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. 9

(01 JANUARY – 31 JANUARY 2018)

Prepared by: _____
LO, Ting Yi

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Issued Date: 07 February 2018 *Report No.: ENA80704*

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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: HKDSD203/50/104844

Date: 20 February 2018

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.9 (January 2018)

We refer to emails of 7, 14 and 15 February 2018 from ETS-Testconsult Limited attaching the Monthly Environmental Monitoring and Audit Report No.9 (January 2018).

We have no further comment and hereby verify the Monthly Environmental Monitoring and Audit Report No.9 (January 2018) 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

p.p.

Adi Lee
Independent Environmental Checker

LYMA/LHHN/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

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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 ninth 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 January 2018 to 31 January 2018.

Site Activities

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

- *Substructure (ELS & Bulk excavation);*
- *Piling Foundation (Prebored H-pile);*
- *Substructure (rc structure);*
- *Pile Loading Test;*
- *Post-Drilling (Investigation and verification of the quality of socketed H-piles);*
- *Slope works and Retaining Wall (Eastern Portion);*
- *Slope works (Northern Portion);*
- *Drainage Inlet connection (Diversion of Three Existing Sewage Rising Mains);*
- *Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber);*
- *EVA (Road & Drainage);*
- *Emergency By-Pass Pipe;*
- *Backfilling;*
- *Bar Screen Installation;*
- *Diversion of Existing Watermains by WSD*

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: 4 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:

- *Substructure (ELS & Bulk excavation);*
- *Substructure (rc structure);*
- *Pile Loading Test;*
- *Post-Drilling (Investigation and verification of the quality of socketed H-piles);*
- *Bar Screen Installation*
- *Slope works and Retaining Wall (Eastern Portion);*
- *Slope works (Northern Portion);*
- *Drainage Inlet connection (Diversion of Three Existing Sewage Rising Mains);*
- *Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber)*
- *EVA (Road & Drainage);*
- *RC Trench and Odour Pipe;*
- *Process Pipe*
- *Emergency By-Pass Pipe;*
- *Diversion of Existing Watermains by WSD*

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 ninth 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 January 2018 to 31 January 2018.

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:

- *Substructure (ELS & Bulk excavation);*
- *Piling Foundation (Prebored H-pile);*
- *Substructure (rc structure);*
- *Pile Loading Test;*
- *Post-Drilling (Investigation and verification of the quality of socketed H-piles);*
- *Slope works and Retaining Wall (Eastern Portion);*
- *Slope works (Northern Portion);*
- *Drainage Inlet connection (Diversion of Three Existing Sewage Rising Mains);*
- *Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber);*
- *EVA (Road & Drainage);*
- *Emergency By-Pass Pipe;*
- *Backfilling;*
- *Bar Screen Installation;*
- *Diversion of Existing Watermains by WSD*

2. AIR QUALITY MONITORING

2.1. Monitoring Requirements

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

2.2. Monitoring Equipment

1-hour TSP Monitoring

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

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

Table 2.1 Air Quality Monitoring Equipment

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

1-hr air quality monitoring (Dust Meter)

Measuring Procedures

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

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

Maintenance & Calibration (QA/QC)

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

24-hr air quality monitoring (HVS)

Instrumentation

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

Installation

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

Operation/Analytical Procedures

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

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

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

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

Maintenance & Calibration (QA/QC)

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

Wind Data Monitoring

Wind data (wind speed and wind direction) were directly extracted from 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

January 2018						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 ▼	3	4	5	6
7	8 ▼	9	10	11	12	13 ▼
14	15	16	17	18	19 ▼	20
21	22	23	24	25 ▼	26	27
28	29	30	31 ▼			

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

2.4. Action and Limit Levels

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

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

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

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

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

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

January 2018						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 ▼	3	4	5	6
7	8 ▼	9	10	11	12	13 ▼
14	15	16	17	18	19 ▼	20
21	22	23	24	25 ▼	26	27
28	29	30	31 ▼			

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

3.4. Monitoring Locations

Two noise monitoring stations, NSR1a (晉榮貨櫃服務有限公司) and 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	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; 4. Ensure mitigation measures are properly implemented; 5. If exceedances continues, consider what portion of the	1. Undertake immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of

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

4. WATER QUALITY MONITORING

4.1. Monitoring Requirements

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

4.2. Monitoring Methodology and Equipment

For In-situ Water Quality Measurement

Dissolved Oxygen (DO) measuring equipment

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

For Water Sampling and Sample Analysis

Water Sampler

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

Water Container

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

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

Table 4.1 Summary of Testing Procedures for water samples

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

4.3. Monitoring Frequency

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

Table 4.2 Monitoring Frequency of Water Quality Monitoring

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

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

Table 4.3 Time Schedule of Impact Water Quality Monitoring

January 2018						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 ▼	3	4 ▼	5	6 ▼
7	8	9 ▼	10	11 ▼	12	13 ▼
14	15	16 ▼	17	18 ▼	19	20 ▼
21	22	23 ▼	24	25 ▼	26	27 ▼
28	29	30 ▼	31			

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

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

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

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

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

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

4.5. Actions and Limit Levels

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

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

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

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

Table 4.5 Action and Limit Levels for Water Quality

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

4.6. Result and Observation

4.6.1. Result

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

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

4.6.2. Observation

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

4.7. Event and Action Plan

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

Table 4.6 Event and Action Plan for Water Quality

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and	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

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
	Contractor; 6. Repeat measurement on next day of exceedance.			measures.
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;	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
	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; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level.	Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures.	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.
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	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	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

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

5. ENVIRONMENTAL SITE INSPECTION AND AUDIT

5.1. Site Inspection

5.1.1. Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control mitigation measures for the project. During the reporting period, site inspections were carried out on 05, 12, 19 & 26 January 2018.

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
29 December 2017	1. Oil stain was observed at Portion CEPT.	1. The oil stain was cleared.	05 January 2018
05 January 2018	1. Oil stain was observed on the ground near AB area.	1. The oil stain was cleared.	12 January 2018
12 January 2018	No items were observed.	--	--
19 January 2018	1. Stagnant water was observed near the site boundary.	1. Stagnant water was cleared.	26 January 2018
26 January 2018	1. Oil stain near sheet piling machine was observed.	Follow-up actions for outstanding observation will be inspected during the next site inspection.	--

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)	0	--
Reused in other Projects (Inert) (m^3)	0	--
Disposed as Public Fill (Inert) (m^3)	8,389	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)	18,480	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 03, 16 & 30 January 2018. As there was no water discharged on 02 January 2018 and thus the water sampling work was then taken on next working day (03 January 2018). Besides, the wetsep at P8 was not operated from 16 to 31 January 2018, there was no water sampling work on 16 and 30 January 2018 at P8. 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**.

5.3.3. For effluent quality monitoring as per the discharge license requirement, the results 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 February 2018 are included:

- *Substructure (ELS & Bulk excavation);*
- *Substructure (rc structure);*
- *Pile Loading Test;*
- *Post-Drilling (Investigation and verification of the quality of socketed H-piles);*
- *Bar Screen Installation*
- *Slope works and Retaining Wall (Eastern Portion);*
- *Slope works (Northern Portion);*
- *Drainage Inlet connection (Diversion of Three Existing Sewage Rising Mains);*
- *Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber)*
- *EVA (Road & Drainage);*
- *RC Trench and Odour Pipe;*
- *Process Pipe*
- *Emergency By-Pass Pipe;*
- *Diversion of Existing Watermains by WSD*

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 February 2018 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.

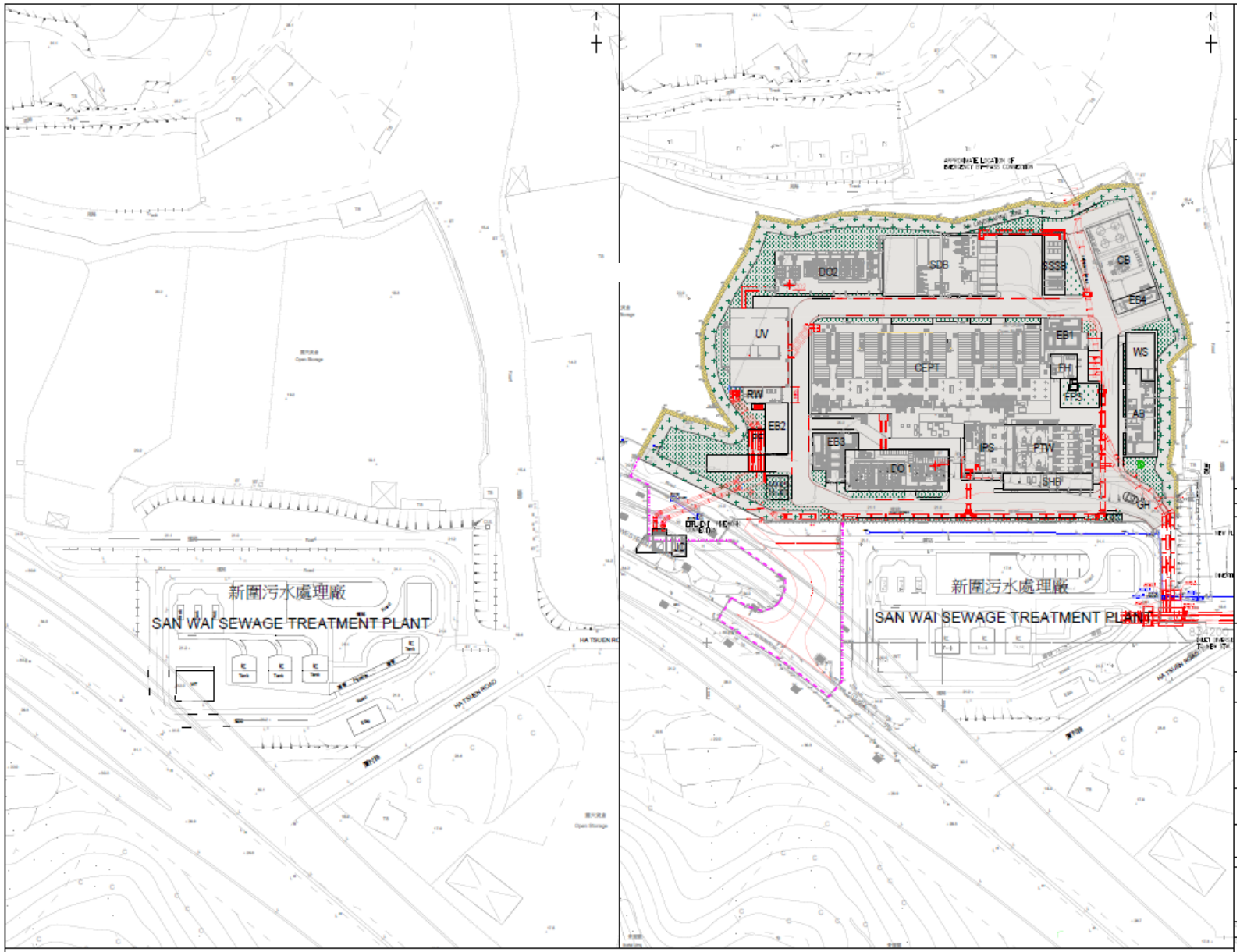
7.1.4. There were no complaints received during the reporting period.

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

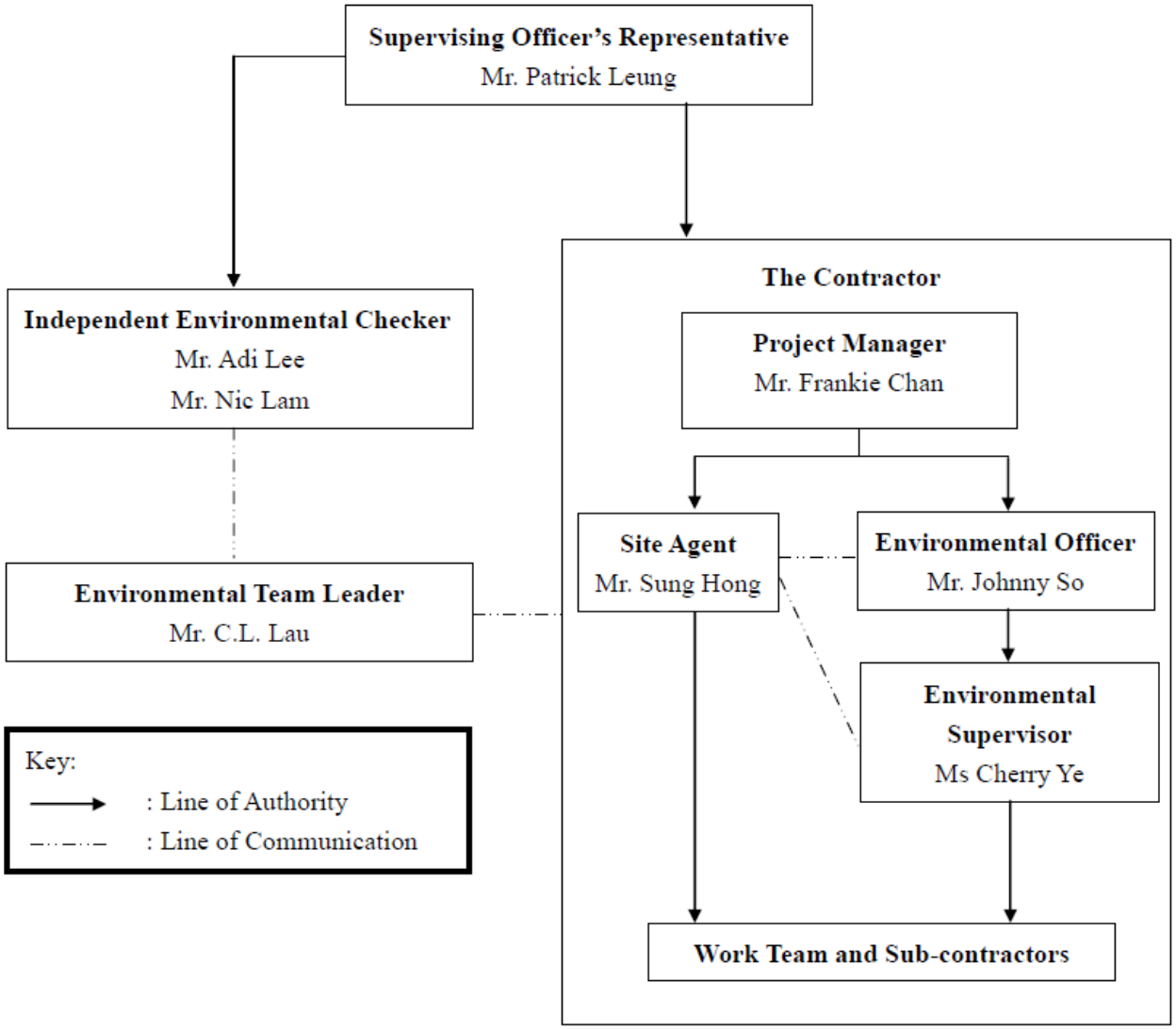


EXISTING SAN WAI SEWAGE TREATMENT WORKS

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

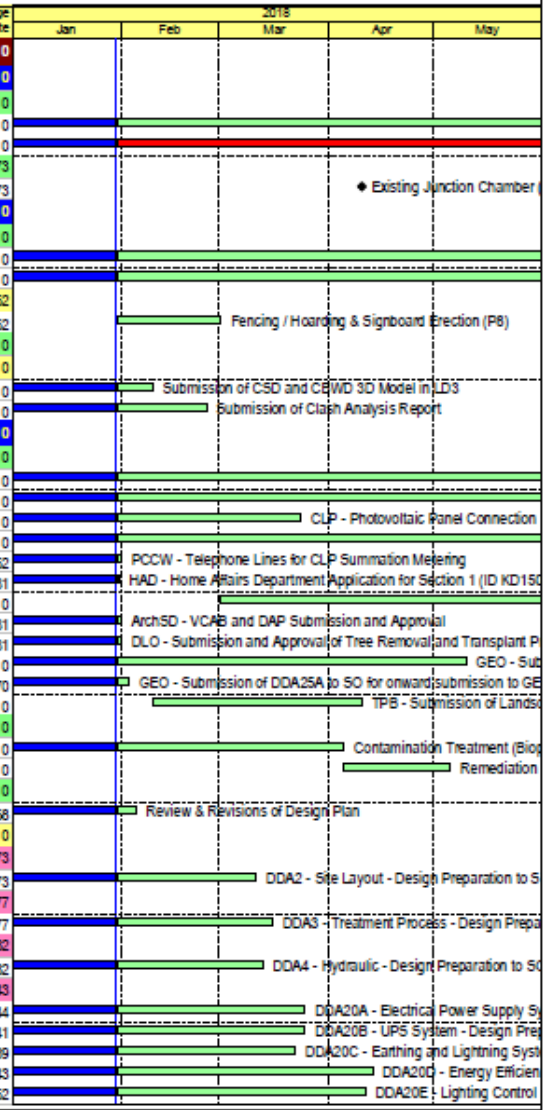
Appendix C

Construction Programme

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

DATA DATE: 31-Jan-18 | LAYOUT: SW Project PHase 1 Rev 8 (3M 31Jan18) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date
San Wai Sewage Treatment Works Phase 1 - Rev 8 MP (Update as of 31 Jan 2018)		1593	27-May-16	06-Oct-20	27-May-16	05-Oct-20	0	0
Key Date		1593	27-May-16	06-Oct-20	27-May-16	05-Oct-20	0	0
Commencement & Completion of Works		1593	27-May-16	06-Oct-20	27-May-16	05-Oct-20	0	0
KD150	Section 1 - Handover to Home Affairs Department for Maintenance	1041	30-Nov-17	05-Oct-20	30-Nov-17	05-Oct-20	0	0
KD160	Section 2 - Period of Works (FOT P.3 cl 67, 71) - Including 10 Days Granted EOT	1593	27-May-16	06-Oct-20	27-May-16	05-Oct-20	0	0
Plant Room Handover Dates To E&M Installation		0	10-Apr-18	10-Apr-18	27-Jan-18	27-Jan-18	-73	-73
KD322	Existing Junction Chamber (JC)	0		10-Apr-18		27-Jan-18	-73	-73
Preliminaries & General Requirement		1529	01-Apr-17	26-Sep-20	01-Apr-17	25-Sep-20	0	0
Contractor Requirement		1529	01-Apr-17	26-Sep-20	01-Apr-17	25-Sep-20	0	0
P5465	Impact Monitoring	1186	27-Jun-17	25-Sep-20	27-Jun-17	25-Sep-20	0	0
P5485	Site Drainage Plan Implementation	1274	01-Apr-17	26-Sep-20	01-Apr-17	25-Sep-20	0	0
Contractor Requirement for Working Area Portion (P8)		30	31-Jan-18	01-Mar-18	30-Nov-17	29-Dec-17	-62	-62
P5160	Fencing / Hoarding & Signboard Erection (P8)	30	31-Jan-18	01-Mar-18	30-Nov-17	29-Dec-17	-62	-62
Site Establishment		198	27-Aug-17	25-Feb-18	27-Aug-17	25-Feb-18	0	0
Site Establishment for Working Area Portion (P1-P2)		198	27-Aug-17	25-Feb-18	27-Aug-17	25-Feb-18	0	0
P5322	Submission of CSD and CBWD 3D Model in LD3	167	27-Aug-17	10-Feb-18	27-Aug-17	10-Feb-18	0	0
P5323	Submission of Clash Analysis Report	167	11-Sep-17	25-Feb-18	11-Sep-17	25-Feb-18	0	0
Design & Design Checking of Permanent Works		1253	26-Jun-16	03-Oct-20	26-Jun-16	03-Oct-20	0	0
Statutory Submission		1192	01-Nov-16	03-Oct-20	01-Nov-16	03-Oct-20	0	0
D5160	WSD - Water Supply & Plumbing	578	02-Feb-17	02-Sep-18	02-Feb-17	02-Sep-18	0	0
D5165	CLP - Power Supply	751	01-Nov-16	21-Nov-18	01-Nov-16	21-Nov-18	0	0
D5166	CLP - Photovoltaic Panel Connection	90	24-Dec-17	24-Mar-18	24-Dec-17	23-Mar-18	0	0
D5173	PCCW - Telephone Lines and Megalink	540	27-Jun-17	19-Dec-18	27-Jun-17	19-Dec-18	0	0
D5174	PCCW - Telephone Lines for CLP Summation Metering	126	28-Jul-17 A	01-Feb-18	28-Jul-17	30-Nov-17	0	-62
D5185	HAD - Home Affairs Department Application for Section 1 (ID KD150)	154	31-Jul-17 A	31-Jan-18	31-Jul-17	31-Dec-17	0	-31
D5195	BEAM Plus - Final Assessment (FA)	948	01-Mar-18	03-Oct-20	01-Mar-18	03-Oct-20	0	0
D5200	ArchSD - VCAB and DAP Submission and Approval	292	15-Mar-17	01-Feb-18	15-Mar-17	01-Jan-18	0	-31
D5210	DLO - Submission and Approval of Tree Removal and Transplant Proposals	335	31-Jan-17	01-Feb-18	31-Jan-17	31-Dec-17	0	-31
D5230	GEO - Submission of DDA28A to SO for onward submission to GEO for Checking Certificate	280	03-Aug-17	10-May-18	03-Aug-17	09-May-18	0	0
D5232	GEO - Submission of DDA25A to SO for onward submission to GEO for Checking Certificate	353	08-Dec-16	03-Feb-18	08-Dec-16	25-Nov-17	0	-70
D5280	TPB - Submission of Landscape Proposal to TPB for Approval	60	10-Feb-18	10-Apr-18	10-Feb-18	10-Apr-18	0	0
Site Investigation		186	15-Oct-17	05-May-18	15-Oct-17	05-May-18	0	0
D5380	Contamination Treatment (Biopile)	173	15-Oct-17	05-Apr-18	15-Oct-17	05-Apr-18	0	0
D5390	Remediation Report approved by EPD	30	05-Apr-18	05-May-18	05-Apr-18	05-May-18	0	0
AIP / DDA Submission & Approval		630	26-Jun-16	09-Oct-18	26-Jun-16	09-Oct-18	0	0
D5410	Review & Revisions of Design Plan	521	26-Jun-16	05-Feb-18	26-Jun-16	28-Nov-17	0	-68
Global Design		582	02-Sep-16	09-Oct-18	02-Sep-16	09-Oct-18	0	0
Site Layout (AIP2 / DDA2)		434	21-Oct-16	11-Mar-18	21-Oct-16	28-Dec-17	0	-73
DG390	DDA2 - Site Layout - Design Preparation to SO Approval	434	21-Oct-16	11-Mar-18	21-Oct-16	28-Dec-17	0	-73
Treatment Process (AIP3 / DDA3)		483	02-Sep-16	16-Mar-18	02-Sep-16	28-Dec-17	0	-77
DG130	DDA3 - Treatment Process - Design Preparation to SO Approval	483	02-Sep-16	16-Mar-18	02-Sep-16	28-Dec-17	0	-77
Hydraulic (AIP4 / DDA4)		475	02-Sep-16	13-Mar-18	02-Sep-16	20-Dec-17	0	-82
DG162	DDA4 - Hydraulic - Design Preparation to SO Approval	475	02-Sep-16	13-Mar-18	02-Sep-16	20-Dec-17	0	-82
Electrical Power Supply System (AIP20 / DDA20ABCDE)		392	24-Apr-17	13-Apr-18	24-Apr-17	28-Feb-18	0	-43
DG1891	DDA20A - Electrical Power Supply System - Design Preparation to SO Approval	260	24-Apr-17	25-Mar-18	24-Apr-17	08-Feb-18	0	-44
DG3880	DDA20B - UPS System - Design Preparation to SO Approval	260	24-Apr-17	25-Mar-18	24-Apr-17	11-Feb-18	0	-41
DG3896	DDA20C - Earthing and Lightning System - Design Preparation to SO Approval	260	24-Apr-17	22-Mar-18	24-Apr-17	11-Feb-18	0	-39
DG3912	DDA20D - Energy Efficiency - Design Preparation to SO Approval	260	24-Apr-17	13-Apr-18	24-Apr-17	28-Feb-18	0	-43
DG3950	DDA20E - Lighting Control System - Design Preparation to SO Approval	260	01-Sep-17	11-Apr-18	01-Sep-17	08-Feb-18	0	-62



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 8 (31 January 2018)
THREE (3) MONTHS ROLLING PROGRAMME

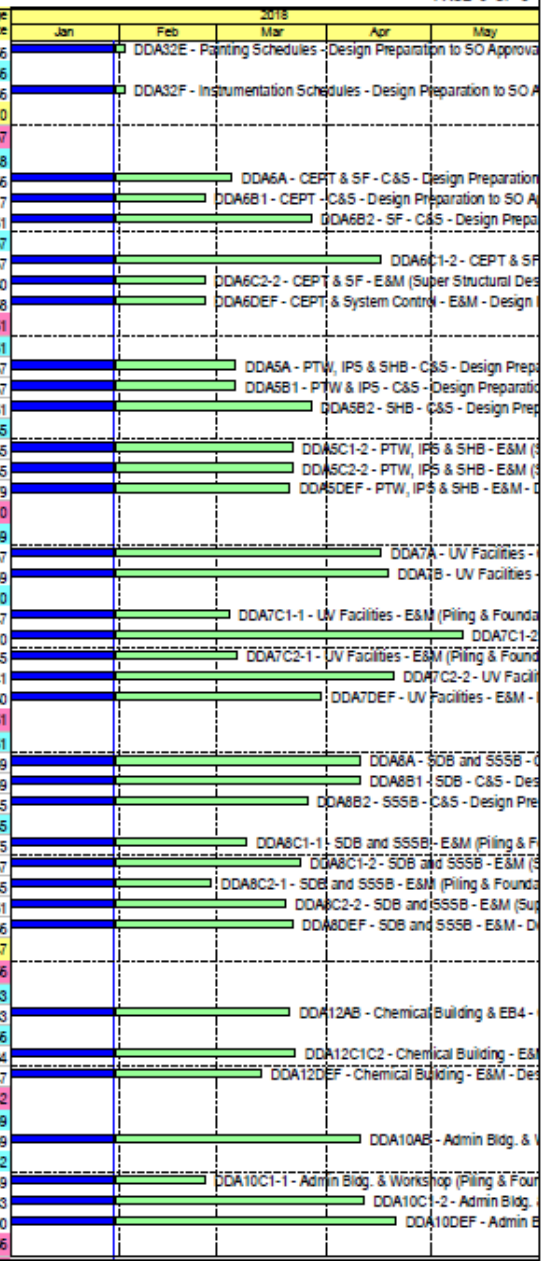
Date	Revision	Checked	Approved
31-Jan-18	Three (3) Months Rolling Programme Rev. 8		

DATA DATE: 31-Jan-18 | LAYOUT: SW Project PHase 1 Rev 8 (3M 31Jan18) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date
	Control and Monitoring System (AIP21 / DDA21ABCDE)	538	12-Jan-17	30-May-18	12-Jan-17	29-May-18	0	0
DG1924	DDA21A - Process & Instrumentation Diagram (P&ID) - Design Preparation to SO Approval	349	12-Jan-17	22-Mar-18	12-Jan-17	25-Jan-18	0	-55
DG1940	DDA21B - System Control Philosophy - Design Preparation to SO Approval	295	20-Mar-17	03-Apr-18	20-Mar-17	08-Feb-18	0	-54
DG1956	DDA21C - Function Design Specification - Design Preparation to SO Approval	270	03-Apr-17	23-Mar-18	03-Apr-17	09-Feb-18	0	-42
DG1972	DDA21D - PLC, SCADA & I/O Allocation Schedules - Design Preparation to SO Approval	261	23-Apr-17	25-Mar-18	23-Apr-17	09-Feb-18	0	-43
DG1988	DDA21E - SCADA Graphic Interface - Design Preparation to SO Approval	192	01-Jul-17 A	30-May-18	01-Jul-17	29-May-18	0	0
	Landscaping Works (AIP22 / DDA22AB)	478	06-Jan-17	27-Mar-18	06-Jan-17	09-Feb-18	0	-46
DG1260	DDA22A - Landscaping Works (Green Roof) - Design Preparation to SO Approval	329	06-Jan-17	16-Mar-18	06-Jan-17	28-Dec-17	0	-78
DG1274	DDA22B - Landscaping Works (Site Wide) - Design Preparation to SO Approval	186	03-Jul-17 A	27-Mar-18	03-Jul-17	09-Feb-18	0	-46
	Testing and Commissioning Plan (AIP23 / DDA23)	277	28-Nov-17	09-Oct-18	28-Nov-17	09-Oct-18	0	0
DG3270	AIP23 - Outline Testing & Commissioning Plan - Design Preparation to SO Approval	145	28-Nov-17	22-Apr-18	28-Nov-17	22-Apr-18	0	0
DG3305	DDA23 - Detailed Testing & Commissioning Plan - Design Preparation to SO Approval	170	22-Apr-18	09-Oct-18	22-Apr-18	09-Oct-18	0	0
	General Notes Drawings for Foundation and Civil & Structural (AIP24AB / DDA24AB)	307	22-Feb-17	01-Apr-18	22-Feb-17	26-Jan-18	0	-64
	General Notes Drawings for Civil & Structural (AIP24B / DDA24BC)	307	22-Feb-17	01-Apr-18	22-Feb-17	26-Jan-18	0	-64
DG3706	DDA24C - Typical Details for Architecture - Design Preparation to SO Approval	307	22-Feb-17	01-Apr-18	22-Feb-17	26-Jan-18	0	-64
	Geotechnical Report (AIP25 / DDA25A)	390	09-Oct-16	04-Feb-18	09-Oct-16	25-Nov-17	0	-71
DG3445	DDA25A - Geotechnical Interpretation Report - Design Preparation to SO Approval	390	09-Oct-16	04-Feb-18	09-Oct-16	25-Nov-17	0	-71
	Site Formation (AIP26 / DDA26)	361	14-Jan-17	30-Mar-18	14-Jan-17	08-Feb-18	0	-50
DG660	DDA26 - Site Formation - Design Preparation to SO Approval	361	14-Jan-17	30-Mar-18	14-Jan-17	08-Feb-18	0	-50
	Road Works (AIP27A / DDA27A)	281	23-Mar-17	07-Mar-18	23-Mar-17	12-Jan-18	0	-54
DG1060	DDA27A - Road Works - Design Preparation to SO Approval	281	23-Mar-17	07-Mar-18	23-Mar-17	12-Jan-18	0	-54
	Sewerage and Drainage Works (AIP27B / DDA27BCD)	547	21-Feb-17	22-Apr-18	21-Feb-17	23-Feb-18	0	-57
DG960	DDA27B - Sewerage and Drainage Works - Design Preparation to SO Approval	308	21-Feb-17	14-Apr-18	21-Feb-17	12-Jan-18	0	-92
DG974	DDA27C - Foul Water Pump Sump - E&M - Design Preparation to SO Approval	308	01-Sep-17	30-Mar-18	01-Sep-17	08-Feb-18	0	-50
DG988	DDA27D - Detailed Design Report for Pipe Trenches - C&S - Design Preparation to SO Approval	251	08-May-17	22-Apr-18	08-May-17	23-Feb-18	0	-57
	Boundary Wall & Entrance (AIP28 / DDA28AB)	472	03-Feb-17	19-Apr-18	03-Feb-17	08-Feb-18	0	-69
DG1160	DDA28A - Slopes and Retaining Wall - Design Preparation to SO Approval	329	03-Feb-17	18-Mar-18	03-Feb-17	28-Dec-17	0	-80
DG1195	DDA28B - Boundary Wall & Entrance - Design Preparation to SO Approval	237	17-Jun-17	19-Apr-18	17-Jun-17	08-Feb-18	0	-69
	Foundation & Piling Design (AIP29 / DDA29ABCDE)	170	01-Sep-17	13-Feb-18	01-Sep-17	15-Jan-18	0	-29
DG531	DDA29E - Piling Foundation (Area V - PF) - Design Preparation to SO Approval	170	01-Sep-17	13-Feb-18	01-Sep-17	15-Jan-18	0	-29
	Site Wide Utility (AIP30 / DDA30ABCDEFG)	526	30-Jan-17	22-Apr-18	30-Jan-17	28-Feb-18	0	-53
DG3515	DDA30A - Site Wide Security Access Control & Communication System - Design Preparation to SO Approval	336	30-Jan-17	29-Mar-18	30-Jan-17	31-Dec-17	0	-88
DG3774	DDA30B - Site Wide Utility (U/G Pipework, Ductwork, Cable Route, Cable Draw Pit) - Design Preparation to SO Approval	225	08-Jun-17	19-Apr-18	08-Jun-17	24-Jan-18	0	-84
DG3788	DDA30C - Fire Services System and Street Fire Hydrant System - Design Preparation to SO Approval	204	08-Jun-17	25-Mar-18	08-Jun-17	28-Dec-17	0	-86
DG3816	DDA30E - Site Wide Utility (Road Lighting) - Design Preparation to SO Approval	201	23-Jun-17	25-Mar-18	23-Jun-17	24-Jan-18	0	-59
DG3830	DDA30F - Typical Electrical Installation Drawings - Design Preparation to SO Approval	225	08-Jun-17	19-Apr-18	08-Jun-17	29-Jan-18	0	-79
DG3844	DDA30G - Typical Building Services Installation Drawings - Design Preparation to SO Approval	210	23-Jun-17	22-Apr-18	23-Jun-17	28-Feb-18	0	-53
	HAZOP Report (DDA31AB)	410	01-Dec-16	06-Mar-18	01-Dec-16	05-Feb-18	0	-29
DG3530	DDA31A - HAZOP Study - Design Preparation to SO Approval	363	01-Dec-16	01-Mar-18	01-Dec-16	12-Jan-18	0	-47
DG3545	DDA31B - Hazardous Zoning Classification Report - Design Preparation to SO Approval	119	01-Sep-17	06-Mar-18	01-Sep-17	05-Feb-18	0	-29
	ELS / Bulk Excavation (Temporary Works)	178	12-Jun-17	27-Feb-18	12-Jun-17	04-Jan-18	0	-53
	ELS for Emergency Bypass	155	12-Jun-17	27-Feb-18	12-Jun-17	04-Jan-18	0	-53
DG3740	ELS for Emergency Bypass - Design Preparation to DC and SO Approval	155	12-Jun-17	27-Feb-18	12-Jun-17	04-Jan-18	0	-53
	ELS for Inlet Pipe Connection	123	04-Sep-17	25-Feb-18	04-Sep-17	04-Jan-18	0	-51
DG3755	ELS for Inlet Pipe Connection - Design Preparation to DC and SO Approval	123	04-Sep-17	25-Feb-18	04-Sep-17	04-Jan-18	0	-51
	ELS for UV	110	04-Sep-17	24-Feb-18	04-Sep-17	23-Dec-17	0	-63
DG3769	ELS for UV - Design Preparation to DC and SO Approval	110	04-Sep-17	24-Feb-18	04-Sep-17	23-Dec-17	0	-63
	Miscellaneous Design	148	03-Jul-17 A	02-Feb-18	03-Jul-17	27-Jan-18	0	-6
	Equipment Schedules (DDA32A)	148	03-Jul-17 A	02-Feb-18	03-Jul-17	08-Dec-17	0	-56
DG2012	DDA32A - Equipment Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Feb-18	03-Jul-17	08-Dec-17	0	-56
	Penstock & Stoplogs Schedules (DDA32B)	148	03-Jul-17 A	02-Feb-18	03-Jul-17	28-Dec-17	0	-36
DG3216	DDA32B - Penstock & Stoplogs Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Feb-18	03-Jul-17	28-Dec-17	0	-36
	Valves Schedules (DDA32C)	148	03-Jul-17 A	02-Feb-18	03-Jul-17	08-Dec-17	0	-56
DG3222	DDA32C - Valves Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Feb-18	03-Jul-17	08-Dec-17	0	-56
	Piping and Pipe Support Schedules (DDA32D)	148	03-Jul-17 A	02-Feb-18	03-Jul-17	27-Jan-18	0	-6
DG3864	DDA32D - Piping and Pipe Support Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Feb-18	03-Jul-17	27-Jan-18	0	-6
	Painting Schedules (DDA32E)	148	03-Jul-17 A	02-Feb-18	03-Jul-17	08-Dec-17	0	-56

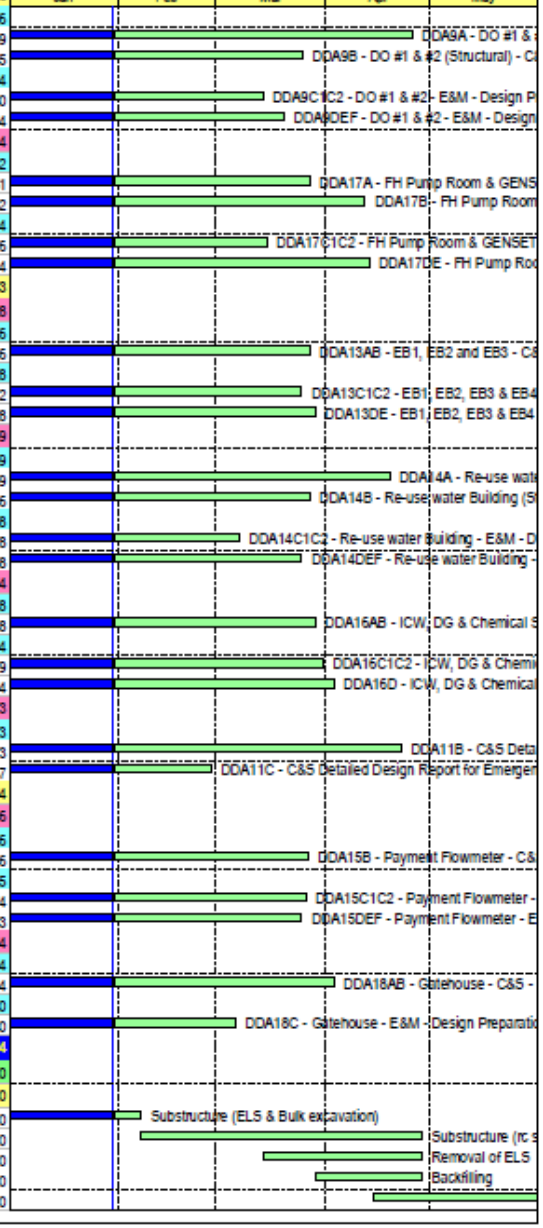
DATA DATE: 31-Jan-18 | LAYOUT: SW Project PHase 1 Rev 8 (3M 31Jan18) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date
DG3228	DDA32E - Painting Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Feb-18	03-Jul-17	08-Dec-17	0	-56
	Instrumentation Schedules (DDA32F)	148	03-Jul-17 A	02-Feb-18	03-Jul-17	28-Dec-17	0	-36
DG3234	DDA32F - Instrumentation Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Feb-18	03-Jul-17	28-Dec-17	0	-36
	LOT #1 - Building / Facilities Design : CEPT+SF, PTW+IPS+SHB, UV, SDB+SSSB	594	25-Sep-16	09-May-18	25-Sep-16	09-May-18	0	0
	CEPT and System Control Flowmeter Chamber	492	24-Dec-16	16-Apr-18	24-Dec-16	09-Feb-18	0	-67
	Civil and Structural Design (AIP6A / DDA6AB1B2)	489	24-Dec-16	27-Mar-18	24-Dec-16	07-Feb-18	0	-48
DB1123	DDA6A - CEPT & SF - C&S - Design Preparation to SO Approval	352	24-Dec-16	05-Mar-18	24-Dec-16	28-Dec-17	0	-66
DB4914	DDA6B1 - CEPT - C&S - Design Preparation to SO Approval	370	24-Dec-16	25-Feb-18	24-Dec-16	07-Feb-18	0	-17
DB4930	DDA6B2 - SF - C&S - Design Preparation to SO Approval	285	26-Mar-17	27-Mar-18	26-Mar-17	25-Jan-18	0	-61
	Electrical and Mechanical Design (AIP6B / DDA6C1C2DEF)	427	25-Jan-17	16-Apr-18	25-Jan-17	09-Feb-18	0	-67
DB1160	DDA6C1-2 - CEPT & SF - E&M (Super Structural Design) - Design Preparation to SO Approval	185	08-Aug-17	16-Apr-18	08-Aug-17	09-Feb-18	0	-67
DB1188	DDA6C2-2 - CEPT & SF - E&M (Super Structural Design) - Design Preparation to SO Approval	185	28-Jun-17	25-Feb-18	28-Jun-17	25-Jan-18	0	-30
DB4508	DDA6DEF - CEPT & System Control - E&M - Design Preparation to SO Approval	327	25-Jan-17	25-Feb-18	25-Jan-17	28-Dec-17	0	-58
	Inlet Work, Preliminary Treatment Works, IPS and SHB	530	26-Nov-16	27-Mar-18	26-Nov-16	25-Jan-18	0	-61
	Civil and Structural Design (AIP5A / DDA5AB1B2)	396	26-Nov-16	27-Mar-18	26-Nov-16	25-Jan-18	0	-61
DB1223	DDA5A - PTW, IPS & SHB - C&S - Design Preparation to SO Approval	377	26-Nov-16	06-Mar-18	26-Nov-16	28-Dec-17	0	-67
DB4814	DDA5B1 - PTW & IPS - C&S - Design Preparation to SO Approval	359	17-Dec-16	06-Mar-18	17-Dec-16	28-Dec-17	0	-67
DB4830	DDA5B2 - SHB - C&S - Design Preparation to SO Approval	324	06-Feb-17	27-Mar-18	06-Feb-17	25-Jan-18	0	-61
	Electrical and Mechanical Design (AIP5B / DDA5C1C2DEF)	486	27-Nov-16	22-Mar-18	27-Nov-16	15-Jan-18	0	-65
DB1264	DDA5C1-2 - PTW, IPS & SHB - E&M (Super Structural Design) - Design Preparation to SO Approval	283	01-Apr-17	22-Mar-18	01-Apr-17	15-Jan-18	0	-65
DB1296	DDA5C2-2 - PTW, IPS & SHB - E&M (Super Structural Design) - Design Preparation to SO Approval	306	01-Mar-17	22-Mar-18	01-Mar-17	15-Jan-18	0	-65
DB4524	DDA5DEF - PTW, IPS & SHB - E&M - Design Preparation to SO Approval	394	27-Nov-16	21-Mar-18	27-Nov-16	01-Jan-18	0	-79
	UV Disinfection Facilities	467	22-Dec-16	09-May-18	22-Dec-16	09-May-18	0	0
	Civil and Structural Design (AIP7A / DDA7AB)	228	26-Jun-17	18-Apr-18	26-Jun-17	08-Feb-18	0	-69
DB1325	DDA7A - UV Facilities - C&S (Architectural) - Design Preparation to SO Approval	182	11-Aug-17	16-Apr-18	11-Aug-17	08-Feb-18	0	-67
DB5010	DDA7B - UV Facilities - C&S (Structural) - Design Preparation to SO Approval	228	26-Jun-17	18-Apr-18	26-Jun-17	08-Feb-18	0	-69
	Electrical and Mechanical Design (AIP7B / DDA7C1C2DEF)	467	22-Dec-16	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	371	22-Dec-16	04-Mar-18	22-Dec-16	15-Jan-18	0	-47
DB1368	DDA7C1-2 - UV Facilities - E&M (Super Structural Design) - Design Preparation to SO Approval	244	08-Sep-17	09-May-18	08-Sep-17	09-May-18	0	0
DB1384	DDA7C2-1 - UV Facilities - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	371	22-Dec-16	06-Mar-18	22-Dec-16	20-Jan-18	0	-45
DB1399	DDA7C2-2 - UV Facilities - E&M (Super Structural Design) - Design Preparation to SO Approval	252	01-Jul-17 A	20-Apr-18	01-Jul-17	10-Mar-18	0	-41
DB4540	DDA7DEF - UV Facilities - E&M - Design Preparation to SO Approval	306	30-Mar-17	30-Mar-18	30-Mar-17	30-Jan-18	0	-60
	Sludge Dewatering Building and Sludge Skip Storage Building	594	25-Sep-16	10-Apr-18	25-Sep-16	08-Feb-18	0	-61
	Civil and Structural Design (AIP8A / DDA8AB1B2)	383	24-Dec-16	10-Apr-18	24-Dec-16	08-Feb-18	0	-61
DB1433	DDA8A - SDB and SSSB - C&S - Design Preparation to SO Approval	346	24-Dec-16	10-Apr-18	24-Dec-16	11-Jan-18	0	-89
DB4844	DDA8B1 - SDB - C&S - Design Preparation to SO Approval	307	04-Feb-17	10-Apr-18	04-Feb-17	11-Jan-18	0	-89
DB4858	DDA8B2 - SSSB - C&S - Design Preparation to SO Approval	341	04-Feb-17	26-Mar-18	04-Feb-17	08-Feb-18	0	-45
	Electrical and Mechanical Design (AIP8B / DDA8C1C2DEF)	585	25-Sep-16	24-Mar-18	25-Sep-16	18-Jan-18	0	-65
DB1450	DDA8C1-1 - SDB and SSSB - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	449	25-Sep-16	09-Mar-18	25-Sep-16	23-Dec-17	0	-75
DB1476	DDA8C1-2 - SDB and SSSB - E&M (Super Structural Design) - Design Preparation to SO Approval	257	29-Apr-17	24-Mar-18	29-Apr-17	16-Jan-18	0	-67
DB1492	DDA8C2-1 - SDB and SSSB - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	449	25-Sep-16	27-Feb-18	25-Sep-16	23-Dec-17	0	-65
DB1508	DDA8C2-2 - SDB and SSSB - E&M (Super Structural Design) - Design Preparation to SO Approval	248	29-Apr-17	20-Mar-18	29-Apr-17	18-Jan-18	0	-61
DB4556	DDA8DEF - SDB and SSSB - E&M - Design Preparation to SO Approval	394	27-Nov-16	22-Mar-18	27-Nov-16	25-Dec-17	0	-86
	LOT #2 - Building / Facilities Design : AB+WS, DO, CB+EB4, FH	585	28-Sep-16	25-Apr-18	28-Sep-16	09-Mar-18	0	-47
	Chemical Building and EB 4	450	28-Sep-16	23-Mar-18	28-Sep-16	25-Jan-18	0	-56
	Civil and Structural Design for CB & EB4 (AIP12A / DDA12AB)	308	31-Jan-17	21-Mar-18	31-Jan-17	28-Dec-17	0	-83
DB2123	DDA12AB - Chemical Building & EB4 - C&S - Design Preparation to SO Approval	308	31-Jan-17	21-Mar-18	31-Jan-17	28-Dec-17	0	-83
	Electrical and Mechanical Design for CB only (AIP12B / DDA12C1C2DEF)	443	28-Sep-16	23-Mar-18	28-Sep-16	25-Jan-18	0	-56
DB2148	DDA12C1C2 - Chemical Building - E&M - Design Preparation to SO Approval	432	28-Sep-16	23-Mar-18	28-Sep-16	28-Dec-17	0	-84
DB4602	DDA12DEF - Chemical Building - E&M - Design Preparation to SO Approval	313	05-Feb-17	13-Mar-18	05-Feb-17	25-Jan-18	0	-47
	Administration Building & Maintenance Workshop	542	03-Oct-16	20-Apr-18	03-Oct-16	09-Mar-18	0	-42
	Civil and Structural Design (AIP10A / DDA10AB)	334	22-Jan-17	10-Apr-18	22-Jan-17	11-Jan-18	0	-89
DB2234	DDA10AB - Admin Bldg. & Workshop - C&S - Design Preparation to SO Approval	334	22-Jan-17	10-Apr-18	22-Jan-17	11-Jan-18	0	-89
	Electrical and Mechanical Design (AIP10B / DDA10C1C2DEF)	452	03-Oct-16	20-Apr-18	03-Oct-16	09-Mar-18	0	-42
DB2286	DDA10C1-1 - Admin Bldg. & Workshop (Piling & Foundation Design) - E&M - Design Preparation to SO Approval	449	03-Oct-16	25-Feb-18	03-Oct-16	06-Jan-18	0	-49
DB2307	DDA10C1-2 - Admin Bldg. & Workshop (Super Structural Design) - E&M - Design Preparation to SO Approval	449	01-Oct-17	11-Apr-18	01-Oct-17	09-Mar-18	0	-33
DB4618	DDA10DEF - Admin Bldg. & Workshop - E&M - Design Preparation to SO Approval	332	31-Jan-17	20-Apr-18	31-Jan-17	20-Jan-18	0	-90
	Deodorization Facilities No.1 and No.2	379	15-Dec-16	25-Apr-18	15-Dec-16	29-Jan-18	0	-86



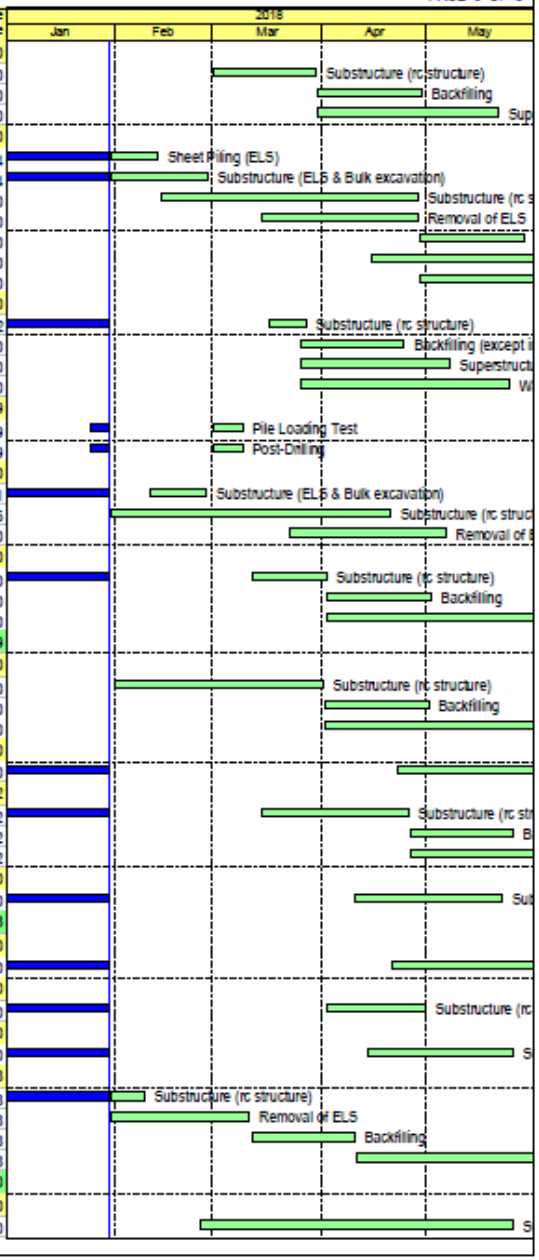
DATA DATE: 31-Jan-18 | LAYOUT: SW Project PHase 1 Rev 8 (3M 31Jan18) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date
	Civil and Structural Design (AIP9A / DDA9AB)	336	26-Jan-17	25-Apr-18	26-Jan-17	29-Jan-18	0	-86
DB2323	DDA9A - DO #1 & #2 (Architectural) - C&S - Design Preparation to SO Approval	336	26-Jan-17	25-Apr-18	26-Jan-17	26-Jan-18	0	-89
DB5150	DDA9B - DO #1 & #2 (Structural) - C&S - Design Preparation to SO Approval	336	05-Jun-17	25-Mar-18	05-Jun-17	29-Jan-18	0	-55
	Electrical and Mechanical Design (AIP9B / DDA9C1C2DEF)	379	15-Dec-16	20-Mar-18	15-Dec-16	25-Jan-18	0	-54
DB2348	DDA9C1C2 - DO #1 & #2 - E&M - Design Preparation to SO Approval	365	15-Dec-16	14-Mar-18	15-Dec-16	23-Dec-17	0	-80
DB4634	DDA9DEF - DO #1 & #2 - E&M - Design Preparation to SO Approval	337	26-Jan-17	20-Mar-18	26-Jan-17	25-Jan-18	0	-54
	Street Fire Hydrant Pump Room & GENSET Room	423	07-Dec-16	13-Apr-18	07-Dec-16	28-Feb-18	0	-44
	Civil and Structural Design (AIP17A / DDA17AB)	288	23-Mar-17	12-Apr-18	23-Mar-17	08-Feb-18	0	-62
DB2423	DDA17A - FH Pump Room & GENSET Room (Architectural) - C&S - Design Preparation to SO Approval	288	23-Mar-17	27-Mar-18	23-Mar-17	25-Jan-18	0	-61
DB5220	DDA17B - FH Pump Room & GENSET Room (Structural) - C&S - Design Preparation to SO Approval	288	01-Aug-17	12-Apr-18	01-Aug-17	08-Feb-18	0	-62
	Electrical and Mechanical Design (AIP17B / DDA17C1C2DE)	423	07-Dec-16	13-Apr-18	07-Dec-16	28-Feb-18	0	-44
DB2448	DDA17C1C2 - FH Pump Room & GENSET Room - E&M - Design Preparation to SO Approval	387	07-Dec-16	15-Mar-18	07-Dec-16	28-Dec-17	0	-76
DB4648	DDA17DE - FH Pump Room & GENSET Room - E&M - Design Preparation to SO Approval	317	23-Mar-17	13-Apr-18	23-Mar-17	28-Feb-18	0	-44
	LOT #3 - Building / Facilities Design : EB1, EB2, EB3, EB4, RW, DG+ICW, Inlet/Outlet Connection	575	16-Sep-16	22-Apr-18	16-Sep-16	28-Feb-18	0	-53
	Electrical Building No.1, No.2, No.3, No.4	515	16-Sep-16	29-Mar-18	16-Sep-16	28-Feb-18	0	-28
	Civil and Structural Design for EB123 (AIP13A / DDA13AB)	264	08-Apr-17	27-Mar-18	08-Apr-17	09-Feb-18	0	-45
DB3123	DDA13AB - EB1, EB2 and EB3 - C&S - Design Preparation to SO Approval	264	08-Apr-17	27-Mar-18	08-Apr-17	09-Feb-18	0	-46
	Electrical and Mechanical Design for EB1234 (AIP13B / DDA13C1C2DE)	475	16-Sep-16	29-Mar-18	16-Sep-16	28-Feb-18	0	-28
DB3148	DDA13C1C2 - EB1, EB2, EB3 & EB4 - E&M - Design Preparation to SO Approval	458	16-Sep-16	25-Mar-18	16-Sep-16	11-Jan-18	0	-72
DB4664	DDA13DE - EB1, EB2, EB3 & EB4 - E&M - Design Preparation to SO Approval	320	23-Feb-17	29-Mar-18	23-Feb-17	28-Feb-18	0	-28
	Re-use Water Building	466	03-Dec-16	19-Apr-18	03-Dec-16	09-Feb-18	0	-69
	Civil and Structural Design (AIP14A / DDA14AB)	262	13-Apr-17	19-Apr-18	13-Apr-17	09-Feb-18	0	-69
DB3223	DDA14A - Re-use water Building (Architectural) - C&S - Design Preparation to SO Approval	262	13-Apr-17	19-Apr-18	13-Apr-17	09-Feb-18	0	-69
DB5080	DDA14B - Re-use water Building (Structural) - C&S - Design Preparation to SO Approval	262	18-Aug-17	27-Mar-18	18-Aug-17	09-Feb-18	0	-45
	Electrical and Mechanical Design (AIP14B / DDA14C1C2DEF)	394	03-Dec-16	25-Mar-18	03-Dec-16	25-Jan-18	0	-58
DB3248	DDA14C1C2 - Re-use water Building - E&M - Design Preparation to SO Approval	366	03-Dec-16	07-Mar-18	03-Dec-16	19-Dec-17	0	-78
DB4680	DDA14DEF - Re-use water Building - E&M - Design Preparation to SO Approval	263	13-Apr-17	25-Mar-18	13-Apr-17	25-Jan-18	0	-58
	ICW and DG Store & Chemical Waste Storage Building	471	30-Nov-16	03-Apr-18	30-Nov-16	08-Feb-18	0	-54
	Civil and Structural Design (AIP16A / DDA16AB)	310	11-Mar-17	29-Mar-18	11-Mar-17	08-Feb-18	0	-48
DB3323	DDA16AB - ICW, DG & Chemical Stores - C&S - Design Preparation to SO Approval	310	11-Mar-17	29-Mar-18	11-Mar-17	08-Feb-18	0	-48
	Electrical and Mechanical Design (AIP16B / DDA16C1C2D)	440	30-Nov-16	03-Apr-18	30-Nov-16	08-Feb-18	0	-54
DB3348	DDA16C1C2 - ICW, DG & Chemical Stores - E&M - Design Preparation to SO Approval	380	30-Nov-16	31-Mar-18	30-Nov-16	11-Jan-18	0	-79
DB4694	DDA16D - ICW, DG & Chemical Stores - E&M - Design Preparation to SO Approval	233	24-May-17	03-Apr-18	24-May-1	08-Feb-18	0	-54
	Inlet & Outlet Pipe Connections and Diversion Pipeworks	353	31-Dec-16	22-Apr-18	31-Dec-16	08-Feb-18	0	-73
	Civil and Structural Design (AIP11 / DDA11ABC)	353	31-Dec-16	22-Apr-18	31-Dec-16	08-Feb-18	0	-73
DB3438	DDA11B - C&S Detailed Design Report for Inlet Connections Pipework - Design Preparation to SO Approval	284	08-Apr-17	22-Apr-18	08-Apr-17	08-Feb-18	0	-73
DB3452	DDA11C - C&S Detailed Design Report for Emergency Bypass - Design Preparation to SO Approval	353	31-Dec-16	27-Feb-18	31-Dec-16	11-Jan-18	0	-47
	LOT #4 - Building / Facilities Design : GH, PF	536	25-Nov-16	03-Apr-18	25-Nov-16	08-Feb-18	0	-54
	Payment Flowmeter Chamber	510	25-Nov-16	27-Mar-18	25-Nov-16	08-Feb-18	0	-46
	Civil and Structural Design (AIP15A / DDA15B)	277	13-Apr-17	27-Mar-18	13-Apr-17	08-Feb-18	0	-46
DB4323	DDA15B - Payment Flowmeter - C&S - Design Preparation to SO Approval	277	13-Apr-17	27-Mar-18	13-Apr-17	08-Feb-18	0	-46
	Electrical and Mechanical Design (AIP15B / DDA15C1C2DEF)	443	25-Nov-16	26-Mar-18	25-Nov-16	20-Jan-18	0	-65
DB4348	DDA15C1C2 - Payment Flowmeter - E&M - Design Preparation to SO Approval	383	25-Nov-16	26-Mar-18	25-Nov-16	11-Jan-18	0	-74
DB4740	DDA15DEF - Payment Flowmeter - E&M - Design Preparation to SO Approval	240	31-May-17	25-Mar-18	31-May-1	20-Jan-18	0	-63
	Gatehouse	500	24-Apr-17	03-Apr-18	24-Apr-17	08-Feb-18	0	-54
	Civil and Structural Design (AIP18A / DDA18AB)	176	18-Jul-17 A	03-Apr-18	18-Jul-17	08-Feb-18	0	-54
DB4424	DDA18AB - Gatehouse - C&S - Design Preparation to SO Approval	176	18-Jul-17 A	03-Apr-18	18-Jul-17	08-Feb-18	0	-54
	Electrical and Mechanical Design (AIP18B / DDA18C)	249	24-Apr-17	06-Mar-18	24-Apr-17	25-Jan-18	0	-40
DB4754	DDA18C - Gatehouse - E&M - Design Preparation to SO Approval	249	24-Apr-17	06-Mar-18	24-Apr-17	25-Jan-18	0	-40
	Civil & Structural Works	936	01-Jun-17	06-Jan-20	01-Jun-17	13-Nov-19	0	-54
	LOT #1 - Bldg / Facilities Const. (Arch'l & Struct'l) : CEPT+SF, PTW+IPS+SHB, UV, SDB+SSSB	230	01-Oct-17	17-Jun-18	01-Oct-17	17-Jun-18	0	0
	Chemically Enhanced Primary Treatment (CEPT)	220	01-Oct-17	07-Jun-18	01-Oct-17	07-Jun-18	0	0
CS1510	Substructure (ELS & Bulk excavation)	130	01-Oct-17	07-Feb-18	01-Oct-17	07-Feb-18	0	0
CS1520	Substructure (rc structure)	80	07-Feb-18	28-Apr-18	08-Feb-18	28-Apr-18	0	0
CS1525	Removal of ELS	45	14-Mar-18	28-Apr-18	15-Mar-18	28-Apr-18	0	0
CS1526	Backfilling	30	29-Mar-18	28-Apr-18	30-Mar-18	28-Apr-18	0	0
CS1530	Superstructure (rc and metalworks)	54	14-Apr-18	07-Jun-18	15-Apr-18	07-Jun-18	0	0



DATA DATE: 31-Jan-18 | LAYOUT: SW Project PHase 1 Rev 8 (3M 31Jan18) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date
	System Control Flowmeter Chamber (SF)	82	01-Mar-18	21-May-18	01-Mar-18	21-May-18	0	0
CS1400	Substructure (rc structure)	30	01-Mar-18	30-Mar-18	01-Mar-18	30-Mar-18	0	0
CS1405	Backfilling	30	31-Mar-18	29-Apr-18	31-Mar-18	29-Apr-18	0	0
CS1410	Superstructure (rc and metalworks)	52	31-Mar-18	21-May-18	31-Mar-18	21-May-18	0	0
	Inlet Work, Preliminary Treatment Works and Inlet Pumping Station (PTW & IPS)	230	13-Oct-17	17-Jun-18	13-Oct-17	17-Jun-18	0	0
CS1208	Sheet Piling (ELS)	45	28-Oct-17	13-Feb-18	28-Oct-17	11-Dec-17	0	-64
CS1210	Substructure (ELS & Bulk excavation)	124	13-Oct-17	27-Feb-18	13-Oct-17	13-Feb-18	0	-14
CS1220	Substructure (rc structure)	74	14-Feb-18	28-Apr-18	14-Feb-18	28-Apr-18	0	0
CS1224	Removal of ELS	45	15-Mar-18	28-Apr-18	15-Mar-18	28-Apr-18	0	0
CS1226	Backfilling (except in Water Tightness Test area)	30	29-Apr-18	28-May-18	29-Apr-18	28-May-18	0	0
CS1230	Superstructure (rc and metalworks)	59	15-Apr-18	12-Jun-18	15-Apr-18	12-Jun-18	0	0
CS1235	Water Tightness Test + Backfilling	50	29-Apr-18	17-Jun-18	29-Apr-18	17-Jun-18	0	0
	Solid Handling Building (SHB)	119	22-Oct-17	24-May-18	22-Oct-17	24-May-18	0	0
CS1300	Substructure (rc structure)	30	22-Oct-17	27-Mar-18	22-Oct-17	25-Mar-18	0	-2
CS1305	Backfilling (except in Water Tightness Test area)	30	26-Mar-18	24-Apr-18	26-Mar-18	24-Apr-18	0	0
CS1310	Superstructure (rc and metalworks)	43	26-Mar-18	07-May-18	26-Mar-18	07-May-18	0	0
CS1315	Water Tightness Test + Backfilling	60	26-Mar-18	24-May-18	26-Mar-18	24-May-18	0	0
	UV Disinfection Facility (UV)	30	25-Jan-18	09-Mar-18	27-Feb-18	28-Mar-18	33	19
CS1905	Pile Loading Test	30	25-Jan-18	09-Mar-18	27-Feb-18	28-Mar-18	33	19
CS1907	Post-Drilling	30	25-Jan-18	09-Mar-18	27-Feb-18	28-Mar-18	33	19
	Sludge Dewatering Building (SDB)	128	11-Oct-17	06-May-18	11-Oct-17	06-May-18	0	0
CS1820	Substructure (ELS & Bulk excavation)	128	11-Oct-17	27-Feb-18	11-Oct-17	15-Feb-18	0	-11
CS1830	Substructure (rc structure)	80	31-Jan-18	20-Apr-18	16-Feb-18	06-May-18	16	16
CS1834	Removal of ELS	45	23-Mar-18	06-May-18	23-Mar-18	06-May-18	0	0
	Sludge Skip Storage Building (SSSB)	142	22-Oct-17	01-Jun-18	22-Oct-17	31-May-18	0	0
CS2900	Substructure (rc structure)	30	22-Oct-17	02-Apr-18	22-Oct-17	01-Apr-18	0	0
CS2905	Backfilling	30	02-Apr-18	02-May-18	02-Apr-18	01-May-18	0	0
CS2910	Superstructure (rc and metalworks)	60	02-Apr-18	01-Jun-18	02-Apr-18	31-May-18	0	0
	LOT #2 - Bldg / Facilities Const. (Arch'l & Struct'l) : AB+WS, DO, CB, FH	146	13-Oct-17	22-Jun-18	13-Oct-17	03-Jun-18	0	-19
	Administration Building & Maintenance Workshop (AB & WS)	122	01-Feb-18	02-Jun-18	01-Feb-18	02-Jun-18	0	0
CS1110	Substructure (rc structure)	60	01-Feb-18	01-Apr-18	01-Feb-18	01-Apr-18	0	0
CS1115	Backfilling	30	02-Apr-18	01-May-18	02-Apr-18	01-May-18	0	0
CS1120	Superstructure (rc and metalworks)	62	02-Apr-18	02-Jun-18	02-Apr-18	02-Jun-18	0	0
	Deodorization Facilities No. 1 (DO 1)	60	19-Oct-17	03-Jun-18	19-Oct-17	03-Jun-18	0	0
CS1610	Substructure (rc structure)	60	19-Oct-17	03-Jun-18	19-Oct-17	03-Jun-18	0	0
	Deodorization Facilities No. 2 (DO 2)	97	22-Oct-17	22-Jun-18	22-Oct-17	21-May-18	0	-32
CS1710	Substructure (rc structure)	60	22-Oct-17	25-Apr-18	22-Oct-17	24-Mar-18	0	-32
CS1715	Backfilling	30	26-Apr-18	25-May-18	25-Mar-18	23-Apr-18	-32	-32
CS1720	Superstructure (rc and metalworks)	58	26-Apr-18	22-Jun-18	25-Mar-18	21-May-18	-32	-32
	Chemical Building (CB)	61	13-Oct-17	22-May-18	13-Oct-17	22-May-18	0	0
CS2310	Substructure (rc structure)	61	13-Oct-17	22-May-18	13-Oct-17	22-May-18	0	0
	LOT #3 - Bldg / Facilities Const. (Arch'l & Struct'l) : EB, RW, DG, ICW, JC	214	12-Oct-17	08-Aug-18	12-Oct-17	01-Jun-18	0	-68
	Electrical Building No.2 (EB2)	60	15-Oct-17	01-Jun-18	15-Oct-17	01-Jun-18	0	0
CS2510	Substructure (rc structure)	60	15-Oct-17	01-Jun-18	15-Oct-17	01-Jun-18	0	0
	Electrical Building No.4 (EB4)	60	22-Oct-17	30-Apr-18	22-Oct-17	01-May-18	0	0
CS2710	Substructure (rc structure)	60	22-Oct-17	30-Apr-18	22-Oct-17	01-May-18	0	0
	Re-use Water Building (RW)	60	12-Oct-17	25-May-18	12-Oct-17	25-May-18	0	0
CS2010	Substructure (rc structure)	60	12-Oct-17	25-May-18	12-Oct-17	25-May-18	0	0
	Existing Junction Chamber (JC)	214	23-Dec-17	08-Aug-18	09-Nov-17	27-May-18	-44	-73
CS2200	Substructure (rc structure)	50	23-Dec-17	09-Feb-18	09-Nov-17	28-Dec-17	-44	-43
CS2202	Removal of ELS	40	31-Jan-18	11-Mar-18	19-Nov-17	28-Dec-17	-73	-73
CS2205	Backfilling	30	12-Mar-18	10-Apr-18	29-Dec-17	27-Jan-18	-73	-73
CS2210	Bar Screen Installation	120	11-Apr-18	08-Aug-18	28-Jan-18	27-May-18	-73	-73
	LOT #4 - Bldg / Facilities Const. (Arch'l & Struct'l) : GH, PF	115	31-Jan-18	25-May-18	16-Dec-17	25-May-18	-46	0
	Gatehouse (GH)	90	25-Feb-18	25-May-18	25-Feb-18	25-May-18	0	0
CS3100	Substructure (rc structure)	90	25-Feb-18	25-May-18	25-Feb-18	25-May-18	0	0

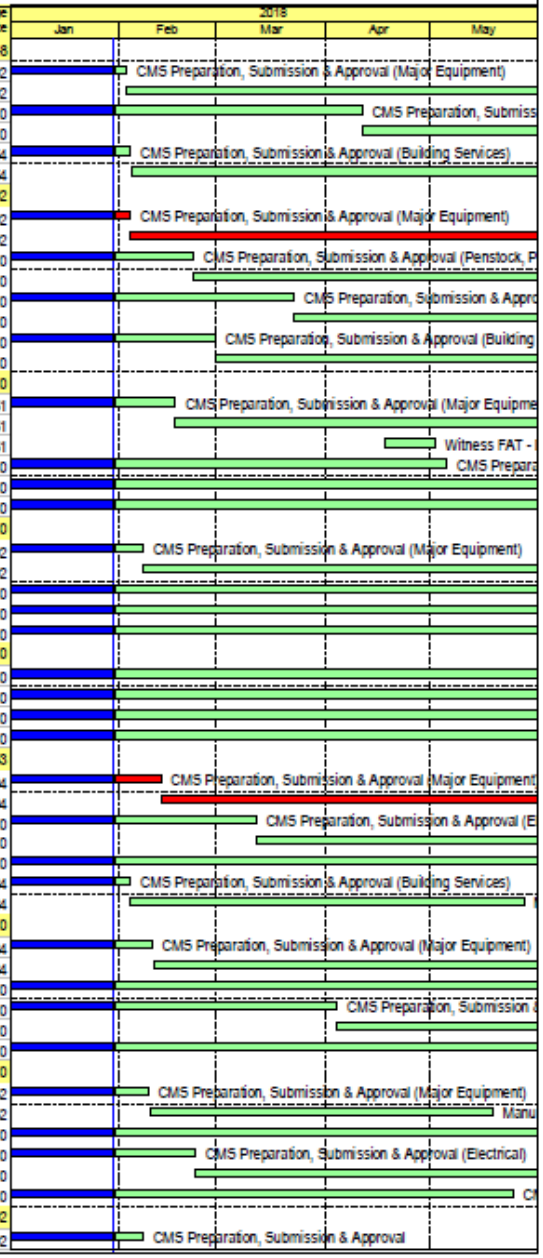


DATA DATE: 31-Jan-18 | LAYOUT: SW Project PHase 1 Rev 8 (3M 31Jan18) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date
	Payment Flowmeter Chamber (PF)	90	31-Jan-18	30-Apr-18	16-Dec-17	15-Mar-18	-46	-46
CS2080	Piling Foundation (Prebored H-pile) 9	31	31-Jan-18	02-Mar-18	16-Dec-17	15-Jan-18	-46	-46
CS2085	Pile Loading Test	30	03-Mar-18	01-Apr-18	16-Jan-18	14-Feb-18	-46	-46
CS2090	Post-Drilling	30	03-Mar-18	01-Apr-18	16-Jan-18	14-Feb-18	-46	-46
CS2100	Substructure (rc structure)	28	03-Apr-18	30-Apr-18	16-Feb-18	15-Mar-18	-46	-46
	External Works & Miscellaneous	936	01-Jun-17	06-Jan-20	01-Jun-17	13-Nov-19	0	-54
CS3201	Slope works and Retaining Wall (Eastern Portion)	197	18-Mar-18	01-Oct-18	29-Dec-17	13-Jul-18	-80	-80
CS3203	Slope works (Northern Portion)	180	15-Apr-18	11-Oct-18	13-Jan-18	11-Jul-18	-92	-92
CS3210	Drainage Inlet connection (Diversion of Three Existing Sewage Rising Mains)	208	25-Feb-18	21-Sep-18	05-Jan-18	31-Jul-18	-51	-51
CS3220	Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber)	200	13-Sep-17	31-Mar-18	13-Sep-17	31-Mar-18	0	0
CS3230	CLP Cable Duct and Draw Pits (within the Site)	210	19-Apr-18	15-Nov-18	05-Mar-18	30-Sep-18	-45	-45
CS3250	EVA (Road & Drainage)	670	07-Mar-18	06-Jan-20	13-Jan-18	13-Nov-19	-54	-54
CS3252	RC Trench and Odour Pipe (DO1, DO2)	180	22-Apr-18	19-Oct-18	24-Feb-18	22-Aug-18	-57	-57
CS3254	Process Pipe	180	22-Apr-18	19-Oct-18	24-Feb-18	22-Aug-18	-57	-57
CS3258	Emergency By-Pass Pipe	200	29-Mar-18	15-Oct-18	05-Jan-18	23-Jul-18	-84	-84
CS3284	Diversion of Existing Watermains by WSD	89	18-Feb-18	18-May-18	01-Dec-17	27-Feb-18	-79	-79
CS3286	Civil Works by ADCJV for WSD's Diversion of Existing Watermains	183	01-Jun-17	18-Feb-18	01-Jun-17	30-Nov-17	0	-79
E&M Works		682	27-Nov-16	18-Dec-18	27-Nov-16	18-Dec-18	0	0
	Procurement	682	27-Nov-16	18-Dec-18	27-Nov-16	18-Dec-18	0	0
	Chemically Enhanced Primary Treatment (CEPT)	593	25-Jan-17	13-Dec-18	25-Jan-17	12-Sep-18	0	-92
EM3110	CMS Preparation, Submission & Approval (Major Equipment)	289	25-Jan-17	09-Feb-18	25-Jan-17	09-Nov-17	0	-92
EM3112	Manufacturing & Logistic (Major Equipment)	307	10-Feb-18	13-Dec-18	10-Nov-17	12-Sep-18	-92	-92
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	14-Aug-18	10-Nov-17	14-Aug-18	0	0
	System Control Flowmeter Chamber (SF)	567	25-Jan-17	18-Sep-18	25-Jan-17	17-Sep-18	0	0
EM3132	CMS Preparation, Submission & Approval (Major Equipment)	289	25-Jan-17	09-Feb-18	25-Jan-17	09-Nov-17	0	-92
EM3134	Manufacturing & Logistic (Major Equipment)	210	10-Feb-18	07-Sep-18	10-Nov-17	07-Jun-18	-92	-92
EM3136	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	187	10-Nov-17	15-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)	479	04-Jan-17	07-Nov-18	04-Jan-17	08-Sep-18	0	-61
EM3135	CMS Preparation, Submission & Approval (Major Equipment)	301	04-Jan-17	31-Jan-18	04-Jan-17	31-Oct-17	0	-92
EM3137	Manufacturing & Logistic (Major Equipment)	280	01-Feb-18	07-Nov-18	01-Nov-17	07-Aug-18	-92	-92
EM3141	Witness FAT - Main Sewage Pumps	28	01-Apr-18	28-Apr-18	30-Dec-17	26-Jan-18	-92	-92
EM3635	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	225	01-Oct-17	14-May-18	01-Oct-17	14-May-18	0	0
EM3655	CMS Preparation, Submission & Approval (Electrical)	288	01-Oct-17	16-Jul-18	01-Oct-17	15-Jul-18	0	0
EM3675	CMS Preparation, Submission & Approval (Building Services)	342	01-Oct-17	08-Sep-18	01-Oct-17	08-Sep-18	0	0
	Solid Handling Building (SHB)	279	12-Apr-17	24-Jul-18	12-Apr-17	20-Jun-18	0	-34
EM3145	CMS Preparation, Submission & Approval (Major Equipment)	203	12-Apr-17	01-Feb-18	12-Apr-17	31-Oct-17	0	-92
EM3150	Manufacturing & Logistic (Major Equipment)	173	01-Feb-18	24-Jul-18	31-Oct-17	22-Apr-18	-92	-92
EM3695	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	227	01-Oct-17	15-May-18	01-Oct-17	15-May-18	0	0
EM3715	CMS Preparation, Submission & Approval (Electrical)	178	01-Oct-17	27-Mar-18	01-Oct-17	28-Mar-18	0	0
EM3725	Manufacturing & Logistic (Electrical)	84	27-Mar-18	19-Jun-18	28-Mar-18	20-Jun-18	0	0
EM3735	CMS Preparation, Submission & Approval (Building Services)	230	01-Oct-17	19-May-18	01-Oct-17	19-May-18	0	0
	UV Disinfection Facility (UV)	595	30-Mar-17	16-Dec-18	30-Mar-17	15-Dec-18	0	0
EM3185	CMS Preparation, Submission & Approval (Major Equipment)	318	30-Mar-17	11-Feb-18	30-Mar-17	10-Feb-18	0	0
EM3190	Manufacturing & Logistic (Major Equipment)	308	11-Feb-18	16-Dec-18	11-Feb-18	15-Dec-18	0	0
EM3755	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	250	21-Nov-17	28-Jul-18	21-Nov-17	29-Jul-18	0	0
EM3775	CMS Preparation, Submission & Approval (Electrical)	265	21-Nov-17	13-Aug-18	21-Nov-17	13-Aug-18	0	0
EM3795	CMS Preparation, Submission & Approval (Building Services)	313	21-Nov-17	30-Sep-18	21-Nov-17	30-Sep-18	0	0
	Sludge Dewatering Building (SDB)	511	27-Nov-16	14-Dec-18	27-Nov-16	11-Nov-18	0	-34
EM3175	CMS Preparation, Submission & Approval (Major Equipment)	348	27-Nov-16	09-Feb-18	27-Nov-16	09-Nov-17	0	-92
EM3180	Manufacturing & Logistic (Major Equipment)	308	09-Feb-18	14-Dec-18	09-Nov-17	13-Sep-18	-92	-92
EM3815	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	345	27-Oct-17	06-Oct-18	27-Oct-17	06-Oct-18	0	0
EM3835	CMS Preparation, Submission & Approval (Electrical)	270	27-Oct-17	23-Jul-18	27-Oct-17	24-Jul-18	0	0
EM3855	CMS Preparation, Submission & Approval (Building Services)	380	27-Oct-17	11-Nov-18	27-Oct-17	11-Nov-18	0	0

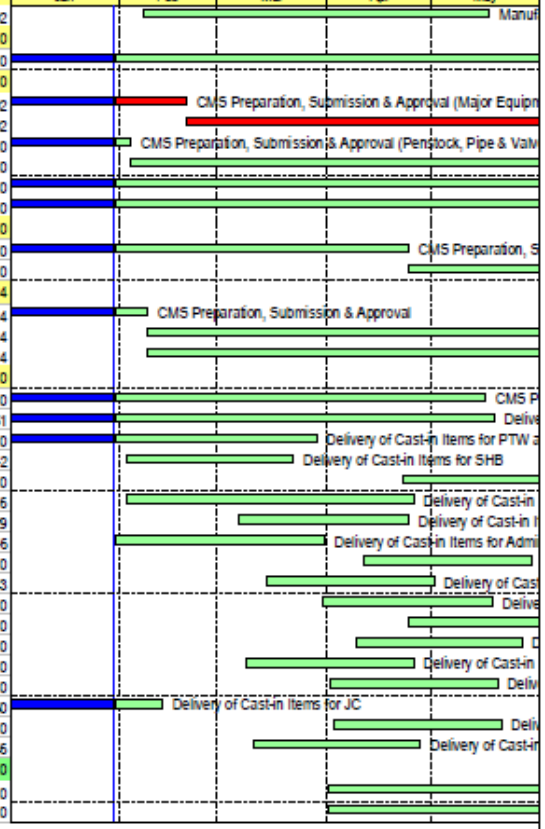
DATA DATE: 31-Jan-18 | LAYOUT: SW Project PHase 1 Rev 8 (3M 31Jan18) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date
Sludge Skip Storage Building (SSSB)		331	08-Dec-16	12-Jul-18	08-Dec-16	04-Jul-18	0	-8
EM3265	CMS Preparation, Submission & Approval (Major Equipment)	331	08-Dec-16	03-Feb-18	08-Dec-16	03-Nov-17	0	-92
EM3270	Manufacturing & Logistic (Major Equipment)	159	03-Feb-18	12-Jul-18	03-Nov-17	11-Apr-18	-92	-92
EM3875	CMS Preparation, Submission & Approval (Electrical)	220	04-Sep-17	11-Apr-18	04-Sep-17	11-Apr-18	0	0
EM3885	Manufacturing & Logistic (Electrical)	84	11-Apr-18	04-Jul-18	11-Apr-18	04-Jul-18	0	0
EM3895	CMS Preparation, Submission & Approval (Building Services)	100	04-Sep-17	04-Feb-18	04-Sep-17	12-Dec-17	0	-54
EM3905	Manufacturing & Logistic (Building Services)	120	05-Feb-18	04-Jun-18	13-Dec-17	11-Apr-18	-54	-54
Administration Building & Maintenance Workshop (AB & WS)		517	31-Jan-17	28-Sep-18	31-Jan-17	29-Jun-18	0	-92
EM3125	CMS Preparation, Submission & Approval (Major Equipment)	278	31-Jan-17	04-Feb-18	31-Jan-17	04-Nov-17	0	-92
EM3130	Manufacturing & Logistic (Major Equipment)	236	04-Feb-18	28-Sep-18	04-Nov-17	28-Jun-18	-92	-92
EM3915	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	177	30-Aug-17	22-Feb-18	30-Aug-17	22-Feb-18	0	0
EM3925	Manufacturing & Logistic (Penstock, Pipe & Valve)	126	22-Feb-18	28-Jun-18	22-Feb-18	28-Jun-18	0	0
EM3935	CMS Preparation, Submission & Approval (Electrical)	205	30-Aug-17	23-Mar-18	30-Aug-17	23-Mar-18	0	0
EM3945	Manufacturing & Logistic (Electrical)	98	23-Mar-18	29-Jun-18	23-Mar-18	29-Jun-18	0	0
EM3955	CMS Preparation, Submission & Approval (Building Services)	183	30-Aug-17	28-Feb-18	30-Aug-17	28-Feb-18	0	0
EM3965	Manufacturing & Logistic (Building Services)	120	28-Feb-18	28-Jun-18	28-Feb-18	28-Jun-18	0	0
Deodorization Facilities No. 1 & 2 (DO 1 & DO 2)		535	10-Jan-17	07-Dec-18	10-Jan-17	08-Dec-18	0	0
EM3165	CMS Preparation, Submission & Approval (Major Equipment)	342	10-Jan-17	17-Feb-18	10-Jan-17	18-Dec-17	0	-61
EM3170	Manufacturing & Logistic (Major Equipment)	120	17-Feb-18	17-Jun-18	18-Dec-17	17-Apr-18	-61	-61
EM3171	Witness FAT - DO 1 & DO 2	14	18-Apr-18	02-May-18	16-Feb-18	02-Mar-18	-61	-61
EM3172	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	249	30-Aug-17	05-May-18	30-Aug-17	05-May-18	0	0
EM3975	CMS Preparation, Submission & Approval (Electrical)	327	30-Aug-17	23-Jul-18	30-Aug-17	22-Jul-18	0	0
EM3995	CMS Preparation, Submission & Approval (Building Services)	465	30-Aug-17	07-Dec-18	30-Aug-17	08-Dec-18	0	0
Chemical Building (CB)		602	05-Feb-17	22-Oct-18	05-Feb-17	23-Oct-18	0	0
EM3225	CMS Preparation, Submission & Approval (Major Equipment)	276	05-Feb-17	08-Feb-18	05-Feb-17	08-Nov-17	0	-92
EM3230	Manufacturing & Logistic (Major Equipment)	168	08-Feb-18	26-Jul-18	08-Nov-17	25-Apr-18	-92	-92
EM4015	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	349	08-Nov-17	22-Oct-18	08-Nov-17	23-Oct-18	0	0
EM4035	CMS Preparation, Submission & Approval (Electrical)	227	08-Nov-17	23-Jun-18	08-Nov-17	23-Jun-18	0	0
EM4055	CMS Preparation, Submission & Approval (Building Services)	295	08-Nov-17	30-Aug-18	08-Nov-17	30-Aug-18	0	0
Street Fire Hydrant Pump Room & GENSET Room (FH)		456	23-Mar-17	07-Dec-18	23-Mar-17	07-Dec-18	0	0
EM3275	CMS Preparation, Submission & Approval (Major Equipment)	455	23-Mar-17	21-Jun-18	23-Mar-17	21-Jun-18	0	0
EM4075	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	432	01-Oct-17	07-Dec-18	01-Oct-17	07-Dec-18	0	0
EM4095	CMS Preparation, Submission & Approval (Electrical)	325	01-Oct-17	21-Aug-18	01-Oct-17	22-Aug-18	0	0
EM4115	CMS Preparation, Submission & Approval (Building Services)	378	01-Oct-17	13-Oct-18	01-Oct-17	13-Oct-18	0	0
Electrical Buildings (EB1, EB2, EB3 & EB4)		413	23-Feb-17	11-Sep-18	23-Feb-17	09-Jul-18	0	-63
EM3235	CMS Preparation, Submission & Approval (Major Equipment)	261	23-Feb-17	13-Feb-18	23-Feb-17	10-Nov-17	0	-94
EM3240	Manufacturing & Logistic (Major Equipment)	210	13-Feb-18	11-Sep-18	11-Nov-17	08-Jun-18	-94	-94
EM3300	CMS Preparation, Submission & Approval (Electrical)	182	11-Sep-17	12-Mar-18	11-Sep-17	12-Mar-18	0	0
EM3305	Manufacturing & Logistic (Electrical)	98	12-Mar-18	18-Jun-18	12-Mar-18	18-Jun-18	0	0
EM3310	CMS Preparation, Submission & Approval (Control & Instrument)	302	11-Sep-17	09-Jul-18	11-Sep-17	09-Jul-18	0	0
EM3320	CMS Preparation, Submission & Approval (Building Services)	96	09-Aug-17	04-Feb-18	09-Aug-17	12-Nov-17	0	-84
EM3325	Manufacturing & Logistic (Building Services)	112	04-Feb-18	27-May-18	12-Nov-17	04-Mar-18	-84	-84
Re-use Water Building (RW)		476	13-Apr-17	11-Jul-18	13-Apr-17	11-Jul-18	0	0
EM3195	CMS Preparation, Submission & Approval (Major Equipment)	220	13-Apr-17	10-Feb-18	13-Apr-17	19-Nov-17	0	-84
EM3200	Manufacturing & Logistic (Major Equipment)	140	11-Feb-18	30-Jun-18	19-Nov-17	08-Apr-18	-84	-84
EM4135	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	199	19-Nov-17	06-Jun-18	19-Nov-17	06-Jun-18	0	0
EM4155	CMS Preparation, Submission & Approval (Electrical)	136	19-Nov-17	04-Apr-18	19-Nov-17	04-Apr-18	0	0
EM4165	Manufacturing & Logistic (Electrical)	98	04-Apr-18	11-Jul-18	04-Apr-18	11-Jul-18	0	0
EM4175	CMS Preparation, Submission & Approval (Building Services)	212	19-Nov-17	19-Jun-18	19-Nov-17	19-Jun-18	0	0
DG Store & Chemical Waste Storage Building (DG) and Irrigation & Cleansing Water Pump Room (ICW)		558	24-May-17	08-Sep-18	24-May-1	08-Sep-18	0	0
EM3255	CMS Preparation, Submission & Approval (Major Equipment)	200	24-May-17	09-Feb-18	24-May-1	09-Dec-17	0	-62
EM3260	Manufacturing & Logistic (Major Equipment)	98	10-Feb-18	18-May-18	10-Dec-17	17-Mar-18	-62	-62
EM4195	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	273	10-Dec-17	08-Sep-18	10-Dec-17	08-Sep-18	0	0
EM4215	CMS Preparation, Submission & Approval (Electrical)	146	30-Sep-17	23-Feb-18	30-Sep-17	23-Feb-18	0	0
EM4225	Manufacturing & Logistic (Electrical)	98	23-Feb-18	01-Jun-18	23-Feb-18	01-Jun-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)		305	07-Jan-17	17-May-18	07-Jan-17	14-Feb-18	0	-92
EM3215	CMS Preparation, Submission & Approval	305	07-Jan-17	08-Feb-18	07-Jan-17	08-Nov-17	0	-92



DATA DATE: 31-Jan-18 | LAYOUT: SW Project PHase 1 Rev 8 (3M 31Jan18) | PAGE 8 OF 8

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date
EM3220	Manufacturing & Logistic	98	08-Feb-18	17-May-18	08-Nov-17	14-Feb-18	-92	-92
Gatehouse (GH)		450	24-Apr-17	17-Jul-18	24-Apr-17	18-Jul-18	0	0
EM3285	CMS Preparation, Submission & Approval (Building Services)	450	24-Apr-17	17-Jul-18	24-Apr-17	18-Jul-18	0	0
Payment Flowmeter Chamber (PF)		658	25-Jan-17	18-Dec-18	25-Jan-17	18-Dec-18	0	0
EM3205	CMS Preparation, Submission & Approval (Major Equipment)	299	25-Jan-17	20-Feb-18	25-Jan-17	20-Nov-17	0	-92
EM3210	Manufacturing & Logistic (Major Equipment)	203	20-Feb-18	11-Sep-18	20-Nov-17	11-Jun-18	-92	-92
EM4255	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	157	01-Sep-17	04-Feb-18	01-Sep-17	04-Feb-18	0	0
EM4265	Manufacturing & Logistic (Penstock, Pipe & Valve)	126	04-Feb-18	10-Jun-18	04-Feb-18	10-Jun-18	0	0
EM4275	CMS Preparation, Submission & Approval (Electrical)	333	20-Nov-17	19-Oct-18	20-Nov-17	19-Oct-18	0	0
EM4295	CMS Preparation, Submission & Approval (Building Services)	393	20-Nov-17	18-Dec-18	20-Nov-17	18-Dec-18	0	0
Foul Water Pump Sump		234	20-Nov-17	22-Aug-18	20-Nov-17	21-Aug-18	0	0
EM4315	CMS Preparation, Submission & Approval	155	20-Nov-17	24-Apr-18	20-Nov-17	23-Apr-18	0	0
EM4320	Manufacturing & Logistic	120	24-Apr-18	22-Aug-18	24-Apr-18	21-Aug-18	0	0
SCADA and CMMS Systems		304	01-Jul-17 A	13-Jul-18	01-Jul-17	29-Jun-18	0	-14
EM3330	CMS Preparation, Submission & Approval	209	01-Jul-17 A	09-Feb-18	01-Jul-17	26-Jan-18	0	-14
EM3335	Manufacturing & Logistic (SCADA)	154	09-Feb-18	13-Jul-18	26-Jan-18	29-Jun-18	-14	-14
EM3345	Manufacturing & Logistic (CMMS)	154	09-Feb-18	13-Jul-18	26-Jan-18	29-Jun-18	-14	-14
Cast - In Items		459	01-Feb-17	11-Jun-18	01-Feb-17	10-Jun-18	0	0
EM3520	CMS Preparation, Submission & Approval	469	01-Feb-17	16-May-18	01-Feb-17	15-May-18	0	0
EM3525	Delivery of Cast-in Items for CEPT and SF	180	30-Sep-17	18-May-18	30-Sep-17	28-Mar-18	0	-51
EM3530	Delivery of Cast-in Items for PTW and IPS	180	30-Sep-17	29-Mar-18	30-Sep-17	28-Mar-18	0	0
EM3535	Delivery of Cast-in Items for SHB	48	03-Feb-18	22-Mar-18	01-Feb-18	20-Mar-18	-2	-2
EM3540	Delivery of Cast-in Items for UV	48	22-Apr-18	09-Jun-18	23-Apr-18	09-Jun-18	0	0
EM3545	Delivery of Cast-in Items for SDB	82	03-Feb-18	25-Apr-18	09-Feb-18	01-May-18	6	6
EM3550	Delivery of Cast-in Items for SSSB	48	07-Mar-18	24-Apr-18	06-Feb-18	25-Mar-18	-29	-29
EM3555	Delivery of Cast-in Items for Admin. Building	60	31-Jan-18	31-Mar-18	25-Jan-18	25-Mar-18	-6	-6
EM3560	Delivery of Cast-in Items for DO No. 1	48	11-Apr-18	29-May-18	12-Apr-18	29-May-18	0	0
EM3565	Delivery of Cast-in Items for DO No. 2	48	15-Mar-18	01-May-18	31-Jan-18	19-Mar-18	-43	-43
EM3570	Delivery of Cast-in Items for CB	48	31-Mar-18	18-May-18	31-Mar-18	17-May-18	0	0
EM3575	Delivery of Cast-in Items for FH	48	24-Apr-18	11-Jun-18	24-Apr-18	10-Jun-18	0	0
EM3590	Delivery of Cast-in Items for EB2	48	09-Apr-18	26-May-18	09-Apr-18	26-May-18	0	0
EM3600	Delivery of Cast-in Items for EB4	48	09-Mar-18	25-Apr-18	09-Mar-18	26-Apr-18	0	0
EM3605	Delivery of Cast-in Items for RW	48	02-Apr-18	19-May-18	02-Apr-18	19-May-18	0	0
EM3615	Delivery of Cast-in Items for JC	70	07-Oct-17	13-Feb-18	07-Oct-17	15-Dec-17	0	-60
EM3620	Delivery of Cast-in Items for GH	48	03-Apr-18	20-May-18	03-Apr-18	20-May-18	0	0
EM3625	Delivery of Cast-in Items for PF	48	11-Mar-18	27-Apr-18	24-Jan-18	12-Mar-18	-46	-46
Testing & Commissioning		120	01-Apr-18	30-Jul-18	01-Apr-18	30-Jul-18	0	0
TC030	Operation Plan - Preparation for Submission	120	01-Apr-18	30-Jul-18	01-Apr-18	30-Jul-18	0	0
TC040	Asset Management Plan - Preparation for Submission	120	01-Apr-18	30-Jul-18	01-Apr-18	30-Jul-18	0	0



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 : 21 October 2017

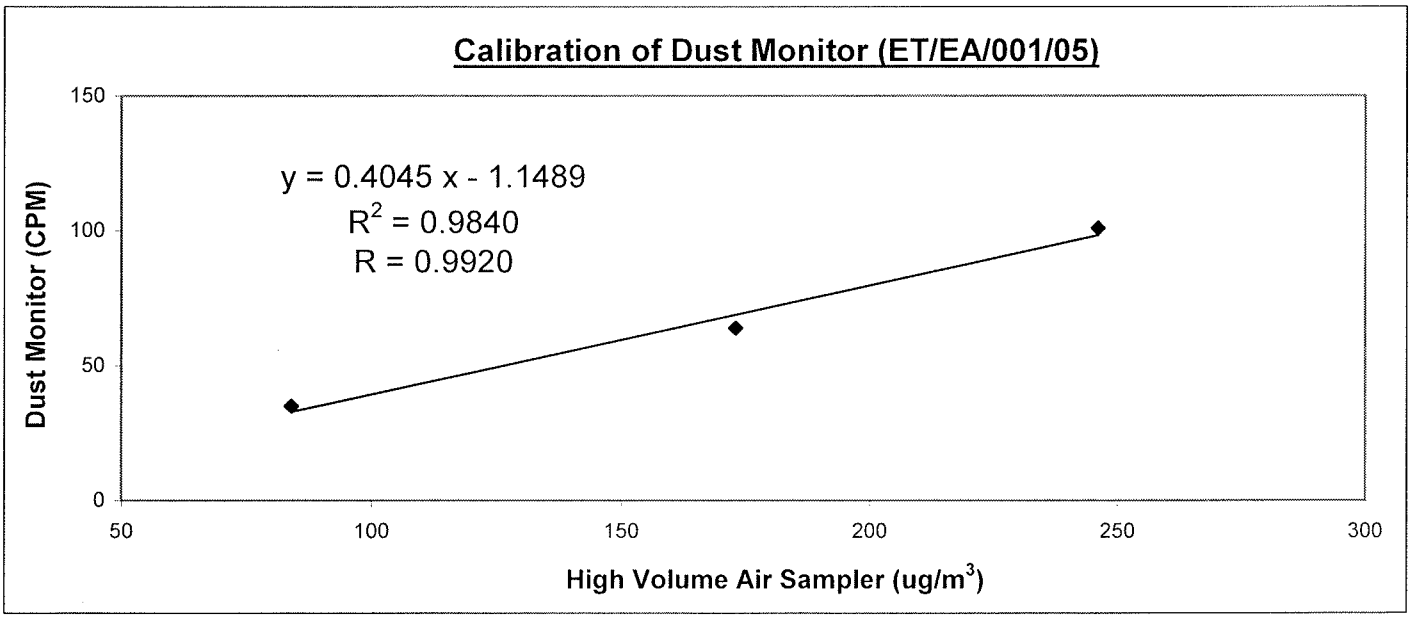
Serial No. : 8X4282 (ET/EA/001/05)

Calibration Due Date : 20 April 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)	35	64	101
High Volume Air Sampler (ug/m^3)	84	173	246
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 13 December 2017		



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

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

Calibrated by : Chung Ka Ho (Technician)

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

- END OF REPORT -

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ETS-TESTCONSULT LTD.™

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

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F: +852 2695 3944
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W: www.ets-testconsult.com

Internal Calibration Report of Dust Monitor

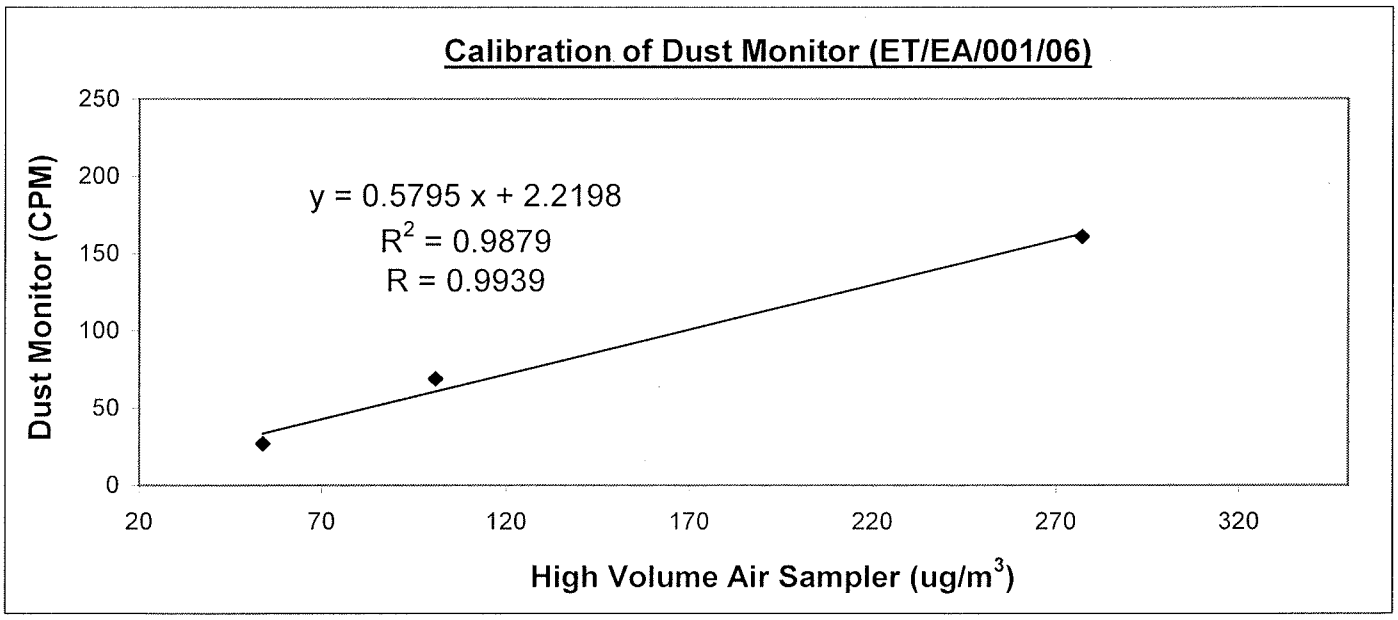
Manufacturer : SIBATA — Date of Calibration : 21 October 2017

Serial No. : 014746 (ET/EA/001/06) — Calibration Due Date : 20 April 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	69	161
High Volume Air Sampler (ug/m^3)	55	103	273
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 13 December 2017		



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

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

Calibrated by : CHUNG, Ka Ho (Technician)

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

- END OF REPORT -

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Internal Calibration Report of Dust Monitor

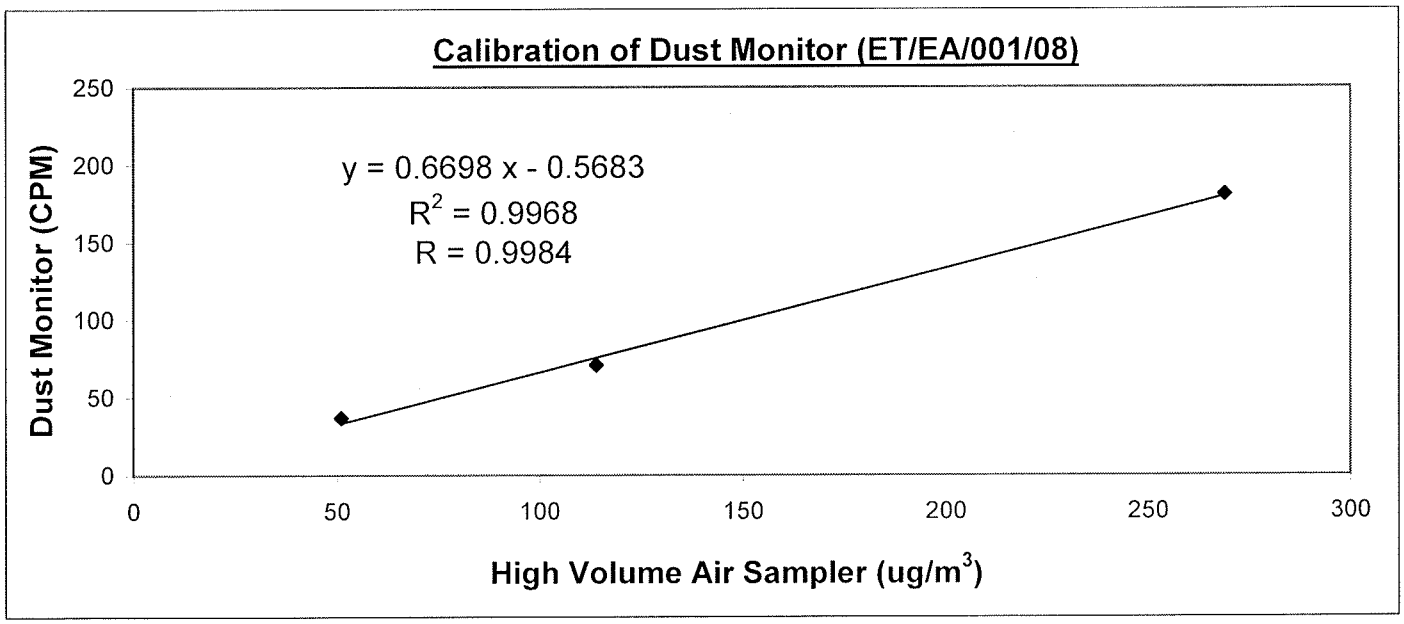
Manufacturer : SIBATA (LD-3B) Date of Calibration : 30 September 2017

Serial No. : 135261 (ET/EA/001/08) Calibration Due Date : 29 March 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)	37	71	181
High Volume Air Sampler (ug/m^3)	51	114	269
High Volume Air Sampler Serail No.:1177	Calibration Due Date: 14 October 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 -

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ETS-TESTCONSULT LTD.™

8/F Block B,
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W: www.ets-testconsult.com

Internal Calibration Report of Dust Monitor

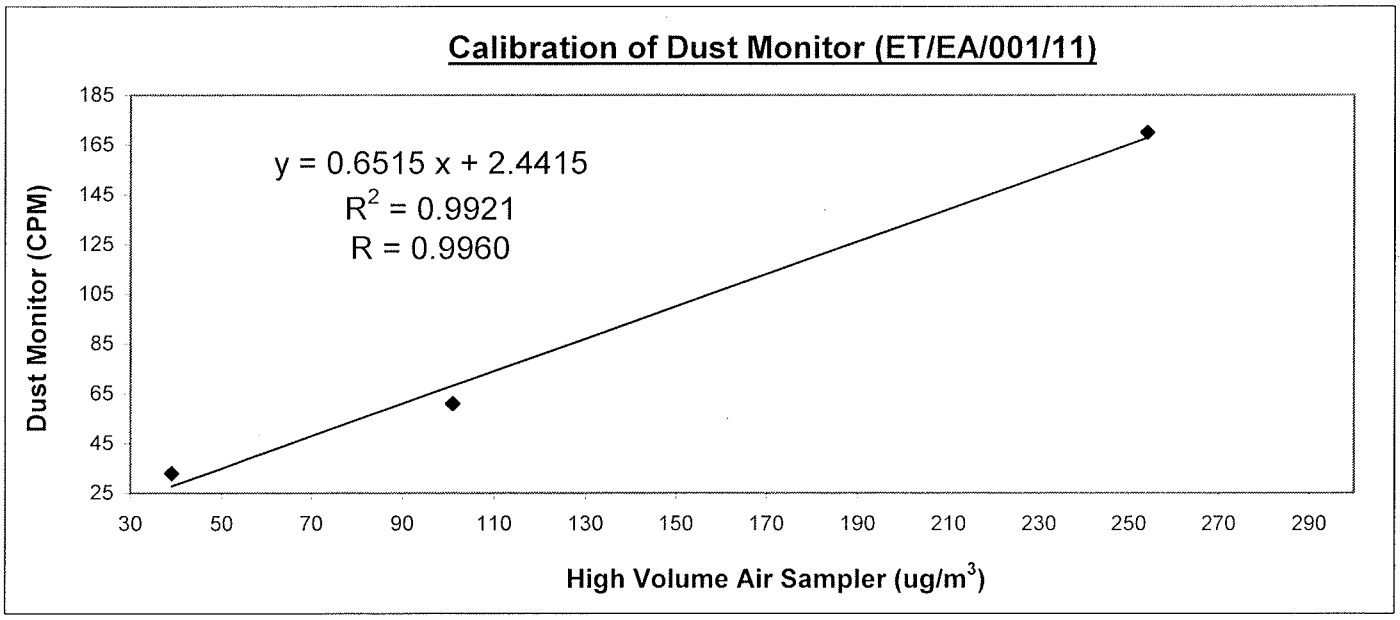
Manufacturer : SIBATA (LD-3B) Date of Calibration : 18 Novermber 2017

Serial No. : 255863 (ET/EA/001/11) Calibration Due Date : 17 May 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)	33	61	170
High Volume Air Sampler (ug/m^3)	39	101	254
High Volume Air Sampler Serail No.:1177	Calibration Due Date: 13 December 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 -

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ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
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T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Internal Calibration Report of Dust Monitor

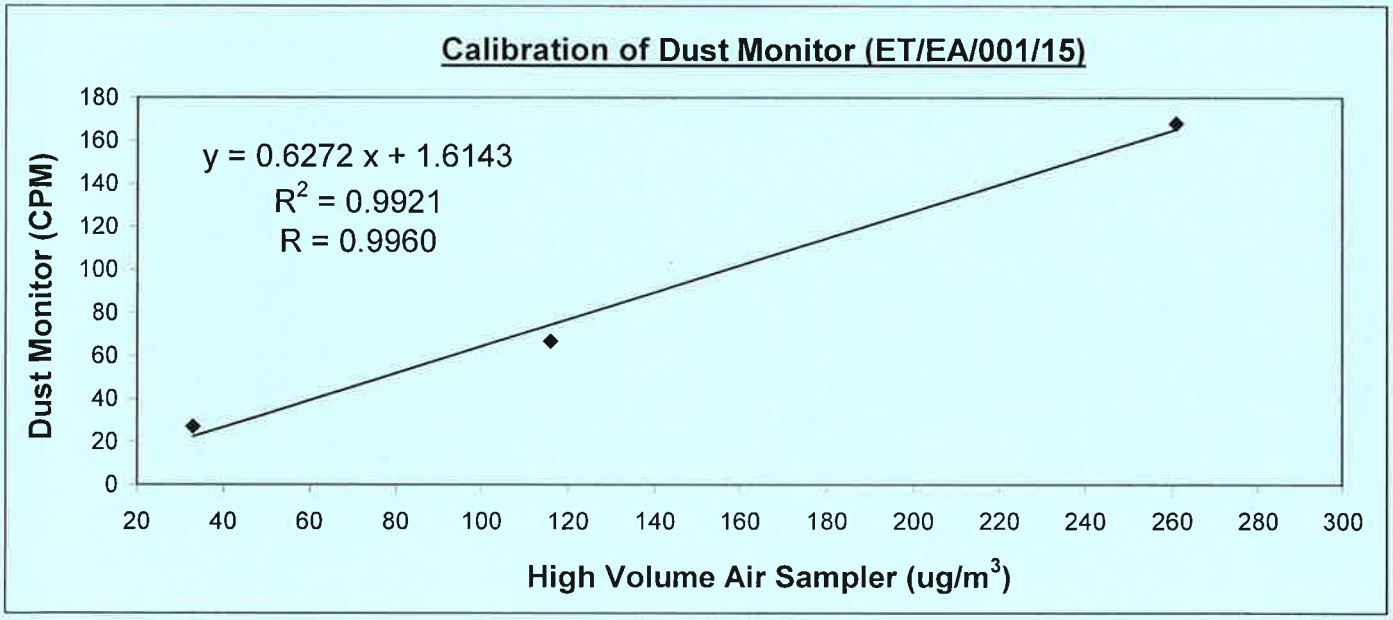
Manufacturer : SIBATA (LD-3B) Date of Calibration : 22 July 2017

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 -

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ETS-TESTCONSULT LTD.™

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

Internal Calibration Report of Dust Monitor

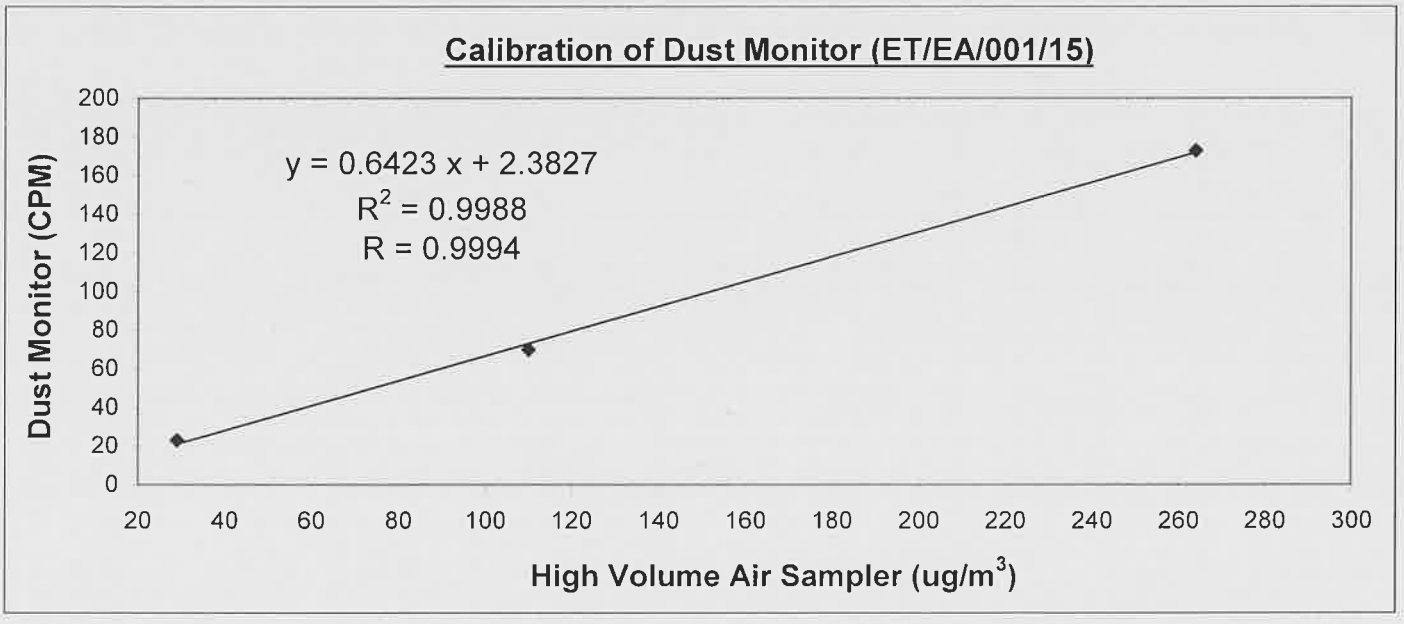
Manufacturer : SIBATA (LD-3B) Date of Calibration : 20 January 2018

Serial No. : 597227 (ET/EA/001/15) Calibration Due Date : 19 July 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)	23	70	173
High Volume Air Sampler (ug/m^3)	29	110	264
High Volume Air Sampler Serail No.: 1177	Calibration Due Date: 11 February 2018		



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 : _____
LAU, Chi Leung
(Environmental Team Leader)

- END OF REPORT -

東業德勤測試顧問有限公司
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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 : 16 November 2017

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

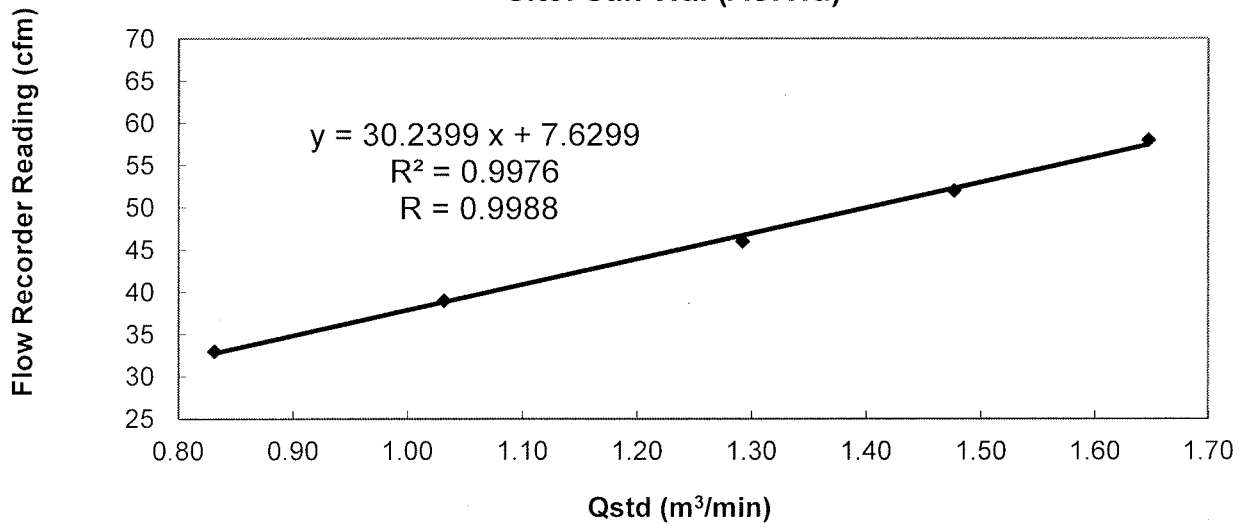
Calibration Due Date : 15 January 2018

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

Results :

Flow recorder reading (cfm)	58	52	46	39	33
Qstd (Actual flow rate, m^3/min)	1.65	1.48	1.29	1.03	0.83
Pressure : 769.56 **mm Hg**		Temp. : 298 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

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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 : 13 January 2018

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

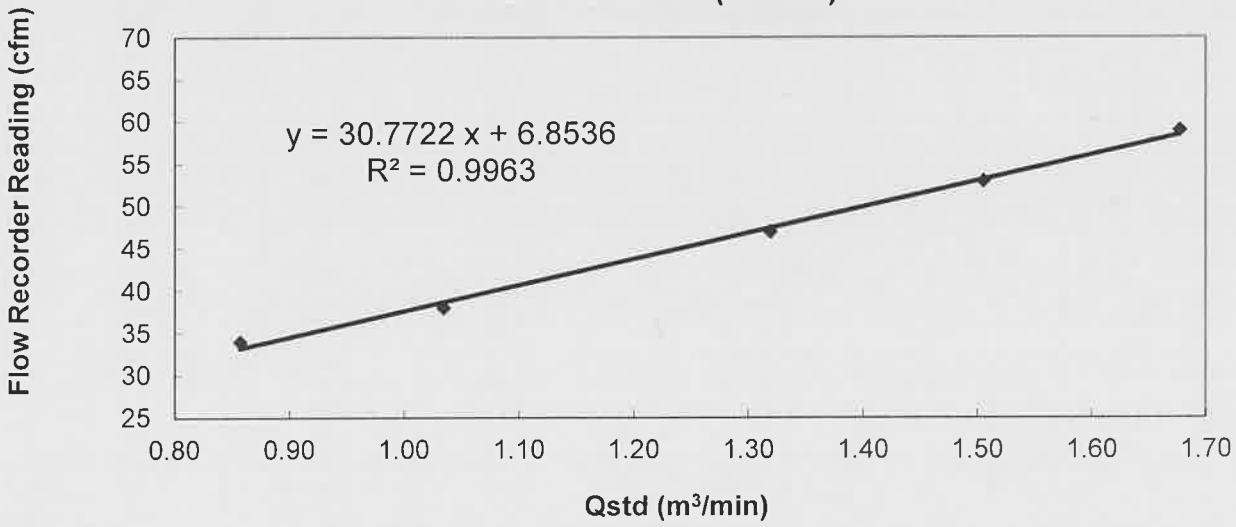
Calibration Due Date : 12 March 2018

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

Results :

Flow recorder reading (cfm)		59	53	47	38	34
Qstd (Actual flow rate, m^3/min)		1.68	1.51	1.32	1.03	0.86
Pressure :	765.06 **mm Hg**		Temp. :		288 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 : _____
TANG, Chung Hang
(Supervisor)

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

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

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Fo Tan, Hong Kong

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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 : 16 November 2017

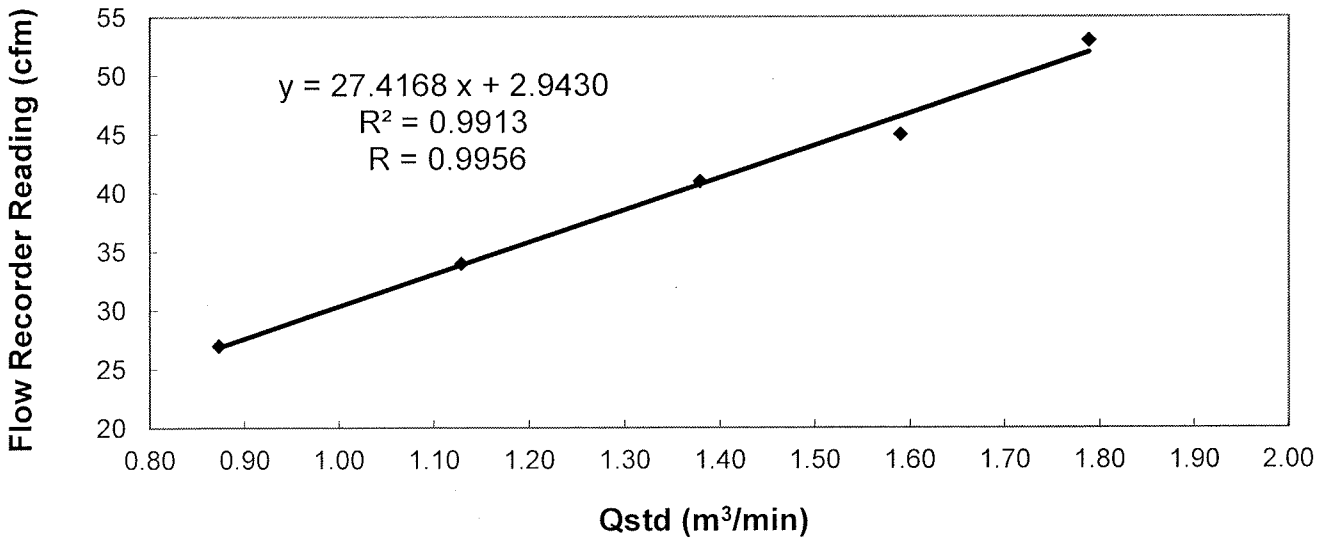
Serial No. : 9998 (ET / EA / 003 / 12) Calibration Due Date : 15 January 2018

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

Results :

Flow recorder reading (cfm)	53	45	41	34	27
Qstd (Actual flow rate, m^3/min)	1.79	1.59	1.38	1.13	0.87
Pressure : 769.56 mm Hg		Temp. : 298 K			

Sampler 9998 Calibration Curve
Site: San Wai (ASR2a)



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

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

Calibrated by : _____
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

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F: +852 2695 3944
E: etl@ets-testconsult.com
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Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby (Model No. GS2310) Date of Calibration : 13 January 2018

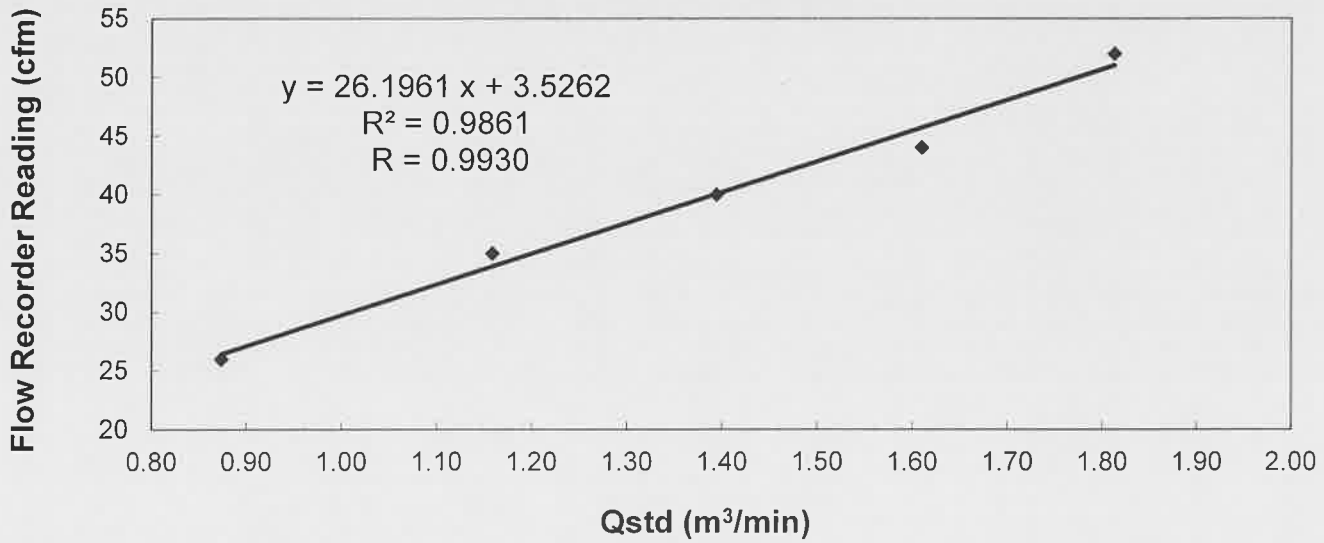
Serial No. : 9998 (ET / EA / 003 / 12) Calibration Due Date : 12 March 2018

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

Results :

Flow recorder reading (cfm)	52	44	40	35	26
Qstd (Actual flow rate, m^3/min)	1.81	1.61	1.39	1.16	0.87
Pressure : 769.56 mm Hg		Temp. : 288 K			

Sampler 9998 Calibration Curve
Site: San Wai (ASR2a)



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

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

Calibrated by : _____
TANG, Chung Hang
(Supervisor)

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

- 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	
2/1/2018	Fine	17	09:00	10:00	200
2/1/2018	Fine	17	10:00	11:00	205
2/1/2018	Fine	17	11:00	12:00	196
8/1/2018	Cloudy	18	09:26	10:26	47
8/1/2018	Cloudy	17	10:26	11:26	50
8/1/2018	Cloudy	14	13:10	14:10	45
13/1/2018	Fine	14	08:47	09:47	84
13/1/2018	Fine	14	09:47	10:47	87
13/1/2018	Fine	14	10:47	11:47	77
19/1/2018	Cloudy	18	09:57	10:57	157
19/1/2018	Cloudy	19	10:57	11:57	151
19/1/2018	Cloudy	19	13:00	14:00	160
25/1/2018	Cloudy	16	08:46	09:46	83
25/1/2018	Cloudy	16	09:46	10:46	86
25/1/2018	Cloudy	16	10:46	11:46	80
31/1/2018	Cloudy	7	08:23	09:23	37
31/1/2018	Cloudy	7	09:23	10:23	60
31/1/2018	Cloudy	7	10:23	11:23	59
				Min	37
				Max	205
				Average	104

Air Quality Monitoring Station : ASR2a

Date	Weather	Temperature (℃)	Monitoring Period		1-hr TSP ($\mu g/m^3$)
			Start	Finish	
2/1/2018	Fine	17	13:04	14:04	208
2/1/2018	Fine	17	14:04	15:04	213
2/1/2018	Fine	17	15:04	16:04	211
8/1/2018	Cloudy	18	09:20	10:20	36
8/1/2018	Cloudy	17	10:20	11:20	39
8/1/2018	Cloudy	14	11:20	12:20	36
13/1/2018	Fine	14	13:00	14:00	72
13/1/2018	Fine	14	14:00	15:00	79
13/1/2018	Fine	14	15:00	16:00	82
19/1/2018	Cloudy	18	09:54	10:54	152
19/1/2018	Cloudy	19	10:54	11:54	146
19/1/2018	Cloudy	19	13:06	14:06	143
25/1/2018	Cloudy	16	13:08	14:08	90
25/1/2018	Cloudy	16	14:08	15:08	96
25/1/2018	Cloudy	16	15:08	16:08	93
31/1/2018	Cloudy	7	08:34	09:34	38
31/1/2018	Cloudy	7	09:34	10:34	40
31/1/2018	Cloudy	7	10:34	11:34	45
				Min	36
				Max	213
				Average	101

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		
2/1/2018	09:00	3/1/2018	09:00	23789.64	23813.64	24	1.0043	1.0043	1.0043	2.7840	3.0882	210	Fine
8/1/2018	09:26	9/1/2018	09:26	23813.64	23837.64	24	1.0374	1.0374	1.0374	2.8204	3.0309	141	Cloudy
13/1/2018	08:47	14/1/2018	08:47	23837.64	23861.64	24	1.0122	1.0122	1.0122	2.7388	2.9752	162	Fine
19/1/2018	10:00	20/1/2018	10:00	23861.64	23885.64	24	1.0772	1.0772	1.0772	2.7846	3.0971	201	Cloudy
25/1/2018	08:46	26/1/2018	08:46	23885.64	23909.64	24	1.1097	1.1097	1.1097	2.8407	2.9874	92	Cloudy
31/1/2018	08:23	1/2/2018	08:23	23909.64	23933.64	24	1.1421	1.1421	1.1421	2.7843	2.9690	112	Cloudy

Min	92
Max	210
Average	153

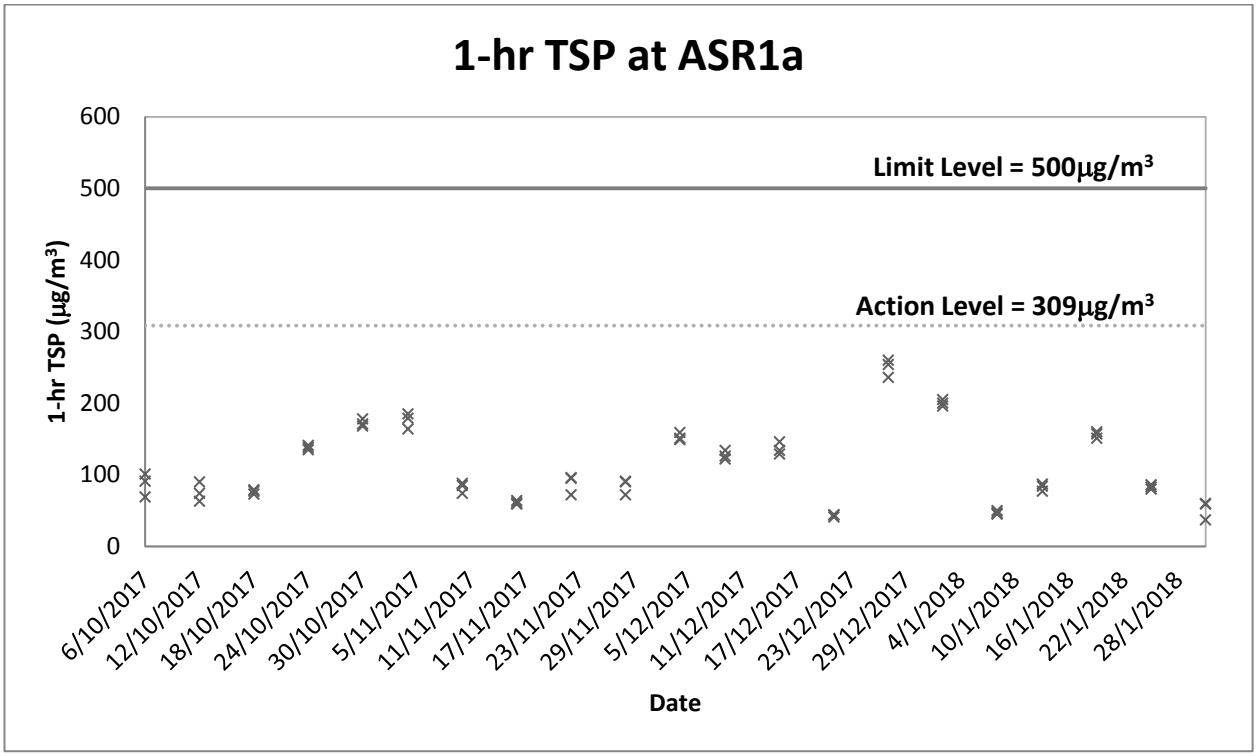
Air Quality Monitoring Station : ASR2a

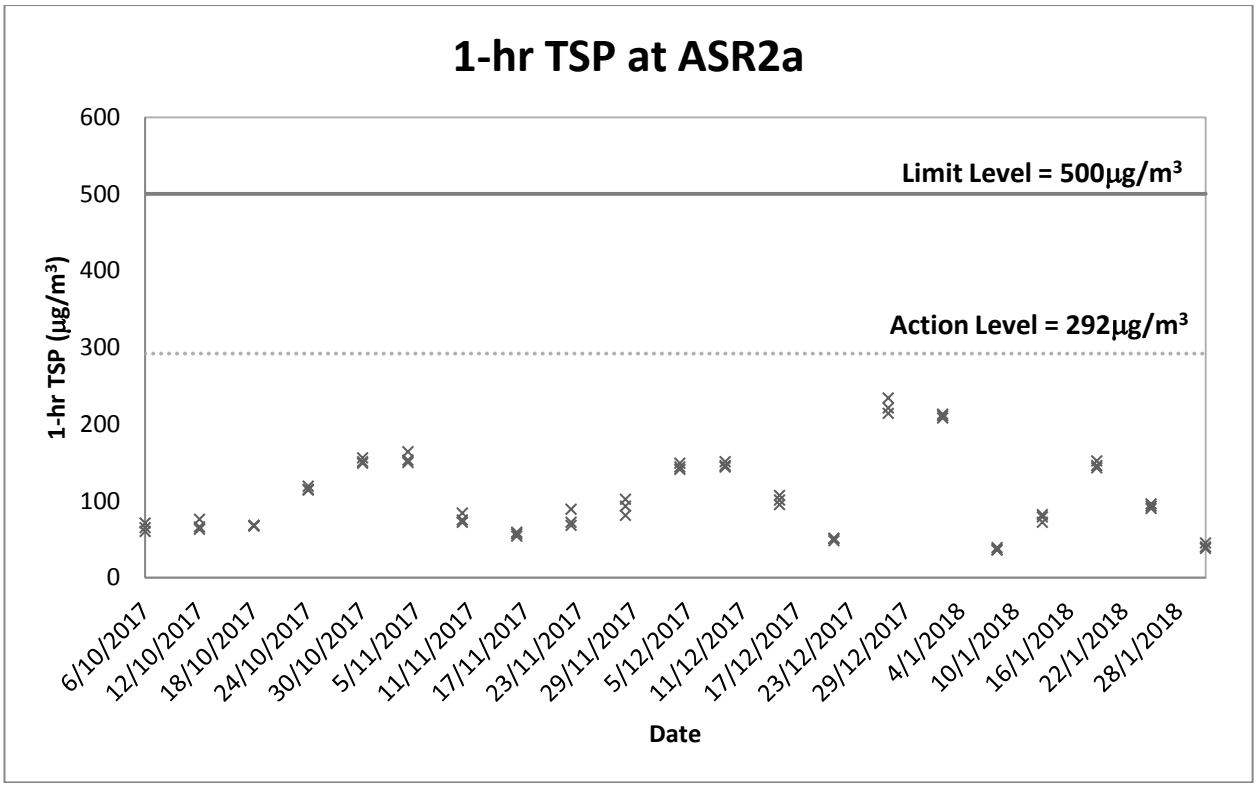
Start		Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m^3/min.)		Average (m^3/min.)	Filter Paper Weight (g)		Conc. (g/m^3)	Weather Condition
Date	Time	Date	Time	Initial	Final		Initial	Final		Initial	Final		
2/1/2018	13:04	3/1/2018	13:04	20750.45	20774.45	24	1.0043	1.0043	1.0043	2.7840	3.0882	210	Fine
8/1/2018	09:20	9/1/2018	09:20	20774.45	20798.45	24	1.1328	1.1328	1.1328	2.7745	2.9793	126	Cloudy
13/1/2018	13:00	14/1/2018	13:00	20798.45	20822.45	24	1.1251	1.1251	1.1251	2.7645	2.9782	132	Fine
19/1/2018	10:35	20/1/2018	10:35	20822.45	20846.45	24	1.0869	1.0869	1.0869	2.7924	3.0840	186	Fine
25/1/2018	13:08	26/1/2018	13:08	20846.45	20870.45	24	1.1251	1.1251	1.1251	2.8557	3.0093	95	Cloudy
31/1/2018	08:34	1/2/2018	08:34	20870.45	20894.45	24	1.1633	1.1633	1.1633	2.8045	2.9969	115	Cloudy

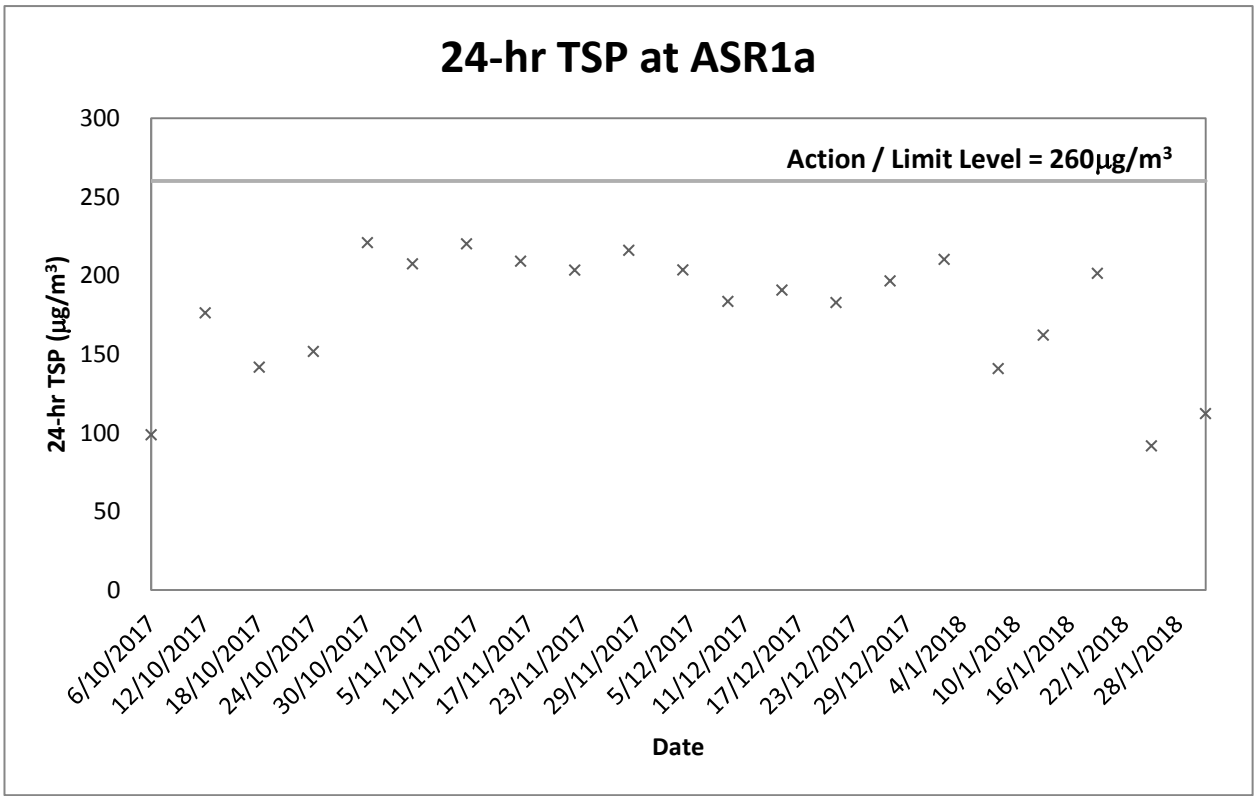
Min	95
Max	210
Average	144

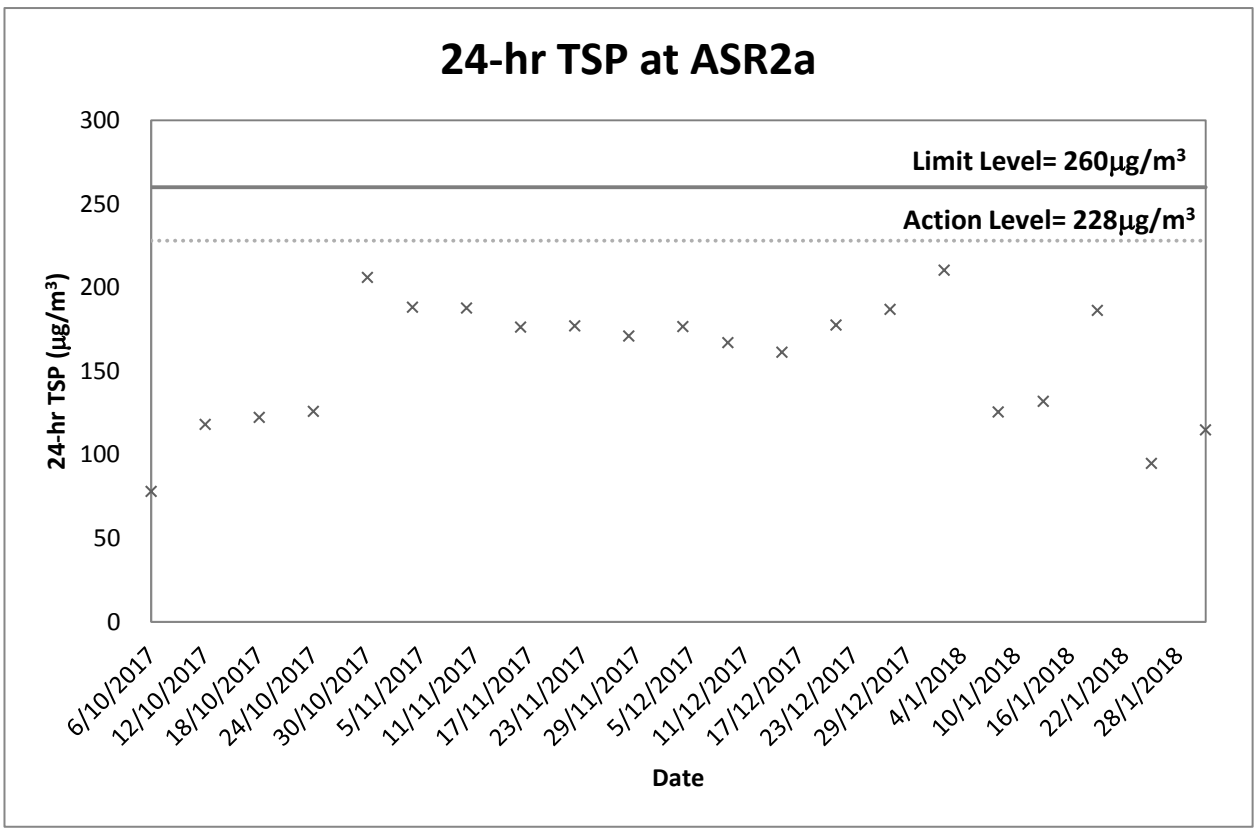
Appendix D3

Graphical Plots of Impact Air Quality Monitoring Results


1-hr TSP at ASR1a
Limit Level = 500μg/m³
Action Level = 309μg/m³
1-hr TSP (μg/m³)
600
500
400
300
200
100
0
6/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
5/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
5/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
4/1/2018
10/1/2018
16/1/2018
22/1/2018
28/1/2018
Date


1-hr TSP at ASR2a
Limit Level = 500μg/m³
Action Level = 292μg/m³
1-hr TSP (μg/m³)
600
500
400
300
200
100
0
6/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
5/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
5/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
4/1/2018
10/1/2018
16/1/2018
22/1/2018
28/1/2018
Date


24-hr TSP at ASR1a
Action / Limit Level = 260μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
6/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
5/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
5/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
4/1/2018
10/1/2018
16/1/2018
22/1/2018
28/1/2018
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
6/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
5/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
5/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
4/1/2018
10/1/2018
16/1/2018
22/1/2018
28/1/2018
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. 709571 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. : Q73909 **Date of receipt :** 6-Oct-17

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 : 16-Oct-17 **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	707126	NIM-PRC & SCL-HKSAR
S240	Sound Level Calibrator	703741	NIM-PRC & SCL-HKSAR
S041	Universal Counter	707135	SCL-HKSAR
S206	Sound Level Meter	707129	SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

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

Calibrated by : Elva Chong

Approved by : Alan Chu

Date: 16-Oct-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

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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	0.987 kHz	± 2 %

Uncertainty : ± 0.1 %

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

4. Total Harmonic Distortion : < 0.5 %
Mfr's Spec. : < 3 %
Uncertainty : ± 2.3 % of reading

Remarks: 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1 025 hPa

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

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Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. **702279** 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. : Q70965 **Date of receipt :** 14-Mar-17

Item Tested

Description : Acoustic Calibrator

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

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

Test Conditions

Date of Test : 17-Mar-17 **Supply Voltage** : --

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

Test Specifications

Calibration check.

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

Test Results

All results were within the IEC 60942 Class 1 specification.

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

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S014	Spectrum Analyzer	605758	NIM-PRC & SCL-HKSAR
S240	Sound Level Calibrator	701036	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: 17-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

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Calibration Certificate

Results :

1. Generated Sound Pressure Level

UUT Nominal Value (dB)	Measured Value (dB)	IEC 60942 Class 1 Spec.
94	94.0	± 0.4 dB

Uncertainty : ± 0.1 dB

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

3. Frequency

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

Uncertainty : ± 3.6 x 10^{-6}

4. Total Distortion : < 2.8 %
IEC 60942 Class 1 Spec. : < 3 %
Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1026 hPa.

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

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香 港 校 正 有限公司

Calibration Certificate

Certificate No. **704458** 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. : Q71850 **Date of receipt :** 16-May-17

Item Tested

Description : Sound Level Meter

Manufacturer : Rion **I.D.** : ET/EN/003/16

Model : NL-52 **Serial No.** : 00253765

Test Conditions

Date of Test : 24-May-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: 24-May-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

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Calibration Certificate

Results :

1. **Self-generated noise :** 15.0 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	-39.6	- 39.4 dB, ± 2 dB
63 Hz	-26.2	- 26.2 dB, ± 1.5 dB
125 Hz	-16.2	- 16.1 dB, ± 1.5 dB
250 Hz	-8.7	- 8.6 dB, ± 1 dB
500 Hz	-3.3	- 3.2 dB, ± 1.4 dB
1 kHz	0.0 (Ref)	0 dB, ± 1.1 dB
2 kHz	+1.2	+ 1.2 dB, ± 1.6 dB
4 kHz	+1.0	+ 1.0 dB, ± 1.6 dB
8 kHz	-1.1	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-8.0	- 6.6 dB, + 3.5 dB ~ - 17.0 dB

Uncertainty : ± 0.1 dB

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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 : 1026 hPa.
4. Preamplifier model : NH-25 , S/N : 43795
5. Firmware Version: 1.5
6. Power Supply Check: OK
7. The UUT was adjusted with the laboratory's calibrator at the reference sound pressure level before the calibration.

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

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Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 701813

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/003/17

Model : NL-52 **Serial No. :** 00264519

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

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Calibration Certificate

Results :

1. **Self-generated noise:** 15.9 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	114.1
		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	-26.2	- 26.2 dB, ± 1.5 dB
125 Hz	-16.2	- 16.1 dB, ± 1.5 dB
250 Hz	-8.7	- 8.6 dB, ± 1 dB
500 Hz	-3.2	- 3.2 dB, ± 1.4 dB
1 kHz	0.0 (Ref)	0 dB, ± 1.1 dB
2 kHz	+1.2	+ 1.2 dB, ± 1.6 dB
4 kHz	+1.0	+ 1.0 dB, ± 1.6 dB
8 kHz	-1.1	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-8.0	- 6.6 dB, + 3.5 dB ~ - 17.0 dB

Uncertainty : ± 0.1 dB

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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 : 1012 hPa.
4. Preamplifier model : NH-25 , S/N : 64644
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 ----------

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Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 701812 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
Model : NL-52
I.D. : ET/EN/003/18
Serial No. : 00264520

Test Conditions

Date of Test : 7-Mar-17
Ambient Temperature : (23 ± 3)°C
Supply Voltage : --
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

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E

Calibration Certificate

Results :

1. **Self-generated noise:** 15.7 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		94.2
	A	F	OFF	114.0	114.0
		S	OFF		114.0
	C	F	OFF		114.0
	Z	F	OFF		114.1

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

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

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	-39.7	- 39.4 dB, ± 2 dB
63 Hz	-26.2	- 26.2 dB, ± 1.5 dB
125 Hz	-16.2	- 16.1 dB, ± 1.5 dB
250 Hz	-8.7	- 8.6 dB, ± 1 dB
500 Hz	-3.2	- 3.2 dB, ± 1.4 dB
1 kHz	0.0 (Ref)	0 dB, ± 1.1 dB
2 kHz	+1.2	+ 1.2 dB, ± 1.6 dB
4 kHz	+1.0	+ 1.0 dB, ± 1.6 dB
8 kHz	-1.1	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-8.0	- 6.6 dB, + 3.5 dB ~ - 17.0 dB

Uncertainty : ± 0.1 dB

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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.	94.1	+0.1	
Z	94.0	94.2	+0.2	

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 : 64645
5. Firmware Version: 1.7
6. Power Supply Check: OK
7. The UUT was adjusted with the laboratory's sound calibrator at the reference sound pressure level before the calibration.

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

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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

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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

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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 ----------

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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)	
02/01/18	Fine	17	09:15	09:45	66.3	68.4	64.1	0.2
08/01/18	Cloudy	18	09:29	09:59	69.3	72.3	52.3	0.3
13/01/18	Fine	13	09:00	09:30	57.9	64.3	52.5	0.3
19/01/18	Cloudy	18	10:00	10:30	71.6	74.3	67.5	0.2
25/01/18	Cloudy	16	08:46	09:16	65.0	67.5	62.9	0.2
31/01/18	Cloudy	7	09:15	09:45	66.5	68.8	53.8	0.4

Min	57.9	64.3	52.3
Max	71.6	74.3	67.5
Logarithmic Average for normal weekdays	67.7	70.5	62.5

Monitoring Station: NSR2a(*)

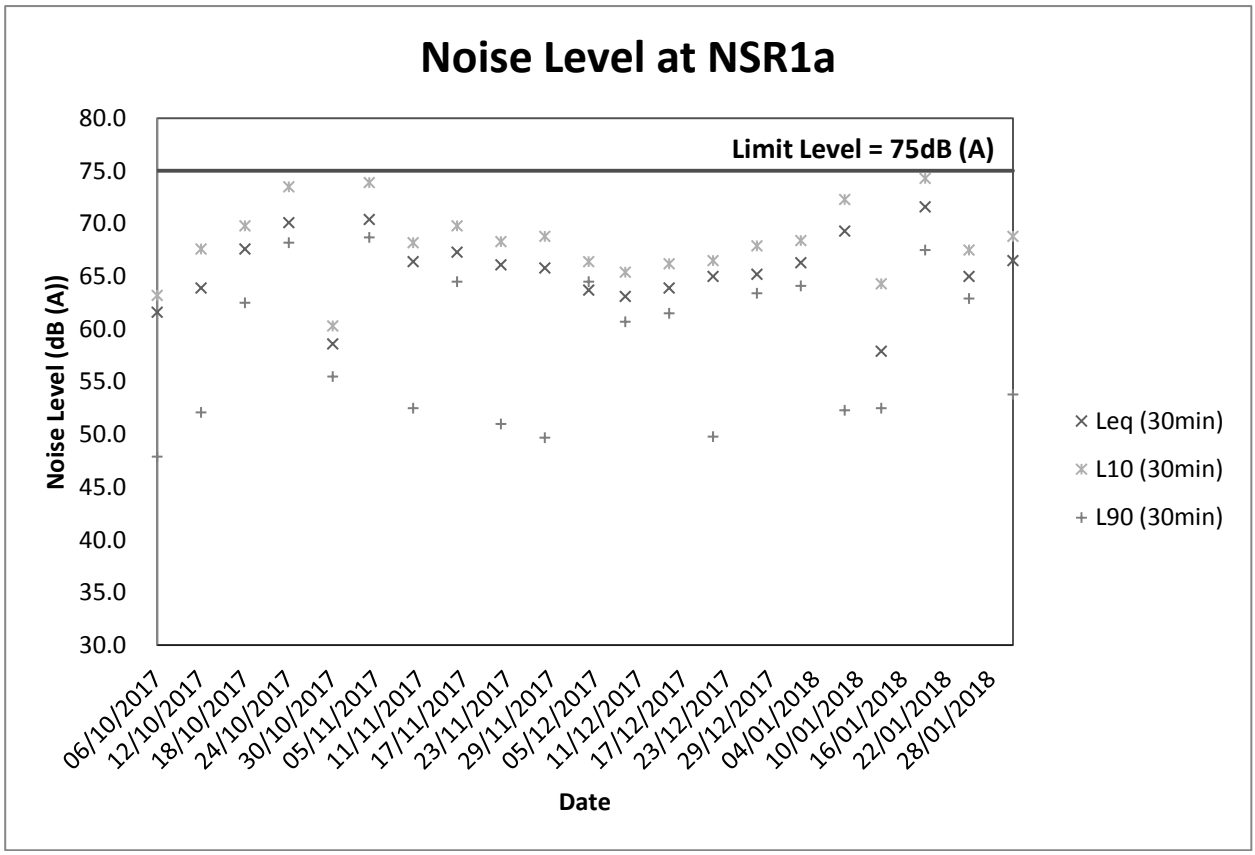
. Date	Weather	Temperature (℃)	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at NSR2a, dB (A)			Wind Speed (m/s)
					Leq (30min)	L10 (30min)	L90 (30min)	
02/01/18	Fine	17	13:40	14:10	68.2	70.6	66.8	0.3
08/01/18	Cloudy	17	10:10	10:40	68.1	72.1	56.8	0.3
13/01/18	Fine	13	13:12	13:42	60.4	66.8	54.2	0.3
19/01/18	Cloudy	18	10:35	11:05	69.4	73.0	62.8	0.1
25/01/18	Cloudy	16	13:08	13:38	64.7	68.2	61.5	0.3
31/01/18	Cloudy	7	08:35	09:05	68.0	70.9	58.3	0.2

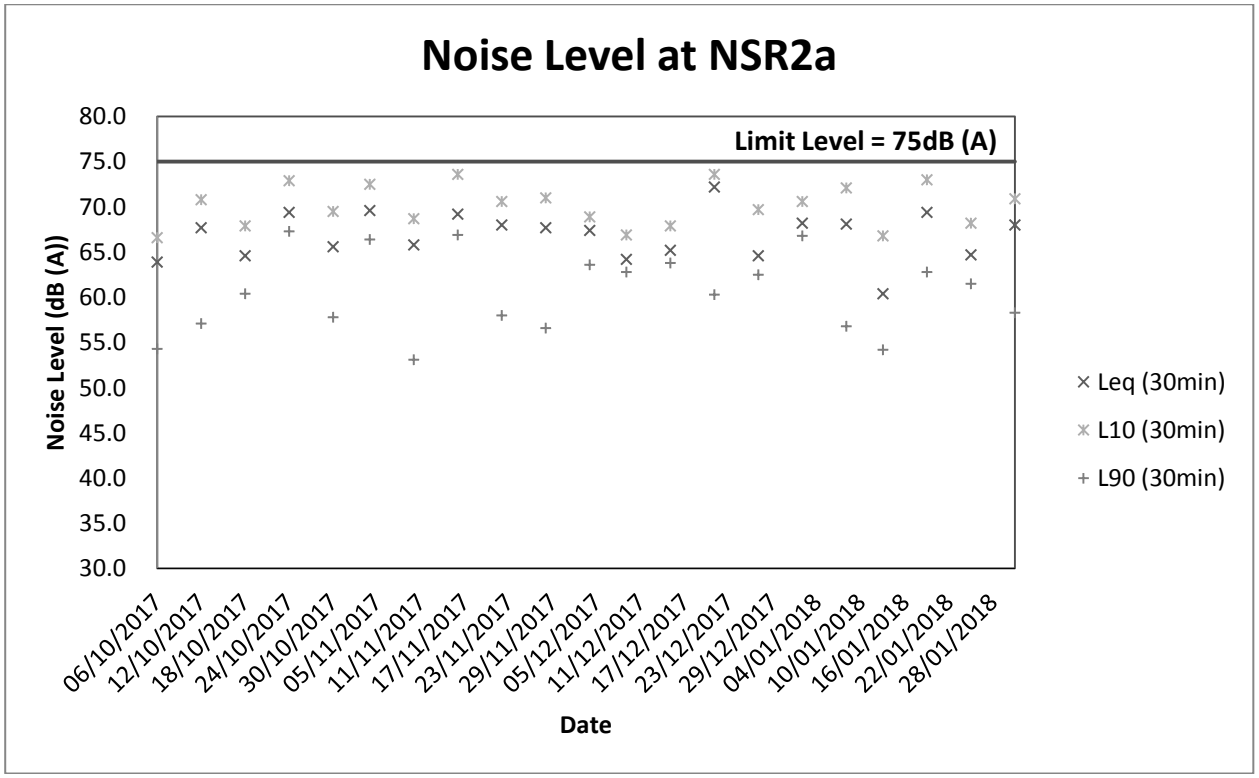
(*) : 3dB(A) correction was added to the results during the free-field noise measurements

Min	60.4	66.8	54.2
Max	69.4	73.0	66.8
Logarithmic Average for normal weekdays	67.3	70.8	62.0

Appendix E3

Graphical Plots of Impact Noise Monitoring Data


Noise Level at NSR1a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
06/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
05/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
05/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
04/01/2018
10/01/2018
16/01/2018
22/01/2018
28/01/2018
Date
Leq (30min)
L10 (30min)
L90 (30min)


Noise Level at NSR2a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
06/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
05/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
05/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
04/01/2018
10/01/2018
16/01/2018
22/01/2018
28/01/2018
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 : 18/11/2017 Due Date : 17/01/2018

Theoretical Value of Turbidity Standard (NTU)	Measured Value (NTU)	Difference % *
20	21.0	5.0
100	110	1.0
800	790	-1.3

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

Acceptance Criteria

Difference : -5 % to 5 %

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

Prepared by : _____ Checked by : _____

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Performance Check of Turbidity Meter

Equipment Ref. No. : ET/0505/014 Manufacturer : HACH

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

Date of Calibration : 18/1/18 Due Date : 17/4/18

Theoretical Value of Turbidity Standard (NTU)	Measured Value (NTU)	Difference % *
20	20.8	+4.0%
100	104	+4.0%
800	832	+4.0%

(*) 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/008/009	Manufacturer	:	YSI
Model No.	:	Pro 2030	Serial No.	:	16LL100372
Date of Calibration	:	14/10/2017	Calibration Due Date	:	13/01/2018

Temperature Verification

Ref. No. of Reference Thermometer : ET/0521/023

Ref. No. of Water Bath : ---

	Temperature (°C)			
Reference Thermometer reading	Measured	19.7	Corrected	20.0
DO Meter reading	Measured	19.9	Difference	0.1

Standardization of sodium thiosulphate ($Na_2S_2O_3$) solution

Reagent No. of $Na_2S_2O_3$ titrant	CPE/012/4.5/001/17	Reagent No. of 0.025N $K_2Cr_2O_7$	CPE/012/4.4/002/22

	Trial 1	Trial 2
Initial Vol. of $Na_2S_2O_3$ (ml)	0.00	10.15
Final Vol. of $Na_2S_2O_3$ (ml)	10.15	20.25
Vol. of $Na_2S_2O_3$ used (ml)	10.15	10.10
Normality of $Na_2S_2O_3$ solution (N)	0.02463	0.02475
Average Normality (**N**) of $Na_2S_2O_3$ solution (N)	0.02469	
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	10.90	21.90	0.00	6.20	10.30
Final Vol. of $Na_2S_2O_3$ (ml)	10.90	21.90	27.90	6.20	10.30	14.50
Vol. (**V**) of $Na_2S_2O_3$ used (ml)	10.90	11.00	6.00	6.20	4.10	4.20
Dissolved Oxygen (**DO**), mg/L	7.22	7.29	3.98	4.11	2.72	2.78
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	7.30	7.29	7.30	7.22	7.29	7.26	0.55
5	4.21	4.24	4.23	3.98	4.11	4.05	4.35
10	2.65	2.65	2.65	2.72	2.78	2.75	3.70
Linear regression coefficient				0.9968			

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/012/4.7/004/11	Reagent No. of NaCl (30ppt)	CPE/012/4.8/004/11

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	10.60	21.30	30.50
Final Vol. of $Na_2S_2O_3$ (ml)	10.60	21.30	30.50	39.60
Vol. (**V**) of $Na_2S_2O_3$ used (ml)	10.60	10.70	9.20	9.10
Dissolved Oxygen (**DO**), mg/L	7.03	7.09	6.10	6.03
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	7.08	7.11	7.1	7.03	7.09	7.06	0.56
30	6.12	6.08	6.1	6.10	6.03	6.07	0.49

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 : _____

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Internal Calibration Report of Dissolved Oxygen Meter

Equipment Ref. No.	:	ET/EW/008/006	Manufacturer	:	YSI Incorporated
Model No.	:	Pro 2030	Serial No.	:	12A100354
Date of Calibration	:	15/1/2018	Calibration Due Date	:	14/4/2018

Temperature Verification

Ref. No. of Reference Thermometer : ET/0521/026

Ref. No. of Water Bath : ET/0533/001

	Temperature (°C)			
Reference Thermometer reading	Measured	19.4	Corrected	19.6
DO Meter reading	Measured	19.2	Difference	0.4

Standardization of sodium thiosulphate ($Na_2S_2O_3$) solution

Reagent No. of $Na_2S_2O_3$ titrant	CPE/012/4.5/001/18	Reagent No. of 0.025N $K_2Cr_2O_7$	CPE/012/4.4/002/25

	Trial 1	Trial 2
Initial Vol. of $Na_2S_2O_3$ (ml)	0.50	0.90
Final Vol. of $Na_2S_2O_3$ (ml)	41.85	42.70
Vol. of $Na_2S_2O_3$ used (ml)	41.35	41.80
Normality of $Na_2S_2O_3$ solution (N)	0.0242	0.0239
Average Normality (**N**) of $Na_2S_2O_3$ solution (N)	0.0241	
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)	1.00	10.60	0.15	7.35	21.65	24.85
Final Vol. of $Na_2S_2O_3$ (ml)	10.50	20.20	7.35	14.50	24.85	28.10
Vol. (**V**) of $Na_2S_2O_3$ used (ml)	9.50	9.60	7.20	7.15	3.20	3.25
Dissolved Oxygen (**DO**), mg/L	6.15	6.21	4.66	4.63	2.07	2.10
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	6.02	6.05	6.04	6.15	6.21	6.18	2.99
5	4.45	4.53	4.49	4.66	4.63	4.64	3.39
10	2.00	2.02	2.01	2.07	2.10	2.08	3.66
Linear regression coefficient				0.99208			

Internal Calibration Report of Dissolved Oxygen Meter

Zero Point Checking

DO meter reading, mg/L	0.04

Salinity Checking

Reagent No. of NaCl (10ppt)	CPE/012/4.7/004/15	Reagent No. of NaCl (30ppt)	CPE/012/4.8/004/15

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)	0.45	14.60	1.10	14.20
Final Vol. of $Na_2S_2O_3$ (ml)	14.60	28.70	14.20	27.15
Vol. (**V**) of $Na_2S_2O_3$ used (ml)	14.15	14.10	13.10	12.95
Dissolved Oxygen (**DO**), mg/L	9.15	9.12	8.48	8.38
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	9.15	9.21	9.18	9.15	9.12	9.14	0.44
30	8.22	8.25	8.24	8.48	8.38	8.43	1.86

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

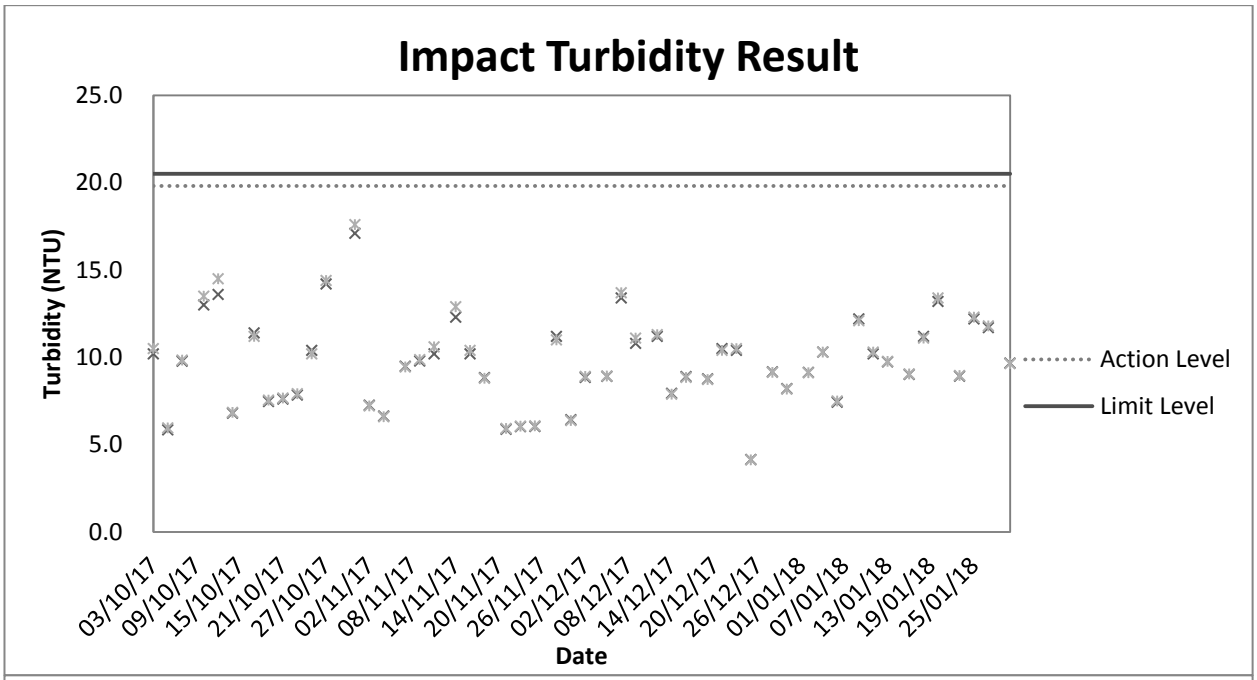
Date	Sampling Duration	Weather Condition	Sampling Level	Turbidity (NTU)			Dissolved Oxygen (DO) (mg/L)			Suspended Solid (SS) (mg/L)		
				1	2	Ave.	1	2	Ave.	1	2	Ave.
02/01/18	11:30-11:45	Cloudy	Mid-Depth	9.1	9.1	9.1	2.87	2.83	2.85	6.8	5.4	6.1
04/01/18	08:35-08:45	Cloudy	Mid-Depth	10.3	10.3	10.3	2.89	2.87	2.88	9.9	4.2	7.1
06/01/18	12:00-12:05	Drizzle	Mid-Depth	7.4	7.5	7.5	2.27	2.29	2.28	<3.0*	<3.0*	<3.0*
09/01/18	11:15-11:20	Cloudy	Mid-Depth	12.2	12.1	12.2	2.49	2.45	2.47	<3.0*	<3.0*	<3.0*
11/01/18	09:50-10:05	Cloudy	Mid-Depth	10.2	10.3	10.3	2.79	2.83	2.81	5.2	13.5	9.4
13/01/18	14:15-14:30	Fine	Mid-Depth	9.7	9.8	9.8	2.93	2.89	2.91	5.2	3.6	4.4
16/01/18	12:20-12:40	Fine	Mid-Depth	9.0	9.1	9.0	2.33	2.31	2.32	6.0	4.8	5.4
18/01/18	09:30-09:35	Fine	Mid-Depth	11.2	11.1	11.2	2.32	2.34	2.33	9.0	7.8	8.4
20/01/18	12:45-12:50	Cloudy	Mid-Depth	13.2	13.4	13.3	2.19	2.23	2.21	7.1	8.6	7.9
23/01/18	13:45-13:50	Fine	Mid-Depth	8.9	9.0	8.9	2.29	2.27	2.28	7.7	7.8	7.8
25/01/18	13:40-13:55	Cloudy	Mid-Depth	12.2	12.3	12.3	2.76	2.74	2.75	7.2	7.3	7.3
27/01/18	12:10-12:25	Cloudy	Mid-Depth	11.7	11.8	11.8	2.63	2.66	2.65	10.8	11.0	10.9
30/01/18	15:50-16:10	Cloudy	Mid-Depth	9.7	9.6	9.7	2.87	2.85	2.86	<5.0#	<5.0#	<5.0#
				Min		7.4	Min		2.19	Min		<3.0
				Max		13.4	Max		2.93	Max		13.5
				Average		10.4	Average		2.58	Average		5.7

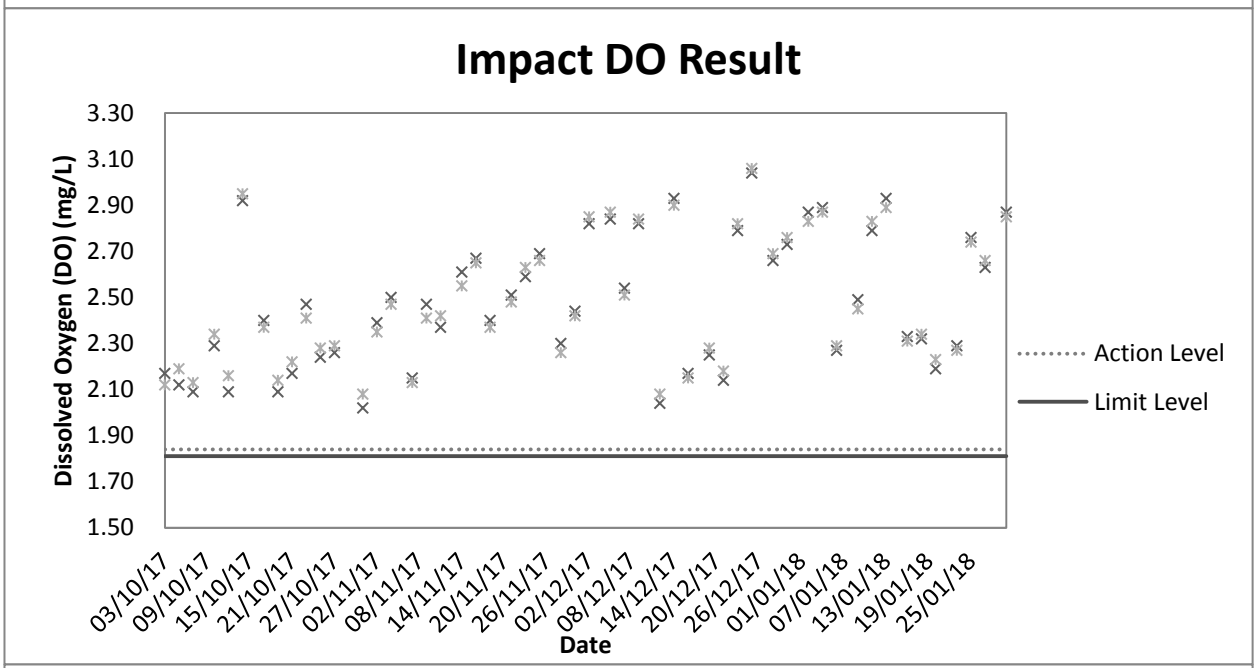
Remark(s):

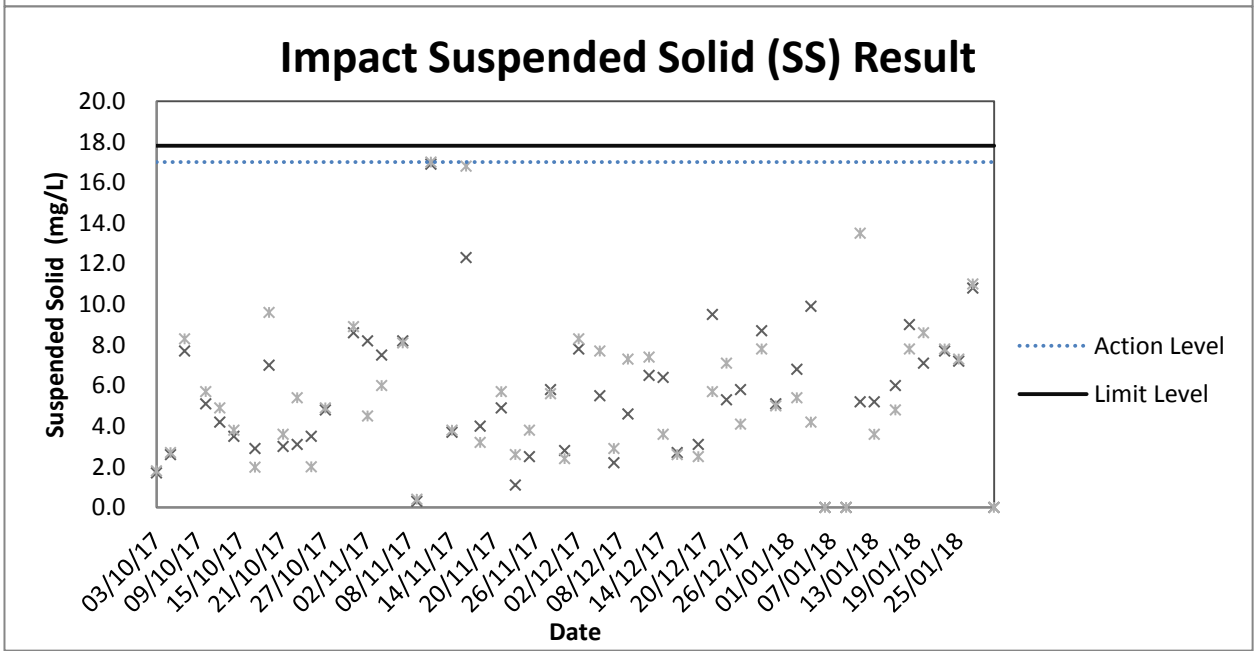
1. (*) 300ml sample was used for Suspended Solids analysis. Practical Quantitation Limit of Suspended Solids reported less than 3.0 mg/L. The results reported as <3.0 would be counted as zero for average measurement.
2. (#) 200ml sample was used for Suspended Solids analysis. Practical Quantitation Limit of Suspended Solids reported less than 5.0 mg/L. The results reported as <5.0 would be counted as zero for average measurement.

Appendix F3

Graphical Plots of Impact Water Quality Monitoring Data


Impact Turbidity Result
Turbidity (NTU)
25.0
20.0
15.0
10.0
5.0
0.0
03/10/17
09/10/17
15/10/17
21/10/17
27/10/17
02/11/17
08/11/17
14/11/17
20/11/17
26/11/17
02/12/17
08/12/17
14/12/17
20/12/17
26/12/17
01/01/18
07/01/18
13/01/18
19/01/18
25/01/18
Date
Action Level
Limit Level


Impact DO Result
Dissolved Oxygen (DO) (mg/L)
3.30
3.10
2.90
2.70
2.50
2.30
2.10
1.90
1.70
1.50
03/10/17
09/10/17
15/10/17
21/10/17
27/10/17
02/11/17
08/11/17
14/11/17
20/11/17
26/11/17
02/12/17
08/12/17
14/12/17
20/12/17
26/12/17
01/01/18
07/01/18
13/01/18
19/01/18
25/01/18
Date
Action Level
Limit Level


Impact Suspended Solid (SS) Result
Suspended Solid (mg/L)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
03/10/17
09/10/17
15/10/17
21/10/17
27/10/17
02/11/17
08/11/17
14/11/17
20/11/17
26/11/17
02/12/17
08/12/17
14/12/17
20/12/17
26/12/17
01/01/18
07/01/18
13/01/18
19/01/18
25/01/18
Date
Action Level
Limit Level

Appendix G

Weather Condition

Daily Extract of Meteorological Observations, January 2018 – 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	1020.5	20.3	16.5	13.6	11.4	73	0.0	060	4.6
02	1019.3	21.7	18.4	15.3	12.9	71	0.0	060	5.5
03	1018.5	24.9	20.2	16.8	13.3	66	0.0	090	7.4
04	1016.5	22.8	19.6	17.5	14.7	74	0.0	070	8.2
05	1015.3	23.8	19.5	16.4	16.2	82	0.0	060	5.1
06	1014.6	17.1	16.1	14.7	14.8	92	8.5	070	7.2
07	1014.1	19.6	17.4	14.5	15.6	89	15.5	070	7.0
08	1016.1	18.8	14.6	8.6	13.4	92	12.5	340	7.1
09	1024.2	10.6	8.4	6.5	3.4	73	10.0	030	9.9
10	1025.6	15.9	12.8	10.3	-3.9	32	0.0	040	11.5
11	1026.6	17.1	13.8	11.2	-5.6	26	0.0	040	11.0
12	1027.5	16.9	11.6	7.0	-3.8	40	0.0	040	8.8
13	1026.1	16.7	11.4	5.8	4.3	66	0.0	070	5.3
14	1023.0	20.3	13.9	8.6	5.8	63	0.0	050	5.2
15	1018.9	21.7	14.1	8.4	9.6	78	0.0	270	3.4
16	1015.5	22.8	16.2	11.2	11.2	76	0.0	250	3.1
17	1014.6	25.6	17.5	11.0	11.7	73	0.0	310	2.3
18	1016.5	25.2	18.2	12.3	13.8	78	0.0	050	2.2
19	1017.7	20.6	19.0	17.1	16.7	87	0.0	060	3.0
20	1016.6	23.4	19.7	17.1	15.9	79	0.0	070	5.2
21	1015.5	23.0	18.4	16.1	15.4	83	0.0	060	4.4
22	1013.9	25.5	19.4	14.9	16.2	83	0.0	180	3.5
23	1015.2	22.5	19.0	15.6	15.2	80	0.0	070	4.3
24	1015.2	22.1	18.3	16.7	13.1	72	0.0	080	9.4
25	1015.4	21.2	17.8	15.4	13.3	75	0.0	080	9.1
26	1017.2	21.5	17.3	14.9	13.8	80	0.0	070	5.0
27	1017.2	19.0	15.5	12.9	10.8	74	0.0	070	8.1
28	1015.6	18.0	15.4	10.4	11.6	78	0.0	060	7.2
29	1021.6	10.4	8.1	6.8	5.0	81	2.0	020	9.0
30	1021.5	8.2	7.3	5.9	4.4	82	2.0	040	8.3
31	1022.6	9.0	7.8	6.8	5.9	88	20.0	350	7.1

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: 5-1-18 **Inspected By:** Frankie Tang

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

Participants: Patrick Leung, TY Lam, Johnny So, Cheng Yan

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)	☐	☐	☑	item 1
	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 the action taken on 29.12.17, all item was improved. **Observations** Item 1: Oil Stain was observed on the ground near AB areas
Corrective Actions – Mitigation Measures Implemented or Proposed (if any): Item 1: To clean the oil stain properly.

Signature:
ET's representative

Name: TANG CHUNG HANG

Date: 5.1.18

Signature:
Contractor's representative

Name:

Date:

Signature:
ET Leader

Name: C. L. Lau

Date: 6.1.2018

Signature:
SO's representative

Name:

Date:

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 29/12/2017, the oil stain was cleared.	--	180105_001	No	--
1	 Oil stain was observed on the ground near AB area.	To clear the oil stain properly	180105_001	Yes	12/01/2018

Environmental Site Inspection Checklist – San Wai

Inspection Date: 12.1.18 **Inspected By:** Frankie Tang

Time: 9:00 **Weather Condition:** Fine

Participants: Patrick Leung, Teddy Yuen, TTLam, Johnny So, Cheng Kin

		N/A	Yes	No	Remarks
1	**Permits/Licenses**				
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 scaling with latex, vinyl, bitumen, concrete or other suitable surface stabilizer within 6 months after the last construction activity?	☑	☐	☐	
2.17	Are stockpile of dusty material covered entirely by impervious sheeting; placed in an area sheltered on the top and the 3 sides; or sprayed with water or dust suppression chemical?	☑	☐	☐	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	☐	☑	☐	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	☑	☐	☐	
2.20	Is every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) covered entirely by impervious sheeting or placed in an area sheltered on the top and 3 sides?	☑	☐	☐	
2.21	Are the approval or exempted NRMM labels painted or securely fixed on site machines or vehicles and displayed at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation?	☐	☑	☐	

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

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

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

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

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

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

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

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

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

Follow up actions for pervious Site Audit: Follow up action to item on 5.1.18, all item was improved **Observations** No observation was recorded on this site inspection.
Corrective Actions – Mitigation Measures Implemented or Proposed (if any):

Signature:
ET's representative

Name: TANG CHUNG HANG

Date: 12-1-18

Signature:
Contractor's representative

Name: Cherry Ye

Date: 12/1/18

Signature:
ET Leader

Name: C. H. Lau

Date: 13/01/2018

Signature:
SO's representative

Name:

Date:

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 05/01/2017, the oil stain was cleared.	--	180112_001	No	--

Environmental Site Inspection Checklist – San Wai

Inspection Date: 19 January 2018 **Inspected By:** Ivy L.

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

Participants: Patrick Leung, TY Lau, Johnny So, Cheng 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?	☐	☐	☑	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 on 19/1/2018, all items were improved.
Observations	1. Stagnant water was observed near the site boundary
Corrective Actions – Mitigation Measures Implemented or Proposed (if any):	1. The contractor should clear the stagnant water

Signature:
ET's representative

Name: Ivy Lo
Date: 19/1/2018

Signature:
Contractor's representative

Name:
Date:

Signature:
ET Leader

Name: C. L. Lau
Date: 20/1/2018

Signature:
SO's representative

Name:
Date:

Summary of the Weekly Environmental Site Inspection

Item	Details of observations	Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Proposed Follow up Date
1	 Stagnant water was observed near the site boundary.	To clear the stagnant water	180119_001	Yes	26/01/2018

Environmental Site Inspection Checklist – San Wai

Inspection Date: 26-1-18 **Inspected By:** Frankie Tang

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

Participants: Patrick Leung, Tylon, Johnny So, Chemy Ye

		N/A	Yes	No	Remarks
1	**Permits/Licenses**				
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?	☐	☐	☒	N/A
	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 19.1.18, all item was improved. **Observations** Item 1: Oil stain near sheet piling machine was observed
Corrective Actions – Mitigation Measures Implemented or Proposed (if any): Item 1: To clean the oil stain properly

Signature: **ET's representative**	**Signature:** **Contractor's representative**
Name: Tang Chung Hung Date: 26-1-18	Name: Date:
Signature: **ET Leader**	**Signature:** **SO's representative**
Name: C. L. Lau Date: 27.1.18	Name: Date:

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 19/01/2017, the stagnant water was cleared.	--	180126_001	No	--
1	 Oil stain near sheet piling machine was observed.	To clear the oil stain properly	180126_002	Yes	02/02/2018

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: 2018

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

Contract No.: DC/2013/10

Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Broken Concrete (see Note [3])	Reused in the Contract (see Note)	Reused in other Projects	Disposed as Public Fill (see Note [4])	Imported Fill	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	8.389	0.000	0.000	0.000	8.389	0.000	0.000	0.000	0.000	0.000	18.480
Feb											
Mar											
Apr											
May											
Jun											
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	8.389	0.000	0.000	0.000	8.389	0.000	0.000	0.000	0.000	0.000	18.480

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.

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-RN0811-17	16/12/2017	12/06/2018	Valid
7	Construction Noise Permit (for pilling works)	PP-RN0053-17	02/01/2018	30/06/2018	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

January 2018

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

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

February 2018

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

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. : ENA80155
Date of issue : 09 January 2018
Page No. : 1 of 1

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 : 03 January 2018
Sample Description : The sample was collected by the Customer.
The sample was stored in 1L plastic bottle (for pH and Total Suspended Solids) 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 : 04 January 2018

Result

Customer Sample ID	Lab Ref No	Test	Method Used	Result	Date Tested
P1	W40463 (01)	pH	In house method TPE/003/W	7.1 (at 20°C)	04 January 2018
		Total Suspended Solids	In house method TPE/006/W	8 mg/L *	04 January 2018
	W40463 (04)	Chemical Oxygen Demand	In house method TPE/002/W	17 mgO_2/L	04 January 2018

Remark (if any) : (*) 300ml sample was used for Total Suspended Solids analysis. PQL of Total Suspended Solids reported less than 3 mg/L.

Approved Signatory :
LAU, Chi Leung

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- END OF REPORT -

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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. : ENA80156
Date of issue : 09 January 2018

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 : 03 January 2018
Sample Description : The sample was collected by the Customer.
The sample was stored in 1L plastic bottle (for pH and Total Suspended Solids) 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 : 04 January 2018

Result

Customer Sample ID	Lab Ref No	Test	Method Used	Result	Date Tested
P6	W40463 (02)	pH	In house method TPE/003/W	7.6 (at 20°C)	04 January 2018
		Total Suspended Solids	In house method TPE/006/W	4 mg/L *	04 January 2018
	W40463 (05)	Chemical Oxygen Demand	In house method TPE/002/W	<10 mgO_2/L	04 January 2018

Remark (if any) : (*) 300ml sample was used for Total Suspended Solids analysis. PQL of Total Suspended Solids reported less than 3 mg/L.

Approved Signatory :
LAU, Chi Leung

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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. : ENA80157
Date of issue : 09 January 2018

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 : 03 January 2018
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 : 04 January 2018

Result

Customer Sample ID	Lab Ref No	Test	Method Used	Result	Date Tested
P8	W40463 (03)	pH	In house method TPE/003/W	8.8 (at 20°C)	04 January 2018
		Total Suspended Solids	In house method TPE/006/W	27 mg/L *	04 January 2018
	W40463 (06)	Chemical Oxygen Demand	In house method TPE/002/W	16 mgO_2/L	04 January 2018

Remark (if any) : (*) 300ml sample was used for Total Suspended Solids analysis. PQL of Total Suspended Solids reported less than 3 mg/L.

Approved Signatory :
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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. : ENA80333
Date of issue : 19 January 2018

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 : 16 January 2018
Sample Description : The sample was collected by the Customer.
The sample was stored in 1L plastic bottle (for pH and Total Suspended Solids) 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 : 16 January 2018

Result

Customer Sample ID	Lab Ref No	Test	Method Used	Result	Date Tested
P1	W40518 (01)	pH	In house method TPE/003/W	8.2 (at 20°C)	16 January 2018
		Total Suspended Solids	In house method TPE/006/W	9 mg/L	17 January 2018
	W40518 (03)	Chemical Oxygen Demand	In house method TPE/002/W	11 mgO_2/L	17 January 2018

Remark (if any) : The results relate to the tested sample as received.

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E: etl@ets-testconsult.com
W: www.ets-testconsult.com

TEST REPORT

Environmental Testing of Water & Wastewater

Report No. : ENA80334
Date of issue : 19 January 2018

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 : 16 January 2018
Sample Description : The sample was collected by the Customer.
The sample was stored in 1L plastic bottle (for pH and Total Suspended Solids) 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 : 16 January 2018

Result

Customer Sample ID	Lab Ref No	Test	Method Used	Result	Date Tested
P6	W40518 (02)	pH	In house method TPE/003/W	8.1 (at 20°C)	16 January 2018
		Total Suspended Solids	In house method TPE/006/W	2 mg/L	17 January 2018
	W40518 (04)	Chemical Oxygen Demand	In house method TPE/002/W	<10 mgO_2/L	17 January 2018

Remark (if any) : The results relate to the tested sample as received.

Approved Signatory :
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ETS-TESTCONSULT LTD.™

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

TEST REPORT

Environmental Testing of Water & Wastewater

Report No. : ENA80682
Date of issue : 02 February 2018

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 : 30 January 2018
Sample Description : The sample was collected by the Customer.
The sample was stored in 1L plastic bottle (for pH and Total Suspended Solids) 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 : 30 January 2018

Result

Customer Sample ID	Lab Ref No	Test	Method Used	Result	Date Tested
P1	W40603 (01)	pH	In house method TPE/003/W	8.6 (at 20°C)	30 January 2018
		Total Suspended Solids	In house method TPE/006/W	10 mg/L	31 January 2018
	W40603 (03)	Chemical Oxygen Demand	In house method TPE/002/W	<10 mgO_2/L	31 January 2018

Remark (if any) : The results relate to the tested sample as received.

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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. : ENA80683
Date of issue : 02 February 2018

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 : 30 January 2018
Sample Description : The sample was collected by the Customer.
The sample was stored in 1L plastic bottle (for pH and Total Suspended Solids) 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 : 30 January 2018

Result

Customer Sample ID	Lab Ref No	Test	Method Used	Result	Date Tested
P6	W40603 (02)	pH	In house method TPE/003/W	7.9 (at 20°C)	30 January 2018
		Total Suspended Solids	In house method TPE/006/W	5 mg/L	31 January 2018
	W40603 (04)	Chemical Oxygen Demand	In house method TPE/002/W	<10 mgO_2/L	31 January 2018

Remark (if any) : The results relate to the tested sample as received.

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Figure 1

Locations of Air Quality and Noise Monitoring Stations

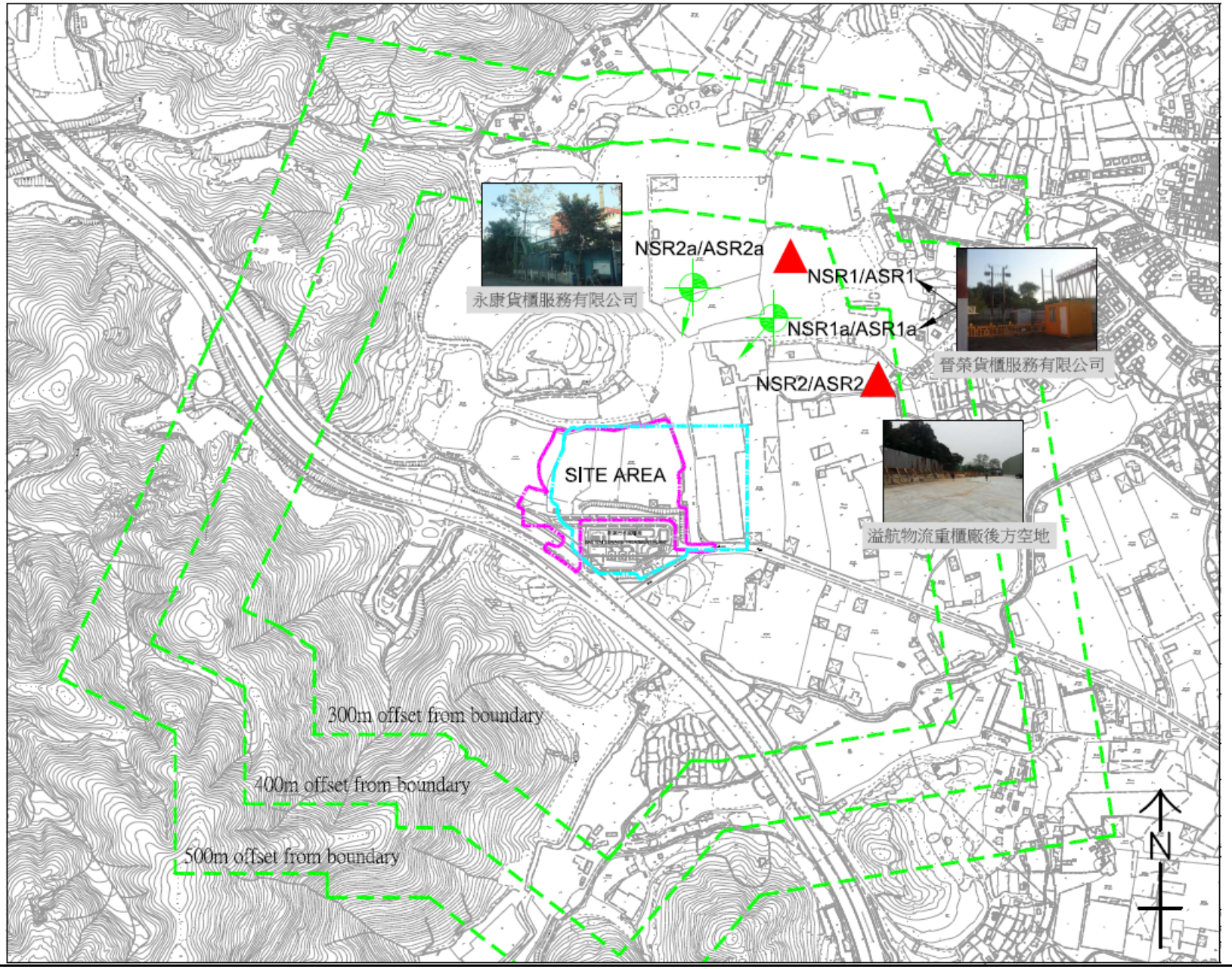

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Figure 1 Locations of Air Quality and Noise Monitoring Stations

Figure 2

Locations of Water Quality Monitoring Station

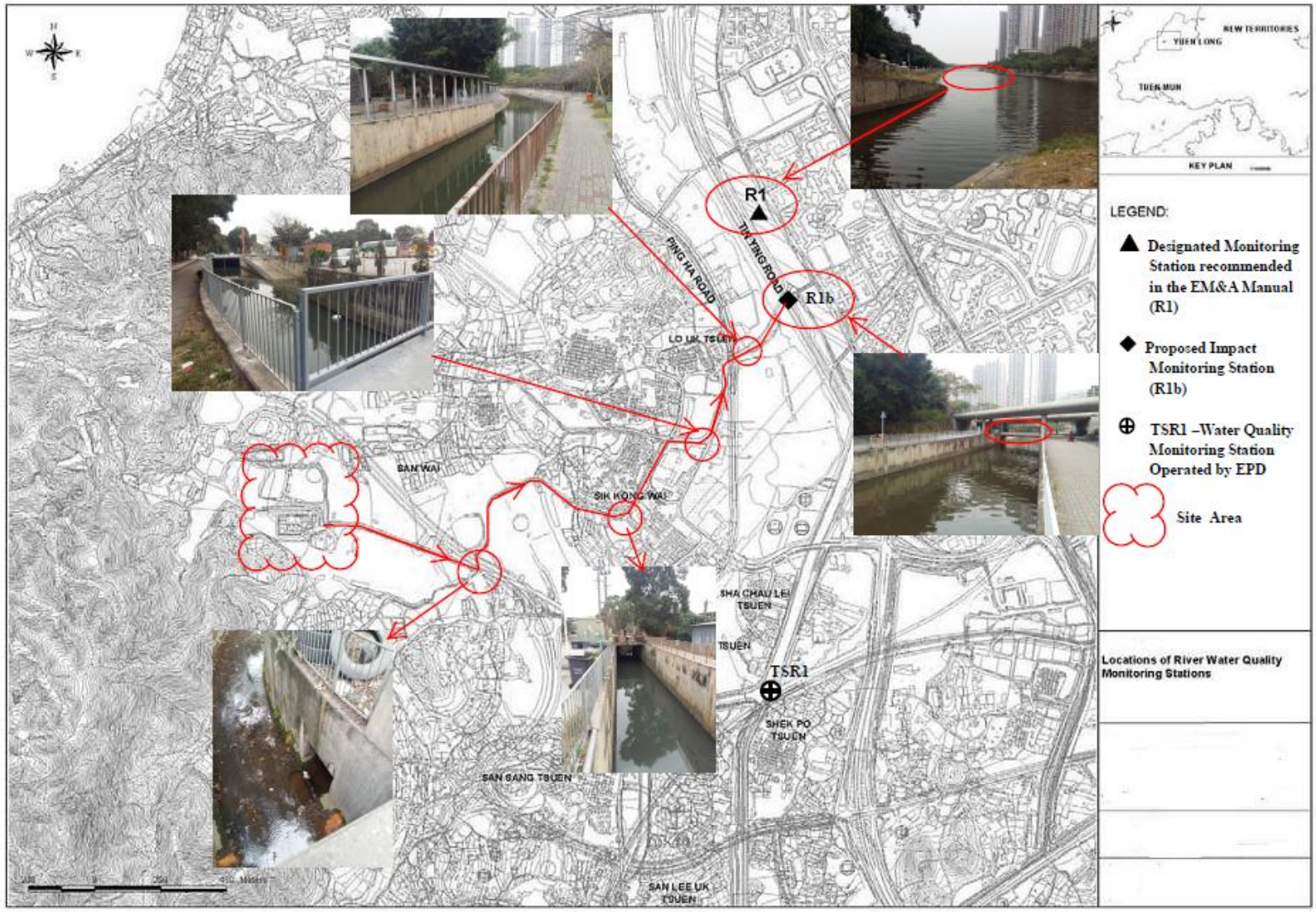

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Figure 2 Locations of Water Quality Monitoring Station