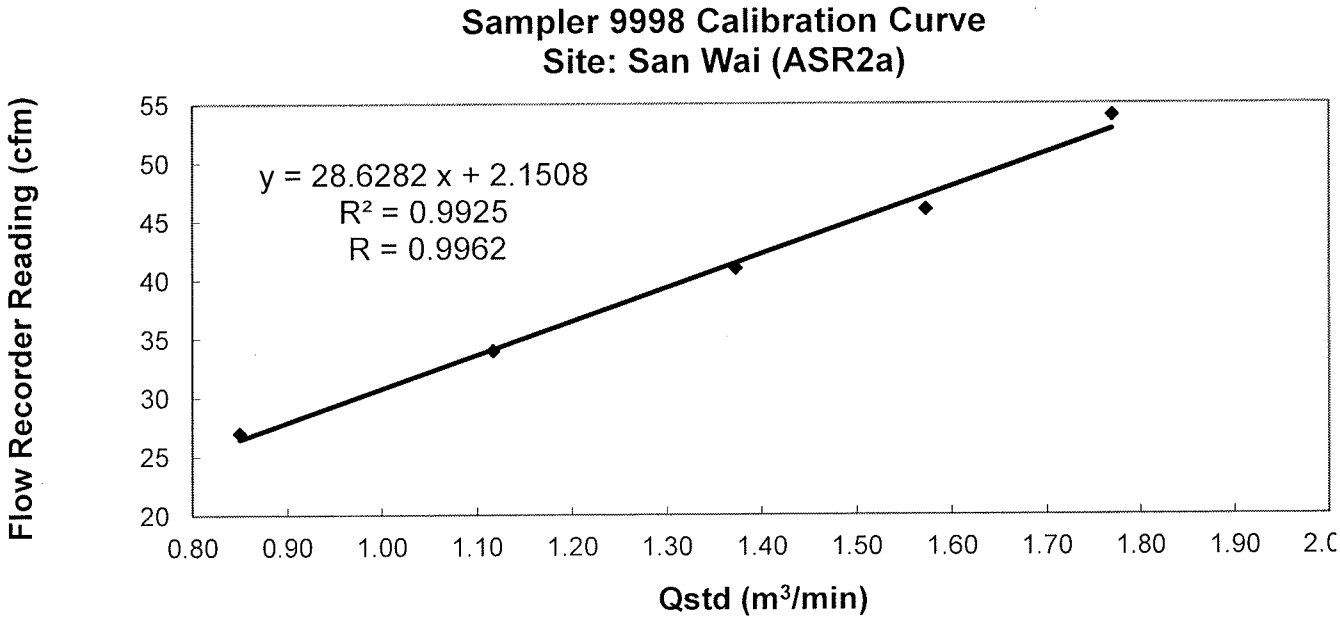
Manufacturer : Graseby (Model No. GS2310) Date of Calibration : 19 September 2017

Serial No. : 9998 (ET / EA / 003 / 12) Calibration Due Date : 18 November 2017

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

Results :

Flow recorder reading (cfm)	54	46	41	34	27
Qstd (Actual flow rate, m^3/min)	1.77	1.57	1.37	1.12	0.85
Pressure : 768.06 mm Hg		Temp. : 304 K			



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
MAK, Kei Wai
(Assistant Supervisor)

Checked by :
LAW, Sau Yee
(Senior Environmental Officer)

- END OF REPORT -

ET/EA/004/14

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Apr 03, 2017 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 3297 Pa (mm) - 748.03

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4360	3.2	2.00
2	NA	NA	1.00	1.0230	6.4	4.00
3	NA	NA	1.00	0.9170	7.9	5.00
4	NA	NA	1.00	0.8720	8.8	5.50
5	NA	NA	1.00	0.7180	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9900	0.6894	1.4101		0.9957	0.6934	0.8881
0.9858	0.9636	1.9943		0.9915	0.9692	1.2560
0.9837	1.0727	2.2296		0.9893	1.0789	1.4042
0.9825	1.1268	2.3385		0.9882	1.1333	1.4728
0.9773	1.3612	2.8203		0.9830	1.3691	1.7762

Qstd slope (m) =	2.10166	Qa slope (m) =	1.31603
intercept (b) =	-0.03302	intercept (b) =	-0.02080
coefficient (r) =	0.99984	coefficient (r) =	0.99984
y axis = SQRT[H2O(Pa/760)(298/Ta)]		y axis = SQRT[H2O(Ta/Pa)]	

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

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	
1/9/2017	Fine	30	09:45	10:45	65
1/9/2017	Fine	30	10:45	11:45	70
1/9/2017	Fine	30	13:15	14:15	62
7/9/2017	Cloudy	29	09:45	10:45	73
7/9/2017	Cloudy	29	10:45	11:45	78
7/9/2017	Cloudy	29	13:00	14:00	75
13/9/2017	Fine	30	09:55	10:55	72
13/9/2017	Fine	30	10:55	11:55	69
13/9/2017	Fine	30	13:00	14:00	73
19/9/2017	Fine	31	08:50	09:50	53
19/9/2017	Fine	31	09:50	10:50	53
19/9/2017	Fine	31	10:50	11:50	58
25/9/2017	Fine	30	08:00	09:00	68
25/9/2017	Fine	30	09:00	10:00	74
25/9/2017	Fine	30	10:00	11:00	71
30/9/2017	Cloudy	27	08:50	09:50	52
30/9/2017	Cloudy	27	09:50	10:50	54
30/9/2017	Cloudy	28	10:50	11:50	57
				Min	52
				Max	78
				Average	65

Air Quality Monitoring Station : ASR2a

Date	Weather	Temperature (℃)	Monitoring Period		1-hr TSP (mg/m^3)
			Start	Finish	
1/9/2017	Fine	30	10:00	11:00	69
1/9/2017	Fine	30	11:00	12:00	64
1/9/2017	Fine	30	13:00	14:00	72
7/9/2017	Cloudy	29	14:10	15:10	66
7/9/2017	Cloudy	29	15:10	16:10	69
7/9/2017	Cloudy	29	16:10	17:10	72
13/9/2017	Fine	30	14:15	15:15	79
13/9/2017	Fine	30	15:15	16:15	75
13/9/2017	Fine	30	16:15	17:15	70
19/9/2017	Fine	31	09:00	10:00	47
19/9/2017	Fine	31	10:00	11:00	49
19/9/2017	Fine	31	11:00	12:00	49
25/9/2017	Fine	30	13:00	14:00	65
25/9/2017	Fine	30	14:00	15:00	67
25/9/2017	Fine	30	15:00	16:00	61
30/9/2017	Cloudy	27	08:58	09:58	53
30/9/2017	Cloudy	27	09:58	10:58	47
30/9/2017	Cloudy	28	10:58	11:58	51
				Min	47
				Max	79
				Average	63

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		
1/9/2017	09:50	2/9/2017	09:50	23285.64	23309.64	24	1.1266	1.1266	1.1266	2.8043	3.0220	134	Fine
7/9/2017	09:50	8/9/2017	09:50	23309.64	23333.64	24	1.1266	1.1266	1.1266	2.7843	2.9488	101	Fine
13/9/2017	10:00	14/9/2017	10:00	23333.64	23357.64	24	1.1266	1.1266	1.1266	2.7743	2.9195	90	Fine
19/9/2017	08:55	20/9/2017	09:55	23357.64	23381.64	24	0.8515	0.8515	0.8515	2.7352	2.8673	108	Cloudy
25/9/2017	08:05	26/9/2017	09:05	23381.64	23405.64	24	0.8515	0.8515	0.8515	2.8042	2.9463	116	Fine
30/9/2017	08:55	1/10/2017	09:55	23405.64	23429.64	24	0.8515	0.8515	0.8515	2.7541	2.8586	85	Fine

Min	85
Max	134
Average	106

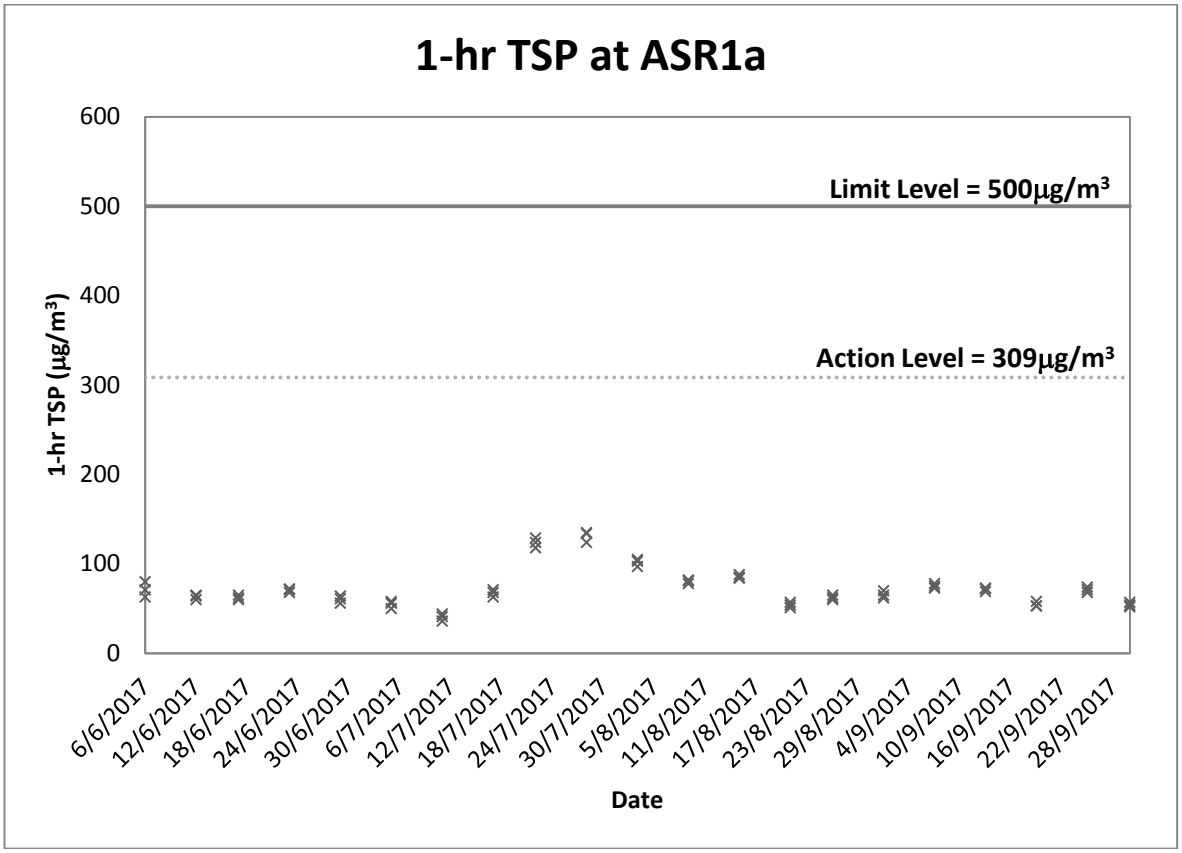
Air Quality Monitoring Station : ASR2a

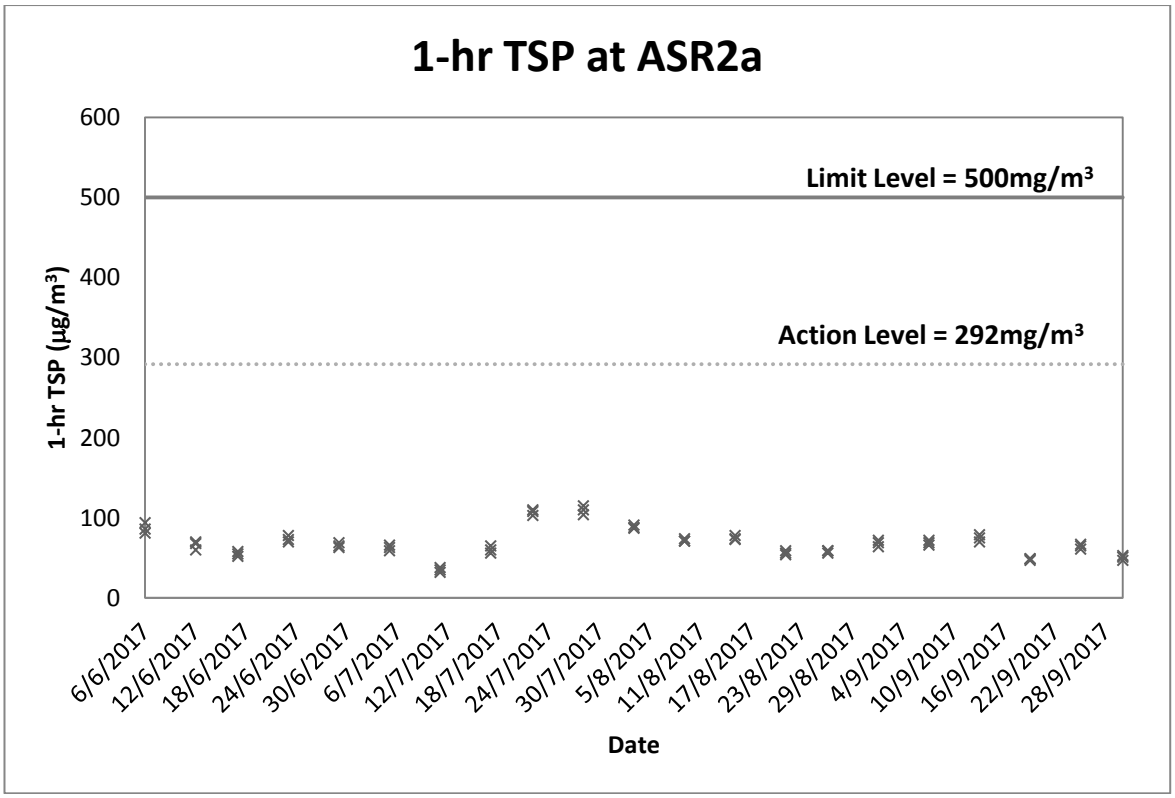
Start		Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m^3/min.)		Average (m^3/min.)	Filter Paper Weight (g)		Conc. ($\mu g/m^3$)	Weather Condition
Date	Time	Date	Time	Initial	Final		Initial	Final		Initial	Final		
1/9/2017	10:05	2/9/2017	10:05	20246.45	20270.45	24	0.8652	0.8652	0.8652	2.7651	2.9636	159	Fine
7/9/2017	14:15	8/9/2017	14:15	20270.45	20294.45	24	0.8652	0.8652	0.8652	2.8041	2.9881	148	Fine
13/9/2017	14:20	14/9/2017	14:20	20294.45	20318.45	24	0.8652	0.8652	0.8652	2.8001	2.9601	128	Fine
19/9/2017	09:05	20/9/2017	09:05	20318.45	20342.45	24	1.1125	1.1125	1.1125	2.7840	2.9085	78	Cloudy
25/9/2017	13:05	26/9/2017	13:05	20342.45	20366.45	24	1.1125	1.1125	1.1125	2.7392	2.8742	84	Fine
30/9/2017	09:00	1/10/2017	09:00	20366.45	20390.45	24	1.1125	1.1125	1.1125	2.8004	2.9177	73	Fine

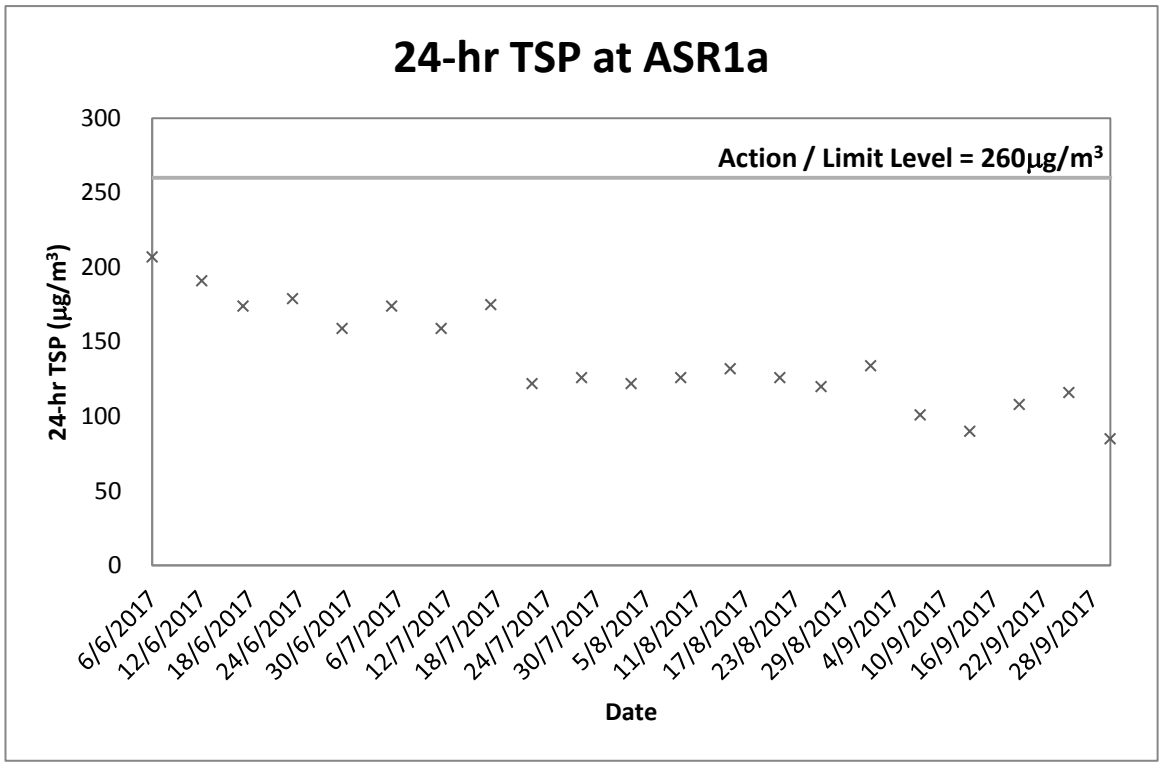
Min	73
Max	159
Average	112

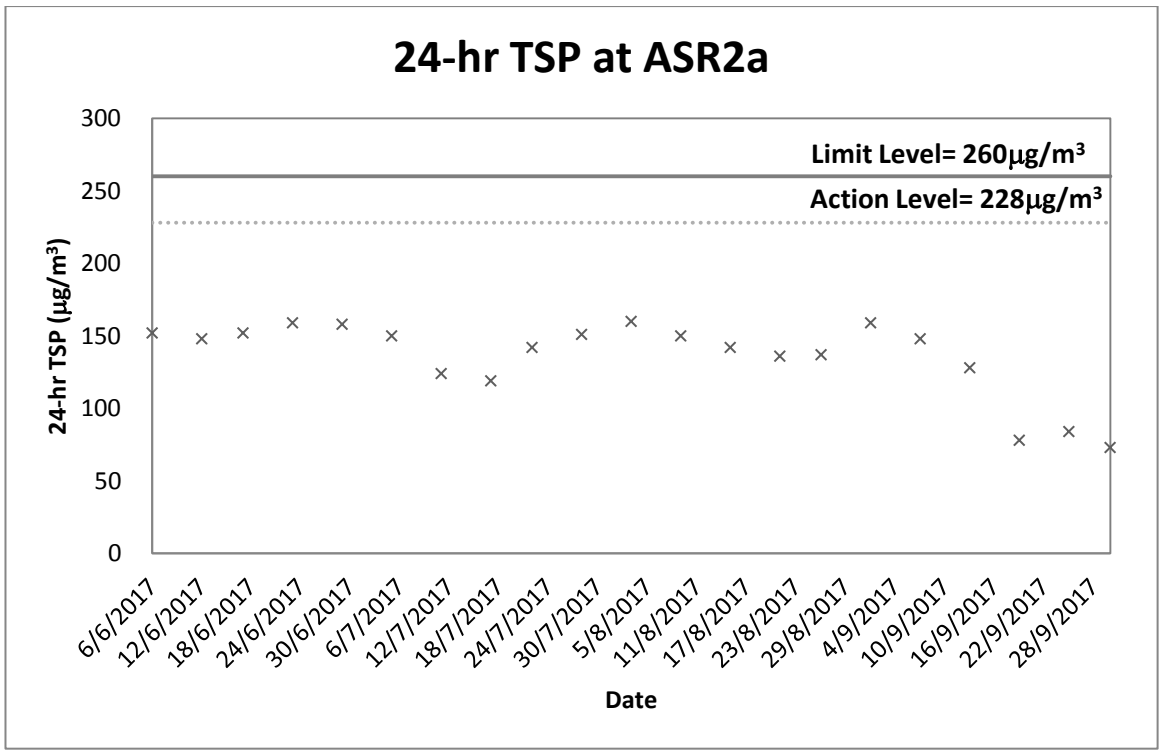
Appendix D3

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
6/6/2017
12/6/2017
18/6/2017
24/6/2017
30/6/2017
6/7/2017
12/7/2017
18/7/2017
24/7/2017
30/7/2017
5/8/2017
11/8/2017
17/8/2017
23/8/2017
29/8/2017
4/9/2017
10/9/2017
16/9/2017
22/9/2017
28/9/2017
Date


1-hr TSP at ASR2a
600
500
400
300
200
100
0
1-hr TSP (µg/m³)
Limit Level = 500mg/m³
Action Level = 292mg/m³
6/6/2017
12/6/2017
18/6/2017
24/6/2017
30/6/2017
6/7/2017
12/7/2017
18/7/2017
24/7/2017
30/7/2017
5/8/2017
11/8/2017
17/8/2017
23/8/2017
29/8/2017
4/9/2017
10/9/2017
16/9/2017
22/9/2017
28/9/2017
Date


24-hr TSP at ASR1a
Action / Limit Level = 260μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
6/6/2017
12/6/2017
18/6/2017
24/6/2017
30/6/2017
6/7/2017
12/7/2017
18/7/2017
24/7/2017
30/7/2017
5/8/2017
11/8/2017
17/8/2017
23/8/2017
29/8/2017
4/9/2017
10/9/2017
16/9/2017
22/9/2017
28/9/2017
Date


24-hr TSP at ASR2a
Limit Level= 260μg/m³
Action Level= 228μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
6/6/2017
12/6/2017
18/6/2017
24/6/2017
30/6/2017
6/7/2017
12/7/2017
18/7/2017
24/7/2017
30/7/2017
5/8/2017
11/8/2017
17/8/2017
23/8/2017
29/8/2017
4/9/2017
10/9/2017
16/9/2017
22/9/2017
28/9/2017
Date

Appendix E1

Calibration Certificates for Impact Noise Monitoring Equipment

Hong Kong Calibration Ltd.
香 港 校 正 有限公司

Calibration Certificate

Certificate No. 700818 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. : Q70345 **Date of receipt :** 25-Jan-17

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 : 15-Feb-17 **Supply Voltage** : --
Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.
Ref. Document/Procedure: T03, Z04.

Test Results

A correction factor of x 1.06 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	611074	NIM-PRC
S223C	Std. Thermometer	604664	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 : C H Chan

Approved by : Steve Kwan

Date: 15-Feb-17

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

Certificate No. 700818

Results :

1. Velocity

Applied Value (m/s)	UUT Reading (m/s)	Corrected Reading (UUT Reading x 1.06)	Mfr's Spec.
0.00	0.0	0.0	± 5 % of reading.
2.50	2.4	2.5	
5.00	4.8	5.1	
10.00	* 9.3	9.9	
15.00	* 13.6	14.4	
19.00	* 17.2	18.2	

2. Temperature

Applied Value (°C)	UUT Reading (°C)	Mfr's Spec.
22.85	22.5	± 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 : 1 022 hPa
4. * Out of specification

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

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. **609158**

Customer : ETS-Testconsult Limited

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

Order No. : Q63739 **Date of receipt :** 7-Oct-16

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 : 24-Oct-16 **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	605758	NIM-PRC & SCL-HKSAR
S240	Sound Level Calibrator	601604	NIM-PRC & SCL-HKSAR
S041	Universal Counter	607883	SCL-HKSAR
S206	Sound Level Meter	605757	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 : Kin Wong

Approved by : Alan Chu

Date: 24-Oct-16

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	94.0 dB	± 1 dB

Uncertainty : ± 0.2 dB

2. **Frequency Accuracy**

UUT Nominal Value	Measured Value	Mfr's Spec.
1 kHz	0.993 kHz	± 2 %

Uncertainty : ± 0.1 %

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

4. **Total Harmonic Distortion** : < 0.4 %
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 : 1020 hPa

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

Hong Kong Calibration Ltd.
香 港 校 正 有限公司

Calibration Certificate

Certificate No. **611393** 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. : Q64510 **Date of receipt :** 8-Dec-16

Item Tested

Description : Precision Integrating Sound Level Meter (ET/EN/003/12)

Manufacturer : Rion **I.D.** : ET/EN/003/12

Model : NL-31 **Serial No.** : 00773032

Test Conditions

Date of Test : 23-Dec-16 **Supply Voltage** : --

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

Test Specifications

Calibration check.

Ref. Document/Procedure : IEC 61672 Type 1 Spec..

Test Results

All results were within the IEC 61672 Type 1 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	C147450	SCL-HKSAR
S240	Sound Level Calibrator	601604	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 : Alan Chu

Approved by : Kin Wong

Date: 23-Dec-16

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

EO

Calibration Certificate

Results :

1. **Self-generated noise:** 16.8 dBA (Mfr's Spec ≤ 20 dBA)

2. **Acoustical signal test**

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Response		
20 – 100	L_A	Fast	94.0	93.8
		Slow		93.8
	L_C	Fast		93.8
	Lp	Fast		93.8
30 – 120	L_A	Fast	94.0	93.8
		Slow		93.8
	L_C	Fast		93.8
	Lp	Fast		93.8
30 – 120	L_A	Fast	114.0	113.8
		Slow		113.8
	L_C	Fast		113.8
	Lp	Fast		113.8

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

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	- 16.3	- 16.1 dB, ± 1.5 dB
250 Hz	- 8.8	- 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	- 6.6	- 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	93.8 (Ref.)	- -	± 0.4 dB
C	94.0	93.8	0.0	
Z	94.0	93.8	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 : 1026 hPa.
4. Preamplifier model : NH-21 , S/N : 25043
5. The UUT's internal calibration was performed before the calibration.

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

Hong Kong Calibration Ltd.
香 港 校 正 有 限 公 司

Calibration Certificate

Certificate No. 610324

Customer : ETS-Testconsult Limited

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

Order No. : Q64225 **Date of receipt :** 15-Nov-16

Item Tested

Description : Sound Level Meter

Manufacturer : Rion **I.D.** : ET/EN/003/14

Model : NL-52 **Serial No.** : 00320645

Test Conditions

Date of Test : 24-Nov-16 **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 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	C147450	SCL-HKSAR
S240	Sound Level Calibrator	601604	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 : Kin Wong

Approved by : Alan Chu

Date: 24-Nov-16

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. **Self-generated noise:** 16.5 dBA (Mfr's Spec ≤ 17 dBA)

2. **Acoustical signal test**

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range (dB)	Frequency Weighting	Time Weighting	Octave Filter		
30-130	A	F	OFF	94.0	94.0
		S	OFF		94.0
	C	F	OFF		94.1
	Z	F	OFF		94.1
	A	F	OFF	114.0	114.0
		S	OFF		114.0
	C	F	OFF		114.1
	Z	F	OFF		114.1

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

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

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	-39.5	- 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	+1.1	+ 1.2 dB, ± 1.6 dB
4 kHz	+0.7	+ 1.0 dB, ± 1.6 dB
8 kHz	-1.1	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-8.5	- 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	94.1	+0.1	
Z	94.0	94.1	+0.1	

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 : 1025 hPa.
4. Preamplifier model : NH-25 , S/N : 10653
5. Firmware Version: 1.2
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. **701814** 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. : Q70792 **Date of receipt :** 2-Mar-17

Item Tested

Description : Sound Level Meter
Manufacturer : Rion **I.D.** : ET/EN/003/19
Model : NL-52 **Serial No.** : 00264521

Test Conditions

Date of Test : 7-Mar-17 **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 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	C170120	SCL-HKSAR
S240	Sound Level Calibrator	701036	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 : Kin Wong **Approved by :** Alan Chu

Date: 7-Mar-17

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. **Self-generated noise:** 14.6 dBA (Mfr's Spec ≤ 17 dBA)

2. **Acoustical signal test**

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range (dB)	Frequency Weighting	Time Weighting	Octave Filter		
30-130	A	F	OFF	94.0	94.0
		S	OFF		94.0
	C	F	OFF		94.3
	Z	F	OFF		94.3
	A	F	OFF	114.0	114.1
		S	OFF		114.1
	C	F	OFF		114.1
	Z	F	OFF		114.1

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

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	-26.3	- 26.2 dB, ± 1.5 dB
125 Hz	-16.3	- 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	+0.9	+ 1.0 dB, ± 1.6 dB
8 kHz	-1.1	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-8.1	- 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	94.3	+0.3	
Z	94.0	94.3	+0.3	

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 : 1012 hPa.
4. Preamplifier model : NH-25 , S/N : 64646
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 ----------

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)	
01/09/17	Fine	30	09:45	10:15	67.2	70.4	63.8	0.3
07/09/17	Cloudy	29	09:45	10:15	64.2	68.5	61.3	0.1
13/09/17	Fine	30	09:55	10:25	65.6	67.4	62.3	0.1
19/09/17	Fine	31	08:55	09:25	67.4	69.6	61.8	0.2
25/09/17	Fine	30	08:00	08:30	64.1	67.8	61.2	0.1
30/09/17	Cloudy	28	10:10	10:40	63.5	65.7	59.8	0.2

Min	63.5	65.7	59.8
Max	67.4	70.4	63.8
Logarithmic Average for normal weekdays	65.6	68.5	61.9

Monitoring Station: NSR2a(*)

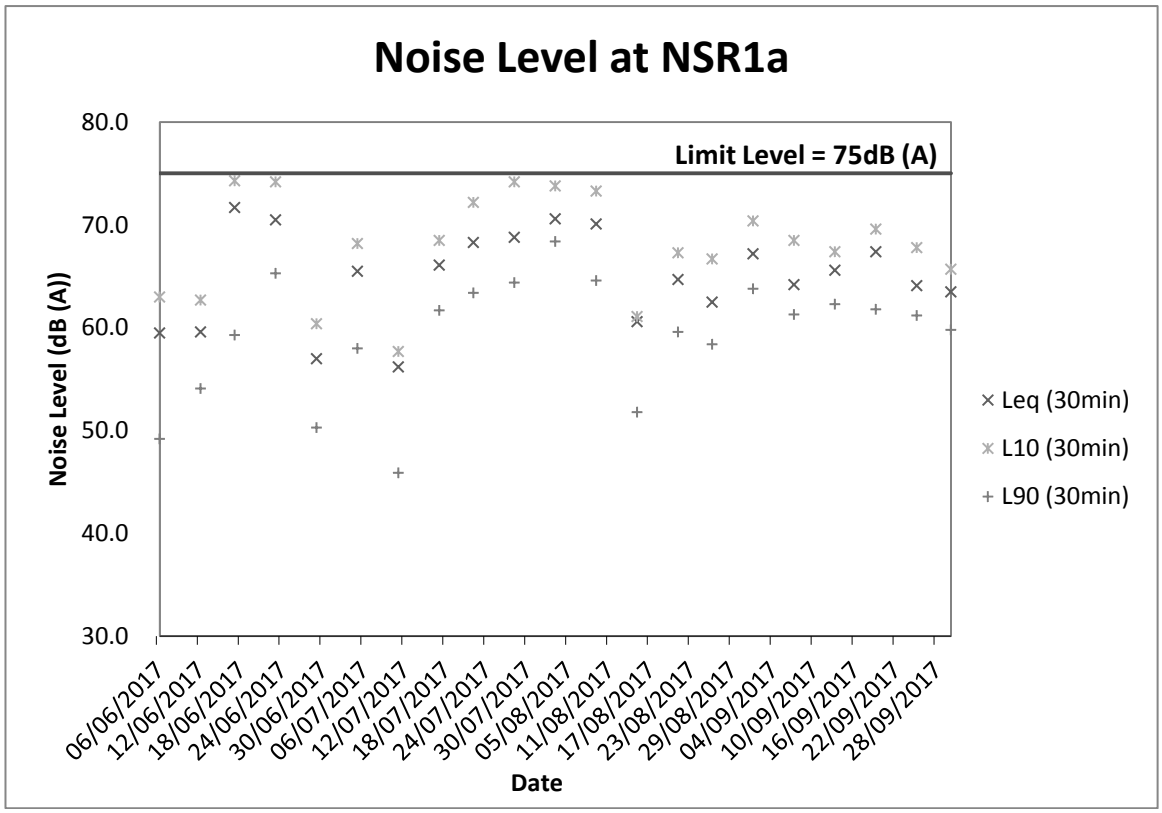
. Date	Weather	Temperature (℃)	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at NSR2a, dB (A)			Wind Speed (m/s)
					Leq (30min)	L10 (30min)	L90 (30min)	
01/09/17	Fine	30	10:30	11:00	70.1	72.9	67.5	0.3
07/09/17	Cloudy	29	14:10	14:40	67.1	70.4	63.2	0.1
13/09/17	Fine	30	14:15	14:45	68.4	70.1	64.7	0.1
19/09/17	Fine	31	10:00	10:30	66.0	67.3	57.9	0.3
25/09/17	Fine	30	13:00	13:30	66.7	69.5	62.3	0.1
30/09/17	Cloudy	28	08:59	09:29	69.7	72.1	62.5	0.1

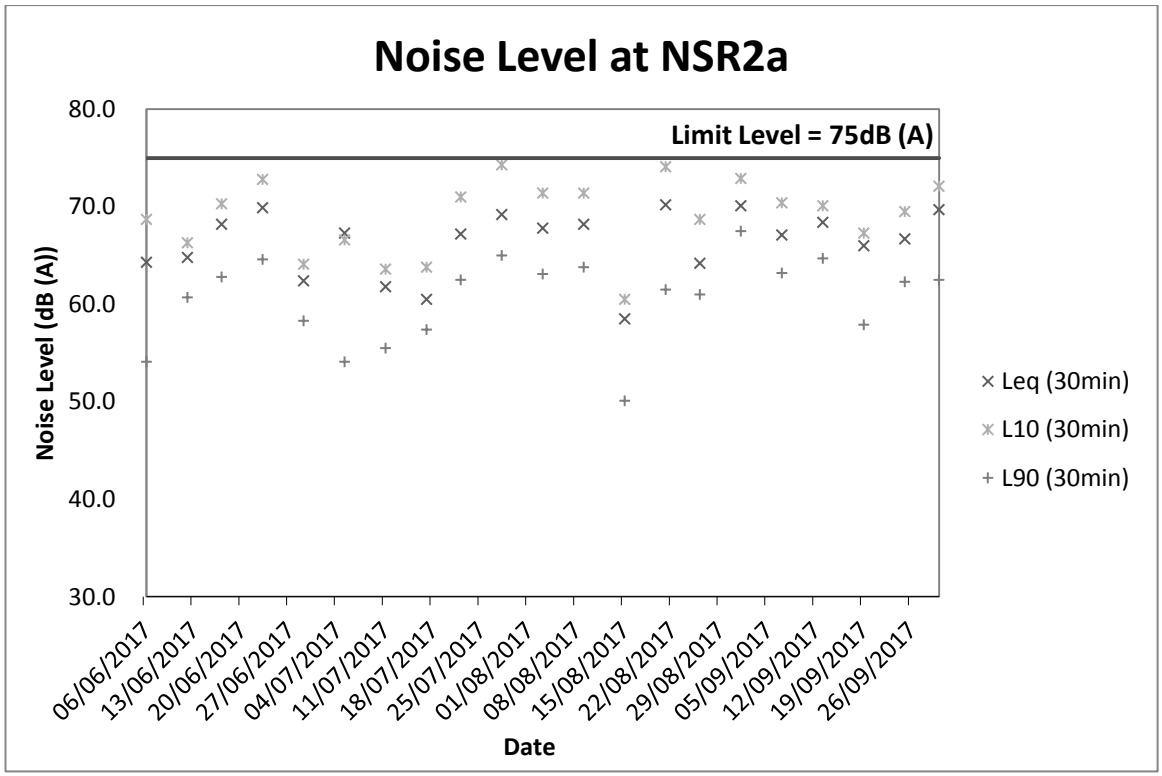
(*) : 3dB(A) correction was added to the results during the free-field noise measurements

Min	66.0	67.3	57.9
Max	70.1	72.9	67.5
Logarithmic Average for normal weekdays	68.3	70.7	63.9

Appendix E3

Graphical Plots of Impact Noise Monitoring Data


Noise Level at NSR1a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
70.0
60.0
50.0
40.0
30.0
06/06/2017
12/06/2017
18/06/2017
24/06/2017
30/06/2017
06/07/2017
12/07/2017
18/07/2017
24/07/2017
30/07/2017
05/08/2017
11/08/2017
17/08/2017
23/08/2017
29/08/2017
04/09/2017
10/09/2017
16/09/2017
22/09/2017
28/09/2017
Date
Leq (30min)
L10 (30min)
L90 (30min)


Noise Level at NSR2a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
70.0
60.0
50.0
40.0
30.0
06/06/2017
13/06/2017
20/06/2017
27/06/2017
04/07/2017
11/07/2017
18/07/2017
25/07/2017
01/08/2017
08/08/2017
15/08/2017
22/08/2017
29/08/2017
05/09/2017
12/09/2017
19/09/2017
26/09/2017
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/0505/014 Manufacturer : HACH

Model No. : 2100Q Serial No. : 13110C029448

Date of Calibration : 21/08/2017 Due Date : 20/11/2017

Theoretical Value of Turbidity Standard (NTU)	Measured Value (NTU)	Difference % *
20	19.7	-1.5
100	98	-2.0
800	803	0.4

(*) 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 : _____

Internal Calibration Report of Dissolved Oxygen Meter

Equipment Ref. No.	:	ET/EW/008/008	Manufacturer	:	YSI
Model No.	:	Pro 2030	Serial No.	:	14M101489
Date of Calibration	:	17/07/2017	Calibration Due Date	:	16/10/2017

Temperature Verification

Ref. No. of Reference Thermometer : ET/0521/019

Ref. No. of Water Bath : ---

	Temperature (°C)			
Reference Thermometer reading	Measured	20.3	Corrected	19.8
DO Meter reading	Measured	19.6	Difference	0.2

Standardization of sodium thiosulphate ($Na_2S_2O_3$) solution

Reagent No. of $Na_2S_2O_3$ titrant	CPE/012/4.5/001/16	Reagent No. of 0.025N $K_2Cr_2O_7$	CPE/012/4.4/002/20

	Trial 1	Trial 2
Initial Vol. of $Na_2S_2O_3$ (ml)	0.00	10.45
Final Vol. of $Na_2S_2O_3$ (ml)	10.45	20.90
Vol. of $Na_2S_2O_3$ used (ml)	10.45	10.45
Normality of $Na_2S_2O_3$ solution (N)	0.02392	0.02392
Average Normality (**N**) of $Na_2S_2O_3$ solution (N)	0.02392	
Acceptance criteria, Deviation	Less than ± 0.001N	

Calculation: Normality of $Na_2S_2O_3$, **N** = 0.25 / ml $Na_2S_2O_3$ used

Lineality Checking

Determination of dissolved oxygen content by Winkler Titration *

Purging Time (min)	2		5		10	
Trial	1	2	1	2	1	2
Initial Vol. of $Na_2S_2O_3$ (ml)	0.00	11.40	22.80	0.00	6.50	10.50
Final Vol. of $Na_2S_2O_3$ (ml)	11.40	22.80	29.40	6.50	10.50	14.50
Vol. (**V**) of $Na_2S_2O_3$ used (ml)	11.40	11.40	6.60	6.50	4.00	4.00
Dissolved Oxygen (**DO**), mg/L	7.32	7.32	4.24	4.17	2.57	2.57
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less than + 0.3mg/L		Less than + 0.3mg/L	

Calculation: DO (mg/L) = **V** x **N** x 8000/298

Purging time, min	DO meter reading, mg/L			Winkler Titration result *, mg/L			Difference (%) of DO Content
	1	2	Average	1	2	Average	
2	7.19	7.18	7.19	7.32	7.32	7.32	1.79
5	4.23	4.21	4.22	4.24	4.17	4.21	0.24
10	2.55	2.59	2.57	2.57	2.57	2.57	0.00
Linear regression coefficient				0.9998			

Internal Calibration Report of Dissolved Oxygen Meter

Zero Point Checking

DO meter reading, mg/L	0.00

Salinity Checking

Reagent No. of NaCl (10ppt)	CPE/012/4.7/004/7	Reagent No. of NaCl (30ppt)	CPE/012/4.8/004/7

Determination of dissolved oxygen content by Winkler Titration **

Salinity (ppt)	10		30	
Trial	1	2	1	2
Initial Vol. of $Na_2S_2O_3$ (ml)	0.00	11.40	22.70	32.60
Final Vol. of $Na_2S_2O_3$ (ml)	11.40	22.70	32.60	42.60
Vol. (**V**) of $Na_2S_2O_3$ used (ml)	11.40	11.30	9.90	10.00
Dissolved Oxygen (**DO**), mg/L	7.32	7.26	6.36	6.42
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less than + 0.3mg/L	

Calculation: DO (mg/L) = **V** x **N** x 8000/298

Salinity (ppt)	DO meter reading, mg/L			Winkler Titration result**, mg/L			Difference (%) of DO Content
	1	2	Average	1	2	Average	
10	7.32	7.29	7.31	7.32	7.26	7.29	0.27
30	6.28	6.31	6.3	6.36	6.42	6.39	1.42

Acceptance Criteria

(1) Differenc between temperature readings from temperature sensor of DO probe and reference thermometer : < 0.5 °C
(2) Linear regression coefficient : >0.99
(3) Zero checking: 0.0mg/L
(4) Difference (%) of DO content from the meter reading and by winkler titration : within ± 5%

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

Delete as appropriate

Calibrated by : _____ Approved by : _____

Appendix F2

Impact Water Quality Monitoring Results

Impact Water Quality Monitoring

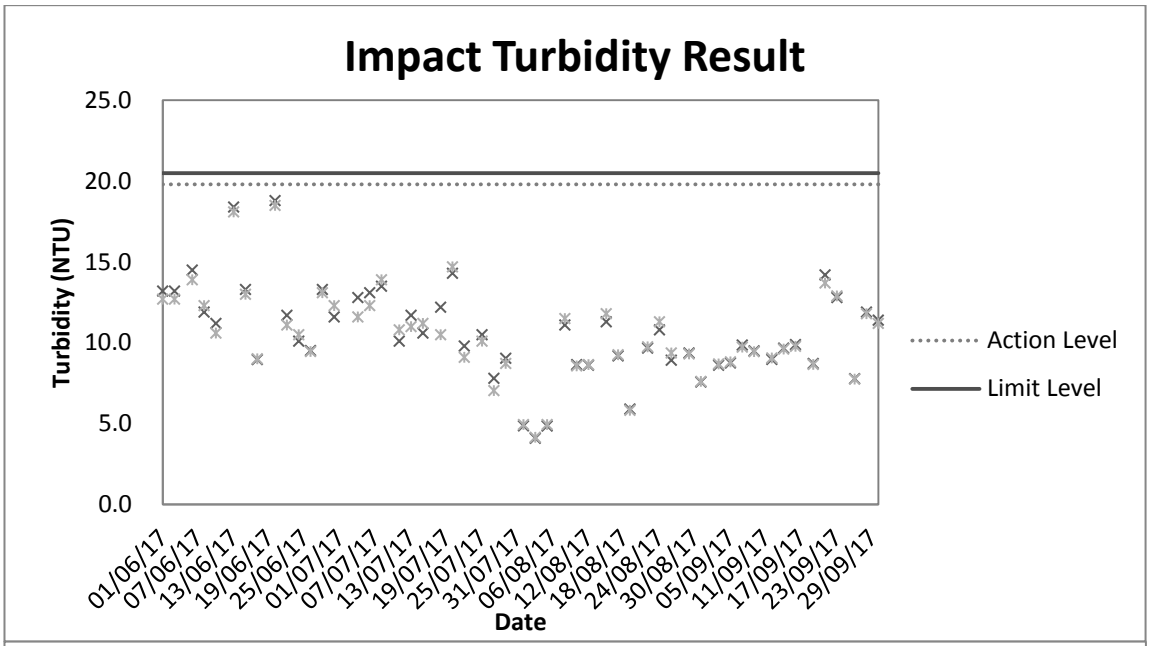
Monitoring Station: R1b

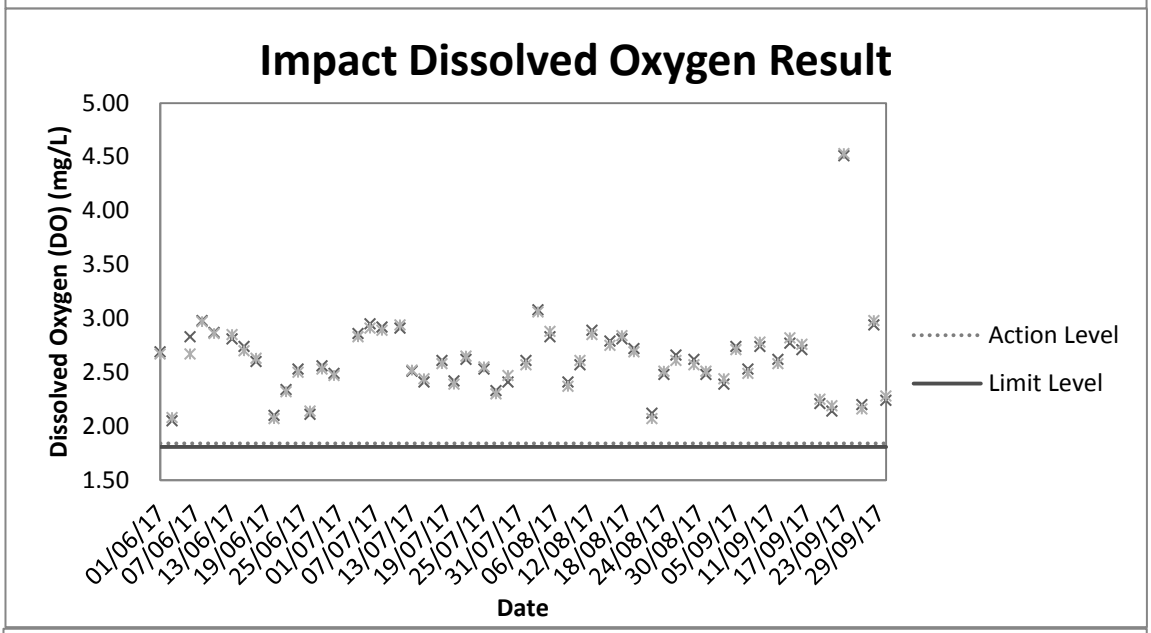
Date	Sampling Duration	Weather Condition	Sampling Level	Turbidity (NTU)			Dissolved Oxygen (DO) (mg/L)			Suspended Solid (SS) (mg/L)		
				1	2	Ave.	1	2	Ave.	1	2	Ave.
03/09/17	12:15-12:30	Cloudy	Mid-Depth	8.6	8.7	8.7	2.39	2.44	2.42	3.1	4.8	4.0
05/09/17	11:20-11:35	Cloudy	Mid-Depth	8.8	8.8	8.8	2.74	2.71	2.73	4.7	5.8	5.3
07/09/17	08:45-09:00	Cloudy	Mid-Depth	9.9	9.7	9.8	2.53	2.49	2.51	5.2	3.0	4.1
09/09/17	11:45-12:00	Cloudy	Mid-Depth	9.5	9.5	9.5	2.74	2.78	2.76	4.1	3.3	3.7
12/09/17	13:00-13:15	Cloudy	Mid-Depth	9.0	9.1	9.0	2.62	2.58	2.60	6.4	8.3	7.4
14/09/17	10:15-10:30	Fine	Mid-Depth	9.7	9.6	9.6	2.77	2.82	2.80	7.4	5.6	6.5
16/09/17	13:15-13:30	Fine	Mid-Depth	9.9	9.8	9.8	2.71	2.76	2.74	7.5	5.1	6.3
19/09/17	10:50-10:55	Fine	Mid-Depth	8.7	8.7	8.7	2.21	2.25	2.23	6.5	5.8	6.2
21/09/17	10:10-10:26	Fine	Mid-Depth	14.2	13.7	14.0	2.14	2.19	2.17	7.7	6.6	7.2
23/09/17	10:50-11:00	Cloudy	Mid-Depth	12.8	12.9	12.9	4.51	4.53	4.52	5.0	5.2	5.1
26/09/17	12:40-12:50	Fine	Mid-Depth	7.8	7.8	7.8	2.20	2.16	2.18	4.1	3.9	4.0
28/09/17	10:20-10:30	Fine	Mid-Depth	11.9	11.8	11.9	2.94	2.98	4.52	12.9	12.6	12.8
30/09/17	11:20-11:25	Cloudy	Mid-Depth	11.4	11.2	11.3	2.24	2.28	2.26	4.4	2.4	3.4

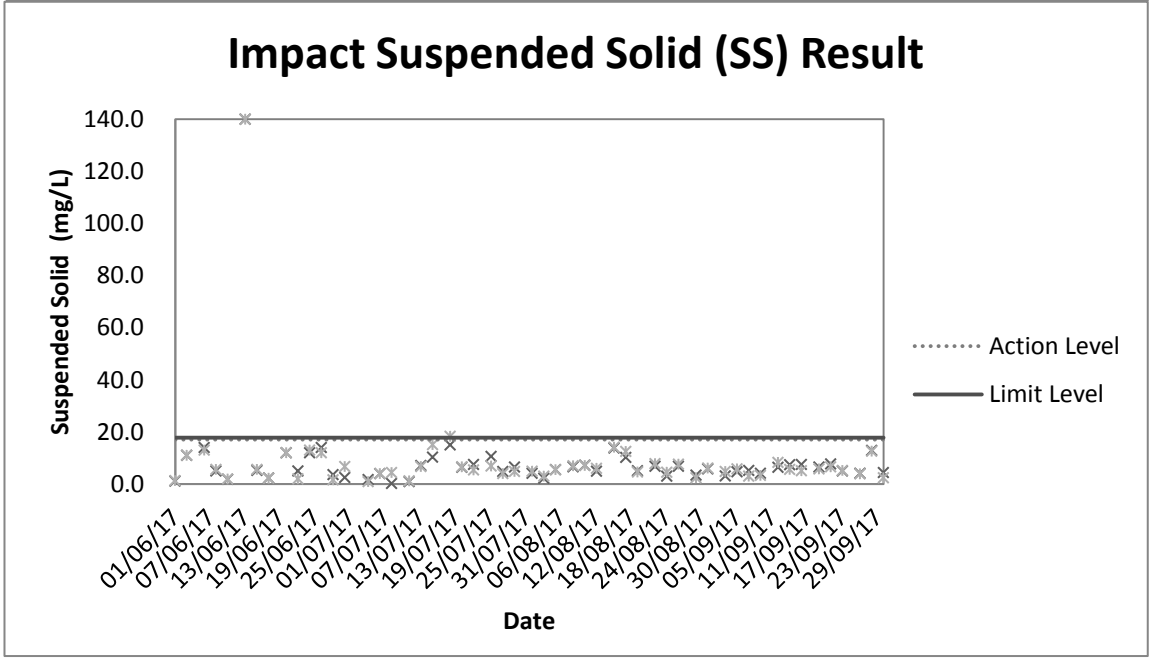
Min	7.75	Min	2.14	Min	2.4
Max	14.20	Max	4.53	Max	12.9
Average	10.12	Average	2.68	Average	5.8

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
01/06/17
07/06/17
13/06/17
19/06/17
25/06/17
01/07/17
07/07/17
13/07/17
19/07/17
25/07/17
31/07/17
06/08/17
12/08/17
18/08/17
24/08/17
30/08/17
05/09/17
11/09/17
17/09/17
23/09/17
29/09/17
Date
Action Level
Limit Level


Impact Dissolved Oxygen Result
Dissolved Oxygen (DO) (mg/L)
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
01/06/17
07/06/17
13/06/17
19/06/17
25/06/17
01/07/17
07/07/17
13/07/17
19/07/17
25/07/17
31/07/17
06/08/17
12/08/17
18/08/17
24/08/17
30/08/17
05/09/17
11/09/17
17/09/17
23/09/17
29/09/17
Date
Action Level
Limit Level


Impact Suspended Solid (SS) Result
Suspended Solid (mg/L)
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
01/06/17
07/06/17
13/06/17
19/06/17
25/06/17
01/07/17
07/07/17
13/07/17
19/07/17
25/07/17
31/07/17
06/08/17
12/08/17
18/08/17
24/08/17
30/08/17
05/09/17
11/09/17
17/09/17
23/09/17
29/09/17
Date
Action Level
Limit Level

Appendix G

Weather Condition

Daily Extract of Meteorological Observations, September 2017 – Wetland Park

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
01	1005.4	34.4	28.2	25.0	27.2	95	0.0	160	4.5
02	1004.3	32.9	27.8	25.1	25.5	88	14.0	090	2.9
03	1005.2	32.0	28.6	26.4	27.1	92	10.5	250	4.1
04	1006.3	28.0	26.7	25.2	25.2	92	26.0	180	6.6
05	1008.0	30.6	28.1	26.1	26.1	89	5.5	150	5.4
06	1007.3	33.3	28.8	26.1	25.9	85	1.0	150	4.3
07	1008.0	31.2	27.7	26.0	26.0	91	17.0	080#	2.5
08	1008.9	32.0	27.9	25.1	25.6	88	6.0	160	4.5
09	1008.7	33.1	28.1	25.9	25.9	88	18.0	160	5.3
10	1009.9	33.0	28.4	25.8	25.9	87	0.0	140	4.2
11	1009.4	33.6#	29.5	25.5#	25.0	78	0.0	160	4.3
12	1009.2	35.2	29.1	26.3	26.1	85	12.5	320	3.2
13	1009.4	33.4	29.1	26.2	25.4	82	15.5	070	6.0
14	1008.3	33.3	28.5	25.1	22.9	72	0.0	080	7.0
15	1009.4	33.5	28.9	26.0	25.1	80	0.0	070	4.5
16	1009.7	34.7	30.3	25.9	24.7	75	0.0	240	2.5
17	1009.1	35.1	30.0	26.1	24.9	76	0.0	330	2.1
18	1009.4	33.4	28.5	24.8	24.4	80	0.0	090	4.4
19	1009.9	31.6	27.8	24.7	24.4	82	0.0	150	2.6
20	1009.1	32.9	28.0	24.1	25.2	85	17.5	170	3.0
21	1008.4	33.0	27.7	25.4	25.8	90	43.5	060	2.1
22	1009.7	33.2	28.0	25.1	26.0	89	4.5	090	4.3
23	1010.6	33.1	28.7	26.2	26.3	88	33.5	090	5.1
24	1008.7	31.8	28.2	26.3	25.7	87	2.5	100	7.4
25	1009.8	32.7	29.2	26.8	25.5	81	0.5	130	8.3
26	1010.7	33.6	29.4	25.9	26.0	83	0.0	180	3.7
27	1009.3	34.4	29.9	25.8	26.0	81	0.0	170	5.2
28	1008.9	34.1	29.5	25.7	25.2	79	0.0	170	4.5
29	1011.8	34.5	29.1	25.4	25.7	83	0.0	090	6.0
30	1013.5	32.2	27.8	25.7	25.8	89	34.0	090	4.7

 # data incomplete

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

Appendix H

Environmental Site Inspection Checklist

Environmental Site Inspection Checklist – San Wai

Inspection Date: 1.9.17 **Inspected By:** Frankie Tam

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

Participants: Teddy Kuen, Kevin Tam, Cherry Ye

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?	☐	☐	☑	Reminder 1 ~~Item 1~~
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?	☐	☐	☑	Item 1
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 25.8.17, all item was improved.

Observations Reminder I: Main haul road should be increase the frequence of watering.

Item I: Stagnant pool was found accumulated in the dray trip.

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

Item I: To clean the stagnant pool properly.

Signature:
ET's representative

Name: Tony Chung Hoy

Date: 1.9.17

Signature:
Contractor's representative

Name: Cherry Ye

Date: 1.9.17

Signature:
ET Leader

Name: C. L. Lam

Date: 02/09/2017

Signature:
SO's representative

Name: C F LEUNG

Date: 1.9.2017

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 25/08/2017, impervious sheet was provided to cover the dusty materials.	--	170901_001	No	--
--	 Follow up action to Item 2 on 25/08/2017, general refuse was collected.	--	170901_002	No	--

1	 Stagnant pool was found accumulated in the drip tray.	To clear the stagnant pool in the drip tray	170901_003	Yes	08/09/2017

Environmental Site Inspection Checklist – San Wai

Inspection Date: 8-9.17 **Inspected By:** Frankie Tsy

Time: 9:30 **Weather Condition:** Cloudy

Participants: Teddy Yuen, ~~Kelvin~~ Johny, Chenyye, Rickie

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?	☐	☐	☑	item 1
	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 1.9.17, all item was improved

Observations

Item 1: O/I container was found without driptray at Portion P1.

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

Item 1: Provide the driptray for O/I container storage

Signature:
ET's representative

Name: Frankie Tang

Date: 8.9.17

Signature:
Contractor's representative

Name: Johnny So

Date: 8/9/2017

Signature:
ET Leader

Name: C.K. Lau

Date: 9.9.17

Signature:
SO's representative

Name: 8/9/2017

Date: CF 120917

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 01/09/2017, stagnant pool in the drip tray was cleared.	--	170908_001	No	--
1	 Oil container was found without drip tray at Portion P1.	To provide the drip tray for oil container storage.	170908_002	Yes	15/09/2017

Environmental Site Inspection Checklist – San Wai

Inspection Date: 15.9.17 **Inspected By:** Frankie Tang

Time: 9:45 **Weather Condition:** Fine

Participants: Teddy Tsen, Patrick, Cheng yee, TT Lau

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: Follow up action to item on 8.9.17, all item was improved **Observations** no observation was record on this site inspection
Corrective Actions – Mitigation Measures Implemented or Proposed (if any): N/A

Signature:
ET's representative

Name: Frakie Tse

Date: 15.9.17

Signature:
Contractor's representative

Name: Johnny So

Date: 15/9/2017

Signature:
ET Leader

Name: C. L. Lau

Date: 16.9.17

Signature:
SO's representative

Name: a f [illegible]

Date: 15/9/2017

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 08/09/2017, the oil container was placed in the drip tray.	--	170915_001	No	--

Environmental Site Inspection Checklist – San Wai

Inspection Date: 22.9.17 **Inspected By:** Frankie Tung

Time: 10:00 **Weather Condition:** ~~Fine~~ Cloudy

Participants: Teddy Yuen, Timmy So, Chemy Ye

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: N/A **Observations** no observed was recorded on this site inspection
Corrective Actions – Mitigation Measures Implemented or Proposed (if any): N/A

Signature:
ET's representative

Name: Ivy Chy Vty

Date: 22-9-17

Signature:
Contractor's representative

Name: Cherry Ye

Date: 22.9.17

Signature:
ET Leader

Name: C. L. Lau

Date: 25. 9. 2017

Signature:
SO's representative

Name: CF CHOW

Date: 22. 9. 2017

Environmental Site Inspection Checklist – San Wai

Inspection Date: 29 September 2017 **Inspected By:** Ivy Lo

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

Participants: Teddy Yuen, T.Y. Lou, Johnny So, Cherry Ye

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** No items were observed.
Corrective Actions – Mitigation Measures Implemented or Proposed (if any): N/A

Signature:
ET's representative

Name: Ivy Lo
Date: 29/9/2017

Signature:
Contractor's representative

Name: Man Guangling
Date: 29/9/17

Signature:
ET Leader

Name: C. L. Lam
Date: 30/09/2017

Signature:
SO's representative

Name: C J Lo
Date: 29/9/2017

Appendix I

Waste Flow Table

DSD Contract: DC/2013/10
Design, Build and Operate
San Wai Sewage Treatment Works Phase 1

ATAL-Degremont-China Harbour Joint Venture

Name of Department: DSD

Year: 2017

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 [5])	Reused in other Projects	Disposed as Public Fill (see Note [4])	Imported Fill	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.480
Feb	0.005	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	6.830
Mar	0.000	0.000	0.000	0.000	0.000	1.074	0.000	0.000	0.000	0.000	5.830
Apr	0.248	0.000	0.000	0.000	0.248	0.000	0.000	0.000	0.000	0.000	23.350
May	1.762	0.000	0.000	0.000	1.762	0.000	0.000	0.000	0.000	0.000	1.540
Jun	2.628	0.000	0.000	0.000	2.628	0.030	0.000	0.095	0.000	0.000	12.300
Jul	1.142	0.000	0.000	0.000	1.142	0.066	0.000	0.000	0.000	0.000	4.560
Aug	3.619	0.000	0.050	0.000	3.569	0.000	0.001	0.155	0.000	0.000	29.930
Sep	4.136	0.000	0.094	0.000	4.043	0.098	0.000	0.000	0.000	0.000	8.710
Oct											
Nov											
Dec											
Total	13.540	0.000	0.144	0.000	13.396	1.268	0.001	0.250	0.000	0.000	112.530

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, Rockfill, Soil, Mix Rock and Soil, Reclaimed Asphalt Pave, Slurry are 2.0 ton/m^3; the densities of Building debris is 2.1 ton/m^3; the densities of Broken Concrete is 2.4 ton/m^3.

(5) About 187.5 ton on-site excavated materials were reused for founding materials of temporary ground supporting for the Plate Load Test in September 2017.

Appendix J

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-RN0420-17	25/06/2017	12/12/2017	Valid
7	Construction Noise Permit (for pilling works)	PP-RN0030-17	03/07/2017	30/12/2017	Valid

Appendix K

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	√			

Appendix L

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

September 2017

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

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

October 2017

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

Appendix M

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

TEST REPORT

Environmental Testing of Water & Wastewater

Report No. : ENA75500
Date of issue : 12 September 2017

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 : 04 September 2017
Sample Description : The sample was collected by the Customer.
The sample was stored in 1L plastic bottle (for pH) and
500ml plastic bottle (for Chemical Oxygen Demand). The sample was chilled when received.
Sample for Chemical Oxygen Demand was preserved by adding conc H_2SO_4 to pH<2.

Laboratory information

Date Received : 05 September 2017

Result

Customer Sample ID	Lab Ref No	Test	Method Used	Result	Date Tested
DC201310-006	W39762 (01)	pH	In house method TPE/003/W	8.0 (at 25°C)	05 September 2017
		Total Suspended Solids	In house method TPE/006/W	5 mg/L *	11 September 2017
	W39762 (02)	Chemical Oxygen Demand	In house method TPE/002/W	<10 mgO_2/L	08 September 2017

Remark (if any) : (*) 500ml sample was used for Total Suspended Solids analysis. PQL of Total Suspended Solids reported less than 3 mg/L.

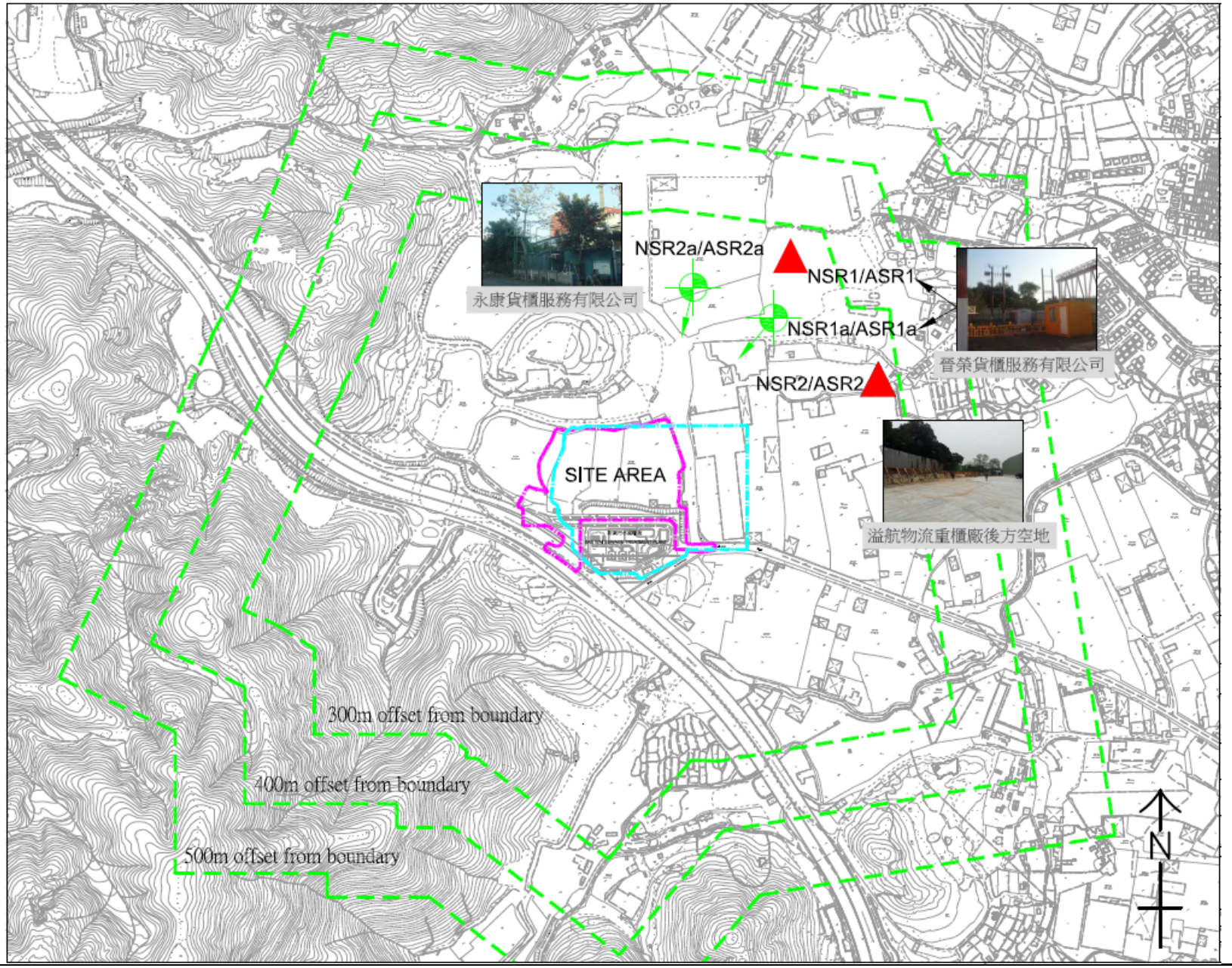
Checked by : LAW, Sau Yee (Senior Chemist)

Approved Signatory : LAU, Chi Leung

- END OF REPORT -

Figure 1

Locations of Air Quality and Noise Monitoring Stations

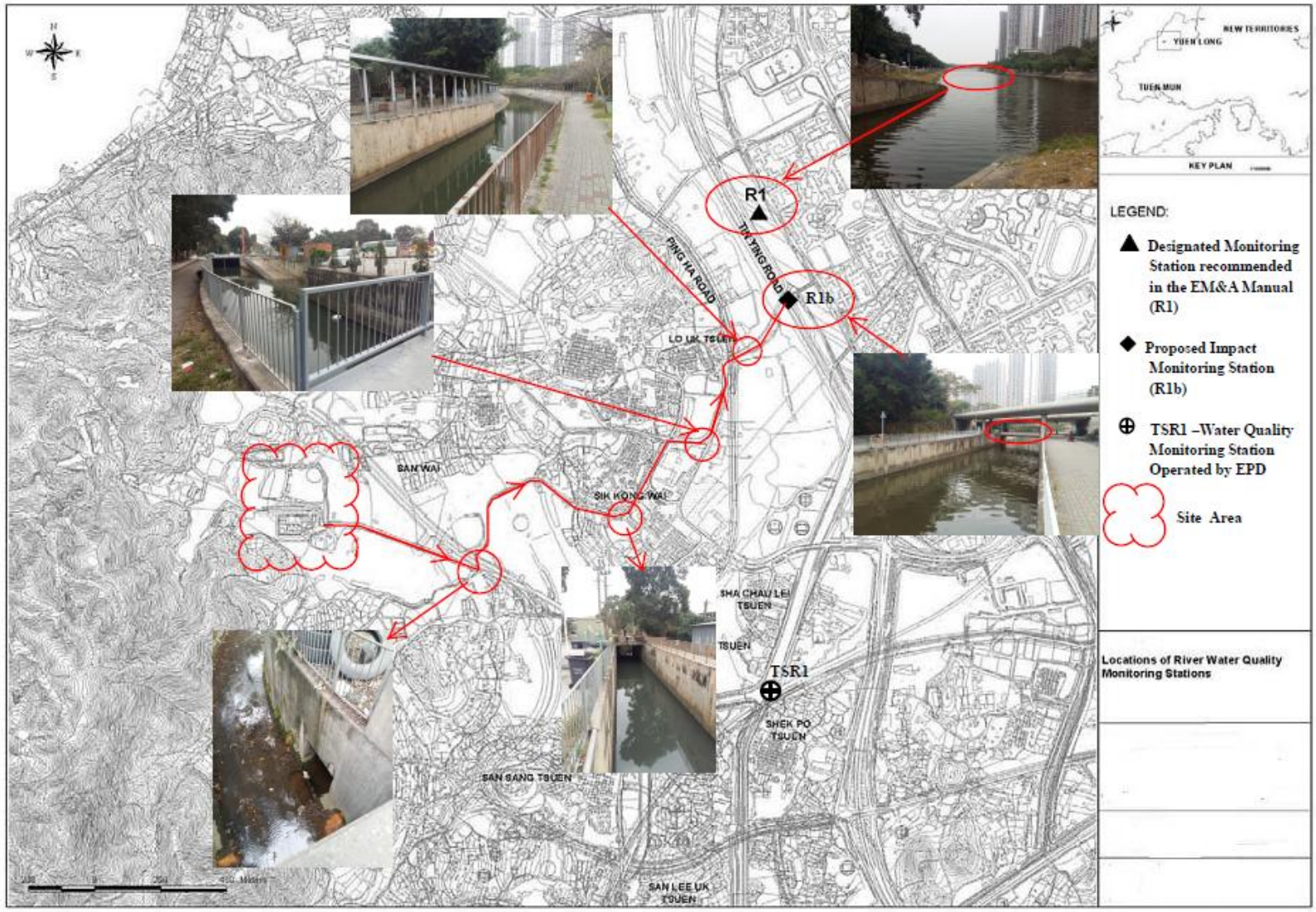


Project: Contract No. DC/2013/10 -Design, Build and Operate San Wai Sewage Treatment Works – Phase 1

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