東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

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

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

ATAL-DEGREMONT-CHINA HARBOUR JOINT VENTURE

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

QUARTERLY EM&A REPORT NO. 2

(01 AUGUST – 31 OCTOBER 2017)

Prepared by: _____
LO, Ting Yi

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Issued Date: 16 November 2017 *Report No.: ENA76553*

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: HKDSD203/50/104726

Date: 1 December 2017

Attention: Ms Carol Ho

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

Dear Sirs

Agreement No. HATS 02/2016
Services for Independent Environmental Checker (IEC) for
Contract No. DC/2013/10 – Design, Build and Operate San Wai Sewage Treatment Works – Phase 1
Quarterly Environmental Monitoring and Audit Report No.2 (August - October 2017)

We refer to emails of 26 September and 10 October 2017 from ETS-Testconsult Limited attaching the Quarterly Environmental Monitoring and Audit Report No.2 (August - October 2017).

We have no further comment and hereby verify the Quarterly Environmental Monitoring and Audit Report No.2 (August - October 2017).

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

Yours faithfully
ANEWR CONSULTING LIMITED

Adi Lee
Independent Environmental Checker

LYMA/LHHN/WCKJ/lhmh

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

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

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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 second 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 August 2017 to 31 October 2017.

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: 40 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 second 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 August 2017 to 31 October 2017.

1.2. Project Organization

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

Table 1.1 Contact Information of Key Personnel

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

1.3. Construction Programme

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

1.4. Construction Works Undertaken During the Reporting Period

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

- *Piling Foundation (Prebored H-pile);*
- *Pile Loading Test*
- *Post-Drilling (Investigation and verification of the quality of socketed H-piles);*
- *Sheet Piling (ELS);*
- *Substructure (ELS & Bulk excavation);*
- *Piling Foundation (52 Driven H-pile)*
- *Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber);*
- *Portion 5 (Access Road) Works;*
- *Civil Works by ADCJV for WSD's Diversion of Existing Watermains;*

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

August 2017	September 2017	October 2017
04, 11, 18 and 25	01, 08, 15, 22 and 29	06, 13, 20 and 27

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
28 July 2017	1. Storage of dusty materials without impervious sheet was observed. 2. Stagnant water was observed inside the drip tray.	1. Impervious sheet was provided to cover the dusty materials. 2. Stagnant water was cleared inside the drip tray.	04 August 2017
04 August 2017	No items were observed.	--	--
11 August 2017	No items were observed.	--	--
18 August 2017	No items were observed.	--	--
25 August 2017	1. Dusty material was found without impervious sheeting. 2. General refuse was observed.	1. Impervious sheet was provided to cover the dusty material. 2. General refuse was collected.	01 September 2017
01 September 2017	1. Stagnant pool was found accumulated in the drip tray.	1. Stagnant pool in the drip tray was cleared.	08 September 2017
08 September 2017	1. Oil container was found without drip tray at Portion P1.	1. The oil container was placed in the drip tray.	15 September 2017
15 September 2017	No items were observed.	--	--
22 September 2017	No items were observed.	--	--
29 September 2017	No items were observed.	--	--
06 October 2017	1. Improper storage of chemical containers was observed. 2. Chemical container without bottle cap was observed.	1. Drip tray was provided for chemical containers. 2. The chemical container was seal with bottle cap.	13 October 2017
13 October 2017	1. Stagnant water was found accumulated in the drip tray at Portion SDB.	1. Stagnant water was cleared in the drip tray at Portion SDB.	20 October 2017

20 October 2017	Reminder 1 – Main haul road should be kept clean and sprayed with water to control the dust emission.	--	--
27 October 2017	No items were observed.	--	--

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 is no discharge from 16 September 2017 to 15 October 2017, no effluent monitoring was conducted on this period.

Table 3.3 Effluent Sampling Dates

August 2017	September 2017	October 2017
14 and 21	04	16 and 24

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 parameter complied with the discharge license requirement.

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 provide appropriate labels for the chemical containers;
- The Contractor was reminded to cover the dusty material with impervious sheet;
- The Contractor was reminded to clear all the stagnant water pools;
- The Contractor was reminded to spray water regularly.

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. Environmental site inspections were carried out on 04, 11, 18 & 25 August 2017, 01, 08, 15, 22 & 29 September 2017 and 06, 13, 20 and 27 October 2017. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

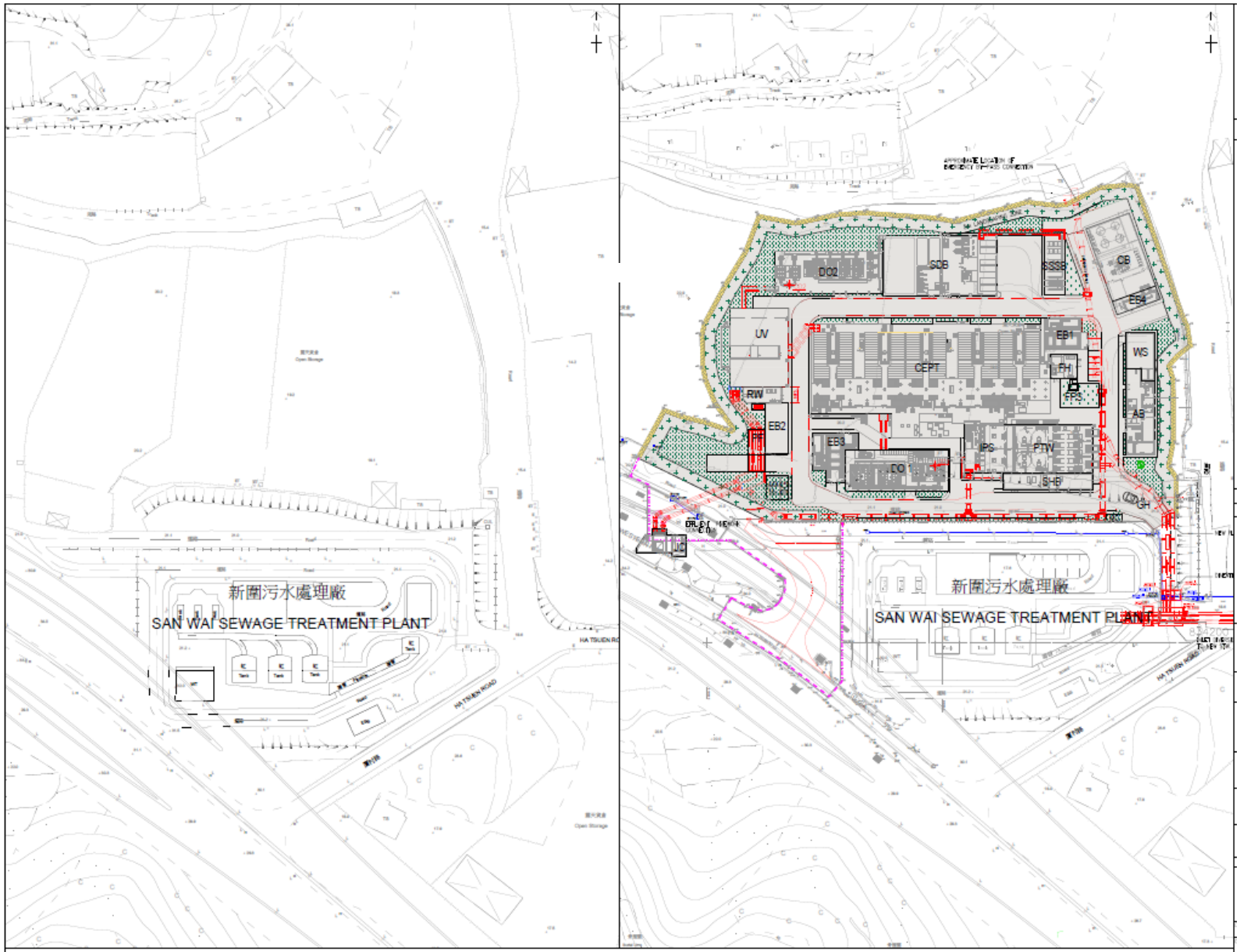
5.3.5. There were no complaints received during the reporting period.

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

- END OF REPORT -

Appendix A

Location of Works Areas

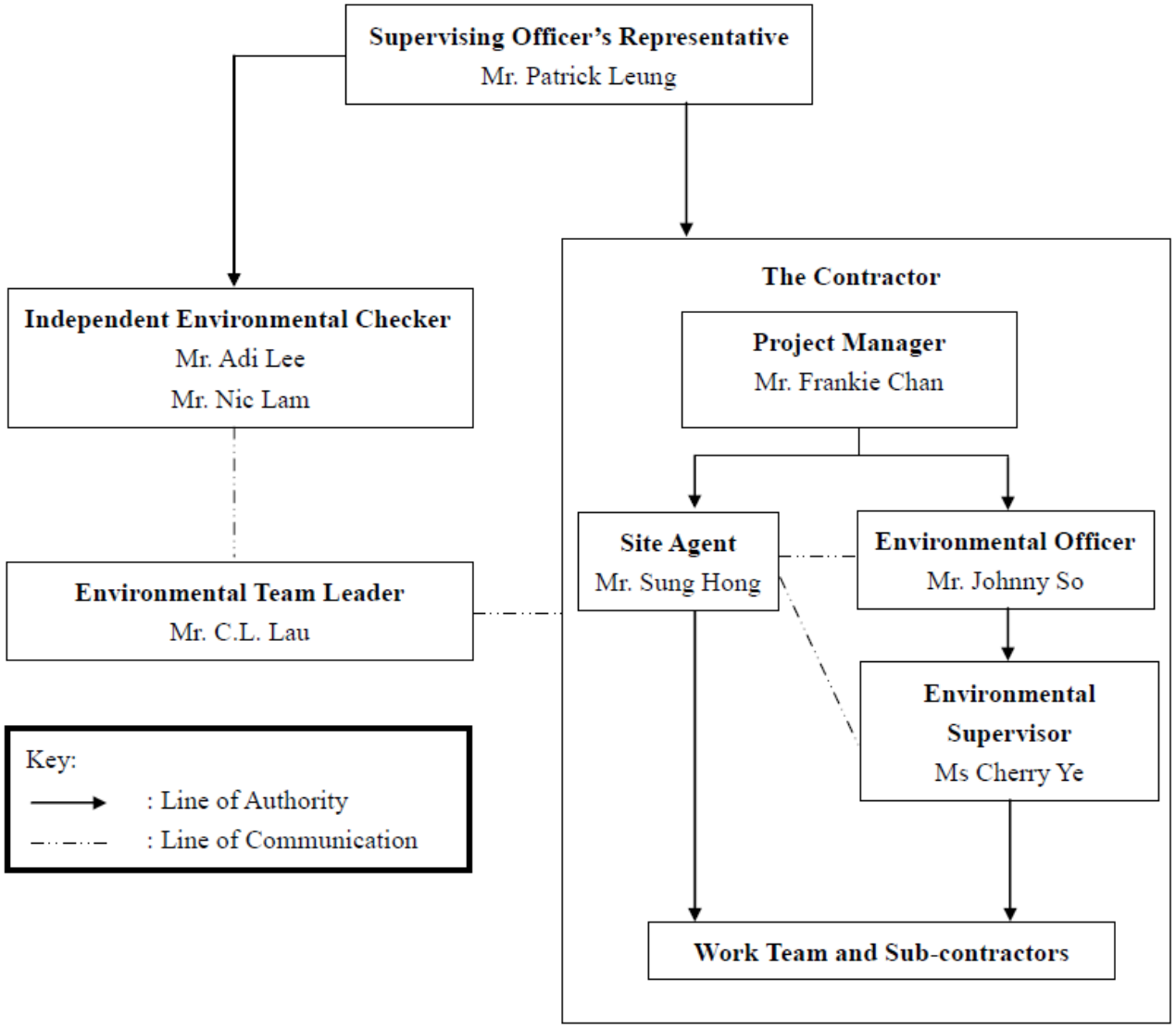


EXISTING SAN WAI SEWAGE TREATMENT WORKS

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: 31-Jul-17 | LAYOUT: SW Project PHase 1 Rev 6 (3M 31Jul17) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 6 BL Start	Rev 6 BL Finish	Slippage Start Date	Slippage Finish Date
San Wai Sewage Treatment Works Phase 1 - Rev 6 (Update as of 31 July 2017)		1585	27-May-16 A	27-Sep-20	27-May-16	27-Sep-20	0	0
Key Date		1585	27-May-16 A	27-Sep-20	27-May-16	27-Sep-20	0	0
Commencement & Completion of Works		1585	27-May-16 A	27-Sep-20	27-May-16	27-Sep-20	0	0
KD130	Section 1 - Period of Works (FOT P.3 cl 67,71) - Including 1.5 Days Granted EOT	552	27-May-16 A	29-Nov-17	27-May-16	29-Nov-17	0	0
KD160	Section 2 - Period of Works (FOT P.3 cl 67, 71) - Including 1.5 Days Granted EOT	1585	27-May-16 A	27-Sep-20	27-May-16	27-Sep-20	0	0
Preliminaries & General Requirement		1529	22-Nov-16 A	24-Sep-20	22-Nov-16	25-Sep-20	0	1
Contractor Requirement		1529	22-Nov-16 A	24-Sep-20	22-Nov-16	25-Sep-20	0	1
PS465	Impact Monitoring	1204	27-Jun-17 A	24-Sep-20	09-Jun-17	24-Sep-20	-18	0
PS475	Temporary Stockpile at DO2 Area	184	01-Jul-17 A	01-Jan-18	01-Jul-17	31-Dec-17	0	0
PS485	Site Drainage Plan Implementation	1274	01-Apr-17 A	17-Aug-18	01-Apr-17	25-Sep-20	0	771
Contractor Requirement for Working Area Portion (P1-P2)		130	22-Nov-16 A	10-Aug-17	22-Nov-16	31-Mar-17	0	-131
PS105	Fencing / Hoarding & Signboard Erection (P1,P2)	130	22-Nov-16 A	10-Aug-17	22-Nov-16	31-Mar-17	0	-131
Site Establishment		165	31-Jul-17	11-Jan-18	01-Apr-17	12-Sep-17	-121	-121
Site Establishment for Working Area Portion (P1-P2)		165	31-Jul-17	11-Jan-18	01-Apr-17	12-Sep-17	-121	-121
PS322	Submission of CSD and CBWD 3D Model in LD3	150	31-Jul-17	27-Dec-17	01-Apr-17	28-Aug-17	-121	-121
PS323	Submission of Clash Analysis Report	150	15-Aug-17	11-Jan-18	16-Apr-17	12-Sep-17	-121	-121
Site Establishment for Working Area Portion (P8)		0	31-Jul-17	31-Jul-17	31-May-17	31-May-17	-61	-61
PS390	TTMS for excavation of trial pits to ascertain the details of the existing rising mains - Submission to SO	0	31-Jul-17		31-May-17		-61	-61
Design & Design Checking of Permanent Works		887	26-Jun-16 A	18-Dec-18	26-Jun-16	18-Dec-18	0	0
Statutory Submission		845	10-Oct-16 A	18-Dec-18	10-Oct-16	18-Dec-18	0	0
DS120	Designer Review Town Planning Submission	120	10-Oct-16 A	11-Aug-17	10-Oct-16	06-Feb-17	0	-186
DS160	WSD - Water Supply & Plumbing	578	02-Feb-17 A	02-Sep-18	02-Feb-17	02-Sep-18	0	0
DS165	CLP - Power Supply	751	01-Nov-16 A	21-Nov-18	01-Nov-16	21-Nov-18	0	0
DS170	FSD - GBP with FS Notes and Dangerous Goods (DG)	283	02-Feb-17 A	12-Nov-17	02-Feb-17	11-Nov-17	0	0
DS173	PCCW - Telephone Lines and Megalink	540	27-Jun-17 A	18-Dec-18	27-Jun-17	18-Dec-18	0	0
DS174	PCCW - Telephone Lines for CLP Summation Metering	90	28-Jul-17 A	25-Sep-17	28-Jun-17	25-Sep-17	-30	0
DS185	HAD - Home Affairs Department Application for Section 1 (ID KD150)	60	26-Jul-17 A	24-Sep-17	26-Jul-17	23-Sep-17	0	0
DS205	Application for XP and TTMS for diverting traffic onto the Access Road in Portion P5 - Submission and Approval	290	30-Nov-16 A	16-Sep-17	30-Nov-16	15-Sep-17	0	0
DS210	DLO - Submission and Approval of Tree Removal and Transplant Proposals	182	31-Jan-17 A	31-Jul-17	31-Jan-17	31-Jul-17	0	0
DS230	GEO - Submission of DDA28A to SO for onward submission to GEO for Checking Certificate	283	11-May-17 A	18-Feb-18	11-May-17	17-Feb-18	0	0
Site Investigation		180	14-Jun-17 A	11-Dec-17	14-Jun-17	10-Dec-17	0	0
DS380	Contamination Treatment (Biopile)	180	14-Jun-17 A	11-Dec-17	14-Jun-17	10-Dec-17	0	0
AIP / DDA Submission & Approval		562	26-Jun-16 A	09-May-18	26-Jun-16	09-May-18	0	0
DS410	Review & Revisions of Design Plan	340	26-Jun-16 A	31-Jul-17	26-Jun-16	31-May-17	0	-61
Global Design		500	02-Sep-16 A	17-Jan-18	02-Sep-16	04-Jan-18	0	-12
Plant / Site Layout & Formation Level w/. GBP (AIP2 / DDA2)		207	21-Oct-16 A	08-Aug-17	21-Oct-16	15-May-17	0	-84
DG390	DDA2 - Plant / Site Layout Plan - Design Preparation to SO Approval	207	21-Oct-16 A	08-Aug-17	21-Oct-16	15-May-17	0	-84
Treatment Process (AIP3 / DDA3)		256	02-Sep-16 A	31-Aug-17	02-Sep-16	15-May-17	0	-107
DG130	DDA3 - Treatment Process - Design Preparation to SO Approval	256	02-Sep-16 A	31-Aug-17	02-Sep-16	15-May-17	0	-107

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

TASK filter: 3 Months Rolling Programme.

CONTRACT NO. DC/2013/10 DESIGN, BUILD & OPERATE
SAN WAI SEWAGE TREATMENT - PHASE 1
MASTER SCHEDULE Rev 6 (31 July 2017)
THREE (3) MONTHS ROLLING PROGRAMME

Date	Revision	Checked	Approved
31-Jul-17	Three (3) Months Rolling Programme...		

DATA DATE: 31-Jul-17 | LAYOUT: SW Project PHase 1 Rev 6 (3M 31Jul17) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 6 BL Start	Rev 6 BL Finish	Slippage Start Date	Slippage Finish Date
Hydraulic (AIP4 / DDA4)		256	02-Sep-16 A	02-Sep-17	02-Sep-16	15-May-17	0	-110
DG162	DDA4 - Hydraulic - Design Preparation to SO Approval	256	02-Sep-16 A	02-Sep-17	02-Sep-16	15-May-17	0	-110
Alternative Permanent Access Road [Section 1] (AIP19 / DDA19)		222	01-Oct-16 A	02-Aug-17	01-Oct-16	10-May-17	0	-84
DG260	DDA19 - Access Road (Section 1) - Design Preparation to SO Approval	222	01-Oct-16 A	02-Aug-17	01-Oct-16	10-May-17	0	-84
Electrical Power Supply System (AIP20 / DDA20ABCD)		347	27-Sep-16 A	10-Oct-17	27-Sep-16	08-Sep-17	0	-31
DG1879	AIP20 - Electrical Power Supply System - Design Preparation to SO Approval	185	27-Sep-16 A	29-Aug-17	27-Sep-16	30-Mar-17	0	-151
DG1891	DDA20ABCD - Electrical Power Supply System - Design Preparation to SO Approval	246	24-Apr-17 A	10-Oct-17	06-Jan-17	08-Sep-17	-108	-31
Control and Monitoring System (AIP21 / DDA21ABCDE)		456	09-Oct-16 A	17-Jan-18	09-Oct-16	04-Jan-18	0	-12
DG1905	AIP21 - Control & Monitoring System - Design Preparation to SO Approval	165	09-Oct-16 A	29-Aug-17	09-Oct-16	22-Mar-17	0	-159
DG1924	DDA21A - Process & Instrumentation Diagram (PID) - Design Preparation to SO Approval	286	12-Jan-17 A	07-Nov-17	12-Jan-17	24-Oct-17	0	-13
DG1940	DDA21B - System Control Philosophy - Design Preparation to SO Approval	219	20-Mar-17 A	07-Nov-17	20-Mar-17	24-Oct-17	0	-13
DG1956	DDA21C - Function Design Specification - Design Preparation to SO Approval	188	03-Apr-17 A	22-Nov-17	05-May-17	08-Nov-17	32	-13
DG1972	DDA21D - PLC, SCADA & I/O Allocation Schedules - Design Preparation to SO Approval	188	23-Apr-17 A	07-Nov-17	27-Apr-17	31-Oct-17	4	-6
DG1988	DDA21E - SCADA Graphic Interface - Design Preparation to SO Approval	188	01-Jul-17 A	17-Jan-18	01-Jul-17	04-Jan-18	0	-12
Landscaping Works (AIP22 / DDA22AB)		359	06-Jan-17 A	30-Dec-17	06-Jan-17	29-Dec-17	0	0
DG1260	DDA22A - Landscaping Works (Green Roof) - Design Preparation to SO Approval	210	06-Jan-17 A	13-Sep-17	06-Jan-17	03-Aug-17	0	-41
DG1274	DDA22B - Landscaping Works (Site Wide) - Design Preparation to SO Approval	180	03-Jul-17 A	30-Dec-17	03-Jul-17	29-Dec-17	0	0
General Notes Drawings for Foundation and Civil & Structure (AIP24AB / DDA24AB)		213	21-Dec-16 A	03-Sep-17	21-Dec-16	21-Jul-17	0	-44
General Notes Drawings for Civil & Structure (AIP24B / DDA24BC)		213	21-Dec-16 A	03-Sep-17	21-Dec-16	21-Jul-17	0	-44
DG3690	DDA24B - Gen. Notes Dwgs for Civil & Structure - Design Preparation to SO Approval	213	21-Dec-16 A	13-Aug-17	21-Dec-16	21-Jul-17	0	-23
DG3706	DDA24C - Typical Details for Architecture - Design Preparation to SO Approval	150	22-Feb-17 A	03-Sep-17	22-Feb-17	21-Jul-17	0	-44
Geotechnical Report (AIP25 / DDA25A)		219	09-Oct-16 A	19-Aug-17	09-Oct-16	15-May-17	0	-96
DG3445	DDA25A - Geotechnical Interpretation Report - Design Preparation to SO Approval	219	09-Oct-16 A	19-Aug-17	09-Oct-16	15-May-17	0	-96
Site Formation & Civil Works (AIP26 / DDA26)		218	14-Jan-17 A	16-Oct-17	14-Jan-17	19-Aug-17	0	-57
DG660	DDA26 - Site Formation - Design Preparation to SO Approval	218	14-Jan-17 A	16-Oct-17	14-Jan-17	19-Aug-17	0	-57
Roadworks (AIP27A / DDA27A)		170	23-Mar-17 A	29-Sep-17	23-Mar-17	08-Sep-17	0	-20
DG1060	DDA27A - Roadworks - Design Preparation to SO Approval	170	23-Mar-17 A	29-Sep-17	23-Mar-17	08-Sep-17	0	-20
Drainage Works (AIP27B / DDA27B)		170	21-Feb-17 A	27-Sep-17	21-Feb-17	09-Aug-17	0	-49
DG960	DDA27B - Drainage - Design Preparation to SO Approval	170	21-Feb-17 A	27-Sep-17	21-Feb-17	09-Aug-17	0	-49
Boundary Wall & Entrance (AIP28 / DDA28AB)		310	03-Feb-17 A	29-Dec-17	03-Feb-17	29-Dec-17	0	0
DG1127	AIP28 - Slopes, Retaining Wall, Boundary Wall & Entrance - Design Preparation to SO Approval	118	03-Feb-17 A	13-Aug-17	03-Feb-17	31-May-17	0	-74
DG1160	DDA28A - Slopes and Retaining Wall - Design Preparation to SO Approval	167	03-Feb-17 A	01-Oct-17	03-Feb-17	19-Jul-17	0	-74
DG1195	DDA28B - Boundary Wall & Entrance - Design Preparation to SO Approval	196	17-Jun-17 A	29-Dec-17	17-Jun-17	29-Dec-17	0	0
Foundation & Piling Design (AIP29 / DDA29ABC)		154	16-Feb-17 A	13-Oct-17	16-Feb-17	19-Jul-17	0	-85
DG495	DDA29B - Piling / Foundation - Design Preparation to SO Approval (Area 2)	112	16-Feb-17 A	08-Aug-17	16-Feb-17	07-Jun-17	0	-61
DG510	DDA29C - Piling / Foundation - Design Preparation to SO Approval (Area 3)	112	30-Mar-17 A	13-Oct-17	30-Mar-17	19-Jul-17	0	-85
Site Wide Utility (AIP30 / DDA30)		409	02-Oct-16 A	09-Dec-17	02-Oct-16	09-Dec-17	0	0
DG3480	AIP30 - Site Wide Utility - Design Preparation to SO Approval	135	02-Oct-16 A	05-Aug-17	02-Oct-16	13-Feb-17	0	-173
DG3515	DDA30A - Site Wide Security Access Control - Design Preparation to SO Approval	189	30-Jan-17 A	14-Oct-17	02-Feb-17	09-Aug-17	3	-66
DG3774	DDA30B - Underground Process Pipework - Design Preparation to SO Approval	170	08-Jun-17 A	24-Nov-17	08-Jun-17	24-Nov-17	0	0
DG3788	DDA30C - Fire Services System and Street Fire Hydrant System - Design Preparation to SO Approval	170	08-Jun-17 A	24-Nov-17	08-Jun-17	24-Nov-17	0	0
DG3802	DDA30D - Cable Route and Cable Draw Pit - Design Preparation to SO Approval	170	23-Jun-17 A	09-Dec-17	23-Jun-17	09-Dec-17	0	0
DG3816	DDA30E - Misc. Small Electrical Power & Bldg. Services - Design Preparation to SO Approval	170	23-Jun-17 A	09-Dec-17	23-Jun-17	09-Dec-17	0	0
DG3830	DDA30F - Typical Electrical Installation Drawings - Design Preparation to SO Approval	170	08-Jun-17 A	24-Nov-17	08-Jun-17	09-Dec-17	0	15
DG3844	DDA30G - Typical Building Services Installation Drawings - Design Preparation to SO Approval	170	23-Jun-17 A	09-Dec-17	23-Jun-17	09-Dec-17	0	0
DG3858	DDA30H - C&S Detailed Design Report for Pipe Trenches - Design Preparation to SO Approval	170	08-May-17 A	24-Oct-17	08-May-17	24-Oct-17	0	0

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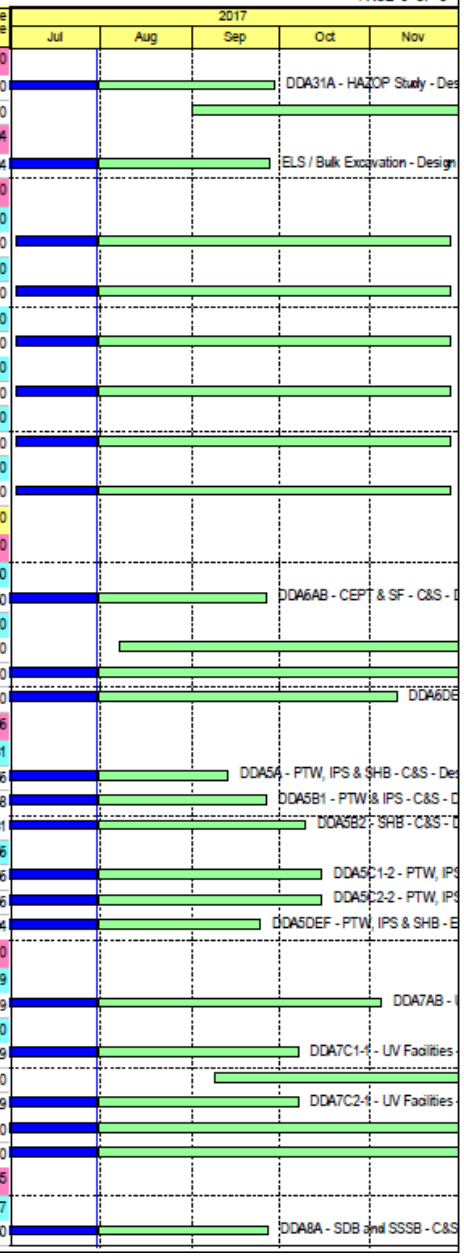
Activity ID	Activity Name	Original Duration	Start	Finish	Rev 6 BL Start	Rev 6 BL Finish	Slippage Start Date	Slippage Finish Date
HAZOP Report (DDA31AB)		366	01-Dec-16 A	29-Dec-17	01-Dec-16	28-Dec-17	0	0
DG3530	DDA31A - HAZOP Study - Design Preparation to SO Approval	302	01-Dec-16 A	29-Sep-17	01-Dec-16	28-Sep-17	0	0
DG3545	DDA31B - Hazardous Zoning Classification Report - Design Preparation to SO Approval	119	01-Sep-17	29-Dec-17	01-Sep-17	28-Dec-17	0	0
ELS / Bulk Excavation		215	22-Jan-17 A	27-Sep-17	22-Jan-17	24-Aug-17	0	-34
DG3760	ELS / Bulk Excavation - Design Preparation to SO Approval	215	22-Jan-17 A	27-Sep-17	22-Jan-17	24-Aug-17	0	-34
Miscellaneous Design		148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
Equipment Schedule (DDA32A)		148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
DG2012	DDA32A - Equipment Schedule - Design Preparation to SO Approval	148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
Penstock & Stoplogs Schedule (DDA32B)		148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3216	DDA32B - Penstock & Stoplogs Schedule - Design Preparation to SO Approval	148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
Valves Schedule (DDA32C)		148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3222	DDA32C - Valves Schedule - Design Preparation to SO Approval	148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
Piping Schedule (DDA32D)		148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3864	DDA32D - Piping Schedule - Design Preparation to SO Approval	148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
Painting Schedule (DDA32E)		148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3228	DDA32E - Painting Schedule - Design Preparation to SO Approval	148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
Instrument and I/O Schedule (DDA32F)		148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
DG3234	DDA32F - Instrument and I/O Schedule - Design Preparation to SO Approval	148	03-Jul-17 A	28-Nov-17	03-Jul-17	27-Nov-17	0	0
LOT #1 - Building / Facilities Design : CEPT+SF, PTW+IPS+SHB, UV, SDB+SSSB		543	25-Sep-16 A	09-May-18	25-Sep-16	09-May-18	0	0
CEPT and System Control Flowmeter Chamber		389	24-Dec-16 A	08-Feb-18	24-Dec-16	08-Feb-18	0	0
Civil and Structural Design (AIP6A / DDA6AB)		216	24-Dec-16 A	26-Sep-17	24-Dec-16	27-Jul-17	0	-60
DB1123	DDA6AB - CEPT & SF - C&S - Design Preparation to SO Approval	216	24-Dec-16 A	26-Sep-17	24-Dec-16	27-Jul-17	0	-60
Electrical and Mechanical Design (AIP6B / DDA6C1C2DEF)		389	25-Jan-17 A	08-Feb-18	25-Jan-17	08-Feb-18	0	0
DB1160	DDA6C1-2 - CEPT & SF - E&M (Super Structural Design) - Design Preparation to SO Approval	185	07-Aug-17	08-Feb-18	08-Aug-17	08-Feb-18	0	0
DB1188	DDA6C2-2 - CEPT & SF - E&M (Super Structural Design) - Design Preparation to SO Approval	185	28-Jun-17 A	29-Dec-17	28-Jun-17	29-Dec-17	0	0
DB4508	DDA6DEF - CEPT & System Control - E&M - Design Preparation to SO Approval	289	25-Jan-17 A	09-Nov-17	25-Jan-17	09-Nov-17	0	0
Inlet Work, Preliminary Treatment Works, IPS and SHB		421	26-Nov-16 A	15-Oct-17	26-Nov-16	08-Sep-17	0	-36
Civil and Structural Design (AIP5A / DDA5AB1B2)		287	26-Nov-16 A	09-Oct-17	26-Nov-16	08-Sep-17	0	-31
DB1223	DDA5A - PTW, IPS & SHB - C&S - Design Preparation to SO Approval	236	26-Nov-16 A	13-Sep-17	26-Nov-16	19-Jul-17	0	-56
DB4814	DDA5B1 - PTW & IPS - C&S - Design Preparation to SO Approval	215	17-Dec-16 A	26-Sep-17	17-Dec-16	19-Jul-17	0	-68
DB4830	DDA5B2 - SHB - C&S - Design Preparation to SO Approval	215	06-Feb-17 A	09-Oct-17	06-Feb-17	08-Sep-17	0	-31
Electrical and Mechanical Design (AIP5B / DDA5C1C2DEF)		300	27-Nov-16 A	15-Oct-17	27-Nov-16	09-Aug-17	0	-66
DB1264	DDA5C1-2 - PTW, IPS & SHB - E&M (Super Structural Design) - Design Preparation to SO Approval	131	01-Apr-17 A	15-Oct-17	01-Apr-17	09-Aug-17	0	-66
DB1296	DDA5C2-2 - PTW, IPS & SHB - E&M (Super Structural Design) - Design Preparation to SO Approval	131	01-Mar-17 A	15-Oct-17	01-Apr-17	09-Aug-17	31	-66
DB4524	DDA5DEF - PTW, IPS & SHB - E&M - Design Preparation to SO Approval	208	27-Nov-16 A	24-Sep-17	27-Nov-16	22-Jun-17	0	-94
UV Disinfection Facilities		467	22-Dec-16 A	09-May-18	22-Dec-16	09-May-18	0	0
Civil and Structural Design (AIP7A / DDA7AB)		145	25-May-17 A	04-Nov-17	25-May-17	16-Oct-17	0	-19
DB1325	DDA7AB - UV Facilities - C&S - Design Preparation to SO Approval	145	25-May-17 A	04-Nov-17	25-May-17	16-Oct-17	0	-19
Electrical and Mechanical Design (AIP7B / DDA7C1C2DEF)		467	22-Dec-16 A	09-May-18	22-Dec-16	09-May-18	0	0
DB1352	DDA7C1-1 - UV Facilities - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	261	22-Dec-16 A	07-Oct-17	22-Dec-16	08-Sep-17	0	-29
DB1368	DDA7C1-2 - UV Facilities - E&M (Super Structural Design) - Design Preparation to SO Approval	243	09-Sep-17	09-May-18	09-Sep-17	09-May-18	0	0
DB1384	DDA7C2-1 - UV Facilities - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	261	22-Dec-16 A	07-Oct-17	22-Dec-16	08-Sep-17	0	-29
DB1399	DDA7C2-2 - UV Facilities - E&M (Super Structural Design) - Design Preparation to SO Approval	253	01-Jul-17 A	11-Mar-18	01-Jul-17	10-Mar-18	0	0
DB4540	DDA7DEF - UV Facilities - E&M - Design Preparation to SO Approval	306	30-Mar-17 A	29-Jan-18	30-Mar-17	29-Jan-18	0	0
Sludge Dewatering Building and Sludge Skip Storage Building		470	25-Sep-16 A	14-Oct-17	25-Sep-16	08-Sep-17	0	-35
Civil and Structural Design (AIP8A / DDA8AB1B2)		217	24-Dec-16 A	14-Oct-17	24-Dec-16	28-Jul-17	0	-77
DB1433	DDA8A - SDB and SSSB - C&S - Design Preparation to SO Approval	217	24-Dec-16 A	27-Sep-17	24-Dec-16	28-Jul-17	0	-60



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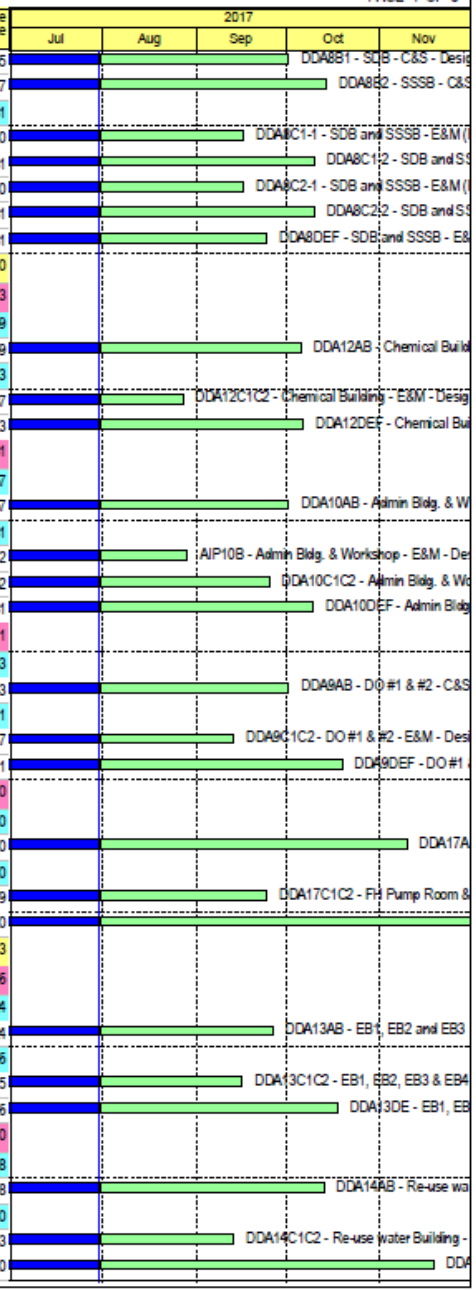
Activity ID	Activity Name	Original Duration	Start	Finish	Rev 6 BL Start	Rev 6 BL Finish	Slippage Start Date	Slippage Finish Date
DB4844	DDA8B1 - SDB - C&S - Design Preparation to SO Approval	175	04-Feb-17 A	01-Oct-17	04-Feb-17	28-Jul-17	0	-65
DB4858	DDA8B2 - SSSB - C&S - Design Preparation to SO Approval	175	04-Feb-17 A	14-Oct-17	04-Feb-17	28-Jul-17	0	-77
	Electrical and Mechanical Design (AIP8B / DDA8C1C2DEF)	470	25-Sep-16 A	10-Oct-17	25-Sep-16	08-Sep-17	0	-31
DB1460	DDA8C1-1 - SDB and SSSB - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	227	25-Sep-16 A	16-Sep-17	25-Sep-16	09-May-17	0	-130
DB1476	DDA8C1-2 - SDB and SSSB - E&M (Super Structural Design) - Design Preparation to SO Approval	133	29-Apr-17 A	10-Oct-17	29-Apr-17	08-Sep-17	0	-31
DB1492	DDA8C2-1 - SDB and SSSB - E&M (Piling & Foundation Design) - Design Preparation to SO Approval	227	25-Sep-16 A	16-Sep-17	25-Sep-16	09-May-17	0	-130
DB1508	DDA8C2-2 - SDB and SSSB - E&M (Super Structural Design) - Design Preparation to SO Approval	133	29-Apr-17 A	10-Oct-17	29-Apr-17	08-Sep-17	0	-31
DB4556	DDA8DEF - SDB and SSSB - E&M - Design Preparation to SO Approval	271	27-Nov-16 A	24-Sep-17	27-Nov-16	24-Aug-17	0	-31
	LOT #2 - Building / Facilities Design : AB+WS, DO, CB+EB4, FH	562	01-Sep-16 A	09-Dec-17	01-Sep-16	09-Dec-17	0	0
	Chemical Building and EB 4	376	28-Sep-16 A	06-Oct-17	28-Sep-16	08-Oct-17	0	3
	Civil and Structural Design for CB & EB4 (AIP12A / DDA12AB)	185	31-Jan-17 A	05-Oct-17	17-Feb-17	07-Aug-17	17	-59
DB2123	DDA12AB - Chemical Building & EB4 - C&S - Design Preparation to SO Approval	185	31-Jan-17 A	05-Oct-17	17-Feb-17	07-Aug-17	17	-59
	Electrical and Mechanical Design for CB only (AIP12B / DDA12C1C2DEF)	376	28-Sep-16 A	06-Oct-17	28-Sep-16	08-Oct-17	0	3
DB2148	DDA12C1C2 - Chemical Building - E&M - Design Preparation to SO Approval	247	28-Sep-16 A	27-Aug-17	28-Sep-16	01-Jun-17	0	-87
DB4602	DDA12DEF - Chemical Building - E&M - Design Preparation to SO Approval	246	05-Feb-17 A	06-Oct-17	05-Feb-17	08-Oct-17	0	3
	Administration Building & Maintenance Workshop	426	01-Sep-16 A	09-Oct-17	01-Sep-16	08-Sep-17	0	-31
	Civil and Structural Design (AIP10A / DDA10AB)	186	22-Jan-17 A	01-Oct-17	22-Jan-17	26-Jul-17	0	-67
DB2234	DDA10AB - Admin Bldg. & Workshop - C&S - Design Preparation to SO Approval	186	22-Jan-17 A	01-Oct-17	22-Jan-17	26-Jul-17	0	-67
	Electrical and Mechanical Design (AIP10B / DDA10C1C2DEF)	373	01-Sep-16 A	09-Oct-17	01-Sep-16	08-Sep-17	0	-31
DB2273	AIP10B - Admin Bldg. & Workshop - E&M - Design Preparation to SO Approval	190	01-Sep-16 A	29-Aug-17	01-Sep-16	09-Mar-17	0	-172
DB2286	DDA10C1C2 - Admin Bldg. & Workshop - E&M - Design Preparation to SO Approval	295	03-Oct-16 A	25-Sep-17	03-Oct-16	24-Jul-17	0	-62
DB4618	DDA10DEF - Admin Bldg. & Workshop - E&M - Design Preparation to SO Approval	221	31-Jan-17 A	09-Oct-17	31-Jan-17	08-Sep-17	0	-31
	Deodorization Facilities No.1 and No.2	298	15-Dec-16 A	19-Oct-17	15-Dec-16	08-Oct-17	0	-11
	Civil and Structural Design (AIP9A / DDA9AB)	206	26-Jan-17 A	01-Oct-17	26-Jan-17	19-Aug-17	0	-43
DB2323	DDA9AB - DO #1 & #2 - C&S - Design Preparation to SO Approval	206	26-Jan-17 A	01-Oct-17	26-Jan-17	19-Aug-17	0	-43
	Electrical and Mechanical Design (AIP9B / DDA9C1C2DEF)	298	15-Dec-16 A	19-Oct-17	15-Dec-16	08-Oct-17	0	-11
DB2348	DDA9C1C2 - DO #1 & #2 - E&M - Design Preparation to SO Approval	146	15-Dec-16 A	13-Sep-17	15-Dec-16	09-May-17	0	-127
DB4634	DDA9DEF - DO #1 & #2 - E&M - Design Preparation to SO Approval	256	26-Jan-17 A	19-Oct-17	26-Jan-17	08-Oct-17	0	-11
	Street Fire Hydrant Pump Room & GENSET Room	368	07-Dec-16 A	09-Dec-17	07-Dec-16	09-Dec-17	0	0
	Civil and Structural Design (AIP17A / DDA17AB)	232	23-Mar-17 A	09-Nov-17	23-Mar-17	09-Nov-17	0	0
DB2423	DDA17AB - FH Pump Room & GENSET Room - C&S - Design Preparation to SO Approval	232	23-Mar-17 A	09-Nov-17	23-Mar-17	09-Nov-17	0	0
	Electrical and Mechanical Design (AIP17B / DDA17C1C2DE)	368	07-Dec-16 A	09-Dec-17	07-Dec-16	09-Dec-17	0	0
DB2448	DDA17C1C2 - FH Pump Room & GENSET Room - E&M - Design Preparation to SO Approval	213	07-Dec-16 A	24-Sep-17	07-Dec-16	07-Jul-17	0	-79
DB4648	DDA17DE - FH Pump Room & GENSET Room - E&M - Design Preparation to SO Approval	262	23-Mar-17 A	09-Dec-17	23-Mar-17	09-Dec-17	0	0
	LOT #3 - Building / Facilities Design : EB1, EB2, EB3, EB4, RW, DG+ICW, Inlet/Outlet Connection	432	16-Sep-16 A	21-Dec-17	21-Sep-16	08-Dec-17	5	-13
	Electrical Building No.1, No.2, No.3, No.4	398	16-Sep-16 A	17-Oct-17	21-Sep-16	01-Sep-17	5	-46
	Civil and Structural Design for EB123 (AIP13A / DDA13AB)	147	08-Apr-17 A	26-Sep-17	08-Apr-17	01-Sep-17	0	-24
DB3123	DDA13AB - EB1, EB2 and EB3 - C&S - Design Preparation to SO Approval	147	08-Apr-17 A	26-Sep-17	08-Apr-17	01-Sep-17	0	-24
	Electrical and Mechanical Design for EB1234 (AIP13B / DDA13C1C2DE)	346	16-Sep-16 A	17-Oct-17	21-Sep-16	01-Sep-17	5	-46
DB3148	DDA13C1C2 - EB1, EB2, EB3 & EB4 - E&M - Design Preparation to SO Approval	246	16-Sep-16 A	16-Sep-17	21-Sep-16	24-May-17	5	-115
DB4664	DDA13DE - EB1, EB2, EB3 & EB4 - E&M - Design Preparation to SO Approval	191	23-Feb-17 A	17-Oct-17	23-Feb-17	01-Sep-17	0	-46
	Re-use Water Building	370	03-Dec-16 A	18-Nov-17	03-Dec-16	18-Nov-17	0	0
	Civil and Structural Design (AIP14A / DDA14AB)	166	13-Apr-17 A	13-Oct-17	13-Apr-17	25-Sep-17	0	-18
DB3223	DDA14AB - Re-use water Building - C&S - Design Preparation to SO Approval	166	13-Apr-17 A	13-Oct-17	13-Apr-17	25-Sep-17	0	-18
	Electrical and Mechanical Design (AIP14B / DDA14C1C2DEF)	351	03-Dec-16 A	18-Nov-17	03-Dec-16	18-Nov-17	0	0
DB3248	DDA14C1C2 - Re-use water Building - E&M - Design Preparation to SO Approval	242	03-Dec-16 A	13-Sep-17	03-Dec-16	01-Aug-17	0	-43
DB4680	DDA14DEF - Re-use water Building - E&M - Design Preparation to SO Approval	220	13-Apr-17 A	18-Nov-17	13-Apr-17	18-Nov-17	0	0



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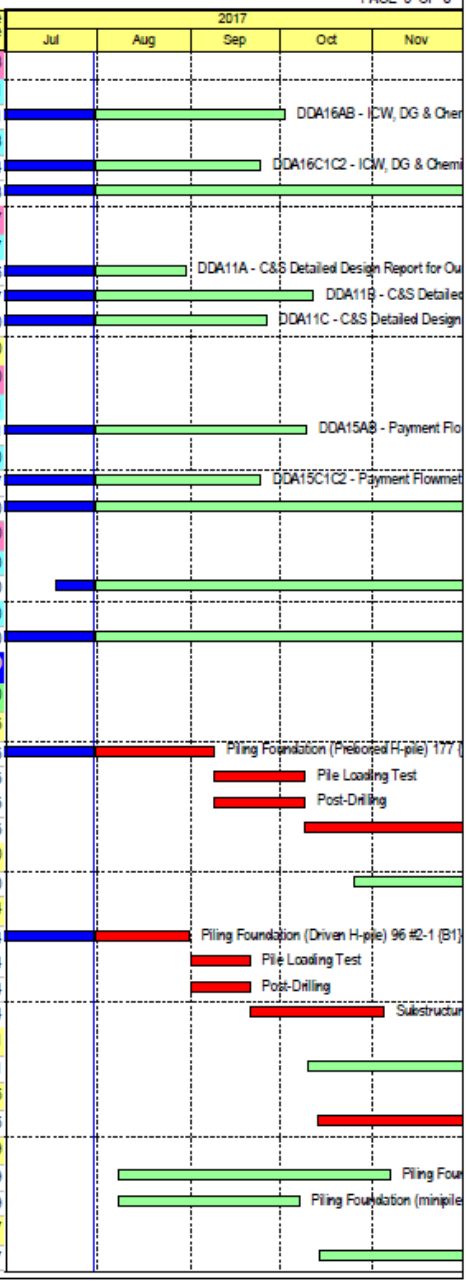
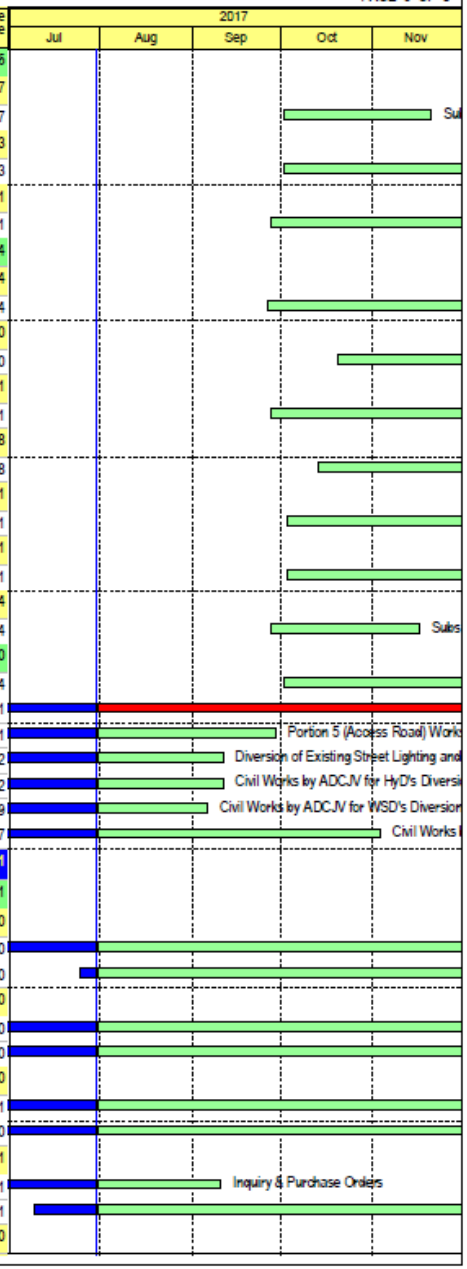
Activity ID	Activity Name	Original Duration	Start	Finish	Rev 6 BL Start	Rev 6 BL Finish	Slippage Start Date	Slippage Finish Date
	ICW and DG Store & Chemical Waste Storage Building	334	30-Nov-16 A	21-Dec-17	30-Nov-16	08-Dec-17	0	-13
	Civil and Structural Design (AIP16A / DDA16AB)	173	11-Mar-17 A	02-Oct-17	11-Mar-17	02-Aug-17	0	-61
DB3323	DDA16AB - ICW, DG & Chemical Stores - C&S - Design Preparation to SO Approval	173	11-Mar-17 A	02-Oct-17	11-Mar-17	02-Aug-17	0	-61
	Electrical and Mechanical Design (AIP16B / DDA16C1C2DE)	305	30-Nov-16 A	21-Dec-17	30-Nov-16	08-Dec-17	0	-13
DB3348	DDA16C1C2 - ICW, DG & Chemical Stores - E&M - Design Preparation to SO Approval	245	30-Nov-16 A	24-Sep-17	30-Nov-16	01-Aug-17	0	-54
DB4694	DDA16DE - ICW, DG & Chemical Stores - E&M - Design Preparation to SO Approval	199	24-May-17 A	21-Dec-17	24-May-17	08-Dec-17	0	-13
	Inlet & Outlet Pipe Connections and Diversion Pipeworks	270	29-Nov-16 A	12-Oct-17	29-Nov-16	25-Aug-17	0	-47
	Civil and Structural Design (AIP11 / DDA11)	270	29-Nov-16 A	12-Oct-17	29-Nov-16	25-Aug-17	0	-47
DB3424	DDA11A - C&S Detailed Design Report for Outlet Pipe Connection - Design Preparation to SO Approval	130	29-Nov-16 A	30-Aug-17	29-Nov-16	07-Apr-17	0	-145
DB3438	DDA11B - C&S Detailed Design Report for Inlet Pipe Connection - Design Preparation to SO Approval	140	08-Apr-17 A	12-Oct-17	08-Apr-17	25-Aug-17	0	-47
DB3452	DDA11C - C&S Detailed Design Report for Emergency Bypass - Design Preparation to SO Approval	140	31-Dec-16 A	26-Sep-17	28-Feb-17	17-Jul-17	59	-70
	LOT #4 - Building / Facilities Design : GH, PF	517	25-Nov-16 A	26-Dec-17	03-Dec-16	25-Dec-17	8	0
	Payment Flowmeter Chamber	352	25-Nov-16 A	26-Dec-17	03-Dec-16	25-Dec-17	8	0
	Civil and Structural Design (AIP15A / DDA15AB)	119	13-Apr-17 A	09-Oct-17	13-Apr-17	09-Aug-17	0	-61
DB4323	DDA15AB - Payment Flowmeter - C&S - Design Preparation to SO Approval	119	13-Apr-17 A	09-Oct-17	13-Apr-17	09-Aug-17	0	-61
	Electrical and Mechanical Design (AIP15B / DDA15C1C2DEF)	309	25-Nov-16 A	26-Dec-17	03-Dec-16	25-Dec-17	8	0
DB4348	DDA15C1C2 - Payment Flowmeter - E&M - Design Preparation to SO Approval	249	25-Nov-16 A	24-Sep-17	03-Dec-16	08-Aug-17	8	-47
DB4740	DDA15DEF - Payment Flowmeter - E&M - Design Preparation to SO Approval	209	31-May-17 A	26-Dec-17	31-May-17	25-Dec-17	0	0
	Gatehouse	481	24-Apr-17 A	25-Dec-17	24-Apr-17	24-Dec-17	0	0
	Civil and Structural Design (AIP18A / DDA18AB)	160	18-Jul-17 A	25-Dec-17	18-Jul-17	24-Dec-17	0	0
DB4424	DDA18AB - Gatehouse - C&S - Design Preparation to SO Approval	160	18-Jul-17 A	25-Dec-17	18-Jul-17	24-Dec-17	0	0
	Electrical and Mechanical Design (AIP18B / DDA18C)	230	24-Apr-17 A	09-Dec-17	24-Apr-17	09-Dec-17	0	0
DB4754	DDA18C - Gatehouse - E&M - Design Preparation to SO Approval	230	24-Apr-17 A	09-Dec-17	24-Apr-17	09-Dec-17	0	0
	Civil & Structural Works	289	08-Apr-17 A	30-Mar-18	08-Apr-17	28-Feb-18	0	-30
	LOT #1 - Bldg / Facilities Const. (Arch'l & Struct'l) : CEPT+SF, PTW+IPS+SHB, UV, SDB+SSSB	192	17-May-17 A	13-Jan-18	17-May-17	12-Jan-18	0	0
	Chemically Enhanced Primary Treatment (CEPT)	156	17-May-17 A	18-Dec-17	17-May-17	21-Nov-17	0	-26
CS1500	Piling Foundation (Prebored H-pile) 177 {D1, D2, E1, E2} + Trial Pile	89	17-May-17 A	09-Sep-17	17-May-17	13-Aug-17	0	-26
CS1505	Pile Loading Test	30	09-Sep-17	09-Oct-17	14-Aug-17	12-Sep-17	-26	-26
CS1507	Post-Drilling	30	09-Sep-17	09-Oct-17	14-Aug-17	12-Sep-17	-26	-26
CS1510	Substructure (ELS & Bulk excavation)	70	09-Oct-17	18-Dec-17	13-Sep-17	21-Nov-17	-26	-26
	System Control Flowmeter Chamber (SF)	80	25-Oct-17	13-Jan-18	25-Oct-17	12-Jan-18	0	0
CS1400	Substructure (rc structure)	80	25-Oct-17	13-Jan-18	25-Oct-17	12-Jan-18	0	0
	Inlet Work, Preliminary Treatment Works and Inlet Pumping Station (PTW & IPS)	168	30-May-17 A	04-Nov-17	30-May-17	21-Oct-17	0	-14
CS1200	Piling Foundation (Driven H-pile) 96 #2-1 {B1} +Trial Pile	80	30-May-17 A	31-Aug-17	30-May-17	17-Aug-17	0	-14
CS1205	Pile Loading Test	20	01-Sep-17	20-Sep-17	18-Aug-17	06-Sep-17	-14	-14
CS1207	Post-Drilling	20	01-Sep-17	20-Sep-17	18-Aug-17	06-Sep-17	-14	-14
CS1210	Substructure (ELS & Bulk excavation)	45	21-Sep-17	04-Nov-17	07-Sep-17	21-Oct-17	-14	-14
	Solid Handling Building (SHB)	68	10-Oct-17	16-Dec-17	09-Sep-17	15-Nov-17	-31	-31
CS1300	Substructure (rc structure)	68	10-Oct-17	16-Dec-17	09-Sep-17	15-Nov-17	-31	-31
	UV Disinfection Facility (UV)	80	13-Oct-17	01-Jan-18	20-Jul-17	07-Oct-17	-85	-85
CS1900	Piling Foundation (minipile) 75 #3-1 {C1}	80	13-Oct-17	01-Jan-18	20-Jul-17	07-Oct-17	-85	-85
	Sludge Dewatering Building (SDB)	90	08-Aug-17	06-Nov-17	30-Jun-17	27-Sep-17	-39	-39
CS1800	Piling Foundation (Prebored H-pile) 66 {E3}	90	08-Aug-17	06-Nov-17	30-Jun-17	27-Sep-17	-39	-39
CS1810	Piling Foundation (minipile) 10 #1-1 {A1} + Trial Pile	60	08-Aug-17	07-Oct-17	30-Jun-17	28-Aug-17	-39	-39
	Sludge Skip Storage Building (SSSB)	82	14-Oct-17	04-Jan-18	29-Jul-17	18-Oct-17	-77	-77
CS2900	Substructure (rc structure)	82	14-Oct-17	04-Jan-18	29-Jul-17	18-Oct-17	-77	-77



DATA DATE: 31-Jul-17 | LAYOUT: SW Project PHase 1 Rev 6 (3M 31Jul17) |

Activity ID	Activity Name	Original Duration	Start	Finish	Rev 6 BL Start	Rev 6 BL Finish	Slippage Start Date	Slippage Finish Date
	LOT #2 - Bldg / Facilities Const. (Arch'l & Struct'l) : AB+WS, DO, CB, FH	91	27-Sep-17	27-Dec-17	27-Jul-17	11-Nov-17	-63	-46
	Administration Building & Maintenance Workshop (AB & WS)	50	02-Oct-17	20-Nov-17	27-Jul-17	14-Sep-17	-67	-67
CS1110	Substructure (rc structure)	50	02-Oct-17	20-Nov-17	27-Jul-17	14-Sep-17	-67	-67
	Deodorization Facilities No. 1 (DO 1)	84	02-Oct-17	24-Dec-17	20-Aug-17	11-Nov-17	-43	-43
CS1610	Substructure (rc structure)	84	02-Oct-17	24-Dec-17	20-Aug-17	11-Nov-17	-43	-43
	Chemical Building (CB)	91	27-Sep-17	27-Dec-17	08-Aug-17	06-Nov-17	-51	-51
CS2310	Substructure (rc structure)	91	27-Sep-17	27-Dec-17	08-Aug-17	06-Nov-17	-51	-51
	LOT #3 - Bldg / Facilities Const. (Arch'l & Struct'l) : EB, RW, DG, ICW, JC	136	26-Sep-17	09-Feb-18	03-Aug-17	15-Jan-18	-54	-24
	Electrical Building No.1 (EB1) CEPT	136	26-Sep-17	09-Feb-18	02-Sep-17	15-Jan-18	-24	-24
CS2410	Substructure (rc structure)	136	26-Sep-17	09-Feb-18	02-Sep-17	15-Jan-18	-24	-24
	Electrical Building No.2 (EB2) UV	60	20-Oct-17	19-Dec-17	20-Oct-17	18-Dec-17	0	0
CS2510	Substructure (rc structure)	60	20-Oct-17	19-Dec-17	20-Oct-17	18-Dec-17	0	0
	Electrical Building No.4 (EB4) CB	85	27-Sep-17	21-Dec-17	08-Aug-17	31-Oct-17	-51	-51
CS2710	Substructure (rc structure)	85	27-Sep-17	21-Dec-17	08-Aug-17	31-Oct-17	-51	-51
	Re-use Water Building (RW)	62	13-Oct-17	14-Dec-17	26-Sep-17	26-Nov-17	-18	-18
CS2010	Substructure (rc structure)	62	13-Oct-17	14-Dec-17	26-Sep-17	26-Nov-17	-18	-18
	DG Store and Chemical Waste Storage Building (DG)	75	03-Oct-17	16-Dec-17	03-Aug-17	16-Oct-17	-61	-61
CS2800	Substructure (rc structure)	75	03-Oct-17	16-Dec-17	03-Aug-17	16-Oct-17	-61	-61
	Irrigation & Cleansing Water Pump Room (ICW)	75	03-Oct-17	16-Dec-17	03-Aug-17	16-Oct-17	-61	-61
CS3370	Substructure (rc structure)	75	03-Oct-17	16-Dec-17	03-Aug-17	16-Oct-17	-61	-61
	Existing Junction Chamber (JC)	50	27-Sep-17	16-Nov-17	25-Aug-17	13-Oct-17	-34	-34
CS2190	Substructure (ELS & Bulk excavation)	50	27-Sep-17	16-Nov-17	25-Aug-17	13-Oct-17	-34	-34
	External Works & Miscellaneous	289	08-Apr-17 A	30-Mar-18	08-Apr-17	28-Feb-18	0	-30
CS3203	Slope works (Northern Portion)	180	02-Oct-17	30-Mar-18	20-Jul-17	15-Jan-18	-74	-74
CS3220	Drainage Outlet connection (Effluent Connection to the Existing Junction Chamber)	210	08-Apr-17 A	24-Dec-17	08-Apr-17	03-Nov-17	0	-51
CS3240	Portion 5 (Access Road) Works	201	12-May-17 A	29-Sep-17	12-May-17	28-Nov-17	0	61
CS3282	Diversion of Existing Street Lighting and Traffic Signs (P5)	61	01-Jun-17 A	11-Sep-17	01-Jun-17	31-Jul-17	0	-42
CS3283	Civil Works by ADCJV for HyD's Diversion of Existing Street Lighting and Traffic Signs (P5)	61	01-Jun-17 A	11-Sep-17	01-Jun-17	31-Jul-17	0	-42
CS3286	Civil Works by ADCJV for WSD's Diversion of Existing Watermains	106	01-Jun-17 A	06-Sep-17	01-Jun-17	14-Sep-17	0	9
CS3288	Civil Works by ADCJV between Site Boundary for WSD's Diversion of Existing Watermains	273	01-Jun-17 A	03-Nov-17	01-Jun-17	28-Feb-18	0	117
	E&M Works	684	15-Jul-16 A	06-Feb-19	15-Jul-16	26-Jan-19	0	-11
	Procurement	684	15-Jul-16 A	06-Feb-19	15-Jul-16	26-Jan-19	0	-11
	Administration Building & Maintenance Workshop (AB & WS)	486	12-Dec-16 A	29-Jul-18	12-Dec-16	28-Jul-18	0	0
EM3125	Inquiry & Purchase Orders	360	12-Dec-16 A	06-Dec-17	12-Dec-16	06-Dec-17	0	0
EM3130	Manufacturing & Logistic	369	25-Jul-17 A	29-Jul-18	25-Jul-17	28-Jul-18	0	0
	Inlet Work, Preliminary Treatment Units and Inlet Pumping Station (PTW & IPS)	606	04-Jan-17 A	27-Jan-19	04-Jan-17	26-Jan-19	0	0
EM3135	Inquiry & Purchase Orders	480	04-Jan-17 A	29-Apr-18	04-Jan-17	28-Apr-18	0	0
EM3140	Manufacturing & Logistic	580	26-Jun-17 A	27-Jan-19	26-Jun-17	26-Jan-19	0	0
	Solid Handling Building (SHB)	430	12-Apr-17 A	20-Aug-18	12-Apr-17	19-Aug-18	0	0
EM3145	Inquiry & Purchase Orders	320	12-Apr-17 A	08-Mar-18	12-Apr-17	25-Feb-18	0	-11
EM3150	Manufacturing & Logistic	420	26-Jun-17 A	20-Aug-18	26-Jun-17	19-Aug-18	0	0
	System Control Flowmeter Chamber (SF)	414	17-Aug-16 A	19-Jun-18	17-Aug-16	07-Jun-18	0	-11
EM3155	Inquiry & Purchase Orders	379	17-Aug-16 A	10-Sep-17	17-Aug-16	30-Aug-17	0	-11
EM3160	Manufacturing & Logistic	333	10-Jul-17 A	19-Jun-18	10-Jul-17	07-Jun-18	0	-11
	Chemically Enhanced Primary Treatment (CEPT)	506	26-Aug-16 A	11-Sep-18	26-Aug-16	10-Sep-18	0	0



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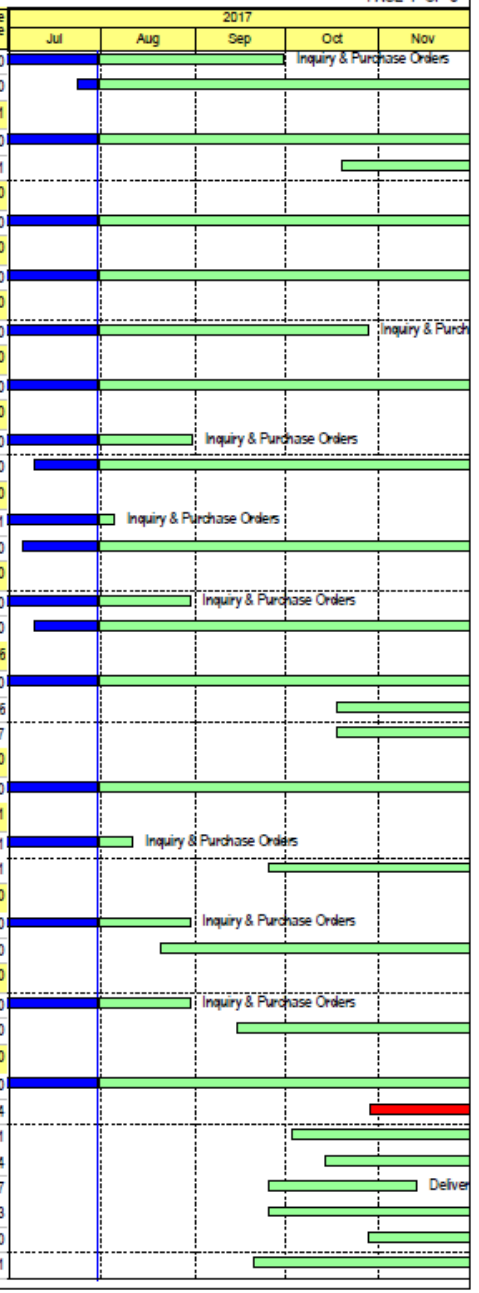
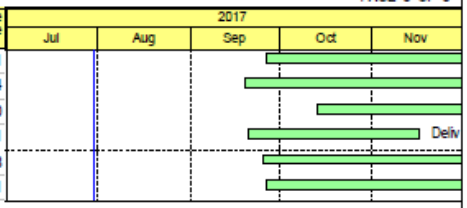
Activity ID	Activity Name	Original Duration	Start	Finish	Rev 6 BL Start	Rev 6 BL Finish	Slippage Start Date	Slippage Finish Date
EM3115	Inquiry & Purchase Orders	401	26-Aug-16 A	30-Sep-17	26-Aug-16	30-Sep-17	0	0
EM3120	Manufacturing & Logistic	414	24-Jul-17 A	11-Sep-18	24-Jul-17	10-Sep-18	0	0
Deodorization Facilities No. 1 & 2 (DO 1 & DO 2)		585	10-Jan-17 A	06-Feb-19	10-Jan-17	26-Jan-19	0	-11
EM3165	Inquiry & Purchase Orders	480	10-Jan-17 A	05-May-18	10-Jan-17	04-May-18	0	0
EM3170	Manufacturing & Logistic (DO No. 1)	475	19-Oct-17	06-Feb-19	09-Oct-17	26-Jan-19	-11	-11
Street Fire Hydrant Pump Room & GENSET Room (FH)		230	18-Jan-17 A	09-Dec-17	24-Apr-17	09-Dec-17	96	0
EM3275	Inquiry & Purchase Orders	230	18-Jan-17 A	09-Dec-17	24-Apr-17	09-Dec-17	96	0
Gatehouse (GH)		247	07-Apr-17 A	09-Dec-17	07-Apr-17	09-Dec-17	0	0
EM3285	Inquiry & Purchase Orders	247	07-Apr-17 A	09-Dec-17	07-Apr-17	09-Dec-17	0	0
SCADA and CMMS Systems		295	06-Jan-17 A	28-Oct-17	06-Jan-17	27-Oct-17	0	0
EM3330	Inquiry & Purchase Orders	295	06-Jan-17 A	28-Oct-17	06-Jan-17	27-Oct-17	0	0
Sludge Dewatering Building (SDB)		560	04-Nov-16 A	17-May-18	04-Nov-16	17-May-18	0	0
EM3175	Inquiry & Purchase Orders	560	04-Nov-16 A	17-May-18	04-Nov-16	17-May-18	0	0
Payment Flowmeter Chamber (PF)		425	17-Aug-16 A	07-Jun-18	17-Aug-16	07-Jun-18	0	0
EM3205	Inquiry & Purchase Orders	379	17-Aug-16 A	31-Aug-17	17-Aug-16	30-Aug-17	0	0
EM3210	Manufacturing & Logistic	333	10-Jul-17 A	07-Jun-18	10-Jul-17	07-Jun-18	0	0
Existing Junction Chamber (JC)		216	07-Jan-17 A	01-Jan-18	07-Jan-17	01-Jan-18	0	0
EM3215	Inquiry & Purchase Orders	180	07-Jan-17 A	05-Aug-17	07-Jan-17	05-Jul-17	0	-31
EM3220	Manufacturing & Logistic	180	06-Jul-17 A	01-Jan-18	06-Jul-17	01-Jan-18	0	0
Chemical Building (CB)		405	22-Jul-16 A	22-Apr-18	22-Jul-16	21-Apr-18	0	0
EM3225	Inquiry & Purchase Orders	405	22-Jul-16 A	30-Aug-17	22-Jul-16	30-Aug-17	0	0
EM3230	Manufacturing & Logistic	286	10-Jul-17 A	22-Apr-18	10-Jul-17	21-Apr-18	0	0
Electrical Buildings (EB1, EB2, EB3 & EB4)		475	10-Jan-17 A	11-Nov-18	10-Jan-17	05-Nov-18	0	-6
EM3235	Inquiry & Purchase Orders	475	10-Jan-17 A	30-Apr-18	10-Jan-17	29-Apr-18	0	0
EM3300	Manufacturing & Logistic (EB2)	390	17-Oct-17	11-Nov-18	12-Oct-17	05-Nov-18	-6	-6
EM3320	Manufacturing & Logistic (EB4)	390	17-Oct-17	11-Nov-18	21-Sep-17	15-Oct-18	-27	-27
DG Store & Chemical Waste Storage Building (DG) and Irrigation & Cleansing Water Pump Room (IC		328	15-Jan-17 A	09-Dec-17	15-Jan-17	08-Dec-17	0	0
EM3255	Inquiry & Purchase Orders	328	15-Jan-17 A	09-Dec-17	15-Jan-17	08-Dec-17	0	0
Sludge Skip Storage Building (SSSB)		215	08-Dec-16 A	20-Feb-18	08-Dec-16	20-Jan-18	0	-31
EM3265	Inquiry & Purchase Orders	215	08-Dec-16 A	11-Aug-17	08-Dec-16	10-Jul-17	0	-31
EM3270	Manufacturing & Logistic	149	25-Sep-17	20-Feb-18	25-Aug-17	20-Jan-18	-31	-31
Re-use Water Building (RW)		360	05-Sep-16 A	09-Mar-18	05-Sep-16	09-Mar-18	0	0
EM3195	Inquiry & Purchase Orders	360	05-Sep-16 A	30-Aug-17	05-Sep-16	30-Aug-17	0	0
EM3200	Manufacturing & Logistic	201	20-Aug-17	09-Mar-18	21-Aug-17	09-Mar-18	0	0
UV Disinfection Facility (UV)		595	15-Jul-16 A	15-Dec-18	15-Jul-16	15-Dec-18	0	0
EM3185	Inquiry & Purchase Orders	412	15-Jul-16 A	30-Aug-17	15-Jul-16	30-Aug-17	0	0
EM3190	Manufacturing & Logistic	457	14-Sep-17	15-Dec-18	15-Sep-17	15-Dec-18	0	0
Cast - In Items		425	01-Feb-17 A	15-Mar-18	01-Feb-17	15-Mar-18	0	0
EM3520	Inquiry & Purchase Orders	408	01-Feb-17 A	15-Mar-18	01-Feb-17	15-Mar-18	0	0
EM3530	Delivery of Cast-in Items for PTW and IPS	74	29-Oct-17	10-Jan-18	15-Oct-17	27-Dec-17	-14	-14
EM3535	Delivery of Cast-in Items for SHB	68	03-Oct-17	09-Dec-17	02-Sep-17	08-Nov-17	-31	-31
EM3550	Delivery of Cast-in Items for SSSB	90	14-Oct-17	12-Jan-18	22-Jul-17	19-Oct-17	-84	-84
EM3555	Delivery of Cast-in Items for Admin. Building	50	25-Sep-17	13-Nov-17	20-Jul-17	07-Sep-17	-67	-67
EM3560	Delivery of Cast-in Items for DO No. 1	84	25-Sep-17	17-Dec-17	13-Aug-17	04-Nov-17	-43	-43
EM3565	Delivery of Cast-in Items for DO No. 2	76	28-Oct-17	12-Jan-18	28-Oct-17	11-Jan-18	0	0
EM3570	Delivery of Cast-in Items for CB	91	20-Sep-17	20-Dec-17	01-Aug-17	30-Oct-17	-51	-51



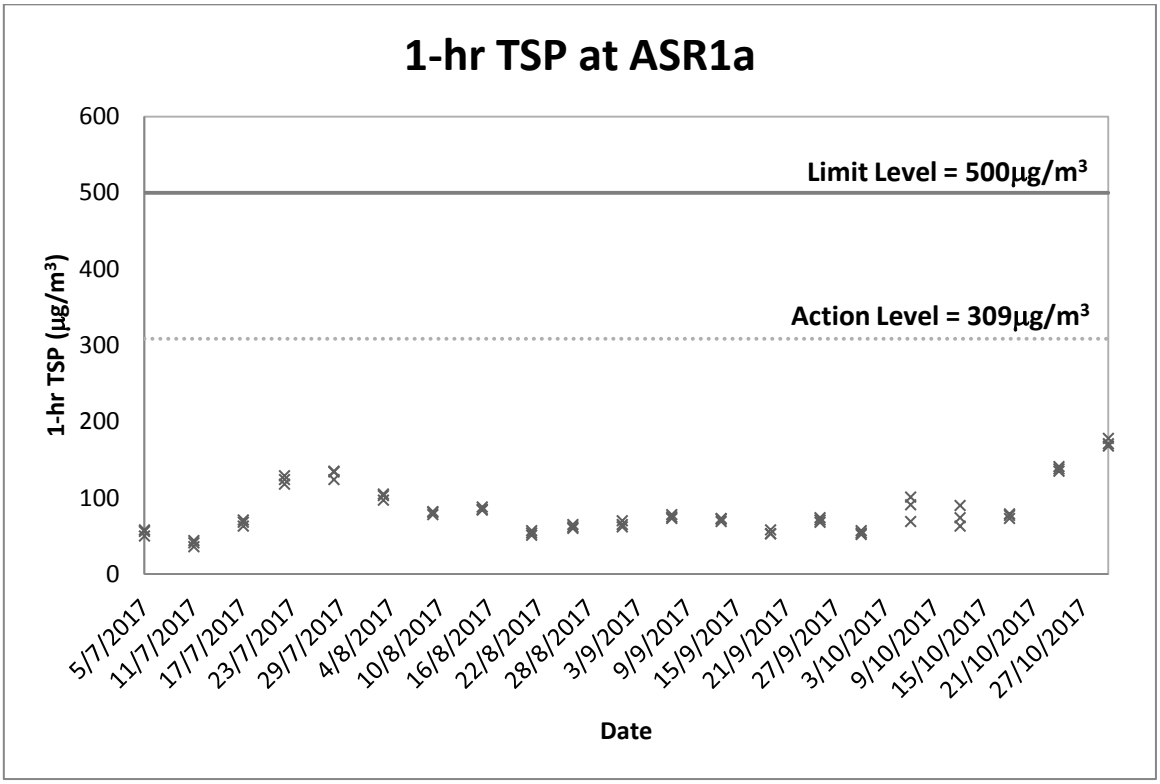
DATA DATE: 31-Jul-17 | LAYOUT: SW Project PHase 1 Rev 6 (3M 31Jul17) |

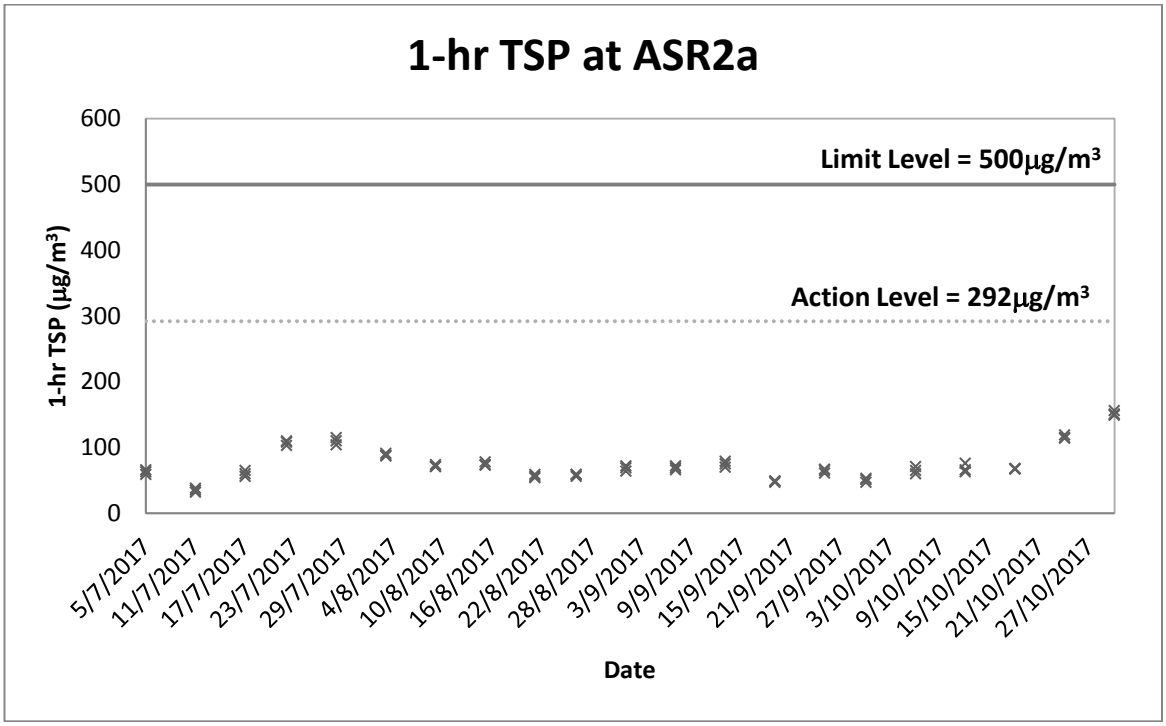
Activity ID	Activity Name	Original Duration	Start	Finish	Rev 6 BL Start	Rev 6 BL Finish	Slippage Start Date	Slippage Finish Date
EM3580	Delivery of Cast-in Items for ICW	75	26-Sep-17	09-Dec-17	27-Jul-17	09-Oct-17	-61	-61
EM3585	Delivery of Cast-in Items for EB1	136	19-Sep-17	02-Feb-18	26-Aug-17	08-Jan-18	-24	-24
EM3590	Delivery of Cast-in Items for EB2	60	13-Oct-17	12-Dec-17	13-Oct-17	11-Dec-17	0	0
EM3600	Delivery of Cast-in Items for EB4	57	20-Sep-17	16-Nov-17	01-Aug-17	26-Sep-17	-51	-51
EM3605	Delivery of Cast-in Items for RW	73	25-Sep-17	07-Dec-17	08-Sep-17	19-Nov-17	-18	-18
EM3610	Delivery of Cast-in Items for DG	75	26-Sep-17	09-Dec-17	27-Jul-17	09-Oct-17	-61	-61

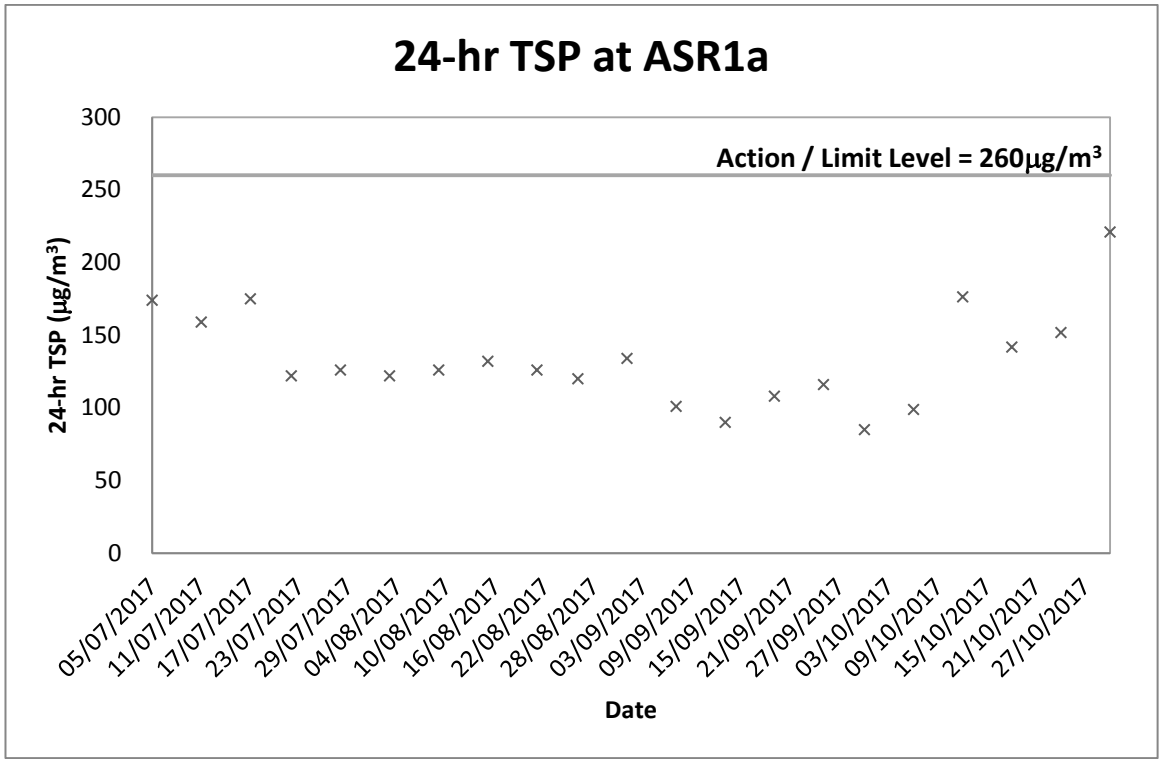


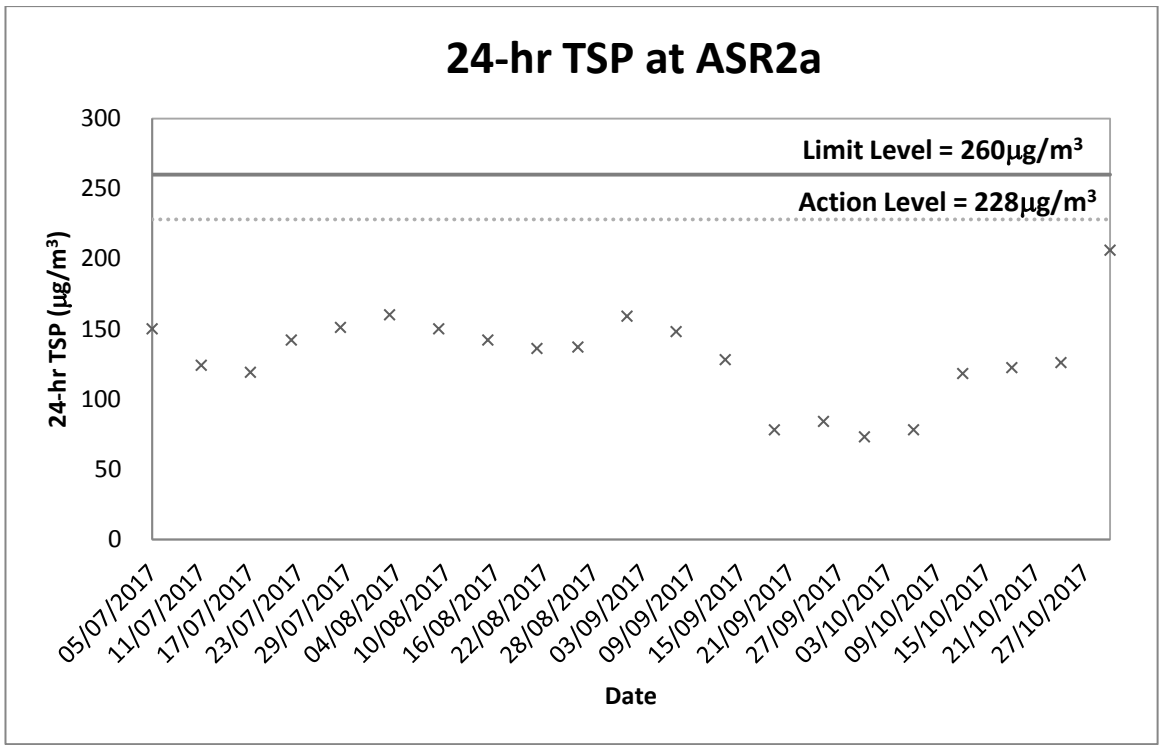
Appendix D

Graphical Plots of Impact Air Quality Monitoring Results


1-hr TSP at ASR1a
600
500
400
300
200
100
0
1-hr TSP (µg/m³)
Limit Level = 500µg/m³
Action Level = 309µg/m³
5/7/2017
11/7/2017
17/7/2017
23/7/2017
29/7/2017
4/8/2017
10/8/2017
16/8/2017
22/8/2017
28/8/2017
3/9/2017
9/9/2017
15/9/2017
21/9/2017
27/9/2017
3/10/2017
9/10/2017
15/10/2017
21/10/2017
27/10/2017
Date

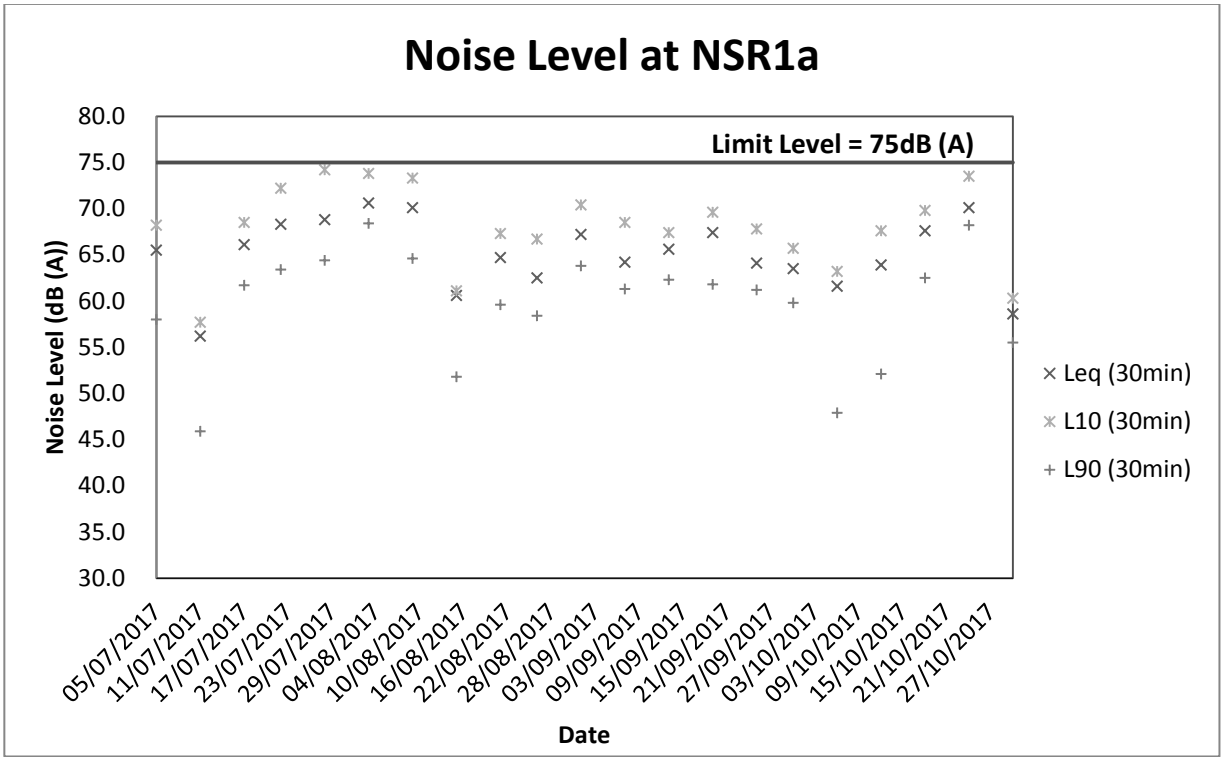

1-hr TSP at ASR2a
600
500
400
300
200
100
0
1-hr TSP (µg/m³)
Limit Level = 500µg/m³
Action Level = 292µg/m³
5/7/2017
11/7/2017
17/7/2017
23/7/2017
29/7/2017
4/8/2017
10/8/2017
16/8/2017
22/8/2017
28/8/2017
3/9/2017
9/9/2017
15/9/2017
21/9/2017
27/9/2017
3/10/2017
9/10/2017
15/10/2017
21/10/2017
27/10/2017
Date

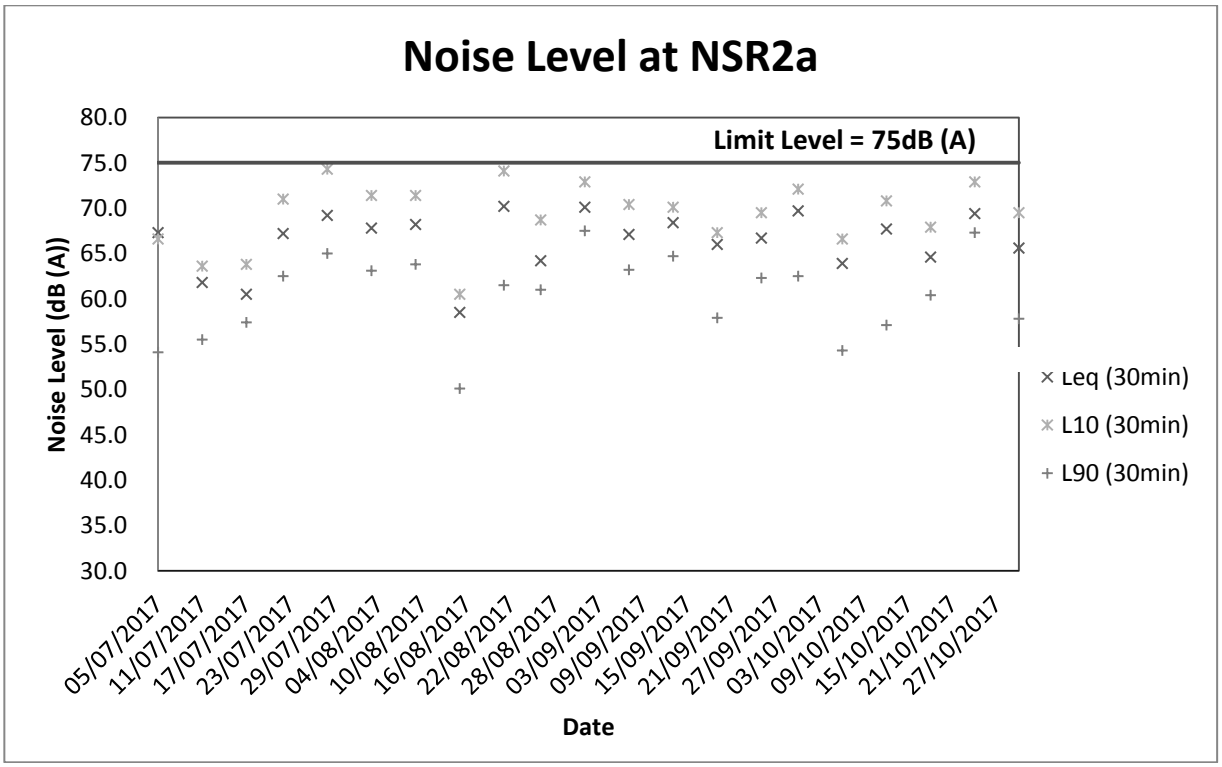

24-hr TSP at ASR1a
Action / Limit Level = 260μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
05/07/2017
11/07/2017
17/07/2017
23/07/2017
29/07/2017
04/08/2017
10/08/2017
16/08/2017
22/08/2017
28/08/2017
03/09/2017
09/09/2017
15/09/2017
21/09/2017
27/09/2017
03/10/2017
09/10/2017
15/10/2017
21/10/2017
27/10/2017
Date


24-hr TSP at ASR2a
Limit Level = 260μg/m³
Action Level = 228μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
05/07/2017
11/07/2017
17/07/2017
23/07/2017
29/07/2017
04/08/2017
10/08/2017
16/08/2017
22/08/2017
28/08/2017
03/09/2017
09/09/2017
15/09/2017
21/09/2017
27/09/2017
03/10/2017
09/10/2017
15/10/2017
21/10/2017
27/10/2017
Date

Appendix E

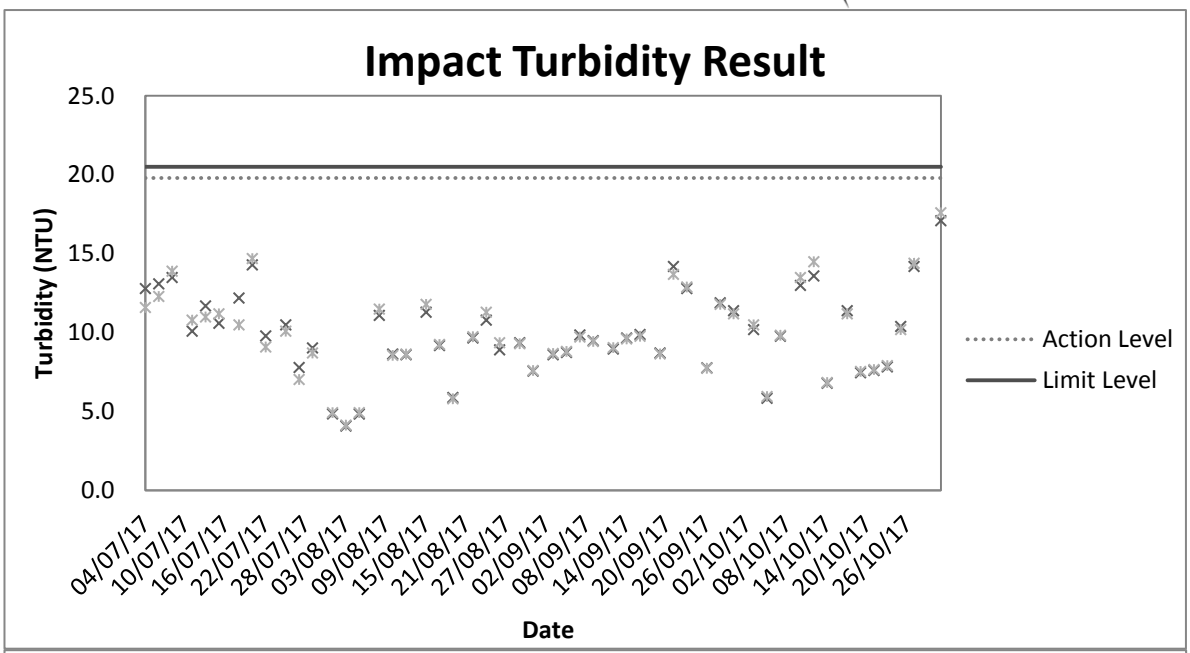
Graphical Plots of Impact Noise Monitoring Data

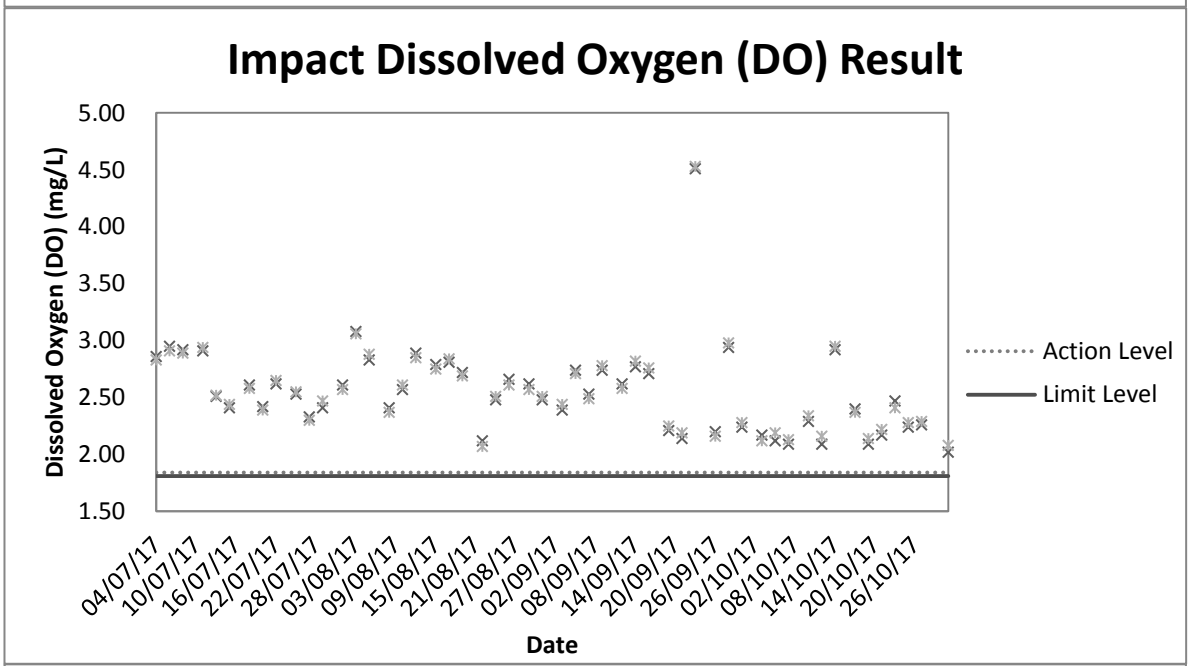

Noise Level at NSR1a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
05/07/2017
11/07/2017
17/07/2017
23/07/2017
29/07/2017
04/08/2017
10/08/2017
16/08/2017
22/08/2017
28/08/2017
03/09/2017
09/09/2017
15/09/2017
21/09/2017
27/09/2017
03/10/2017
09/10/2017
15/10/2017
21/10/2017
27/10/2017
Date
Leq (30min)
L10 (30min)
L90 (30min)

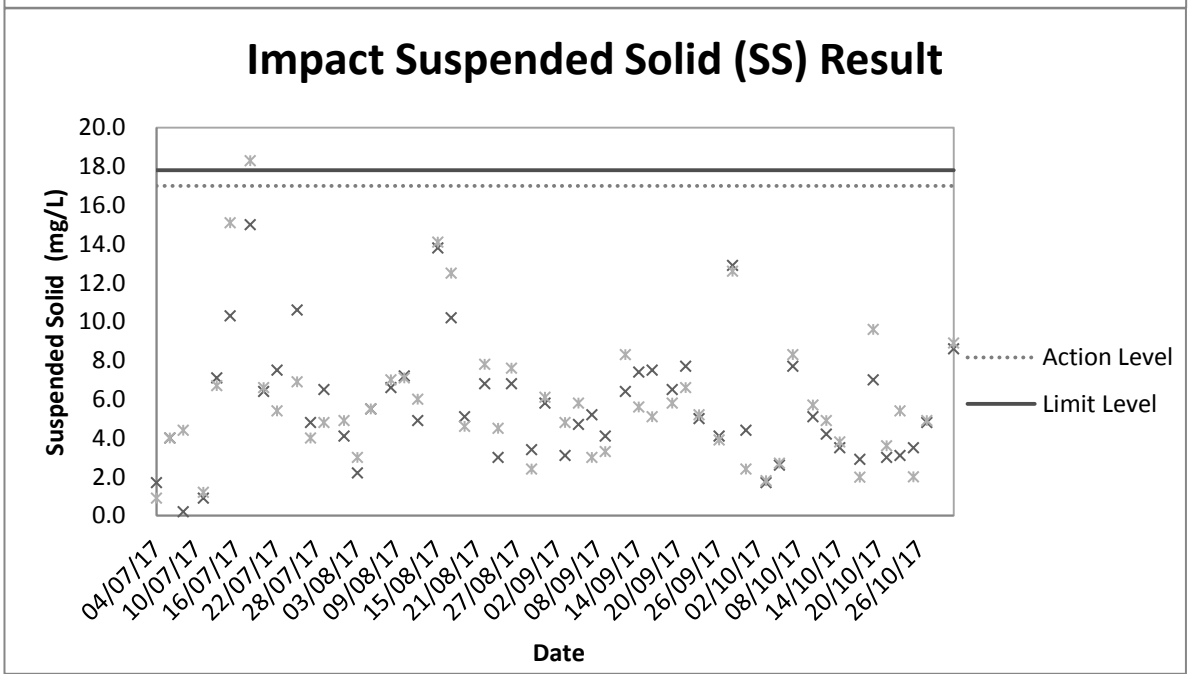

Noise Level at NSR2a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
05/07/2017
11/07/2017
17/07/2017
23/07/2017
29/07/2017
04/08/2017
10/08/2017
16/08/2017
22/08/2017
28/08/2017
03/09/2017
09/09/2017
15/09/2017
21/09/2017
27/09/2017
03/10/2017
09/10/2017
15/10/2017
21/10/2017
27/10/2017
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
04/07/17
10/07/17
16/07/17
22/07/17
28/07/17
03/08/17
09/08/17
15/08/17
21/08/17
27/08/17
02/09/17
08/09/17
14/09/17
20/09/17
26/09/17
02/10/17
08/10/17
14/10/17
20/10/17
26/10/17
Date
Action Level
Limit Level


Impact Dissolved Oxygen (DO) Result
Dissolved Oxygen (DO) (mg/L)
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
04/07/17
10/07/17
16/07/17
22/07/17
28/07/17
03/08/17
09/08/17
15/08/17
21/08/17
27/08/17
02/09/17
08/09/17
14/09/17
20/09/17
26/09/17
02/10/17
08/10/17
14/10/17
20/10/17
26/10/17
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
04/07/17
10/07/17
16/07/17
22/07/17
28/07/17
03/08/17
09/08/17
15/08/17
21/08/17
27/08/17
02/09/17
08/09/17
14/09/17
20/09/17
26/09/17
02/10/17
08/10/17
14/10/17
20/10/17
26/10/17
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, August 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	1000.8	34.2	30.7	28.9	26.9	81	0.0	150	7.5
02	1001.8	31.7	28.7	26.3	26.4	88	2.5	150	4.0
03	1001.4	31.4	27.7	24.8	25.7	90	0.0#	150	4.8
04	1002.7	31.0	27.8	25.7	25.8	89	0.5#	170	3.2
05	1005.2	33.4	29.3	25.9	26.3	85	0.5	170	4.8
06	1006.1	34.2	30.4	26.9	26.2	80	0.0	160	4.9
07	1005.9	34.2	30.6	27.7	26.0	77	0.0	150	6.4
08	1006.1	33.6	30.8	28.7	25.6	75	0.0	160	8.5
09	1005.6	32.8	30.2	27.6	25.9	78	1.5	190	7.4
10	1005.7	31.7	29.5	27.9	26.4	83	6.0	150	5.8
11	1007.1	33.6	30.0	27.0	26.0	80	0.5	150	7.8
12	1008.2	33.5	30.1	27.4	25.4	77	0.0	150	9.3
13	1008.6	33.7	30.0	27.0	24.9	75	0.0	150	7.9
14	1008.3	34.2	30.1	27.5	24.8	74	0.0	150	7.9
15	1008.0	34.6	30.1	26.9	24.5	73	0.0	150	6.3
16	1008.0	33.3	29.5	26.7	24.7	77	0.0	150	5.0
17	1008.8	33.9	30.0	26.8	25.0	76	0.0	160	5.6
18	1010.1	35.5	29.9	25.9	25.2	77	0.0	160	4.3
19	1009.6	34.6	30.3	25.7	24.5	73	0.0	300	4.9
20	1006.8	35.2	30.6	25.9	24.4	72	0.0	150	4.3
21	1002.9	36.4	31.5	27.1	25.5	72	0.0	300	4.0
22	999.5	39.0	31.3	27.4	26.4	78	0.5	350	4.3
23	997.0	28.6#	26.9	25.4#	24.8	89	65.5	140	16.3
24	1007.4	33.2	29.9	27.2	25.3	77	0.0	140	11.7
25	1008.1	32.7	28.6	25.8	25.6	84	0.0	060	4.1
26	1006.4	35.0	29.3	25.6	24.2	76	2.5	070	6.8
27	1004.0	26.8	25.5	24.3	24.4	93	127.0	140	18.0
28	1009.7	27.1	25.6	24.7	24.7	95	22.0	060	4.5
29	1010.0	32.4	28.3	24.0	24.0	80	0.0	070	3.9
30	1008.0	33.5	29.1	25.0	24.8	79	0.0	170	4.8
31	1007.1	33.8	28.5	24.4	26.8	91	34.0	330	3.7

 # data incomplete

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

Daily Extract of Meteorological Observations, September 2017 – Wetland Park

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

 # data incomplete

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

Daily Extract of Meteorological Observations, October 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	1011.5	33.2	28.4	26.4	26.0	87	4.0	090	5.6
02	1010.9	33.7	28.7	25.4	26.1	86	1.0	080	5.1
03	1012.0	34.7	29.2	26.4	25.9	84	0.0	060	4.7
04	1013.8	32.0	28.0	26.3	25.9	89	5.0	080	5.8
05	1013.0	33.2	28.2	25.2	24.7	82	0.0	070	5.5
06	1012.8	33.7	28.5	26.1	24.9	82	0.0	080	6.4
07	1012.8	33.8	28.6	25.6	24.8	81	0.0	090	7.3
08	1011.6	34.3	28.5	25.6	24.6	81	0.0	090	6.1
09	1010.0	35.2	29.2	26.3	23.9#	76#	0.0	090	8.5
10	1010.6	34.3	29.7	26.4	***	***	0.0	090	7.4
11	1010.9	35.1	29.9	26.9	24.9#	72#	0.0	090	6.5
12	1009.9	34.6	29.4	25.8	22.8	70	0.0	350	5.9
13	1008.4	31.3	26.7	23.5	18.3	60	0.0	010	9.8
14	1005.4	26.7	24.0	21.7	17.6	68	0.0	360	8.9
15	1001.7	22.5	20.9	19.7	19.2	90	46.5	360	11.3
16	1008.2	26.9	24.2	22.0	23.4	95	23.0	050	3.2
17	1012.7	27.3	23.9	21.3	21.5	87	27.5	060	7.6
18	1013.3	30.3	25.8	23.0	20.1	71	0.0	030	6.0
19	1012.5	27.7	24.6	22.6	18.7	70	0.0	030	6.0
20	1012.6	29.2	24.0	21.6	17.2	66	0.0	360	6.7
21	1012.4	28.0	23.4	20.7	15.3	60	0.0	360	6.9
22	1012.7	27.6	22.3	18.7	13.6	59	0.0	030	6.8
23	1015.7	28.8	22.6	17.9	15.1	65	0.0	060	4.2
24	1018.5	29.8	23.0	19.0	16.7	71	0.0	070	2.7
25	1018.6	29.4	23.4	19.6	18.0	74	0.0	070	3.1
26	1016.3	30.4	23.7	19.3	18.1	75	0.0	060	3.2
27	1014.0	30.4	23.6	18.7	16.6	70	0.0	060	2.8
28	1014.9	29.6	23.2	19.1	16.2	68	0.0	070	3.0
29	1018.3	27.7	23.2	19.0	13.2	54	0.0	040	7.5
30	1021.2	26.0	22.1	19.4	11.1	51	0.0	040	8.5
31	1019.8	26.7	20.9	17.1	11.9	59	0.0	060	5.8

*** *unavailable*

 # data incomplete

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											
Dec											
Total	15.358	0.000	0.144	0.000	15.214	1.268	0.008	0.360	0.002	0.000	117.940

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.

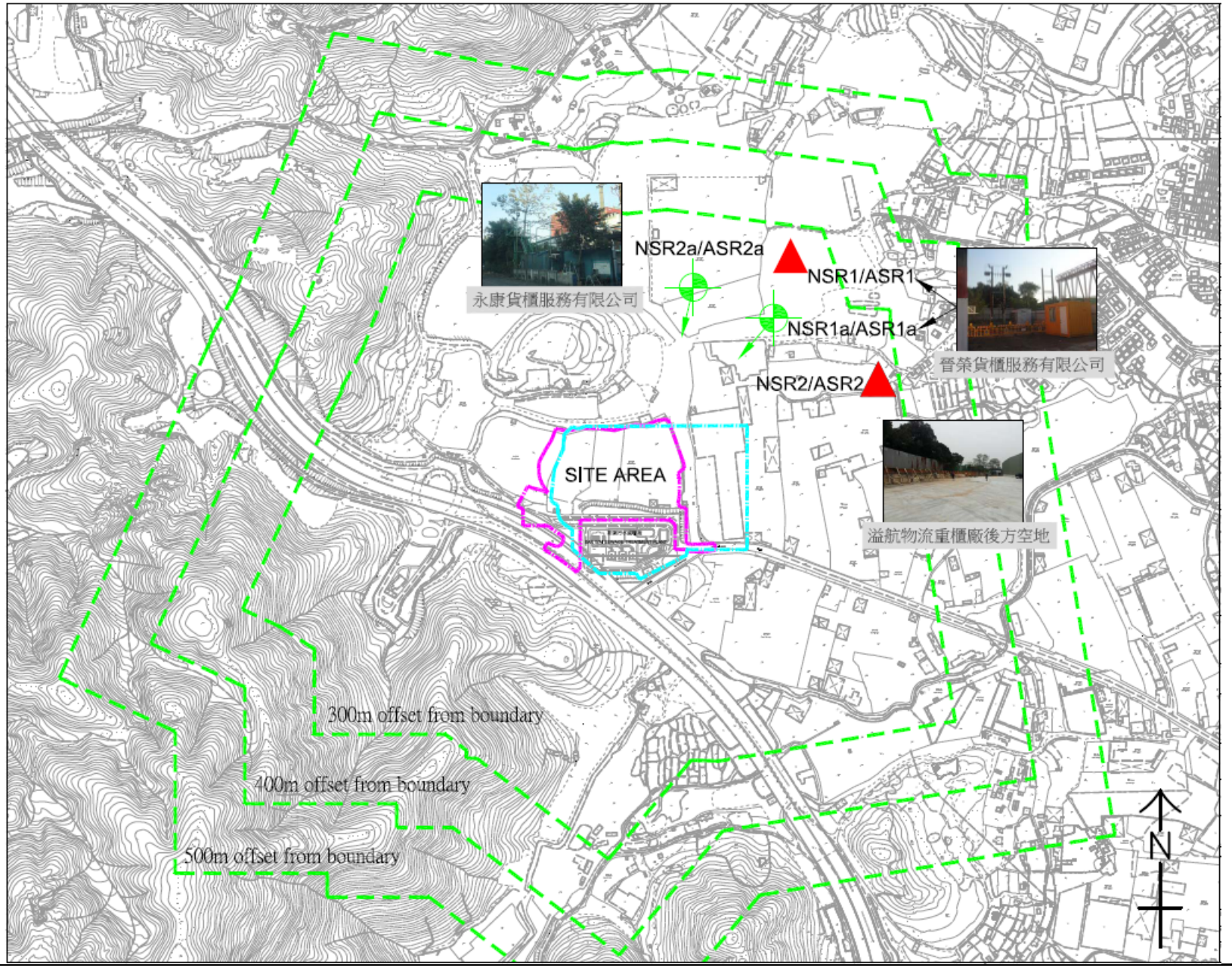
(3) Broken concrete for recycling into aggregates.

(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 Plate Load Test in September 2017.

Figure 1

Locations of Air Quality and Noise Monitoring Stations

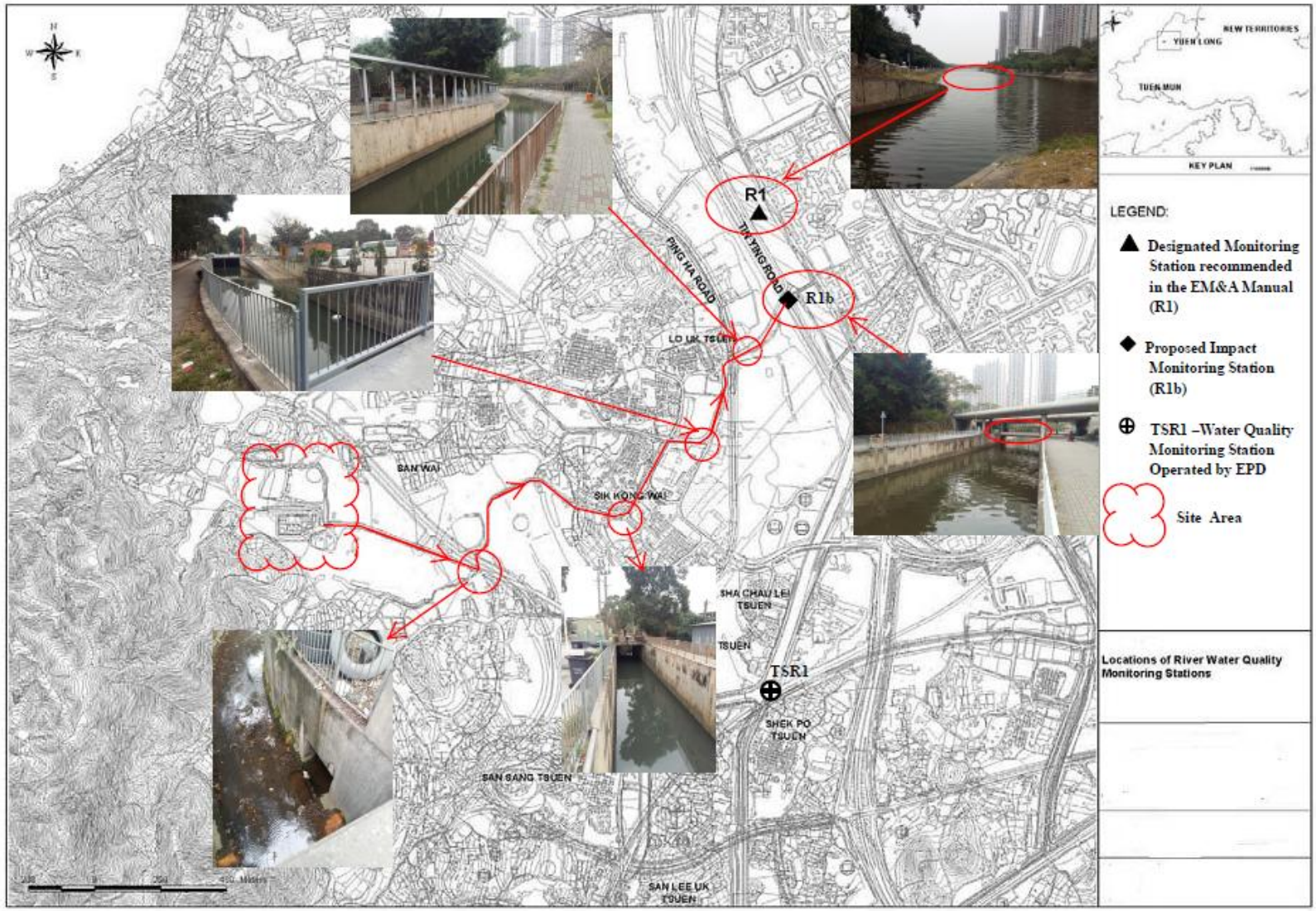


Project: Contract No. DC/2013/10 - Design, Build and Operate San Wai Sewage Treatment Works – Phase 1

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