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ATAL-DEGREMONT-CHINA HARBOUR JOINT VENTURE

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

QUARTERLY EM&A REPORT NO. 9

(01 MAY 2019 – 31 JULY 2019)

Prepared by: _____
LO, Ting Yi

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Issued Date: 15 August 2019 *Report No.: ENA96151*

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: HKDSD203/50/105986

Date: 20 August 2019

Attention: Mr Albert Wong

BY EMAIL & POST
(email: awong@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.9 (May 2019 – July 2019)

We refer to emails of 15 and 20 August 2019 from ETS-Testconsult Limited attaching the Quarterly Environmental Monitoring and Audit Report No.9 (May 2019 – July 2019).

We have no further comment and hereby verify the Quarterly Environmental Monitoring and Audit Report No.9 (May 2019 – July 2019).

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

Yours faithfully
ANEWR CONSULTING LIMITED

Andi Lee
Independent Environmental Checker

LYMA/LHYF/csym

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

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Certificate No.: CC 3988

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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 ninth 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 May 2019 to 31 July 2019.

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 period is listed below:

- *24-hour TSP Monitoring: 15 Occasions at 2 designated locations*
- *1-hour TSP Monitoring: 45 Occasions at 2 designated locations*
- *Noise Monitoring (Day-time): 15 Occasions at 2 designated locations*
- *Water Quality Monitoring: 39 Occasions at 1 designated location*
- *Weekly Site inspection: 13 Occasions*

Breaches of Action and Limit Levels
Air Quality Monitoring
No exceedance of Action and Limit levels was recorded for 1-hr and 24-hr TSP monitoring in the reporting period.

Noise Monitoring
No exceedance of Action and Limit levels for noise monitoring was recorded in the reporting period.

Water Quality Monitoring
According to the summary of water monitoring results, no exceedance of Action and Limit levels was recorded in this reporting period.

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 ninth 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 May 2019 to 31 July 2019.

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*
Contractor (ATAL-DEGREMONT-CHINA HARBOUR JOINT VENTURE)	*Environmental Officer*	*Mr. Johnny So*	*9513 8899*	*johnny.so@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:

- *Backfilling;*
- *Mass Concrete Fill;*
- *Water Tightness Test;*
- *Internal ABWF;*
- *External ABWF;*
- *Superstructure (RC and Metalworks);*
- *Substructure (RC Structure);*
- *Retaining Wall, U-Channel & Stormwater Pipe;*
- *Underground Utilities Along EVA*
- *Construction of Footing of Retaining Wall;*
- *Excavation for UU Installation;*
- *PVC Pipe Laying;*
- *Concrete Surround;*
- *Draw Pits;*
- *ELS and Bulk Excavation;*
- *Bedding and Compaction*

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. Air quality monitoring were conducted at ASR1a (晉榮貨櫃服務有限公司) and ASR2a (永康貨櫃服務有限公司), ASR1a (晉榮貨櫃服務有限公司) and ASR1a (晉榮貨櫃服務有限公司) and ASR2b (永康貨櫃服務有限公司) during November 2018, December 2018 and January 2019 respectively, which was shown in **Figure 1** and **Figure 2**.

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. Noise monitoring were performed at NSR1a (晉榮貨櫃服務有限公司) and NSR2a (永康貨櫃服務有限公司), NSR1a (晉榮貨櫃服務有限公司) and NSR1a (晉榮貨櫃服務有限公司) and NSR2b (永康貨櫃服務有限公司) during August 2018, September 2018 and October 2018 respectively, which was shown in **Figure 1** and **Figure 2**.

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*
ASR2b	*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 period 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, NSR2a and NSR2b 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 period. Graphical presentation of the monitoring results for the reporting period 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

May 2019	June 2019	July 2019
03, 10, 17, 22 and 31	06, 14, 21 and 28	05, 12, 19 and 25

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

Table 3.2 Summary of observation of site inspections

Date	Observations / Reminders	Follow-up Action	Closed Date
03 May 2019	1. General refuse was observed at P1.	1. General refuse was collected properly.	10 May 2019
10 May 2019	--	--	--
17 May 2019	1. Fill materials was observed without cover at the Northern side of UV.	1. Cover was provided.	22 May 2019
22 May 2019	--	--	--
31 May 2019	1. Temporarily cover was not fully overspread the drainage at P1. 2. Fill material was observed without cover at the Northern side of UV.	1. A temporarily cover was provided to cover the drainage at P1. 2. Fill material was covered at the Northern side of UV.	06 June 2019
06 June 2019	1. Stagnant water was accumulated at UV.	1. Larvicide was added for the stagnant water.	14 June 2019
14 June 2019	--	--	--

21 June 2019	1. Stagnant water was observed at the drip tray near DO1 work area.	1. Stagnant water was cleared	28 June 2019
28 June 2019	1. Stagnant water was observed near SDB.	1. The temporary hoardings were erected.	05 July 2019
05 July 2019	1. General refuse was observed near EB3 area.	1. General refuse was collected near EB3 area.	12 July 2019
12 July 2019	1. Stagnant water was observed near SDB area.	1. Stagnant water was cleared and larvicidal oil was applied.	19 July 2019
19 July 2019	--	--	--
25 July 2019	1. Stagnant water was observed.	Follow-up actions for outstanding observation will be inspected during the next site inspection.	--

3.5. Advice on the Solid and Liquid Waste Management Status

3.5.1. All types of waste arising from the construction work are classified into the following:
- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil

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

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

3.6. Landscape and Visual Audit

3.6.1. Landscape and visual audits were undertaken at least once every two weeks throughout the construction period by a competent landscape architect. During the reporting period, audits were carried out on 03, 17 and 31 May 2019, 14 and 28 June 2019 and 05, 12, 19 and 25 July 2019.

3.6.2. Observations and reminders were summarized in the landscape and visual impact assessment checklists which are attached in the monthly EM&A reports.

3.7. Discharge License and Results of Effluent Monitoring

3.7.1. Effluent quality was monitored in the reporting quarter in accordance with the EM&A Manual at the discharge point. The location of Wetsep treatment tank was shown in **Figure 3**. 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.

3.7.2. Effluent water samples were sampled by the Contractor. The dates of effluent sampling during the reporting period are listed in **Table 3.3**. During May 2019, only Wetsep at P1a was operated, the effluent water sample was sampled P1a. During June 2019, only Wetsep at P1a was operated, the effluent water sample was sampled at P1a. On 02 July 2019, only Wetsep at P1a was operated, the effluent water sample was sampled at P1a only on 02 July 2019. While Wetsep were operated at

both P1a and P1b on 16 July 2019, the samples were taken on both Wetsep during this day. On 30 July 2019, water samples were taken on Wetsep at P1b and P8.

Table 3.3 Effluent Sampling Dates

May 2019	June 2019	July 2019
07 and 21	04 and 18	02, 16 and 30

3.7.3. 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.

3.7.4. For effluent quality monitoring as per the discharge license requirement, the results complied with the discharge license requirement.

3.8. Implementation Status of Environmental Mitigation Measures

3.8.1. 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 period.

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

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

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

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

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

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

Table 4.1 Summary of Environmental Complaints Notification of Summons and Successful Prosecution

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

5 COMMENTS, RECOMMENDATIONS AND CONCLUSION

5.1. Comments

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

- The Contractor was reminded to clear all the stagnant water pools;
- The Contractor was reminded to collect the general refuse properly;
- The Contractor was reminded to maintain the Wetsep properly.

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 period.

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 03, 10, 17, 22 & 31 May 2019, 06, 14, 21 & 28 June 2019 and 05, 12, 19 & 25 July 2019. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

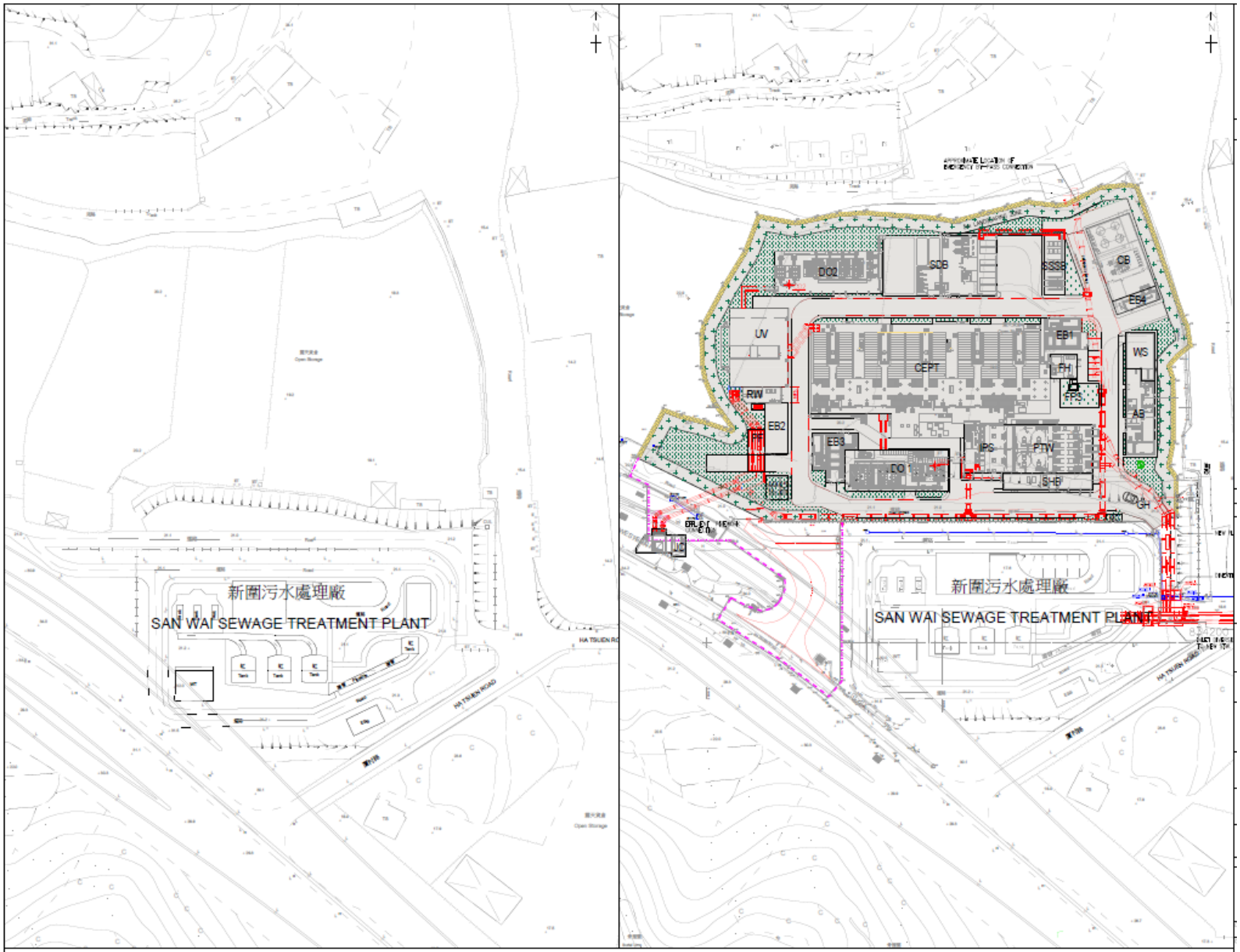
5.3.5. There were no complaints received during the reporting period.

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

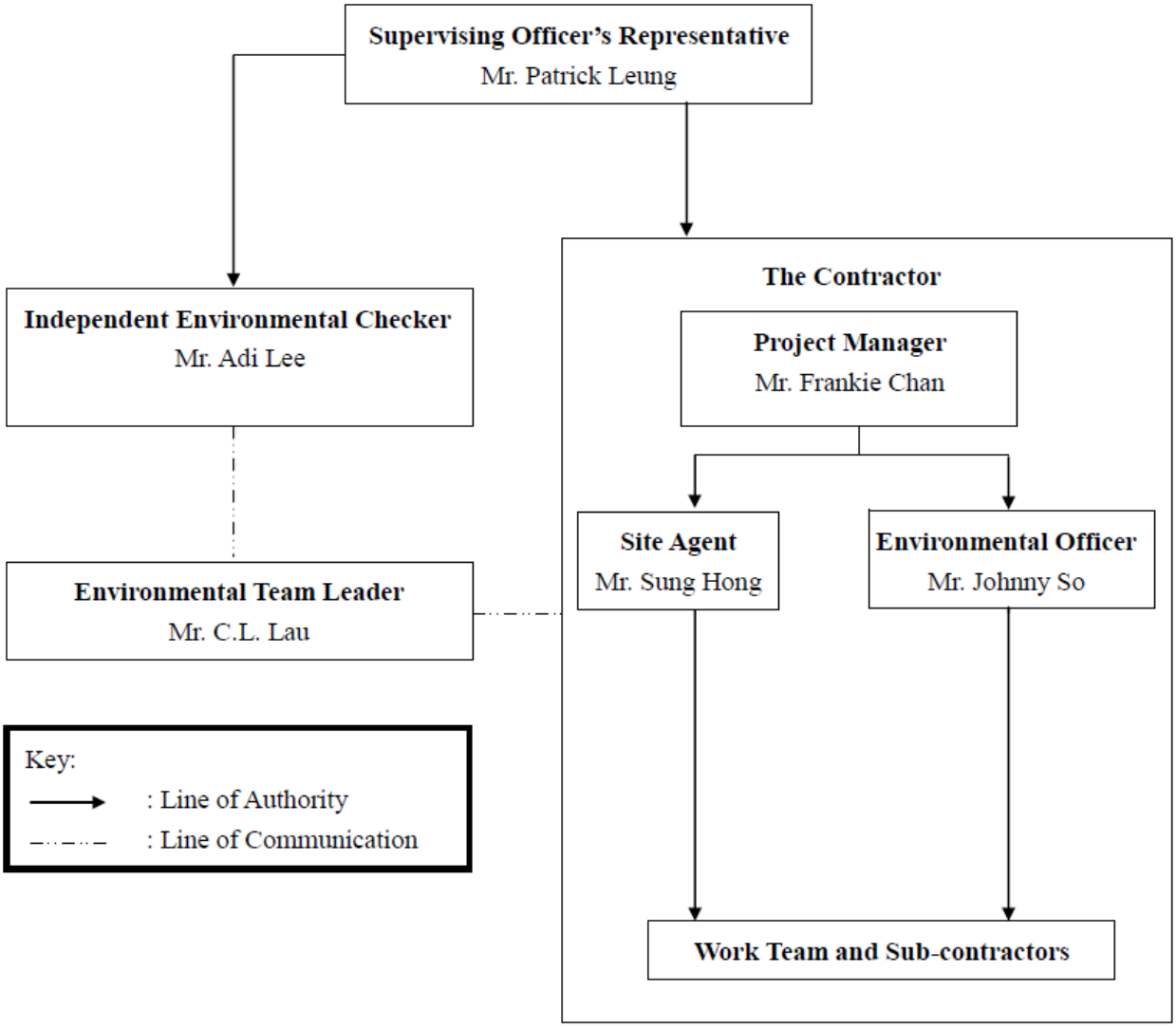


EXISTING SAN WAI SEWAGE TREATMENT WORKS

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
Environmental Team Leader
Mr. C.L. Lau
The Contractor
Project Manager
Mr. Frankie Chan
Site Agent
Mr. Sung Hong
Environmental Officer
Mr. Johnny So
Work Team and Sub-contractors
Key:
: Line of Authority
: Line of Communication

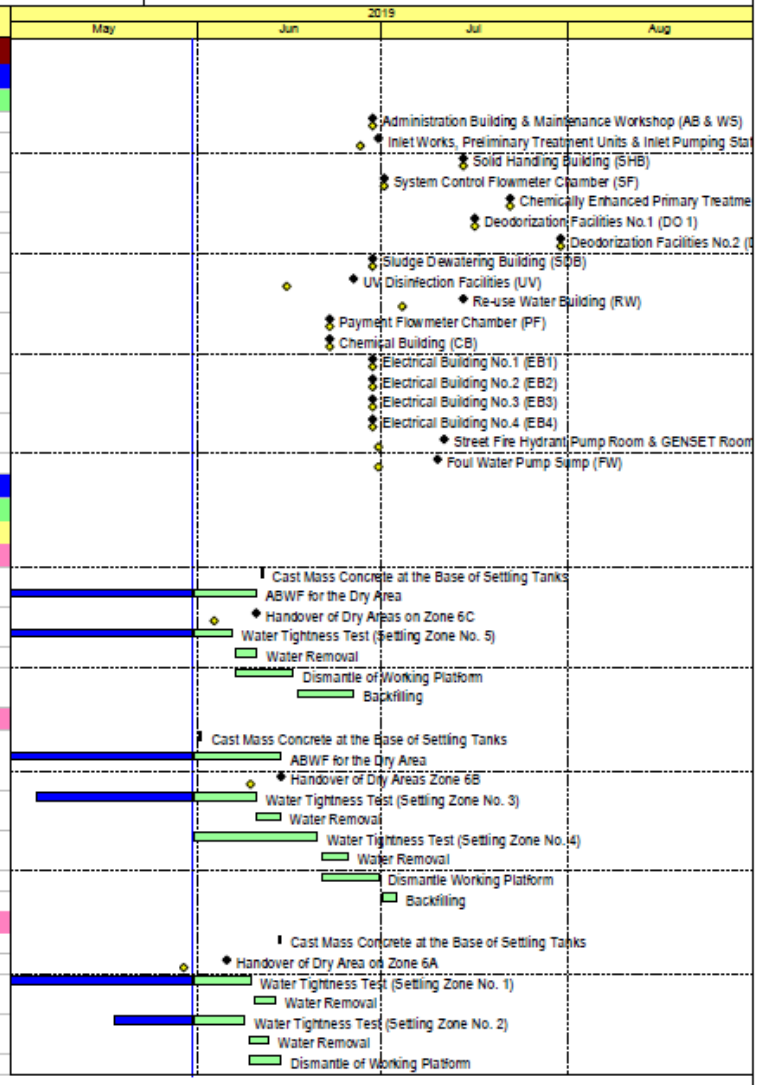
Appendix C

Construction Programme

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
San Wai Sewage Treatment Works Phase 1 - Rev 11 MP (Update as of 31 May 2019)		**437**	**25-Jun-18 A**	**05-Sep-19**
Key Date		**38**	**22-Jun-19**	**30-Jul-19**
Plant Room Access Dates To E&M Installation		38	22-Jun-19	30-Jul-19
KD300	Administration Building & Maintenance Workshop (AB & WS)	0		29-Jun-19
KD302	Inlet Works, Preliminary Treatment Units & Inlet Pumping Station (PTW & IPS)	0		30-Jun-19
KD304	Solid Handling Building (SHB)	0		14-Jul-19
KD306	System Control Flowmeter Chamber (SF)	0		01-Jul-19
KD308	Chemically Enhanced Primary Treatment (CEPT)	0		22-Jul-19
KD310	Deodorization Facilities No.1 (DO 1)	0		16-Jul-19
KD312	Deodorization Facilities No.2 (DO 2)	0		30-Jul-19
KD314	Sludge Dewatering Building (SDB)	0		29-Jun-19
KD316	UV Disinfection Facilities (UV)	0		26-Jun-19
KD318	Re-use Water Building (RW)	0		14-Jul-19
KD320	Payment Flowmeter Chamber (PF)	0		22-Jun-19
KD324	Chemical Building (CB)	0		22-Jun-19
KD326	Electrical Building No.1 (EB1)	0		29-Jun-19
KD328	Electrical Building No.2 (EB2)	0		29-Jun-19
KD330	Electrical Building No.3 (EB3)	0		29-Jun-19
KD331	Electrical Building No.4 (EB4)	0		29-Jun-19
KD336	Street Fire Hydrant Pump Room & GENSET Room (FH)	0		11-Jul-19
KD341	Foul Water Pump Sump (FW)	0		10-Jul-19
Civil & Structural Works		**420**	**25-Jun-18 A**	**18-Aug-19**
Chemically Enhanced Primary Treatment (CEPT)		**161**	**11-Mar-19 A**	**18-Aug-19**
Super Structure Works		**141**	**11-Mar-19 A**	**29-Jul-19**
PORTION 1 (Bay 1, Bay 2, Bay 7 and Bay 10)		**108**	**11-Mar-19 A**	**26-Jun-19**
SU1033	Cast Mass Concrete at the Base of Settling Tanks	1	11-Jun-19	11-Jun-19
SU1047	ABWF for the Dry Area	92	11-Mar-19 A	10-Jun-19
SU1048	Handover of Dry Areas on Zone 6C	0		10-Jun-19
SU1050	Water Tightness Test (Settling Zone No. 5)	40	28-Apr-19 A	06-Jun-19
SU1055	Water Removal	4	07-Jun-19	10-Jun-19
SU1058	Dismantle of Working Platform	10	07-Jun-19	16-Jun-19
SU1060	Backfilling	10	17-Jun-19	26-Jun-19
PORTION 2 (Bay 3, Bay 4, Bay 8 and Bay 11)		**86**	**09-Apr-19 A**	**03-Jul-19**
SU1097	Cast Mass Concrete at the Base of Settling Tanks	1	01-Jun-19	01-Jun-19
SU1108	ABWF for the Dry Area	67	09-Apr-19 A	14-Jun-19
SU1109	Handover of Dry Areas Zone 6B	0		14-Jun-19
SU1115	Water Tightness Test (Settling Zone No. 3)	37	05-May-19 A	10-Jun-19
SU1120	Water Removal	4	10-Jun-19	14-Jun-19
SU1125	Water Tightness Test (Settling Zone No. 4)	21	31-May-19	20-Jun-19
SU1130	Water Removal	5	21-Jun-19	25-Jun-19
SU1133	Dismantle Working Platform	10	21-Jun-19	30-Jun-19
SU1135	Backfilling	3	01-Jul-19	03-Jul-19
PORTION 3 (Bay 5, Bay 6, Bay 9 and Bay 12)		**54**	**27-Apr-19 A**	**19-Jun-19**
SU1173	Cast Mass Concrete at the Base of Settling Tanks	1	14-Jun-19	14-Jun-19
SU1184	Handover of Dry Area on Zone 6A	0		05-Jun-19
SU1190	Water Tightness Test (Settling Zone No. 1)	44	27-Apr-19 A	09-Jun-19
SU1195	Water Removal	4	10-Jun-19	13-Jun-19
SU1200	Water Tightness Test (Settling Zone No. 2)	22	18-May-19 A	08-Jun-19
SU1205	Water Removal	4	09-Jun-19	12-Jun-19
SU1208	Dismantle of Working Platform	6	09-Jun-19	14-Jun-19



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

ATAL-Degremont-China Harbour Joint Venture

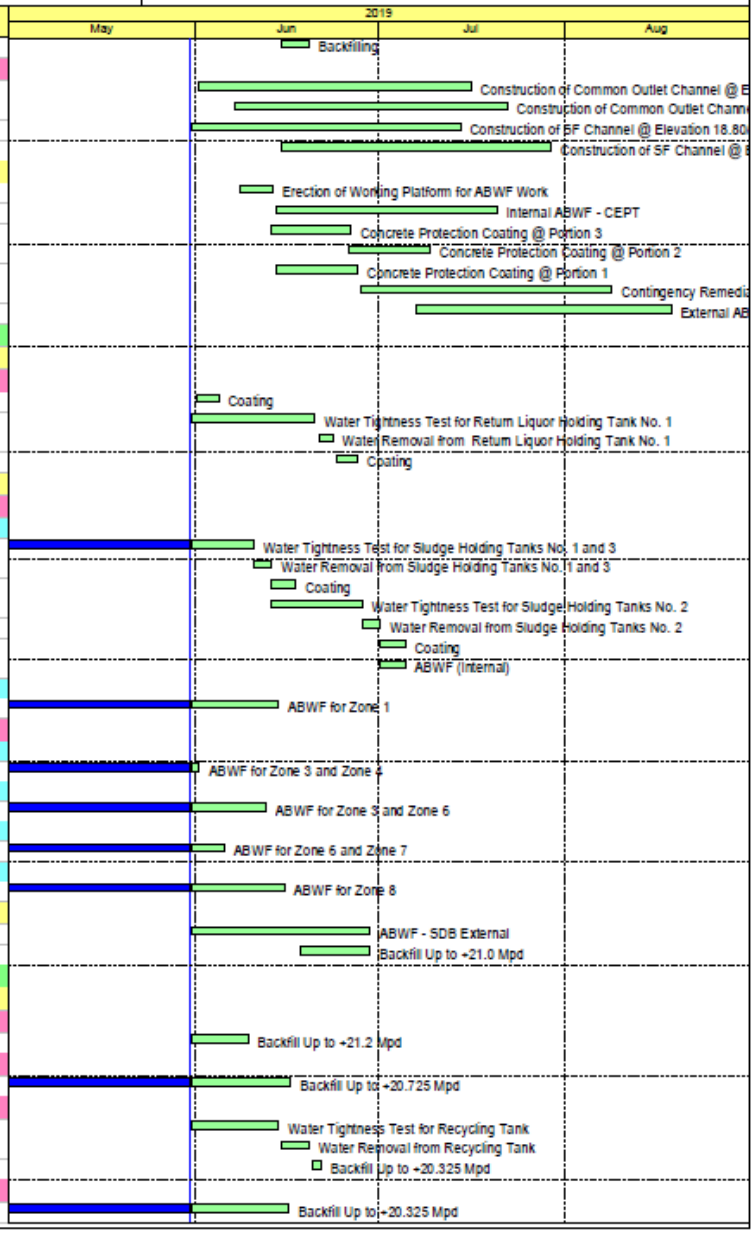
TASK filter: 3 Months Rolling Programme.

CONTRACT NO. DC/2013/10 DESIGN, BUILD & OPERATE
SAN WAI SEWAGE TREATMENT - PHASE 1
Major Civil Activities From May 2019 to Jul 2019

Date	Revision	Checked	Approved
31-May-...	C&S Programme		

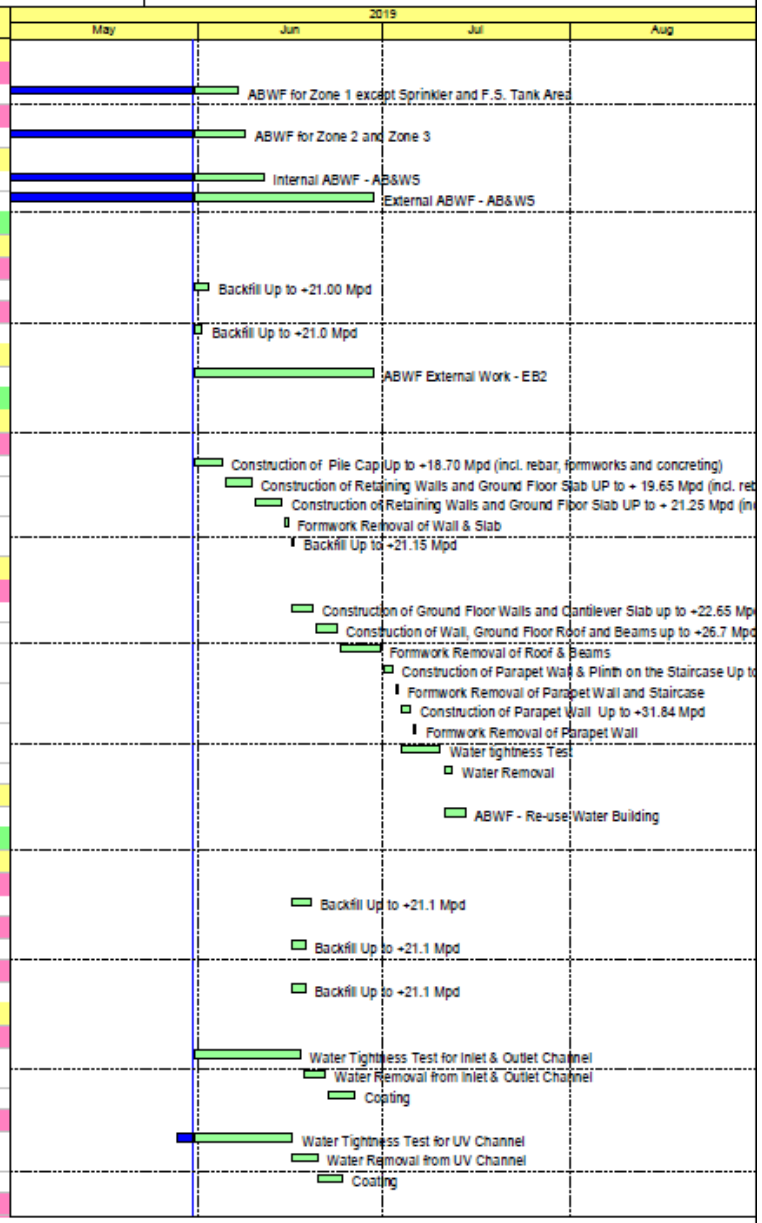
DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
SU1210	Backfilling	5	15-Jun-19	19-Jun-19
Corridor Along Grid A		60	31-May-19	29-Jul-19
SU1215	Construction of Common Outlet Channel @ Elevation 20.75 (Upper Basement)	45	01-Jun-19	16-Jul-19
SU1220	Construction of Common Outlet Channel @ Elevation 23.67 (Ground Floor)	45	07-Jun-19	22-Jul-19
SU1225	Construction of SF Channel @ Elevation 18.80/21.05 (Upper Basement)	45	31-May-19	14-Jul-19
SU1230	Construction of SF Channel @ Elevation 24.57 (Ground Floor)	45	15-Jun-19	29-Jul-19
ABWF		72	08-Jun-19	18-Aug-19
C51029	Erection of Working Platform for ABWF Work	6	08-Jun-19	13-Jun-19
C51030	Internal ABWF - CEPT	37	14-Jun-19	20-Jul-19
C51031	Concrete Protection Coating @ Portion 3	14	13-Jun-19	26-Jun-19
C51032	Concrete Protection Coating @ Portion 2	14	26-Jun-19	09-Jul-19
C51033	Concrete Protection Coating @ Portion 1	14	14-Jun-19	27-Jun-19
C51034	Contingency Remedial Works and Re-Water Tightness Test	42	28-Jun-19	08-Aug-19
C51035	External ABWF - CEPT	42	07-Jul-19	18-Aug-19
Sludge Dewatering Building (SDB)		221	27-Nov-18 A	05-Jul-19
Sub Structure Works		28	31-May-19	27-Jun-19
PORTION 2 (ZONE 2, 3, and ZONE 4)		28	31-May-19	27-Jun-19
SDB1105	Coating	4	01-Jun-19	04-Jun-19
SDB1110	Water Tightness Test for Return Liquor Holding Tank No. 1	21	31-May-19*	20-Jun-19
SDB1115	Water Removal from Return Liquor Holding Tank No. 1	3	21-Jun-19	23-Jun-19
SDB1120	Coating	4	24-Jun-19	27-Jun-19
Super Structure Works		221	27-Nov-18 A	05-Jul-19
PORTION 1 (ZONE 1, ZONE 5 and ZONE 9)		190	28-Dec-18 A	05-Jul-19
Void Over Sludge Holding Tank (ZONE 5 and ZONE 9)		86	11-Apr-19 A	05-Jul-19
SDB1160	Water Tightness Test for Sludge Holding Tanks No. 1 and 3	61	11-Apr-19 A	10-Jun-19
SDB1165	Water Removal from Sludge Holding Tanks No. 1 and 3	3	10-Jun-19	13-Jun-19
SDB1170	Coating	4	13-Jun-19	17-Jun-19
SDB1175	Water Tightness Test for Sludge Holding Tanks No. 2	15	13-Jun-19	28-Jun-19
SDB1180	Water Removal from Sludge Holding Tanks No. 2	3	28-Jun-19	01-Jul-19
SDB1185	Coating	4	01-Jul-19	05-Jul-19
SDB1190	ABWF (Internal)	4	01-Jul-19	05-Jul-19
Sludge Feed Pump Area (ZONE 1 and ZONE 5)		169	28-Dec-18 A	14-Jun-19
SDB1210	ABWF for Zone 1	169	28-Dec-18 A	14-Jun-19
PORTION 2 (ZONE 3, 4, 6, 7 and ZONE 8)		201	27-Nov-18 A	15-Jun-19
Ground Floor (Zone 3 and Zone 4)		151	02-Jan-19 A	01-Jun-19
SDB1250	ABWF for Zone 3 and Zone 4	151	02-Jan-19 A	01-Jun-19
Access Panel (Zone 3 and Zone 6)		198	27-Nov-18 A	12-Jun-19
SDB1280	ABWF for Zone 3 and Zone 6	198	27-Nov-18 A	12-Jun-19
First Floor (Zone 6 and Zone 7)		191	27-Nov-18 A	05-Jun-19
SDB1315	ABWF for Zone 6 and Zone 7	191	27-Nov-18 A	05-Jun-19
Roof (Zone 8)		146	21-Jan-19 A	15-Jun-19
SDB1335	ABWF for Zone 8	146	21-Jan-19 A	15-Jun-19
ABWF		12	18-Jun-19 A	29-Jun-19
SDB1340	ABWF - SDB External	8	22-Jun-19 A	29-Jun-19
SDB1345	Backfill Up to +21.0 Mpd	12	18-Jun-19	29-Jun-19
Administration Building & Maintenance Workshop (AB & WS)		370	25-Jun-18 A	29-Jun-19
Sub Structure Works		362	25-Jun-18 A	21-Jun-19
Portion 1 Administration Building (Zone 1 except Sprinkler Tank)		10	31-May-19	09-Jun-19
ABWS1035	Backfill Up to +21.2 Mpd	10	31-May-19	09-Jun-19
Portion 2 Administration Building (Zone 1 Sprinkler Tank)		357	25-Jun-18 A	16-Jun-19
ABWS1055	Backfill Up to +20.725 Mpd	357	25-Jun-18 A	16-Jun-19
Portion 5 Workshop (Zone 4 Recycling Tank Area)		22	31-May-19	21-Jun-19
ABWS1115	Water Tightness Test for Recycling Tank	15	31-May-19*	14-Jun-19
ABWS1120	Water Removal from Recycling Tank	5	15-Jun-19	19-Jun-19
ABWS1125	Backfill Up to +20.325 Mpd	2	20-Jun-19	21-Jun-19
Portion 4 Workshop (Zone 4 except Recycling Tank Area)		246	13-Oct-18 A	16-Jun-19
ABWS1075	Backfill Up to +20.325 Mpd	246	13-Oct-18 A	16-Jun-19



DATA DATE: 31-May-19 | 5W Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
Super Structure Works		146	14-Jan-19 A	08-Jun-19
Portion 1 Administration Building (Zone 1 except Sprinkler and F.S. Tank)		145	14-Jan-19 A	07-Jun-19
ABWS1150	ABWF for Zone 1 except Sprinkler and F.S. Tank Area	145	14-Jan-19 A	07-Jun-19
Portion 3 Administration Building (Zone 2 and Zone 3)		139	21-Jan-19 A	08-Jun-19
ABWS1225	ABWF for Zone 2 and Zone 3	139	21-Jan-19 A	08-Jun-19
ABWF		160	21-Jan-19 A	29-Jun-19
ABWS1275	Internal ABWF - AB&WS	142	21-Jan-19 A	11-Jun-19
ABWS1280	External ABWF - AB&WS	139	11-Feb-19 A	29-Jun-19
Electrical Building No.2 (EB2)		30	31-May-19	29-Jun-19
Super Structure Works		3	31-May-19	02-Jun-19
PORTION 1 (ZONE1) Transformer Room		3	31-May-19	02-Jun-19
EB2110	Backfill Up to +21.00 Mpd	3	31-May-19	02-Jun-19
PORTION 2 (ZONE2) LV Switchroom		2	31-May-19	01-Jun-19
EB2155	Backfill Up to +21.0 Mpd	2	31-May-19	01-Jun-19
ABWF		30	31-May-19	29-Jun-19
CS3848	ABWF External Work - EB2	30	31-May-19	29-Jun-19
ReUse Water Building (RW)		45	31-May-19	14-Jul-19
Sub Structure Works		17	31-May-19	16-Jun-19
PORTION 1 (ZONE 1)		17	31-May-19	16-Jun-19
RW1000	Construction of Pile Cap Up to +18.70 Mpd (incl. rebar, formworks and concreting)	5	31-May-19	04-Jun-19
RW1010	Construction of Retaining Walls and Ground Floor Slab UP to + 19.65 Mpd (incl. rebar, formworks and concre	5	05-Jun-19	09-Jun-19
RW1020	Construction of Retaining Walls and Ground Floor Slab UP to + 21.25 Mpd (incl. rebar, formworks and concre	5	10-Jun-19	14-Jun-19
RW1025	Formwork Removal of Wall & Slab	1	15-Jun-19	15-Jun-19
RW1035	Backfill Up to +21.15 Mpd	1	16-Jun-19	16-Jun-19
Super Structure Works		27	16-Jun-19	12-Jul-19
PORTION 1 (ZONE1)		27	16-Jun-19	12-Jul-19
RW1040	Construction of Ground Floor Walls and Cantilever Slab up to +22.65 Mpd (incl. rebar, formworks and concret	4	16-Jun-19	19-Jun-19
RW1060	Construction of Wall, Ground Floor Roof and Beams up to +26.7 Mpd (incl. rebar, formworks and concreting)	4	20-Jun-19	23-Jun-19
RW1065	Formwork Removal of Roof & Beams	7	24-Jun-19	30-Jun-19
RW1070	Construction of Parapet Wall & Plinth on the Staircase Up to +28.185 Mpd	2	01-Jul-19	02-Jul-19
RW1075	Formwork Removal of Parapet Wall and Staircase	1	03-Jul-19	03-Jul-19
RW1080	Construction of Parapet Wall Up to +31.84 Mpd	2	04-Jul-19	05-Jul-19
RW1085	Formwork Removal of Parapet Wall	1	06-Jul-19	06-Jul-19
RW1090	Water tightness Test	7	04-Jul-19	10-Jul-19
RW1095	Water Removal	2	11-Jul-19	12-Jul-19
ABWF		4	11-Jul-19	14-Jul-19
RW1100	ABWF - Re-use Water Building	4	11-Jul-19	14-Jul-19
UV Disinfection Facilities (UV)		31	27-May-19 A	26-Jun-19
Sub Structure Works		3	16-Jun-19	19-Jun-19
PORTION 1 (ZONE 3 and ZONE 5)		3	16-Jun-19	19-Jun-19
UV1040	Backfill Up to +21.1 Mpd	3	16-Jun-19	19-Jun-19
PORTION 2 (ZONE 4)		2	16-Jun-19	18-Jun-19
UV1065	Backfill Up to +21.1 Mpd	2	16-Jun-19	18-Jun-19
PORTION 3 (ZONE 2)		2	16-Jun-19	18-Jun-19
UV1085	Backfill Up to +21.1 Mpd	2	16-Jun-19	18-Jun-19
Super Structure Works		31	27-May-19 A	26-Jun-19
PORTION 1 (ZONE 3 and ZONE 5)		27	31-May-19	26-Jun-19
UV1115	Water Tightness Test for Inlet & Outlet Channel	18	31-May-19	17-Jun-19
UV1120	Water Removal from Inlet & Outlet Channel	4	18-Jun-19	21-Jun-19
UV1125	Coating	5	22-Jun-19	26-Jun-19
PORTION 2 (ZONE 4)		28	28-May-19 A	24-Jun-19
UV1155	Water Tightness Test for UV Channel	19	28-May-19 A	16-Jun-19
UV1160	Water Removal from UV Channel	4	16-Jun-19	20-Jun-19
UV1165	Coating	5	20-Jun-19	24-Jun-19
PORTION 3 (ZONE 2)		17	27-May-19 A	12-Jun-19



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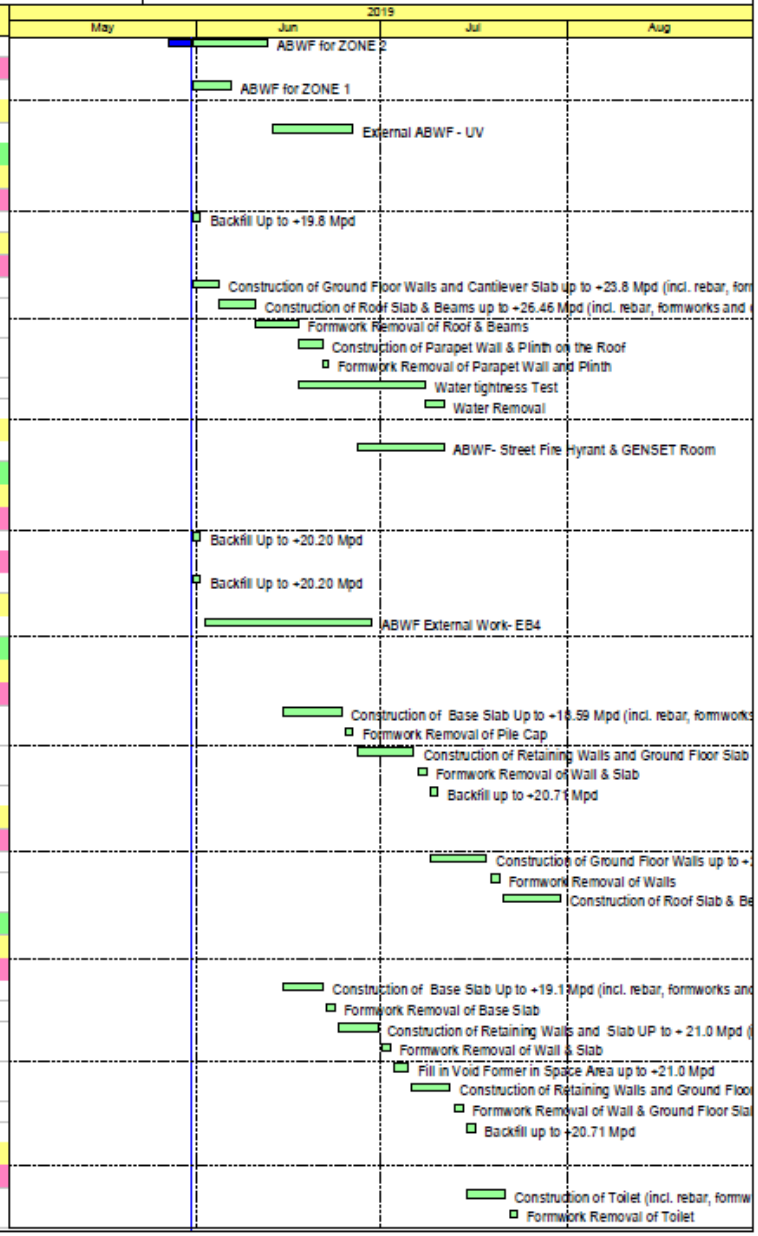
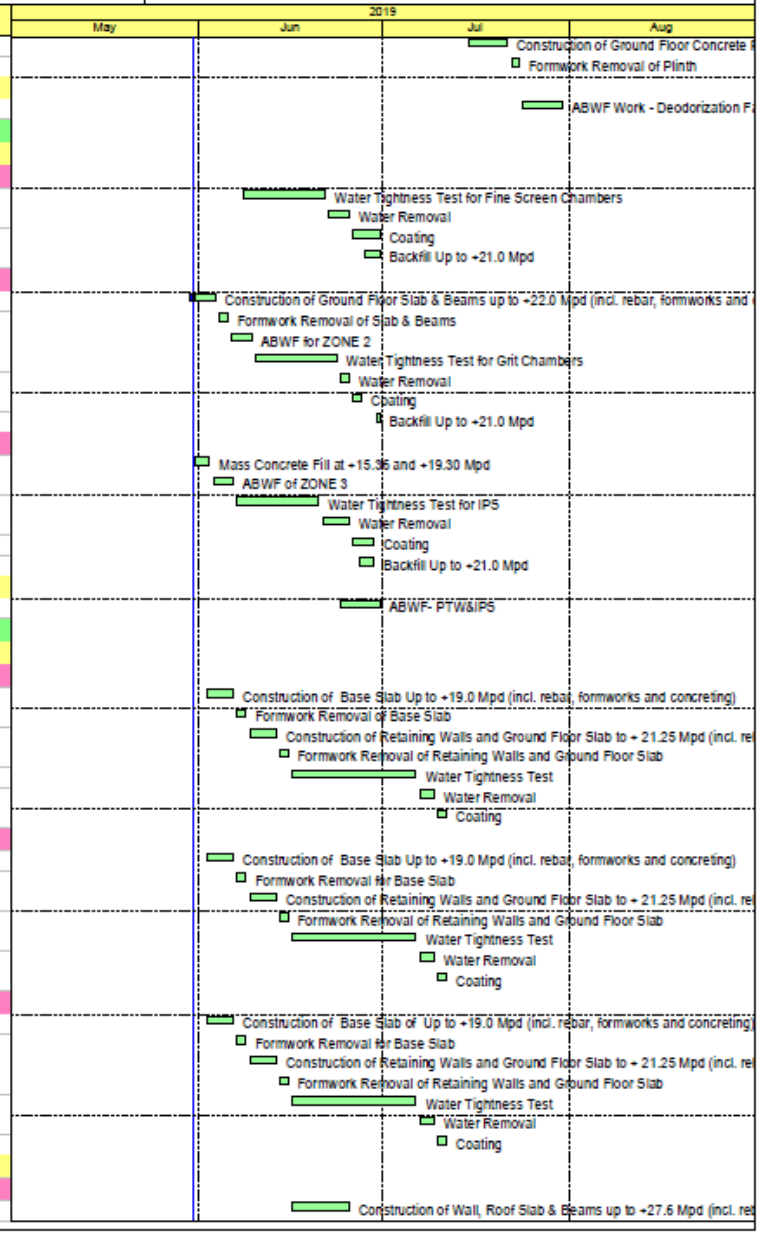
Activity ID	Activity Name	At Completion Duration	Start	Finish
UV1215	ABWF for ZONE 2	17	27-May-19 A	12-Jun-19
PORTION 4 (ZONE 1)		7	31-May-19	06-Jun-19
UV1240	ABWF for ZONE 1	7	31-May-19	06-Jun-19
ABWF		14	13-Jun-19	26-Jun-19
UV1245	External ABWF - UV	14	13-Jun-19	26-Jun-19
Street Fire Hydrant Pump Room & GENSET Room (FH)		42	31-May-19 A	11-Jul-19
Sub Structure Works		2	31-May-19	01-Jun-19
PORTION 1 (ZONE 1)		2	31-May-19	01-Jun-19
FH1025	Backfill Up to +19.8 Mpd	2	31-May-19	01-Jun-19
Super Structure Works		42	31-May-19 A	11-Jul-19
PORTION 1 (ZONE1)		42	31-May-19 A	11-Jul-19
FH1030	Construction of Ground Floor Walls and Cantilever Slab up to +23.8 Mpd (incl. rebar, formworks and concretir	5	31-May-19 A	04-Jun-19
FH1040	Construction of Roof Slab & Beams up to +26.46 Mpd (incl. rebar, formworks and concreting)	6	04-Jun-19	10-Jun-19
FH1045	Formwork Removal of Roof & Beams	7	10-Jun-19	17-Jun-19
FH1050	Construction of Parapet Wall & Plinth on the Roof	4	17-Jun-19	21-Jun-19
FH1055	Formwork Removal of Parapet Wall and Plinth	1	21-Jun-19	22-Jun-19
FH1060	Water tightness Test	21	17-Jun-19	08-Jul-19
FH1065	Water Removal	3	08-Jul-19	11-Jul-19
ABWF		14	27-Jun-19	11-Jul-19
FH1070	ABWF- Street Fire Hyrant & GENSET Room	14	27-Jun-19	11-Jul-19
Electrical Building No.4 (EB4)		30	31-May-19	29-Jun-19
Sub Structure Works		2	31-May-19	01-Jun-19
PORTION 1 (ZONE1) Transformer Room		2	31-May-19	01-Jun-19
EB4030	Backfill Up to +20.20 Mpd	2	31-May-19	01-Jun-19
PORTION 2 (ZONE2) LV Switchroom		2	31-May-19	01-Jun-19
EB4065	Backfill Up to +20.20 Mpd	2	31-May-19	01-Jun-19
ABWF		28	02-Jun-19	29-Jun-19
C53934	ABWF External Work- EB4	28	02-Jun-19	29-Jun-19
Sludge Skip Storage Building (SSSB)		46	15-Jun-19	30-Jul-19
Sub Structure Works		26	15-Jun-19	10-Jul-19
PORTION 1 (ZONE 1)		26	15-Jun-19	10-Jul-19
S55B1000	Construction of Base Slab Up to +18.59 Mpd (incl. rebar, formworks and concreting)	10	15-Jun-19	24-Jun-19
S55B1010	Formwork Removal of Pile Cap	2	25-Jun-19	26-Jun-19
S55B1020	Construction of Retaining Walls and Ground Floor Slab UP to + 20.59 Mpd (incl. rebar, formworks and concre	10	27-Jun-19	06-Jul-19
S55B1030	Formwork Removal of Wall & Slab	2	07-Jul-19	08-Jul-19
S55B1040	Backfill up to +20.71 Mpd	2	09-Jul-19	10-Jul-19
Super Structure Works		22	09-Jul-19	30-Jul-19
PORTION 1 (ZONE1)		22	09-Jul-19	30-Jul-19
S55B1050	Construction of Ground Floor Walls up to +24.59 Mpd (incl. rebar, formworks and concreting)	10	09-Jul-19	18-Jul-19
S55B1060	Formwork Removal of Walls	2	19-Jul-19	20-Jul-19
S55B1070	Construction of Roof Slab & Beams up to +26.44 Mpd (incl. rebar, formworks and concreting)	10	21-Jul-19	30-Jul-19
Deodorization Facilities No. 2 (DO 2)		46	15-Jun-19	30-Jul-19
Sub Structure Works		32	15-Jun-19	16-Jul-19
PORTION 1 (ZONE 1)		32	15-Jun-19	16-Jul-19
DO2000	Construction of Base Slab Up to +19.1 Mpd (incl. rebar, formworks and concreting)	7	15-Jun-19	21-Jun-19
DO2005	Formwork Removal of Base Slab	2	22-Jun-19	23-Jun-19
DO2010	Construction of Retaining Walls and Slab UP to + 21.0 Mpd (incl. rebar, formworks and concreting)	7	24-Jun-19	30-Jun-19
DO2015	Formwork Removal of Wall & Slab	2	01-Jul-19	02-Jul-19
DO2018	Fill in Void Former in Space Area up to +21.0 Mpd	3	03-Jul-19	05-Jul-19
DO2020	Construction of Retaining Walls and Ground Floor Slab UP to + 21.45 Mpd (incl. rebar, formworks and concre	7	06-Jul-19	12-Jul-19
DO2025	Formwork Removal of Wall & Ground Floor Slab	2	13-Jul-19	14-Jul-19
DO2030	Backfill up to +20.71 Mpd	2	15-Jul-19	16-Jul-19
Super Structure Works		9	15-Jul-19	23-Jul-19
PORTION 1 (ZONE1)		9	15-Jul-19	23-Jul-19
DO2035	Construction of Toilet (incl. rebar, formworks and concreting)	7	15-Jul-19	21-Jul-19
DO2040	Formwork Removal of Toilet	2	22-Jul-19	23-Jul-19



DATA DATE: 31-May-19 | SW Project PHase 1 Rev.10 3M (31Dec18) |

Activity ID	Activity Name	At Completion Duration	Start	Finish
DO2045	Construction of Ground Floor Concrete Plinth up to +21.45 Mpd (incl. rebar, formworks and concreting)	7	15-Jul-19	21-Jul-19
DO2050	Formwork Removal of Plinth	2	22-Jul-19	23-Jul-19
ABWF		7	24-Jul-19	30-Jul-19
DO2055	ABWF Work - Deodorization Facilities No.2	7	24-Jul-19	30-Jul-19
Inlet Work, Preliminary Treatment Works and Inlet Pumping Station (PTW & IPS)		32	30-May-19 A	30-Jun-19
Super Structure Works		32	30-May-19 A	30-Jun-19
PORTION 1 (ZONE1) Fine Screen Chamber		23	08-Jun-19	30-Jun-19
PTWIPS1150	Water Tightness Test for Fine Screen Chambers	14	08-Jun-19	21-Jun-19
PTWIPS1155	Water Removal	4	22-Jun-19	25-Jun-19
PTWIPS1160	Coating	5	26-Jun-19	30-Jun-19
PTWIPS1165	Backfill Up to +21.0 Mpd	3	28-Jun-19	30-Jun-19
PORTION 2 (ZONE2) Grit Chamber		32	30-May-19 A	30-Jun-19
PTWIPS1175	Construction of Ground Floor Slab & Beams up to +22.0 Mpd (incl. rebar, formworks and concreting)	5	30-May-19 A	03-Jun-19
PTWIPS1180	Formwork Removal of Slab & Beams	2	04-Jun-19	05-Jun-19
PTWIPS1185	ABWF for ZONE 2	4	06-Jun-19	09-Jun-19
PTWIPS1190	Water Tightness Test for Grit Chambers	14	10-Jun-19	23-Jun-19
PTWIPS1195	Water Removal	2	24-Jun-19	25-Jun-19
PTWIPS1200	Coating	2	26-Jun-19	27-Jun-19
PTWIPS1205	Backfill Up to +21.0 Mpd	1	30-Jun-19	30-Jun-19
PORTION 3 (ZONE3) Wet Well and IPS Area		30	31-May-19	29-Jun-19
PTWIPS1230	Mass Concrete Fill at +15.36 and +19.30 Mpd	3	31-May-19	02-Jun-19
PTWIPS1235	ABWF of ZONE 3	4	03-Jun-19	06-Jun-19
PTWIPS1240	Water Tightness Test for IPS	14	07-Jun-19	20-Jun-19
PTWIPS1245	Water Removal	5	21-Jun-19	25-Jun-19
PTWIPS1250	Coating	4	26-Jun-19	29-Jun-19
PTWIPS1255	Backfill Up to +21.0 Mpd	3	27-Jun-19	29-Jun-19
ABWF		7	24-Jun-19	30-Jun-19
PTWIPS1260	ABWF- PTW&IPS	7	24-Jun-19	30-Jun-19
Solid Handling Building (SHB)		43	02-Jun-19	14-Jul-19
Sub Structure Works		40	02-Jun-19	11-Jul-19
PORTION 1 (ZONE 1) Screening Handling Room		40	02-Jun-19	11-Jul-19
SHB1000	Construction of Base Slab Up to +19.0 Mpd (incl. rebar, formworks and concreting)	5	02-Jun-19	06-Jun-19
SHB1005	Formwork Removal of Base Slab	2	07-Jun-19	08-Jun-19
SHB1010	Construction of Retaining Walls and Ground Floor Slab to + 21.25 Mpd (incl. rebar, formworks and concreting)	5	09-Jun-19	13-Jun-19
SHB1015	Formwork Removal of Retaining Walls and Ground Floor Slab	2	14-Jun-19	15-Jun-19
SHB1020	Water Tightness Test	21	16-Jun-19	06-Jul-19
SHB1025	Water Removal	3	07-Jul-19	09-Jul-19
SHB1030	Coating	2	10-Jul-19	11-Jul-19
PORTION 2 (ZONE2) Air Blower Room		40	02-Jun-19	11-Jul-19
SHB1035	Construction of Base Slab Up to +19.0 Mpd (incl. rebar, formworks and concreting)	5	02-Jun-19	06-Jun-19
SHB1040	Formwork Removal for Base Slab	2	07-Jun-19	08-Jun-19
SHB1045	Construction of Retaining Walls and Ground Floor Slab to + 21.25 Mpd (incl. rebar, formworks and concreting)	5	09-Jun-19	13-Jun-19
SHB1050	Formwork Removal of Retaining Walls and Ground Floor Slab	2	14-Jun-19	15-Jun-19
SHB1055	Water Tightness Test	21	16-Jun-19	06-Jul-19
SHB1060	Water Removal	3	07-Jul-19	09-Jul-19
SHB1065	Coating	2	10-Jul-19	11-Jul-19
PORTION 3 (ZONE3) Grit Handling Room		40	02-Jun-19	11-Jul-19
SHB1070	Construction of Base Slab of Up to +19.0 Mpd (incl. rebar, formworks and concreting)	5	02-Jun-19	06-Jun-19
SHB1075	Formwork Removal for Base Slab	2	07-Jun-19	08-Jun-19
SHB1080	Construction of Retaining Walls and Ground Floor Slab to + 21.25 Mpd (incl. rebar, formworks and concreting)	5	09-Jun-19	13-Jun-19
SHB1085	Formwork Removal of Retaining Walls and Ground Floor Slab	2	14-Jun-19	15-Jun-19
SHB1090	Water Tightness Test	21	16-Jun-19	06-Jul-19
SHB1095	Water Removal	3	07-Jul-19	09-Jul-19
SHB1100	Coating	2	10-Jul-19	11-Jul-19
Super Structure Works		29	16-Jun-19	14-Jul-19
PORTION 1 (ZONE1) Screening Handling Room		26	16-Jun-19	11-Jul-19
SHB1115	Construction of Wall, Roof Slab & Beams up to +27.6 Mpd (incl. rebar, formworks and concreting)	10	16-Jun-19	25-Jun-19



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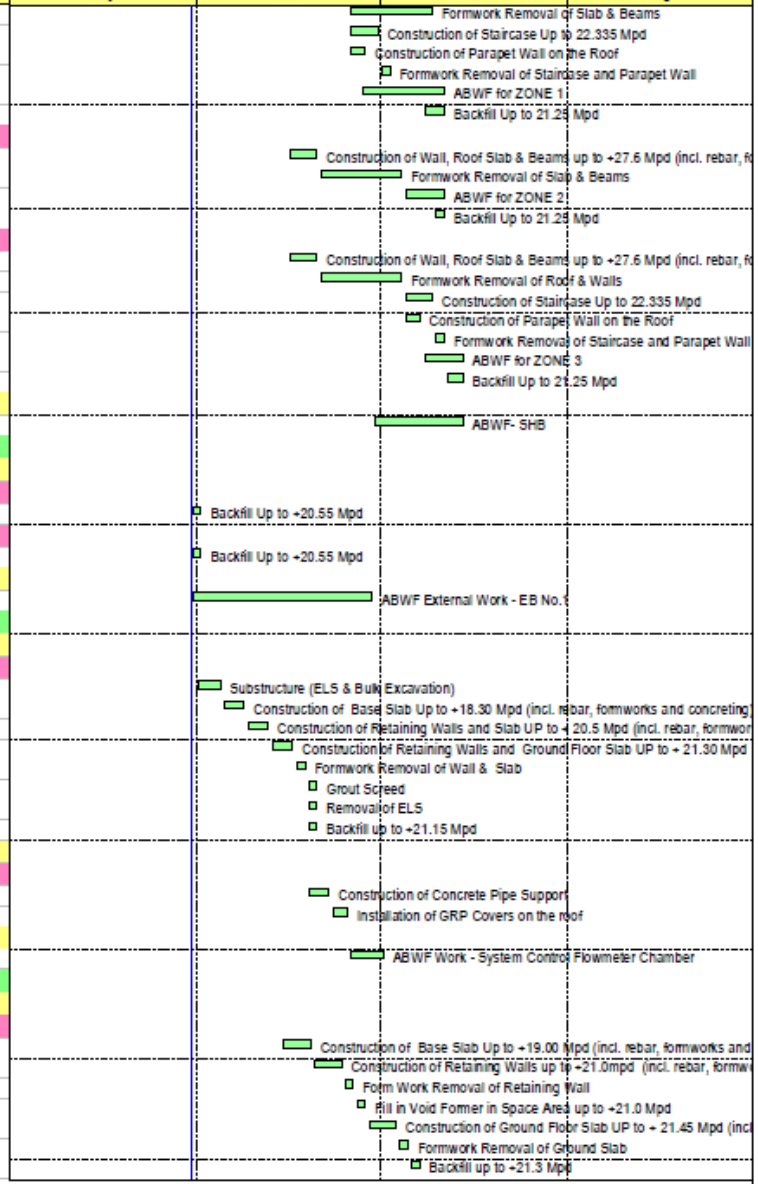
Activity ID	Activity Name	At Completion Duration	Start	Finish
SHB1120	Formwork Removal of Slab & Beams	14	26-Jun-19	09-Jul-19
SHB1125	Construction of Staircase Up to 22.335 Mpd	5	26-Jun-19	30-Jun-19
SHB1130	Construction of Parapet Wall on the Roof	3	26-Jun-19	28-Jun-19
SHB1135	Formwork Removal of Staircase and Parapet Wall	2	01-Jul-19	02-Jul-19
SHB1140	ABWF for ZONE 1	14	28-Jun-19	11-Jul-19
SHB1145	Backfill Up to 21.25 Mpd	4	08-Jul-19	11-Jul-19
PORTION 2 (ZONE2) Air Blower Room		26	16-Jun-19	11-Jul-19
SHB1160	Construction of Wall, Roof Slab & Beams up to +27.6 Mpd (incl. rebar, formworks and concreting)	5	16-Jun-19	20-Jun-19
SHB1165	Formwork Removal of Slab & Beams	14	21-Jun-19	04-Jul-19
SHB1170	ABWF for ZONE 2	7	05-Jul-19	11-Jul-19
SHB1175	Backfill Up to 21.25 Mpd	2	10-Jul-19	11-Jul-19
PORTION 3 (ZONE3) Grit Handling Room		29	16-Jun-19	14-Jul-19
SHB1190	Construction of Wall, Roof Slab & Beams up to +27.6 Mpd (incl. rebar, formworks and concreting)	5	16-Jun-19	20-Jun-19
SHB1195	Formwork Removal of Roof & Walls	14	21-Jun-19	04-Jul-19
SHB1200	Construction of Staircase Up to 22.335 Mpd	5	05-Jul-19	09-Jul-19
SHB1205	Construction of Parapet Wall on the Roof	3	05-Jul-19	07-Jul-19
SHB1210	Formwork Removal of Staircase and Parapet Wall	2	10-Jul-19	11-Jul-19
SHB1215	ABWF for ZONE 3	7	08-Jul-19	14-Jul-19
SHB1220	Backfill Up to 21.25 Mpd	3	12-Jul-19	14-Jul-19
ABWF		15	30-Jun-19	14-Jul-19
SHB1225	ABWF- SHB	15	30-Jun-19	14-Jul-19
Electrical Building No.1 (EB1)		30	31-May-19	29-Jun-19
Super Structure Works		2	31-May-19	01-Jun-19
PORTION 1 (ZONE1) Transformer Room		2	31-May-19	01-Jun-19
EB1100	Backfill Up to +20.55 Mpd	2	31-May-19	01-Jun-19
PORTION 2 (ZONE2) LV Switchroom		2	31-May-19	01-Jun-19
EB1135	Backfill Up to +20.55 Mpd	2	31-May-19	01-Jun-19
ABWF		30	31-May-19	29-Jun-19
C51940	ABWF External Work - EB No.1	30	31-May-19	29-Jun-19
System Control Flowmeter Chamber (SF)		31	01-Jun-19	01-Jul-19
Sub Structure Works		20	01-Jun-19	20-Jun-19
PORTION 1 (ZONE 1)		20	01-Jun-19	20-Jun-19
SF1000	Substructure (ELS & Bulk Excavation)	4	01-Jun-19	04-Jun-19
SF1005	Construction of Base Slab Up to +18.30 Mpd (incl. rebar, formworks and concreting)	4	05-Jun-19	08-Jun-19
SF1015	Construction of Retaining Walls and Slab UP to + 20.5 Mpd (incl. rebar, formworks and concreting)	4	09-Jun-19	12-Jun-19
SF1025	Construction of Retaining Walls and Ground Floor Slab UP to + 21.30 Mpd (incl. rebar, formworks and concr	4	13-Jun-19	16-Jun-19
SF1030	Formwork Removal of Wall & Slab	2	17-Jun-19	18-Jun-19
SF1035	Grout Screed	2	19-Jun-19	20-Jun-19
SF1040	Removal of ELS	2	19-Jun-19	20-Jun-19
SF1045	Backfill up to +21.15 Mpd	2	19-Jun-19	20-Jun-19
Super Structure Works		7	19-Jun-19	25-Jun-19
PORTION 1 (ZONE1)		7	19-Jun-19	25-Jun-19
SF1050	Construction of Concrete Pipe Support	4	19-Jun-19	22-Jun-19
SF1055	Installation of GRP Covers on the roof	3	23-Jun-19	25-Jun-19
ABWF		6	26-Jun-19	01-Jul-19
SF1060	ABWF Work - System Control Flowmeter Chamber	6	26-Jun-19	01-Jul-19
Deodorization Facilities No. 1 (DO 1)		32	15-Jun-19	16-Jul-19
Sub Structure Works		23	15-Jun-19	07-Jul-19
PORTION 1 (ZONE 1)		23	15-Jun-19	07-Jul-19
DO1000	Construction of Base Slab Up to +19.00 Mpd (incl. rebar, formworks and concreting)	5	15-Jun-19	19-Jun-19
DO1007	Construction of Retaining Walls up to +21.0mpd (incl. rebar, formworks and concreting)	5	20-Jun-19	24-Jun-19
DO1008	Form Work Removal of Retaining Wall	2	25-Jun-19	26-Jun-19
DO1009	Fill in Void Former in Space Area up to +21.0 Mpd	2	27-Jun-19	28-Jun-19
DO1010	Construction of Ground Floor Slab UP to + 21.45 Mpd (incl. rebar, formworks and concreting)	5	29-Jun-19	03-Jul-19
DO1015	Formwork Removal of Ground Slab	2	04-Jul-19	05-Jul-19
DO1020	Backfill up to +21.3 Mpd	2	06-Jul-19	07-Jul-19



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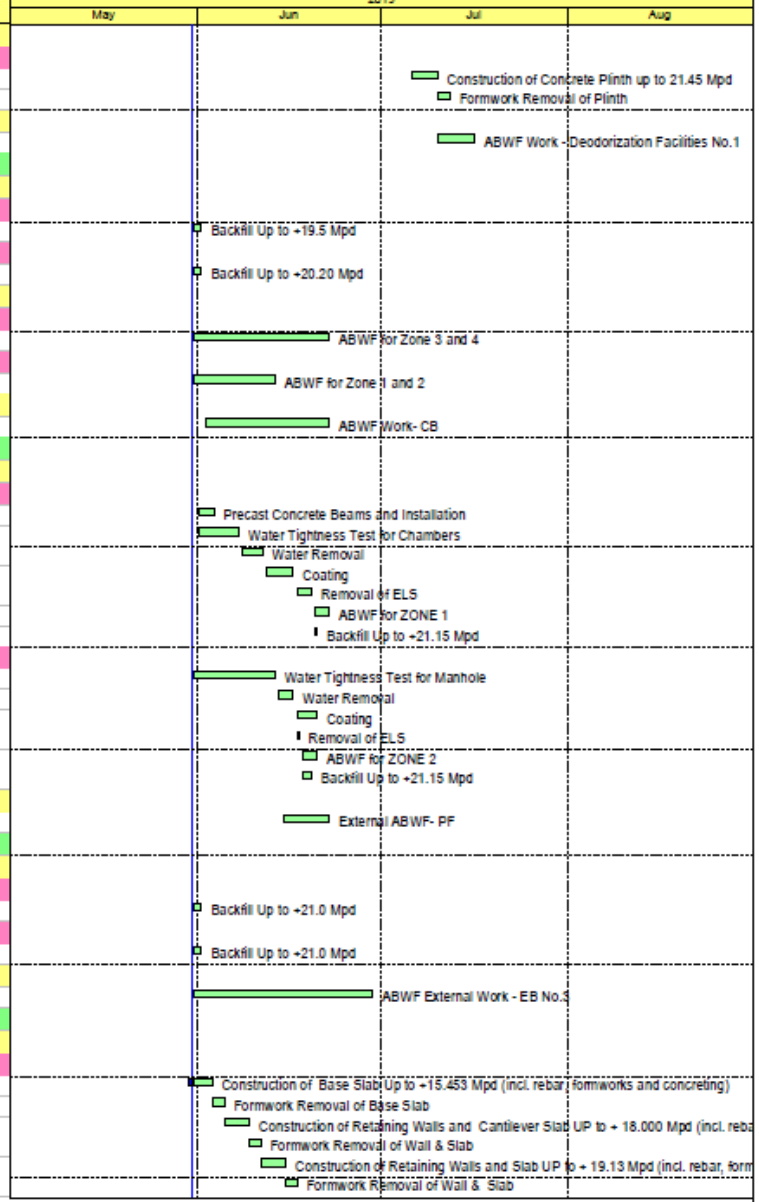
Activity ID	Activity Name	At Completion Duration	Start	Finish
Super Structure Works		7	06-Jul-19	12-Jul-19
PORTION 1 (ZONE1)		7	06-Jul-19	12-Jul-19
DO1025	Construction of Concrete Plinth up to 21.45 Mpd	5	06-Jul-19	10-Jul-19
DO1030	Formwork Removal of Plinth	2	10-Jul-19	12-Jul-19
ABWF		6	10-Jul-19	16-Jul-19
DO1035	ABWF Work - Deodorization Facilities No.1	6	10-Jul-19	16-Jul-19
Chemical Building (CB)		23	31-May-19	22-Jun-19
Sub Structure Works		2	31-May-19	01-Jun-19
PORTION 1 Chemical Storage Tanks Zone 3 & Zone 4		2	31-May-19	01-Jun-19
CB1020	Backfill Up to +19.5 Mpd	2	31-May-19	01-Jun-19
PORTION 2 Plant Room Zone 1 & 2		2	31-May-19	01-Jun-19
CB1045	Backfill Up to +20.20 Mpd	2	31-May-19*	01-Jun-19
Super Structure Works		23	31-May-19	22-Jun-19
PORTION 1 Chemical Storage Tanks Zone 3 & 4		23	31-May-19	22-Jun-19
CB1087	ABWF for Zone 3 and 4	23	31-May-19	22-Jun-19
PORTION 2 Plant Room Zone 1 & 2		14	31-May-19	13-Jun-19
CB1116	ABWF for Zone 1 and 2	14	31-May-19	13-Jun-19
ABWF		21	02-Jun-19	22-Jun-19
CS3922	ABWF Work- CB	21	02-Jun-19	22-Jun-19
Payment Flowmeter Chamber (PF)		23	31-May-19	22-Jun-19
Super Structure Works		23	31-May-19	22-Jun-19
PORTION 1 (ZONE1) PF Chamber		22	01-Jun-19	22-Jun-19
PF1060	Precast Concrete Beams and Installation	3	01-Jun-19	03-Jun-19
PF1065	Water Tightness Test for Chambers	7	01-Jun-19	07-Jun-19
PF1070	Water Removal	4	08-Jun-19	11-Jun-19
PF1075	Coating	5	12-Jun-19	16-Jun-19
PF1080	Removal of ELS	3	17-Jun-19	19-Jun-19
PF1085	ABWF for ZONE 1	3	20-Jun-19	22-Jun-19
PF1090	Backfill Up to +21.15 Mpd	1	20-Jun-19	20-Jun-19
PORTION 2 (ZONE2) Terminal Manhole		21	31-May-19	20-Jun-19
PF1105	Water Tightness Test for Manhole	14	31-May-19	13-Jun-19
PF1110	Water Removal	3	14-Jun-19	16-Jun-19
PF1115	Coating	4	17-Jun-19	20-Jun-19
PF1120	Removal of ELS	1	17-Jun-19	17-Jun-19
PF1125	ABWF for ZONE 2	3	18-Jun-19	20-Jun-19
PF1130	Backfill Up to +21.15 Mpd	2	18-Jun-19	19-Jun-19
ABWF		8	15-Jun-19	22-Jun-19
PF1135	External ABWF- PF	8	15-Jun-19	22-Jun-19
Electrical Building No.3 (EB3)		30	31-May-19	29-Jun-19
Super Structure Works		2	31-May-19	01-Jun-19
PORTION 1 (ZONE1) Transformer Room		2	31-May-19	01-Jun-19
EB3100	Backfill Up to +21.0 Mpd	2	31-May-19	01-Jun-19
PORTION 2 (ZONE2) LV Switchroom		2	31-May-19	01-Jun-19
EB3135	Backfill Up to +21.0 Mpd	2	31-May-19	01-Jun-19
ABWF		30	31-May-19	29-Jun-19
CS3878	ABWF External Work - EB No.3	30	31-May-19	29-Jun-19
Foul Water Pump Sump (FW)		41	30-May-19 A	10-Jul-19
Sub Structure Works		25	30-May-19 A	24-Jun-19
PORTION 1 (ZONE 1)		25	30-May-19 A	24-Jun-19
FW1000	Construction of Base Slab Up to +15.453 Mpd (incl. rebar, formworks and concreting)	4	30-May-19 A	03-Jun-19
FW1005	Formwork Removal of Base Slab	2	03-Jun-19	05-Jun-19
FW1010	Construction of Retaining Walls and Cantilever Slab UP to + 18.000 Mpd (incl. rebar, formworks and concreti	4	05-Jun-19	09-Jun-19
FW1015	Formwork Removal of Wall & Slab	2	09-Jun-19	11-Jun-19
FW1020	Construction of Retaining Walls and Slab UP to + 19.13 Mpd (incl. rebar, formworks and concreting)	4	11-Jun-19	15-Jun-19
FW1025	Formwork Removal of Wall & Slab	2	15-Jun-19	17-Jun-19



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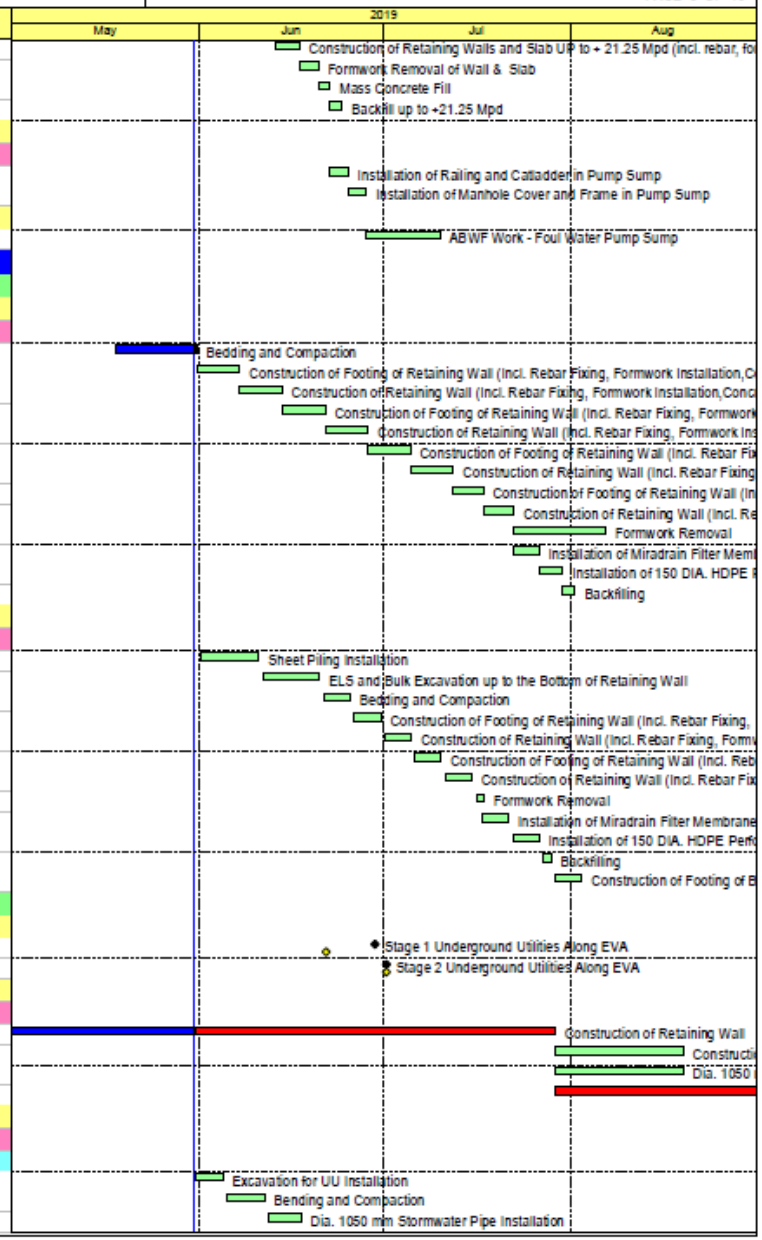
Activity ID	Activity Name	At Completion Duration	Start	Finish
FW1030	Construction of Retaining Walls and Slab UP to + 21.25 Mpd (incl. rebar, formworks and concreting)	4	13-Jun-19	17-Jun-19
FW1035	Formwork Removal of Wall & Slab	3	17-Jun-19	20-Jun-19
FW1040	Mass Concrete Fill	2	20-Jun-19	22-Jun-19
FW1045	Backfill up to +21.25 Mpd	2	22-Jun-19	24-Jun-19
Super Structure Works		6	22-Jun-19	28-Jun-19
PORTION 1 (ZONE1)		6	22-Jun-19	28-Jun-19
FW1050	Installation of Railing and Catladder in Pump Sump	3	22-Jun-19	25-Jun-19
FW1055	Installation of Manhole Cover and Frame in Pump Sump	3	25-Jun-19	28-Jun-19
ABWF		12	28-Jun-19	10-Jul-19
FW1060	ABWF Work - Foul Water Pump Sump	12	28-Jun-19	10-Jul-19
External Works & Miscellaneous		128	30-Apr-19 A	05-Sep-19
Slopes and Retaining Wall		81	18-May-19 A	06-Aug-19
Section 1		81	18-May-19 A	06-Aug-19
North of DO2		81	18-May-19 A	06-Aug-19
RWL-1010	Bedding and Compaction	14	18-May-19 A	31-May-19
RWL-1015	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +16.9 Mpd Typ	7	31-May-19	07-Jun-19
RWL-1020	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 7A	7	07-Jun-19	14-Jun-19
RWL-1025	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +17.35 Mpd Ty	7	14-Jun-19	21-Jun-19
RWL-1030	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 7B	7	21-Jun-19	28-Jun-19
RWL-1035	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +17.35 Mpd Ty	7	28-Jun-19	05-Jul-19
RWL-1040	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 7A	7	05-Jul-19	12-Jul-19
RWL-1045	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +18.00 Mpd Ty	5	12-Jul-19	17-Jul-19
RWL-1050	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 7A	5	17-Jul-19	22-Jul-19
RWL-1055	Formwork Removal	15	22-Jul-19	06-Aug-19
RWL-1060	Installation of Miradrain Filter Membrane	4	22-Jul-19	26-Jul-19
RWL-1065	Installation of 150 DIA. HDPE Perforated Pipe with Grave Surround & Geotextile	4	26-Jul-19	30-Jul-19
RWL-1070	Backfilling	2	30-Jul-19	01-Aug-19
Section 2		63	01-Jun-19	02-Aug-19
North of SSSB		63	01-Jun-19	02-Aug-19
RWL-1085	Sheet Piling Installation	10	01-Jun-19	10-Jun-19
RWL-1090	EL5 and Bulk Excavation up to the Bottom of Retaining Wall	10	11-Jun-19	20-Jun-19
RWL-1095	Bedding and Compaction	5	21-Jun-19	25-Jun-19
RWL-1100	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +15.10 Mpd Ty	5	26-Jun-19	30-Jun-19
RWL-1105	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 5B	5	01-Jul-19	05-Jul-19
RWL-1110	Construction of Footing of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) +16.50 Mpd Ty	5	06-Jul-19	10-Jul-19
RWL-1115	Construction of Retaining Wall (Incl. Rebar Fixing, Formwork Installation,Concrete) Type 6A	5	11-Jul-19	15-Jul-19
RWL-1120	Formwork Removal	2	16-Jul-19	17-Jul-19
RWL-1125	Installation of Miradrain Filter Membrane	5	17-Jul-19	21-Jul-19
RWL-1130	Installation of 150 DIA. HDPE Perforated Pipe with Grave Surround & Geotextile	5	22-Jul-19	26-Jul-19
RWL-1135	Backfilling	2	27-Jul-19	28-Jul-19
RWL-1140	Construction of Footing of Boundary Wall	5	29-Jul-19	02-Aug-19
Underground Utilities Along EVA		128	30-Apr-19 A	05-Sep-19
Zone Completion Dates		2	29-Jun-19	01-Jul-19
S1UU	Stage 1 Underground Utilities Along EVA	0		29-Jun-19*
S2UU	Stage 2 Underground Utilities Along EVA	0		01-Jul-19*
P8 Area		128	30-Apr-19 A	05-Sep-19
Retaining Wall, U-Channel & Stormwater Pipe		128	30-Apr-19 A	05-Sep-19
UUP8-1045	Construction of Retaining Wall	90	30-Apr-19 A	29-Jul-19
UUP8-1050	Construction of 900 U-Channel (East Side of Retaining Wall)	21	29-Jul-19	19-Aug-19
UUP8-1055	Dia. 1050 mm Stormwater Pipe Installation	21	29-Jul-19	19-Aug-19
UUP8-1065	Backfilling (Up to the bottom of Rising Main)	38	29-Jul-19	05-Sep-19
Stage 1 Underground Utilities Along EVA		46	15-May-19 A	29-Jun-19
Stage 1A Between SDB & CEPT		46	15-May-19 A	29-Jun-19
Stormwater Pipe		30	31-May-19	29-Jun-19
UU5T1-100	Excavation for UU Installation	5	31-May-19	04-Jun-19
UU5T1-100	Bending and Compaction	7	05-Jun-19	11-Jun-19
UU5T1-101	Dia. 1050 mm Stormwater Pipe Installation	6	12-Jun-19	17-Jun-19



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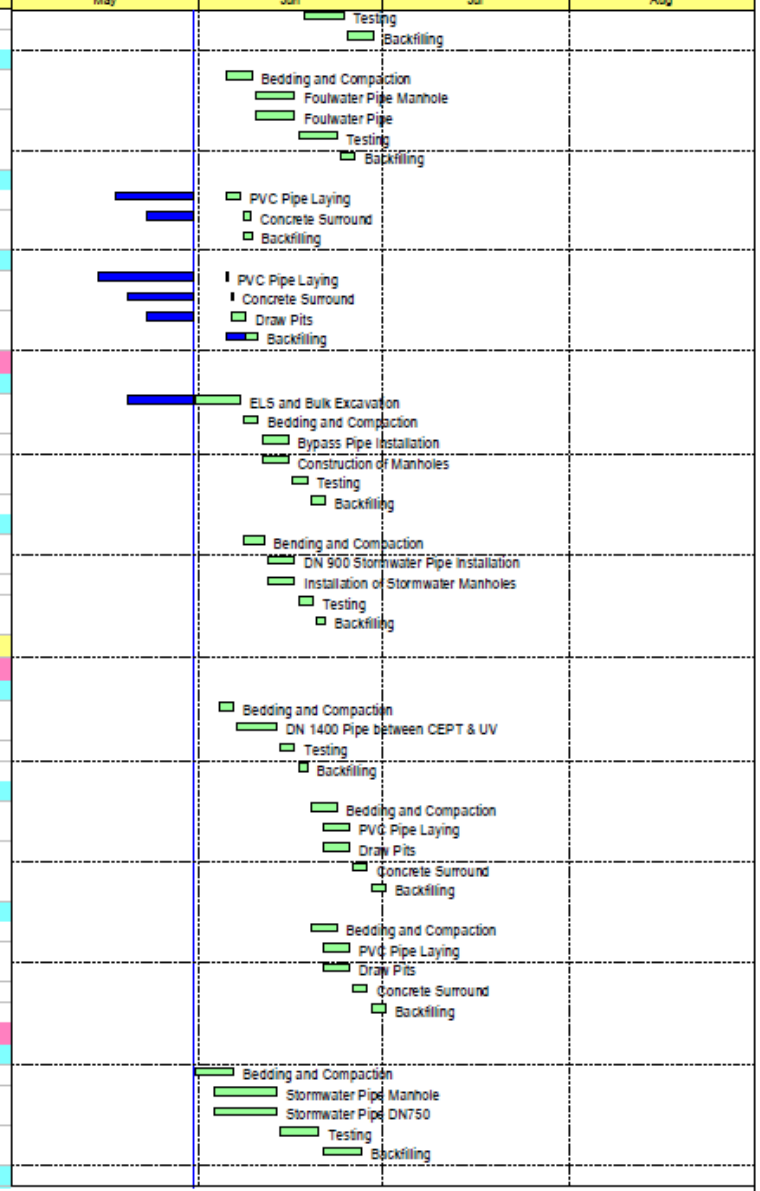
Activity ID	Activity Name	At Completion Duration	Start	Finish
UUST1-101	Testing	7	18-Jun-19	24-Jun-19
UUST1-102	Backfilling	5	25-Jun-19	29-Jun-19
Foulwater Pipe		22	05-Jun-19	26-Jun-19
UUST1-103	Bedding and Compaction	5	05-Jun-19	09-Jun-19
UUST1-103	Foulwater Pipe Manhole	7	10-Jun-19	16-Jun-19
UUST1-103	Foulwater Pipe	7	10-Jun-19	16-Jun-19
UUST1-104	Testing	7	17-Jun-19	23-Jun-19
UUST1-104	Backfilling	3	24-Jun-19	26-Jun-19*
TELECOM Cable Duct and Draw Pits		23	18-May-19 A	09-Jun-19
UUST1-105	PVC Pipe Laying	21	18-May-19 A	07-Jun-19
UUST1-106	Concrete Surround	17	23-May-19 A	09-Jun-19
UUST1-107	Backfilling	2	08-Jun-19	09-Jun-19
LV Cable Duct and Draw Pits		27	15-May-19 A	10-Jun-19
UUST1-108	PVC Pipe Laying	22	15-May-19 A	05-Jun-19
UUST1-108	Concrete Surround	17	20-May-19 A	06-Jun-19
UUST1-109	Draw Pits	17	23-May-19 A	08-Jun-19
UUST1-109	Backfilling	6	05-Jun-19 A	10-Jun-19
Stage 1B South of DO1&IPS&PTW		33	20-May-19 A	21-Jun-19
Bypass Pipe		33	20-May-19 A	21-Jun-19
UUST1-110	ELS and Bulk Excavation	19	20-May-19 A	07-Jun-19
UUST1-110	Bedding and Compaction	3	08-Jun-19	10-Jun-19
UUST1-111	Bypass Pipe Installation	5	11-Jun-19	15-Jun-19
UUST1-111	Construction of Manholes	5	11-Jun-19	15-Jun-19
UUST1-112	Testing	3	16-Jun-19	18-Jun-19
UUST1-112	Backfilling	3	19-Jun-19	21-Jun-19
DN900 Stormwater Pipe		14	08-Jun-19	21-Jun-19
UUST1-113	Bending and Compaction	4	08-Jun-19	11-Jun-19
UUST1-113	DN 900 Stormwater Pipe Installation	5	12-Jun-19	16-Jun-19
UUST1-114	Installation of Stormwater Manholes	5	12-Jun-19	16-Jun-19
UUST1-114	Testing	3	17-Jun-19	19-Jun-19
UUST1-115	Backfilling	2	20-Jun-19	21-Jun-19
Stage 2 Underground Utilities Along EVA		32	31-May-19	01-Jul-19
Stage 2A Between UV & CEPT		28	04-Jun-19	01-Jul-19
DN 1400 Pipe Between UV&CEPT		15	04-Jun-19	18-Jun-19
UUST2-100	Bedding and Compaction	3	04-Jun-19	06-Jun-19
UUST2-100	DN 1400 Pipe between CEPT & UV	7	07-Jun-19	13-Jun-19
UUST2-101	Testing	3	14-Jun-19	16-Jun-19
UUST2-101	Backfilling	2	17-Jun-19	18-Jun-19
LV&ELV Cable Duct and Draw Pits		13	19-Jun-19	01-Jul-19
UUST2-102	Bedding and Compaction	5	19-Jun-19	23-Jun-19
UUST2-102	PVC Pipe Laying	5	21-Jun-19	25-Jun-19
UUST2-103	Draw Pits	5	21-Jun-19	25-Jun-19
UUST2-103	Concrete Surround	3	26-Jun-19	28-Jun-19
UUST2-104	Backfilling	3	29-Jun-19	01-Jul-19
CLP Cable Duct and Draw Pits		13	19-Jun-19	01-Jul-19
UUST2-104	Bedding and Compaction	5	19-Jun-19	23-Jun-19
UUST2-105	PVC Pipe Laying	5	21-Jun-19	25-Jun-19
UUST2-105	Draw Pits	5	21-Jun-19	25-Jun-19
UUST2-106	Concrete Surround	3	26-Jun-19	28-Jun-19
UUST2-106	Backfilling	3	29-Jun-19	01-Jul-19
Stage 2B Between AB & CEPT		28	31-May-19	27-Jun-19
DN750 Stormwater Pipe		28	31-May-19	27-Jun-19
UUST2-109	Bedding and Compaction	7	31-May-19	06-Jun-19
UUST2-110	Stormwater Pipe Manhole	11	03-Jun-19	13-Jun-19
UUST2-110	Stormwater Pipe DN750	11	03-Jun-19	13-Jun-19
UUST2-111	Testing	7	14-Jun-19	20-Jun-19
UUST2-111	Backfilling	7	21-Jun-19	27-Jun-19
DN300 Foulwater Pipe		28	31-May-19	27-Jun-19



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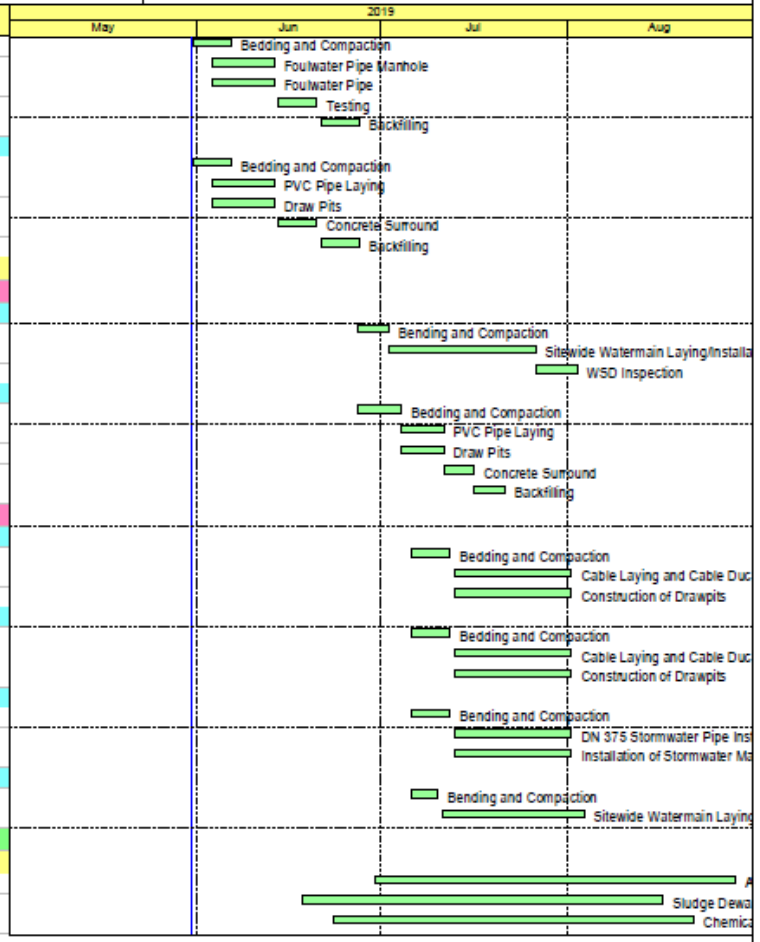
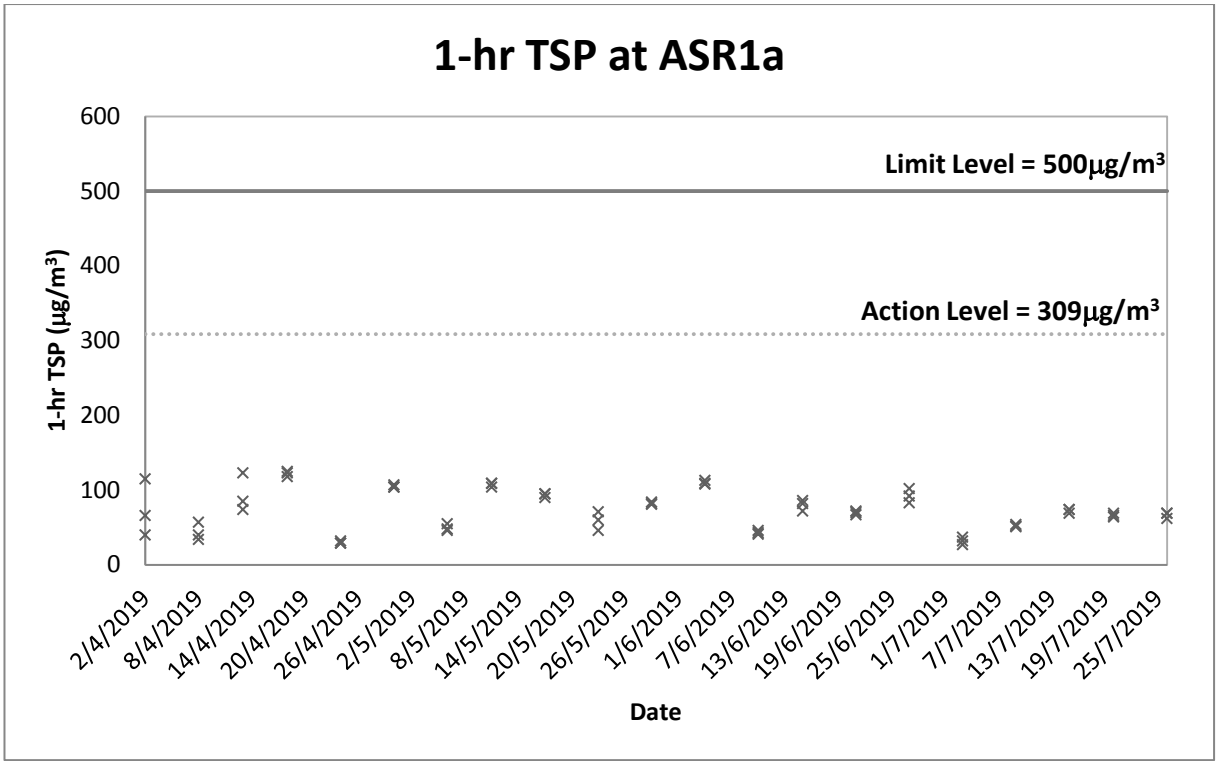
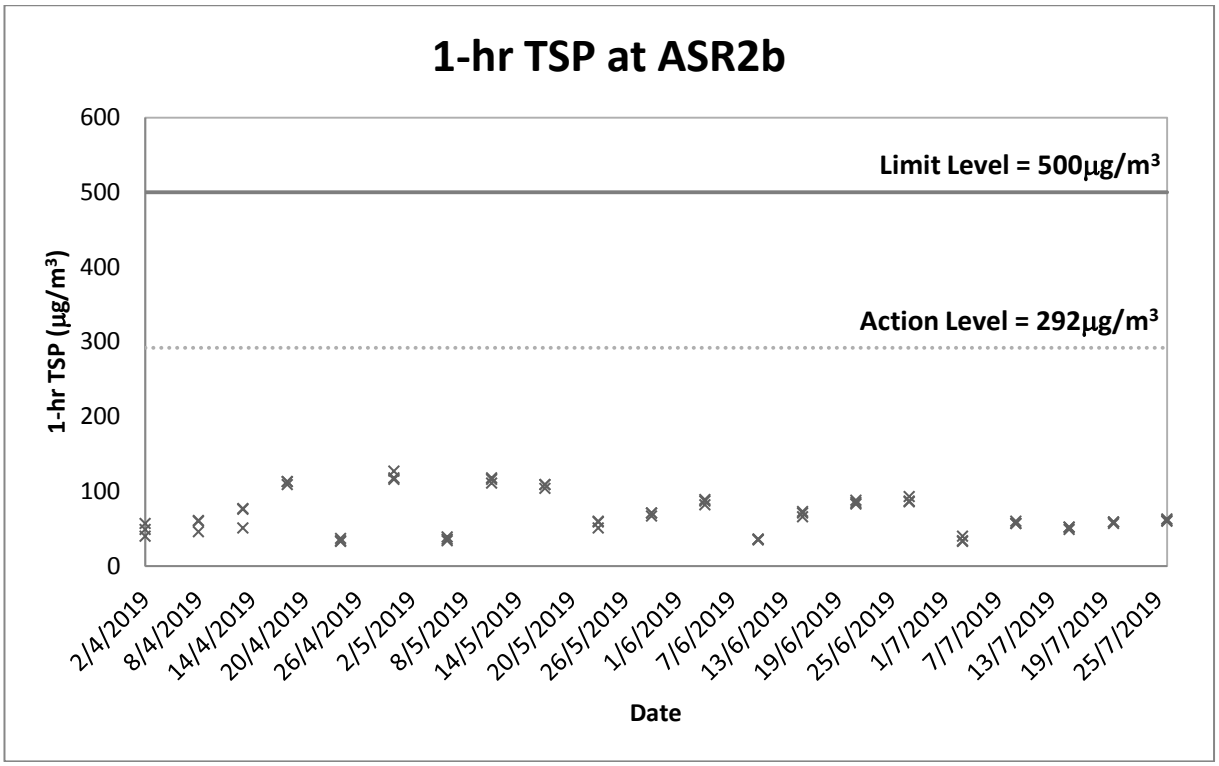
Activity ID	Activity Name	At Completion Duration	Start	Finish
UUST2-112	Bedding and Compaction	7	31-May-19	06-Jun-19
UUST2-113	Foulwater Pipe Manhole	11	03-Jun-19	13-Jun-19
UUST2-113	Foulwater Pipe	11	03-Jun-19	13-Jun-19
UUST2-113	Testing	7	14-Jun-19	20-Jun-19
UUST2-114	Backfilling	7	21-Jun-19	27-Jun-19*
LV&ELV Cable Duct and Draw Pits		28	31-May-19	27-Jun-19
UUST2-114	Bedding and Compaction	7	31-May-19	06-Jun-19
UUST2-115	PVC Pipe Laying	11	03-Jun-19	13-Jun-19
UUST2-115	Draw Pits	11	03-Jun-19	13-Jun-19
UUST2-116	Concrete Surround	7	14-Jun-19	20-Jun-19
UUST2-116	Backfilling	7	21-Jun-19	27-Jun-19
Stage 3 Underground Utilities Along EVA		37	27-Jun-19	03-Aug-19
Stage 3A Between SDB & CEPT		36	27-Jun-19	02-Aug-19
Sitewide Watermain		36	27-Jun-19	02-Aug-19
UUST3-100	Bending and Compaction	5	27-Jun-19	02-Jul-19
UUST3-100	Sitewide Watermain Laying/Installation	24	02-Jul-19	26-Jul-19
UUST3-101	WSD Inspection	7	26-Jul-19	02-Aug-19
ELV Cable Duct and Draw Pits		24	27-Jun-19	21-Jul-19
UUST3-102	Bedding and Compaction	7	27-Jun-19	04-Jul-19
UUST3-102	PVC Pipe Laying	7	04-Jul-19	11-Jul-19
UUST3-103	Draw Pits	7	04-Jul-19	11-Jul-19
UUST3-103	Concrete Surround	5	11-Jul-19	16-Jul-19
UUST3-104	Backfilling	5	16-Jul-19	21-Jul-19
Stage 3B South of DO1&IPS&PTW		29	06-Jul-19	03-Aug-19
LV&ELV Cable Duct and Draw Pits		27	06-Jul-19	01-Aug-19
UUST3-104	Bedding and Compaction	7	06-Jul-19	12-Jul-19
UUST3-105	Cable Laying and Cable Duct	20	13-Jul-19	01-Aug-19
UUST3-105	Construction of Drawpits	20	13-Jul-19	01-Aug-19
CLP Cable Duct and Draw Pits		27	06-Jul-19	01-Aug-19
UUST3-107	Bedding and Compaction	7	06-Jul-19	12-Jul-19
UUST3-107	Cable Laying and Cable Duct	20	13-Jul-19	01-Aug-19
UUST3-106	Construction of Drawpits	20	13-Jul-19	01-Aug-19
DN375 Stormwater Pipe		27	06-Jul-19	01-Aug-19
UUST3-105	Bending and Compaction	7	06-Jul-19	12-Jul-19
UUST3-110	DN 375 Stormwater Pipe Installation	20	13-Jul-19	01-Aug-19
UUST3-110	Installation of Stormwater Manholes	20	13-Jul-19	01-Aug-19
Sitewide Watermain		29	06-Jul-19	03-Aug-19
UUST3-112	Bending and Compaction	5	06-Jul-19	10-Jul-19
UUST3-112	Sitewide Watermain Laying/Installation	24	11-Jul-19	03-Aug-19
Landscape Works		72	18-Jun-19	28-Aug-19
Green Roof		72	18-Jun-19	28-Aug-19
C53340	Administration Building and Maintenance Workshop	60	30-Jun-19	28-Aug-19
C53350	Sludge Dewatering Building	60	18-Jun-19	16-Aug-19
C53360	Chemical Building	60	23-Jun-19	21-Aug-19

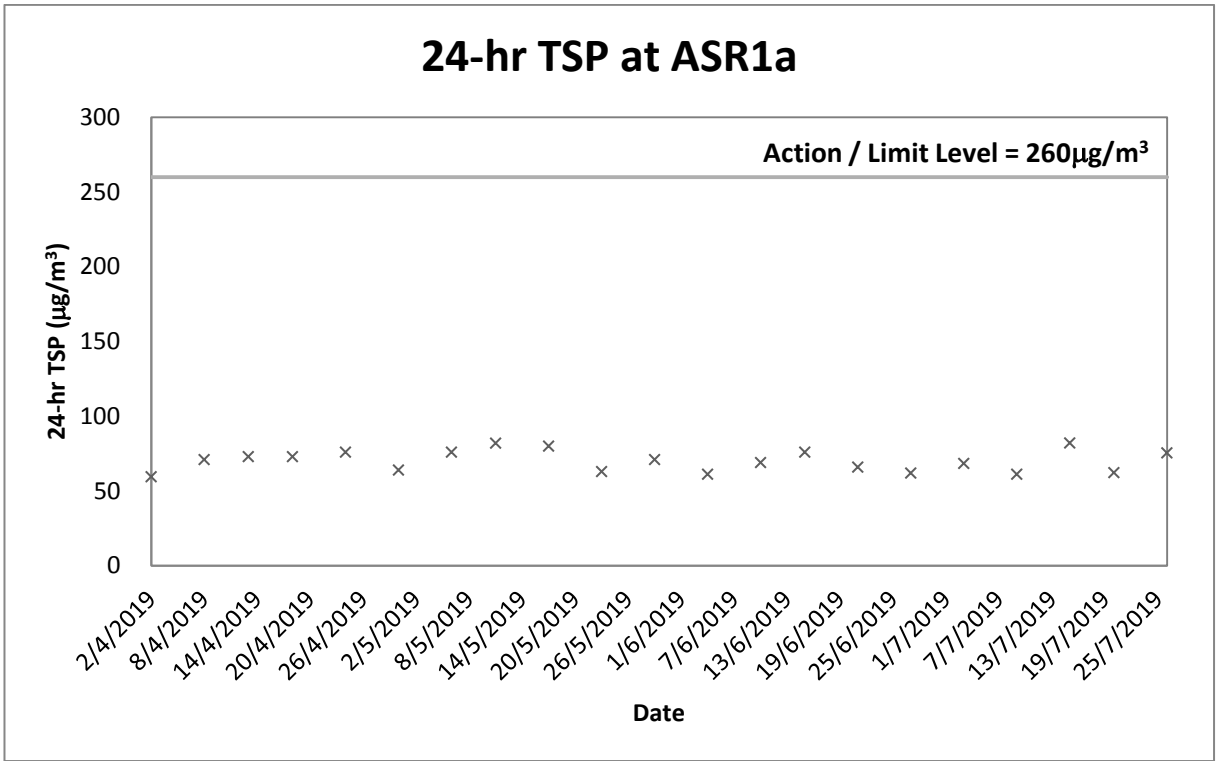


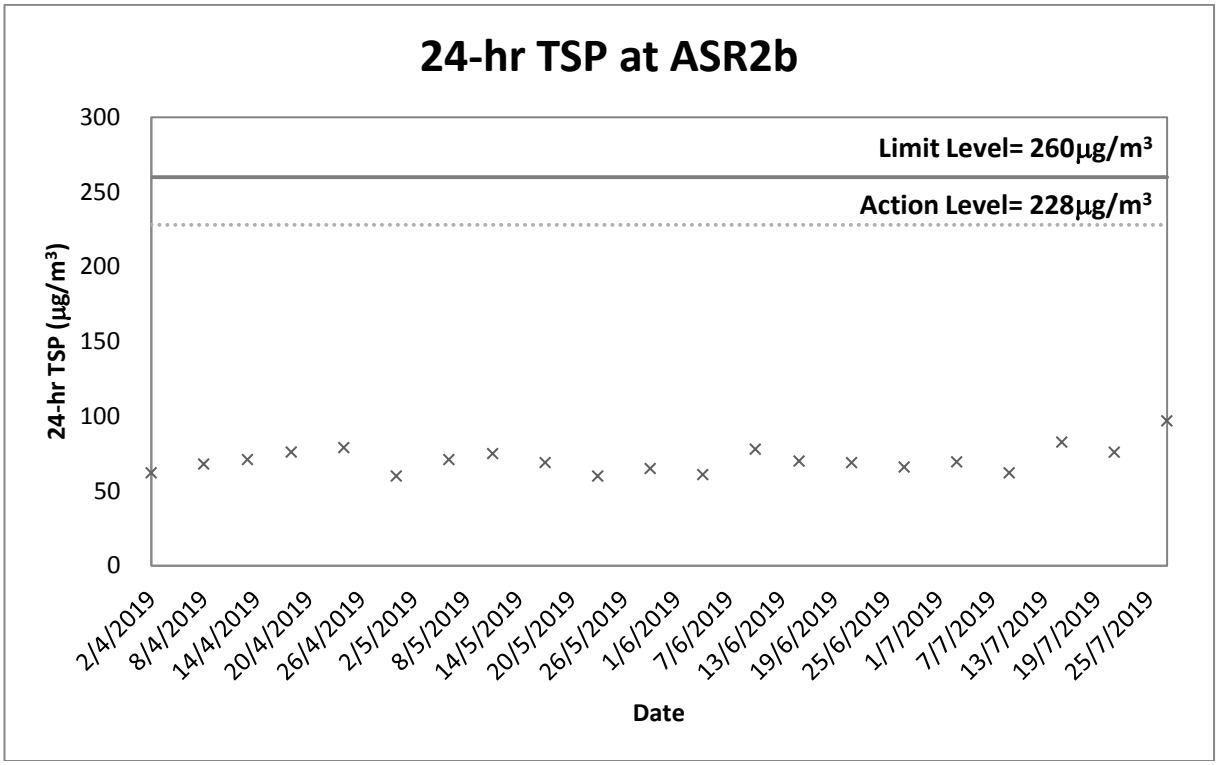
Appendix D

Graphical Plots of Impact Air Quality Monitoring Results


1-hr TSP at ASR1a
Limit Level = 500μg/m³
Action Level = 309μg/m³
1-hr TSP (μg/m³)
600
500
400
300
200
100
0
2/4/2019
8/4/2019
14/4/2019
20/4/2019
26/4/2019
2/5/2019
8/5/2019
14/5/2019
20/5/2019
26/5/2019
1/6/2019
7/6/2019
13/6/2019
19/6/2019
25/6/2019
1/7/2019
7/7/2019
13/7/2019
19/7/2019
25/7/2019
Date

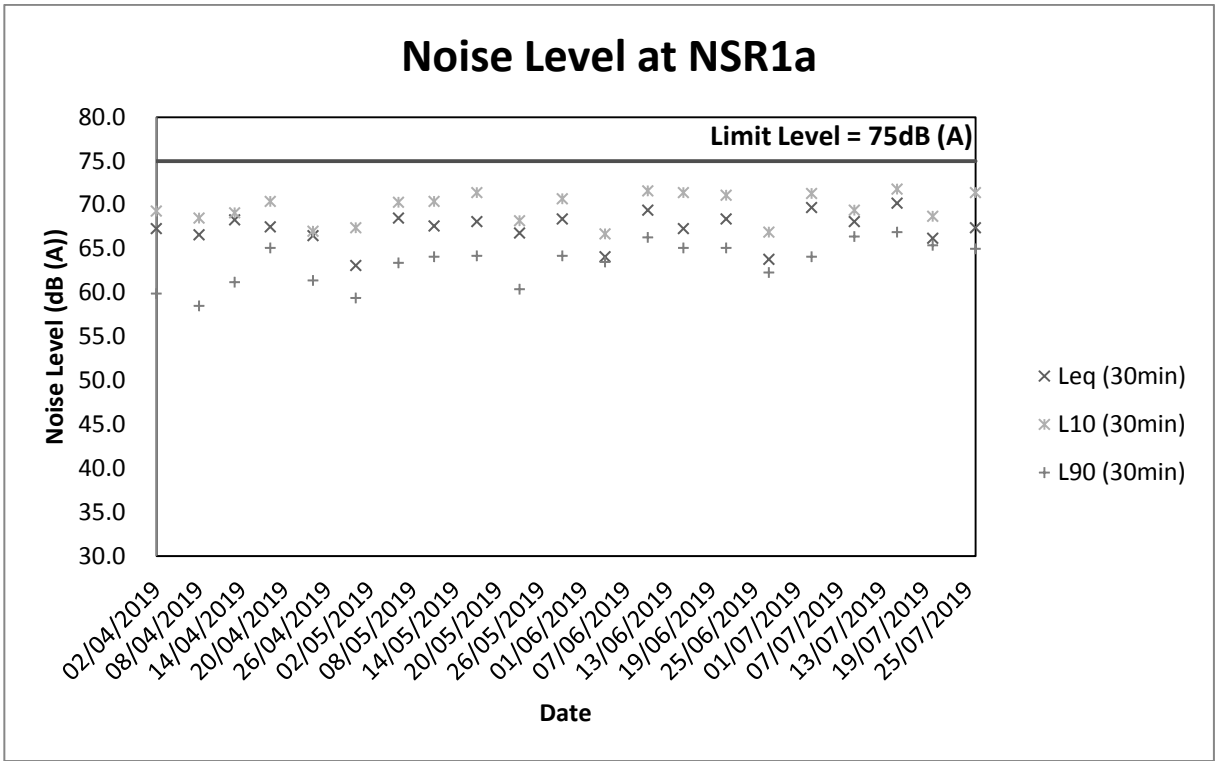

1-hr TSP at ASR2b
Limit Level = 500μg/m³
Action Level = 292μg/m³
1-hr TSP (μg/m³)
600
500
400
300
200
100
0
2/4/2019
8/4/2019
14/4/2019
20/4/2019
26/4/2019
2/5/2019
8/5/2019
14/5/2019
20/5/2019
26/5/2019
1/6/2019
7/6/2019
13/6/2019
19/6/2019
25/6/2019
1/7/2019
7/7/2019
13/7/2019
19/7/2019
25/7/2019
Date

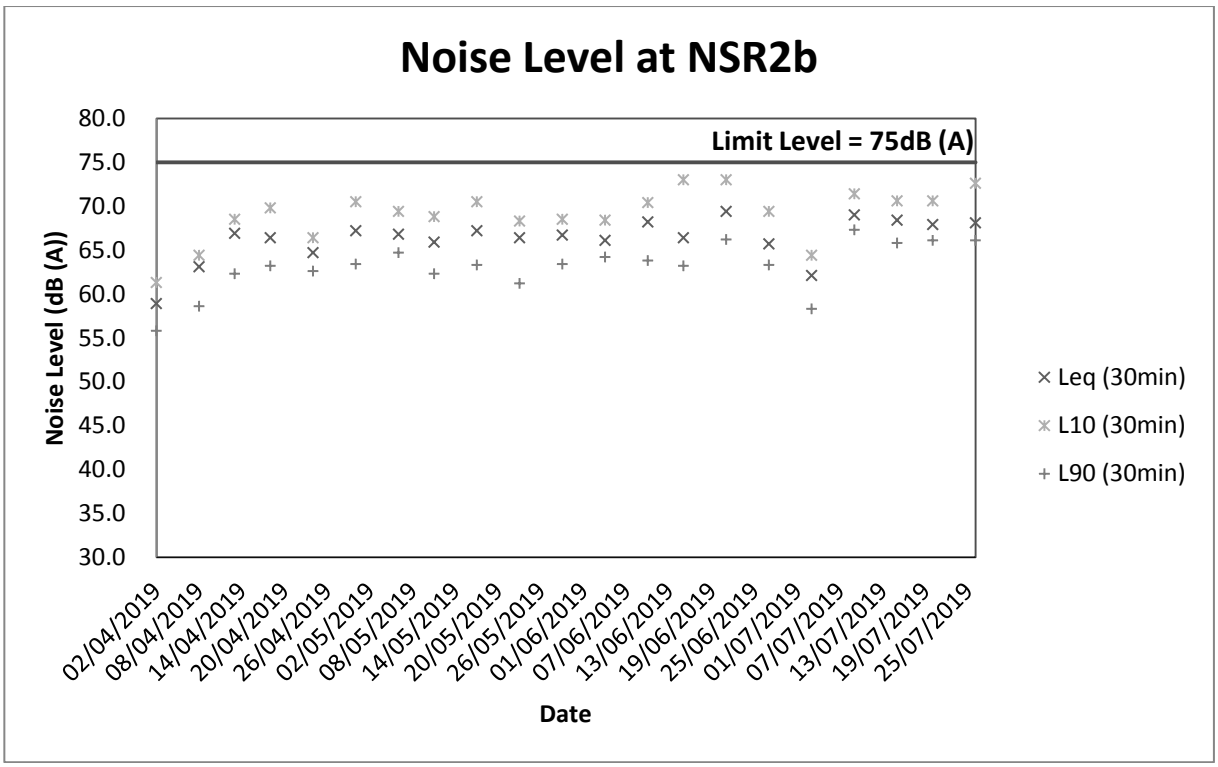

24-hr TSP at ASR1a
Action / Limit Level = 260μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
2/4/2019
8/4/2019
14/4/2019
20/4/2019
26/4/2019
2/5/2019
8/5/2019
14/5/2019
20/5/2019
26/5/2019
1/6/2019
7/6/2019
13/6/2019
19/6/2019
25/6/2019
1/7/2019
7/7/2019
13/7/2019
19/7/2019
25/7/2019
Date


24-hr TSP at ASR2b
Limit Level= 260μg/m³
Action Level= 228μg/m³
24-hr TSP (μg/m³)
300
250
200
150
100
50
0
2/4/2019
8/4/2019
14/4/2019
20/4/2019
26/4/2019
2/5/2019
8/5/2019
14/5/2019
20/5/2019
26/5/2019
1/6/2019
7/6/2019
13/6/2019
19/6/2019
25/6/2019
1/7/2019
7/7/2019
13/7/2019
19/7/2019
25/7/2019
Date

Appendix E

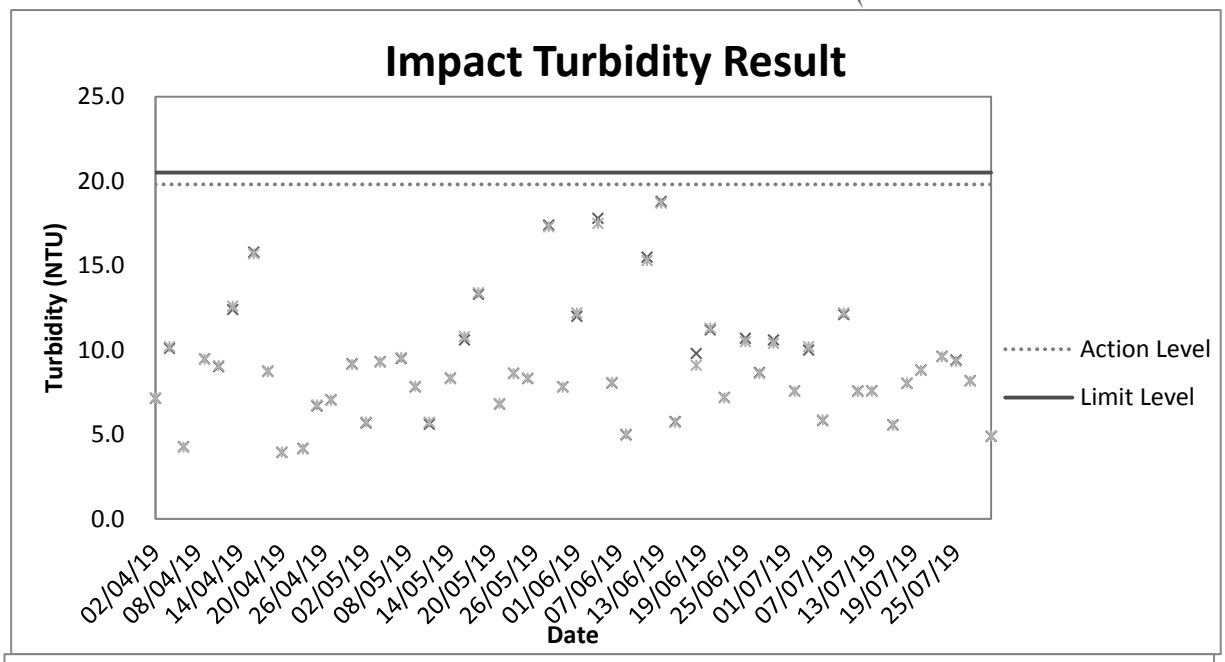
Graphical Plots of Impact Noise Monitoring Data

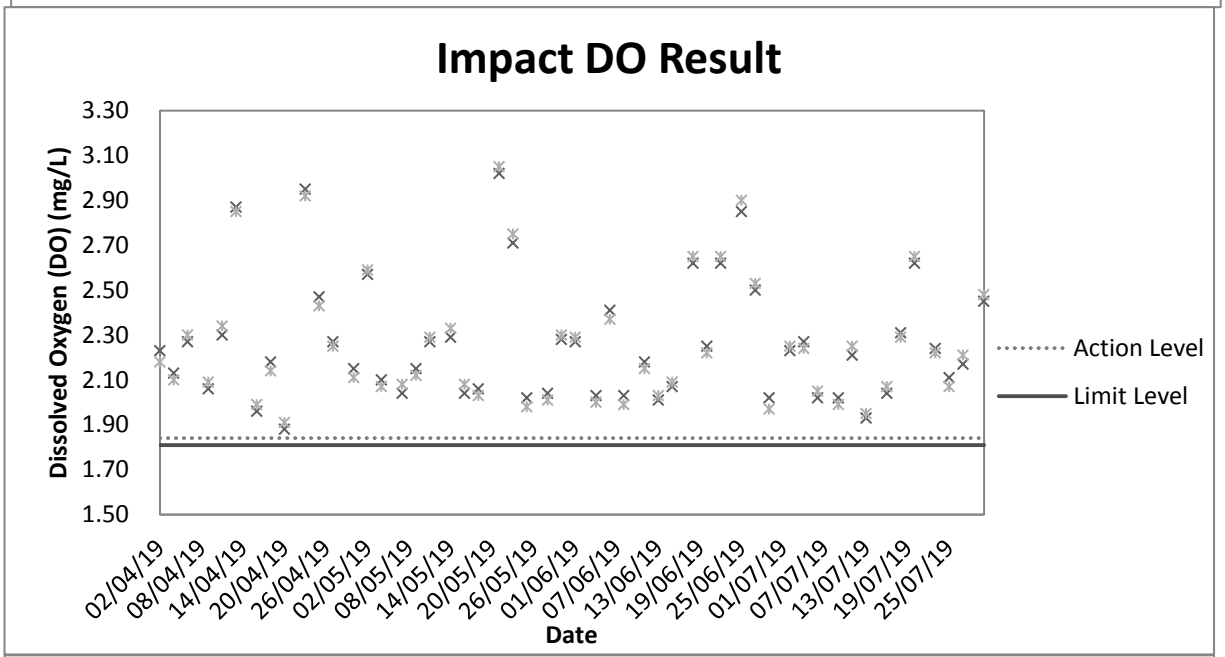

Noise Level at NSR1a
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
02/04/2019
08/04/2019
14/04/2019
20/04/2019
26/04/2019
02/05/2019
08/05/2019
14/05/2019
20/05/2019
26/05/2019
01/06/2019
07/06/2019
13/06/2019
19/06/2019
25/06/2019
01/07/2019
07/07/2019
13/07/2019
19/07/2019
25/07/2019
Date
Leq (30min)
L10 (30min)
L90 (30min)

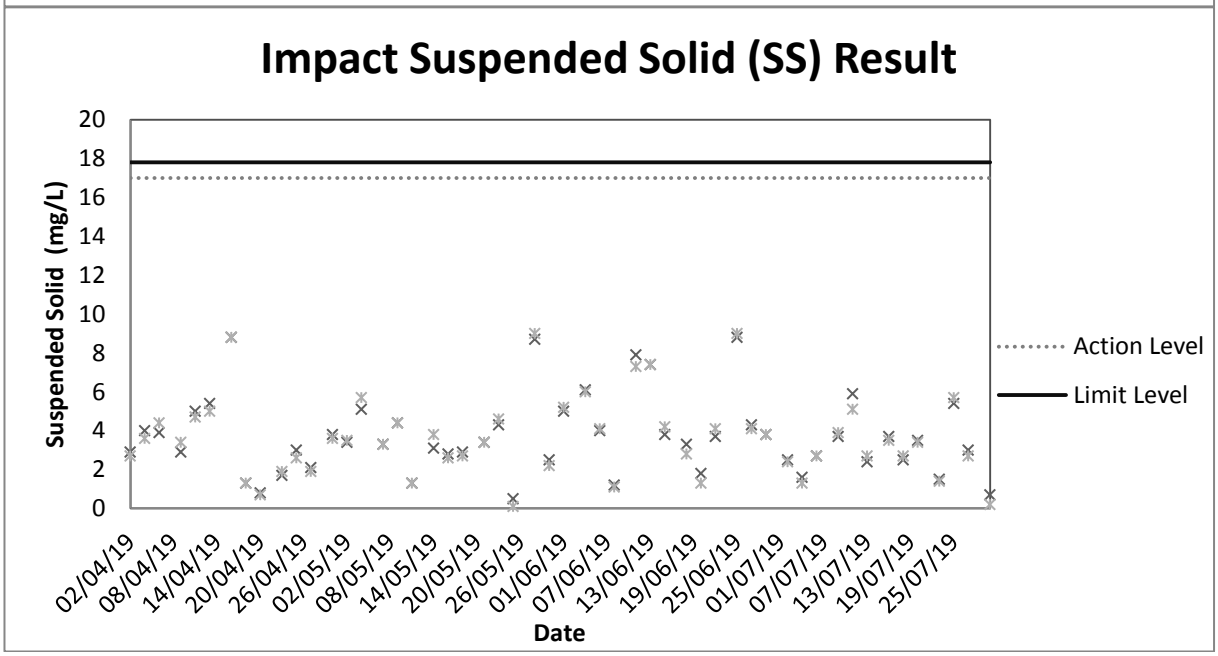

Noise Level at NSR2b
Limit Level = 75dB (A)
Noise Level (dB (A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
02/04/2019
08/04/2019
14/04/2019
20/04/2019
26/04/2019
02/05/2019
08/05/2019
14/05/2019
20/05/2019
26/05/2019
01/06/2019
07/06/2019
13/06/2019
19/06/2019
25/06/2019
01/07/2019
07/07/2019
13/07/2019
19/07/2019
25/07/2019
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
02/04/19
08/04/19
14/04/19
20/04/19
26/04/19
02/05/19
08/05/19
14/05/19
20/05/19
26/05/19
01/06/19
07/06/19
13/06/19
19/06/19
25/06/19
01/07/19
07/07/19
13/07/19
19/07/19
25/07/19
Date
Action Level
Limit Level


Impact DO Result
Dissolved Oxygen (DO) (mg/L)
3.30
3.10
2.90
2.70
2.50
2.30
2.10
1.90
1.70
1.50
02/04/19
08/04/19
14/04/19
20/04/19
26/04/19
02/05/19
08/05/19
14/05/19
20/05/19
26/05/19
01/06/19
07/06/19
13/06/19
19/06/19
25/06/19
01/07/19
07/07/19
13/07/19
19/07/19
25/07/19
Date
Action Level
Limit Level


Impact Suspended Solid (SS) Result
Suspended Solid (mg/L)
20
18
16
14
12
10
8
6
4
2
0
02/04/19
08/04/19
14/04/19
20/04/19
26/04/19
02/05/19
08/05/19
14/05/19
20/05/19
26/05/19
01/06/19
07/06/19
13/06/19
19/06/19
25/06/19
01/07/19
07/07/19
13/07/19
19/07/19
25/07/19
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	√			
Landscape and Visual					
1. Detailed tree survey should have been completed	Site Area	√			
• Trees should be transplanted to their final positions clear of the construction site	--			√	
• Erect site hoarding to protect adjacent vegetation from damage	Site Area	√			

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

Appendix I

Weather Condition

Daily Extract of Meteorological Observations, May 2019

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)			
01	1009.1	27.1	25.4	23.8	21.1	78	85
02	1012.1	24.4	23.0	21.7	19.2	80	89
03	1014.5	24.0	21.8	19.3	18.2	81	91
04	1013.2	23.6	22.6	21.0	18.1	76	88
05	1009.4	22.3	21.7	20.9	20.6	93	94
06	1008.7	22.8	21.8	20.0	20.1	90	95
07	1010.2	21.4	20.5	18.9	18.3	87	95
08	1009.3	21.2	20.4	19.8	18.3	88	93
09	1008.1	26.3	22.7	20.2	21.1	90	92
10	1010.0	26.7	23.9	22.7	21.6	87	63
11	1011.5	28.9	25.3	22.8	20.8	76	14
12	1011.2	28.9	25.5	23.5	21.7	80	57
13	1010.5	26.3	25.1	23.9	23.1	89	92
14	1009.2	31.1	27.5	25.2	24.4	84	64
15	1009.1	30.9	28.5	26.4	25.6	85	85
16	1007.4	31.5	29.2	27.8	26.0	83	82
17	1005.5	31.6	29.6	28.4	25.9	80	82
18	1005.2	32.3	30.0	28.5	26.1	80	77
19	1006.9	32.3	30.2	29.2	26.3	80	79
20	1008.0	32.0	29.1	25.0	25.9	83	85
21	1010.8	26.5	25.0	22.6	21.6	82	91
22	1010.1	28.3	25.3	22.6	22.1	83	77
23	1010.2	26.8	25.9	24.7	24.1	90	89
24	1011.0	25.8	24.8	23.8	23.4	92	97
25	1008.8	28.9	26.7	25.1	24.9	90	89
26	1007.8	28.1	26.5	24.7	25.0	92	83
27	1008.1	28.0	26.5	25.4	25.2	93	87
28	1008.7	27.7	25.9	23.9	24.6	92	87
29	1009.9	25.7	24.7	23.4	23.1	91	95
30	1010.1	25.9	24.4	23.2	22.5	89	97
31	1008.7	26.7	25.7	25.0	24.4	93	93
Mean/Total	1009.5	27.2	25.3	23.7	22.7	86	83
Normal[§]	1009.3	28.4	25.9	24.1	22.6	83	76

Remark(s):

1. *Trace means rainfall less than 0.05 mm*
2. *§ 1981-2010 Climatological Normal*
3. *The* meteorological observations extracted from Hong Kong Observatory only shown the daily average and may be varied from the weather condition recorded during monitoring.

Daily Extract of Meteorological Observations, June 2019

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)			
01	1007.5	30.6	27.2	24.9	24.7	87	32.6
02	1007.2	31.2	27.2	25.4	24.6	86	3.0
03	1007.3	30.2	27.5	25.3	24.7	85	34.1
04	1008.6	31.1	28.0	25.9	25.9	89	38.1
05	1009.5	32.6	29.4	27.4	25.9	82	0.0
06	1010.4	33.0	30.2	28.5	25.9	78	Trace
07	1010.4	33.2	30.1	28.6	25.5	77	0.0
08	1008.5	32.4	30.1	28.2	25.4	76	1.1
09	1005.4	32.3	30.1	28.4	26.0	79	4.1
10	1003.5	31.7	29.5	25.8	25.7	81	3.3
11	1004.4	29.4	27.5	24.6	25.9	91	111.6
12	1005.3	29.6	27.5	26.5	25.8	91	1.5
13	1003.0	30.7	27.7	25.5	25.6	88	55.8
14	1002.4	31.6	28.4	25.4	23.5	76	16.5
15	1005.3	31.4	28.6	26.4	23.4	74	Trace
16	1006.5	30.1	27.9	26.8	24.1	80	0.0
17	1007.3	28.7	27.6	26.8	25.3	88	4.7
18	1008.1	30.0	28.6	27.5	26.4	88	11.1
19	1007.8	31.7	28.9	26.5	26.4	87	14.0
20	1006.9	32.5	30.1	28.2	26.1	80	0.5
21	1005.9	32.8	30.8	29.5	26.3	77	0.7
22	1004.7	33.0	30.7	28.7	26.4	78	0.7
23	1004.8	32.2	30.3	29.1	26.4	80	3.2
24	1006.2	30.6	29.1	24.7	26.2	85	16.8
25	1006.7	29.7	27.2	24.8	25.1	89	35.4
26	1004.0	31.4	28.6	26.1	26.0	86	0.9
27	1001.7	32.5	30.2	28.3	26.9	83	3.5
28	1001.7	32.7	30.5	29.3	27.1	82	2.2
29	1001.6	33.3	31.0	29.5	26.8	79	0.6
30	1001.6	33.0	29.5	26.9	26.7	85	33.1
Mean/Total	1005.8	31.5	29.0	27.0	25.7	83	429.1
Normal[§]	1006.1	30.2	27.9	26.2	24.6	82	456.1

Remark(s):

1. *Trace means rainfall less than 0.05 mm*
2. *§ 1981-2010 Climatological Normal*
3. *The* meteorological observations extracted from Hong Kong Observatory only shown the daily average and may be varied from the weather condition recorded during monitoring.

Daily Extract of Meteorological Observations, July 2019

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)			
01	1001.6	33.2	30.0	26.8	26.5	82	15.3
02	1001.4	31.1	28.9	26.3	26.0	85	19.1
03	1004.0	28.7	26.6	25.5	25.7	95	79.1
04	1006.3	32.3	29.1	27.0	26.0	84	13.0
05	1004.9	32.0	29.5	26.8	25.4	79	1.3
06	1003.5	31.6	29.8	27.9	25.9	80	1.5
07	1004.7	31.4	29.7	28.9	26.0	81	4.3
08	1005.6	32.3	30.1	29.1	26.1	79	0.1
09	1003.4	31.7	30.0	28.7	26.1	80	6.0
10	1003.5	30.2	28.6	26.5	26.0	86	14.3
11	1007.5	30.9	28.8	27.5	26.1	86	6.0
12	1007.4	32.3	29.9	28.1	26.0	80	2.6
13	1005.4	32.2	30.1	29.2	25.6	77	Trace
14	1004.0	32.3	30.1	29.2	26.0	79	Trace
15	1004.8	33.7	30.4	28.7	26.0	77	0.0
16	1004.7	33.4	30.3	28.4	25.5	76	0.0
17	1001.4	33.1	30.5	28.3	26.5	79	0.0
18	998.7	35.0	31.3	29.6	26.4	75	Trace
19	1001.2	32.8	29.5	26.9	26.3	83	22.6
20	1005.2	31.9	28.6	26.6	26.1	87	6.4
21	1006.4	31.5	29.3	27.3	26.1	83	0.1
22	1005.5	31.5	29.2	27.1	25.7	82	0.4
23	1005.3	32.7	29.5	27.2	25.8	80	Trace
24	1006.6	33.1	30.0	28.4	26.3	81	Trace
25	1008.0	32.6	30.1	28.3	25.9	79	1.0
26	1006.9	33.5	30.7	28.8	25.8	76	Trace
27	1005.8	33.3	30.6	29.0	25.7	76	0.0
28	1006.6	32.3	29.6	28.0	25.7	80	0.5
29	1006.6	31.4	28.8	27.4	25.4	82	1.0
30	1004.5	31.5	28.9	26.7	25.6	82	12.8
31	1002.0	28.1	26.2	24.5	24.6	91	121.1
Mean/Total	1004.6	32.1	29.5	27.7	25.9	81	328.5
Normal[§]	1005.7	31.4	28.8	26.8	25.1	81	376.5

Remark(s):

1. *Trace means rainfall less than 0.05 mm*
2. *§ 1981-2010 Climatological Normal*
3. *The* meteorological observations extracted from Hong Kong Observatory only shown the daily average and may be varied from the weather condition recorded during monitoring.

Appendix J

Waste Flow Table

Name of Department: DSD

Year: 2019

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

Contract No.: DC/2013/10

Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Broken Concrete (see Note [3])	Reused in the Contract (see Note)	Reused in other Projects	Disposed as Public Fill (see Note [4])	Imported Fill (see Note [4])	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	0.988	0.000	0.000	0.000	0.988	0.449	0.000	0.000	0.000	0.000	55.820
Feb	0.632	0.000	0.000	0.000	0.632	0.637	0.000	0.300	0.000	0.000	87.830
Mar	0.750	0.000	0.000	0.000	0.750	0.182	0.000	0.000	0.000	0.000	103.440
Apr	0.625	0.000	0.000	0.000	0.625	0.024	0.000	0.200	0.000	0.000	129.800
May	0.442	0.000	0.206	0.000	0.442	0.032	0.000	0.000	0.000	0.000	186.750
Jun	2.408	0.000	0.000	0.000	2.408	1.217	0.000	0.000	0.000	0.000	125.740
Jul	1.619	0.000	0.000	0.000	1.619	2.091	0.000	0.100	0.000	0.111	348.460
Aug											
Sep											
Oct											
Nov											
Dec											
Total	7.464	0.000	0.206	0.000	7.464	4.632	0.000	0.600	0.000	0.111	1037.840

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.

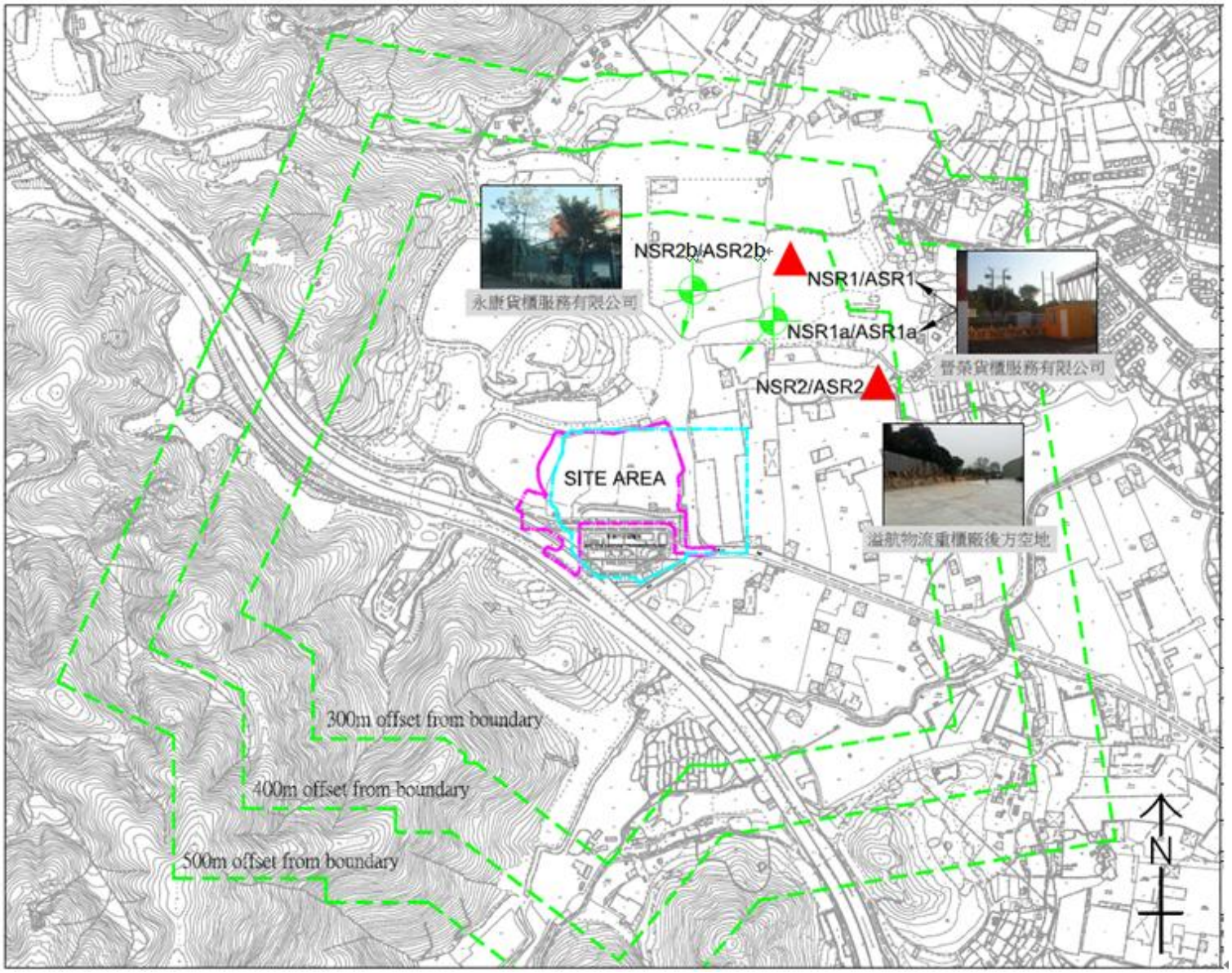
(2) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging materials.

(3) Broken concrete for recycling into aggregates.

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

Figure 1

Locations of Air Quality and Noise Monitoring Stations



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

Figure 1 Locations of Air Quality and Noise Monitoring Stations

Figure 2

Locations of Water Quality Monitoring Station

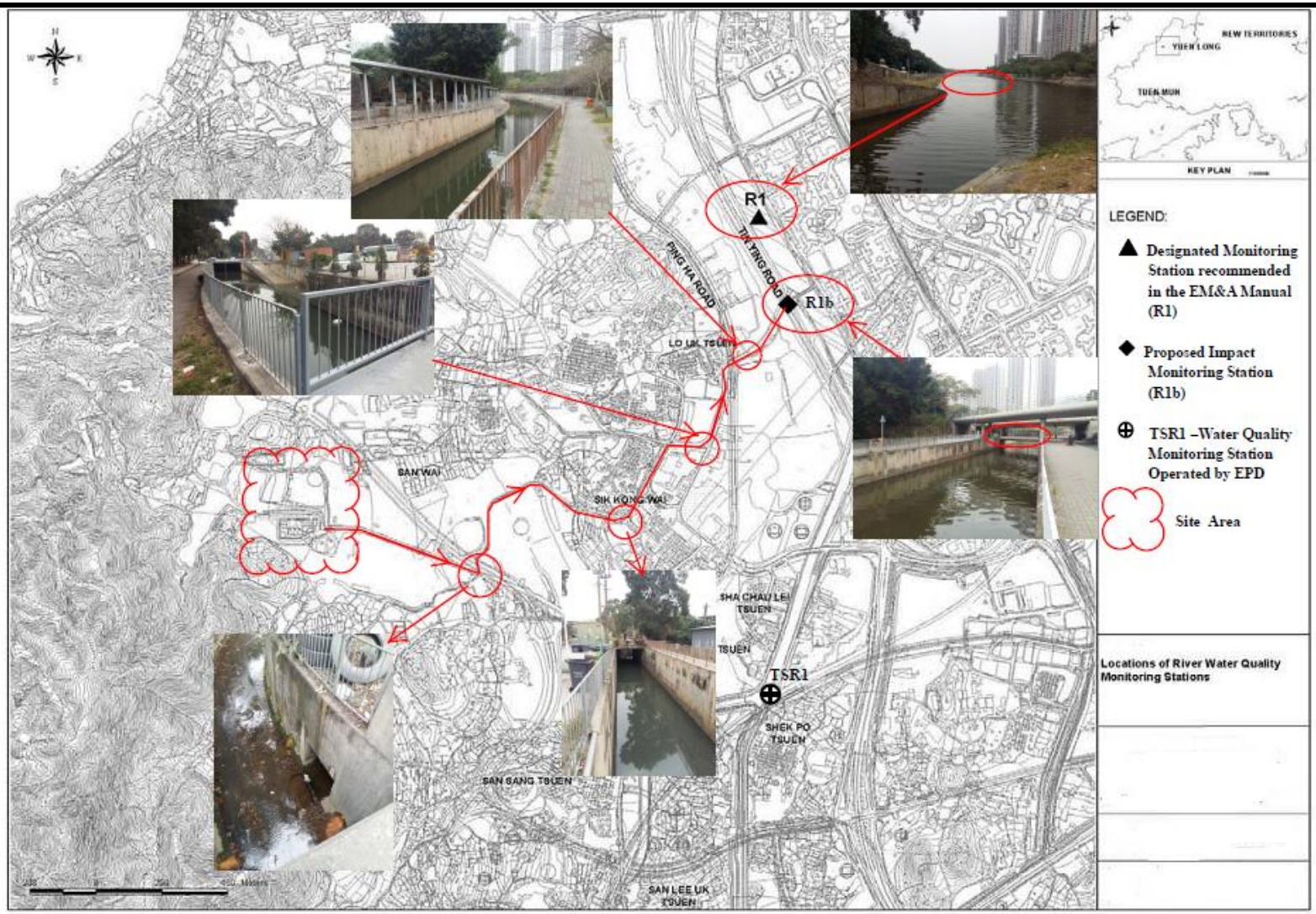


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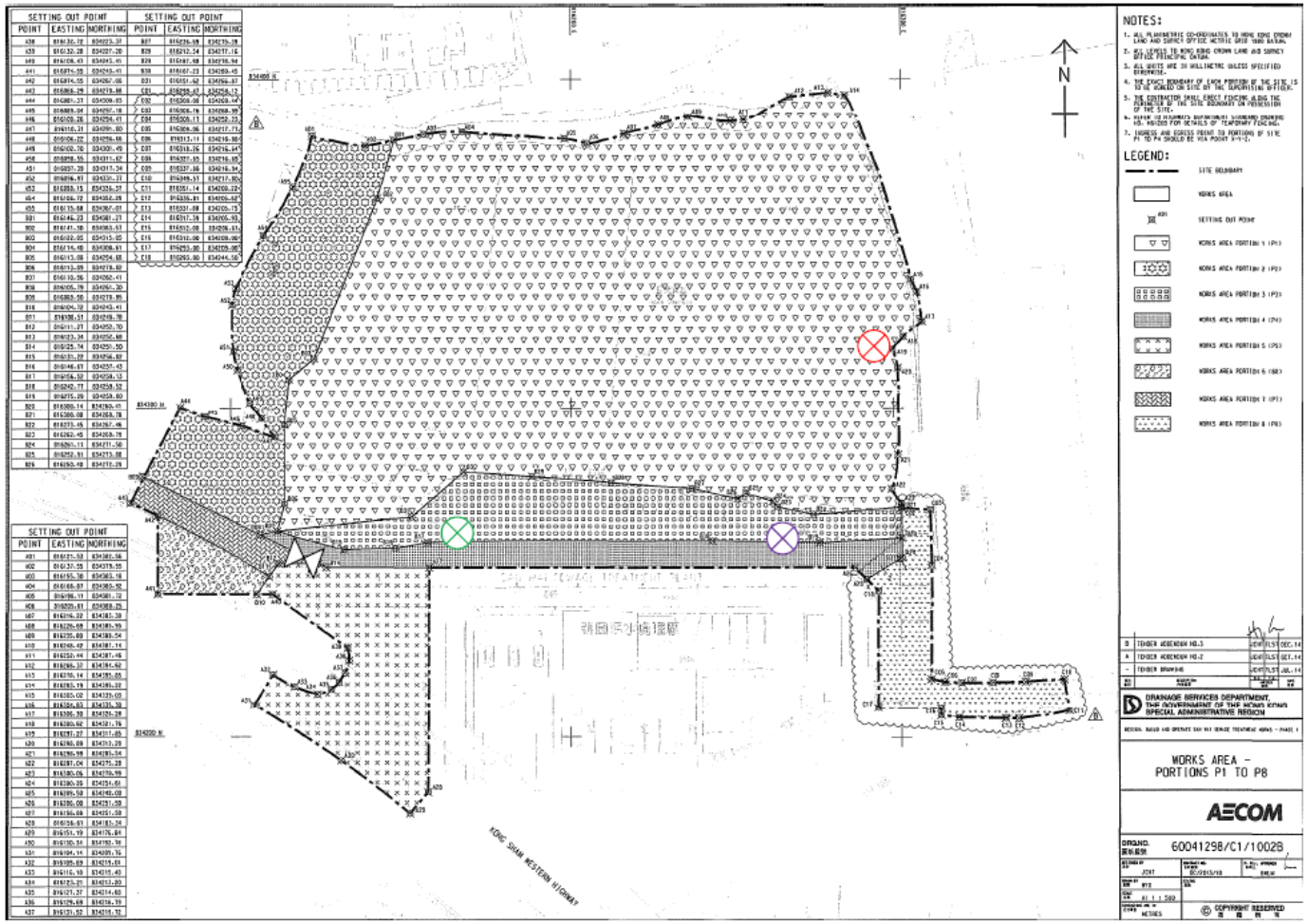
Figure 2 Locations of Water Quality Monitoring Station

Figure 3

Location Plan for the Wetsep Treatment Tank



Legend: ⊗ Wetsep treatment tank P1a ⊗ Wetsep treatment tank P1b ⊗ Wetsep treatment tank P8

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Figure 3 Location Plan for the Wetsep Treatment Tank