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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. 10**

(01 FEBRUARY – 28 FEBRUARY 2018)

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Issued Date: 09 March 2018

Report No.: ENA81088

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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: HKDSD203/50/104886

Date: 14 March 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.10 (February 2018)

We refer to emails of 8 and 14 March 2018 from ETS-Testconsult Limited attaching the Monthly Environmental Monitoring and Audit Report No.10 (February 2018).

We have no further comment and hereby verify the Monthly Environmental Monitoring and Audit Report No.10 (February 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

Adi Lee
Independent Environmental Checker

LYMA/LHHN/WCKJ/lhmlh

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



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EXECUTIVE SUMMARY

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

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

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

This is the tenth 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 February 2018 to 28 February 2018.

Site Activities

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

- *Substructure (ELS & Bulk excavation);*
- *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);*
- *RC Trench and Odour Pipe;*
- *Process Pipe*
- *Emergency By-Pass Pipe;*
- *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: 5 Occasions at 2 designated locations*
- *1-hour TSP Monitoring: 15 Occasions at 2 designated locations*
- *Noise Monitoring (Day-time): 5 Occasions at 2 designated locations*
- *Water Quality Monitoring: 12 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 (rc structure);
- Removal of ELS;
- Backfilling;
- Superstructure (rc and metalworks);
- Water Tightness Test
- 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);
- CLP Cable Duct and Draw Pits (within the Site);
- EVA (Road & Drainage);
- RC Trench and Odour Pipe;
- Emergency By-Pass Pipe



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 m³/d to 200,000 m³/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 tenth 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 February 2018 to 28 February 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.checkk.com
	Environmental Supervisor	Ms Cherry Ye	6237 1125	cherry.ye@c302.checkk.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);*
- *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);*
- *RC Trench and Odour Pipe;*
- *Process Pipe*
- *Emergency By-Pass Pipe;*
- *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 0.6m³/min and 1.7m³/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 $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ 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 15 occasions of 1-hour TSP monitoring and 5 events of 24-hour TSP monitoring were undertaken and the schedule was shown in **Table 2.3**

Table 2.3 Time Schedule of Impact Air Quality Monitoring

February 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			

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 ($\mu\text{g}/\text{m}^3$)	For baseline level $\leq 384\mu\text{g}/\text{m}^3$, Action level = (baseline level plus*1.3 + Limit Level) / 2	500 $\mu\text{g}/\text{m}^3$
	For baseline level $>384\mu\text{g}/\text{m}^3$, Action level = Limit Level	
24-hour TSP Level ($\mu\text{g}/\text{m}^3$)	For baseline level $< 200\mu\text{g}/\text{m}^3$, Action level = (baseline level plus*1.3 + Limit Level) / 2	260 $\mu\text{g}/\text{m}^3$
	For baseline level $\geq 200\mu\text{g}/\text{m}^3$, 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 ($\mu\text{g}/\text{m}^3$)		24-hr TSP ($\mu\text{g}/\text{m}^3$)	
	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	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action Level being exceeded for two or more consecutive samples	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC, ER and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 exceedance s; 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 (L_x). 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

3.3. Monitoring Duration and Frequency

- 3.3.1. Impact noise monitoring for the A-weighted levels L_{eq} , L_{10} and L_{90} in 30-minute interval was recorded once per 6 days.
- 3.3.2. In this reporting period, a total of 5 occasions of noise monitoring were undertaken and the schedule was shown in **Table 3.2**

Table 3.2 Time Schedule of Impact Noise Monitoring

February 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			

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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposal to IEC; 2. Implement noise mitigation proposals.
Limit level	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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

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

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°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 19 th ed 2130 B	0.01 mg/L
Total suspended solids	In house method refer to APHA 19 th 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 12 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

February 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			

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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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
	6. Contractor; 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
	7. mitigation measures are implemented; 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.	7. measures; 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 02, 09, 14 & 23 February 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
26 January 2018	1. Oil stain near sheet piling machine was observed.	• The oil stain was cleared.	02 February 2018
02 February 2018	1. Stagnant water was found accumulated near Portion P1.	1. Stagnant water was cleared near Portion P1.	09 February 2018
09 February 2018	--	--	--
14 February 2018	--	--	--
23 February 2018	1. Improper drip tray was observed. 2. Generator without drip tray was observed at Portion CEPT. Reminder 1 – The contractor was reminded to clear the stagnant pool frequently.	Follow-up actions for outstanding observation will be inspected during the next site inspection.	--

5.2. Landscape and Visual Audit

- 5.2.1. Landscape and visual audits were undertaken at least once every two weeks throughout the construction period by a competent landscape architect. During the reporting period, audits were carried out on 09 & 23 February 2018.
- 5.2.2. Observations and reminders were summarized in the landscape and visual impact assessment checklists which are attached in **Appendix I**.

5.3. Advice on the Solid and Liquid Waste Management Status

- 5.3.1. All types of waste arising from the construction work are classified into the following:
- Construction & Demolition (C&D) Material;
 - Chemical Waste;
 - General Refuse; and
 - Excavated Soil
- 5.3.2. The quantities of waste for disposal in this Reporting Period are summarized in **Table 5.2** and **Table 5.3** and the Monthly Summary Waste Flow Table is shown in **Appendix J**. Whenever possible, materials were reused on-site as far as practicable.

Table 5.2 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity	Disposal Location
Reused in this Contract (Inert) (m ³)	0	--
Reused in other Projects (Inert) (m ³)	0	--
Disposed as Public Fill (Inert) (m ³)	3,231	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)	200	--
Recycled Plastic (kg)	0	--
Chemical Wastes (kg)	0	--
General Refuses (m ³)	2,700	North East New Territories (NENT) Landfill

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

5.4. Discharge License and Results of Effluent Monitoring

- 5.4.1. Effluent quality was monitored in the reporting month in accordance with the EM&A Manual at the discharge point. A discharge license under Water Pollution Control Ordinance was obtained by the Contractor upon commencement of the Project. Self-monitoring would be performed as per the requirement under the discharge license. According to the EM&A Manual, pH, chemical oxygen demand and total suspended solid are required to be analysed at least once every two week.
- 5.4.2. Effluent water samples were scheduled to be collected on 13 and 27 February 2018. As there was no water discharged from 13 to 26 February 2018 and the Wetsep at P8 was not operated during February 2018, the effluent water samples were sampled by the Contractor on 27 February 2018 at P1 and P6. The required testing parameter including pH, chemical oxygen demand and total

suspended solid were carried out in a HOKLAS laboratory. The methods of chemical oxygen demand and total suspended solid determination follow APHA 19ed 5220 B and APHA 19ed 2540 D respectively. The laboratory reports for the discharge water are presented in **Appendix N**.

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

5.5. Environmental Licenses and Permits

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

5.6. Implementation Status of Environmental Mitigation Measures

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

Dust Mitigation Measures

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

Noise Mitigation Measures

- a. Quiet plants should be used in order to reduce the noise impacts to protect the nearby NSRs.
- b. Temporary and Movable Noise Barriers should be used in order to reduce the noise impact to the surrounding sensitive receivers

- c. The contractor should site noisy equipment and activities as far from sensitive receivers as practical.
- d. Idle equipment should be turned off or throttled down.
- e. Construction activities should be planned so that parallel operation of several sets of equipment close to a given receiver is avoided
- f. Construction plant should be properly maintained and operated.

Water Quality Mitigation Measures

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

Waste Management Mitigation Measures

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

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

5.7. Summary of Exceedance of the Environmental Quality Performance Limit

- 5.7.1. There was no Action and Limit level exceedance of 1-hour and 24-hr TSP monitoring was recorded at station ASR1a and ASR2a during this reporting month.
- 5.7.2. There was no Action and Limit Level exceedance for noise recorded at station NSR1a and NSR2a during the reporting period.
- 5.7.3. There was no Action and Limit Level exceedance for water quality monitoring recorded at station R1b during the reporting period.

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

- 5.8.1. There were no complaints received during the reporting period.
- 5.8.2. There were no notifications of summons or prosecutions received during the reporting period.
- 5.8.3. A summary of environmental complaints, notifications of summons and successful prosecutions was given in **Table 5.4**.

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

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

6. FUTURE KEY ISSUES

6.1. Construction Programme for the Coming Months

- 6.1.1. As informed by the Contractor, the major construction activities for March 2018 are included:

- Substructure (rc structure);
- Removal of ELS;
- Backfilling;
- Superstructure (rc and metalworks);
- Water Tightness Test
- 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);
- CLP Cable Duct and Draw Pits (within the Site);
- EVA (Road & Drainage);
- RC Trench and Odour Pipe;
- Emergency By-Pass Pipe

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 March 2018 is provided in **Appendix M**.

7. CONCLUSION

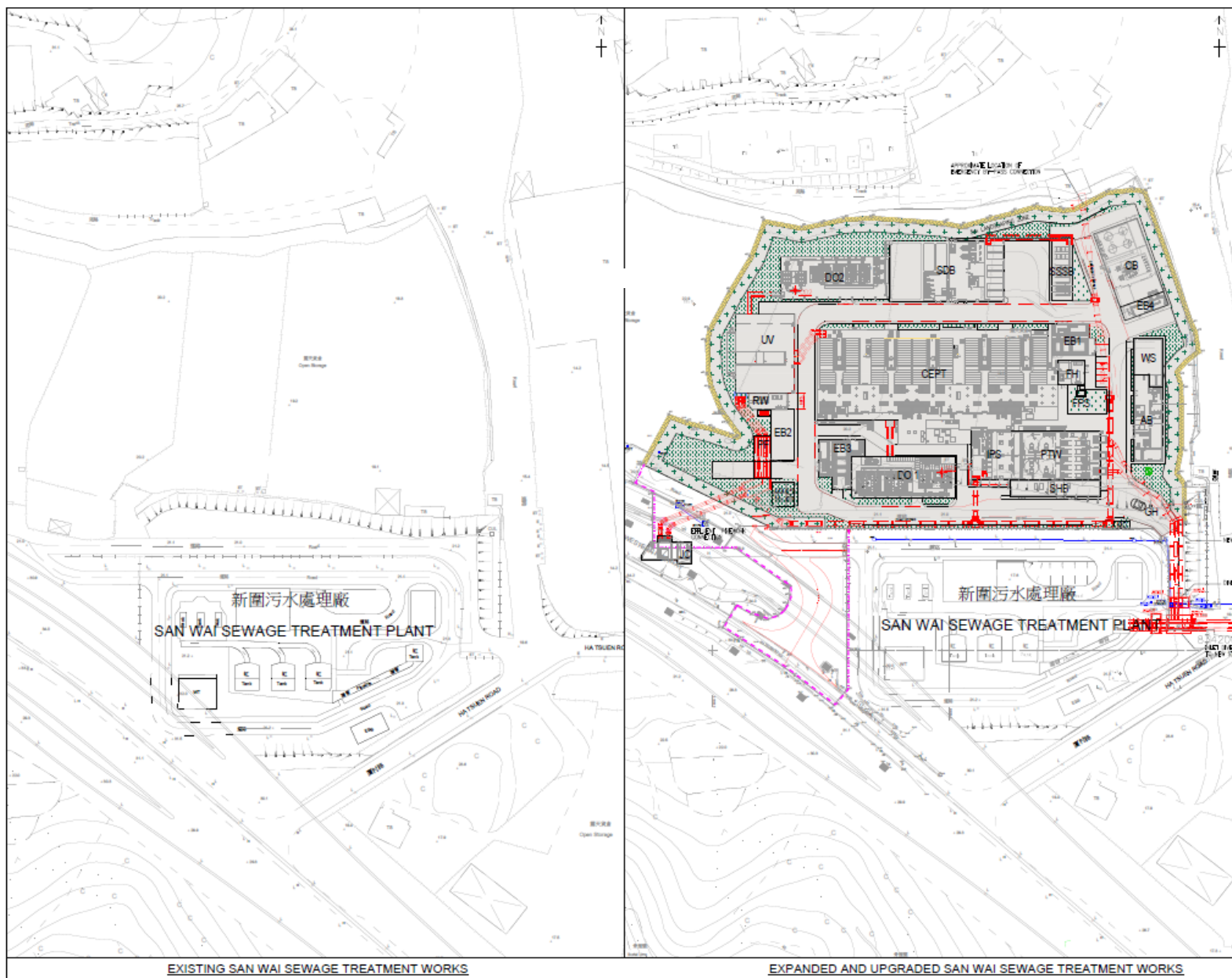
7.1. Conclusions

- 7.1.1.** There was no Action and Limit level exceedance of 1-hour and 24-hr TSP monitoring was recorded at station ASR1a and 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 -

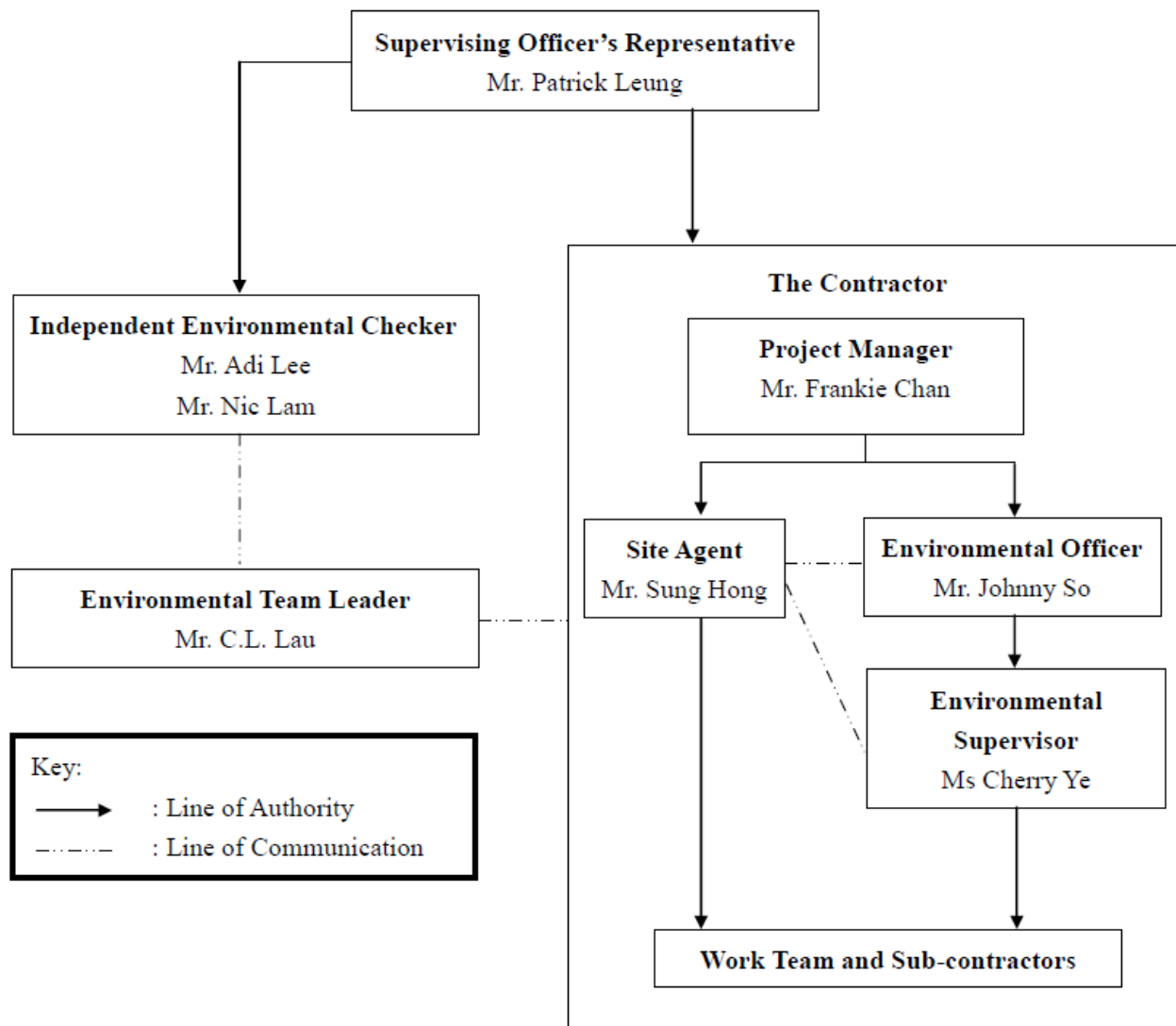
Appendix A

Location of Works Areas



Appendix B

Project Organization Chart



Appendix C

Construction Programme

DATA DATE: 28-Feb-18

LAYOUT: SW Project Phase 1 Rev 8 (3M 28Feb18)

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Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date	2018				
									Feb	Mar	Apr	May	Jun
San Wai Sewage Treatment Works Phase 1 - Rev 8 MP (Update as of 28 Feb 2018)													
Key Date													
Commencement & Completion of Works													
KD150	Section 1 - Handover to Home Affairs Department for Maintenance	1593	27-May-18	06-Oct-20	27-May-18	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-18	06-Oct-20	27-May-18	05-Oct-20	0	0					
Plant Room Handover Dates To E&M Installation													
KD304	Solid Handling Building (SHB)	45	12-Apr-18	28-May-18	27-Jan-18	27-May-18	-75	0					
KD322	Existing Junction Chamber (JC)	0	28-May-18	12-Apr-18	27-Jan-18	27-May-18	-75	-75					
Preliminaries & General Requirement													
Contractor Requirement													
PS465	Impact Monitoring	1529	01-Apr-17	25-Sep-20	01-Apr-17	25-Sep-20	0	0					
PS485	Site Drainage Plan Implementation	1186	27-Jun-17	25-Sep-20	27-Jun-17	25-Sep-20	0	0					
Contractor Requirement for Working Area Portion (P8)													
PS160	Fencing / Hoarding & Signboard Erection (P8)	1274	01-Apr-17	25-Sep-20	01-Apr-17	25-Sep-20	0	0					
Site Establishment													
PS322	Submission of CSD and CBWD 3D Model in LD3	30	28-Feb-18	29-Mar-18	30-Nov-17	29-Dec-17	-90	-90					
PS323	Submission of Clash Analysis Report	198	27-Aug-17	16-Mar-18	27-Aug-17	25-Feb-18	0	-20					
Design & Design Checking of Permanent Works													
Statutory Submission													
DS160	WSD - Water Supply & Plumbing	1192	01-Nov-16	03-Oct-20	01-Nov-16	03-Oct-20	0	0					
DS165	CLP - Power Supply	578	02-Feb-17	02-Sep-18	02-Feb-17	02-Sep-18	0	0					
DS166	CLP - Photovoltaic Panel Connection	751	01-Nov-16	21-Nov-18	01-Nov-16	21-Nov-18	0	0					
DS173	PCCW - Telephone Lines and Megalink	90	24-Dec-17	24-Mar-18	24-Dec-17	23-Mar-18	0	0					
DS174	PCCW - Telephone Lines for CLP Summation Metering	540	27-Jun-17	19-Dec-18	27-Jun-17	19-Dec-18	0	0					
DS177	EMSD - Passenger Lift	126	28-Jul-17	01-Mar-18	28-Jul-17	30-Nov-17	0	-90					
DS185	HAD - Home Affairs Department Application for Section 1 (ID KD150)	355	30-Apr-18	20-Apr-19	30-Apr-18	19-Apr-19	0	0					
DS195	BEAM Plus - Final Assessment (FA)	154	31-Jul-17	28-Feb-18	31-Jul-17	31-Dec-17	0	-59					
DS200	ArchSD - VCB and DAP Submission and Approval	948	01-Mar-18	03-Oct-20	01-Mar-18	03-Oct-20	0	0					
DS210	DLO - Submission and Approval of Tree Removal and Transplant Proposals	292	15-Mar-17	01-Mar-18	15-Mar-17	01-Jan-18	0	-59					
DS230	GEO - Submission of DDA28A to SO for onward submission to GEO for Checking Certificate	335	31-Jan-17	01-Mar-18	31-Jan-17	31-Dec-17	0	-59					
DS280	TPB - Submission of Landscape Proposal to TPB for Approval	280	03-Aug-17	10-May-18	03-Aug-17	09-May-18	0	0					
Site Investigation													
DS380	Contamination Treatment (Biopile)	186	15-Oct-17	06-May-18	15-Oct-17	05-May-18	0	0					
DS390	Remediation Report approved by EPD	173	15-Oct-17	06-Apr-18	15-Oct-17	05-Apr-18	0	0					
AIP / DDA Submission & Approval													
DS410	Review & Revisions of Design Plan	30	06-Apr-18	06-May-18	05-Apr-18	05-May-18	0	0					
Design Memorandum (AIP1 / DDA1)													
DS505	DDA1 - Design Memorandum - Design Preparation to SO Approval	630	26-Jun-16	18-Dec-18	26-Jun-16	19-Dec-18	0	0					
Global Design													
Site Layout (AIP2 / DDA2)													
DG390	DDA2 - Site Layout - Design Preparation to SO Approval	521	26-Jun-16	05-Mar-18	26-Jun-16	28-Nov-17	0	-96					
Treatment Process (AIP3 / DDA3)													
DG130	DDA3 - Treatment Process - Design Preparation to SO Approval	220	13-May-18	18-Dec-18	13-May-18	19-Dec-18	0	0					
Hydraulic (AIP4 / DDA4)													
DG162	DDA4 - Hydraulic - Design Preparation to SO Approval	582	02-Sep-16	09-Oct-18	02-Sep-16	09-Oct-18	0	0					
Electrical Power Supply System (AIP20 / DDA20ABCDE)													
DG1891	DDA20A - Electrical Power Supply System - Design Preparation to SO Approval	434	21-Oct-16	08-Apr-18	21-Oct-16	28-Dec-17	0	-101					
DG3880	DDA20B - UPS System - Design Preparation to SO Approval	483	02-Sep-16	13-Apr-18	02-Sep-16	28-Dec-17	0	-105					
Revision													
Check													
Approved													

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 (28 February 2018)

THREE (3) MONTHS ROLLING PROGRAMME

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



DATA DATE: 28-Feb-18		LAYOUT: SW Project Phase 1 Rev 8 (3M 28Feb18)							PAGE 2 OF 9				
Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date	2018				
									Feb	Mar	Apr	May	Jun
DG3895	DDA20C - Earthing and Lightning System - Design Preparation to SO Approval	260	24-Apr-17	19-Apr-18	24-Apr-17	11-Feb-18	0	-67					DDA20C - Earthing and Lightning System
DG3912	DDA20D - Energy Efficiency - Design Preparation to SO Approval	260	24-Apr-17	11-May-18	24-Apr-17	28-Feb-18	0	-71					DDA20D - Energy Efficiency
DG3950	DDA20E - Lighting Control System - Design Preparation to SO Approval	260	01-Sep-17	09-May-18	01-Sep-17	08-Feb-18	0	-90					DDA20E - Lighting Control System
Control and Monitoring System (AIP21 / DDA21ABCDE)		538	12-Jan-17	10-Jun-18	12-Jan-17	29-May-18	0	-11					
DG1904	DDA21A - Process & Instrumentation Diagram (P&ID) - Design Preparation to SO Approval	349	12-Jan-17	19-Apr-18	12-Jan-17	25-Jan-18	0	-83					DDA21A - Process & Instrumentation Diagram
DG1940	DDA21B - System Control Philosophy - Design Preparation to SO Approval	295	20-Mar-17	26-Apr-18	20-Mar-17	08-Feb-18	0	-76					DDA21B - System Control Philosophy
DG1956	DDA21C - Function Design Specification - Design Preparation to SO Approval	270	03-Apr-17	20-Apr-18	03-Apr-17	09-Feb-18	0	-70					DDA21C - Function Design Specification
DG1972	DDA21D - PLC, SCADA & I/O Allocation Schedules - Design Preparation to SO Approval	261	23-Apr-17	22-Apr-18	23-Apr-17	09-Feb-18	0	-71					DDA21D - PLC, SCADA & I/O Allocation Schedules
DG1988	DDA21E - SCADA Graphic Interface - Design Preparation to SO Approval	192	01-Jul-17 A	10-Jun-18	01-Jul-17	29-May-18	0	-11					DDA21E - SCADA Graphic Interface
Landscaping Works (AIP22 / DDA22AB)		478	05-Jan-17	24-Apr-18	05-Jan-17	09-Feb-18	0	-74					
DG1260	DDA22A - Landscaping Works (Green Roof) - Design Preparation to SO Approval	329	05-Jan-17	13-Apr-18	05-Jan-17	28-Dec-17	0	-105					DDA22A - Landscaping Works (Green Roof)
DG1274	DDA22B - Landscaping Works (Site Wide) - Design Preparation to SO Approval	186	03-Jul-17 A	24-Apr-18	03-Jul-17	09-Feb-18	0	-74					DDA22B - Landscaping Works (Site Wide)
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	26-Apr-18	28-Nov-17	22-Apr-18	0	-4					AIP23 - Outline Testing & Commissioning Plan
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					DDA23 - Detailed Testing & Commissioning Plan
General Notes Drawings for Foundation and Civil & Structural (AIP24AB / DDA24AB)		307	22-Feb-17	15-Apr-18	22-Feb-17	26-Jan-18	0	-79					
General Notes Drawings for Civil & Structural (AIP24B / DDA24BC)		307	22-Feb-17	15-Apr-18	22-Feb-17	26-Jan-18	0	-79					
DG3706	DDA24C - Typical Details for Architecture - Design Preparation to SO Approval	307	22-Feb-17	15-Apr-18	22-Feb-17	26-Jan-18	0	-79					DDA24C - Typical Details for Architecture
Geotechnical Report (AIP25 / DDA25A)		390	09-Oct-16	04-Mar-18	09-Oct-16	25-Nov-17	0	-99					
DG3445	DDA25A - Geotechnical Interpretation Report - Design Preparation to SO Approval	390	09-Oct-16	04-Mar-18	09-Oct-16	25-Nov-17	0	-99					DDA25A - Geotechnical Interpretation Report - Design Preparation
Site Formation (AIP26 / DDA26)		361	14-Jan-17	26-Apr-18	14-Jan-17	08-Feb-18	0	-76					
DG660	DDA26 - Site Formation - Design Preparation to SO Approval	361	14-Jan-17	26-Apr-18	14-Jan-17	08-Feb-18	0	-76					DDA26 - Site Formation - Design Preparation
Road Works (AIP27A / DDA27A)		281	23-Mar-17	04-Apr-18	23-Mar-17	12-Jan-18	0	-82					
DG1060	DDA27A - Road Works - Design Preparation to SO Approval	281	23-Mar-17	04-Apr-18	23-Mar-17	12-Jan-18	0	-82					DDA27A - Road Works - Design Preparation to SO
Sewerage and Drainage Works (AIP27B / DDA27BCD)		547	21-Feb-17	12-May-18	21-Feb-17	23-Feb-18	0	-78					
DG960	DDA27B - Sewerage and Drainage Works - Design Preparation to SO Approval	308	21-Feb-17	12-May-18	21-Feb-17	12-Jan-18	0	-120					DDA27B - Sewerage and Drainage Works
DG974	DDA27C - Foul Water Pump Sump - E&M - Design Preparation to SO Approval	308	01-Sep-17	27-Apr-18	01-Sep-17	08-Feb-18	0	-78					DDA27C - Foul Water Pump Sump
DG988	DDA27D - Detailed Design Report for Pipe Trenches - C&S - Design Preparation to SO Approval	251	08-May-17	27-Apr-18	08-May-17	23-Feb-18	0	-63					DDA27D - Detailed Design Report for Pipe Trenches
Boundary Wall & Entrance (AIP28 / DDA28AB)		472	03-Feb-17	17-May-18	03-Feb-17	08-Feb-18	0	-97					
DG1160	DDA28A - Slopes and Retaining Wall - Design Preparation to SO Approval	329	03-Feb-17	06-Apr-18	03-Feb-17	28-Dec-17	0	-98					DDA28A - Slopes and Retaining Wall - Design Preparation
DG1195	DDA28B - Boundary Wall & Entrance - Design Preparation to SO Approval	237	17-Jun-17	17-May-18	17-Jun-17	08-Feb-18	0	-97					DDA28B - Boundary Wall & Entrance
Site Wide Utility (AIP30 / DDA30ABCDEF)		526	30-Jan-17	21-May-18	30-Jan-17	28-Feb-18	0	-81					
DG3515	DDA30A - Site Wide Security Access Control & Communication System - Design Preparation to SO Approval	336	30-Jan-17	17-Apr-18	30-Jan-17	31-Dec-17	0	-107					DDA30A - Site Wide Security Access Control & Communication System
DG3774	DDA30B - Site Wide Utility (U/G Pipework, Ductwork, Cable Route, Cable Draw Pit) - Design Preparation to SO Approval	225	08-Jun-17	17-May-18	08-Jun-17	24-Jan-18	0	-112					DDA30B - Site Wide Utility (U/G Pipework, Ductwork, Cable Route, Cable Draw Pit)
DG3788	DDA30C - Fire Services System and Street Fire Hydrant System - Design Preparation to SO Approval	204	08-Jun-17	22-Apr-18	08-Jun-17	28-Dec-17	0	-114					DDA30C - Fire Services System and Street Fire Hydrant System
DG3816	DDA30E - Site Wide Utility (Road Lighting) - Design Preparation to SO Approval	201	23-Jun-17	22-Apr-18	23-Jun-17	24-Jan-18	0	-87					DDA30E - Site Wide Utility (Road Lighting)
DG3830	DDA30F - Typical Electrical Installation Drawings - Design Preparation to SO Approval	225	08-Jun-17	11-May-18	08-Jun-17	29-Jan-18	0	-101					DDA30F - Typical Electrical Installation Drawings
DG3844	DDA30G - Typical Building Services Installation Drawings - Design Preparation to SO Approval	210	23-Jun-17	21-May-18	23-Jun-17	28-Feb-18	0	-81					DDA30G - Typical Building Services Installation Drawings
HAZOP Report (DDA31AB)		410	01-Dec-16	03-Apr-18	01-Dec-16	05-Feb-18	0	-57					
DG3530	DDA31A - HAZOP Study - Design Preparation to SO Approval	363	01-Dec-16	29-Mar-18	01-Dec-16	12-Jan-18	0	-75					DDA31A - HAZOP Study - Design Preparation to SO
DG3545	DDA31B - Hazardous Zoning Classification Report - Design Preparation to SO Approval	119	01-Sep-17	03-Apr-18	01-Sep-17	05-Feb-18	0	-57					DDA31B - Hazardous Zoning Classification Report
ELS / Bulk Excavation (Temporary Works)		178	12-Jun-17	27-Mar-18	12-Jun-17	04-Jan-18	0	-81					
ELS for Emergency Bypass		155	12-Jun-17	27-Mar-18	12-Jun-17	04-Jan-18	0	-81					
DG3740	ELS for Emergency Bypass - Design Preparation to DC and SO Approval	155	12-Jun-17	27-Mar-18	12-Jun-17	04-Jan-18	0	-81					ELS for Emergency Bypass - Design Preparation to DC and SO Approval
ELS for Inlet Pipe Connection		123	04-Sep-17	25-Mar-18	04-Sep-17	04-Jan-18	0	-79					
DG3755	ELS for Inlet Pipe Connection - Design Preparation to DC and SO Approval	123	04-Sep-17	25-Mar-18	04-Sep-17	04-Jan-18	0	-79					ELS for Inlet Pipe Connection - Design Preparation to DC and SO Approval
ELS for UV		110	04-Sep-17	24-Mar-18	04-Sep-17	23-Dec-17	0	-91					
DG3769	ELS for UV - Design Preparation to DC and SO Approval	110	04-Sep-17	24-Mar-18	04-Sep-17	23-Dec-17	0	-91					ELS for UV - Design Preparation to DC and SO Approval
Miscellaneous Design		148	03-Jul-17 A	02-Mar-18	03-Jul-17	27-Jan-18	0	-34					
Equipment Schedules (DDA32A)		148	03-Jul-17 A	02-Mar-18	03-Jul-17	08-Dec-17	0	-84					
DG2012	DDA32A - Equipment Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Mar-18	03-Jul-17	08-Dec-17	0	-84					DDA32A - Equipment Schedules - Design Preparation to SO Approval
Penstock & Stoplogs Schedules (DDA32B)		148	03-Jul-17 A	02-Mar-18	03-Jul-17	28-Dec-17	0	-64					
DG3216	DDA32B - Penstock & Stoplogs Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Mar-18	03-Jul-17	28-Dec-17	0	-64					DDA32B - Penstock & Stoplogs Schedules - Design Preparation to SO Approval
Valves Schedules (DDA32C)		148	03-Jul-17 A	02-Mar-18	03-Jul-17	08-Dec-17	0	-84					
DG3222	DDA32C - Valves Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Mar-18	03-Jul-17	08-Dec-17	0	-84					DDA32C - Valves Schedules - Design Preparation to SO Approval
Piping and Pipe Support Schedules (DDA32D)		148	03-Jul-17 A	02-Mar-18	03-Jul-17	27-Jan-18	0	-34					
DG3864	DDA32D - Piping and Pipe Support Schedules - Design Preparation to SO Approval	148	03-Jul-17 A	02-Mar-18	03-Jul-17	27-Jan-18	0	-34					DDA32D - Piping and Pipe Support Schedules - Design Preparation



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Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date	2018	2018	2018	2018	2018	2018	2018	2018
									Feb	Mar	Apr	May	Jun			
	Painting Schedules (DOA32E)	148	03-Jul-17	02-Mar-18	03-Jul-17	08-Dec-17	0	-84								
DG3228	DOA32E - Painting Schedules - Design Preparation to SO Approval	148	03-Jul-17	02-Mar-18	03-Jul-17	08-Dec-17	0	-84								
	Instrumentation Schedules (DOA32F)	148	03-Jul-17	02-Mar-18	03-Jul-17	28-Dec-17	0	-64								
DG3234	DOA32F - Instrumentation Schedules - Design Preparation to SO Approval	148	03-Jul-17	02-Mar-18	03-Jul-17	28-Dec-17	0	-64								
	LOT #1 - Building / Facilities Design : CEPT+SF, PTW+IPS+SHB, UV, SDB+SSSB	594	25-Sep-16	31-May-18	25-Sep-16	09-May-18	0	-22								
	CEPT and System Control Flowmeter Chamber	492	24-Dec-16	14-May-18	24-Dec-16	09-Feb-18	0	-95								
	Civil and Structural Design (AIP6A / DOA6AB1B2)	489	24-Dec-16	24-Apr-18	24-Dec-16	07-Feb-18	0	-76								
DB1123	DOA6A - CEPT & SF - C&S - Design Preparation to SO Approval	352	24-Dec-16	02-Apr-18	24-Dec-16	28-Dec-17	0	-94								
DB4914	DOA6B1 - CEPT - C&S - Design Preparation to SO Approval	370	24-Dec-16	25-Mar-18	24-Dec-16	07-Feb-18	0	-45								
DB4930	DOA6B2 - SF - C&S - Design Preparation to SO Approval	265	24-Mar-17	24-Apr-18	26-Mar-17	25-Jan-18	0	-89								
	Electrical and Mechanical Design (AIP6B / DOA6C1C2DEF)	427	25-Jan-17	14-May-18	25-Jan-17	09-Feb-18	0	-95								
DB1160	DOA6C1-2 - CEPT & SF - E&M (Super Structural Design) - Design Preparation to SO Approval	185	08-Aug-17	14-May-18	08-Aug-17	09-Feb-18	0	-95								
DB1188	DOA6C2-2 - CEPT & SF - E&M (Super Structural Design) - Design Preparation to SO Approval	185	28-Jun-17	19-Mar-18	28-Jun-17	25-Jan-18	0	-52								
DB4508	DOA6DEF - CEPT & System Control - E&M - Design Preparation to SO Approval	327	25-Jan-17	29-Apr-18	25-Jan-17	28-Dec-17	0	-122								
	Inlet Work, Preliminary Treatment Works, IPS and SHB	530	26-Nov-16	19-Apr-18	26-Nov-16	25-Jan-18	0	-83								
	Civil and Structural Design (AIP5A / DOA5AB1B2)	396	26-Nov-16	27-Mar-18	26-Nov-16	25-Jan-18	0	-61								
DB1223	DOA5A - PTW, IPS & SHB - C&S - Design Preparation to SO Approval	377	26-Nov-16	25-Mar-18	26-Nov-16	28-Dec-17	0	-86								
DB4814	DOA5B1 - PTW & IPS - C&S - Design Preparation to SO Approval	359	17-Dec-16	25-Mar-18	17-Dec-16	28-Dec-17	0	-86								
DB4830	DOA5B2 - 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 / DOA5C1C2DEF)	486	27-Nov-16	19-Apr-18	27-Nov-16	15-Jan-18	0	-93								
DB1264	DOA5C1-2 - PTW, IPS & SHB - E&M (Super Structural Design) - Design Preparation to SO Approval	283	01-Apr-17	19-Apr-18	01-Apr-17	15-Jan-18	0	-93								
DB1296	DOA5C2-2 - PTW, IPS & SHB - E&M (Super Structural Design) - Design Preparation to SO Approval	306	01-Mar-17	19-Apr-18	01-Mar-17	15-Jan-18	0	-93								
DB4524	DOA5DEF - PTW, IPS & SHB - E&M - Design Preparation to SO Approval	394	27-Nov-16	18-Apr-18	27-Nov-16	01-Jan-18	0	-107								
	UV Disinfection Facilities	467	22-Dec-16	31-May-18	22-Dec-16	09-May-18	0	-22								
	Civil and Structural Design (AIP7A / DOA7AB)	228	26-Jun-17	16-May-18	26-Jun-17	08-Feb-18	0	-97								
DB1325	DOA7A - UV Facilities - C&S (Architectural) - Design Preparation to SO Approval	182	11-Aug-17	14-May-18	11-Aug-17	08-Feb-18	0	-95								
DB5010	DOA7B - UV Facilities - C&S (Structural) - Design Preparation to SO Approval	228	26-Jun-17	16-May-18	26-Jun-17	08-Feb-18	0	-97								
	Electrical and Mechanical Design (AIP7B / DOA7C1C2DEF)	467	22-Dec-16	31-May-18	22-Dec-16	09-May-18	0	-22								
DB1352	DOA7C1-1 - UV Facilities - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	371	22-Dec-16	26-Mar-18	22-Dec-16	15-Jan-18	0	-70								
DB1368	DOA7C1-2 - UV Facilities - E&M (Super Structural Design) - Design Preparation to SO Approval	244	08-Sep-17	31-May-18	08-Sep-17	09-May-18	0	-22								
DB1384	DOA7C2-1 - UV Facilities - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	371	22-Dec-16	26-Mar-18	22-Dec-16	20-Jan-18	0	-65								
DB1399	DOA7C2-2 - UV Facilities - E&M (Super Structural Design) - Design Preparation to SO Approval	252	01-Jul-17	12-May-18	01-Jul-17	10-Mar-18	0	-63								
DB4540	DOA7DEF - UV Facilities - E&M - Design Preparation to SO Approval	306	30-Mar-17	22-Apr-18	30-Mar-17	30-Jan-18	0	-82								
	Sludge Dewatering Building and Sludge Skip Storage Building	594	25-Sep-16	07-May-18	25-Sep-16	08-Feb-18	0	-88								
	Civil and Structural Design (AIP8A / DOA8AB1B2)	383	24-Dec-16	07-May-18	24-Dec-16	08-Feb-18	0	-88								
DB1433	DOA8A - SDB and SSSB - C&S - Design Preparation to SO Approval	346	24-Dec-16	07-May-18	24-Dec-16	11-Jan-18	0	-115								
DB4844	DOA8B1 - SDB - C&S - Design Preparation to SO Approval	307	04-Feb-17	23-Apr-18	04-Feb-17	11-Jan-18	0	-102								
DB4858	DOA8B2 - SSSB - C&S - Design Preparation to SO Approval	341	04-Feb-17	29-Mar-18	04-Feb-17	08-Feb-18	0	-48								
	Electrical and Mechanical Design (AIP8B / DOA8C1C2DEF)	585	25-Sep-16	25-Mar-18	25-Sep-16	18-Jan-18	0	-66								
DB1460	DOA8C1-1 - SDB and SSSB - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	449	25-Sep-16	25-Mar-18	25-Sep-16	23-Dec-17	0	-91								
DB1476	DOA8C1-2 - SDB and SSSB - E&M (Super Structural Design) - Design Preparation to SO Approval	257	29-Apr-17	25-Mar-18	29-Apr-17	16-Jan-18	0	-67								
DB1492	DOA8C2-1 - SDB and SSSB - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	449	25-Sep-16	16-Mar-18	25-Sep-16	23-Dec-17	0	-83								
DB1508	DOA8C2-2 - SDB and SSSB - E&M (Super Structural Design) - Design Preparation to SO Approval	248	29-Apr-17	25-Mar-18	29-Apr-17	18-Jan-18	0	-66								
DB4556	DOA8DEF - SDB and SSSB - E&M - Design Preparation to SO Approval	394	27-Nov-16	25-Mar-18	27-Nov-16	25-Dec-17	0	-90								
	LOT #2 - Building / Facilities Design : AB+WS, DO, CB+EB4, FH	585	28-Sep-16	23-May-18	28-Sep-16	09-Mar-18	0	-75								
	Chemical Building and EB 4	450	28-Sep-16	20-Apr-18	28-Sep-16	25-Jan-18	0	-84								
	Civil and Structural Design for CB & EB4 (AIP12A / DOA12AB)	308	31-Jan-17	18-Apr-18	31-Jan-17	28-Dec-17	0	-111								
DB2123	DOA12AB - Chemical Building & EB4 - C&S - Design Preparation to SO Approval	308	31-Jan-17	18-Apr-18	31-Jan-17	28-Dec-17	0	-111								
	Electrical and Mechanical Design for CB only (AIP12B / DOA12C1C2DEF)	443	28-Sep-16	20-Apr-18	28-Sep-16	25-Jan-18	0	-84								
DB2148	DOA12C1C2 - Chemical Building - E&M - Design Preparation to SO Approval	432	28-Sep-16	20-Apr-18	28-Sep-16	28-Dec-17	0	-112								
DB4602	DOA12DEF - Chemical Building - E&M - Design Preparation to SO Approval	313	05-Feb-17	11-Apr-18	05-Feb-17	25-Jan-18	0	-76								
	Administration Building & Maintenance Workshop	542	03-Oct-16	09-May-18	03-Oct-16	09-Mar-18	0	-61								
	Civil and Structural Design (AIP10A / DOA10AB)	334	22-Jan-17	08-May-18	22-Jan-17	11-Jan-18	0	-117								
DB2234	DOA10AB - Admin Bldg. & Workshop - C&S - Design Preparation to SO Approval	334	22-Jan-17	08-May-18	22-Jan-17	11-Jan-18	0	-117								
	Electrical and Mechanical Design (AIP10B / DOA10C1C2DEF)	452	03-Oct-16	09-May-18	03-Oct-16	09-Mar-18	0	-61								
DB2286	DOA10C1-1 - Admin Bldg. & Workshop (Piling & Foundation Design) - E&M - Design Preparation to SO Approval	449	03-Oct-16	25-Mar-18	03-Oct-16	06-Jan-18	0	-77								
DB2307	DOA10C1-2 - Admin Bldg. & Workshop (Super Structural Design) - E&M - Design Preparation to SO Approval	449	01-Oct-17	09-May-18	01-Oct-17	09-Mar-18	0	-61								
DB4618	DOA10DEF - Admin Bldg. & Workshop - E&M - Design Preparation to SO Approval	332	31-Jan-17	13-Apr-18	31-Jan-17	20-Jan-18	0	-82								

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Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date	2018	Feb	Mar	Apr	May	Jun
Deodorization Facilities No.1 and No.2														
Civil and Structural Design (AIP9A / DDA9AB)		379	15-Dec-16	23-May-18	15-Dec-16	29-Jan-18	0	-114						
DB2323	DDA9A - DO #1 & #2 (Architectural) - C&S - Design Preparation to SO Approval	336	26-Jan-17	23-May-18	26-Jan-17	29-Jan-18	0	-114						
DB5150	DDA9B - DO #1 & #2 (Structural) - C&S - Design Preparation to SO Approval	336	05-Jun-17	21-Apr-18	05-Jun-17	29-Jan-18	0	-82						
Electrical and Mechanical Design (AIP9B / DDA9C1C2DEF)		379	15-Dec-16	17-Apr-18	15-Dec-16	25-Jan-18	0	-81						
DB2348	DDA9C1C2 - DO #1 & #2 - E&M - Design Preparation to SO Approval	365	15-Dec-16	11-Apr-18	15-Dec-16	23-Dec-17	0	-108						
DB4634	DDA9DEF - DO #1 & #2 - E&M - Design Preparation to SO Approval	337	26-Jan-17	17-Apr-18	26-Jan-17	25-Jan-18	0	-81						
Street Fire Hydrant Pump Room & GENSET Room														
Civil and Structural Design (AIP17A / DDA17AB)		288	23-Mar-17	10-May-18	23-Mar-17	08-Feb-18	0	-90						
DB2423	DDA17A - FH Pump Room & GENSET Room (Architectural) - C&S - Design Preparation to SO Approval	288	23-Mar-17	24-Apr-18	23-Mar-17	25-Jan-18	0	-89						
DB5220	DDA17B - FH Pump Room & GENSET Room (Structural) - C&S - Design Preparation to SO Approval	288	01-Aug-17	10-May-18	01-Aug-17	08-Feb-18	0	-90						
Electrical and Mechanical Design (AIP17B / DDA17C1C2DE)		423	07-Dec-16	11-May-18	07-Dec-16	28-Feb-18	0	-71						
DB2448	DDA17C1C2 - FH Pump Room & GENSET Room - E&M - Design Preparation to SO Approval	387	07-Dec-16	12-Apr-18	07-Dec-16	28-Dec-17	0	-104						
DB4648	DDA17DE - FH Pump Room & GENSET Room - E&M - Design Preparation to SO Approval	317	23-Mar-17	11-May-18	23-Mar-17	28-Feb-18	0	-71						
LOT #3 - Building / Facilities Design : EB1, EB2, EB3, EB4, RW, DG+ICW, Inlet/Outlet Connection		575	16-Sep-16	20-May-18	16-Sep-16	28-Feb-18	0	-81						
Electrical Building No.1, No.2, No.3, No.4		515	16-Sep-16	27-Apr-18	16-Sep-16	28-Feb-18	0	-57						
Civil and Structural Design for EB123 (AIP13A / DDA13AB)		264	08-Apr-17	24-Apr-18	08-Apr-17	09-Feb-18	0	-74						
DB3123	DDA13AB - EB1, EB2 and EB3 - C&S - Design Preparation to SO Approval	264	08-Apr-17	24-Apr-18	08-Apr-17	09-Feb-18	0	-74						
Electrical and Mechanical Design for EB1234 (AIP13B / DDA13C1C2DE)		475	16-Sep-16	27-Apr-18	16-Sep-16	28-Feb-18	0	-57						
DB3148	DDA13C1C2 - EB1, EB2, EB3 & EB4 - E&M - Design Preparation to SO Approval	458	16-Sep-16	22-Apr-18	16-Sep-16	11-Jan-18	0	-100						
DB4664	DDA13DE - EB1, EB2, EB3 & EB4 - E&M - Design Preparation to SO Approval	320	23-Feb-17	27-Apr-18	23-Feb-17	28-Feb-18	0	-57						
Re-use Water Building		466	03-Dec-16	17-May-18	03-Dec-16	09-Feb-18	0	-97						
Civil and Structural Design (AIP14A / DDA14AB)		262	13-Apr-17	17-May-18	13-Apr-17	09-Feb-18	0	-97						
DB3223	DDA14A - Re-use water Building (Architectural) - C&S - Design Preparation to SO Approval	262	13-Apr-17	17-May-18	13-Apr-17	09-Feb-18	0	-97						
DB5080	DDA14B - Re-use water Building (Structural) - C&S - Design Preparation to SO Approval	262	18-Aug-17	24-Apr-18	18-Aug-17	09-Feb-18	0	-74						
Electrical and Mechanical Design (AIP14B / DDA14C1C2DEF)		394	03-Dec-16	17-Apr-18	03-Dec-16	25-Jan-18	0	-82						
DB3248	DDA14C1C2 - Re-use water Building - E&M - Design Preparation to SO Approval	366	03-Dec-16	04-Apr-18	03-Dec-16	19-Dec-17	0	-106						
DB4680	DDA14DEF - Re-use water Building - E&M - Design Preparation to SO Approval	263	13-Apr-17	17-Apr-18	13-Apr-17	25-Jan-18	0	-82						
ICW and DG Store & Chemical Waste Storage Building		471	30-Nov-16	01-May-18	30-Nov-16	08-Feb-18	0	-82						
Civil and Structural Design (AIP16A / DDA16AB)		310	11-Mar-17	26-Apr-18	11-Mar-17	08-Feb-18	0	-76						
DB3323	DDA16AB - ICW, DG & Chemical Stores - C&S - Design Preparation to SO Approval	310	11-Mar-17	26-Apr-18	11-Mar-17	08-Feb-18	0	-76						
Electrical and Mechanical Design (AIP16B / DDA16C1C2D)		440	30-Nov-16	01-May-18	30-Nov-16	08-Feb-18	0	-82						
DB3348	DDA16C1C2 - ICW, DG & Chemical Stores - E&M - Design Preparation to SO Approval	380	30-Nov-16	28-Apr-18	30-Nov-16	11-Jan-18	0	-107						
DB4694	DDA16D - ICW, DG & Chemical Stores - E&M - Design Preparation to SO Approval	233	24-May-17	01-May-18	24-May-17	08-Feb-18	0	-82						
Inlet & Outlet Pipe Connections and Diversion Pipeworks		353	31-Dec-16	20-May-18	31-Dec-16	08-Feb-18	0	-101						
Civil and Structural Design (AIP11 / DDA11ABC)		353	31-Dec-16	20-May-18	31-Dec-16	08-Feb-18	0	-101						
DB3438	DDA11B - C&S Detailed Design Report for Inlet Connections Pipework - Design Preparation to SO Approval	284	08-Apr-17	20-May-18	08-Apr-17	08-Feb-18	0	-101						
DB3452	DDA11C - C&S Detailed Design Report for Emergency Bypass - Design Preparation to SO Approval	353	31-Dec-16	27-Mar-18	31-Dec-16	11-Jan-18	0	-75						
LOT #4 - Building / Facilities Design : GH, PF		536	25-Nov-16	01-May-18	25-Nov-16	08-Feb-18	0	-82						
Payment Flowmeter Chamber		510	25-Nov-16	24-Apr-18	25-Nov-16	08-Feb-18	0	-74						
Civil and Structural Design (AIP15A / DDA15B)		277	13-Apr-17	24-Apr-18	13-Apr-17	08-Feb-18	0	-74						
DB4323	DDA15B - Payment Flowmeter - C&S - Design Preparation to SO Approval	277	13-Apr-17	24-Apr-18	13-Apr-17	08-Feb-18	0	-74						
Electrical and Mechanical Design (AIP15B / DDA15C1C2DEF)		443	25-Nov-16	23-Apr-18	25-Nov-16	20-Jan-18	0	-93						
DB4348	DDA15C1C2 - Payment Flowmeter - E&M - Design Preparation to SO Approval	383	25-Nov-16	23-Apr-18	25-Nov-16	11-Jan-18	0	-102						
DB4740	DDA15DEF - Payment Flowmeter - E&M - Design Preparation to SO Approval	240	31-May-17	16-Apr-18	31-May-17	20-Jan-18	0	-86						
Gatehouse		500	24-Apr-17	01-May-18	24-Apr-17	08-Feb-18	0	-82						
Civil and Structural Design (AIP18A / DDA18AB)		176	18-Jul-17 A	01-May-18	18-Jul-17	08-Feb-18	0	-82						
DB4424	DDA18AB - Gatehouse - C&S - Design Preparation to SO Approval	176	18-Jul-17 A	01-May-18	18-Jul-17	08-Feb-18	0	-82						
Electrical and Mechanical Design (AIP18B / DDA18C)		249	24-Apr-17	03-Apr-18	24-Apr-17	25-Jan-18	0	-68						
DB4754	DDA18C - Gatehouse - E&M - Design Preparation to SO Approval	249	24-Apr-17	03-Apr-18	24-Apr-17	25-Jan-18	0	-68						
Civil & Structural Works		964	01-Jun-17	03-Feb-20	01-Jun-17	13-Nov-19	0	-82						
LOT #1 - Bldg / Facilities Const. (Arch'l & Struct'l) : CEPT+SF, PTW+IPS+SHB, UV, SDB+SSSB		296	01-Oct-17	23-Aug-18	01-Oct-17	22-Aug-18	0	0						
Chemically Enhanced Primary Treatment (CEPT)		296	01-Oct-17	23-Aug-18	01-Oct-17	22-Aug-18	0	0						
CS1510	Substructure (ELS & Bulk excavation)	130	01-Oct-17	06-Mar-18	01-Oct-17	07-Feb-18	0	-27						
CS1520	Substructure (rc structure)	80	02-Feb-18	28-Apr-18	08-Feb-18	28-Apr-18	6	0						
CS1525	Removal of ELS	45	15-Mar-18	28-Apr-18	15-Mar-18	28-Apr-18	0	0						
CS1526	Backfilling	30	30-Mar-18	28-Apr-18	30-Mar-18	28-Apr-18	0	0						

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Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date	Feb	Mar	2018 Apr	May	Jun	
CS1530	Superstructure (rc and metalworks)	54	15-Apr-18	08-Jun-18	15-Apr-18	07-Jun-18	0	0					Superstruc	
CS1534	Water Tightness Test	90	25-May-18	23-Aug-18	25-May-18	22-Aug-18	0	0						
System Control Flowmeter Chamber (SF)		112	01-Mar-18	21-Jun-18	01-Mar-18	20-Jun-18	0	0						
CS1400	Substructure (rc structure)	30	01-Mar-18	31-Mar-18	01-Mar-18	30-Mar-18	0	0				Substructure (rc structure)		
CS1405	Backfilling	30	31-Mar-18	30-Apr-18	31-Mar-18	29-Apr-18	0	0				Backfilling		
CS1410	Superstructure (rc and metalworks)	52	31-Mar-18	22-May-18	31-Mar-18	21-May-18	0	0					Superstructure (rc and metalworks)	
CS1420	ABWF - System Control Flowmeter Chamber	30	22-May-18	21-Jun-18	22-May-18	20-Jun-18	0	0					ABWF - System Control Flowmeter Chamber	
Inlet Work, Preliminary Treatment Works and Inlet Pumping Station (PTW & IPS)		243	13-Oct-17	01-Jul-18	13-Oct-17	30-Jun-18	0	0						
CS1208	Sheet Piling (ELS)	45	28-Oct-17	08-Mar-18	28-Oct-17	11-Dec-17	0	-87				Sheet Piling (ELS)		
CS1210	Substructure (ELS & Bulk excavation)	124	13-Oct-17	24-Mar-18	13-Oct-17	13-Feb-18	0	-39				Substructure (ELS & Bulk excavation)		
CS1220	Substructure (rc structure)	74	28-Feb-18	12-May-18	14-Feb-18	28-Apr-18	-14	-14					Substructure (rc structure)	
CS1224	Removal of ELS	45	15-Mar-18	29-Apr-18	15-Mar-18	28-Apr-18	0	0				Removal of ELS		
CS1226	Backfilling (except in Water Tightness Test area)	30	29-Apr-18	28-May-18	29-Apr-18	28-May-18	0	0					Backfilling (except in Water Tightness Test area)	
CS1230	Superstructure (rc and metalworks)	59	15-Apr-18	13-Jun-18	15-Apr-18	12-Jun-18	0	0					Superstructure (rc and metalworks)	
CS1235	Water Tightness Test + Backfilling	50	29-Apr-18	17-Jun-18	29-Apr-18	17-Jun-18	0	0					Water Tightness Test + Backfilling	
CS1240	ABWF - Preliminary Treatment Works and Inlet Pumping Station	32	30-May-18	01-Jul-18	30-May-18	30-Jun-18	0	0					ABWF - Preliminary Treatment Works and Inlet Pumping Station	
Solid Handling Building (SHB)		122	22-Oct-17	28-May-18	22-Oct-17	27-May-18	0	0						
CS1300	Substructure (rc structure)	30	22-Oct-17	27-Mar-18	22-Oct-17	25-Mar-18	0	-2				Substructure (rc structure)		
CS1305	Backfilling (except in Water Tightness Test area)	30	26-Mar-18	24-Apr-18	26-Mar-18	24-Apr-18	0	0				Backfilling (except in Water Tightness Test area)		
CS1310	Superstructure (rc and metalworks)	43	26-Mar-18	08-May-18	26-Mar-18	07-May-18	0	0					Superstructure (rc and metalworks)	
CS1315	Water Tightness Test + Backfilling	60	26-Mar-18	25-May-18	26-Mar-18	24-May-18	0	0					Water Tightness Test + Backfilling	
CS1320	ABWF - Solid Handling Building	20	08-May-18	28-May-18	08-May-18	27-May-18	0	0					ABWF - Solid Handling Building	
UV Disinfection Facility (UV)		78	07-Oct-17	15-Jun-18	07-Oct-17	14-Jun-18	0	0						
CS1910	Substructure (rc structure)	78	07-Oct-17	15-Jun-18	07-Oct-17	14-Jun-18	0	0					Substructure (rc structure)	
Sludge Dewatering Building (SDB)		168	26-Feb-18	14-Aug-18	16-Feb-18	14-Aug-18	-10	0						
CS1830	Substructure (rc structure)	80	26-Feb-18	13-May-18	16-Feb-18	06-May-18	-10	-6				Substructure (rc structure)		
CS1834	Removal of ELS	45	29-Mar-18	13-May-18	23-Mar-18	06-May-18	-6	-6				Removal of ELS		
CS1836	Backfilling (except in Water Tightness Test area)	30	07-May-18	05-Jun-18	07-May-18	05-Jun-18	0	0					Backfilling (except in Water Tightness Test area)	
CS1840	Superstructure (rc and metalworks)	100	07-May-18	14-Aug-18	07-May-18	14-Aug-18	0	0					Superstructure (rc and metalworks)	
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	06-Apr-18	22-Oct-17	01-Apr-18	0	-4				Substructure (rc structure)		
CS2905	Backfilling	30	02-Apr-18	02-May-18	02-Apr-18	01-May-18	0	0				Backfilling		
CS2910	Superstructure (rc and metalworks)	60	02-Apr-18	01-Jun-18	02-Apr-18	31-May-18	0	0					Superstructure (rc and metalworks)	
LOT #2 - Bldg / Facilities Const. (Arch'l & Struct'l) : AB+WS, DO, CB, FH		185	13-Oct-17	31-Jul-18	13-Oct-17	31-Jul-18	0	0						
Administration Building & Maintenance Workshop (AB & WS)		121	28-Feb-18	29-Jun-18	01-Feb-18	28-Jun-18	-27	0						
CS1110	Substructure (rc structure)	60	28-Feb-18	28-Apr-18	01-Feb-18	01-Apr-18	-27	-27				Substructure (rc structure)		
CS1115	Backfilling	30	02-Apr-18	01-May-18	02-Apr-18	01-May-18	0	0				Backfilling		
CS1120	Superstructure (rc and metalworks)	62	02-Apr-18	03-Jun-18	02-Apr-18	02-Jun-18	0	0					Superstructure (rc and metalworks)	
CS1125	Water Tightness Test	60	30-Apr-18	29-Jun-18	30-Apr-18	28-Jun-18	0	0					Water Tightness Test	
CS1130	ABWF - Administration Building & Maintenance Workshop	60	30-Apr-18	29-Jun-18	30-Apr-18	28-Jun-18	0	0					ABWF - Administration Building & Maintenance Workshop	
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					Substructure (rc structure)	
Deodorization Facilities No. 2 (DO 2)		94	22-Oct-17	20-Jun-18	22-Oct-17	21-May-18	0	-29						
CS1710	Substructure (rc structure)	60	22-Oct-17	23-May-18	22-Oct-17	24-Mar-18	0	-60				Substructure (rc structure)		
CS1715	Backfilling	30	24-Apr-18	23-May-18	25-Mar-18	23-Apr-18	-30	-30				Backfilling		
CS1720	Superstructure (rc and metalworks)	58	23-Apr-18	20-Jun-18	25-Mar-18	21-May-18	-29	-29					Superstructure (rc and metalworks)	
Chemical Building (CB)		185	13-Oct-17	31-Jul-18	13-Oct-17	31-Jul-18	0	0						
CS2310	Substructure (rc structure)	61	13-Oct-17	22-May-18	13-Oct-17	22-May-18	0	0				Substructure (rc structure)		
CS2315	Backfilling	30	23-May-18	21-Jun-18	23-May-18	21-Jun-18	0	0					Backfilling	
CS2320	Superstructure (rc and metalworks)	70	23-May-18	31-Jul-18	23-May-18	31-Jul-18	0	0					Superstructure (rc and metalworks)	
Street Fire Hydrant Pump Room & GENSET Room (FH)		60	17-Oct-17	16-Jun-18	17-Oct-17	15-Jun-18	0	0						
CS3010	Substructure (rc structure)	60	17-Oct-17	16-Jun-18	17-Oct-17	15-Jun-18	0	0					Substructure (rc structure)	
LOT #3 - Bldg / Facilities Const. (Arch'l & Struct'l) : EB, RW, DG, ICW, JC		202	04-Oct-17	10-Aug-18	04-Oct-17	10-Jul-18	0	-31						
Electrical Building No.1 (EB1)		60	22-Oct-17	24-May-18	22-Oct-17	08-Jul-18	0	45						
CS2410	Substructure (rc structure)	60	22-Oct-17	24-May-18	22-Oct-17	08-Jul-18	0	45				Substructure (rc structure)		
Electrical Building No.2 (EB2)		60	15-Oct-17	24-Apr-18	15-Oct-17	01-Jun-18	0	38						
CS2510	Substructure (rc structure)	60	15-Oct-17	24-Apr-18	15-Oct-17	01-Jun-18	0	38				Substructure (rc structure)		

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Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date	Feb	Mar	Apr	May	Jun			
Electrical Building No.3 (EB3)		60	04-Oct-17	21-Jun-18	04-Oct-17	21-Jun-18	0	0								
CS2610	Substructure (rc structure)	60	04-Oct-17	21-Jun-18	04-Oct-17	21-Jun-18	0	0								
Electrical Building No.4 (EB4)		138	22-Oct-17	15-Jun-18	22-Oct-17	15-Jun-18	0	0								
CS2710	Substructure (rc structure)	60	22-Oct-17	01-May-18	22-Oct-17	01-May-18	0	0								
CS2715	Backfilling	30	01-May-18	31-May-18	01-May-18	31-May-18	0	0								
CS2720	Superstructure (rc and metalworks)	45	01-May-18	15-Jun-18	01-May-18	15-Jun-18	0	0								
Re-use Water Building (RW)		152	12-Oct-17	10-Jul-18	12-Oct-17	10-Jul-18	0	0								
CS2010	Substructure (rc structure)	60	12-Oct-17	25-May-18	12-Oct-17	25-May-18	0	0								
CS2015	Backfilling	30	25-May-18	24-Jun-18	25-May-18	24-Jun-18	0	0								
CS2020	Superstructure (rc and metalworks)	45	25-May-18	10-Jul-18	25-May-18	10-Jul-18	0	0								
DG Store and Chemical Waste Storage Building (DG)		60	22-Oct-17	11-Jul-18	22-Oct-17	10-Jul-18	0	0								
CS2800	Substructure (rc structure)	60	22-Oct-17	11-Jul-18	22-Oct-17	10-Jul-18	0	0								
Irigation & Cleansing Water Pump Room (ICW)		60	22-Oct-17	11-Jul-18	22-Oct-17	10-Jul-18	0	0								
CS3370	Substructure (rc structure)	60	22-Oct-17	11-Jul-18	22-Oct-17	10-Jul-18	0	0								
Existing Junction Chamber (JC)		175	13-Feb-18	10-Aug-18	19-Nov-17	27-May-18	-86	-75								
CS2202	Removal of EL5	40	13-Feb-18	04-Apr-18	19-Nov-17	28-Dec-17	-86	-97								
CS2205	Backfilling	30	14-Mar-18	12-Apr-18	29-Dec-17	27-Jan-18	-75	-75								
CS2210	Bar Screen Installation	120	13-Apr-18	10-Aug-18	28-Jan-18	27-May-18	-75	-75								
LOT #4 - Bldg / Facilities Const. (Arch'l & Struct'l) : GH, PF		178	28-Feb-18	24-Aug-18	16-Dec-17	24-Aug-18	-74	0								
Gatehouse (GH)		178	28-Feb-18	24-Aug-18	25-Feb-18	24-Aug-18	-3	0								
CS3100	Substructure (rc structure)	90	28-Feb-18	28-May-18	25-Feb-18	25-May-18	-3	-3								
CS3105	Backfilling	30	25-May-18	24-Jun-18	25-May-18	24-Jun-18	0	0								
CS3110	Superstructure (rc and metalworks)	91	25-May-18	24-Aug-18	25-May-18	24-Aug-18	0	0								
Payment Flowmeter Chamber (PF)		121	28-Feb-18	28-Jun-18	16-Dec-17	15-Apr-18	-74	-74								
CS2080	Piling Foundation (Prebored H-pile) 9	31	28-Feb-18	30-Mar-18	16-Dec-17	15-Jan-18	-74	-74								
CS2085	Pile Loading Test	30	31-Mar-18	29-Apr-18	16-Jan-18	14-Feb-18	-74	-74								
CS2090	Post-Drilling	30	31-Mar-18	29-Apr-18	16-Jan-18	14-Feb-18	-74	-74								
CS2100	Substructure (rc structure)	28	01-May-18	28-May-18	16-Feb-18	15-Mar-18	-74	-74								
CS2105	Backfilling	30	29-May-18	27-Jun-18	16-Mar-18	14-Apr-18	-74	-74								
CS2110	Superstructure (rc and metalworks)	31	29-May-18	28-Jun-18	16-Mar-18	15-Apr-18	-74	-74								
Foul Water Pump Sump		60	16-May-18	14-Jul-18	16-May-18	14-Jul-18	0	0								
CS3395	Substructure (rc structure)	60	16-May-18	14-Jul-18	16-May-18	14-Jul-18	0	0								
External Works & Miscellaneous		964	01-Jun-17	03-Feb-20	01-Jun-17	13-Nov-19	0	-82								
CS3201	Slope works and Retaining Wall (Eastern Portion)	197	06-Apr-18	20-Oct-18	29-Dec-17	13-Jul-18	-98	-98								
CS3203	Slope works (Northern Portion)	180	13-May-18	08-Nov-18	13-Jan-18	11-Jul-18	-120	-120								
CS3210	Drainage Inlet connection (Diversion of Three Existing Sewage Rising Mains)	208	25-Mar-18	19-Oct-18	05-Jan-18	31-Jul-18	-79	-79								
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	28-Mar-18	23-Oct-18	05-Mar-18	30-Sep-18	-23	-23								
CS3250	EVA (Road & Drainage)	670	04-Apr-18	03-Feb-20	13-Jan-18	13-Nov-19	-82	-82								
CS3252	RC Trench and Odour Pipe (DO1, DO2)	180	27-Apr-18	24-Oct-18	24-Feb-18	22-Aug-18	-63	-63								
CS3254	Process Pipe	180	17-May-18	13-Nov-18	24-Feb-18	22-Aug-18	-82	-82								
CS3258	Emergency By-Pass Pipe	200	25-Apr-18	12-Nov-18	05-Jan-18	23-Jul-18	-111	-111								
CS3284	Diversion of Existing Watermains by WSD	89	18-Mar-18	15-Jun-18	01-Dec-17	27-Feb-18	-107	-107								
CS3286	Civil Works by ADCJV for WSD's Diversion of Existing Watermains	183	01-Jun-17	18-Mar-18	01-Jun-17	30-Nov-17	0	-107								
Green Roof		60	30-Apr-18	29-Jun-18	30-Apr-18	28-Jun-18	0	0								
CS3340	Administration Building and Maintenance Workshop	60	30-Apr-18	29-Jun-18	30-Apr-18	28-Jun-18	0	0								
E&M Works		682	27-Nov-16	13-Jan-19	27-Nov-16	18-Dec-18	0	-26								
Procurement		682	27-Nov-16	13-Jan-19	27-Nov-16	18-Dec-18	0	-26								
Chemically Enhanced Primary Treatment (CEPT)		366	10-Nov-17	16-Dec-18	10-Nov-17	12-Sep-18	0	-95								
EM3112	Manufacturing & Logistic (Major Equipment)	307	11-Feb-18	16-Dec-18	10-Nov-17	12-Sep-18	-93	-95								
EM3114	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	219	10-Nov-17	16-Jun-18	10-Nov-17	16-Jun-18	0	0								
EM3118	CMS Preparation, Submission & Approval (Electrical)	219	10-Nov-17	16-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	05-Oct-18	25-Jan-17	17-Sep-18	0	-18								
EM3132	CMS Preparation, Submission & Approval (Major Equipment)	289	25-Jan-17	09-Mar-18	25-Jan-17	09-Nov-17	0	-120								
EM3134	Manufacturing & Logistic (Major Equipment)	210	10-Mar-18	05-Oct-18	10-Nov-17	07-Jun-18	-120	-120								
EM3136	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	187	10-Nov-17	16-May-18	10-Nov-17	15-May-18	0	0								

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Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date	Feb	Mar	Apr	May	Jun
EM3138	Manufacturing & Logistic (Penstock, Pipe & Valve)	35	16-May-18	20-Jun-18	16-May-1	19-Jun-18	0	0					Man
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	17-Sep-18	10-Nov-17	17-Sep-18	0	0					
Inlet Work, Preliminary Treatment Units and Inlet Pumping Station (PTW & IPS)		507	04-Jan-17	05-Dec-18	04-Jan-17	17-Sep-18	0	-80					
EM3135	CMS Preparation, Submission & Approval (Major Equipment)	301	04-Jan-17	28-Feb-18	04-Jan-17	31-Oct-17	0	-120					
EM3137	Manufacturing & Logistic (Major Equipment)	280	01-Mar-18	05-Dec-18	01-Nov-17	07-Aug-18	-120	-120					
EM3141	Witness FAT - Main Sewage Pumps	28	29-Apr-18	26-May-18	30-Dec-17	26-Jan-18	-120	-120					Witness FAT - Mai
EM3635	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	225	01-Oct-17	14-May-18	01-Oct-17	14-May-18	0	0					CMS Preparation, Submis
EM3645	Manufacturing & Logistic (Penstock, Pipe & Valve)	126	14-May-18	17-Sep-18	14-May-1	17-Sep-18	0	0					
EM3655	CMS Preparation, Submission & Approval (Electrical)	288	01-Oct-17	26-Apr-18	01-Oct-17	15-Jul-18	0	80					CMS Preparation, Submission & App
EM3675	CMS Preparation, Submission & Approval (Building Services)	342	01-Oct-17	24-May-18	01-Oct-17	08-Sep-18	0	107					CMS Preparation, S
Solid Handling Building (SHB)		334	12-Apr-17	16-Sep-18	12-Apr-17	16-Sep-18	0	0					
EM3145	CMS Preparation, Submission & Approval (Major Equipment)	203	12-Apr-17	01-Mar-18	12-Apr-17	31-Oct-17	0	-120					
EM3150	Manufacturing & Logistic (Major Equipment)	173	01-Mar-18	21-Aug-18	31-Oct-17	22-Apr-18	-120	-120					
EM3695	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	227	01-Oct-17	15-May-18	01-Oct-17	15-May-18	0	0					CMS Preparation, Submi
EM3705	Manufacturing & Logistic (Penstock, Pipe & Valve)	35	15-May-18	19-Jun-18	15-May-1	19-Jun-18	0	0					Man
EM3715	CMS Preparation, Submission & Approval (Electrical)	178	01-Oct-17	27-Mar-18	01-Oct-17	28-Mar-18	0	0					CMS Preparation, Submission & Approval (Electrical)
EM3725	Manufacturing & Logistic (Electrical)	84	28-Mar-18	19-Jun-18	28-Mar-18	20-Jun-18	0	0					Man
EM3735	CMS Preparation, Submission & Approval (Building Services)	230	01-Oct-17	22-Mar-18	01-Oct-17	19-May-18	0	57					CMS Preparation, Submission & Approval (Building Servi
EM3745	Manufacturing & Logistic (Building Services)	120	19-May-18	16-Sep-18	19-May-1	16-Sep-18	0	0					
UV Disinfection Facility (UV)		623	30-Mar-17	13-Jan-19	30-Mar-17	15-Dec-18	0	-28					
EM3185	CMS Preparation, Submission & Approval (Major Equipment)	318	30-Mar-17	11-Mar-18	30-Mar-17	10-Feb-18	0	-28					CMS Preparation, Submission & Approval (Major Equipment)
EM3190	Manufacturing & Logistic (Major Equipment)	308	11-Mar-18	13-Jan-19	11-Feb-18	15-Dec-18	-28	-28					
EM3755	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	250	21-Nov-17	15-Jul-18	21-Nov-17	29-Jul-18	0	13					
EM3775	CMS Preparation, Submission & Approval (Electrical)	265	21-Nov-17	30-Jul-18	21-Nov-17	13-Aug-18	0	13					
EM3795	CMS Preparation, Submission & Approval (Building Services)	313	21-Nov-17	16-Sep-18	21-Nov-17	30-Sep-18	0	13					
Sludge Dewatering Building (SDB)		539	27-Nov-16	11-Jan-19	27-Nov-16	11-Nov-18	0	-62					
EM3175	CMS Preparation, Submission & Approval (Major Equipment)	348	27-Nov-16	09-Mar-18	27-Nov-16	09-Nov-17	0	-120					CMS Preparation, Submission & Approval (Major Equipment)
EM3180	Manufacturing & Logistic (Major Equipment)	308	09-Mar-18	11-Jan-19	09-Nov-17	13-Sep-18	-120	-120					
EM3815	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	345	27-Oct-17	07-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					
Sludge Skip Storage Building (SSSB)		350	08-Dec-16	09-Aug-18	08-Dec-16	04-Jul-18	0	-36					
EM3265	CMS Preparation, Submission & Approval (Major Equipment)	331	08-Dec-16	03-Mar-18	08-Dec-16	03-Nov-17	0	-120					CMS Preparation, Submission & Approval (Major Equipment)
EM3270	Manufacturing & Logistic (Major Equipment)	159	03-Mar-18	09-Aug-18	03-Nov-17	11-Apr-18	-120	-120					
EM3875	CMS Preparation, Submission & Approval (Electrical)	220	04-Sep-17	11-Apr-18	04-Sep-17	11-Apr-18	0	0					CMS Preparation, Submission & Approval (E
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-Mar-18	04-Sep-17	12-Dec-17	0	-82					CMS Preparation, Submission & Approval (Building Services)
EM3905	Manufacturing & Logistic (Building Services)	120	05-Mar-18	02-Jul-18	13-Dec-17	11-Apr-18	-82	-82					
Administration Building & Maintenance Workshop (AB & WS)		545	31-Jan-17	26-Oct-18	31-Jan-17	29-Jun-18	0	-120					
EM3125	CMS Preparation, Submission & Approval (Major Equipment)	278	31-Jan-17	04-Mar-18	31-Jan-17	04-Nov-17	0	-120					CMS Preparation, Submission & Approval (Major Equipment)
EM3130	Manufacturing & Logistic (Major Equipment)	236	04-Mar-18	26-Oct-18	04-Nov-17	28-Jun-18	-120	-120					
EM3915	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	177	30-Aug-17	05-Mar-18	30-Aug-17	22-Feb-18	0	-11					CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)
EM3925	Manufacturing & Logistic (Penstock, Pipe & Valve)	126	06-Mar-18	09-Jul-18	22-Feb-18	28-Jun-18	-11	-11					
EM3935	CMS Preparation, Submission & Approval (Electrical)	205	30-Aug-17	22-Mar-18	30-Aug-17	23-Mar-18	0	0					CMS Preparation, Submission & Approval (Electrical)
EM3945	Manufacturing & Logistic (Electrical)	98	23-Mar-18	28-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					CMS Preparation, Submission & Approval (Building Services)
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	19-Sep-18	10-Jan-17	08-Dec-18	0	80					
EM3165	CMS Preparation, Submission & Approval (Major Equipment)	342	10-Jan-17	17-Mar-18	10-Jan-17	18-Dec-17	0	-89					CMS Preparation, Submission & Approval (Major Equipment)
EM3170	Manufacturing & Logistic (Major Equipment)	120	12-Mar-18	10-Jul-18	18-Dec-17	17-Apr-18	-84	-84					
EM3171	Witness FAT - DO 1 & DO 2	14	11-May-18	25-May-18	16-Feb-18	02-Mar-18	-84	-84					Witness FAT - DO 1
EM3172	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	249	30-Aug-17	02-Mar-18	30-Aug-17	05-May-18	0	65					CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)
EM3173	Manufacturing & Logistic (Penstock, Pipe & Valve)	126	16-May-18	19-Sep-18	06-May-1	08-Sep-18	-10	-10					
EM3975	CMS Preparation, Submission & Approval (Electrical)	327	30-Aug-17	18-Apr-18	30-Aug-17	22-Jul-18	0	96					CMS Preparation, Submission & Approva
EM3995	CMS Preparation, Submission & Approval (Building Services)	465	30-Aug-17	24-Jun-18	30-Aug-17	08-Dec-18	0	167					C
Chemical Building (CB)		349	08-Nov-17	06-Aug-18	08-Nov-17	23-Oct-18	0	77					
EM3230	Manufacturing & Logistic (Major Equipment)	168	10-Feb-18	06-Aug-18	08-Nov-17	25-Apr-18	-94	-104					

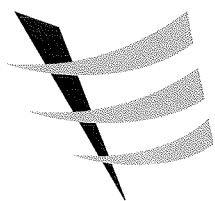


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Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date	2018				
									Feb	Mar	Apr	May	Jun
EM4015	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	349	08-Nov-17	30-Jun-18	08-Nov-17	23-Oct-18	0	115					
EM4035	CMS Preparation, Submission & Approval (Electrical)	227	08-Nov-17	07-May-18	08-Nov-17	23-Jun-18	0	47					
EM4055	CMS Preparation, Submission & Approval (Building Services)	295	08-Nov-17	27-May-18	08-Nov-17	30-Aug-18	0	95					
Street Fire Hydrant Pump Room & GENSET Room (FH)													
EM3275	CMS Preparation, Submission & Approval (Major Equipment)	456	23-Mar-17	07-Jul-18	23-Mar-17	07-Dec-18	0	152					
EM4075	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	455	23-Mar-17	21-Jun-18	23-Mar-17	21-Jun-18	0	0					
EM4095	CMS Preparation, Submission & Approval (Electrical)	432	01-Oct-17	07-Jul-18	01-Oct-17	07-Dec-18	0	152					
EM4115	CMS Preparation, Submission & Approval (Building Services)	325	01-Oct-17	20-May-18	01-Oct-17	22-Aug-18	0	94					
EM4115	CMS Preparation, Submission & Approval (Building Services)	378	01-Oct-17	02-Jun-18	01-Oct-17	13-Oct-18	0	133					
Electrical Buildings (EB1, EB2, EB3 & EB4)													
EM3235	CMS Preparation, Submission & Approval (Major Equipment)	441	23-Feb-17	09-Oct-18	23-Feb-17	09-Jul-18	0	-91					
EM3240	Manufacturing & Logistic (Major Equipment)	261	23-Feb-17	13-Mar-18	23-Feb-17	10-Nov-17	0	-122					
EM3300	CMS Preparation, Submission & Approval (Electrical)	210	13-Mar-18	09-Oct-18	11-Nov-17	08-Jun-18	-122	-122					
EM3305	Manufacturing & Logistic (Electrical)	182	11-Sep-17	13-Mar-18	11-Sep-17	12-Mar-18	0	-1					
EM3310	CMS Preparation, Submission & Approval (Control & Instrument)	98	13-Mar-18	19-Jun-18	12-Mar-18	18-Jun-18	-1	-1					
EM3320	CMS Preparation, Submission & Approval (Building Services)	302	11-Sep-17	29-Apr-18	11-Sep-17	09-Jul-18	0	72					
EM3325	Manufacturing & Logistic (Building Services)	96	09-Aug-17	04-Mar-18	09-Aug-17	12-Nov-17	0	-112					
EM3325	Manufacturing & Logistic (Building Services)	112	04-Mar-18	24-Jun-18	12-Nov-17	04-Mar-18	-112	-112					
Re-use Water Building (RW)													
EM3195	CMS Preparation, Submission & Approval (Major Equipment)	476	13-Apr-17	28-Jul-18	13-Apr-17	11-Jul-18	0	-18					
EM3200	Manufacturing & Logistic (Major Equipment)	220	13-Apr-17	10-Mar-18	13-Apr-17	19-Nov-17	0	-112					
EM4135	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	140	11-Mar-18	28-Jul-18	19-Nov-17	08-Apr-18	-112	-112					
EM4155	CMS Preparation, Submission & Approval (Electrical)	199	19-Nov-17	06-Jun-18	19-Nov-17	06-Jun-18	0	0					
EM4165	Manufacturing & Logistic (Electrical)	136	19-Nov-17	04-Apr-18	19-Nov-17	04-Apr-18	0	0					
EM4175	CMS Preparation, Submission & Approval (Building Services)	98	04-Apr-18	11-Jul-18	04-Apr-18	11-Jul-18	0	0					
DG Store & Chemical Waste Storage Building (DG) and Irrigation & Cleansing Water Pump Room (ICW)													
EM3255	CMS Preparation, Submission & Approval (Major Equipment)	558	24-May-17	14-Sep-18	24-May-17	13-Sep-18	0	0					
EM3260	Manufacturing & Logistic (Major Equipment)	200	24-May-17	09-Mar-18	24-May-17	09-Dec-17	0	-90					
EM4195	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	98	10-Mar-18	15-Jun-18	10-Dec-17	17-Mar-18	-90	-90					
EM4215	CMS Preparation, Submission & Approval (Electrical)	273	10-Dec-17	09-Sep-18	10-Dec-17	08-Sep-18	0	0					
EM4225	Manufacturing & Logistic (Electrical)	146	30-Sep-17	05-Mar-18	30-Sep-17	23-Feb-18	0	-11					
EM4235	CMS Preparation, Submission & Approval (Building Services)	98	06-Mar-18	11-Jun-18	23-Feb-18	01-Jun-18	-11	-11					
EM4245	Manufacturing & Logistic (Building Services)	237	30-Sep-17	25-May-18	30-Sep-17	24-May-18	0	0					
Existing Junction Chamber (JC)													
EM3215	CMS Preparation, Submission & Approval	112	25-May-18	14-Sep-18	25-May-18	13-Sep-18	0	0					
EM3220	Manufacturing & Logistic	305	07-Jan-17	14-Jun-18	07-Jan-17	14-Feb-18	0	-120					
Gatehouse (GH)													
EM3285	CMS Preparation, Submission & Approval (Building Services)	305	07-Jan-17	08-Mar-18	07-Jan-17	08-Nov-17	0	-120					
Payment Flowmeter Chamber (PF)													
EM3205	CMS Preparation, Submission & Approval (Major Equipment)	450	24-Apr-17	17-Jul-18	24-Apr-17	18-Jul-18	0	0					
EM3210	Manufacturing & Logistic (Major Equipment)	450	24-Apr-17	17-Jul-18	24-Apr-17	18-Jul-18	0	0					
EM4255	CMS Preparation, Submission & Approval (Penstock, Pipe & Valve)	658	25-Jan-17	09-Oct-18	25-Jan-17	18-Dec-18	0	70					
EM4265	Manufacturing & Logistic (Penstock, Pipe & Valve)	299	25-Jan-17	20-Mar-18	25-Jan-17	20-Nov-17	0	-120					
EM4275	CMS Preparation, Submission & Approval (Electrical)	203	20-Mar-18	09-Oct-18	20-Nov-17	11-Jun-18	-120	-120					
EM4295	CMS Preparation, Submission & Approval (Building Services)	157	01-Sep-17	04-Mar-18	01-Sep-17	04-Feb-18	0	-28					
Foul Water Pump Sump													
EM4315	CMS Preparation, Submission & Approval	126	04-Mar-18	08-Jul-18	04-Feb-18	10-Jun-18	-28	-28					
EM4320	Manufacturing & Logistic	333	20-Nov-17	13-Aug-18	20-Nov-17	19-Oct-18	0	67					
SCADA and CMMS Systems													
EM3330	CMS Preparation, Submission & Approval	393	20-Nov-17	12-Sep-18	20-Nov-17	18-Dec-18	0	97					
EM3335	Manufacturing & Logistic (SCADA)	234	20-Nov-17	21-Aug-18	20-Nov-17	21-Aug-18	0	0					
EM3345	Manufacturing & Logistic (CMMS)	155	20-Nov-17	23-Apr-18	20-Nov-17	23-Apr-18	0	0					
Cast - In Items													
EM3520	CMS Preparation, Submission & Approval	120	23-Apr-18	21-Aug-18	24-Apr-18	21-Aug-18	0	0					
EM3525	Delivery of Cast-in Items for CEPT and SF	332	01-Jul-17	10-Aug-18	01-Jul-17	29-Jun-18	0	-42					
EM3530	Delivery of Cast-in Items for PTW and IPS	209	01-Jul-17	09-Mar-18	01-Jul-17	26-Jan-18	0	-42					
EM3535	Delivery of Cast-in Items for SHB	154	09-Mar-18	10-Aug-18	26-Jan-18	29-Jun-18	-42	-42					
EM3545	Delivery of Cast-in Items for SDB	154	09-Mar-18	10-Aug-18	26-Jan-18	29-Jun-18	-42	-42					
EM3550	Delivery of Cast-in Items for SSSB	469	01-Feb-17	10-Jul-18	01-Feb-17	09-Jul-18	0	0					
EM3555	Delivery of Cast-in Items for SSSB	469	01-Feb-17	16-May-18	01-Feb-17	15-May-18	0	0					
EM3560	Delivery of Cast-in Items for SSSB	180	30-Sep-17	28-Mar-18	30-Sep-17	28-Mar-18	0	-61					
EM3565	Delivery of Cast-in Items for SSSB	180	30-Sep-17	28-Mar-18	30-Sep-17	28-Mar-18	0	0					
EM3570	Delivery of Cast-in Items for SSSB	48	28-Feb-18	16-Apr-18	01-Feb-18	20-Mar-18	-27	-27					
EM3575	Delivery of Cast-in Items for SSSB	82	26-Mar-18	15-Jun-18	09-Feb-18	01-May-18	-45	-45					
EM3580	Delivery of Cast-in Items for SSSB	48	27-Oct-17	26-Mar-18	06-Feb-18	25-Mar-18	102	0					

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Activity ID	Activity Name	Original Duration	Start	Finish	Rev 8 BL Start	Rev 8 BL Finish	Slippage Start Date	Slippage Finish Date	2018					
									Feb	Mar	Apr	May	Jun	
EM3555	Delivery of Cast-in Items for Admin. Building	60	28-Feb-18	28-Apr-18	25-Jan-18	25-Mar-18	-34	-34				Delivery of Cast-in Items for Admin		
EM3560	Delivery of Cast-in Items for DO No. 1	48	12-Apr-18	29-May-18	12-Apr-18	29-May-18	0	0				Delivery of Cast-		
EM3565	Delivery of Cast-in Items for DO No. 2	48	31-Jan-18	02-May-18	31-Jan-18	19-Mar-18	0	-43				Delivery of Cast-in Items for DO		
EM3570	Delivery of Cast-in Items for CB	48	31-Mar-18	18-May-18	31-Mar-18	17-May-18	0	0				Delivery of Cast-in Item		
EM3575	Delivery of Cast-in Items for FH	48	24-Apr-18	11-Jun-18	24-Apr-18	10-Jun-18	0	0				Delivery		
EM3580	Delivery of Cast-in Items for ICW	48	18-May-18	05-Jul-18	18-May-1	04-Jul-18	0	0						
EM3585	Delivery of Cast-in Items for EB1	48	17-May-18	03-Jul-18	17-May-1	03-Jul-18	0	0						
EM3590	Delivery of Cast-in Items for EB2	48	27-Oct-17	26-May-18	09-Apr-18	26-May-18	164	0				Delivery of Cast-in		
EM3595	Delivery of Cast-in Items for EB3	48	29-Apr-18	16-Jun-18	30-Apr-18	16-Jun-18	0	0				Delive		
EM3600	Delivery of Cast-in Items for EB4	48	27-Oct-17	26-Apr-18	09-Mar-18	26-Apr-18	133	0				Delivery of Cast-in Items for EB4		
EM3605	Delivery of Cast-in Items for RW	48	02-Apr-18	19-May-18	02-Apr-18	19-May-18	0	0				Delivery of Cast-in Item		
EM3610	Delivery of Cast-in Items for DG	48	18-May-18	05-Jul-18	18-May-1	04-Jul-18	0	0						
EM3615	Delivery of Cast-in Items for JC	70	07-Oct-17	13-Mar-18	07-Oct-17	15-Dec-17	0	-88				Delivery of Cast-in Items for JC		
EM3620	Delivery of Cast-in Items for GH	48	03-Apr-18	21-May-18	03-Apr-18	20-May-18	0	0				Delivery of Cast-in It		
EM3625	Delivery of Cast-in Items for PF	48	24-Jan-18	12-Mar-18	24-Jan-18	12-Mar-18	0	0				Delivery of Cast-in Items for PF		
EM3630	Delivery of Cast-in Items for FW	48	23-May-18	10-Jul-18	23-May-1	09-Jul-18	0	0						
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



Internal Calibration Report
of
Dust Monitor

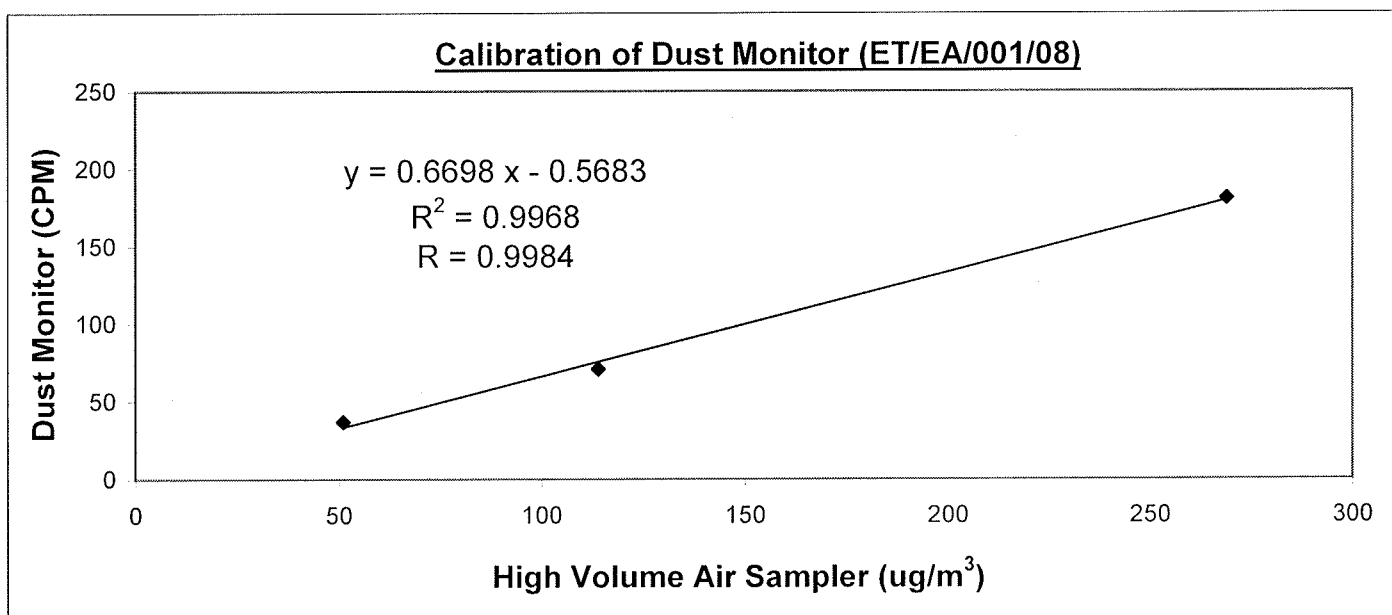
Manufacturer : SIBATA (LD-3B) **Date of Calibration :** 30 September 2017

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 Sampler 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 Serial No.: 1177		Calibration Due Date: 14 October 2017	

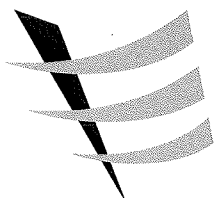


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after three-point calibration

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)



Internal Calibration Report
of
Dust Monitor

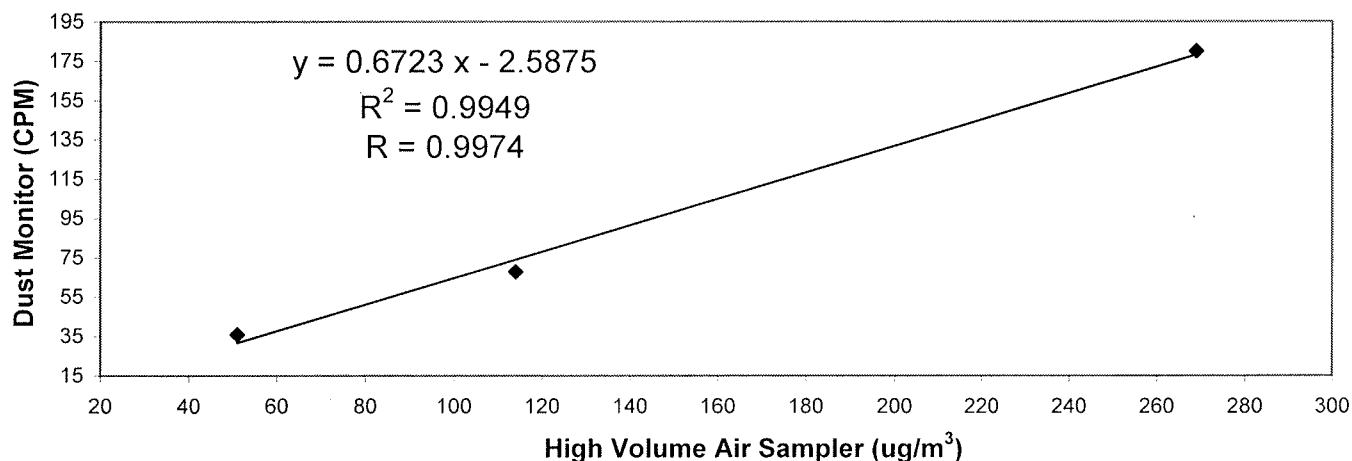
Manufacturer : SIBATA (LD-3B) **Date of Calibration** : 21 October 2017

Serial No. : 155331 (ET/EA/001/09) **Calibration Due Date** : 20 April 2018

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


Results	Dust Monitor (CPM)	36	68	180
	High Volume Air Sampler (ug/m ³)	51	114	269
	High Volume Air Sampler Serial No.: 1177		Calibration Due Date: 13 December 2017	


Calibration of Dust Monitor (ET/EA/001/09)



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)



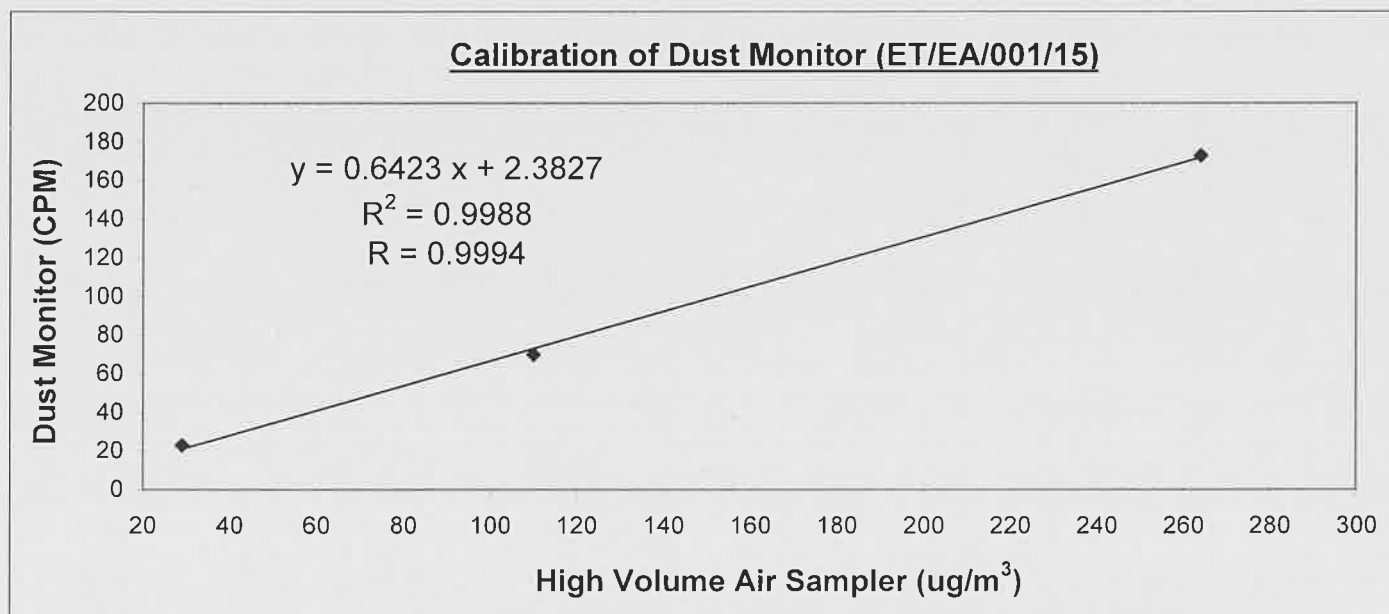
Internal Calibration Report
of
Dust Monitor

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 Sampler 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 Serial 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)



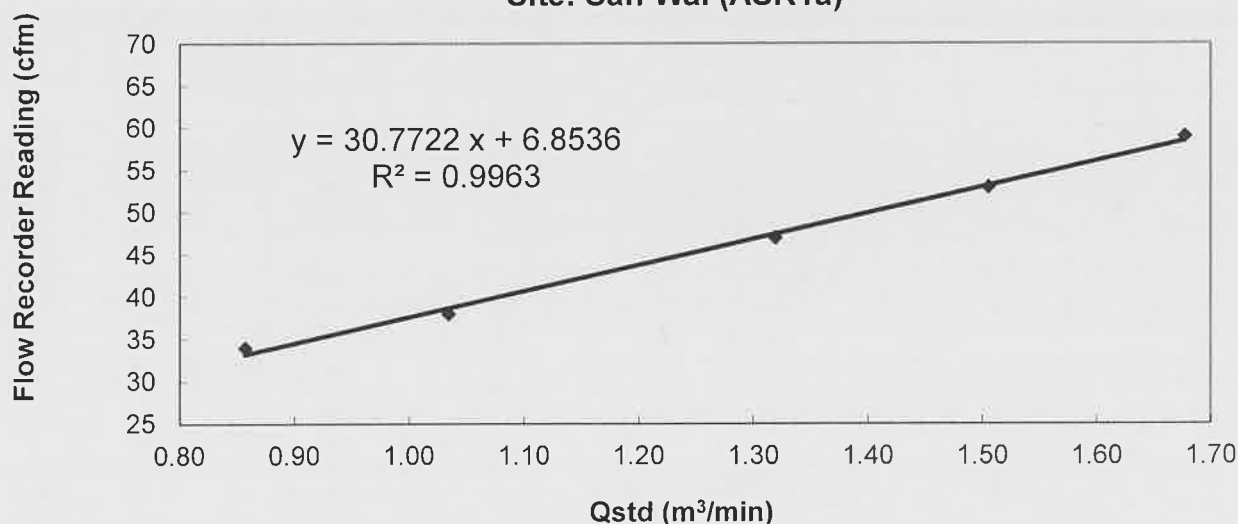
Calibration Report
of
High Volume Air Sampler

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)



Calibration Report
of
High Volume Air Sampler

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

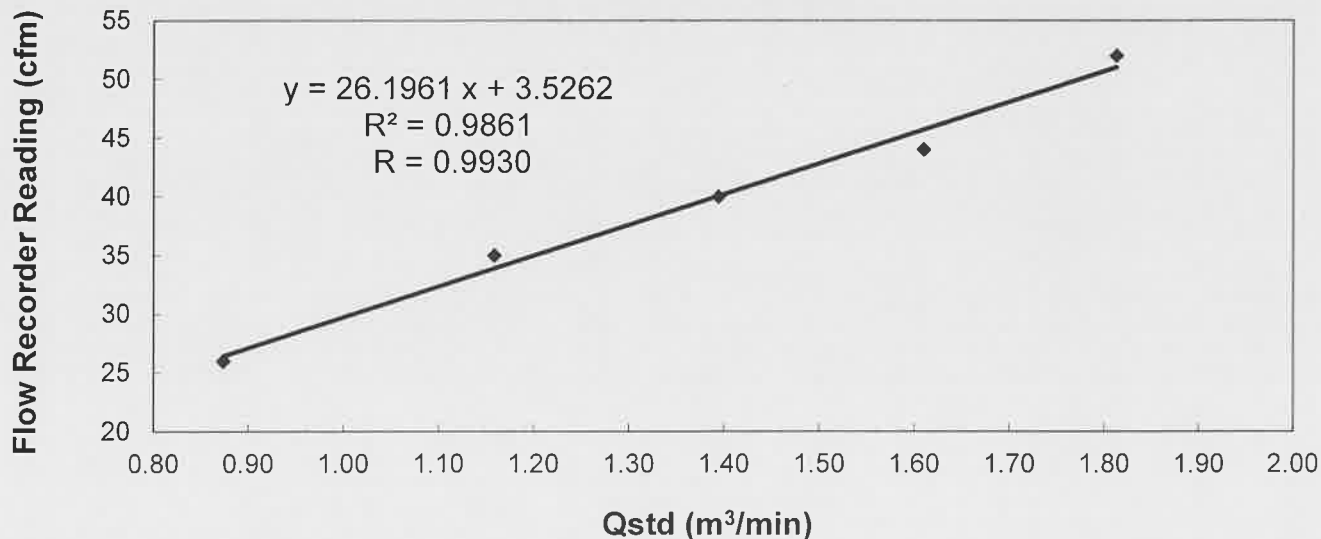
Serial No. : 9998 (ET / EA / 003 / 12) **Calibration Due Date** : 12 March 2018

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)

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 = $\text{SQRT}[\text{H2O}(\text{Pa}/760)(298/\text{Ta})]$			y axis = $\text{SQRT}[\text{H2O}(\text{Ta}/\text{Pa})]$		

CALCULATIONS

$$\text{Vstd} = \text{Diff. Vol}[(\text{Pa} - \text{Diff. Hg})/760](298/\text{Ta})$$

$$\text{Qstd} = \text{Vstd}/\text{Time}$$

$$\text{Va} = \text{Diff Vol}[(\text{Pa} - \text{Diff Hg})/\text{Pa}]$$

$$\text{Qa} = \text{Va}/\text{Time}$$

For subsequent flow rate calculations:

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

$$\text{Qa} = 1/\text{m}\{[\text{SQRT} \text{H2O}(\text{Ta}/\text{Pa})] - b\}$$

Appendix D2

Impact Air Quality Monitoring Results

Summary of Impact 1-hour TSP Monitoring Results

Air Quality Monitoring Station : ASR1a

Date	Weather	Temperature (°C)	Monitoring Period		1-hr TSP ($\mu\text{g}/\text{m}^3$)
			Start	Finish	
06/02/2018	Cloudy	13	08:49	09:49	73
06/02/2018	Cloudy	13	09:49	10:49	76
06/02/2018	Cloudy	13	10:49	11:49	74
12/02/2018	Cloudy	11	08:58	09:58	89
12/02/2018	Cloudy	11	09:58	10:58	84
12/02/2018	Cloudy	11	10:58	11:58	83
15/02/2018	Cloudy	16	08:07	09:07	102
15/02/2018	Cloudy	17	09:07	10:07	101
15/02/2018	Cloudy	18	10:07	11:07	105
21/02/2018	Cloudy	17	10:00	11:00	89
21/02/2018	Cloudy	17	11:00	12:00	92
21/02/2018	Cloudy	17	13:00	14:00	95
27/02/2018	Cloudy	16	08:20	09:20	102
27/02/2018	Cloudy	16	09:20	10:20	116
27/02/2018	Cloudy	17	10:20	11:20	90
Min					73
Max					116
Average					91

Air Quality Monitoring Station : ASR2a

Date	Weather	Temperature (°C)	Monitoring Period		1-hr TSP ($\mu\text{g}/\text{m}^3$)
			Start	Finish	
06/02/2018	Cloudy	13	13:02	14:02	104
06/02/2018	Cloudy	13	14:02	15:02	101
06/02/2018	Cloudy	13	15:02	16:02	106
12/02/2018	Cloudy	11	13:09	14:09	72
12/02/2018	Cloudy	11	14:09	15:09	78
12/02/2018	Cloudy	11	15:09	16:09	69
15/02/2018	Cloudy	16	08:17	09:17	96
15/02/2018	Cloudy	17	09:17	10:17	95
15/02/2018	Cloudy	18	10:17	11:17	93
21/02/2018	Cloudy	17	14:05	15:05	81
21/02/2018	Cloudy	17	15:05	16:05	84
21/02/2018	Cloudy	17	16:05	17:05	83
27/02/2018	Cloudy	16	08:27	09:27	73
27/02/2018	Cloudy	16	09:27	10:27	71
27/02/2018	Cloudy	17	10:27	11:27	77
Min					69
Max					106
Average					86

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. (µg/m ³)	Weather Condition
Date	Time	Date	Time	Initial	Final		Initial	Final		Initial	Final		
06/02/2018	08:55	07/02/2018	08:55	23933.64	23957.64	24	1.1097	1.1097	1.1097	2.7869	2.9190	83	Cloudy
12/02/2018	09:00	13/02/2018	09:00	23957.64	23981.64	24	1.1097	1.1097	1.1097	2.8043	2.9505	91	Cloudy
15/02/2018	08:10	16/02/2018	08:10	23981.64	24005.64	24	1.1421	1.1421	1.1421	2.7643	2.8890	76	Cloudy
21/02/2018	10:00	22/02/2018	10:00	24005.64	24029.64	24	1.1421	1.1421	1.1421	2.8425	2.9585	71	Cloudy
27/02/2018	08:20	28/02/2018	08:20	24029.64	24053.64	24	1.1421	1.1421	1.1421	2.8842	3.0083	75	Cloudy
											Min	71	
											Max	91	
											Average	79	

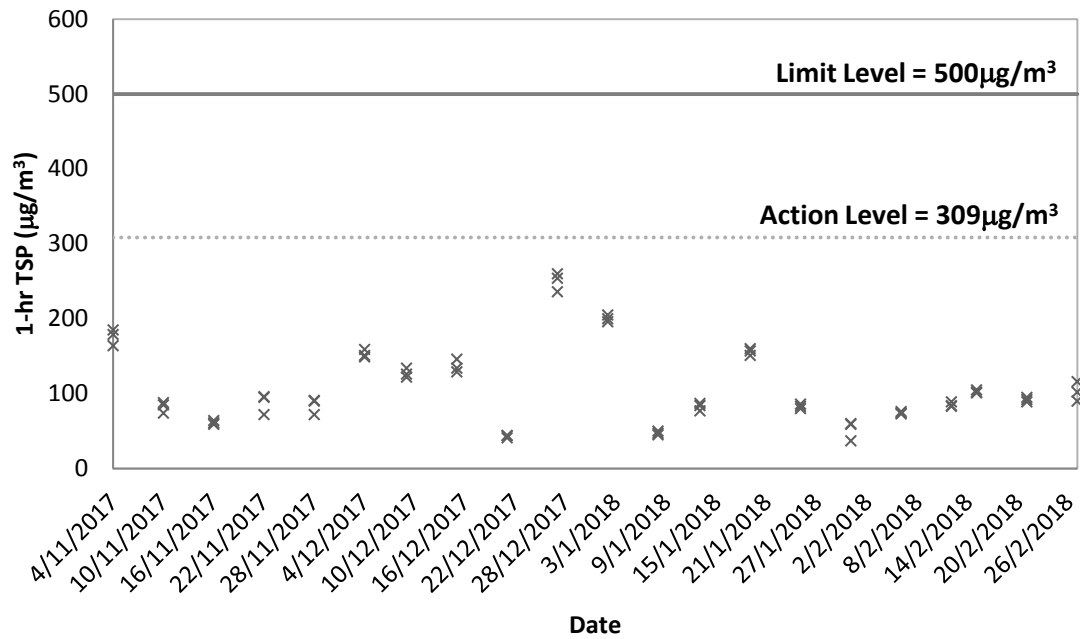
Air Quality Monitoring Station : ASR2a

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		
06/02/2018	13:00	07/02/2018	13:00	20894.45	20918.45	24	1.1251	1.1251	1.1251	2.8024	2.9515	92	Cloudy
12/02/2018	13:05	13/02/2018	13:05	20918.45	20942.45	24	1.1251	1.1251	1.1251	2.7658	2.9047	86	Cloudy
15/02/2018	08:20	16/02/2018	08:20	20942.45	20966.45	24	1.1633	1.1633	1.1633	2.7942	2.9107	70	Cloudy
21/02/2018	14:08	22/02/2018	14:08	20966.45	20990.45	24	1.1633	1.1633	1.1633	2.7932	2.9173	74	Cloudy
27/02/2018	08:30	28/02/2018	08:30	20990.45	21014.45	24	1.1633	1.1633	1.1633	2.7635	2.8759	67	Cloudy
											Min	67	
											Max	92	
											Average	78	

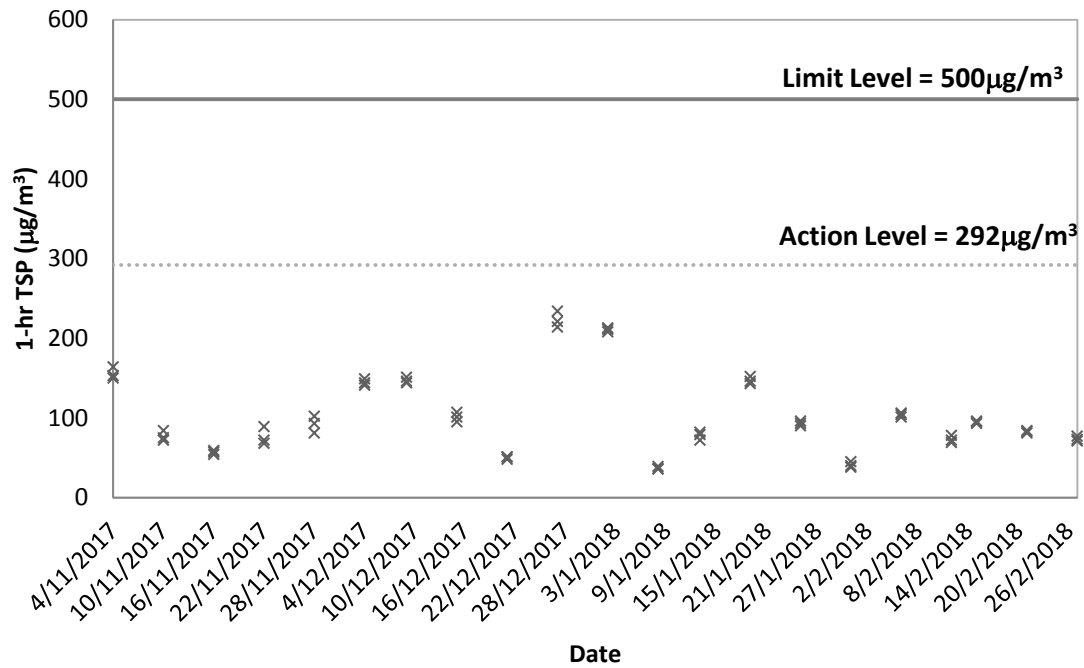
Appendix D3

Graphical Plots of Impact Air Quality Monitoring Results

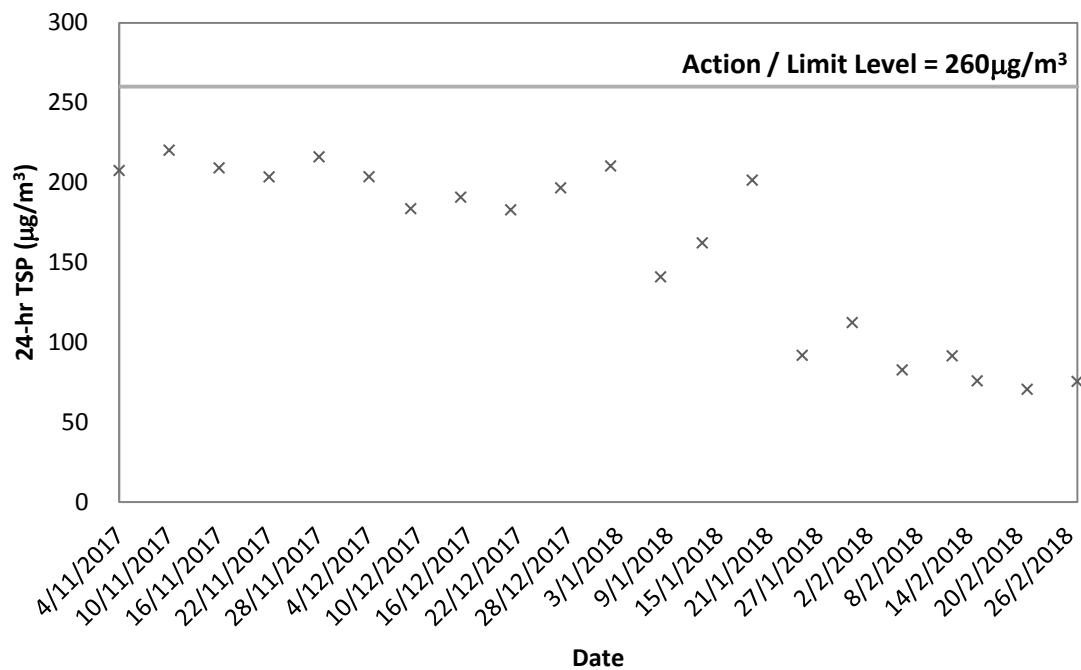
1-hr TSP at ASR1a



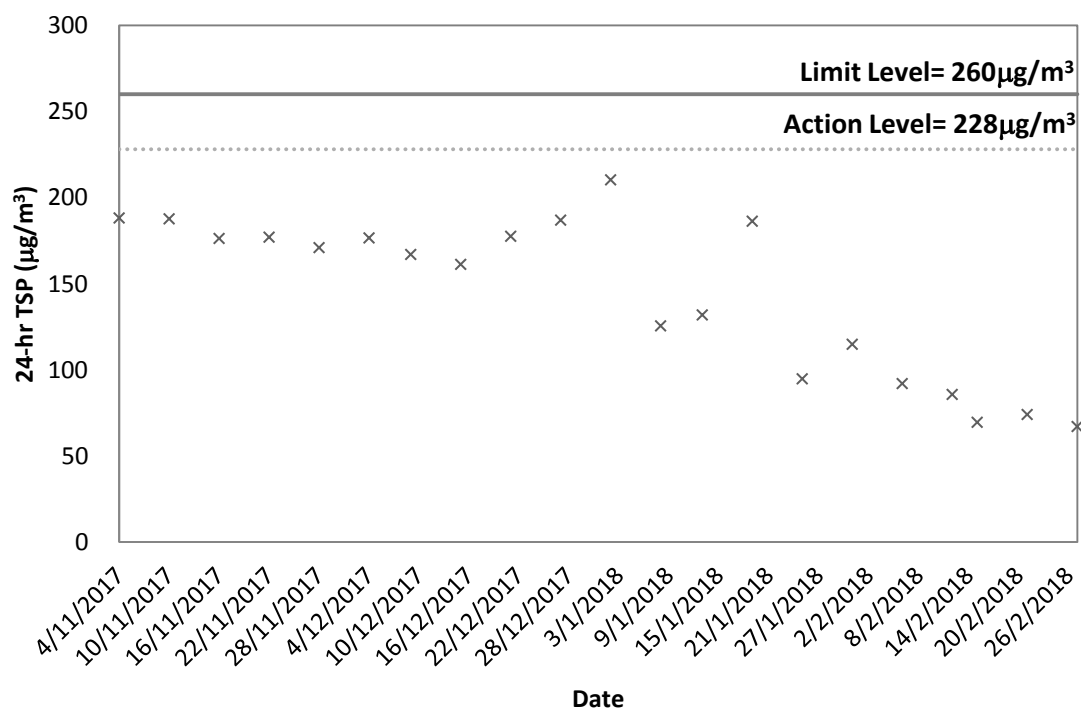
1-hr TSP at ASR2a



24-hr TSP at ASR1a



24-hr TSP at ASR2a



Appendix E1

Calibration Certificates for Impact Noise Monitoring Equipment



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:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
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

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

Date: 16-Oct-17



Calibration Certificate

Certificate No. 709571

Page 2 of 2 Pages

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 -----



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:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
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

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

Date: 24-May-17



Calibration Certificate

Certificate No. 704458

Page 2 of 3 Pages

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 \sim -3.1 dB
16 kHz	-8.0	- 6.6 dB, + 3.5 dB \sim - 17.0 dB

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 704458

Page 3 of 3 Pages

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 -----



Calibration Certificate

Certificate No. 701813

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/003/17

Serial No. : 00264519

Test Conditions

Date of Test : 7-Mar-17

Ambient Temperature : $(23 \pm 3)^{\circ}\text{C}$

Supply Voltage : --

Relative Humidity : $(50 \pm 25) \%$

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).

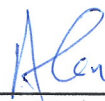
Main Test equipment used:

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

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

Date: 7-Mar-17



Calibration Certificate

Certificate No. 701813

Page 2 of 3 Pages

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 \sim -3.1 dB
16 kHz	-8.0	- 6.6 dB, + 3.5 dB \sim - 17.0 dB

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 701813

Page 3 of 3 Pages

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 -----



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 : $(23 \pm 3)^{\circ}\text{C}$

Relative Humidity : $(50 \pm 25) \%$

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:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
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



Calibration Certificate

Certificate No. 701814

Page 2 of 3 Pages

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 \sim -3.1 dB
16 kHz	-8.1	- 6.6 dB, + 3.5 dB \sim -17.0 dB

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 701814

Page 3 of 3 Pages

4. Frequency & Time weightings at 1 kHz

4.1 Frequency Weighting (Fast)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
A	94.0	94.0 (Ref.)	- -	± 0.4 dB
C	94.0	94.3	+0.3	
Z	94.0	94.3	+0.3	

4.2 Time Weighting (A-weighted)

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

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure : 1012 hPa.

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

5. Firmware Version: 1.7

6. Power Supply Check: OK

7. The UUT was adjusted with the laboratory's sound calibrator at the reference sound pressure level before the calibration.

----- END -----

Appendix E2

Impact Noise Monitoring Results

Day-time Noise Monitoring

Monitoring Station: NSR1a

Date	Weather	Temperature (°C)	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at NSR1a, dB (A)			Wind Speed (m/s)
					Leq (30min)	L10 (30min)	L90 (30min)	
06/02/18	Cloudy	13	08:55	09:25	63.6	66.7	61.5	0.4
12/02/18	Cloudy	11	09:00	09:30	66.3	68.8	64.1	0.2
15/02/18	Cloudy	16	08:56	09:26	54.2	54.7	51.6	0.3
21/02/18	Fine	17	10:00	10:30	66.2	68.5	63.4	0.2
27/02/18	Cloudy	16	09:09	09:39	68.7	70.1	54.7	0.4
Min					54.2	54.7	51.6	
Max					68.7	70.1	64.1	
Logarithmic Average for normal weekdays					65.7	67.8	61.2	

Monitoring Station: NSR2a(*)

Date	Weather	Temperature (°C)	Start Time (hh:mm)	End Time (hh:mm)	Noise Level at NSR2a, dB (A)			Wind Speed (m/s)
					Leq (30min)	L10 (30min)	L90 (30min)	
06/02/18	Cloudy	13	13:10	13:40	66.4	68.9	63.7	0.2
12/02/18	Cloudy	11	13:10	13:40	67.4	71.2	65.3	0.3
15/02/18	Cloudy	16	08:18	08:48	61.1	65.4	50.5	0.2
21/02/18	Fine	17	14:30	15:00	67.0	69.1	64.2	0.3
27/02/18	Cloudy	16	08:35	09:05	63.8	66.6	53.9	0.6
Min					61.1	65.4	50.5	
Max					67.4	71.2	65.3	
Logarithmic Average for normal weekdays					65.7	68.7	62.4	

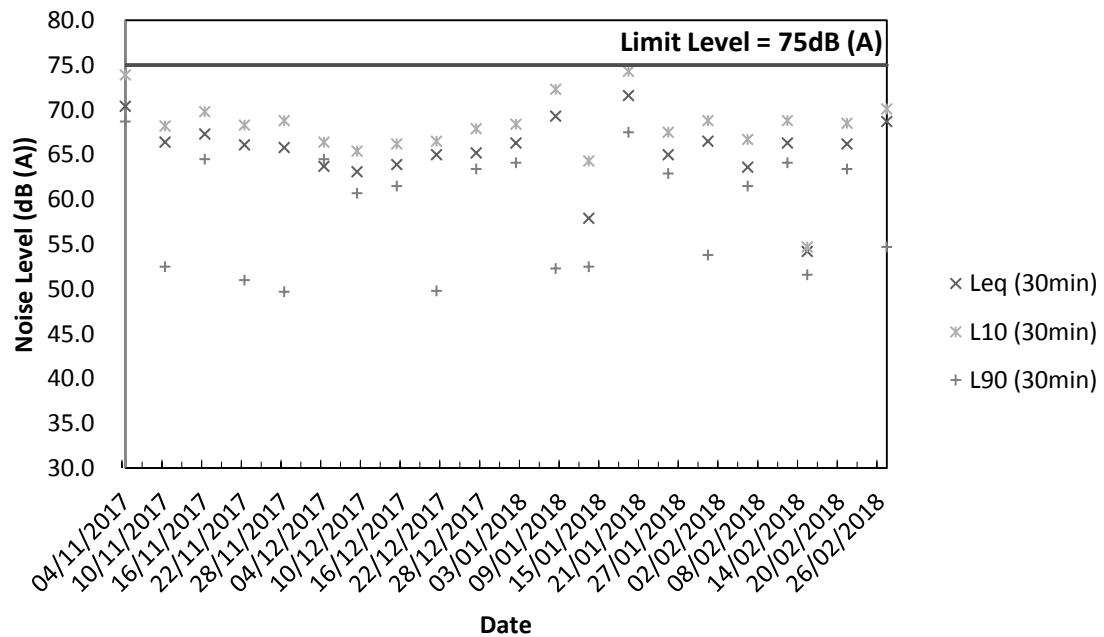
(*) : 3dB(A) correction was added to the results during the free-field noise measurements

Appendix E3

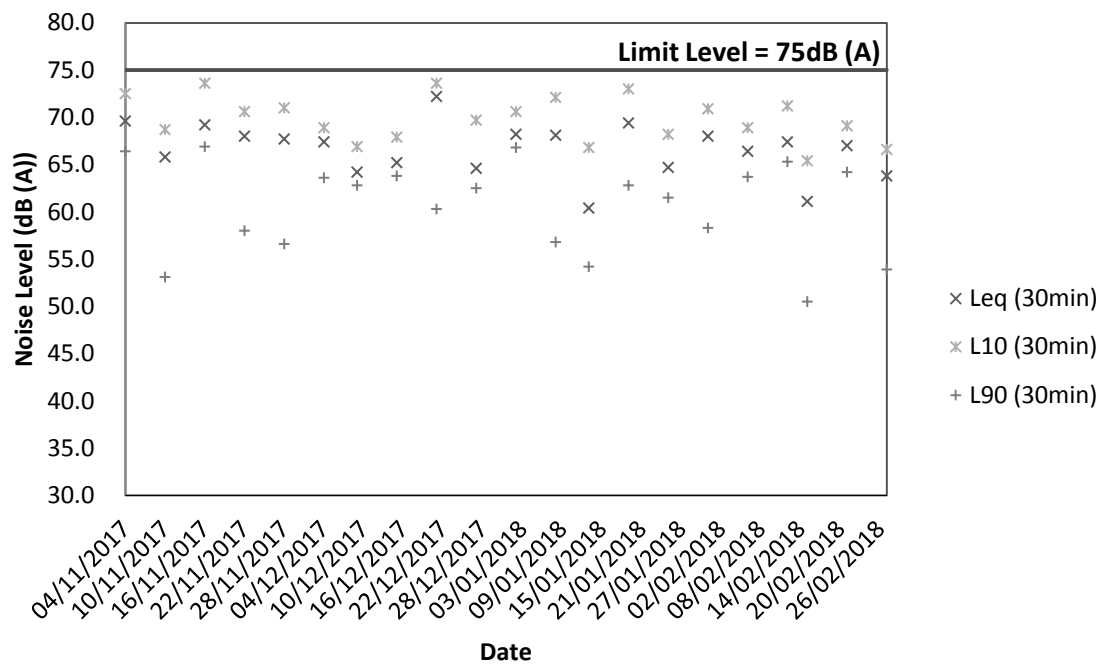
Graphical Plots of Impact Noise Monitoring Data



Noise Level at NSR1a



Noise Level at NSR2a



Appendix F1

Calibration Certificates for Impact Water Quality Monitoring Equipments



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/008/006	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 ($\text{Na}_2\text{S}_2\text{O}_3$) solution

Reagent No. of $\text{Na}_2\text{S}_2\text{O}_3$ titrant	CPE/012/4.5/001/18	Reagent No. of 0.025N $\text{K}_2\text{Cr}_2\text{O}_7$	CPE/012/4.4/002/25
	Trial 1		Trial 2
Initial Vol. of $\text{Na}_2\text{S}_2\text{O}_3$ (ml)	0.50		0.90
Final Vol. of $\text{Na}_2\text{S}_2\text{O}_3$ (ml)	41.85		42.70
Vol. of $\text{Na}_2\text{S}_2\text{O}_3$ used (ml)	41.35		41.80
Normality of $\text{Na}_2\text{S}_2\text{O}_3$ solution (N)	0.0242		0.0239
Average Normality (N) of $\text{Na}_2\text{S}_2\text{O}_3$ solution (N)	0.0241		
Acceptance criteria, Deviation	Less than $\pm 0.001\text{N}$		

Calculation: Normality of $\text{Na}_2\text{S}_2\text{O}_3$, $N = 0.25 / \text{ml } \text{Na}_2\text{S}_2\text{O}_3 \text{ used}$

Linearity 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 $\text{Na}_2\text{S}_2\text{O}_3$ (ml)	1.00	10.60	0.15	7.35	21.65	24.85
Final Vol. of $\text{Na}_2\text{S}_2\text{O}_3$ (ml)	10.50	20.20	7.35	14.50	24.85	28.10
Vol. (V) of $\text{Na}_2\text{S}_2\text{O}_3$ 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: $\text{DO (mg/L)} = V \times N \times 8000/298$

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 ₂ S ₂ O ₃ (ml)	0.45	14.60	1.10	14.20
Final Vol. of Na ₂ S ₂ O ₃ (ml)	14.60	28.70	14.20	27.15
Vol. (V) of Na ₂ S ₂ O 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) Difference 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 : VP

Approved by : [Signature]

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.
01/02/18	11:35-11:50	Cloudy	Mid-Depth	9.5	9.6	9.5	2.81	2.78	2.80	5.2	5.5	5.4
03/02/18	08:20-08:25	Cloudy	Mid-Depth	9.8	9.8	9.8	2.42	2.45	2.44	<5.0 [#]	<5.0 [#]	<5.0
06/02/18	14:00-14:15	Cloudy	Mid-Depth	9.9	9.8	9.9	2.98	2.95	2.97	<3.0 [*]	<5.0 [#]	<5.0
08/02/18	11:30-11:35	Fine	Mid-Depth	5.5	5.6	5.6	2.09	2.11	2.10	<3.0 [*]	<3.0 [*]	<3.0
10/02/18	11:00-11:05	Fine	Mid-Depth	8.0	8.1	8.1	2.17	2.19	2.18	<3.0 [*]	<3.0 [*]	<3.0
13/02/18	10:00-10:05	Fine	Mid-Depth	6.5	6.6	6.6	2.32	2.35	2.34	3.4	<5.0 [#]	3.4
15/02/18	08:40-08:55	Cloudy	Mid-Depth	7.0	7.0	7.0	2.41	2.39	2.40	<3.0 [*]	<3.0 [*]	<3.0
17/02/18	09:00-09:30	Fine	Mid-Depth	6.8	6.8	6.8	2.60	2.62	2.61	<3.0 [*]	<3.0 [*]	<3.0
20/02/18	13:15-13:20	Cloudy	Mid-Depth	6.5	6.4	6.4	2.09	2.05	2.07	5.2	4.9	5.1
22/02/18	11:00-11:05	Cloudy	Mid-Depth	8.1	8.1	8.1	2.32	2.36	2.34	7.0	6.8	6.9
24/02/18	15:00-15:15	Cloudy	Mid-Depth	8.8	8.8	8.8	2.54	2.53	2.54	7.6	9.1	8.4
27/02/18	16:35-16:48	Cloudy	Mid-Depth	12.3	12.5	12.4	2.64	2.71	2.68	5.5	5.6	5.6
				Min		5.5	Min		2.05	Min		<3.0
				Max		12.5	Max		2.98	Max		9.1
				Average		8.2	Average		2.45	Average		2.7

Remark(s):

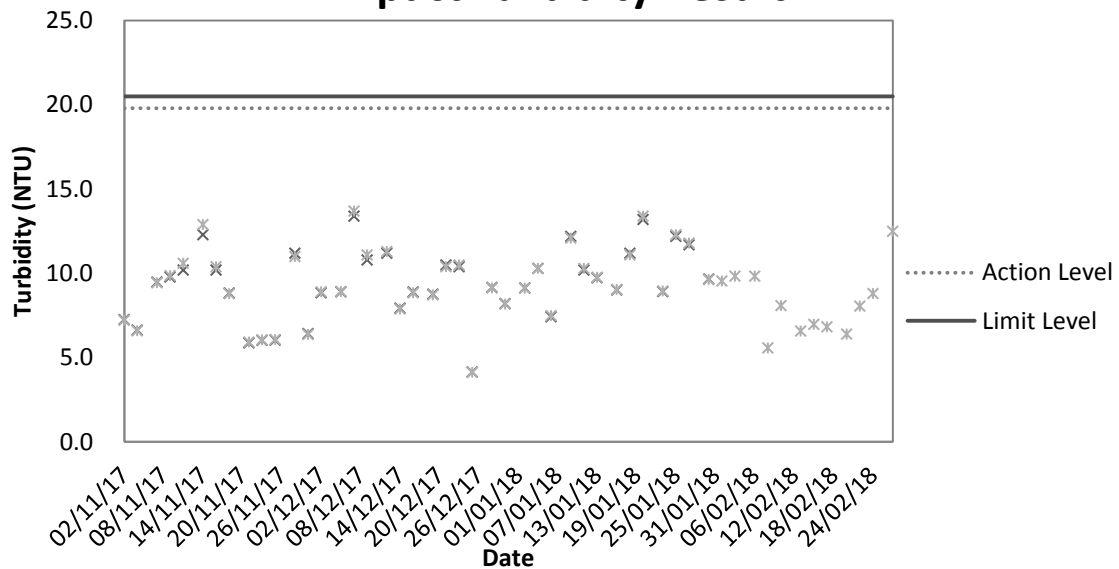
- (*) 300ml sample was used for Suspended Solids analysis. Practical Quantitation Limit of Suspended Solids reported less than 3.0 mg/L. The results reported as <3.0 would be counted as zero for average measurement.
- (#) 200ml sample was used for Suspended Solids analysis. Practical Quantitation Limit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

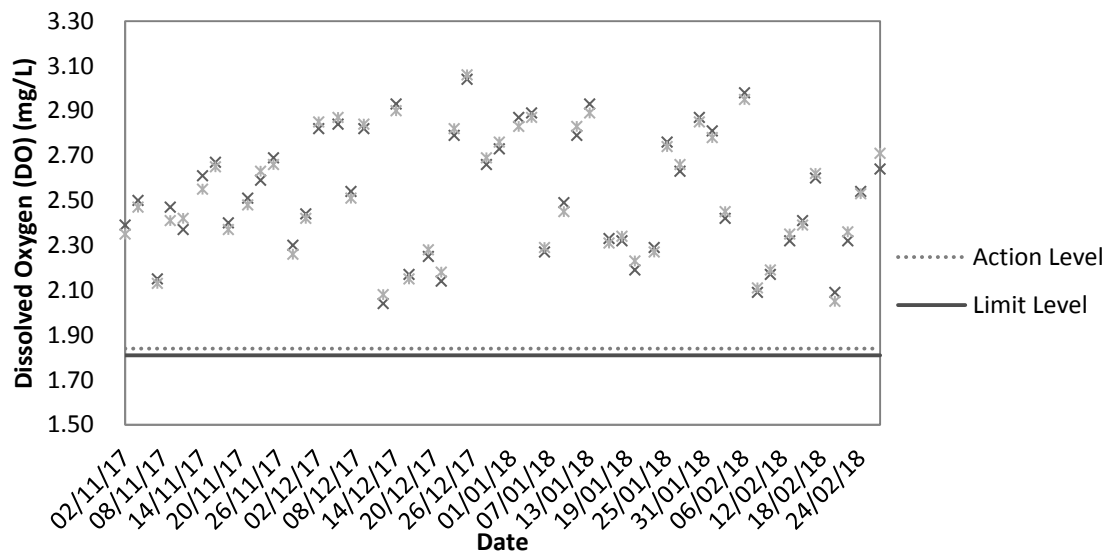
Graphical Plots of Impact Water Quality Monitoring Data



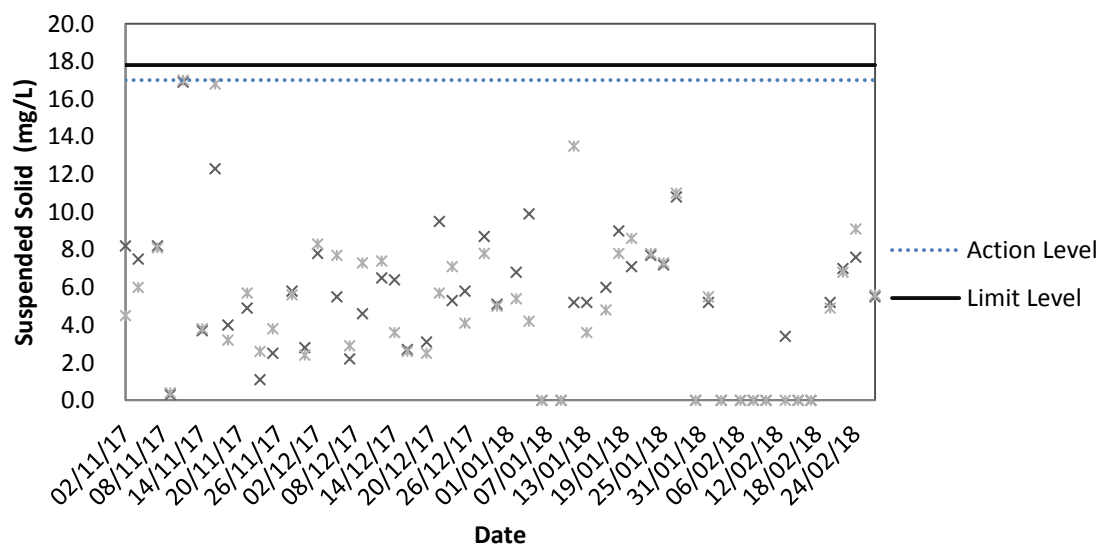
Impact Turbidity Result



Impact DO Result



Impact Suspended Solid (SS) Result



Appendix G

Weather Condition

Daily Extract of Meteorological Observations, February 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	1023.0	12.8	9.5	4.5	1.2	57	0.0	060	6.2
02	1025.4	11.7	10.2	8.9	3.6	64	0.0	360	7.1
03	1026.6	11.0	9.4	7.9	-1.5	47	0.0	030	8.5
04	1026.8	11.5	9.2	8.0	-2.3	44	0.0	030	7.7
05	1027.3	12.0#	8.5	6.0#	-1.7	51	0.0	010	5.8
06	1024.1	16.5	10.5	5.7	-1.7	45	0.0	050	5.8
07	1021.3	15.1	11.8	9.0	2.8	57	0.0	020	4.1
08	1019.0	18.5	13.3	8.4	5.0	60	0.0	060	4.3
09	1016.4	19.9	15.7	13.6	10.7	73	0.0	070	5.0
10	1017.6	23.4	18.1	15.2	12.9	72	0.0	270	5.0
11	1023.1	19.1	16.1	13.9	6.2	52	0.0	040	7.7
12	1026.7	20.2	14.4	10.2	4.0	51	0.0	060	7.7
13	1023.8	20.2#	14.0	9.4#	6.7	63	0.0	340	3.9
14	1018.9	22.6	16.1	10.3	9.4	67	0.0	170	3.0
15	1016.2	25.4	18.5	13.3	14.9	81	0.0	320	2.8
16	1015.1	25.6	19.6	13.9	15.7	81	0.0	270	3.2
17	1016.6	20.4	17.6	15.6	14.4	83	0.0	080	7.8
18	1017.4	22.8	19.1	16.3	15.2	79	0.0	050	3.5
19	1016.0	26.7	21.2	17.8	18.3	84	0.0	340	2.3
20	1014.1	26.3#	21.5	19.0#	18.7	85	0.0	060	4.4
21	1014.7	20.7	18.5	16.5	16.1	86	0.5	050	5.8
22	1018.8	16.7	14.0	11.7	12.3	89	2.5	040	7.4
23	1020.2	17.8	14.8	11.5	11.4	81	2.0	070	5.4
24	1019.0	23.3	18.7	15.0	14.1	75	0.0	330	3.5
25	1018.5	23.3	19.8	17.5	15.9	78	0.0	360	4.8
26	1019.7	21.0	17.5	14.7	12.9	75	0.0	060	6.0
27	1017.3	24.4	18.8	13.9	13.2	71	0.0	030	5.1
28	1013.8	26.7	21.2	17.5	17.5	80	0.0	330	3.4

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:

22.18

Inspected By:

Frankie Tung

Time:

9:00

Weather Condition:

Cloudy

Participants:

Patrick Leung, Teddy Zou, TX Leung, Anthony Zou, Isling So

1	Permits/Licenses	N/A	Yes	No	Remarks
1.1	Are Environmental Permit, license/ other permit displayed at major site exit and vehicle access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.2	Are Construction Noise Permits available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.3	Is wastewater discharge license available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.4	Are trip tickets for chemical waste and construction waste disposal available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.5	Are relevant license/permits for disposal of construction waste or excavated materials available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2	Air Quality	N/A	Yes	No	Remarks
2.1	Is open burning avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.2	Are speed controlled at 10 km/h on unpaved site areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.3	Are plant and equipment well maintained (i.e. without black smoke from powered plant)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.4	Observed dust source(s): <input type="checkbox"/> Wind erosion <input type="checkbox"/> Vehicle/ Equipment Movements <input type="checkbox"/> Loading/ unloading of materials <input checked="" type="checkbox"/> Others: Not observed				
2.5	Are the work sites wetted with water twice a day?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.8	Are wheel washing facilities with high pressure water jet provided at all site exits if practicable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.10	Are hoarding \geq 2.4m tall provided beside roads or area with public access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.12	Are construction site that is within 30m of a discernible or designated vehicle entrance or exit kept clear of dusty materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.13	Are all vehicles and plant cleaned before they leave the construction site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.14	Are loaded dump trucks covered by impervious sheeting appropriately	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



	before leaving the site?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.15	Are working areas of any excavation or earth moving operation sprayed with water or a dusty suppression chemical immediately?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

3	Noise	N/A	Yes	No	Remarks
3.1	Are idle plant/equipments turned off or throttled down?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.2	Are silenced equipments or quiet plants utilized?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.3	Are the silencers or mufflers properly fitted on construction equipments and maintained regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.4	Is temporary hoarding installed located on the site boundaries between noisy construction activities and NSRs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.6	Do air compressors have valid noise labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.7	Are compressor operated with doors closed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.8	QPME used with valid noise labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.9	Are construction activities planned so that parallel operation of several sets of equipment close to a given receiver is avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.10	Major noise source(s): <input type="checkbox"/> Traffic <input checked="" type="checkbox"/> Construction activities inside of site <input type="checkbox"/> Construction activities outside of site <input type="checkbox"/> 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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.2	Are stockpiles of materials placed in the locations away from the drainage channel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



4.3	Are site drainage systems and treatment facilities provided to minimize the water pollution?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.4	Is the treated effluent quality met the requirements specified in the discharge license?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.5	Is the sewage generated from toilets collected using a temporary storage system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.7	Is a licensed waste collector employed to clean the chemical toilets and temporary storage tank on a regular basis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.9	Are measures taken to prevent the washout of construction materials, soil, silt or debris into any drainage system?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.11	Is a wheel washing bay provided at every site exit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.12	Is the wheel wash overflow directed to silt removal facilities before being discharged to the storm drain?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.13	Is the section of construction road between the wheel washing bay and the public road surfaced with crushed stone or coarse gravel?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.14	Does the surface runoff from bunded areas pass through oil/grease traps prior to discharge to the storm water system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

5	Waste / Chemical Management	N/A	Yes	No	Remarks
	<u>General Waste</u>				
5.1	Are sufficient waste disposal points provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.2	Is waste disposed regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.3	Is the general waste generated on-site stored in enclosed bins or compaction units separately from the construction and chemical wastes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.4	Are separated labeled containers/ areas provided for facilitating recycling and waste segregation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<u>Construction Waste</u>				
5.5	Are the temporary stockpiles maintained regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.6	Are the C&D materials sorted and recycled on-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.8	Is the segregation and storage of C&D wastes undertaken in designated area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



5.9	Are waste storage area properly cleaned and do not cause windblown litter and dust nuisance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Chemical / Fuel Storage Area</u>					
5.11	Are the fuel tanks and chemical storage areas provided with locks and sited on sealed areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.12	Are the storage areas labeled and separated (if needed)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.13	Do the storage areas have adequate ventilation and be covered to prevent rainfall entering?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.15	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>Chemical Waste / Waste Oil</u>					
5.16	Is chemical waste or waste oil stored and labeled in English and Chinese properly in designated area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.17	Are chemicals and waste oil collected and stored for recycling or proper disposal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>Records</u>					
5.18	Is a licensed waste hauler used for waste collection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.19	Are the records of quantities of wastes generated, recycled and disposed properly kept?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.20	For the demolition material/ waste, is the number of loads for each day recorded as appropriate?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6	Landscape and Visual Impacts	N/A	Yes	No	Remarks
6.1	Is the work site confined within site boundaries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6.2	Is damage to surrounding areas avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7	Environmental Complaint	N/A	Yes	No	Remarks
7.1	Number of Environmental Complaint received from dd/mm/yyyy to dd/mm/yyyy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8	General Housekeeping	N/A	Yes	No	Remarks
8.1	Are potential stagnant pools cleared and mosquito breeding prevented?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
8.2	Are the defined boundaries of working areas identified to prevent loss of vegetation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	




Follow up actions for pervious Site Audit: Follow up action to item on 26-1-18, all item was improved.

Observations Item 1: Stagnant water was found accumulated near Portion P1.

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

Item 1: To clean the stagnant water properly.


Signature:
ET's representative


Name: Tung Ching Yung
Date: 2-2-18

Signature:
Contractor's representative

Name:
Date:


Signature:
ET Leader


Name: C. L. Lau
Date: 3.2.18

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	 <p>Stagnant water was found accumulated near Portion P1.</p>	To clear the stagnant water properly	180202_001	Yes	09/02/2018



Environmental Site Inspection Checklist – San Wai

Inspection Date:

9.2.18

Inspected By:

Frankie Tong

Time:

11:00

Weather Condition:

Fine

Participants:

Patrick Leung, Teilly Yuen, TY Lau, Cherry Ye, Johnny So

		N/A	Yes	No	Remarks
1	Permits/Licenses				
1.1	Are Environmental Permit, license/ other permit displayed at major site exit and vehicle access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.2	Are Construction Noise Permits available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.3	Is wastewater discharge license available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.4	Are trip tickets for chemical waste and construction waste disposal available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.5	Are relevant license/permits for disposal of construction waste or excavated materials available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2	Air Quality				
2.1	Is open burning avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.2	Are speed controlled at 10 km/h on unpaved site areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.3	Are plant and equipment well maintained (i.e. without black smoke from powered plant)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.4	Observed dust source(s): <input type="checkbox"/> Wind erosion <input type="checkbox"/> Vehicle/ Equipment Movements <input type="checkbox"/> Loading/ unloading of materials <input checked="" type="checkbox"/> Others: not observed				
2.5	Are the work sites wetted with water twice a day?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.8	Are wheel washing facilities with high pressure water jet provided at all site exits if practicable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.10	Are hoarding \geq 2.4m tall provided beside roads or area with public access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.12	Are construction site that is within 30m of a discernible or designated vehicle entrance or exit kept clear of dusty materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.13	Are all vehicles and plant cleaned before they leave the construction site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.14	Are loaded dump trucks covered by impervious sheeting appropriately	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



	before leaving the site?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.15	Are working areas of any excavation or earth moving operation sprayed with water or a dusty suppression chemical immediately?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3	Noise	N/A	Yes	No	Remarks
3.1	Are idle plant/equipments turned off or throttled down?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.2	Are silenced equipments or quiet plants utilized?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.3	Are the silencers or mufflers properly fitted on construction equipments and maintained regularly?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.4	Is temporary hoarding installed located on the site boundaries between noisy construction activities and NSRs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.6	Do air compressors have valid noise labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.7	Are compressor operated with doors closed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.8	QPME used with valid noise labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.9	Are construction activities planned so that parallel operation of several sets of equipment close to a given receiver is avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.10	Major noise source(s): <input type="checkbox"/> Traffic <input checked="" type="checkbox"/> Construction activities inside of site <input type="checkbox"/> Construction activities outside of site <input type="checkbox"/> 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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.2	Are stockpiles of materials placed in the locations away from the drainage channel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



4.3	Are site drainage systems and treatment facilities provided to minimize the water pollution?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.4	Is the treated effluent quality met the requirements specified in the discharge license?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.5	Is the sewage generated from toilets collected using a temporary storage system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.7	Is a licensed waste collector employed to clean the chemical toilets and temporary storage tank on a regular basis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.9	Are measures taken to prevent the washout of construction materials, soil, silt or debris into any drainage system?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.11	Is a wheel washing bay provided at every site exit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.12	Is the wheel wash overflow directed to silt removal facilities before being discharged to the storm drain?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.13	Is the section of construction road between the wheel washing bay and the public road surfaced with crushed stone or coarse gravel?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.14	Does the surface runoff from bunded areas pass through oil/grease traps prior to discharge to the storm water system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5	Waste / Chemical Management	N/A	Yes	No	Remarks
	<u>General Waste</u>				
5.1	Are sufficient waste disposal points provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.2	Is waste disposed regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.3	Is the general waste generated on-site stored in enclosed bins or compaction units separately from the construction and chemical wastes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.4	Are separated labeled containers/ areas provided for facilitating recycling and waste segregation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<u>Construction Waste</u>				
5.5	Are the temporary stockpiles maintained regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.6	Are the C&D materials sorted and recycled on-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.8	Is the segregation and storage of C&D wastes undertaken in designated area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



5.9	Are waste storage area properly cleaned and do not cause windblown litter and dust nuisance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.10	Are surplus inert 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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Chemical / Fuel Storage Area</u>					
5.11	Are the fuel tanks and chemical storage areas provided with locks and sited on sealed areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.12	Are the storage areas labeled and separated (if needed)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.13	Do the storage areas have adequate ventilation and be covered to prevent rainfall entering?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.15	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>Chemical Waste / Waste Oil</u>					
5.16	Is chemical waste or waste oil stored and labeled in English and Chinese properly in designated area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.17	Are chemicals and waste oil collected and stored for recycling or proper disposal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>Records</u>					
5.18	Is a licensed waste hauler used for waste collection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.19	Are the records of quantities of wastes generated, recycled and disposed properly kept?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.20	For the demolition material/ waste, is the number of loads for each day recorded as appropriate?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6	Landscape and Visual Impacts	N/A	Yes	No	Remarks
6.1	Is the work site confined within site boundaries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6.2	Is damage to surrounding areas avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7	Environmental Complaint	N/A	Yes	No	Remarks
7.1	Number of Environmental Complaint received from dd/mm/yyyy to dd/mm/yyyy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8	General Housekeeping	N/A	Yes	No	Remarks
8.1	Are potential stagnant pools cleared and mosquito breeding prevented?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8.2	Are the defined boundaries of working areas identified to prevent loss of vegetation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



Follow up actions for pervious Site Audit: Follow up action on to item on 2-2-18, all item was improved.

Observations

No observed was recorded on this site inspection.

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

N/A

Signature:

ET's representative

Name: Fong Chung Hong

Date: 9.2.18

Signature:

Contractor's representative

Name:

Date:

Signature:

ET Leader

Name: C. L. Lau

Date: 10.2.18

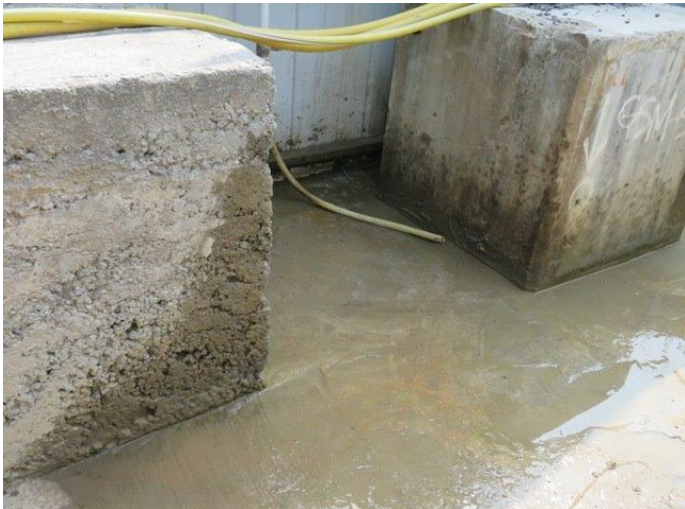
Signature:

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
--	 <p>Follow up action to Item 1 on 02/02/2018, the stagnant water was cleared.</p>	--	180209_001	No	--



Environmental Site Inspection Checklist – San Wai

Inspection Date: 14 February 2018 Inspected By: Ivy Lo
Time: 09:30 Weather Condition: Fine
Participants: Patrick Lemp, TY Lou, Johnny So, Cherry Ye

1	Permits/Licenses	N/A	Yes	No	Remarks
1.1	Are Environmental Permit, license/ other permit displayed at major site exit and vehicle access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.2	Are Construction Noise Permits available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.3	Is wastewater discharge license available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.4	Are trip tickets for chemical waste and construction waste disposal available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.5	Are relevant license/permits for disposal of construction waste or excavated materials available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2	Air Quality	N/A	Yes	No	Remarks
2.1	Is open burning avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.2	Are speed controlled at 10 km/h on unpaved site areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.3	Are plant and equipment well maintained (i.e. without black smoke from powered plant)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.4	Observed dust source(s): <input type="checkbox"/> Wind erosion <input type="checkbox"/> Vehicle/ Equipment Movements <input type="checkbox"/> Loading/ unloading of materials <input checked="" type="checkbox"/> Others: <u>Not observed</u>				
2.5	Are the work sites wetted with water twice a day?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.8	Are wheel washing facilities with high pressure water jet provided at all site exits if practicable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.10	Are hoarding ≥ 2.4 m tall provided beside roads or area with public access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.12	Are construction site that is within 30m of a discernible or designated vehicle entrance or exit kept clear of dusty materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.13	Are all vehicles and plant cleaned before they leave the construction site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.14	Are loaded dump trucks covered by impervious sheeting appropriately	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



	before leaving the site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.15	Are working areas of any excavation or earth moving operation sprayed with water or a dusty suppression chemical immediately?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3	Noise	N/A	Yes	No	Remarks
3.1	Are idle plant/equipments turned off or throttled down?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.2	Are silenced equipments or quiet plants utilized?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.3	Are the silencers or mufflers properly fitted on construction equipments and maintained regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.4	Is temporary hoarding installed located on the site boundaries between noisy construction activities and NSRs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.6	Do air compressors have valid noise labels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.7	Are compressor operated with doors closed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.8	QPME used with valid noise labels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.9	Are construction activities planned so that parallel operation of several sets of equipment close to a given receiver is avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.10	Major noise source(s): <input type="checkbox"/> Traffic <input checked="" type="checkbox"/> Construction activities inside of site <input type="checkbox"/> Construction activities outside of site <input type="checkbox"/> Others:				
4	Water Quality	N/A	Yes	No	Remarks
	<u>Construction Activities</u>				
4.1	Before a rainstorm, are exposed stockpiles covered with tarpaulin or impervious sheets?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.2	Are stockpiles of materials placed in the locations away from the drainage channel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



4.3	Are site drainage systems and treatment facilities provided to minimize the water pollution?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.4	Is the treated effluent quality met the requirements specified in the discharge license?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.5	Is the sewage generated from toilets collected using a temporary storage system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.7	Is a licensed waste collector employed to clean the chemical toilets and temporary storage tank on a regular basis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.9	Are measures taken to prevent the washout of construction materials, soil, silt or debris into any drainage system?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.11	Is a wheel washing bay provided at every site exit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.12	Is the wheel wash overflow directed to silt removal facilities before being discharged to the storm drain?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.13	Is the section of construction road between the wheel washing bay and the public road surfaced with crushed stone or coarse gravel?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.14	Does the surface runoff from bunded areas pass through oil/grease traps prior to discharge to the storm water system?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5	Waste / Chemical Management	N/A	Yes	No	Remarks
	<u>General Waste</u>				
5.1	Are sufficient waste disposal points provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.2	Is waste disposed regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.3	Is the general waste generated on-site stored in enclosed bins or compaction units separately from the construction and chemical wastes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.4	Are separated labeled containers/ areas provided for facilitating recycling and waste segregation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<u>Construction Waste</u>				
5.5	Are the temporary stockpiles maintained regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.6	Are the C&D materials sorted and recycled on-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.8	Is the segregation and storage of C&D wastes undertaken in designated area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



5.9	Are waste storage area properly cleaned and do not cause windblown litter and dust nuisance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Chemical / Fuel Storage Area</u>					
5.11	Are the fuel tanks and chemical storage areas provided with locks and sited on sealed areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.12	Are the storage areas labeled and separated (if needed)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.13	Do the storage areas have adequate ventilation and be covered to prevent rainfall entering?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.15	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>Chemical Waste / Waste Oil</u>					
5.16	Is chemical waste or waste oil stored and labeled in English and Chinese properly in designated area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.17	Are chemicals and waste oil collected and stored for recycling or proper disposal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>Records</u>					
5.18	Is a licensed waste hauler used for waste collection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.19	Are the records of quantities of wastes generated, recycled and disposed properly kept?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.20	For the demolition material/ waste, is the number of loads for each day recorded as appropriate?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6	Landscape and Visual Impacts	N/A	Yes	No	Remarks
6.1	Is the work site confined within site boundaries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6.2	Is damage to surrounding areas avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7	Environmental Complaint	N/A	Yes	No	Remarks
7.1	Number of Environmental Complaint received from dd/mm/yyyy to dd/mm/yyyy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8	General Housekeeping	N/A	Yes	No	Remarks
8.1	Are potential stagnant pools cleared and mosquito breeding prevented?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8.2	Are the defined boundaries of working areas identified to prevent loss of vegetation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Follow up actions for pervious Site Audit: N/A.

Observations


No observation was recorded during this site inspection.

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

N/A.

Signature:

ET's representative


Name: Ivy Lo

Date: 14/2/2018

Signature:

Contractor's representative

Name:

Date:

Signature:

ET Leader


Name: C. L. Lau

Date: 15/2/2018

Signature:

SO's representative

Name:

Date:

**Environmental Site Inspection Checklist – San Wai**

Inspection Date: 23 February 2018 **Inspected By:** Ivy Lo
Time: 14:30 **Weather Condition:** Fine
Participants: Patrick Leung, Johnny So, Cherry Ye, Jack Wong

		N/A	Yes	No	Remarks
1	Permits/Licenses				
1.1	Are Environmental Permit, license/ other permit displayed at major site exit and vehicle access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.2	Are Construction Noise Permits available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.3	Is wastewater discharge license available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.4	Are trip tickets for chemical waste and construction waste disposal available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.5	Are relevant license/permits for disposal of construction waste or excavated materials available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2	Air Quality				
2.1	Is open burning avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.2	Are speed controlled at 10 km/h on unpaved site areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.3	Are plant and equipment well maintained (i.e. without black smoke from powered plant)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.4	Observed dust source(s): <input type="checkbox"/> Wind erosion <input type="checkbox"/> Vehicle/ Equipment Movements <input type="checkbox"/> Loading/ unloading of materials <input checked="" type="checkbox"/> Others: <u>Not observed</u>				
2.5	Are the work sites wetted with water twice a day?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.8	Are wheel washing facilities with high pressure water jet provided at all site exits if practicable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.10	Are hoarding \geq 2.4m tall provided beside roads or area with public access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.12	Are construction site that is within 30m of a discernible or designated vehicle entrance or exit kept clear of dusty materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.13	Are all vehicles and plant cleaned before they leave the construction site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.14	Are loaded dump trucks covered by impervious sheeting appropriately	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



	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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.18	Are unpaved areas / designated roads watered regularly to avoid dust generation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2.19	Are dusty materials covered entirely by impervious sheeting or sprayed with water?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

3	Noise	N/A	Yes	No	Remarks
3.1	Are idle plant/equipments turned off or throttled down?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.2	Are silenced equipments or quiet plants utilized?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.3	Are the silencers or mufflers properly fitted on construction equipments and maintained regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.4	Is temporary hoarding installed located on the site boundaries between noisy construction activities and NSRs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.6	Do air compressors have valid noise labels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.7	Are compressor operated with doors closed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.8	QPME used with valid noise labels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.9	Are construction activities planned so that parallel operation of several sets of equipment close to a given receiver is avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.10	Major noise source(s): <input type="checkbox"/> Traffic <input checked="" type="checkbox"/> Construction activities inside of site <input type="checkbox"/> Construction activities outside of site <input type="checkbox"/> Others:				

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



4.3	Are site drainage systems and treatment facilities provided to minimize the water pollution?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.4	Is the treated effluent quality met the requirements specified in the discharge license?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.5	Is the sewage generated from toilets collected using a temporary storage system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.7	Is a licensed waste collector employed to clean the chemical toilets and temporary storage tank on a regular basis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.9	Are measures taken to prevent the washout of construction materials, soil, silt or debris into any drainage system?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.11	Is a wheel washing bay provided at every site exit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.12	Is the wheel wash overflow directed to silt removal facilities before being discharged to the storm drain?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.13	Is the section of construction road between the wheel washing bay and the public road surfaced with crushed stone or coarse gravel?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4.14	Does the surface runoff from bunded areas pass through oil/grease traps prior to discharge to the storm water system?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

5	Waste / Chemical Management	N/A	Yes	No	Remarks
	<u>General Waste</u>				
5.1	Are sufficient waste disposal points provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.2	Is waste disposed regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.3	Is the general waste generated on-site stored in enclosed bins or compaction units separately from the construction and chemical wastes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.4	Are separated labeled containers/ areas provided for facilitating recycling and waste segregation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<u>Construction Waste</u>				
5.5	Are the temporary stockpiles maintained regularly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.6	Are the C&D materials sorted and recycled on-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.8	Is the segregation and storage of C&D wastes undertaken in designated area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



5.9	Are waste storage area properly cleaned and do not cause windblown litter and dust nuisance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Chemical / Fuel Storage Area</u>					
5.11	Are the fuel tanks and chemical storage areas provided with locks and sited on sealed areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.12	Are the storage areas labeled and separated (if needed)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.13	Do the storage areas have adequate ventilation and be covered to prevent rainfall entering?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.15	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Item 1, 2
<u>Chemical Waste / Waste Oil</u>					
5.16	Is chemical waste or waste oil stored and labeled in English and Chinese properly in designated area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.17	Are chemicals and waste oil collected and stored for recycling or proper disposal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>Records</u>					
5.18	Is a licensed waste hauler used for waste collection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.19	Are the records of quantities of wastes generated, recycled and disposed properly kept?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5.20	For the demolition material/ waste, is the number of loads for each day recorded as appropriate?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6	Landscape and Visual Impacts	N/A	Yes	No	Remarks
6.1	Is the work site confined within site boundaries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6.2	Is damage to surrounding areas avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7	Environmental Complaint	N/A	Yes	No	Remarks
7.1	Number of Environmental Complaint received from dd/mm/yyyy to dd/mm/yyyy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8	General Housekeeping	N/A	Yes	No	Remarks
8.1	Are potential stagnant pools cleared and mosquito breeding prevented?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8.2	Are the defined boundaries of working areas identified to prevent loss of vegetation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



Follow up actions for pervious Site Audit: N/A.

Observations

1. Improper drip tray was observed.
2. Generator without drip tray was observed at Portion C EPT.

Reminder 1 - The contractor was remind to clean the stagnant pool frequently

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

1. The contractor was remind to provide proper drip tray.
2. The contractor was remind to provide drip tray for the generator.

Signature:

ET's representative

Name: Ivy Lo

Date: 23/2/2018

Signature:

Contractor's representative

Name:

Date:

Signature:

ET Leader

Name: C. L. Lan

Date: 24/2/2018

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	 <p>Improper drip tray was observed.</p>	To provide proper drip tray	180223_001	Yes	02/03/2018
2	 <p>Generator without drip tray was observed at Portion CEPT.</p>	To provide drip tray for the generator	180223_002	Yes	02/03/2018

Appendix I

Landscape and Visual Impact Assessment Checklist

Landscape and Visual Impact Assessment Checklist for Site Audit

Inspection Date: 9 Feb 2018 **Weather:** Sunny/ Fine/ Cloudy/ Rainy
Time: 2:30 p.m. **Wind:** Strong/ Breeze/ Light/ Calm

Item	Description	YES	NO	N/A	Actions/ Remarks
1	Construction Phase				
1.1	Is the detailed tree survey completed prior to construction work?	✓ <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2	Are trees to be transplanted removed to their final positions?	<input type="checkbox"/>	✓ <input type="checkbox"/>	<input type="checkbox"/>	
1.3	Are the transplants and existing trees to be retained properly protected from damage by stout hoarding positioned as directed by a qualified Landscape Architect?	✓ <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Eastern side trees: Protective fence has been provided at lot. Northern side trees: They are protected outside lot.
1.4	Is regular inspection of the retained and transplanted trees made to ensure the effectiveness of the hoarding?	✓ <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.5	Are the TPZ clearly demarcated on site and surrounded by strong fences sturdy enough to withstand impacts from the construction activities?	✓ <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Except T407, T408, and T409. They are temporarily acceptable as no works have been done so far. Contractor should follow up before the construction work comes close. Eastern side trees: Protective fence has been provided at lot. Northern side trees: They are protected outside lot.
1.6	Are warning signs and notices installed at the fences denoting the “tree protection zone” to prohibit the entry of equipment or construction activities?	<input type="checkbox"/>	✓ <input type="checkbox"/>	<input type="checkbox"/>	Ask contractor to follow up.
1.7	Are tree labels with clear indication of tree no. and status (e.g. “R”, “T” or “F”) provided for all the trees on site?	✓ <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.8	If protective fencings are not practicable, are the tree root systems adequately protected from soil compaction due to passage of vehicles, equipment or machinery?	✓ <input type="checkbox"/>			
1.9	Are vehicular/foot paths and storage areas designated away from TPZ?	✓ <input type="checkbox"/>			
1.10	Are the trees properly irrigated and sprayed with water to remove the accumulated construction dust during dry season in order to lessen the chances of decline and to maintain the vigour of trees?			✓ <input type="checkbox"/>	
1.11	Are the trees free from any sign of distress, such as dieback, leaf loss, or general decline in tree health or appearance or tree damage with symptoms of construction injury?	✓ <input type="checkbox"/>			
1.12	Are the trees free from wire or nail and prohibited to be used as anchor for any site activities?	✓ <input type="checkbox"/>			
1.13	Are cutting, trenching, excavating or raising of soil level within the TPZ prohibited?		✓ <input type="checkbox"/>		
1.14	Is improper pruning of the tree branches/roots prohibited?	✓ <input type="checkbox"/>			
1.15	Are the trees free from any tree root damage?	✓ <input type="checkbox"/>			
1.16	Are construction works or operation of machines within the TPZ prohibited?	✓ <input type="checkbox"/>			
1.17	Is the TPZ free from pollution from effluent water, machine petroleum or chemical spillage?	✓ <input type="checkbox"/>			
1.18	Is the excavated topsoil stored and protected on site for reuse for restoration of screen planting works?		✓ <input type="checkbox"/>		Ask contractor to provide evidence and proof.
1.19	Is the progress of the above activities reported in the monthly EM&A report?	✓ <input type="checkbox"/>			
2	Operational Phase (12 months period from commissioning of the expanded and upgraded works)				
2.1	Is a planting reserve, where locates around the site perimeter of approximately 5m wide, provided to allow a continuous belt of trees to be planted as a visual screen?			✓ <input type="checkbox"/>	
2.2	Is the planting reserve complemented the boundary planting to the existing San Wai STW?			✓ <input type="checkbox"/>	
2.3	Is all new planting maintained for 12			✓ <input type="checkbox"/>	

	months to ensure proper establishment?				
2.4	Are the trees free from sign of deterioration of tree health and/or structure?			✓ <input type="checkbox"/>	
2.5	Are the trees free from insect pests and disease pathogens?			✓ <input type="checkbox"/>	
2.6	Are the irrigation systems functioning properly and well maintained?			✓ <input type="checkbox"/>	
2.7	Are the tree root systems adequately protected from soil compaction due to storage of materials or operation of machinery?			✓ <input type="checkbox"/>	

Summary/ Remarks:

N/A

Follow up actions taken by Contractor for previous comments:

N/A

The contractor was reminded to rectify the following:

1. Contractor was reminded to provide strong fences for T407, T408, and T409 unless there is a strong justification.
2. The warning signs and notices at the fences denoting the TPZ are missing. Contractor was reminded to install the signs and notices.
3. Contractor was reminded to provide evidence and proof of excavated topsoil storage and protection on site for reuse.
4. Generally, contractor was reminded to keep on the tree protection and maintenance.

New Observation:

1. Excavation works is being carried out on site. Contractor was reminded not to disturb the TPZ of the trees.

Reminders:

1. Contractor was reminded to provide TPZ with robust fence at the dripline of all retained trees unless the trees are well beyond the extent of construction activities.

Photo Record:





Figure 1	Figure 2
	
Northern side: fenced off trees (outside the hoarding board)	Northern side: fenced off trees (within the hoarding boards)
Figure 3	Figure 4
	
Fenced off trees	Weak fence at locations of T407, T408, and T409

Figure 5



Trees at the existing fence (outside works area)

Signature:

		Signature	Date
Inspected & Recorded by	Registered Landscape Architect	Xylem	14/02/2018
Checked by	Environmental Team Leader		
Follow up by	Contractor's Representative		
Witnessed by	Supervising Officer's Representative		

Landscape and Visual Impact Assessment Checklist for Site Audit

Inspection Date: 23 Feb 2018 **Weather:** Sunny/ Fine/ Cloudy/ Rainy
Time: 2:30 p.m. **Wind:** Strong/ Breeze/ Light/ Calm

Item	Description	YES	NO	N/A	Actions/ Remarks
1	Construction Phase				
1.1	Is the detailed tree survey completed prior to construction work?	✓ <input type="checkbox"/>			
1.2	Are trees to be transplanted removed to their final positions?		✓ <input type="checkbox"/>		
1.3	Are the transplants and existing trees to be retained properly protected from damage by stout hoarding positioned as directed by a qualified Landscape Architect?	✓ <input type="checkbox"/>			Eastern side trees: Protective fence has been provided at lot. Northern side trees: They are protected outside lot.
1.4	Is regular inspection of the retained and transplanted trees made to ensure the effectiveness of the hoarding?	✓ <input type="checkbox"/>			
1.5	Are the TPZ clearly demarcated on site and surrounded by strong fences sturdy enough to withstand impacts from the construction activities?	✓ <input type="checkbox"/>			Except trees far beyond the extent of construction activities, strong protective fence is noted. Eastern side trees: Protective fence has been provided at lot. Northern side trees: They are protected outside lot.
1.6	Are warning signs and notices installed at the fences denoting the “tree protection zone” to prohibit the entry of equipment or construction activities?	✓ <input type="checkbox"/>			
1.7	Are tree labels with clear indication of tree no. and status (e.g. “R”, “T” or “F”) provided for all the trees on site?	✓ <input type="checkbox"/>			Trees no. are generally OK, but contractor is required to fix those defective tags.
1.8	If protective fencings are not practicable, are the tree root systems adequately protected from soil	✓ <input type="checkbox"/>			

	compaction due to passage of vehicles, equipment or machinery?				
1.9	Are vehicular/foot paths and storage areas designated away from TPZ?	✓ <input type="checkbox"/>			
1.10	Are the trees properly irrigated and sprayed with water to remove the accumulated construction dust during dry season in order to lessen the chances of decline and to maintain the vigour of trees?			✓ <input type="checkbox"/>	
1.11	Are the trees free from any sign of distress, such as dieback, leaf loss, or general decline in tree health or appearance or tree damage with symptoms of construction injury?			✓ <input type="checkbox"/>	Trees in eastern boundary: 1) Dead branches to remove 2) Tear bark/ stubs to be properly primed.
1.12	Are the trees free from wire or nail and prohibited to be used as anchor for any site activities?	✓ <input type="checkbox"/>			
1.13	Are cutting, trenching, excavating or raising of soil level within the TPZ prohibited?	✓ <input type="checkbox"/>			
1.14	Is improper pruning of the tree branches/roots prohibited?	✓ <input type="checkbox"/>			
1.15	Are the trees free from any tree root damage?	✓ <input type="checkbox"/>			
1.16	Are construction works or operation of machines within the TPZ prohibited?	✓ <input type="checkbox"/>			
1.17	Is the TPZ free from pollution from effluent water, machine petroleum or chemical spillage?	✓ <input type="checkbox"/>			
1.18	Is the excavated topsoil stored and protected on site for reuse for restoration of screen planting works?		✓ <input type="checkbox"/>		Ask contractor to explain reason for non-compliance of this item.
1.19	Is the progress of the above activities reported in the monthly EM&A report?	✓ <input type="checkbox"/>			
2	Operational Phase (12 months period from commissioning of the expanded and upgraded works)				
2.1	Is a planting reserve, where locates around the site perimeter of approximately 5m wide, provided to allow a continuous belt of trees to be planted as a visual screen?			✓ <input type="checkbox"/>	
2.2	Is the planting reserve complemented the boundary planting to the existing San Wai STW?			✓ <input type="checkbox"/>	
2.3	Is all new planting maintained for 12 months to ensure proper			✓ <input type="checkbox"/>	

	establishment?				
2.4	Are the trees free from sign of deterioration of tree health and/or structure?	✓ <input type="checkbox"/>			
2.5	Are the trees free from insect pests and disease pathogens?	✓ <input type="checkbox"/>			
2.6	Are the irrigation systems functioning properly and well maintained?			✓ <input type="checkbox"/>	
2.7	Are the tree root systems adequately protected from soil compaction due to storage of materials or operation of machinery?	✓ <input type="checkbox"/>			

Summary/ Remarks:

Follow up actions taken by Contractor for previous comments:

1. Warning signs of TPZ provided.
2. Trees at eastern boundary require proper pruning of dead branches and etc.

The contractor was reminded to rectify the following:

1. Contractor was reminded to provide strong fences for TPZ of T407, T408, and T409 as construction activities is found to be carried out nearby.
2. Contractor was reminded to provide evidence and proof of excavated topsoil storage and protection on site for reuse. Or the contractor has to provide explanation for non-compliance with this item.
3. Generally, contractor was reminded to keep on the tree protection and maintenance.





New Observation:

1. New excavation is carried out on site. Contractor was reminded not to disturb the TPZ.

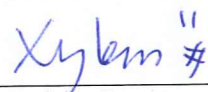
Reminders:

1. Contractor was reminded to provide TPZ with robust fence at the dripline of all retained trees until the trees are well beyond the extend of construction activities.

Photo Record:

<p style="text-align: center;">Figure 1</p> 	<p style="text-align: center;">Figure 2</p> 
<p style="text-align: center;">Dead branches and stubs to be removed</p>	<p style="text-align: center;">Construction activities is being carried out near T407, T408, and T409</p>
<p style="text-align: center;">Figure 3</p> 	<p style="text-align: center;">Figure 4</p> 
<p style="text-align: center;">Protective fence is noted</p>	<p style="text-align: center;">Protective fence is noted</p>

Signature:

		Signature	Date
Inspected & Recorded by	Registered Landscape Architect		26 FEB, 2018
		Xylem Leung	
Checked by	Environmental Team Leader		
Follow up by	Contractor's Representative		
Witnessed by	Supervising Officer's Representative		

Appendix J

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	8.809	0.000	0.000	0.000	8.809	0.000	0.000	0.000	0.000	0.000	18.480
Feb	3.231	0.000	0.000	0.000	3.231	0.000	0.000	0.200	0.000	0.000	2.700
Mar											
Apr											
May											
Jun											
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	12.040	0.000	0.000	0.000	12.040	0.000	0.000	0.200	0.000	0.000	21.180

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, Shurry are 2.0 ton/m³; the densities of Building debris is 2.1 ton/m³; the densities of Broken Concrete is 2.4 ton/m³.

Appendix K

Environmental Licenses and Permits

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

Implementation Schedule for Environmental Mitigation Measures (EMIS)

Environmental Mitigation Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
Air Quality					
<ul style="list-style-type: none">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	√			
<ul style="list-style-type: none">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	√			
<ul style="list-style-type: none">Vehicle washing facilities including a high pressure water jet should be provided at every discernible or designated vehicle exit point;	Site Entrance	√			
<ul style="list-style-type: none">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	√			
<ul style="list-style-type: none">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	√			
<ul style="list-style-type: none">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	√			
<ul style="list-style-type: none">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	√			
<ul style="list-style-type: none">Immediately before leaving a construction site, every vehicle should be washed to remove any dusty materials from its body and wheels;	Site Exit	√			
<ul style="list-style-type: none">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;	--	√			
<ul style="list-style-type: none">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	√			
<ul style="list-style-type: none">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;					
<ul style="list-style-type: none"> 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					
<ul style="list-style-type: none"> Quiet plants should be used in order to reduce the noise impacts to protect the nearby NSRs. 	Site Area	√			
<ul style="list-style-type: none"> Temporary and Movable Noise Barriers should be used in order to reduce the noise impact to the surrounding sensitive receivers 	Site Area	√			
<ul style="list-style-type: none"> Intermittent noisy activities should be scheduled to minimize exposure of nearby NSRs to high levels of construction noise. 	Site Area	√			
<ul style="list-style-type: none"> Idle equipment should be turned off or throttled down. 	Site Area	√			
<ul style="list-style-type: none"> Construction activities should be planned so that parallel operation of several sets of equipment close to a given receiver is avoided 	Site Area	√			
<ul style="list-style-type: none"> Construction plant should be properly maintained and operated. 	Site Area	√			
Water Quality					
<ul style="list-style-type: none"> Exposed stockpiles should be covered with tarpaulin or impervious sheets before a rainstorm occurs; 	Site Area	√			
<ul style="list-style-type: none"> The exposed soil surfaces should also be properly protected to minimize dust emission; 	Site Area	√			
<ul style="list-style-type: none"> 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	√			
<ul style="list-style-type: none"> 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	√			
<ul style="list-style-type: none"> Provision of site drainage systems and treatment facilities would be required to minimize the water pollution; 	Site Area	√			
<ul style="list-style-type: none"> A discharge license needs to be applied from EPD for discharging effluent from the construction site; 	--	√			
<ul style="list-style-type: none"> The treated effluent quality is required to meet the requirements specified in the discharge license; 	--	√			
<ul style="list-style-type: none"> 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 handling chemical wastes;	Site Area	√			
• The impact from accidental spillage of chemicals can be effectively controlled through good management practices.	Site Area		√		
Waste Management					
• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;	Site Area	√			
• To encourage collection of aluminium cans by individual collectors, separate bins should be provided to segregate this waste from other general refuse generated by the workforce;	Site Area	√			
• Any unused chemicals or those with remaining functional capacity should be recycled;	Site Area	√			
• Prior to disposal of C&D waste, it is recommended that wood, steel and other metals be separated for re-use and/or recycling and inert waste as fill material to minimize the quantity of waste to be disposed of to landfill;	Site Area	√			
• Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and	Site Area		√		
• Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.	Site Area	√			
Landscape and Visual					
• Detailed tree survey should have been completed	Site Area	√			
• Trees should be transplanted to their final positions clear of the construction site	--			√	
• Erect site hoarding to protect adjacent vegetation from damage	Site Area	√			

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

Appendix M

Environmental Site Inspection Schedule

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

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

Schedule for Environmental Monitoring and Site Inspection

March 2018

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

Appendix N

Laboratory Report for Discharge Water



TEST REPORT

Form E/EN/R/01/Issue 6 (1/2) [02/18]

Testing of Water and Wastewater

Report No. : ENA81425
Date of Issue : 08 March 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 : 27 February 2018
Sample Description : Sample was stored in 1L plastic bottle (for pH and Total Suspended Solids).
Sample was stored in 500ml plastic bottle (for Chemical Oxygen Demand).
Sample for Chemical Oxygen Demand was preserved by adding conc. H₂SO₄ to pH <2.
Sample was collected by the customer and refrigerated after received.

Laboratory Information

Date of Received : 27 February 2018
Date of Testing Period : 27 to 28 February 2018
Lab Ref. No. : W40743

Result

Sample ID	Sample No.	Test	Method Used	Result	Unit
P1	01	pH	In house method TPE/003/W	8.1	(at 25°C)
		Total Suspended Solids	In house method TPE/006/W	9	mg/L
	03	Chemical Oxygen Demand	In house method TPE/002/W	<10	mgO ₂ /L

Remark(s):

1. The results relate only to the tested sample as received.

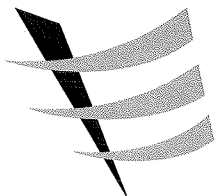
Approved Signatory :

LAU, Chi Leung

TPE/001/W

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TEST REPORT

Form E/EN/R/01/Issue 6 (1/2) [02/18]

Testing of Water and Wastewater

Report No. : ENA81426
Date of Issue : 08 March 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 : 27 February 2018
Sample Description : Sample was stored in 1L plastic bottle (for pH and Total Suspended Solids).
Sample was stored in 500ml plastic bottle (for Chemical Oxygen Demand).
Sample for Chemical Oxygen Demand was preserved by adding conc. H₂SO₄ to pH <2.
Sample was collected by the customer and refrigerated after received.

Laboratory Information

Date of Received : 27 February 2018
Date of Testing Period : 27 to 28 February 2018
Lab Ref. No. : W40743

Result

Sample ID	Sample No.	Test	Method Used	Result	Unit
P6	02	pH	In house method TPE/003/W	7.8	(at 25°C)
		Total Suspended Solids	In house method TPE/006/W	6	mg/L
	04	Chemical Oxygen Demand	In house method TPE/002/W	<10	mgO ₂ /L

Remark(s):

1. The results relate only to the tested sample as received.

Approved Signatory :

LAU, Chi Leung

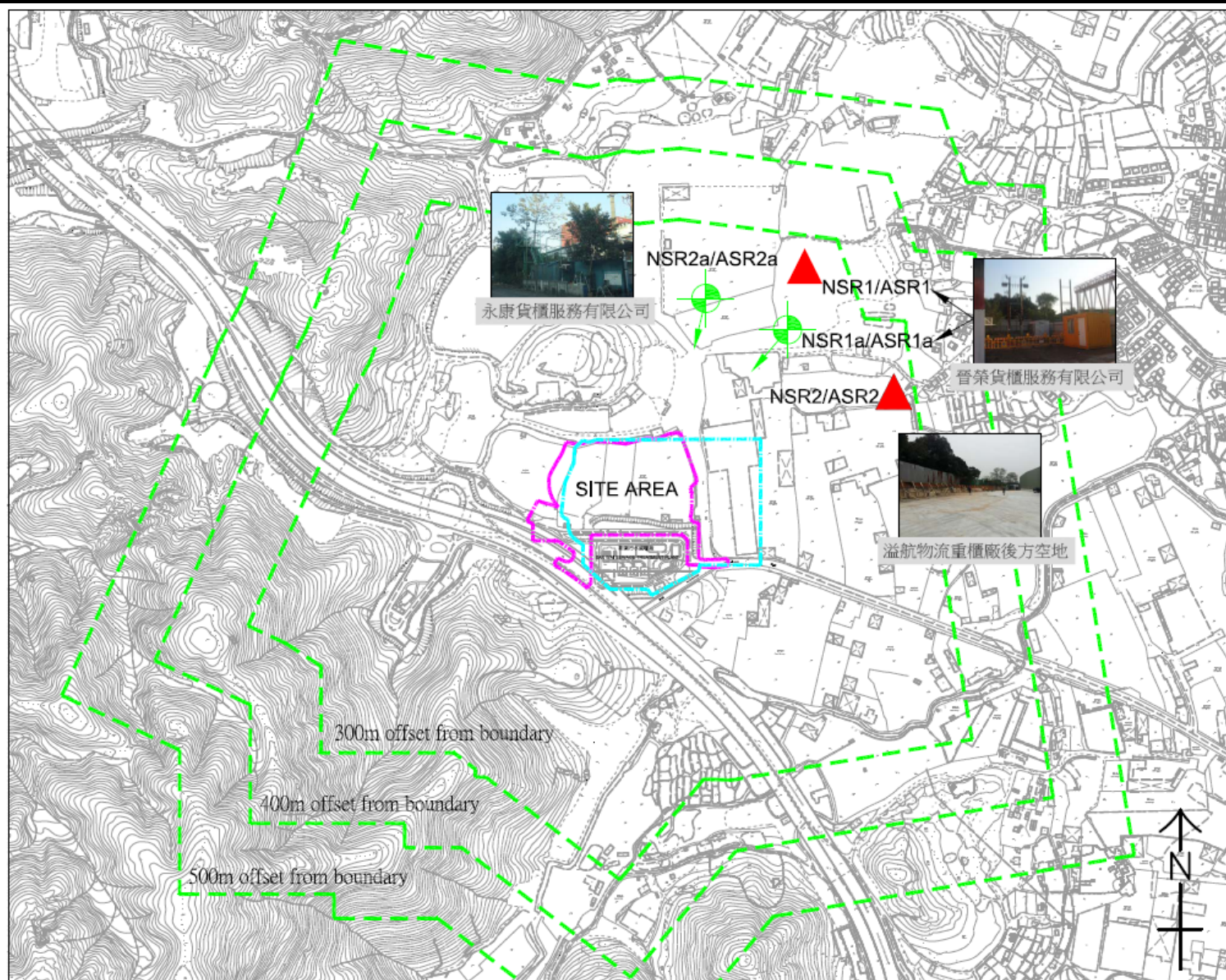
TPE/001/W

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- END OF REPORT -

Figure 1

Locations of Air Quality and Noise Monitoring Stations

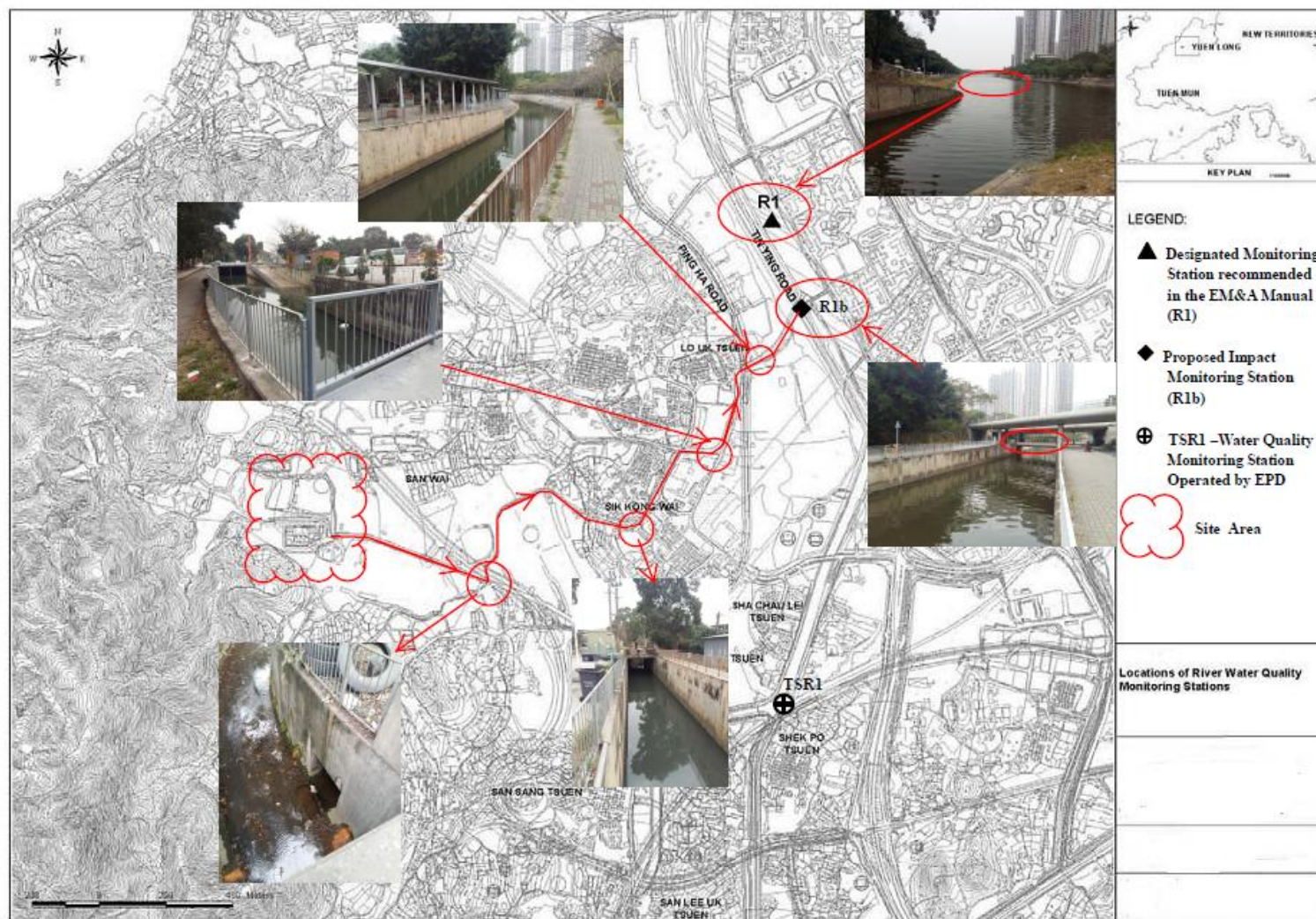


Project: Contract No. DC/2013/10 -Design, Build and Operate San Wai Sewage Treatment Works – Phase 1

Figure 1 Locations of Air Quality and Noise Monitoring Stations

Figure 2

Locations of Water Quality Monitoring Station



Project: Contract No. DC/2013/10 - Design, Build and Operate San Wai Sewage Treatment Works – Phase 1
Figure 2 Locations of Water Quality Monitoring Station