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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

QUARTERLY EM&A REPORT NO. 3

(01 NOVEMBER 2017 – 31 JANUARY 2018)

Prepared by: _____
LO, Ting Yi

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Issued Date: 27 February 2018 *Report No.: ENA80705*

ANEWR

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

Your reference:

Our reference: HKDSD203/50/104913

Date: 3 April 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
Quarterly Environmental Monitoring and Audit Report No.3 (November 2017 – January 2018)

We refer to emails of 27 February and 26 March 2018 from ETS-Testconsult Limited attaching the Quarterly Environmental Monitoring and Audit Report No.3 (November 2017 – January 2018).

We have no further comment and hereby verify the Quarterly Environmental Monitoring and Audit Report No.3 (November 2017 – January 2018).

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/lhmh

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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This Quarterly 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 third Quarterly 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 November 2017 to 31 January 2018.

Environmental Monitoring and Audit Progress
The quarterly 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: 16 Occasions at 2 designated locations*
- *1-hour TSP Monitoring: 48 Occasions at 2 designated locations*
- *Noise Monitoring (Day-time): 16 Occasion at 2 designated locations*
- *Water Quality Monitoring: 39 Occasions at 1 designated location*
- *Weekly Site inspection: 13 Occasions*

Breaches of Action and Limit Levels
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 period. The major findings observed during site inspections are presented in the **Section 3.4.**

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.

1 INTRODUCTION

1.1. Basic Project Information

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

1.1.2. The project involves expansion of the preliminary treatment works at San Wai STW from 164,000 m^3/d to 200,000 m^3/d Average Dry Weather Flow, upgrading the preliminary treatment level to CEPT and adding centralized disinfection. The site layout plan is shown in **Appendix A**. For any enquiries, hot line telephone (24 hours) at 9083 0560 was established.

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 third Quarterly 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 November 2017 to 31 January 2018.

1.2. Project Organization

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

Table 1.1 Contact Information of Key Personnel

Party	*Position*	*Name of Key Staff*	*Tel. No.*	*E-mail*
Supervising Officer (AECOM Asia Co. Ltd.)	*Resident Engineer*	*Mr. Patrick Leung*	*5222 6561*	*patrick.leung@swstw-aecom.com*
Independent Environmental Checker (ANewR Consulting Limited)	*Technical Director*	*Mr. Adi Lee*	*2618 2836*	*aymlee@anewr.com*
	Senior Environmental Consultant	*Mr. Nic Lam*	*2618 2836*	*nhhlam@anewr.com*
Contractor (ATAL-DEGREMONT-CHINA HARBOUR JOINT VENTURE)	*Environmental Officer*	*Mr. Johnny So*	*9513 8899*	*johnny.so@c302.chechk.com*
	Environmental Supervisor	*Ms Cherry Ye*	*6237 1125*	*cherry.ye@c302.chechk.com*
Environmental Team (ETS-Testconsult Ltd.)	*Environmental Team Leader*	*Mr. C. L. Lau*	*2946 7791*	*env@ets-testconsult.com*

1.3. Construction Programme

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

1.4. Construction Works Undertaken During the Reporting Period

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

- *Sheet Piling (ELS);*
- *Substructure (ELS & Bulk excavation);*
- *Piling Foundation (Prebored H-pile);*
- *Substructure (rc structure);*
- *UV Disinfection Facility Piling Foundation (Prebored H-pile);*
- *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);*
- *Emergency By-Pass Pipe;*
- *EVA (Road & Drainage);*
- *Removal of ELS;*
- *RC trench and Odour Pipe (DO1 and DO2);*
- *Bar Screen Installation;*
- *Backfilling;*
- *Process Pipe;*
- *Diversion of Existing Watermains by WSD*

2 EM&A Requirement

2.1. Summary of EM&A Requirements

2.1.1. 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.*

2.2. Monitoring Requirements

2.2.1. Air Quality Monitoring

In accordance with the EM&A Manual, 1-hr and 24-hr TSP air quality monitoring were conducted three times and once per six days correspondingly. Two air monitoring location, ASR1a (晉榮貨櫃服務有限公司) and ASR2a (永康貨櫃服務有限公司) were selected which was shown in **Figure 1**.

2.2.2. Noise Monitoring

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

2.2.3. Water Quality Monitoring

Water quality was monitored 3 times per week in the reporting period in accordance with the EM&A Manual at the one alternative water quality monitoring station, R1b (at Tin Shui Wai Nullah) which shown in **Figure 2**.

2.2.4 The equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports.

2.3. Action and Limit Levels

2.3.1. The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.1**.

Table 2.1 Action and Limit Levels for 1-hr and 24-hr TSP

Air Quality Monitoring Station	*1-hr TSP ($\mu g/m^3$)*		*24-hr TSP ($\mu g/m^3$)*	
	Action Level	*Limit Level*	*Action Level*	*Limit Level*
ASR1a	*309*	*500*	*260*	*260*
ASR2a	*292*	*500*	*228*	*260*

2.3.2. The Action and Limit Levels for construction noise are provided in **Table 2.2**

Table 2.2 Action and Limit Levels for Construction Noise

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

2.3.3. The Action and Limit Levels for Water Quality are provided in **Table 2.3**

Table 2.3 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*

2.4. Event and Action Plans

2.4.1. The event and action plan is provided in **Appendix G**.

2.5. Mitigation Measures

2.5.1. Environmental mitigation measures for the Contract were recommended in the Approved EIA Report. **Appendix H** lists the recommended mitigation measures and the implementation status.

3 ENVIRONMENTAL MONITORING AND AUDIT

3.1. Air Quality Monitoring Result

3.1.1. No exceedance of Action and Limit levels was recorded for 1-hr and 24-hr TSP monitoring in this quarter. Graphical presentation of 1-hour and 24-hour TSP monitoring results is shown in **Appendix D**. Wind data included wind speed and wind direction was extracted from Wetland Park Station of Hong Kong Observatory and is presented in **Appendix I**.

3.1.2. 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 quarter.

3.1.3. Apart from the construction activities, the cargo trunks passing through the container yards (晉榮貨櫃服務有限公司 and 永康貨櫃服務有限公司) would also generate dust since the Ha Tsuen Road was mainly made by soil and sand. A part of 1-hour TSP and 24-hour TSP monitoring results were contributed by the cargo trunks.

3.2. Noise Monitoring Results

3.2.1. No exceedance of Action and Limit Level of noise monitoring results was recorded during the reporting quarter. Graphical presentation of 1-hour and 24-hour TSP monitoring results for the reporting month is shown in **Appendix E**.

3.2.2. 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.

3.2.3. Since NSR1a and NSR2a were located inside the container yards, the frequency of vehicles moving in and out the container yards would influence the noise monitoring results.

3.3. Water Quality Monitoring Result

3.3.1. According to the summary of water monitoring results, no exceedance of Action and Limit levels was recorded in this reporting month. Graphical presentation of the monitoring results for the reporting month is shown in **Appendix F**.

3.3.2. 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 period were higher than the action level.

3.3.3. Aside from the discharge, weather condition would be a major factor that affects the water quality in Tin Shui Wan Nallah. In rainy day, the soil and other suspended materials were flushed along the shore and entered the Tin Shui Wai Nullah. Besides, the nullah water would flow rapidly and the sand and stones in the nullah bed were upturned. Thus, the water quality would be deteriorated.

3.4. Site Inspection

3.4.1. Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control mitigation measures for the project. The dates of environmental site inspections during the reporting period are listed in **Table 3.1**.

Table 3.1 Environmental Site Inspection Date

November 2017	December 2017	January 2018
03, 10, 17 and 24	01, 06, 15, 21 and 29	05, 12, 19 and 26

3.4.2. Observations for the site inspections within this reporting period are summarized in **Table 3.2**.

Table 3.2 Summary of observation of site inspections

Date	Observations / Reminders	Follow-up Action	Closed Date
03 November 2017	No items were observed.	--	--
10 November 2017	1. Oil Stain was observed on the ground at P1 AB area.	1. The oil stain was cleaned at P1 AB area.	17 November 2017
17 November 2017	1. Stagnant pool was observed on the H-piles	1. The H-piles were removed.	24 November 2017
24 November 2017	No items were observed.	--	--
01 December 2017	1. Chemical containers without drip tray were observed.	1. Chemical containers were removed.	06 December 2017
06 December 2017	No items were observed.	--	--
15 December 2017	No items were observed.	--	--
21 December 2017	No items were observed.	--	--
29 December 2017	1. Oil stain was observed at Portion CEPT. Reminder 1 – The contractor was reminded to provide appropriate NRMM label on the air compressor.	1. The oil stain was cleared.	05 January 2018
05 January 2018	1. Oil stain was observed on the ground near AB area.	1. The oil stain was cleared.	12 January 2018
12 January 2018	No items were observed.	--	--
19 January 2018	1. Stagnant water was observed near the site boundary.	1. Stagnant water was cleared.	26 January 2018
26 January 2018	1. Oil stain near sheet piling machine was observed.	Follow-up actions for outstanding observation will be inspected during the next site inspection.	--

3.5. Advice on the Solid and Liquid Waste Management Status

3.5.1. 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

3.5.2. The quantities of waste for disposal in this reporting period are summarized in the Monthly Summary Waste Flow Table which is shown in **Appendix J**.

3.5.3. 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.

3.6. Discharge License and Results of Effluent Monitoring

3.6.1. Effluent quality was monitored in the reporting quarter 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.

3.6.2. Effluent water samples were sampled by the Contractor. The dates of environmental site inspections during the reporting period are listed in **Table 3.3**. Since there was no water discharged on 21 November 2017, 05 December 2017 and 02 January 2018, the water sampling work was then taken on next working day (22 November 2017, 06 December 2017 and 03 January 2018). Besides, the wetsep at P8 was not operated from 16 to 31 January 2018, there was no water sampling work on 16 and 30 January 2018 at P8.

Table 3.3 Effluent Sampling Dates

November 2017	December 2017	January 2018
07 and 22	06 and 19	03, 16 and 30

3.6.3. 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.

3.6.4. For effluent quality monitoring as per the discharge license requirement, the suspended solid results for the effluent sample sampled on 07 November 2017 failed to comply with the discharge license requirement. A repeat measurement of treated effluent sample was sampled on 15 November 2017. The results for samples collected on this reporting period complied with the discharge license requirement. The investigation report no. E001 for the non-compliance of the effluent quality is presented in **Appendix K**.

3.7. Implementation Status of Environmental Mitigation Measures

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

Dust Mitigation Measures

a. The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures should be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet;

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

Noise Mitigation Measures

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

Water Quality Mitigation Measures

a. Exposed stockpiles should be covered with tarpaulin or impervious sheets before a rainstorm occurs;
b. The exposed soil surfaces should also be properly protected to minimize dust emission;
c. The stockpiles of materials should be placed in the locations away from the drainage channel so as to avoid releasing materials into the channel;
d. Wheel washing facilities should be provided at site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles;
e. Provision of site drainage systems and treatment facilities would be required to minimize the water pollution;
f. A discharge license needs to be applied from EPD for discharging effluent from the construction site;
g. The treated effluent quality is required to meet the requirements specified in the discharge license;
h. Provision of chemical toilets is required to collect sewage from workforce. The chemical toilets should be cleaned on a regular basis;

i. A licensed waste collector should be employed to clean the chemical toilets and temporary storage tank on a regular basis;
j. Illegal disposal of chemicals should be strictly prohibited;
k. Registration as a chemical waste producer is required if chemical wastes are generated and need to be disposed of. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes;
l. Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance should be used as a guideline for handing chemical wastes;
m. The impact from accidental spillage of chemicals can be effectively controlled through good management practices.

Waste Management Mitigation Measures

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

4 SUMMARY OF EXCEEDANCE, COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

4.1. Summary of Exceedance of the Environmental Quality Performance Limit

4.1.1. 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.

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

4.1.3. According to the summary of water monitoring results, there was no Action and Limit Level exceedance for water quality monitoring recorded at station R1b during the reporting period.

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

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

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

4.2.3. A summary of environmental complaints, notifications of summons and successful prosecutions was given in **Table 4.1**.

Table 4.1 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

5 COMMENTS, RECOMMENDATIONS AND CONCLUSION

5.1. Comments

5.1.1. According to the environmental site inspection undertaken during the reporting period, the following recommendations were provided:

- The Contractor was reminded to clear all the stagnant water pools;
- The Contractor was reminded to clean the oil stain;
- The Contractor was reminded to provide the drip tray for the chemical containers;

5.2. Recommendations

5.2.1. With implementation of the recommended environmental mitigation measures, the contract's environmental impacts were considered environmentally acceptable. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented.

5.2.2. The recommended environmental mitigation measures, as included in the EM&A programme, effectively minimize the potential environmental impacts from the Contract. Also, the EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

5.3. Conclusions

5.3.1. 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.

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

5.3.3. According to the summary of water monitoring results, there was no Action and Limit Level exceedance for water quality monitoring recorded at station R1b during the reporting period.

5.3.4. There was a non-compliance of effluent quality with the discharge license requirement recorded during the reporting period. The Investigation Reports No. E001 (including the causes of exceedance, action taken and recommendation for mitigation) for Action or Limit Level Non-compliance were provided in **Appendix K**.

5.3.5. Environmental site inspections were carried out on 03, 10, 17 & 24 November 2017, 01, 06, 15, 21 & 29 December 2017 and 05, 12, 19 & 26 January 2018. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

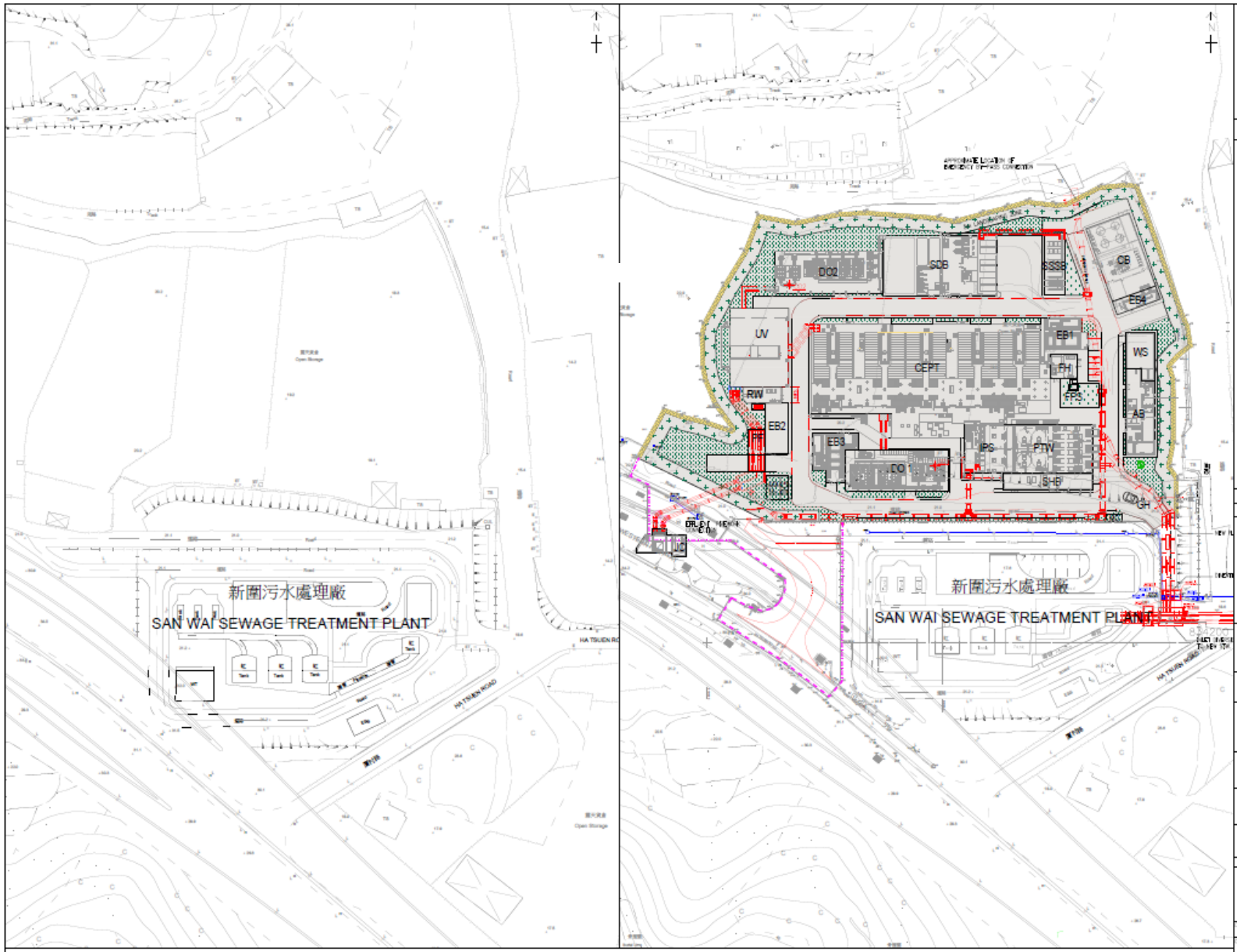
5.3.6. There were no complaints received during the reporting period.

5.3.7. There was no notification of summons and successful prosecution received during the reporting period.

- END OF REPORT -

Appendix A

Location of Works Areas

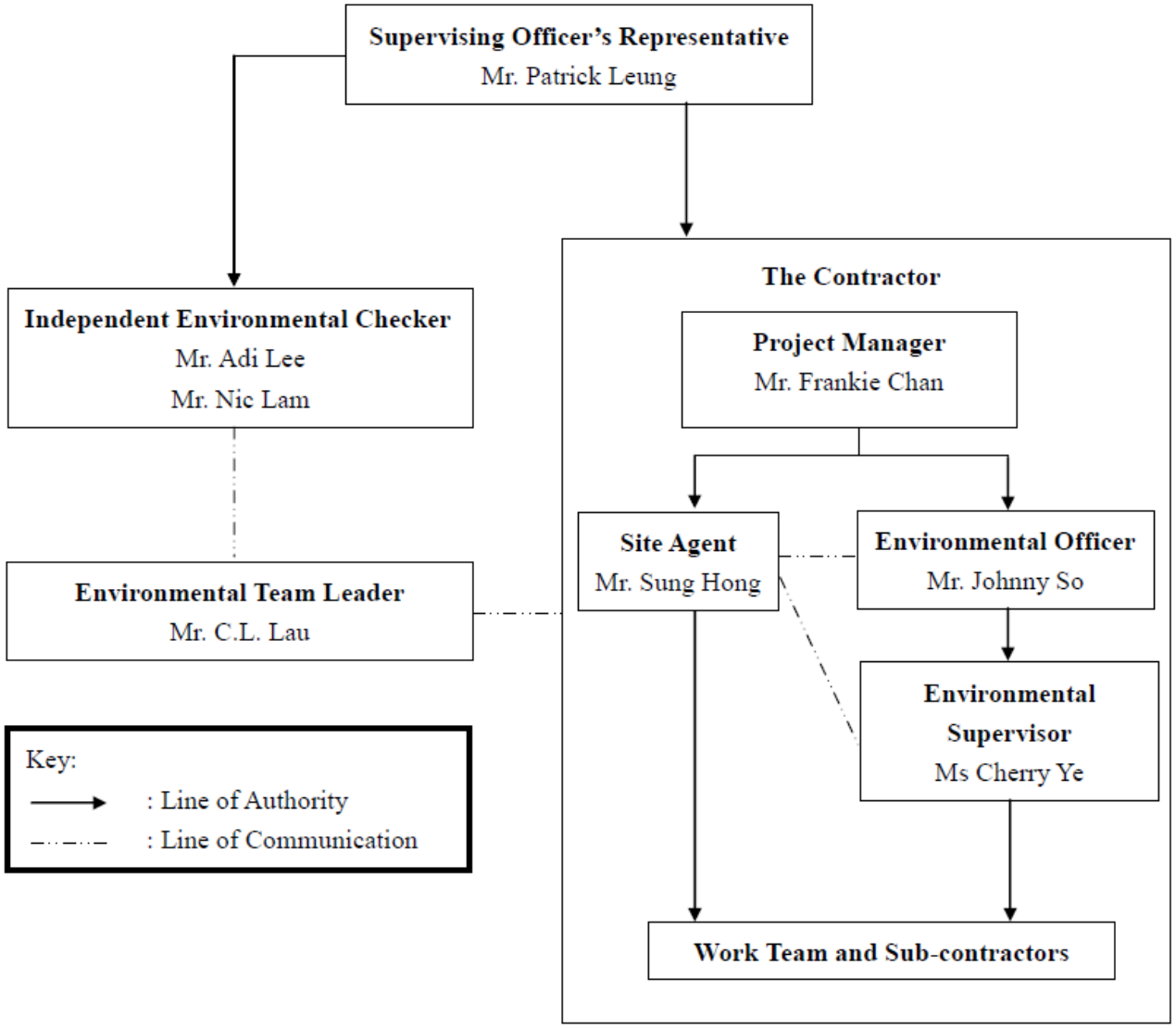


EXISTING SAN WAI SEWAGE TREATMENT WORKS

EXPANDED AND UPGRADED SAN WAI SEWAGE TREATMENT WORKS

Appendix B

Project Organization Chart

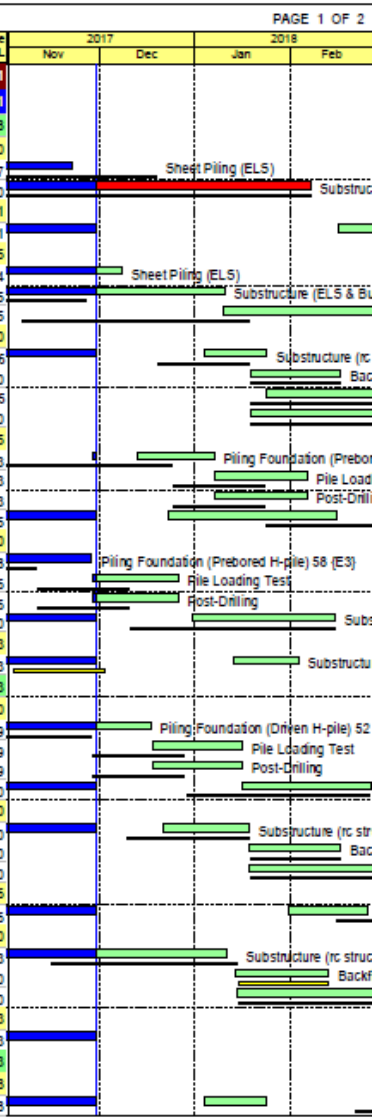

Supervising Officer's Representative
Mr. Patrick Leung
Independent Environmental Checker
Mr. Adi Lee
Mr. Nic Lam
Environmental Team Leader
Mr. C.L. Lau
The Contractor
Project Manager
Mr. Frankie Chan
Site Agent
Mr. Sung Hong
Environmental Officer
Mr. Johnny So
Environmental Supervisor
Ms Cherry Ye
Work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

Appendix C

Construction Programme

DATA DATE: 30-Nov-17 | LAYOUT: 5W Project PHase 1 Rev 7 (Upd 31Aug2017) |

Activity ID	Activity Name	Original Duration	Duration %	Physical %	Activity %	Schedule %	Start	Finish	Total Float	BL Project	BL Project Start	BL Project Finish	Variance - BL	Variance - BL
San Wai Sewage Treatment Works Phase 1 - Rev 7 MP (Update as of 30 N		**873**	**19.19%**			**0%**	**15-May-1**	**05-Nov-19**	**3**		**01-Jun-17**	**25-Sep-19**	**17**	**-41**
Civil & Structural Works		**873**	**19.19%**			**0%**	**15-May-1**	**05-Nov-19**	**3**		**01-Jun-17**	**25-Sep-19**	**17**	**-41**
LOT #1 - Bldg / Facilities Const. (Arch'l & Struct'l) : CEPT+SF, PTW+IPS+SHB, UV, SI		**254**	**54.73%**			**0%**	**15-May-1**	**24-Mar-18**	**54**		**23-Aug-17**	**11-Apr-18**	**100**	**18**
Chemically Enhanced Primary Treatment (CEPT)		**117**	**40.17%**			**0%**	**15-May-1**	**07-Feb-18**	**0**		**21-Oct-17**	**07-Feb-18**	**159**	**0**
CS1508	Sheet Piling (ELS)	60	100%	100%	100%	66.67%	20-Oct-1	22-Nov-1		0	21-Oct-17	19-Dec-17	1	27
CS1510	Substructure (ELS & Bulk excavation)	100	30%	30%	30%	30%	15-May-1	07-Feb-18	0	0	31-Oct-17	07-Feb-18	169	0
System Control Flowmeter Chamber (SF)		**30**	**30%**			**0%**	**15-May-1**	**09-Mar-18**	**51**		**01-Mar-18**	**30-Mar-18**	**290**	**21**
CS1400	Substructure (rc structure)	30	30%	30%	30%	0%	15-May-1	09-Mar-18	51	52	01-Mar-18	30-Mar-18	290	21
Inlet Work, Preliminary Treatment Works and Inlet Pumping Station (PTW & IPS)		**145**	**20.69%**			**0%**	**15-Oct-1**	**24-Mar-18**	**41**		**11-Sep-17**	**18-Jan-18**	**-34**	**-65**
CS1208	Sheet Piling (ELS)	45	80%	80%	80%	100%	28-Oct-1	08-Dec-17	41	0	11-Sep-17	25-Oct-17	-47	-44
CS1210	Substructure (ELS & Bulk excavation)	60	30%	30%	30%	100%	15-Oct-1	10-Jan-18	41	0	28-Sep-17	26-Nov-17	-17	-45
CS1220	Substructure (rc structure)	74	0%	0%	0%	32.43%	10-Jan-18	24-Mar-18	41	0	06-Nov-17	18-Jan-18	-65	-65
Solid Handling Building (SHB)		**67**	**0%**			**0%**	**01-Jun-1**	**19-Mar-18**	**59**		**20-Dec-17**	**19-Mar-18**	**202**	**0**
CS1300	Substructure (rc structure)	30	30%	30%	30%	0%	01-Jun-1	24-Jan-18	57	59	20-Dec-17	18-Jan-18	202	-6
CS1305	Backfilling (except in Water Tightness Test area)	30	0%	0%	0%	0%	19-Jan-18	17-Feb-18	59	59	19-Jan-18	17-Feb-18	0	0
CS1310	Superstructure (rc and metalworks)	43	0%	0%	0%	0%	24-Jan-18	07-Mar-18	59	59	19-Jan-18	02-Mar-18	-5	-5
CS1315	Water Tightness Test + Backfilling	60	0%	0%	0%	0%	19-Jan-18	19-Mar-18	59	59	19-Jan-18	19-Mar-18	0	0
UV Disinfection Facility (UV)		**155**	**58.06%**			**0%**	**17-Jun-1**	**16-Feb-18**	**22**		**26-Oct-17**	**11-Apr-18**	**131**	**55**
CS1900	Piling Foundation (Prebored H-pile) 33	60	58.33%	58.33%	58.33%	58.33%	29-Nov-1	07-Jan-18	22	6	26-Oct-17	24-Dec-17	-34	-13
CS1905	Pile Loading Test	30	0%	0%	0%	0%	07-Jan-18	06-Feb-18	22	6	25-Dec-17	23-Jan-18	-13	-13
CS1907	Post-Drilling	30	0%	0%	0%	0%	07-Jan-18	06-Feb-18	22	6	25-Dec-17	23-Jan-18	-13	-13
CS1910	Substructure (rc structure)	78	30%	30%	30%	0%	17-Jun-1	16-Feb-18	22	6	24-Jan-18	11-Apr-18	221	55
Sludge Dewatering Building (SDB)		**161**	**51.55%**			**0%**	**25-Sep-1**	**15-Feb-18**	**43**		**23-Aug-17**	**15-Feb-18**	**-33**	**0**
CS1800	Piling Foundation (Prebored H-pile) 58 (E3)	80	100%	100%	100%	100%	25-Sep-1	28-Nov-1		12	23-Aug-17	10-Nov-17	-33	-18
CS1815	Pile Loading Test	30	10%	10%	10%	63.33%	29-Nov-1	26-Dec-17	43	12	11-Nov-17	10-Dec-17	-18	-16
CS1817	Post-Drilling	30	10%	10%	10%	63.33%	29-Nov-1	26-Dec-17	43	12	11-Nov-17	10-Dec-17	-18	-16
CS1820	Substructure (ELS & Bulk excavation)	67	30%	30%	30%	0%	25-Sep-1	15-Feb-18	43	12	11-Dec-17	15-Feb-18	77	0
Sludge Skip Storage Building (SSSB)		**30**	**30%**			**0%**	**15-Jun-1**	**03-Feb-18**	**59**		**03-Nov-17**	**02-Dec-17**	**141**	**-63**
CS2900	Substructure (rc structure)	30	30%	30%	30%	90%	15-Jun-1	03-Feb-18	59	59	03-Nov-17	02-Dec-17	141	-63
LOT #2 - Bldg / Facilities Const. (Arch'l & Struct'l) : AB+WS, DO, CB, FH		**214**	**32.46%**			**0%**	**15-May-1**	**23-Apr-18**	**29**		**30-Sep-17**	**15-Jun-18**	**138**	**53**
Administration Building & Maintenance Workshop (AB & WS)		**125**	**28.75%**			**0%**	**15-Jun-1**	**27-Feb-18**	**31**		**30-Sep-17**	**26-Feb-18**	**107**	**0**
CS1100	Piling Foundation (Driven H-pile) 52	60	70%	70%	70%	100%	17-Oct-1	17-Dec-17	31	32	30-Sep-17	28-Nov-17	-17	-19
CS1105	Pile Loading Test	30	0%	0%	0%	3.33%	18-Dec-17	16-Jan-18	31	32	29-Nov-17	28-Dec-17	-19	-19
CS1107	Post-Drilling	30	0%	0%	0%	3.33%	18-Dec-17	16-Jan-18	31	32	29-Nov-17	28-Dec-17	-19	-19
CS1110	Substructure (rc structure)	60	30%	30%	30%	0%	15-Jun-1	27-Feb-18	31	32	29-Dec-17	26-Feb-18	197	0
Deodorization Facilities No. 1 (DO 1)		**63**	**0%**			**0%**	**13-Jun-1**	**17-Mar-18**	**51**		**10-Dec-17**	**17-Mar-18**	**180**	**0**
CS1610	Substructure (rc structure)	40	30%	30%	30%	0%	13-Jun-1	18-Jan-18	51	52	10-Dec-17	18-Jan-18	180	0
CS1615	Backfilling	30	0%	0%	0%	0%	18-Jan-18	17-Feb-18	51	52	19-Jan-18	17-Feb-18	0	0
CS1620	Superstructure (rc and metalworks)	58	0%	0%	0%	0%	18-Jan-18	17-Mar-18	51	52	19-Jan-18	17-Mar-18	0	0
Deodorization Facilities No. 2 (DO 2)		**37**	**30%**			**0%**	**15-Jun-1**	**26-Feb-18**	**12**		**16-Feb-18**	**24-Mar-18**	**246**	**26**
CS1710	Substructure (rc structure)	37	30%	30%	30%	0%	15-Jun-1	26-Feb-18	12	12	16-Feb-18	24-Mar-18	246	26
Chemical Building (CB)		**94**	**0%**			**0%**	**03-Jun-1**	**25-Mar-18**	**58**		**15-Nov-17**	**25-Mar-18**	**165**	**0**
CS2310	Substructure (rc structure)	61	30%	30%	30%	24.59%	03-Jun-1	11-Jan-18	44	59	15-Nov-17	14-Jan-18	165	3
CS2315	Backfilling	30	0%	0%	0%	0%	14-Jan-18	13-Feb-18	58	59	15-Jan-18	13-Feb-18	0	0
CS2320	Superstructure (rc and metalworks)	70	0%	0%	0%	0%	14-Jan-18	25-Mar-18	58	59	15-Jan-18	25-Mar-18	0	0
Street Fire Hydrant Pump Room & GENSET Room (FH)		**48**	**30%**			**0%**	**15-May-1**	**23-Apr-18**	**19**		**29-Apr-18**	**15-Jun-18**	**349**	**53**
CS3010	Substructure (rc structure)	48	30%	30%	30%	0%	15-May-1	23-Apr-18	19	12	29-Apr-18	15-Jun-18	349	53
LOT #3 - Bldg / Facilities Const. (Arch'l & Struct'l) : EB, RW, DG, ICW, JC		**292**	**51.74%**			**0%**	**15-May-1**	**20-Apr-18**	**34**		**25-Aug-17**	**21-Jun-18**	**102**	**63**
Electrical Building No.1 (EB1)		**30**	**30%**			**0%**	**15-May-1**	**24-Jan-18**	**38**		**22-Feb-18**	**23-Mar-18**	**283**	**58**
CS2410	Substructure (rc structure)	30	30%	30%	30%	0%	15-May-1	24-Jan-18	38	39	22-Feb-18	23-Mar-18	283	58



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

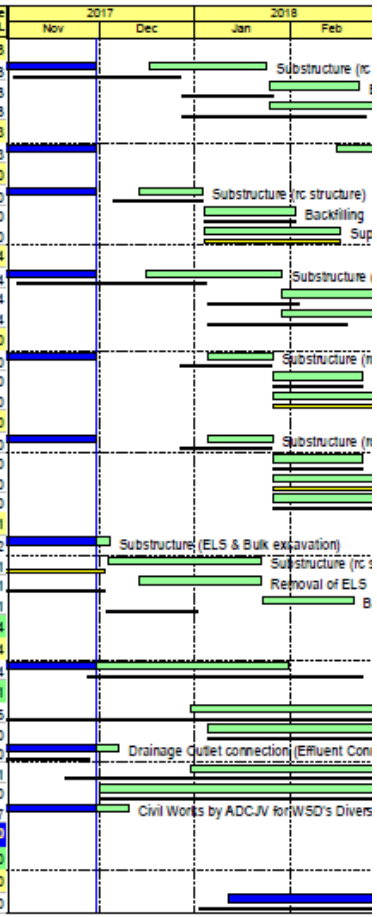
TASK filters: 3 Months Rolling Programme, Construction.

CONTRACT NO. DC/2013/10 DESIGN, BUILD & OPERATE
SAN WAI SEWAGE TREATMENT - PHASE 1
Major Construction Activities from 1 Nov 17 to 31 Jan 18

Date	Revision	Checked	Approved
06-Jul-16	Master Programme Revision 1		
29-Aug-16	Master Programme Revision 2		
09-Nov-16	Master Programme Revision 3		
24-Jan-17	Master Programme Revision 4		

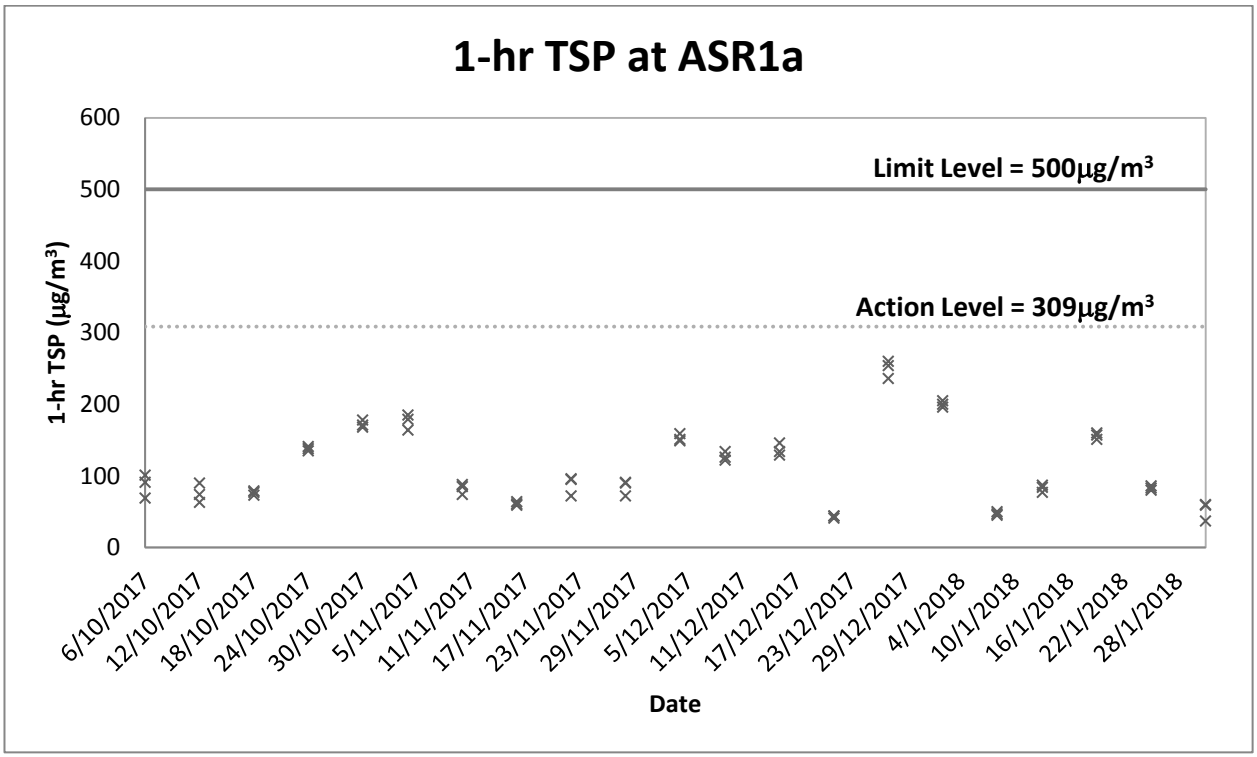
DATA DATE: 30-Nov-17 | LAYOUT: SW Project PHase 1 Rev 7 (Upd 31Aug2017) | PAGE 2 OF 2

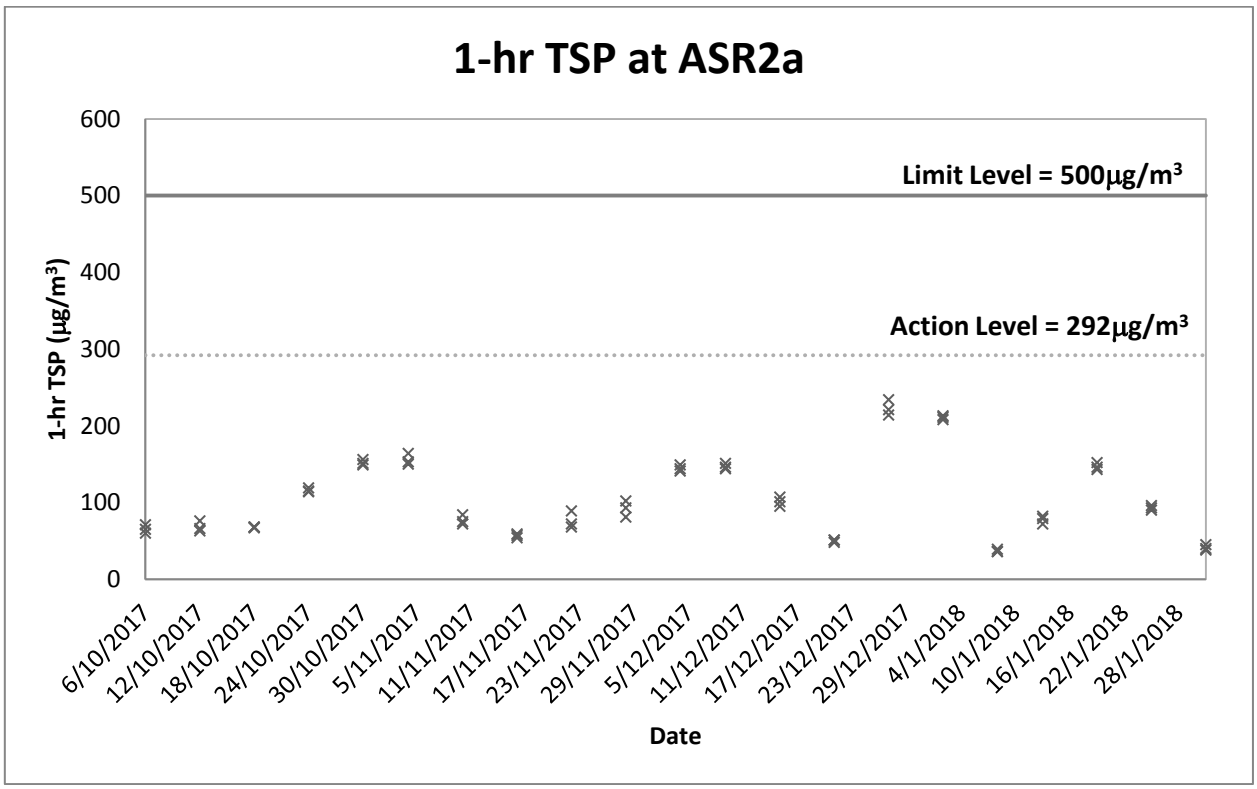
Activity ID	Activity Name	Original Duration	Duration %	Physical %	Activity %	Schedule %	Start	Finish	Total Float	BL Project	BL Project Start	BL Project Finish	Variance - BL	Variance - BL
Electrical Building No.2 (EB2)		71	0%			0%	17-Jun-1	25-Mar-18	59		03-Nov-17	25-Feb-18	139	-28
CS2510	Substructure (rc structure)	55	30%	30%	30%	49.09%	17-Jun-1	24-Jan-18	59	59	03-Nov-17	27-Dec-17	139	-28
CS2515	Backfilling	30	0%	0%	0%	0%	25-Jan-18	23-Feb-18	59	59	28-Dec-17	26-Jan-18	-28	-28
CS2520	Superstructure (rc and metalworks)	60	0%	0%	0%	0%	25-Jan-18	25-Mar-18	59	59	28-Dec-17	25-Feb-18	-28	-28
Electrical Building No.3 (EB3)		90	30%			0%	15-Jun-1	20-Apr-18	21		24-Mar-18	21-Jun-18	282	63
CS2610	Substructure (rc structure)	90	30%	30%	30%	0%	15-Jun-1	20-Apr-18	21	12	24-Mar-18	21-Jun-18	282	63
Electrical Building No.4 (EB4)		58	0%			0%	03-Jun-1	17-Feb-18	30		05-Dec-17	17-Feb-18	185	0
CS2710	Substructure (rc structure)	30	30%	30%	30%	0%	03-Jun-1	03-Jan-18	30	59	05-Dec-17	03-Jan-18	185	0
CS2715	Backfilling	30	0%	0%	0%	0%	04-Jan-18	02-Feb-18	33	59	04-Jan-18	02-Feb-18	0	0
CS2720	Superstructure (rc and metalworks)	45	0%	0%	0%	0%	04-Jan-18	17-Feb-18	30	59	04-Jan-18	17-Feb-18	0	0
Re-use Water Building (RW)		68	0%			0%	10-Jun-1	16-Mar-18	7		04-Nov-17	19-Feb-18	147	-24
CS2010	Substructure (rc structure)	62	30%	30%	30%	41.94%	10-Jun-1	29-Jan-18	7	31	04-Nov-17	04-Jan-18	147	-24
CS2015	Backfilling	30	0%	0%	0%	0%	29-Jan-18	28-Feb-18	23	47	05-Jan-18	03-Feb-18	-24	-24
CS2020	Superstructure (rc and metalworks)	46	0%	0%	0%	0%	29-Jan-18	16-Mar-18	7	31	05-Jan-18	19-Feb-18	-24	-24
DG Store and Chemical Waste Storage Building (DG)		36	0%			0%	10-Jun-1	02-Mar-18	58		27-Dec-17	02-Mar-18	200	0
CS2800	Substructure (rc structure)	30	30%	30%	30%	0%	10-Jun-1	26-Jan-18	58	59	27-Dec-17	25-Jan-18	200	0
CS2805	Backfilling	30	0%	0%	0%	0%	26-Jan-18	24-Feb-18	58	59	26-Jan-18	24-Feb-18	0	0
CS2810	Superstructure (rc and metalworks)	36	0%	0%	0%	0%	26-Jan-18	02-Mar-18	58	59	26-Jan-18	02-Mar-18	0	0
Irrigation & Cleansing Water Pump Room (ICW)		36	0%			0%	10-Jun-1	02-Mar-18	58		27-Dec-17	02-Mar-18	200	0
CS3370	Substructure (rc structure)	30	30%	30%	30%	0%	10-Jun-1	26-Jan-18	58	59	27-Dec-17	25-Jan-18	200	0
CS3375	Backfilling	30	0%	0%	0%	0%	26-Jan-18	24-Feb-18	58	59	26-Jan-18	24-Feb-18	0	0
CS3380	Superstructure (rc and metalworks)	36	0%	0%	0%	0%	26-Jan-18	02-Mar-18	58	59	26-Jan-18	02-Mar-18	0	0
CS3385	Water Tightness Test	36	0%	0%	0%	0%	26-Jan-18	02-Mar-18	58	59	26-Jan-18	02-Mar-18	0	0
Existing Junction Chamber (JC)		172	51.22%			0%	21-Aug-1	21-Feb-18	40		25-Aug-17	01-Jan-18	4	-51
CS2190	Substructure (ELS & Bulk excavation)	50	90%	90%	90%	100%	21-Aug-1	04-Dec-17	40	52	25-Aug-17	13-Oct-17	4	-52
CS2200	Substructure (rc structure)	50	0%	0%	0%	94%	04-Dec-17	22-Jan-18	40	52	14-Oct-17	02-Dec-17	-51	-51
CS2202	Removal of ELS	40	0%	0%	0%	92.5%	14-Dec-17	22-Jan-18	40	52	24-Oct-17	02-Dec-17	-51	-51
CS2205	Backfilling	30	0%	0%	0%	0%	23-Jan-18	21-Feb-18	40	52	03-Dec-17	01-Jan-18	-51	-51
LOT #4 - Bldg / Facilities Const. (Arch'l & Struct'l) : GH, PF		90	30%			0%	10-Jun-1	31-Jan-18	29		27-Nov-17	24-Feb-18	170	24
Payment Flowmeter Chamber (PF)		90	30%			0%	10-Jun-1	31-Jan-18	29		27-Nov-17	24-Feb-18	170	24
CS2100	Substructure (rc structure)	90	30%	30%	30%	3.33%	10-Jun-1	31-Jan-18	29	12	27-Nov-17	24-Feb-18	170	24
External Works & Miscellaneous		873	19.19%			0%	01-Jun-1	05-Nov-19	3		01-Jun-17	25-Sep-19	0	-41
CS3201	Slope works and Retaining Wall (Eastern Portion)	197	0%	0%	0%	22.84%	30-Dec-17	15-Jul-18	58	28	16-Oct-17	30-Apr-18	-76	-76
CS3210	Drainage Inlet connection (Diversion of Three Existing Sewage Rising Mains)	174	0%	0%	0%	0%	05-Jan-18	27-Jun-18	37	28	05-Jan-18	27-Jun-18	0	0
CS3220	Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber)	75	90%	90%	90%	100%	13-Sep-1	07-Dec-17	41	1	13-Sep-17	27-Nov-17	1	-10
CS3250	EVA (Road & Drainage)	675	0%	0%	0%	1.48%	30-Dec-17	05-Nov-19	3	4	20-Nov-17	25-Sep-19	-41	-41
CS3284	Diversion of Existing Watermains by WSD	89	0%	0%	0%	0%	01-Dec-17	28-Feb-18	36	28	01-Dec-17	28-Feb-18	0	0
CS3286	Civil Works by ADCJV for WSD's Diversion of Existing Watermains	106	90%	90%	90%	100%	01-Jun-1	10-Dec-17	36	28	01-Jun-17	14-Sep-17	0	-87
E&M Works		130	100%			0%	12-Jan-1	22-May-1	51		02-Jan-18	11-May-18	-10	-10
Installation		130	100%			0%	12-Jan-1	22-May-1	51		02-Jan-18	11-May-18	-10	-10
Existing Junction Chamber (JC)		130	100%			0%	12-Jan-1	22-May-1	51		02-Jan-18	11-May-18	-10	-10
EM2200	Existing Junction Chamber (#12)	130	100%	100%	100%	0%	12-Jan-1	22-May-1	51	52	02-Jan-18	11-May-18	-10	-10

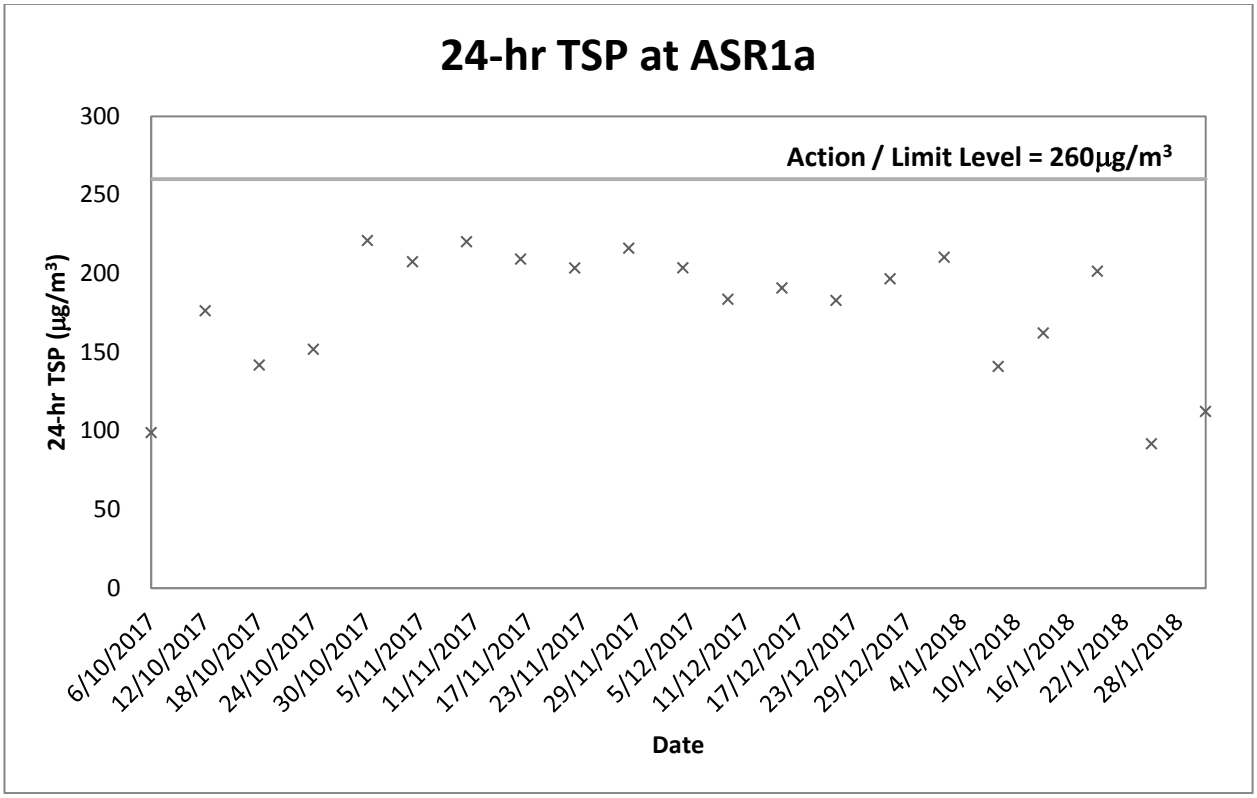


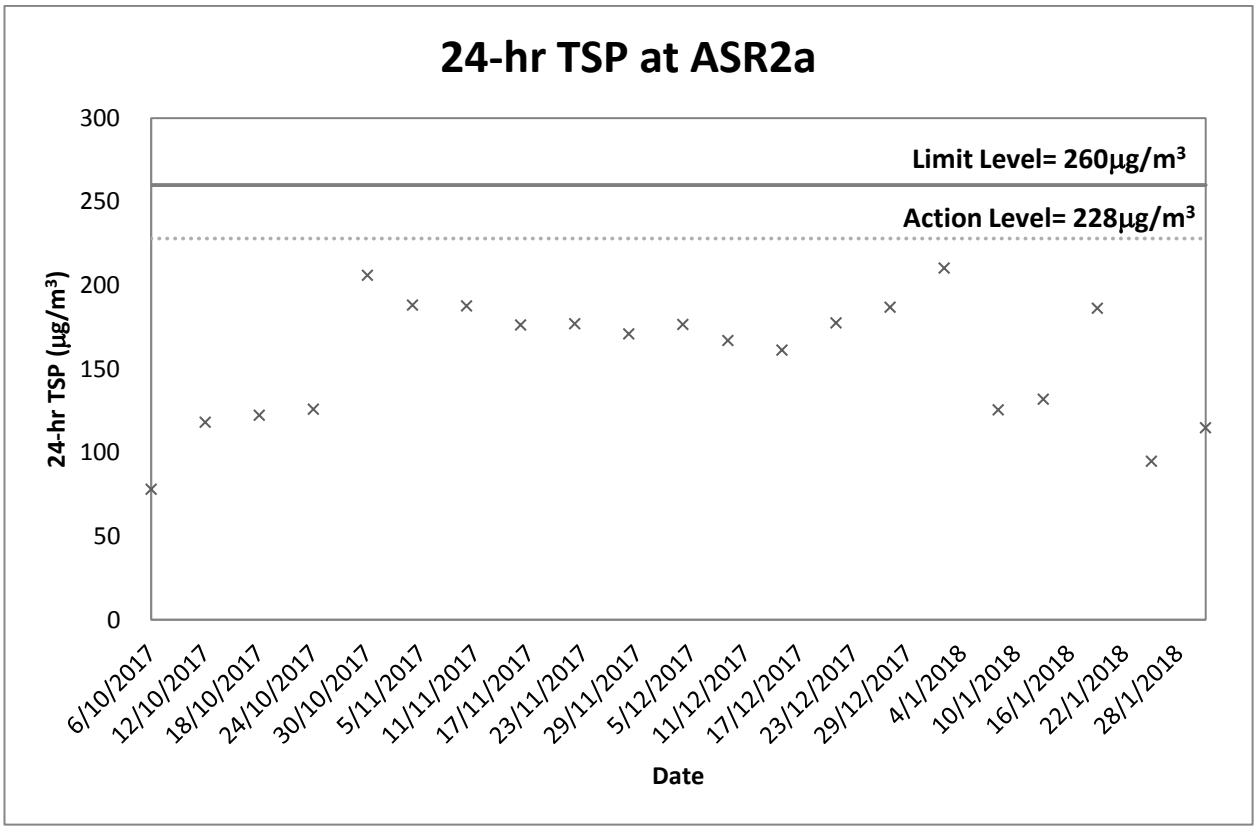
Appendix D

Graphical Plots of Impact Air Quality Monitoring Results


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

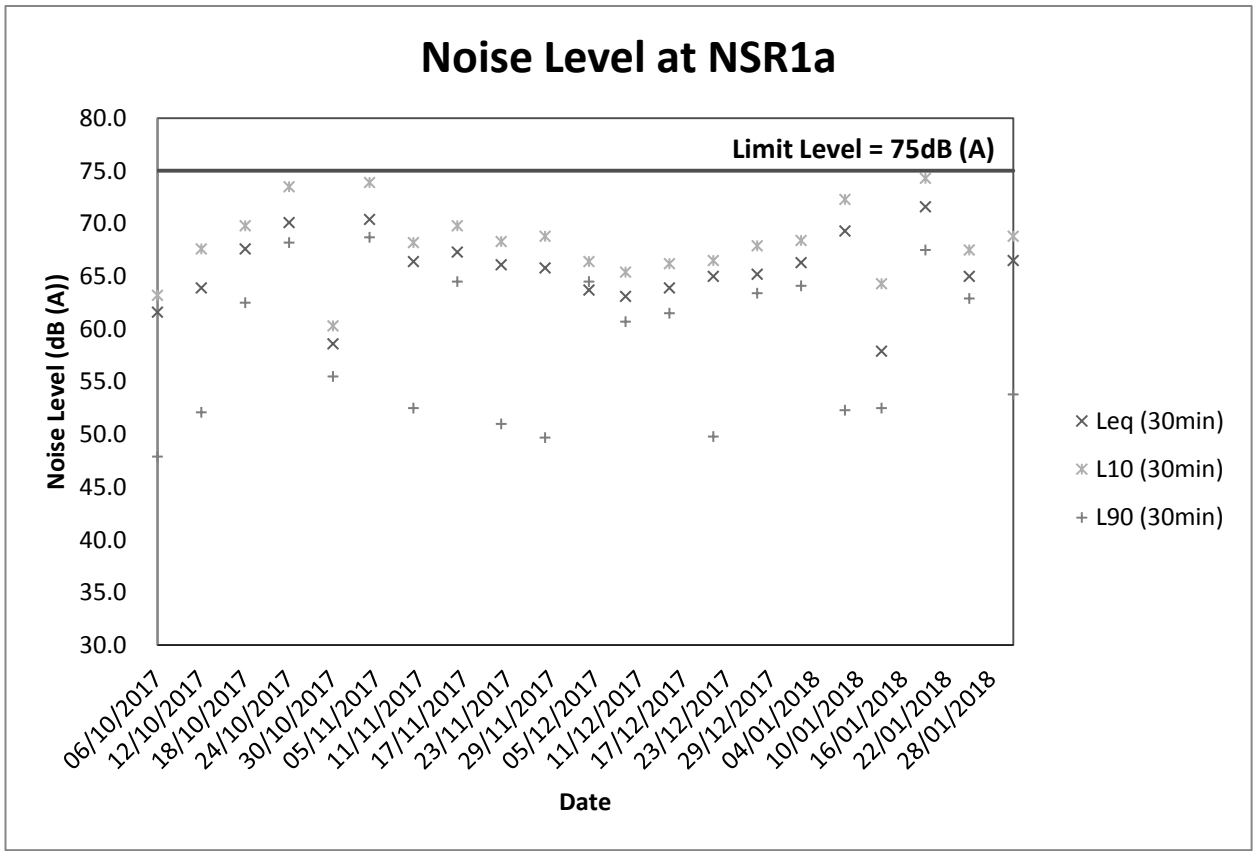

1-hr TSP at ASR2a
Limit Level = 500μg/m³
Action Level = 292μg/m³
1-hr TSP (μg/m³)
600
500
400
300
200
100
0
6/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
5/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
5/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
4/1/2018
10/1/2018
16/1/2018
22/1/2018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

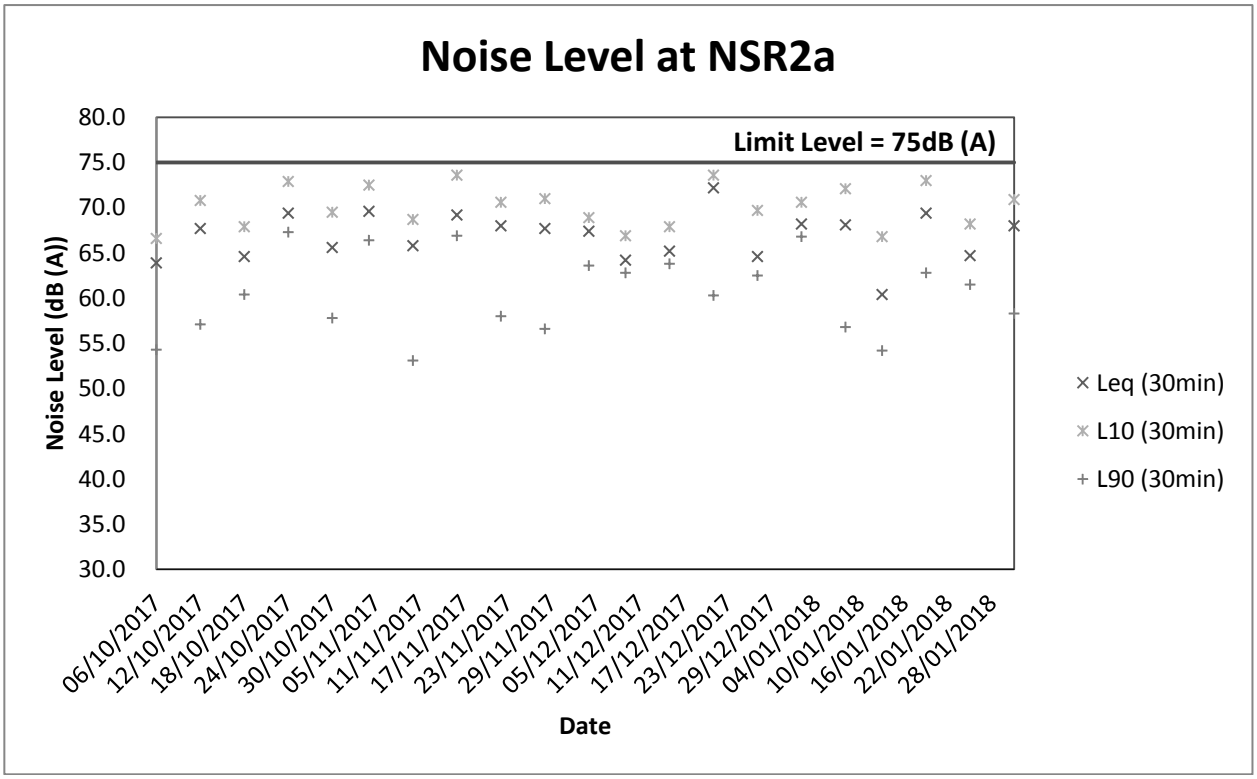

24-hr TSP at ASR1a
Action / Limit Level = 260μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
6/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
5/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
5/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
4/1/2018
10/1/2018
16/1/2018
22/1/2018
28/1/2018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


24-hr TSP at ASR2a
Limit Level= 260μg/m³
Action Level= 228μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
6/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
5/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
5/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
4/1/2018
10/1/2018
16/1/2018
22/1/2018
28/1/2018
Date

Appendix E

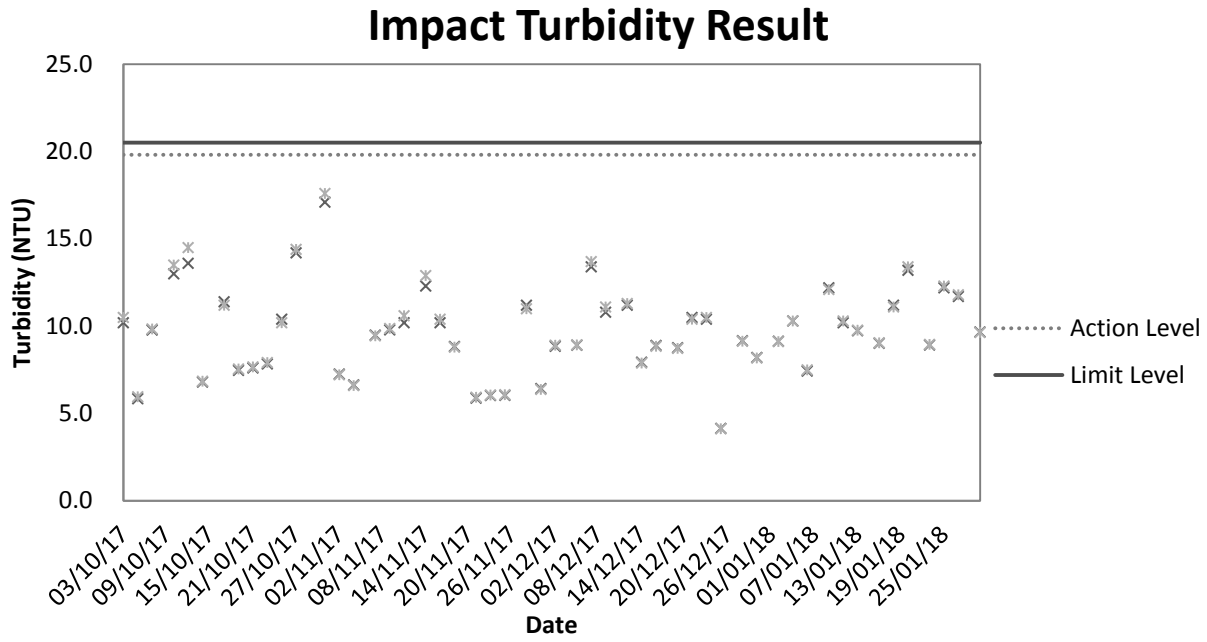
Graphical Plots of Impact Noise Monitoring Data

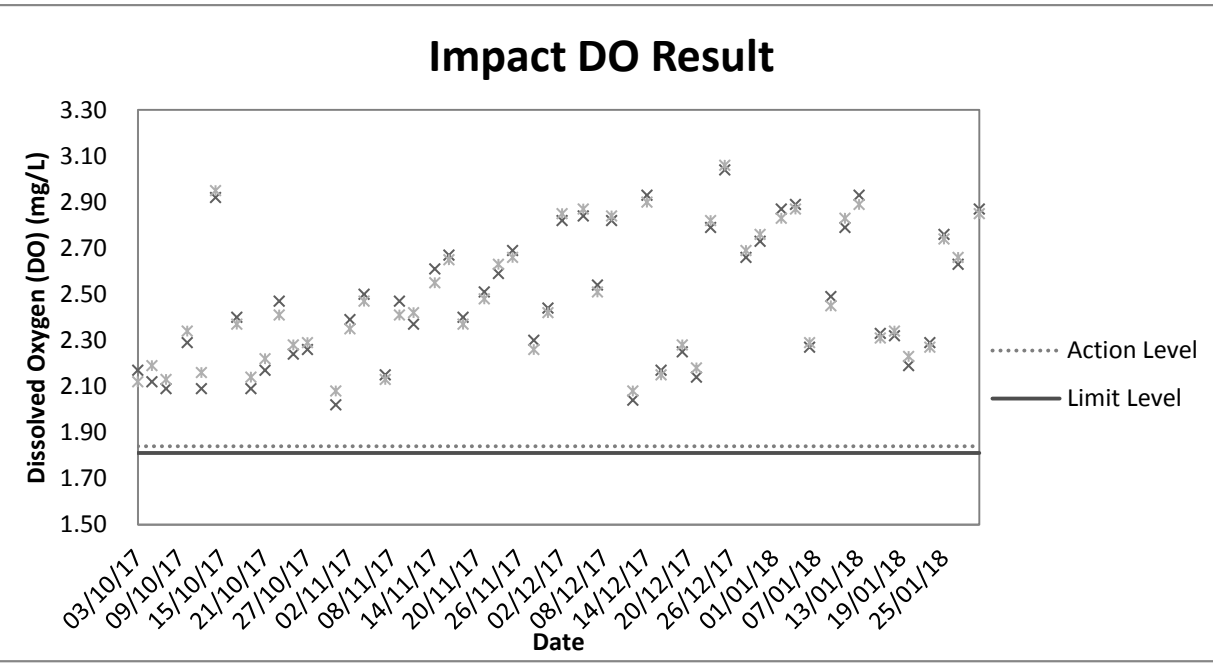

Noise Level at NSR1a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
06/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
05/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
05/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
04/01/2018
10/01/2018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

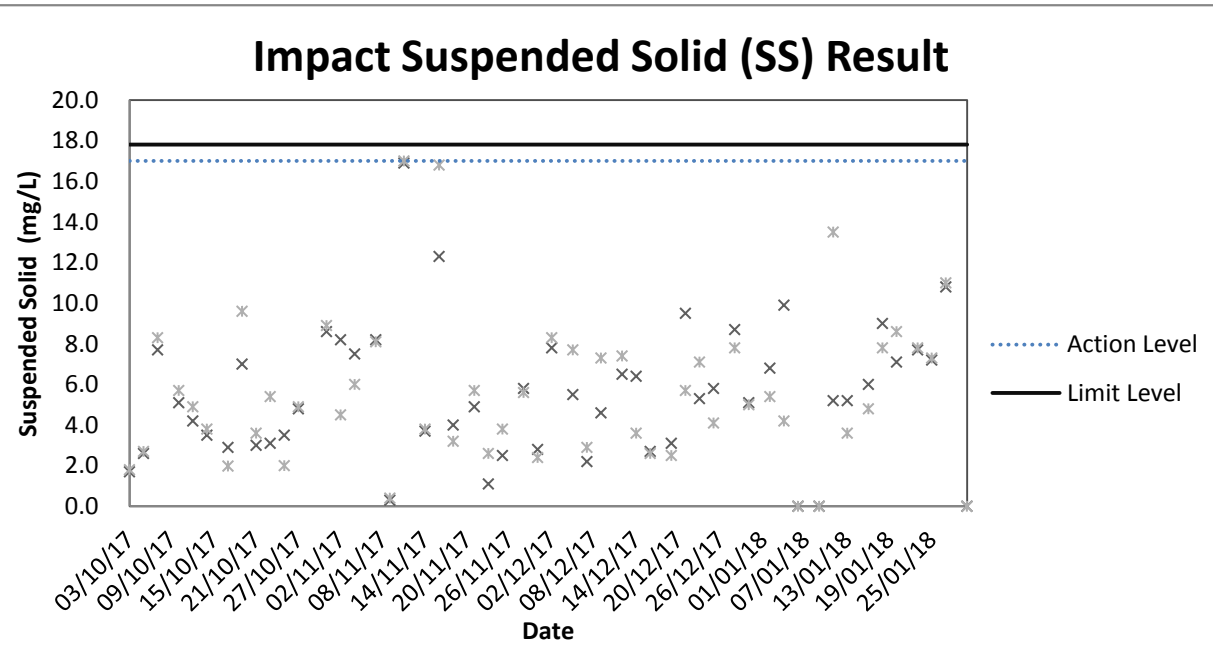

Noise Level at NSR2a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
06/10/2017
12/10/2017
18/10/2017
24/10/2017
30/10/2017
05/11/2017
11/11/2017
17/11/2017
23/11/2017
29/11/2017
05/12/2017
11/12/2017
17/12/2017
23/12/2017
29/12/2017
04/01/2018
10/01/2018
16/01/2018
22/01/2018
28/01/2018
Date
Leq (30min)
L10 (30min)
L90 (30min)

Appendix F

Graphical Plots of Impact Water Quality Monitoring Data


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


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


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

Appendix G

Event and Action Plan

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

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

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

Event and Action Plan for Construction Noise

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

	effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.		portion of work until the exceedance is abated.	is abated.

Event and Action Plan for Water Quality

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

Event	Action			
	ET Leader	IEC	ER	Contractor
	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.	and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	3. Assess the effectiveness of the implemented mitigation measures.	equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contract or and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the	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.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.

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

Appendix H

Implementation Schedule for Environmental Mitigation Measures (EMIS)

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

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

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

Appendix I

Weather Condition

Daily Extract of Meteorological Observations, November 2017 – Wetland Park

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
01	1017.2	28.4	21.5	17.0	15.4	72	0.0	060	3.8
02	1014.4	29.2	22.0	16.6	16.7	77	0.0	050	2.3
03	1015.7	29.4	23.4	18.2	13.7	59	0.0	040	6.0
04	1019.1	26.2	23.4	21.7	11.8	48	0.0	050	7.3
05	1018.6	26.6	22.8	18.9	13.0	55	0.0	060	6.7
06	1016.6	26.2	22.7	19.5	15.8	66	0.0	060	4.3
07	1016.5	26.0	22.4	19.5	18.9	81	7.0	320	4.3
08	1016.1	27.2	24.1	21.5	21.8	88	0.0	050	3.4
09	1015.6	29.3	24.8	21.8	21.3#	88#	0.0	070	3.8
10	1014.7	31.2#	25.3	21.2#	21.2#	72#	0.0	060	3.4
11	1014.0	28.9	24.8	21.6	20.9	80	0.0	070	4.0
12	1013.3	25.1	22.7	21.6	19.5	82	7.0	090	4.4
13	1013.2	23.0	22.1	21.5	20.2	89	2.0	070	3.4
14	1014.4	25.7	23.5	22.0	21.3	88	0.0	050	3.7
15	1015.9	25.1	23.4	21.5	19.8	80	0.0	080	4.6
16	1014.8	27.7	23.5	20.8	19.1	78	0.0	070	5.1
17	1011.2	30.4	24.7	20.6	20.9	81	0.0	170	3.2
18	1012.4	26.8	23.4	19.6	19.6	80	0.0	070	3.9
19	1018.0	19.9	18.4	16.4	15.3	83	0.0	060	4.3
20	1019.5	18.9#	17.7	16.2#	13.0	74	0.0	040	5.7
21	1018.6	22.2	17.9	15.2	12.5	71	0.0	340	4.6
22	1017.3	23.7#	19.1	15.8#	12.4	66	0.0	350	6.5
23	1020.6	21.0	17.1	14.3	6.5	50	0.0	030	10.5
24	1022.8	20.4	16.7	15.6	8.5	59	0.0	030	7.3
25	1022.0	19.7	17.2	15.2	11.6	69	0.0	360	4.0
26	1020.9	22.5#	18.8	16.5#	13.6	72	0.0	350	3.8
27	1017.0#	23.0#	21.3#	19.3#	15.7#	72#	0.0#	060	4.4
28	1017.3	28.2	22.2	18.7	17.9	78	0.0	040	2.8
29	1016.6	28.1#	23.5	20.0#	19.9	81	0.0	070	3.2
30	1016.7	25.0#	22.5	20.3#	20.0	86	0.0	070	4.0

 # data incomplete

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

Daily Extract of Meteorological Observations, December 2017 – Wetland Park

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
01	1019.1	24.6	21.4	19.0	13.9	63	0.0	060	8.7
02	1019.3	24.8	19.6	16.4	13.0	67	0.0	040	5.7
03	1017.9	24.4	19.7	17.1	14.5	73	0.0	060	4.7
04	1018.6	24.6	19.7	16.0	13.1	68	0.0	060	4.5
05	1020.4	21.6	18.1	15.4	11.0	63	0.0	050	7.7
06	1018.6	23.8	18.1	14.7	12.5	72	0.0	070	3.6
07	1018.4	23.3	17.9	14.5	12.9	75	0.0	050	3.1
08	1021.8	20.8	17.1	14.5	4.4	46	0.0	020	8.0
09	1020.1	19.6	14.6	10.5	3.0	48	0.0	030	5.8
10	1018.5	22.1	16.3	10.4	9.1	66	0.0	290	2.7
11	1018.6	23.4	18.6	15.2	6.5	47	0.0	040	5.1
12	1018.5	21.5	18.3	16.3	9.7	60	0.0	060	5.0
13	1017.8	20.6	18.8	17.8	13.7	73	0.0	070	8.5
14	1018.1	22.5	20.0	18.1	14.7	72	0.0	070	6.3
15	1019.3	22.4	19.8	18.3	14.9	74	0.0	070	7.0
16	1024.5	18.3	14.5	11.3	8.0	65	0.0	360	10.5
17	1027.5	14.0	11.4	9.3	3.5	59	0.0	010	10.3
18	1026.4	17.0	11.6	7.0	1.3	50	0.0	360	6.2
19	1026.6	17.5	13.1	8.2	-2.5	35	0.0	350	7.5
20	1028.0	19.9	14.7	11.1	-2.9	31	0.0	020	8.4
21	1025.9	20.3	14.6	10.9	0.3	43	0.0	050	6.3
22	1021.2	22.0	16.4	12.1	7.8	60	0.0	060	4.3
23	1017.6	22.3	18.4	13.8	13.5	74	0.0	330	2.3
24	1018.6	25.6	19.5	13.7	10.5	61	0.0	360	4.3
25	1020.2	22.4	17.4	14.7	2.8	41	0.0	040	6.4
26	1020.9	24.6	17.8	13.4	9.8	63	0.0	060	4.5
27	1021.2	22.6	17.9	13.3	11.8	70	0.0	070	4.6
28	1020.8	21.6#	18.7	16.2#	13.0	70	0.0	070	3.9
29	1021.2	26.0	19.7	16.5	13.4	68	0.0	050	4.6
30	1021.8	24.7	20.0	15.7	13.1	66	0.0	060	6.5
31	1022.0	22.6	17.5	13.7	7.5	53	0.0	030	8.0

 # data incomplete

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

Daily Extract of Meteorological Observations, January 2018 – Wetland Park

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
01	1020.5	20.3	16.5	13.6	11.4	73	0.0	060	4.6
02	1019.3	21.7	18.4	15.3	12.9	71	0.0	060	5.5
03	1018.5	24.9	20.2	16.8	13.3	66	0.0	090	7.4
04	1016.5	22.8	19.6	17.5	14.7	74	0.0	070	8.2
05	1015.3	23.8	19.5	16.4	16.2	82	0.0	060	5.1
06	1014.6	17.1	16.1	14.7	14.8	92	8.5	070	7.2
07	1014.1	19.6	17.4	14.5	15.6	89	15.5	070	7.0
08	1016.1	18.8	14.6	8.6	13.4	92	12.5	340	7.1
09	1024.2	10.6	8.4	6.5	3.4	73	10.0	030	9.9
10	1025.6	15.9	12.8	10.3	-3.9	32	0.0	040	11.5
11	1026.6	17.1	13.8	11.2	-5.6	26	0.0	040	11.0
12	1027.5	16.9	11.6	7.0	-3.8	40	0.0	040	8.8
13	1026.1	16.7	11.4	5.8	4.3	66	0.0	070	5.3
14	1023.0	20.3	13.9	8.6	5.8	63	0.0	050	5.2
15	1018.9	21.7	14.1	8.4	9.6	78	0.0	270	3.4
16	1015.5	22.8	16.2	11.2	11.2	76	0.0	250	3.1
17	1014.6	25.6	17.5	11.0	11.7	73	0.0	310	2.3
18	1016.5	25.2	18.2	12.3	13.8	78	0.0	050	2.2
19	1017.7	20.6	19.0	17.1	16.7	87	0.0	060	3.0
20	1016.6	23.4	19.7	17.1	15.9	79	0.0	070	5.2
21	1015.5	23.0	18.4	16.1	15.4	83	0.0	060	4.4
22	1013.9	25.5	19.4	14.9	16.2	83	0.0	180	3.5
23	1015.2	22.5	19.0	15.6	15.2	80	0.0	070	4.3
24	1015.2	22.1	18.3	16.7	13.1	72	0.0	080	9.4
25	1015.4	21.2	17.8	15.4	13.3	75	0.0	080	9.1
26	1017.2	21.5	17.3	14.9	13.8	80	0.0	070	5.0
27	1017.2	19.0	15.5	12.9	10.8	74	0.0	070	8.1
28	1015.6	18.0	15.4	10.4	11.6	78	0.0	060	7.2
29	1021.6	10.4	8.1	6.8	5.0	81	2.0	020	9.0
30	1021.5	8.2	7.3	5.9	4.4	82	2.0	040	8.3
31	1022.6	9.0	7.8	6.8	5.9	88	20.0	350	7.1

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

Appendix 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: 2017

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

Contract No.: DC/2013/10

Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Broken Concrete (see Note 3)	Reused in the Contract (see Note 5)	Reused in other Projects	Disposed as Public Fill (see Note 4)	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 kg)
Jan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.480
Feb	0.005	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	6.830
Mar	0.000	0.000	0.000	0.000	0.000	1.074	0.000	0.000	0.000	0.000	5.830
Apr	0.248	0.000	0.000	0.000	0.248	0.000	0.000	0.000	0.000	0.000	23.350
May	1.762	0.000	0.000	0.000	1.762	0.000	0.000	0.000	0.000	0.000	1.540
Jun	2.628	0.000	0.000	0.000	2.628	0.030	0.000	0.095	0.000	0.000	12.300
Jul	1.142	0.000	0.000	0.000	1.142	0.066	0.000	0.000	0.000	0.000	4.560
Aug	3.619	0.000	0.050	0.000	3.569	0.000	0.001	0.155	0.000	0.000	29.930
Sep	4.136	0.000	0.094	0.000	4.043	0.098	0.000	0.000	0.000	0.000	8.710
Oct	1.818	0.000	0.000	0.000	1.818	0.000	0.007	0.110	0.002	0.000	5.410
Nov	5.787	0.000	0.000	0.000	5.787	0.000	0.002	0.148	0.001	0.000	11.970
Dec	10.528	0.000	0.000	0.000	10.528	0.000	0.000	0.000	0.000	0.000	12.330
Total	31.672	0.000	0.144	0.000	31.528	1.268	0.010	0.508	0.003	0.000	142.240

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

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

(3) Broken concrete for recycling into aggregates.

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

(5) About 100 ton public fill materials were reused for the founding material of temporary access road in August 2017. About 187.5 ton on-site excavated materials were reused for founding materials of temporary ground supporting for the Pile Load Test in September 2017.

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

ATAL-Degremont-China Harbour Joint Venture

Name of Department: DSD

Year: 2018

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

Contract No.: DC/2013/10

Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Broken Concrete (see Note [3])	Reused in the Contract (see Note)	Reused in other Projects	Disposed as Public Fill (see Note [4])	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note [2])	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 kg)
Jan	8.389	0.000	0.000	0.000	8.389	0.000	0.000	0.000	0.000	0.000	18.480
Feb											
Mar											
Apr											
May											
Jun											
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	8.389	0.000	0.000	0.000	8.389	0.000	0.000	0.000	0.000	0.000	18.480

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

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

(3) Broken concrete for recycling into aggregates.

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

Appendix K

Investigation Report on Non-compliance of the effluent quality

Report No. **E001**
Sampling Date **07 November 2017**

Test Parameter **Suspended Solid (in mg/L)**

Monitoring Location	Result	Limit as per the discharge license no. WT00026754-2017
P8	74	30

The suspended solid result for the treated effluent sampled on 07 November 2017 failed to comply with the limit as per the discharge license no. WT00026754-2017.

Investigation Results:

a) Causes of non-compliance

- As confirmed by the contractor, the major machine technician, whom manage the treatment facility, was on leave during 06 November 2017 to 07 November 2017. A reserve technician was assigned to pick up the duty during this period. Due to the mishandling of the WetSep treatment tank by the reserve technician, the suspended solid result for the treated effluent sampled on 07 November 2017 failed to comply with the limit as per the discharge license no. WT00026754-2017.
- In addition to the above reason, the sludge was accumulated in the Wetsep treatment tank which affects the performance of the tank. Besides, the Wetsep treatment tank was observed to be tiled and thus unbalanced sedimentation would be resulted which also affected the quality of treated effluent.

b) Action required under the action plan
Refer to Table 4.2 of the EM&A Manual.

c) Action taken under the action plan

1. Repeat measurement of treated effluent sample was sampled on 15 November 2017 and the suspended solid result was shown below:

Monitoring Location	Suspended Solid (in mg/L)	Limit as per the discharge license no. WT00026754-2017
P8	10	30

The result of suspended solid of the water samples sampled on 15 November 2017 was under the limit as per the discharge license no. WT00026754-2017.

2. After considered the above mentioned investigation results, the non-compliance was found to be an individual case;
3. The exceedance was informed to EPD and Contractors;

4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Mitigation measures and recommendations were provided in item d).

d) ET's conclusions and recommendations for mitigation

- The contractor was reminded to check the operational condition of the WetSep treatment tank and the amount of the chemical dosage regularly to ensure the tank was operated properly
- The contractor was reminded to provide sufficient training to workers who responsible to operate the WetSep treatment tank
- The contractor was recommended to perform visual check of the treated effluent against suspended solid standard solution before each discharge
- The contractor was reminded to provide an operational procedure on the WetSep treatment tank

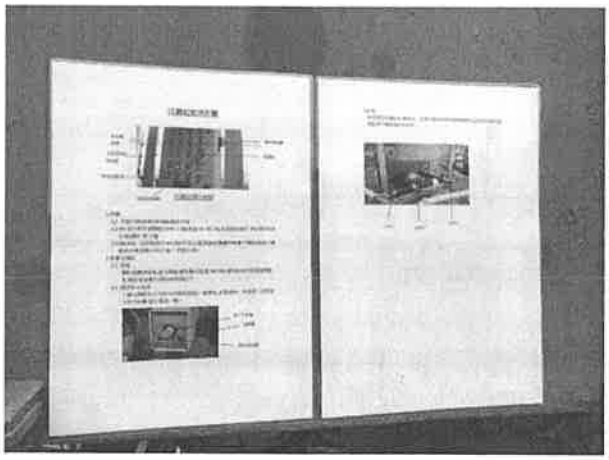
e) Contractor's actions to implement the mitigation

- To prepare a checklist for front staff to check the operational condition of the WetSep treatment tank and the amount of the chemical dosage regularly
- To provide sufficient training including operational procedures and maintenance works to technicians who responsible to operate and manage the WetSep treatment tank

f) Implementation Status

A related follow-up inspection was performed on 24 November 2017 to investigate the implementation status of the mitigation measures recommended in item d).

- An operational procedure was affixed on the WetSep treatment tank



- A checklist was provided to the front staffs in order to check the operational condition of the WetSep treatment tank and the amount of the chemical dosage regularly to ensure the tank was operated properly. The checklist was attached in **Appendix A.**

Prepared by: _____
LO, Ting Yi

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Appendix A

Checklist for Using Wetsep Treatment Tank

環保缸檢查清單

Inspected by
巡查人員 _____
Date
日期 _____

Time
時間 _____
Signature
簽署 _____

*Inspection shall be carried out every day.
*檢查需每天進行一次。

A. Condition Check 現況檢測

Item 項目	Requirement 要求	✓	✗	Last Check 上次檢驗日期	Frequency 檢查密度
A1	No leakage found in connections 喉通接駁良好，無漏水情況				Every 7 days 每 7 天
A2	Good condition of tank, platform and secure ground condition nearby 缸身，鐵台情況良好及附近環境穩固				Every 7 days 每 7 天
A3	Chemicals stored with cover to prevent getting wet 化學物品存放在有蓋範圍以免沾濕				Every 3 days 每 3 天
A4	Chemicals sufficient for at least 7 days use 化學物品足夠應付 7 日所需				Every 3 days 每 3 天
A5	Good condition of discharge point 排水點暢通無阻，排水良好				Every 7 days 每 7 天
A6	Drainage system cleared and maintained unblocked, standby pumping facilities in place 排水系統暢通無阻，並提供抽水設備待用				Every 7 days 每 7 天
A7	Sludge ready to be disposed off 泥漿池已曬乾並可準備處理				Every 3 days 每 3 天
A8	No loosen object/material left in tank may result in blockage 沒有大件的物件/物料留在缸內造成阻塞				Every 3 days 每 3 天
A9	Sample at effluent and compare with standard solution 抽取水辦和樣辦比較				Every day 每天

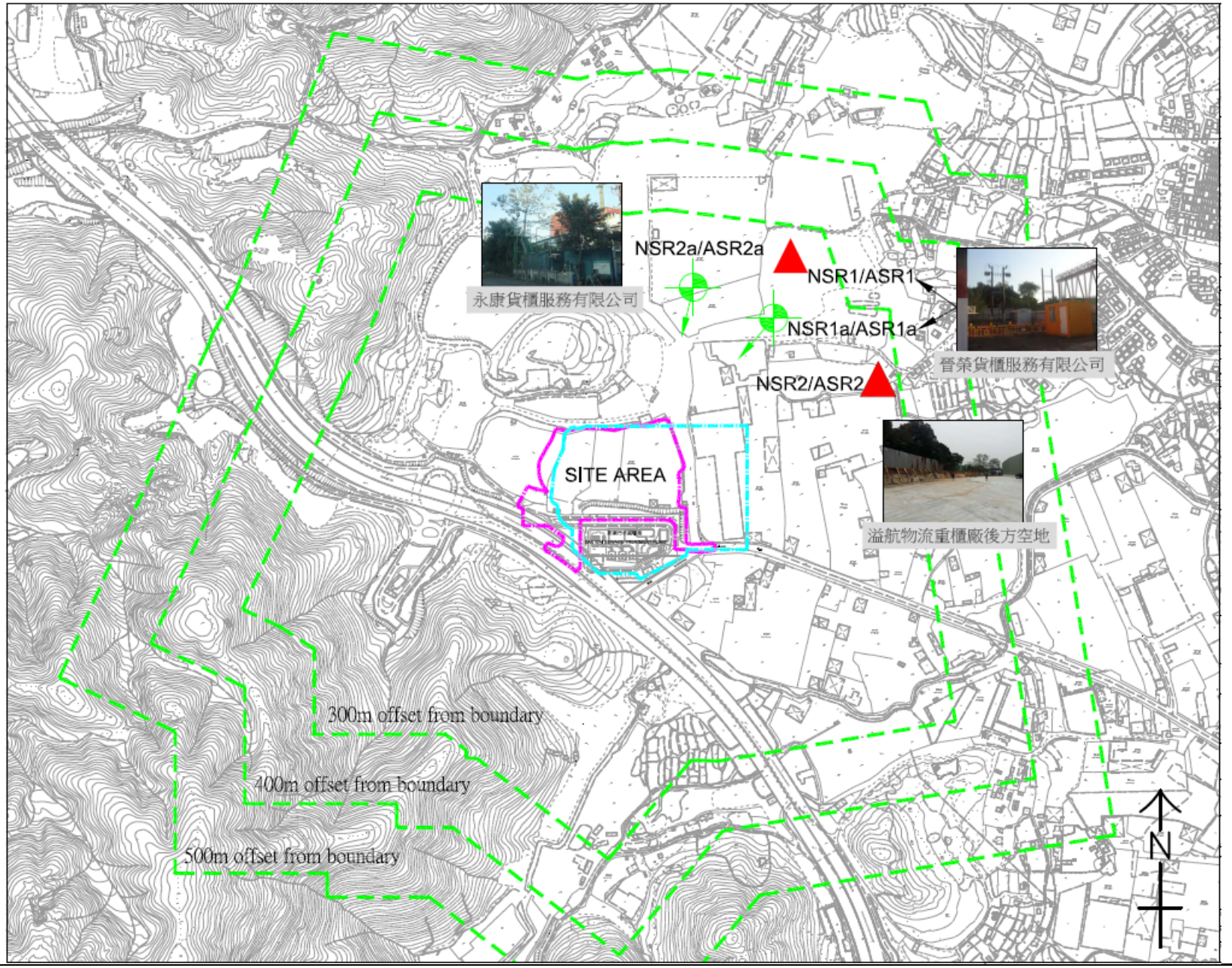
B. Tank Operation 基本運作

Item 項目	Requirement 要求	✓	✗	Last Check 上次檢驗日期	Frequency 檢查密度
B1	Water level of dosage tanks more than 20% 白药，黃药，酸桶水量不少於 20%				Every day 每天
B2	Stirrer functioning properly 白药，黃药內攪拌器運作正常				Every day 每天
B3	pH value maintain between 6-10 錶板上酸鹼度維持在 6-10pH 值				Every day 每天
B4	Release sludge from Wetsep to sludge pool 排放環保缸泥漿至泥漿池				Every day 每天
B5	Washing Wetsep tank 清洗環保缸				Every 3 days 每 3 天
B6	Remove sludge in sedimentation tank 清理沉澱缸泥漿				Every 3 days 每 3 天

** 註 *Note* ：
檢查結果 *Inspection Result*
✓ - 良好狀況 *Satisfactory*
✗ - 需改善及更換 *Need Improvement & Replacement*

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

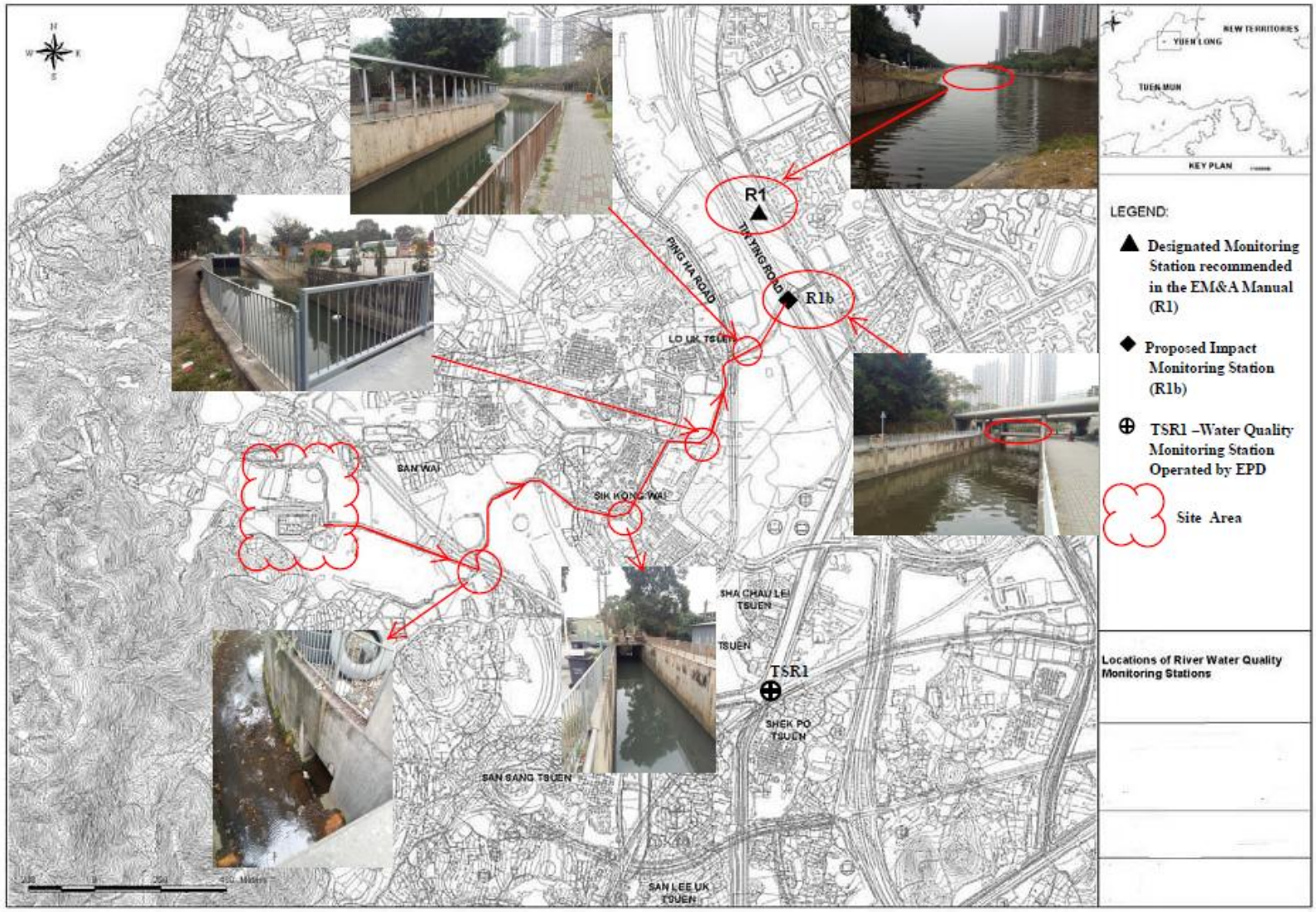


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Figure 2 Locations of Water Quality Monitoring Station