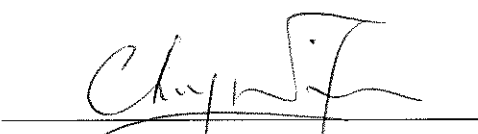


Sun Fook Kong – Bestwise Joint Venture

**Contract No. DC/2009/10
HATS Stage 2A – Upgrading
Works at Stonecutters Island Sewage
Treatment Works - Main Pumping
Station, Sedimentation Tanks and
Ancillary Facilities**

**Monthly Environmental
Monitoring and Audit Report
March 2019**

(Version 1.0)

Certified By 
(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

Wellab accepts no responsibility for changes made to this report by third parties

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2A Pokfulam Road, Hong Kong

Attn: Mr. K K Kam

**Agreement No. CE 8/2009(EP) Harbour Area Treatment Scheme Stage 2A
Independent Environmental Checker for Construction Phase – Investigation**

Our Reference
EC/AFK/DC/rh/T261332/
22.01/L-1384

**Contract No. DC/2009/10 – Upgrading Works at Stonecutters Island Sewage
Treatment Works – Main Pumping Station, Sedimentation Tanks and Ancillary
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Condition 4.4 – Monthly EM&A Report for March 2019 (no. 96) Version 1.0

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15 April 2019

By Post

Dear Sir,

I refer to the captioned Monthly EM&A Report for March 2019 (version 1.0) submitted by ET on 12 April 2019 via email. In accordance with Condition 4.4 of Environmental Permit No. EP-322/2008/G, I hereby verify the captioned Monthly EM&A Report.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED



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ABBREVIATION AND ACRONYM

| | |
|---------------|--|
| AL Levels | Action and Limit Levels |
| DSD | Drainage Services Department |
| E / ER | Engineer/Engineer's Representative |
| EIA | Environmental Impact Assessment |
| EM&A | Environmental Monitoring and Audit |
| EMIS | Environmental Mitigation Implementation Schedule |
| EP | Environmental Permit |
| EPD | Environmental Protection Department |
| ET | Environmental Team |
| HVS | High Volume Sampler |
| IEC | Independent Environmental Checker |
| RE | Resident Engineer |
| RH | Relative Humidity |
| QA/QC | Quality Assurance / Quality Control |
| SLM | Sound Level Meter |
| WMP | Waste Management Plan |
| SCISTW | Stonecutters Island Sewage Treatment Works |
| HATS Stage 2A | Harbour Area Treatment Scheme Stage 2A |
| SBJV | Sun Fook Kong - Bestwise Joint Venture |

EXECUTIVE SUMMARY**Introduction**

1. This is the 96th Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Wellab Limited for DSD Contract No. DC/2009/10 “HATS Stage 2A – Upgrading Works at Stonecutters Island Treatment Works – Main Pumping Station, Sedimentation Tanks and Ancillary Facilities” (The Project) which documents the key information of EM&A and environmental monitoring works undertaken by other Contracts at the SCISTW under HATS Stage 2A with the same Environmental Permit (Permit No. EP-322/2008/G).
2. The site activities undertaken in the reporting month included:

Portion 4 Main Pumping Station No.2

- Finishing works for MPS2

MPS1 Inlet Chamber

- Water test to installed Inlet Penstocks
- Remove bulkheads from Adit Tunnel and Inlet Chamber of MPS1
- Modify FRP cover and reinstall stainless steel hatch, isolation of Inlet Chamber of MPS1 completed

Temporary DOUs

- Remove activated carbon for temporary DOUs removal

Riser Shaft

- Lower pump post and operate pumping system at Riser Shaft to draw down sewage level in MPS1

External Works

- Construction of pavement and paving block road at various locations

Environmental Monitoring Works

3. The environmental monitoring works of the Project were conducted by the ETs for Contract DC/2009/10, at the SCISTW under HATS 2A with the same Environmental Permit. The monitoring results were checked and reviewed and the site audits were conducted once per week. The implementation of the Environmental Mitigation Measures, Event Action Plans and Environmental Complaint Handling Procedures were also checked.
4. Summary of the non-compliance of the reporting month is tabulated in **Table I**.

Table I Summary Table for Non-compliance Recorded in the Reporting Month

| Monitored By | Monitoring Station | Parameter | No. of Exceedance | | No. of Exceedance Due to the Project | | Action Taken |
|--------------|--------------------|-----------|-------------------|-------------|--------------------------------------|-------------|--------------|
| | | | Action Level | Limit Level | Action Level | Limit Level | |
| DC/2009/10 | AM6a | 1-hr TSP | 0 | 0 | 0 | 0 | N/A |
| | | 24-hr TSP | 0 | 0 | 0 | 0 | N/A |
| | NM5 | Noise | 0 | 0 | 0 | 0 | N/A |

| Monitored By | Monitoring Station | Parameter | No. of Exceedance | | No. of Exceedance Due to the Project | | Action Taken |
|--------------|--------------------|-----------|-------------------|-------------|--------------------------------------|-------------|--------------|
| | | | Action Level | Limit Level | Action Level | Limit Level | |
| | NM6 | Noise | 0 | 0 | 0 | 0 | N/A |
| | AM7 | 1-hr TSP | 0 | 0 | 0 | 0 | N/A |
| | | 24-hr TSP | 0 | 0 | 0 | 0 | N/A |
| | AM8 | 1-hr TSP | 0 | 0 | 0 | 0 | N/A |
| | | 24-hr TSP | 0 | 0 | 0 | 0 | N/A |

1-hour TSP Monitoring

5. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

6. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise

7. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

8. Licenses/Permits granted to the Project include the Environmental Permit (EP); Billing account for Disposal of Construction Waste, Registered as Chemical Waste Producer and Construction Noise Permits.

Environmental Mitigation Implementation Schedule

9. According to the EIA Report Section 3.74, 4.56 and 13.44, air quality, noise and landscape and visual would be the key environmental issues and mitigation measures shall be implemented during the construction phase. Details of the implementation of mitigation measures are provided in the **Appendix J**.

Key Information in the Reporting Month

10. Summary of key information in the reporting month is tabulated in **Table II**.

Table II Summary Table for Key Information in the Reporting Month

| Event | Event Details | | Action Taken | Status | Remark |
|--|---------------|---------------------------------------|----------------------------|------------|--------|
| | Number | Nature | | | |
| Complaint received | 0 | --- | N/A | N/A | --- |
| Status of submissions under EP | 1 | Monthly EM&A Report for February 2019 | Submitted on 13 March 2019 | No Comment | --- |
| Notifications of any summons & prosecutions received | 0 | --- | N/A | N/A | --- |

Summary of Complaints and Prosecutions

11. No environmental complaint and prosecution was received for the Project in the reporting month.
12. There were no environmental complaint and prosecution received since the commencement of the Project. The Complaint Log is presented in **Appendix K**.

Future Key Issues:

13. Major site activities for the coming two months include:

Section 5 – (External works)

- DN1200 NWK overflow pipes
- Landscaping works

Modification works of Overflow Chamber

- Construction of Dividing Wall of Overflow Chamber
- Install FRP covers on top of Overflow Chamber

MPS2

- Manufacturing of remaining impellers, expected delivery Mar – Apr 19 (3nos)
- Preparation works for FSD inspection

DOU3

- 1st FRP tank expected delivery Apr 19

14. The environmental concerns in the coming months are mainly on chemicals and general refuse storage, surface runoff generated during rainstorm and wheel washing; dust control and treatment of wastewater generated from the construction works.

1. INTRODUCTION

Background

- 1.1 The Project ‘HATS Stage 2A - Upgrading works at Stonecutters Island Treatment Works (SCISTW) – Main Pumping Station, Sedimentation Tanks and Ancillary Facilities’ under Contract No: DC/2009/10 mainly comprises the construction of a large underground pumping station with an internal diameter of 55 metres and a depth of more than 40 metres, the provision of additional double-tray sedimentation tanks, a new computer control system, the expansion and modification of existing installations of the SCISTW as well as the construction of other ancillary facilities. The general location plan of the Project is shown in **Figure 1**.
- 1.2 The Project is under Harbour Area Treatment Scheme (HATS) Stage 2A and is a designated project with Register No. : AEIAR-121/2008. The current works under the Project at SCISTW for HATS 2A are covered by the Environmental Permit (Permit No. EP-322/2008/G), which was issued on 9th May 2014 by the Environmental Protection Department (hereinafter called EPD) to the Drainage Services Department (hereinafter called the DSD) as the Permit Holder.
- 1.3 Sun Fook Kong -Bestwise Joint Venture (hereafter called the SBJV) was commissioned by the DSD to undertake the construction of the Contract No. DC/2009/10 “HATS 2A –Upgrading works at Stonecutters Island Treatment Works – Main Pumping, Sedimentation Tanks and Ancillary Facilities”. The date of commencement of construction of the Project is 24th February 2011.
- 1.4 Wellab Limited was commissioned by SBJV to undertake the Environmental Monitoring and Audit (EM&A) works for the project and was appointed as the Environmental Team (ET) of the Project under Condition 2.1 of the EP. The date of commencement of EM&A works is 14th April 2011. The Project cover the environmental monitoring works at monitoring stations AM6a, AM7, AM8, NM5 and NM6.
- 1.5 This is the 96th monthly EM&A report summarizing the EM&A works conducted for the Project in March 2019.

Project Organizations

- 1.6 The contacts of the Project are shown in **Table 1.1** and the organization chart of ET for Contract is shown in **Figure 2**.

Table 1.1 Key Project Contacts

| Party | Role | Name | Position | Phone No. |
|-----------------------------------|---------------------------|--------------------|----------------------------------|-----------|
| Ove Arup & Partners Hong Kong Ltd | Engineer’s Representative | Mr. Ted Tang | Principal Resident Engineer | 2370 4311 |
| | Coordinator | Ms. Natalie Kwok | Resident Engineer | 6794 8844 |
| Wellab | Environmental Team | Dr. Priscilla Choy | ET Leader | 2151 2089 |
| | | Mr. Jonathan Lee | Project Coordinator & Audit Team | 2151 2035 |

| Party | Role | Name | Position | Phone No. |
|--|-----------------------------------|---------------|-----------------------------------|-----------|
| Mott MacDonald | Independent Environmental Checker | Dr. Anne Kerr | Independent Environmental Checker | 2828 5757 |
| Sun Fook Kong - Bestwise Joint Venture | Contractor | Mr. Keith Ho | Site Agent | 2620 0070 |
| | | Mr. Leo Leung | Environmental Officer | 2620 0070 |

Summary of EM&A Requirements

- 1.7 The EM&A programme requires construction phase monitoring for air quality and construction noise, landscape and visual and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:
- All monitoring parameters;
 - 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.
- 1.8 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in **Section 4** of this report.
- 1.9 This report presents the monitoring results, observations, locations, equipment, period, for required monitoring parameter namely air quality, noise and audit works conducted for the Project in March 2019.

2. AIR QUALITY

Monitoring Requirements

- 2.1 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

- 2.2 Three designated monitoring stations, AM6a, AM7 and AM8 were selected for impact dust monitoring for the Project. The previous location of AM6 was inaccessible due to planned construction works and therefore an alternative monitoring station AM6a was proposed and adopted for subsequent impact monitoring starting on 4th January 2016. **Table 2.1** describes the air quality monitoring locations, which are also depicted in **Figure 1**.

Table 2.1 Locations for Air Quality Monitoring

| Monitoring Station | Monitored by | Location of Measurement |
|--------------------|--------------|---|
| AM6a | DC/2009/10 | Works site boundary |
| AM7 | | North West Kowloon Sewage Pumping Station |
| AM8 | | Block A of Government Dockyard |

Monitoring Equipment

- 2.3 **Table 2.2** summarizes the air quality monitoring equipment and **Appendix B** shows the copies of calibration certificates for the equipment at AM6a, AM7 and AM8.

Table 2.2 Air Quality Monitoring Equipment

| Equipment | Model and Make | Quantity |
|--------------------|-------------------------------------|----------|
| Laser Dust Monitor | Met One Instruments no. AEROCET-831 | 3 |
| HVS Sampler | TISCH: Model no. TE-5170 | 3 |
| Calibrator | TISCH: Model TE-5025A | 1 |

Monitoring Parameters, Frequency and Duration

- 2.4 **Table 2.3** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for AM6a, AM7 and AM8 are shown in **Appendix C**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

| Monitoring Station | Parameter | Period | Frequency |
|--------------------------|-------------|---------------|-----------------------|
| All monitoring locations | 1-hour TSP | 0700-1900 hrs | 3 times/ every 6 days |
| | 24-hour TSP | 0000-2400 hrs | once in every 6 days |

Monitoring Methodology and QA/QC Procedure

- 2.5 The monitoring methodology and QA/QC procedures for monitoring station AM6a, AM7 and AM8 are presented as follow:

- 2.6 The general weather conditions (i.e. sunny, cloudy or rainy) were recorded by the field staff's observation on the monitoring day.

TSP Monitoring with Laser Dust Monitor

Measuring Procedures

- 2.7 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:
- Pull up the air sampling inlet cover
 - Change the Mode 0 to BG with once
 - Push Start/Stop switch once
 - Turn the knob to SENSI.ADJ and press it
 - Push Start/Stop switch once
 - Return the knob to the position MEASURE slowly
 - Push the timer set switch to set measuring time
 - Remove the cap and make a measurement

Maintenance/Calibration

- 2.8 The following maintenance/calibration was required for the direct dust meters:
- Check the meter at a 3-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

TSP Monitoring with High Volume Sampler

Instrumentation

- 2.9 High Volume Sampler (HVS) completed with appropriate sampling inlets was employed for air quality monitoring. Each sampler comprised of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

HVS Installation

- 2.10 The following guidelines were adopted during the installation of HVS:
- Sufficient support was provided to secure the samplers against gusty wind.
 - No two samplers were placed less than 2 meters apart.
 - The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
 - A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
 - A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
 - No furnaces or incineration flues were nearby.
 - Airflow around the sampler was unrestricted.
 - The samplers were more than 20 meters from the drip line.
 - Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

Filters Preparation

- 2.11 Fibre glass filters, which have a collection efficiency of larger than 99% of particles of 0.3 μm in diameter, were used. A HOKLAS accredited laboratory, Wellab Ltd., was responsible for the preparation of 24-hr conditioned and pre-weighed filter papers for Wellab's monitoring team.
- 2.12 All filters, which were prepared by Wellab Ltd., were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was < 50% and not variable by more than $\pm 5\%$. A convenient working RH was 40%.
- 2.13 Wellab Ltd. has a comprehensive quality assurance and quality control programme.

Operating/Analytical Procedures

- 2.14 Operating/analytical procedures for the air quality monitoring were highlighted as follows:
- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 $\text{m}^3/\text{min.}$ and 1.4 $\text{m}^3/\text{min.}$) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
 - The power supply was checked to ensure the sampler worked properly.
 - On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air quality monitoring station.
 - The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centred with the stamped number upwards, on a supporting screen.
 - The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
 - The shelter lid was closed and secured with the aluminium strip.
 - The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
 - After sampling, the filter was removed and sent to the Wellab Ltd. for weighing. The elapsed time was also recorded.
 - Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ± 3 °C; the relative humidity (RH) should be < 50% and not vary by more than $\pm 5\%$. A convenient working RH is 40%. Weighing results were returned to Wellab for further analysis of TSP concentrations collected by each filter.

Maintenance/Calibration

- 2.15 The following maintenance/calibration was required for the HVS:
- The high volume motors and their accessories were properly maintained.

Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.

Results and Observations

- 2.16 **Table 2.4** summarizes the monitoring results at AM6a, AM7 and AM8 in the reporting month.

Table 2.4 Summary of 1-hour and 24-hour TSP Monitoring Result in the Reporting Month

| Air Quality Monitoring Station | Average $\mu\text{g}/\text{m}^3$ | Range $\mu\text{g}/\text{m}^3$ | Action Level $\mu\text{g}/\text{m}^3$ | Limit Level $\mu\text{g}/\text{m}^3$ |
|--------------------------------|----------------------------------|--------------------------------|---------------------------------------|--------------------------------------|
| 1 hour TSP | | | | |
| AM6a | 48 | 19 – 97 | 346 | 500 |
| AM7 | 147.7 | 96.8 – 258.1 | 322 | |
| AM8 | 105.2 | 71.5 – 200.6 | 307 | |
| 24 hours TSP | | | | |
| AM6a | 35 | 18 – 51 | 196 | 260 |
| AM7 | 123 | 58 – 166 | 207 | |
| AM8 | 21 | 14 – 26 | 158 | |

- 2.17 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix F**.
- 2.18 All 24-hr TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix F**.
- 2.19 The details and graphical presentations of the air quality monitoring results at AM6a, AM7 and AM8 are shown in **Appendix D**.
- 2.20 According to field observations during site inspection, the identified dust sources at the monitoring stations were mainly from loadings of material, vehicles movement of this Contract in the site.

3. NOISE

Monitoring Requirements

- 3.1 Two noise monitoring stations, namely NM5 and NM6 was designated in the EM&A Manual for impact monitoring. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.
- 3.2 Monitoring station (NM6) serves as an alternative location for FSD Diving Rescue and Diving Training Centre which is regarded as a Noise Sensitive Receiver (NSR) as it is an institution. Monitoring station (NM6) was set up at the proposed location in accordance with the Monitoring Proposal submitted by ET of Contract DC/2009/05, as agreed by the ER and IEC.

Monitoring Locations

- 3.3 Noise monitoring was conducted at two designated monitoring stations as listed in **Table 3.1**.

Table 3.1 Location of Noise Monitoring Stations

| Monitoring Station | Monitored By | Location of Measurement |
|--------------------|--------------|--|
| NM5 | DC/2009/10 | Near FSD Diving Rescue and Training Centre |
| NM6 | | Customs' Marine Base (Block H of Government Dockyard Rooftop) |

Monitoring Equipment

- 3.4 **Table 3.2** summarizes the noise quality monitoring equipment and **Appendix B** shows the copies of calibration certificates for the equipment used at NM5 and NM6 in the reporting month.

Table 3.2 Noise Monitoring Equipment

| Equipment | Model and Make | Quantity |
|-------------------------------|---------------------------|----------|
| Integrating Sound Level Meter | BSWA, Model no: BSWA 801 | 1 |
| Calibrator | SVANTEK, Model no: SV 30A | 1 |

Monitoring Parameters, Frequency and Duration

- 3.5 **Table 3.3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule of the reporting month for NM5 and NM6 is shown in **Appendix C**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

| Monitoring Stations | Parameter | Period | Frequency |
|---------------------|------------------------------------|-------------------------------|--|
| NM5 NM6 | $L_{eq}(30 \text{ min.})$ dB(A) | 0700-1900 hrs. on weekdays | Once per week |
| | $L_{eq}(5 \text{ min.})$ dB(A) | During restricted hours | Monitoring to be conducted when construction works were to be carried out |

Monitoring Methodology and QA/QC Procedures

- 3.6 The monitoring methodology and QA/QC procedure at NM5 and NM6 are presented as follow:
- 3.7 General weather conditions (i.e. sunny, cloudy or rainy) were recorded by field observation during equipment checking and estimated according to weather data from the Hong Kong Observatory.

Field Monitoring

- 3.8 The monitoring procedures are as follows:
- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
 - For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).
 - The battery condition was checked to ensure good functioning of the meter.
 - Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - Frequency weighting : A
 - Time weighting : Fast
 - Measurement time : 30 minutes
 - Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement was considered invalid and repeat of noise measurement was required after re-calibration or repair of the equipment.
 - Noise monitoring was carried out 30 minutes during on the monitoring days. Monitoring data was recorded and stored automatically within the sound level meter system. At the end of the monitoring period, noise levels in term of L_{eq} , L_{90} and L_{10} were recorded.
 - All the monitoring data within the sound level meter system was downloaded through the computer software, and all these data was checked and reviewed within the computer.

Maintenance and Calibration

3.9 Maintenance and Calibration procedures were as follows:

- The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
- The sound level meter and calibrator were checked and calibrated at yearly intervals.

Results and Observations

3.10 **Table 3.4** summarizes the monitoring results at NM5 and NM6 in the reporting month.

Table 3.4 Summary the Noise Monitoring Results in Reporting Month

| For the time period 0700-1900 hrs. on weekdays | | |
|--|---|----------------------|
| Noise Monitoring Station | Range, dB(A) L _{eq} (30 min.) | Limit Level dB(A) |
| NM5 | 60.3 – 72.0 | 75.0 |
| NM6 | 57.5 – 69.5 | 75.0 |

3.11 The construction noise monitoring at the designated location was conducted by the ET of Contracts DC/2009/10 as scheduled in the reporting month. The monitoring results and graphical presentations could be referred to **Appendix E**.

3.12 1900-2300 hours noise monitoring was not conducted in the reporting month as there were no construction works during the period of restricted hours.

3.13 No Action/Limit Level exceedance was recorded in the reporting month. Summary of exceedance is presented in **Appendix F**.

3.14 The major noise sources identified at the designated noise monitoring stations were vehicle movement and construction equipment, as well as construction activities in Stonecutters Island STW.

4. ENVIRONMENTAL AUDIT**Site Audits**

- 4.1 Site audits were conducted on a weekly basis to monitor the implementation of environmental management practices and mitigation measures at the site area by the Contractor.
- 4.2 Site inspections were undertaken to ensure and check that the implementation and maintenance of mitigation measures for Air Quality, Noise, Water Quality, Waste Management, Landscape and Visual are being properly carried out in the reporting month in accordance to section 14.1 of the EM&A Manual. No non-compliance was observed during the site inspections.
- 4.3 The summaries of site audits are attached in **Appendix G**.

Implementation Status of Environmental Mitigation Measures

- 4.4 Details of the implementation of mitigation measures are provided in the **Appendix J**.
- 4.5 During the weekly environmental site inspections in the reporting period, no non-conformance was identified. The observations of the site audit for the Projects are summarized in **Table 4.1**.

Table 4.1 Observations of Site Audit

| Parameters | Ref. Number | Observations | Follow Up Action |
|-----------------------------------|-------------|---|--|
| Water Quality | N/A | There was no observation in the reporting month. | N/A |
| Air Quality | 190228-R01 | Sediment on the side of the road should be cleared to avoid dust impact when vehicle passby. | The road was wet and no dust impact observed when vehicle passed by. |
| | 190320-R01 | Stockpile was observed not covered, Contractor was reminded to cover them with impervious material. | Stockpile was covered properly. |
| | 190320-R02 | Road around the works area was found dusty, contractor should provide water spray or clear the sediment to reduce dust impact | Follow up action will be reported in the next reporting month. |
| Waste/ Chemical Management | 190307-R01 | Chemical containers should be properly stored to avoid contamination | Chemical containers were cleared. |
| | 190314-R02 | General refuse should be cleared regularly to avoid accumulation. | The majority of the general refuse has been cleared. |
| | 190328-R02 | Chemical containers should be properly stored to avoid contamination | Follow up action will be reported in the next reporting month. |
| Landscape and Visual | 190307-O02 | Excavator was placed next the existing trees, and damage was observed. | The excavator has been removed from the tree protection zone. |
| Noise | N/A | There was no observation in the reporting month. | N/A |
| Permit/ Licenses | N/A | There was no observation in the reporting month. | N/A |

Review of Environmental Monitoring Procedures

- 4.6 The monitoring works conducted by Contract DC/2009/10's ET were reviewed at a regular basis to ensure the monitoring procedures were carried out properly.

Status of Environmental Licensing and Permitting

- 4.7 All permits/licenses obtained for the Contract DC/2009/10 are summarized in **Table 4.2**.

Table 4.2 Summary of Environmental Licence / Permit for DC/2009/10

| Reference Number | Valid Period | | Details | Status |
|--|--------------|-----------|---|--------|
| | From | To | | |
| <i>Water Discharge License</i> | | | | |
| WT00023103-2015 | 19/1/2016 | 31/1/2021 | The application was approved on 19-1-2016. | Valid |
| WT00024404-2016 | 19/5/2016 | 31/5/2021 | The application was approved on 19-5-2016. | Valid |
| WT00025973-2016 | 22/11/2016 | 31/5/2021 | The application was approved on 22/11/2016. | Valid |
| <i>Registered Chemical Waste Producer</i> | | | | |
| WPN5213-269-3584-01 | N/A | N/A | The application was approved on 4-5-2011. | Valid |
| <i>Billing Account for Disposal of Construction Waste</i> | | | | |
| CSW01444 | 16/3/2011 | N/A | The application was approved on 16-3-2011. | Valid |
| <i>Notification of Works Under APCO</i> | | | | |
| 327427 | N/A | N/A | Notice form received by EPD on 2-3-2011. | N/A |

Status of Waste Management

- 4.8 The amount of wastes generated by the activities of the Project in the reporting month is shown in **Appendix H**.

Implementation Status of Event Action Plans

- 4.9 The Event Action Plans for air quality and noise are presented in **Appendix I**.

1-hr TSP

- 4.10 No Action/Limit Level exceedance was recorded.

24-hr TSP

- 4.11 No Action/Limit Level exceedance was recorded.

Construction Noise

- 4.12 No Action/Limit Level exceedance was recorded.

Landscape and Visual

- 4.13 No major deficiency was recorded.

Summary of Complaints and Prosecutions

- 4.14 No environmental complaint and prosecution was received for the Project in the

reporting month.

- 4.15 There were no environmental complaint and prosecution received since the commencement of the Project. The Complaint Log is presented in **Appendix K**.

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key environmental issues in the coming month include:

- Storage of chemicals/fuel and chemical waste/waste oil on-site;
- Drainage system should be well designed and maintained to prevent flooding and silty water from getting into the public area on rainy days;
- Leakage of oil from equipment;
- Generation of runoff during rainstorm;
- Dust generation should be mitigated by adequate water spraying, especially in dry days;
- Stockpile should be properly covered by tarpaulin to mitigate dust generation; and
- Silt and dust getting into the public area by the leaving site vehicles at the site exits without adequate wheel washing facilities.

Monitoring Schedule for the Next Month

5.2 The tentative environmental monitoring schedule over the next month is shown in **Appendix C** of this report.

Construction Program for the Next Month

5.3 The tentative construction program is provided in **Appendix L**.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 6.1 Environmental monitoring and audit works were performed in the reporting month and all monitoring results were checked and reviewed.

1-hour TSP Monitoring

- 6.2 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

- 6.3 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

- 6.4 All Construction Noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Audit

- 6.5 Environmental site audits were conducted as weekly basis in the reporting month. No non-compliance was recorded.

Complaint and Prosecution

- 6.6 No environmental complaint and prosecution was received in the reporting month.

Recommendations for next reporting month

- 6.7 The following recommendations were made for the next report month:

Air Quality

- To prohibit any open burning on site;
- To provide adequate water spray on site;
- To mitigate dust generation by providing adequate water spraying or covering stockpile with tarpaulin during dry days;
- To regularly maintain the machinery and vehicles on site; and
- To follow up any exceedance caused by the construction works.
- Non-Road Mobile Machinery (NRMM) labels must be demonstrated on the registered equipment for inspection.

Noise

- To inspect the noise sources inside the site;
- To follow up any exceedance caused by the construction works;
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers;
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.

- To provide adequate lubricant on mechanical equipments to reduce frictional noise; and
- To well maintain the mechanical equipments / machineries to avoid abnormal noise nuisance.

Water Quality

- To identify any discharge of wastewater from the construction site;
- To provide adequate temporary drainage system with adequate capacity;
- To provide adequate wastewater treatment facilities to treat the wastewater generated during construction works and heavy rain;
- To properly cover the stockpile and slope to prevent the generation of surface runoff; and
- To avoid water accumulation on site and carry out larviciding against mosquito breeding for stagnant water when mosquito larvae are observed.

Waste/Chemical Management

- To provide proper rubbish bins / skips for waste collection;
- To check for any accumulation of wasted materials or rubbish on site;
- To provide adequate chemical waste storage area on site;
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment; and
- To avoid improper handling or storage of oil drum and cement on site.

Landscape and Visual

- To erect and maintain the protection fence around the retained trees; and
- To avoid any construction materials being placed inside the tree protection zone.

FIGURES



AM7
North West Kowloon
Sewage Pumping Station

NM5
FSD Diving Rescue and
Training Centre

AM6a
Works Site Boundary

Stonecutters Island
Sewage Treatment Plant

NM6
Customs' Marine Base

AM8
Block A of
Government Dockyard

LEGEND:

DC/2009/10' SITE AREA



DC/2009/17' SITE AREA



DC/2009/18' SITE AREA



AIR QUALITY MONITORING
STATION



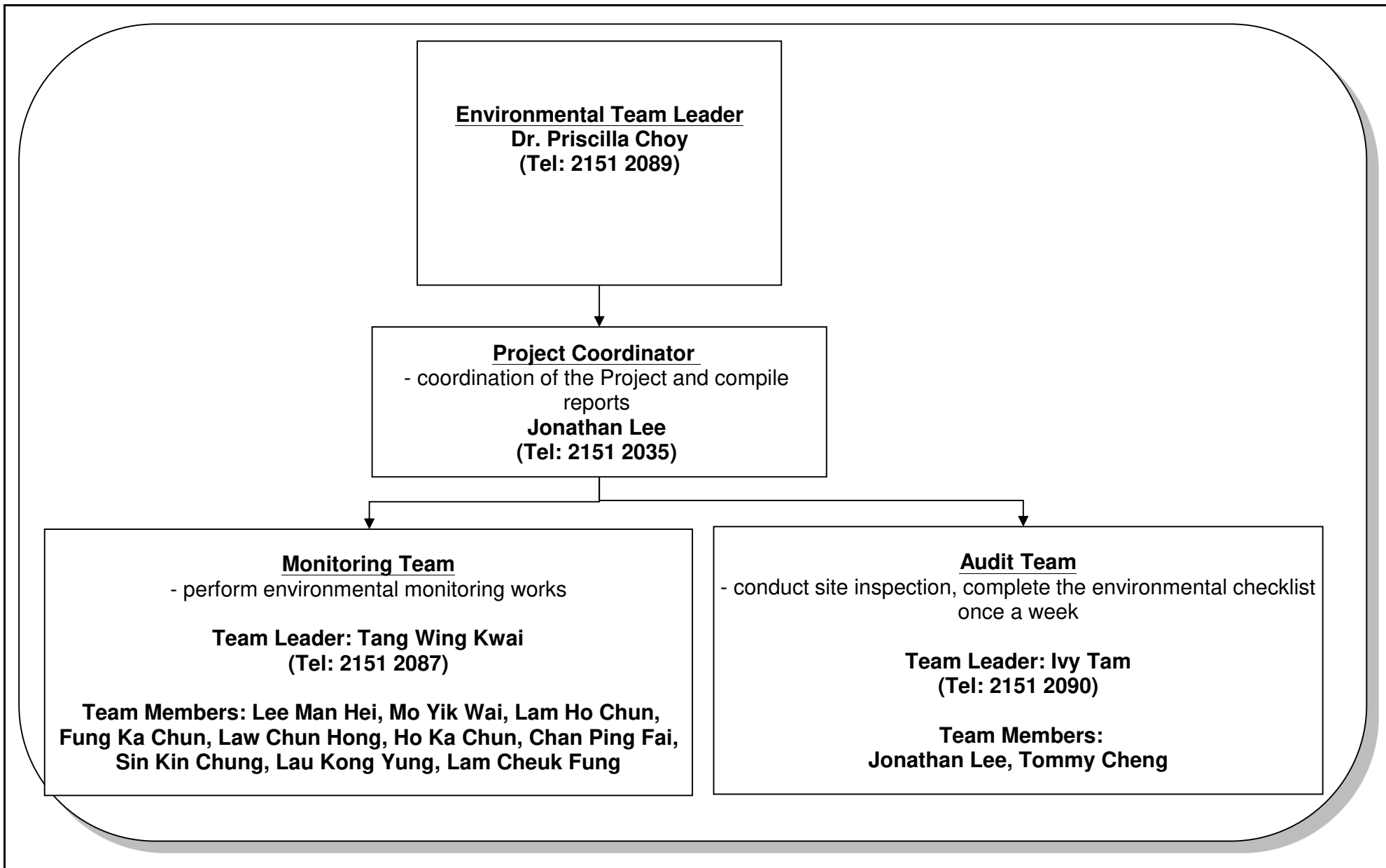
NOISE MONITORING STATION



Contract No: DC/2009/10
HATS 2A - Upgrading Main Pumping Station, Sedimentation Tanks and Ancillary
Facilities at SCISTW

General Location Plan of the Project and Locations of Air
Quality and Noise Monitoring Stations

| | | | |
|---------|---------|------------|---------|
| SCALE | N.T.S | DATE | 11/2015 |
| CHECK | - | DRAWN | VW |
| JOB No. | MA11007 | FIGURE NO. | 1 |
| | | REV | - |



| | | | | | | |
|-------|--|---------|-------|-------------|---------|--|
| Title | Contract No. DC/2009/10 HATS Stage 2A – Upgrading Works at SISTW Main Pumping Station, Sedimentation Tanks and Ancillary Facilities ET's Organization Chart | Scale | N.T.S | Project No. | MA11007 | |
| | | Version | v.1 | Figure | 2 | |

**APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR
QUALITY AND NOISE QUALITY**

Appendix A Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP and 24-Hour TSP

| Monitoring Stations | Action Level ($\mu\text{g}/\text{m}^3$) | | Limit Level ($\mu\text{g}/\text{m}^3$) | |
|---------------------|---|---------|--|---------|
| | 1-hour | 24-hour | 1-hour | 24-hour |
| AM6a | 346 | 196 | 500 | 260 |
| AM7 | 322 | 207 | 500 | 260 |
| AM8 | 307 | 158 | 500 | 260 |

Table A-2 Action and Limit Level for Construction Noise

| Monitoring Stations | Time Period | Action Level | Limit Level in dB(A) |
|---------------------|--|---|----------------------|
| NM5 NM6 | 0700-1900 hours on normal weekdays | When one documented complaint is received | 75 |
| | Evening Time of normal weekdays and General Holidays: All days during the evening (1900 to 2300 hours), and general holidays (including Sundays) during the day-time and evening (0700 to 2300 hours) | N/A | 70 ⁽¹⁾ |

Notes: If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

**APPENDIX B
COPIES OF CALIBRATION
CERTIFICATES**

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

| | |
|------------------|------------|
| Test Report No.: | 30677 |
| Date of Issue: | 2019-01-14 |
| Date Received: | 2019-01-11 |
| Date Tested: | 2019-01-11 |
| Date Completed: | 2019-01-14 |
| Next Due Date: | 2019-03-13 |

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for Calibration:

Description : Dust Monitor
 Manufacturer : Met One Instruments
 Model No. : AEROCET-831
 Serial No. : X23807
 Flow rate : 0.1 cfm
 Zero Count Test : 0 count per 1 minute
 Equipment No. : WA-01-01

Test Conditions:

Room Temperature : 17-22 degree Celsius
 Relative Humidity : 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

| | |
|-------------------------|-------|
| Correlation Factor (CF) | 1.185 |
|-------------------------|-------|

PREPARED AND CHECKED BY:
 For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
 Laboratory Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

| | |
|------------------|------------|
| Test Report No.: | 31065 |
| Date of Issue: | 2019-03-11 |
| Date Received: | 2019-03-08 |
| Date Tested: | 2019-03-08 |
| Date Completed: | 2019-03-11 |
| Next Due Date: | 2019-05-10 |

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for Calibration:

| | |
|-----------------|------------------------|
| Description | : Dust Monitor |
| Manufacturer | : Met One Instruments |
| Model No. | : AEROCET-831 |
| Serial No. | : X23807 |
| Flow rate | : 0.1 cfm |
| Zero Count Test | : 0 count per 1 minute |
| Equipment No. | : WA-01-01 |

Test Conditions:

| | |
|-------------------|------------------------|
| Room Temperature | : 17-22 degree Celsius |
| Relative Humidity | : 40-70% |

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

| | |
|-------------------------|-------|
| Correlation Factor (CF) | 1.164 |
|-------------------------|-------|

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Laboratory Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

| | |
|------------------|------------|
| Test Report No.: | 30914 |
| Date of Issue: | 2019-02-25 |
| Date Received: | 2019-02-22 |
| Date Tested: | 2019-02-22 |
| Date Completed: | 2019-02-25 |
| Next Due Date: | 2019-04-24 |

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for Calibration:

| | |
|-----------------|------------------------|
| Description | : Dust Monitor |
| Manufacturer | : Met One Instruments |
| Model No. | : AEROCET-831 |
| Serial No. | : X24476 |
| Flow rate | : 0.1 cfm |
| Zero Count Test | : 0 count per 1 minute |
| Equipment No. | : WA-01-05 |

Test Conditions:

| | |
|-------------------|------------------------|
| Room Temperature | : 17-22 degree Celsius |
| Relative Humidity | : 40-70% |

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

| | |
|-------------------------|-------|
| Correlation Factor (CF) | 1.131 |
|-------------------------|-------|

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

TEST REPORT

APPLICANT: Wellab Limited
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

| | |
|------------------|------------|
| Test Report No.: | 30914D |
| Date of Issue: | 2019-02-25 |
| Date Received: | 2019-02-22 |
| Date Tested: | 2019-02-22 |
| Date Completed: | 2019-02-25 |
| Next Due Date: | 2019-04-24 |

Page: 1 of 1

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for Calibration:

Description : Dust Monitor
 Manufacturer : Met One Instruments
 Model No. : AEROCET-831
 Serial No. : X24478
 Flow rate : 0.1 cfm
 Zero Count Test : 0 count per 1 minute
 Equipment No. : WA-01-10

Test Conditions:

Room Temperature : 17-22 degree Celsius
 Relative Humidity : 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

| | |
|-------------------------|-------|
| Correlation Factor (CF) | 1.071 |
|-------------------------|-------|

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
 Laboratory Manager

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

| | |
|------------------|------------|
| Test Report No.: | 30524C |
| Date of Issue: | 2018-12-17 |
| Date Received: | 2018-12-15 |
| Date Tested: | 2018-12-15 |
| Date Completed: | 2018-12-17 |
| Next Due Date: | 2019-12-16 |

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

| | |
|---------------|------------------------------|
| Description | : Sound & Vibration Analyser |
| Manufacturer | : BSWA |
| Model No. | : BSWA 801 |
| Serial No. | : 35927 |
| Equipment No. | : N-13-03 |

Test conditions:

| | |
|-------------------|------------------------|
| Room Temperature | : 17-22 degree Celsius |
| Relative Humidity | : 40-70% |

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

| Reference Set Point, dB | Instrument Readings, dB |
|-------------------------|-------------------------|
| 94 | 94.0 |
| 114 | 114.0 |

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
Laboratory Manager

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

| | |
|------------------|------------|
| Test Report No.: | 29816 |
| Date of Issue: | 2018-09-29 |
| Date Received: | 2018-09-28 |
| Date Tested: | 2018-09-28 |
| Date Completed: | 2018-09-29 |
| Next Due Date: | 2019-09-28 |

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

Description : Acoustical Calibrator
Manufacturer : SVANTEK
Model No. : SV30A
Serial No. : 24803
Equipment No. : N-09-03

Test conditions:

Room Temperature : 17-22 degree Celsius
Relative Humidity : 40-70%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

| Sound Pressure Level (1kHz) | Measured SPL | Tolerance |
|-----------------------------|--------------|----------------|
| At 94 dB SPL | 94.0 | 94.0 ± 0.1 dB |
| At 114 dB SPL | 114.0 | 114.0 ± 0.1 dB |

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Laboratory Manager

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

File No. MA11007/56/0020

Station AM6 - Works Site Boundary Operator: MH
 Date: 21-Jan-19 Next Due Date: 20-Mar-19
 Equipment No.: A-01-56 Serial No. 2353

| Ambient Condition | | | |
|---------------------|-----|---------------------|-------|
| Temperature, Ta (K) | 289 | Pressure, Pa (mmHg) | 770.5 |

| Orifice Transfer Standard Information | | | | | |
|---------------------------------------|-----------|--|--------|---------------|----------|
| Serial No. | 2896 | Slope, mc | 0.0585 | Intercept, bc | -0.00045 |
| Last Calibration Date: | 13-Feb-18 | $mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | | | |
| Next Calibration Date: | 13-Feb-19 | $Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$ | | | |

| Calibration of TSP Sampler | | | | | |
|----------------------------|------------------------------------|--|-------------------|--------------------------------|---|
| Calibration Point | Orifice | | | HVS | |
| | ΔH (orifice), in. of water | $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | Qstd (CFM) X-axis | ΔW (HVS), in. of water | $[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis |
| 1 | 12.3 | 3.59 | 61.27 | 8.0 | 2.89 |
| 2 | 10.6 | 3.33 | 56.88 | 6.7 | 2.65 |
| 3 | 7.5 | 2.80 | 47.85 | 4.8 | 2.24 |
| 4 | 5.4 | 2.38 | 40.60 | 3.6 | 1.94 |
| 5 | 3.6 | 1.94 | 33.15 | 2.4 | 1.58 |

By Linear Regression of Y on X

Slope, mw = 0.0457 Intercept, bw : 0.0695
 Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.96

Remarks: _____

Conducted by: LEE MAN HEI Signature: Lee Date: 21/1/2019
 Checked by: Wk Tang Signature: Kwan Date: 21/1/2019

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

File No. MA11007/56/0021

Station AM6 - Works Site Boundary Operator: MH
 Date: 20-Mar-19 Next Due Date: 19-May-19
 Equipment No.: A-01-56 Serial No. 2353

| Ambient Condition | | | |
|---------------------|-------|---------------------|-------|
| Temperature, Ta (K) | 295.2 | Pressure, Pa (mmHg) | 763.4 |

| Orifice Transfer Standard Information | | | | | |
|---------------------------------------|-----------|--|--------|---------------|----------|
| Serial No. | 0993 | Slope, mc | 0.0572 | Intercept, bc | -0.02285 |
| Last Calibration Date: | 25-Feb-19 | $mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | | | |
| Next Calibration Date: | 25-Feb-20 | $Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$ | | | |

| Calibration of TSP Sampler | | | | | |
|----------------------------|----------------------------|---|------------------------|------------------------|---|
| Calibration Point | Orifice | | | HVS | |
| | ΔH (orifice), in. of water | [ΔH x (Pa/760) x (298/Ta)] ^{1/2} | Qstd (CFM) X - axis | ΔW (HVS), in. of water | [ΔW x (Pa/760) x (298/Ta)] ^{1/2} Y-axis |
| 1 | 12.6 | 3.57 | 62.88 | 8.1 | 2.87 |
| 2 | 10.3 | 3.23 | 56.89 | 6.8 | 2.63 |
| 3 | 7.4 | 2.74 | 48.28 | 5.0 | 2.25 |
| 4 | 5.6 | 2.38 | 42.06 | 3.7 | 1.94 |
| 5 | 3.5 | 1.88 | 33.33 | 2.6 | 1.62 |

By Linear Regression of Y on X

Slope, mw = 0.0429 Intercept, bw = 0.1741
 Correlation coefficient* = 0.9989

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)² x (760 / Pa) x (Ta / 298) = 4.01

Remarks: _____

Conducted by: LEE MAN HEE Signature: Lee Date: 20/3/2019
 Checked by: W.K. Tang Signature: Kwan Date: 20/3/2019

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

File No. MA11007/55/0043

Station AM7 - North West Kowloon Sewage Pumping Station Operator: MH
 Date: 12-Feb-19 Next Due Date: 11-Apr-19
 Equipment No.: A-01-55 Serial No. 2355

| Ambient Condition | | | |
|---------------------|-------|---------------------|-------|
| Temperature, Ta (K) | 294.2 | Pressure, Pa (mmHg) | 769.8 |

| Orifice Transfer Standard Information | | | | | |
|---------------------------------------|-----------|---|--------|---------------|----------|
| Serial No. | 2896 | Slope, mc | 0.0585 | Intercept, bc | -0.00045 |
| Last Calibration Date: | 13-Feb-18 | $mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ $Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$ | | | |
| Next Calibration Date: | 13-Feb-19 | | | | |

| Calibration of TSP Sampler | | | | | |
|----------------------------|------------------------------------|--|---------------------|--------------------------------|---|
| Calibration Point | Orifice | | | HVS | |
| | ΔH (orifice), in. of water | $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | Qstd (CFM) X - axis | ΔW (HVS), in. of water | $[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis |
| 1 | 11.7 | 3.46 | 59.20 | 7.7 | 2.81 |
| 2 | 9.7 | 3.15 | 53.91 | 6.5 | 2.58 |
| 3 | 8.6 | 2.97 | 50.76 | 5.4 | 2.35 |
| 4 | 5.4 | 2.35 | 40.22 | 3.5 | 1.89 |
| 5 | 3.6 | 1.92 | 32.84 | 2.4 | 1.57 |

By Linear Regression of Y on X

Slope, mw = 0.0473 Intercept, bw = 0.0005
 Correlation coefficient* = 0.9982

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM
 From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.04

Remarks: _____

Conducted by: LEE MAN HEZ Signature: hi Date: 12-2-2019
 Checked by: Wk Tang Signature: Kwan Date: 12/2/2019

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

File No. MA11007/68/0042

Station AM8 - Block A of Government Dockyard Operator: MH
 Date: 12-Feb-19 Next Due Date: 11-Apr-19
 Equipment No.: A-01-68 Serial No. 3219

| Ambient Condition | | | |
|---------------------|-------|---------------------|-------|
| Temperature, Ta (K) | 294.5 | Pressure, Pa (mmHg) | 769.7 |

| Orifice Transfer Standard Information | | | | | |
|---------------------------------------|-----------|--|--------|---------------|----------|
| Serial No. | 2896 | Slope, mc | 0.0585 | Intercept, bc | -0.00045 |
| Last Calibration Date: | 13-Feb-18 | $mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | | | |
| Next Calibration Date: | 13-Feb-19 | $Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$ | | | |

| Calibration of TSP Sampler | | | | | |
|----------------------------|----------------------------|---|---------------------|------------------------|--|
| Calibration Point | Orifice | | | HVS | |
| | ΔH (orifice), in. of water | [ΔH x (Pa/760) x (298/Ta)] ^{1/2} | Qstd (CFM) X - axis | ΔW (HVS), in. of water | [ΔW x (Pa/760) x (298/Ta)] ^{1/2} Y-axis |
| 1 | 11.5 | 3.43 | 58.66 | 7.4 | 2.75 |
| 2 | 10.7 | 3.31 | 56.58 | 6.9 | 2.66 |
| 3 | 7.6 | 2.79 | 47.69 | 4.8 | 2.22 |
| 4 | 5.3 | 2.33 | 39.83 | 3.5 | 1.89 |
| 5 | 3.3 | 1.84 | 31.43 | 2.2 | 1.50 |

By Linear Regression of Y on X

Slope, mw = 0.0459 Intercept, bw : 0.0570
 Correlation coefficient* = 0.9996

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)² x (760 / Pa) x (Ta / 298) = 4.02

Remarks: _____

Conducted by: Lee Man Ho Signature: hi Date: 12-2-2019
 Checked by: Wk Tang Signature: Kwan Date: 12/2/2019



RECALIBRATION
DUE DATE:
 February 13, 2019

Certificate of Calibration

| Calibration Certification Information | | | |
|---------------------------------------|-------------------------|-----------|-------|
| Cal. Date: February 13, 2018 | Rootsmerter S/N: 438320 | Ta: 293 | °K |
| Operator: Jim Tisch | | Pa: 763.3 | mm Hg |
| Calibration Model #: TE-5025A | Calibrator S/N: 2896 | | |

| Run | Vol. Init (m3) | Vol. Final (m3) | ΔVol. (m3) | ΔTime (min) | ΔP (mm Hg) | ΔH (in H2O) |
|-----|----------------|-----------------|------------|-------------|------------|-------------|
| 1 | 1 | 2 | 1 | 1.4670 | 3.2 | 2.00 |
| 2 | 3 | 4 | 1 | 1.0380 | 6.4 | 4.00 |
| 3 | 5 | 6 | 1 | 0.9220 | 8.0 | 5.00 |
| 4 | 7 | 8 | 1 | 0.8840 | 8.8 | 5.50 |
| 5 | 9 | 10 | 1 | 0.7250 | 12.8 | 8.00 |

| Data Tabulation | | | | | |
|-----------------|---------------|--|-----------|-------------|---|
| Vstd (m3) | Qstd (x-axis) | $\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis) | Va | Qa (x-axis) | $\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis) |
| 1.0172 | 0.6934 | 1.4293 | 0.9958 | 0.6788 | 0.8762 |
| 1.0129 | 0.9758 | 2.0213 | 0.9916 | 0.9553 | 1.2392 |
| 1.0107 | 1.0962 | 2.2599 | 0.9895 | 1.0732 | 1.3854 |
| 1.0097 | 1.1422 | 2.3702 | 0.9885 | 1.1182 | 1.4530 |
| 1.0043 | 1.3853 | 2.8586 | 0.9832 | 1.3562 | 1.7524 |
| QSTD | m= | 2.06726 | QA | m= | 1.29448 |
| | b= | -0.00045 | | b= | -0.00028 |
| | r= | 0.99992 | | r= | 0.99992 |

| Calculations | |
|--|---|
| $Vstd = \Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$ | $Va = \Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$ |
| $Qstd = Vstd / \Delta Time$ | $Qa = Va / \Delta Time$ |
| For subsequent flow rate calculations: | |
| $Qstd = 1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$ | $Qa = 1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$ |

| Standard Conditions | |
|---|-----------|
| Tstd: | 298.15 °K |
| Pstd: | 760 mm Hg |
| Key | |
| ΔH: calibrator manometer reading (in H2O) | |
| ΔP: rootsmerter manometer reading (mm Hg) | |
| Ta: actual absolute temperature (°K) | |
| Pa: actual barometric pressure (mm Hg) | |
| b: intercept | |
| m: slope | |

| RECALIBRATION |
|--|
| US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30 |

Certificate of Calibration

| Calibration Certification Information | | | |
|---------------------------------------|------------------------|-----------|-------|
| Cal. Date: February 25, 2019 | Rootsmeter S/N: 438320 | Ta: 294 | °K |
| Operator: Jim Tisch | | Pa: 762.0 | mm Hg |
| Calibration Model #: TE-5025A | Calibrator S/N: 0993 | | |

| Run | Vol. Init (m3) | Vol. Final (m3) | ΔVol. (m3) | ΔTime (min) | ΔP (mm Hg) | ΔH (in H2O) |
|-----|----------------|-----------------|------------|-------------|------------|-------------|
| 1 | 1 | 2 | 1 | 1.4070 | 3.2 | 2.00 |
| 2 | 3 | 4 | 1 | 1.0000 | 6.3 | 4.00 |
| 3 | 5 | 6 | 1 | 0.8940 | 7.8 | 5.00 |
| 4 | 7 | 8 | 1 | 0.8520 | 8.7 | 5.50 |
| 5 | 9 | 10 | 1 | 0.7010 | 12.7 | 8.00 |

| Data Tabulation | | | | | |
|-----------------|---------------|--|-----------|-------------|---|
| Vstd (m3) | Qstd (x-axis) | $\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis) | Va | Qa (x-axis) | $\sqrt{\Delta H \left(Ta/Pa \right)}$ (y-axis) |
| 1.0120 | 0.7193 | 1.4257 | 0.9958 | 0.7077 | 0.8784 |
| 1.0079 | 1.0079 | 2.0162 | 0.9917 | 0.9917 | 1.2423 |
| 1.0059 | 1.1251 | 2.2542 | 0.9898 | 1.1071 | 1.3889 |
| 1.0047 | 1.1792 | 2.3642 | 0.9886 | 1.1603 | 1.4567 |
| 0.9993 | 1.4256 | 2.8513 | 0.9833 | 1.4028 | 1.7569 |
| QSTD | m= 2.02048 | | QA | m= 1.26519 | |
| | b= -0.02285 | | | b= -0.01408 | |
| | r= 0.99995 | | | r= 0.99995 | |

| Calculations | |
|--|---|
| Vstd= ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta) | Va= ΔVol((Pa-ΔP)/Pa) |
| Qstd= Vstd/ΔTime | Qa= Va/ΔTime |
| For subsequent flow rate calculations: | |
| $Qstd = 1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$ | $Qa = 1/m \left(\left(\sqrt{\Delta H \left(Ta/Pa \right)} \right) - b \right)$ |

| Standard Conditions | |
|---|-----------|
| Tstd: | 298.15 °K |
| Pstd: | 760 mm Hg |
| Key | |
| ΔH: calibrator manometer reading (in H2O) | |
| ΔP: rootsmeter manometer reading (mm Hg) | |
| Ta: actual absolute temperature (°K) | |
| Pa: actual barometric pressure (mm Hg) | |
| b: intercept | |
| m: slope | |

| RECALIBRATION |
|--|
| US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30 |

**APPENDIX C
ENVIRONMENTAL MONITORING
SCHEDULES**

**DC/2009/10, HATS 2A Upgrading Main Pumping Station, Sedimentation Tanks and Ancillary Facilities at SCISTW
Impact Air Quality and Noise Monitoring Schedule (March 2019)**

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---------------|----------------------|----------------------|----------------------|-----------|-------------|----------|
| | | | | | 1-Mar | 2-Mar |
| | | | | | 24 hr TSP | |
| 3-Mar | 4-Mar | 5-Mar | 6-Mar | 7-Mar | 8-Mar | 9-Mar |
| | 1hr TSP X 3 Noise | | | | 1hr TSP X 3 | |
| 10-Mar | 11-Mar | 12-Mar | 13-Mar | 14-Mar | 15-Mar | 16-Mar |
| | | | | 24 hr TSP | | |
| 17-Mar | 18-Mar | 19-Mar | 20-Mar | 21-Mar | 22-Mar | 23-Mar |
| | | | 1hr TSP X 3 Noise | | | |
| 24-Mar | 25-Mar | 26-Mar | 27-Mar | 28-Mar | 29-Mar | 30-Mar |
| | | 24 hr TSP | | | | |
| 31-Mar | 24 hr TSP | 1hr TSP X 3 Noise | | | 24 hr TSP | |
| | | | | | | |

Air Quality Monitoring Station

AM7 - West Kowloon No.2 Sewage Pumping Station
AM8 - Block A of Government Dockyard
AM6a - Works Site Boundary

Noise Monitoring Station

NM6 - Customs' Marine Base (Block H of Government Dockyard) Rooftop
NM5 - FSD Diving Training Centre

**DC/2009/10, HATS 2A Upgrading Main Pumping Station, Sedimentation Tanks and Ancillary Facilities at SCISTW
Tentative Impact Air Quality and Noise Monitoring Schedule (April 2019)**

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---------------|---------------|----------------------|----------------------|----------------------|---------------|---------------|
| | 1-Apr | 2-Apr | 3-Apr | 4-Apr | 5-Apr | 6-Apr |
| | 1hr TSP X 3 | | 24 hr TSP | 1hr TSP X 3 Noise | | |
| 7-Apr | 8-Apr | 9-Apr | 10-Apr | 11-Apr | 12-Apr | 13-Apr |
| | 24 hr TSP | 1hr TSP X 3 Noise | | | 24 hr TSP | |
| 14-Apr | 15-Apr | 16-Apr | 17-Apr | 18-Apr | 19-Apr | 20-Apr |
| | 1hr TSP X 3 | | 24 hr TSP | 1hr TSP X 3 Noise | | |
| 21-Apr | 22-Apr | 23-Apr | 24-Apr | 25-Apr | 26-Apr | 27-Apr |
| | | | 1hr TSP X 3 Noise | | | |
| 28-Apr | 29-Apr | 30-Apr | | | | |
| | 24 hr TSP | 1hr TSP X 3 Noise | | | | |

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

AM7 - West Kowloon No.2 Sewage Pumping Station
AM8 - Block A of Government Dockyard
AM6a - Works Site Boundary

Noise Monitoring Station

NM6 - Customs' Marine Base (Block H of Government Dockyard) Rooftop
NM5 - FSD Diving Training Centre

**APPENDIX D
1-HOUR AND 24-HOUR TSP
MONITORING RESULTS AND
GRAPHICAL PRESENTATION**

Appendix D - 1-hour TSP Monitoring Results

Location AM6a - Works Site Boundary

| Start Date | Start Time | Weather Condition | Air Temp. (K) | Filter Weight (g) | | Particulate weight (g) | Elapse Time | | Sampling Time(hrs.) | Flow Rate (m ³ /min.) | | Av. flow (m ³ /min) | Total vol. (m ³) | Conc. (µg/m ³) | Filter ID no. |
|------------|------------|-------------------|---------------|-------------------|--------|------------------------|-------------|--------|---------------------|----------------------------------|-------|--------------------------------|------------------------------|----------------------------|---------------|
| | | | | Initial | Final | | Initial | Final | | Initial | Final | | | | |
| 4-Mar-19 | 9:00 | Cloudy | 294.3 | 2.9943 | 2.9983 | 0.0040 | 8802.6 | 8803.6 | 1.0 | 1.21 | 1.21 | 1.21 | 72.4 | 55.3 | 190101/055 |
| 4-Mar-19 | 10:00 | Cloudy | 294.5 | 2.9813 | 2.9842 | 0.0029 | 8803.6 | 8804.6 | 1.0 | 1.21 | 1.21 | 1.21 | 72.3 | 40.1 | 190101/056 |
| 4-Mar-19 | 11:00 | Cloudy | 294.7 | 2.9775 | 2.9814 | 0.0039 | 8804.6 | 8805.6 | 1.0 | 1.21 | 1.20 | 1.21 | 72.3 | 53.9 | 190101/057 |
| 8-Mar-19 | 10:00 | Cloudy | 289.3 | 3.1605 | 3.1637 | 0.0032 | 8829.6 | 8830.6 | 1.0 | 1.22 | 1.22 | 1.22 | 73.1 | 43.8 | 190202/073 |
| 8-Mar-19 | 11:00 | Cloudy | 289.5 | 3.1200 | 3.1239 | 0.0039 | 8830.6 | 8831.6 | 1.0 | 1.22 | 1.22 | 1.22 | 73.1 | 53.4 | 190202/074 |
| 8-Mar-19 | 13:00 | Cloudy | 289.6 | 2.9741 | 2.9762 | 0.0021 | 8831.6 | 8832.6 | 1.0 | 1.22 | 1.22 | 1.22 | 73.0 | 28.8 | 190201/045 |
| 14-Mar-19 | 10:00 | Cloudy | 292.5 | 3.5170 | 3.5207 | 0.0037 | 8856.6 | 8857.6 | 1.0 | 1.21 | 1.21 | 1.21 | 72.8 | 50.8 | 190301/032 |
| 14-Mar-19 | 11:00 | Cloudy | 292.7 | 3.5221 | 3.5259 | 0.0038 | 8857.6 | 8858.6 | 1.0 | 1.21 | 1.21 | 1.21 | 72.7 | 52.2 | 190301/033 |
| 14-Mar-19 | 13:00 | Cloudy | 294.1 | 3.5220 | 3.5277 | 0.0057 | 8858.6 | 8859.6 | 1.0 | 1.21 | 1.21 | 1.21 | 72.5 | 78.6 | 190301/034 |
| 20-Mar-19 | 10:00 | Sunny | 295.9 | 3.4172 | 3.4243 | 0.0071 | 8883.6 | 8884.6 | 1.0 | 1.21 | 1.21 | 1.21 | 72.9 | 97.5 | 190301/021 |
| 20-Mar-19 | 11:00 | Sunny | 296.1 | 3.4691 | 3.4735 | 0.0044 | 8884.6 | 8885.6 | 1.0 | 1.21 | 1.21 | 1.21 | 72.8 | 60.4 | 190301/022 |
| 20-Mar-19 | 13:00 | Sunny | 296.9 | 3.5109 | 3.5139 | 0.0030 | 8885.6 | 8886.6 | 1.0 | 1.21 | 1.21 | 1.21 | 72.7 | 41.3 | 190301/023 |
| 26-Mar-19 | 10:00 | Cloudy | 296.1 | 3.5784 | 3.5801 | 0.0017 | 8910.6 | 8911.6 | 1.0 | 1.22 | 1.22 | 1.22 | 73.0 | 23.3 | 190301/069 |
| 26-Mar-19 | 11:00 | Cloudy | 296.3 | 3.6032 | 3.6048 | 0.0016 | 8911.6 | 8912.6 | 1.0 | 1.22 | 1.22 | 1.22 | 73.0 | 21.9 | 190301/070 |
| 26-Mar-19 | 13:00 | Cloudy | 295.9 | 3.5508 | 3.5522 | 0.0014 | 8912.6 | 8913.6 | 1.0 | 1.22 | 1.22 | 1.22 | 73.0 | 19.2 | 190301/071 |
| | | | | | | | | | | | | | Min | 19 | |
| | | | | | | | | | | | | | Max | 97 | |
| | | | | | | | | | | | | | Average | 48 | |

Appendix D - 1-hour TSP Monitoring Results

| Location AM7 - North West Kowloon Sewage Pumping Station | | | |
|--|-------|---------|--|
| Date | Time | Weather | Particulate Concentration ($\mu\text{g}/\text{m}^3$) |
| 4-Mar-19 | 14:00 | Cloudy | 115.4 |
| 4-Mar-19 | 15:00 | Cloudy | 104.8 |
| 4-Mar-19 | 16:00 | Cloudy | 133.3 |
| 8-Mar-19 | 14:00 | Cloudy | 96.8 |
| 8-Mar-19 | 15:00 | Cloudy | 124.9 |
| 8-Mar-19 | 16:00 | Cloudy | 104.5 |
| 14-Mar-19 | 14:00 | Cloudy | 111.3 |
| 14-Mar-19 | 15:00 | Cloudy | 114.5 |
| 14-Mar-19 | 16:00 | Cloudy | 133.3 |
| 20-Mar-19 | 14:00 | Fine | 251.9 |
| 20-Mar-19 | 15:00 | Fine | 238.4 |
| 20-Mar-19 | 16:00 | Fine | 258.1 |
| 26-Mar-19 | 14:00 | Cloudy | 140.1 |
| 26-Mar-19 | 15:00 | Cloudy | 139.3 |
| 26-Mar-19 | 16:00 | Cloudy | 149.3 |
| | | Minimum | 96.8 |
| | | Maximum | 258.1 |
| | | Average | 147.7 |

| Location AM8 - Block A of Government Dockyard | | | |
|---|-------|---------|--|
| Date | Time | Weather | Particulate Concentration ($\mu\text{g}/\text{m}^3$) |
| 4-Mar-19 | 9:00 | Cloudy | 75.7 |
| 4-Mar-19 | 10:00 | Cloudy | 83.4 |
| 4-Mar-19 | 11:00 | Cloudy | 77.9 |
| 8-Mar-19 | 9:00 | Cloudy | 74.0 |
| 8-Mar-19 | 10:00 | Cloudy | 71.5 |
| 8-Mar-19 | 11:00 | Cloudy | 84.3 |
| 14-Mar-19 | 9:00 | Cloudy | 80.6 |
| 14-Mar-19 | 10:00 | Cloudy | 87.4 |
| 14-Mar-19 | 11:00 | Cloudy | 84.0 |
| 20-Mar-19 | 9:00 | Fine | 188.9 |
| 20-Mar-19 | 10:00 | Fine | 200.6 |
| 20-Mar-19 | 11:00 | Fine | 177.7 |
| 26-Mar-19 | 9:00 | Cloudy | 93.5 |
| 26-Mar-19 | 10:00 | Cloudy | 95.9 |
| 26-Mar-19 | 11:00 | Cloudy | 103.1 |
| | | Minimum | 71.5 |
| | | Maximum | 200.6 |
| | | Average | 105.2 |

Appendix D - 24-hour TSP Monitoring Results

Location AM6a - Works Site Boundary

| Start Date | Weather Condition | Air Temp. (K) | Filter Weight (g) | | Particulate weight (g) | Elapse Time | | Sampling Time(hrs.) | Flow Rate (m ³ /min.) | | Av. flow (m ³ /min) | Total vol. (m ³) | Conc. (µg/m ³) | Filter ID no. |
|------------|-------------------|---------------|-------------------|--------|------------------------|-------------|--------|---------------------|----------------------------------|-------|--------------------------------|------------------------------|----------------------------|---------------|
| | | | Initial | Final | | Initial | Final | | Initial | Final | | | | |
| 1-Mar-19 | Cloudy | 292.7 | 2.9699 | 3.0390 | 0.0691 | 8778.6 | 8802.6 | 24.0 | 1.21 | 1.21 | 1.21 | 1744.3 | 39.6 | 190202/019 |
| 7-Mar-19 | Cloudy | 290.0 | 2.9981 | 3.0292 | 0.0311 | 8805.6 | 8829.6 | 24.0 | 1.22 | 1.22 | 1.22 | 1752.2 | 17.7 | 190101/058 |
| 13-Mar-19 | Cloudy | 293.4 | 3.1631 | 3.2519 | 0.0888 | 8832.6 | 8856.6 | 24.0 | 1.21 | 1.21 | 1.21 | 1743.0 | 50.9 | 190202/071 |
| 19-Mar-19 | Sunny | 296.5 | 3.4693 | 3.5352 | 0.0659 | 8859.6 | 8883.6 | 24.0 | 1.20 | 1.20 | 1.20 | 1732.1 | 38.0 | 190301/035 |
| 25-Mar-19 | Cloudy | 292.5 | 3.2050 | 3.2645 | 0.0595 | 8886.6 | 8910.6 | 24.0 | 1.22 | 1.22 | 1.22 | 1763.0 | 33.7 | 190202/039 |
| 29-Mar-19 | Cloudy | 296.9 | 3.5443 | 3.5916 | 0.0473 | 8913.6 | 8937.6 | 24.0 | 1.21 | 1.21 | 1.21 | 1741.8 | 27.2 | 190301/072 |
| | | | | | | | | | | | | Min | 18 | |
| | | | | | | | | | | | | Max | 51 | |
| | | | | | | | | | | | | Average | 35 | |

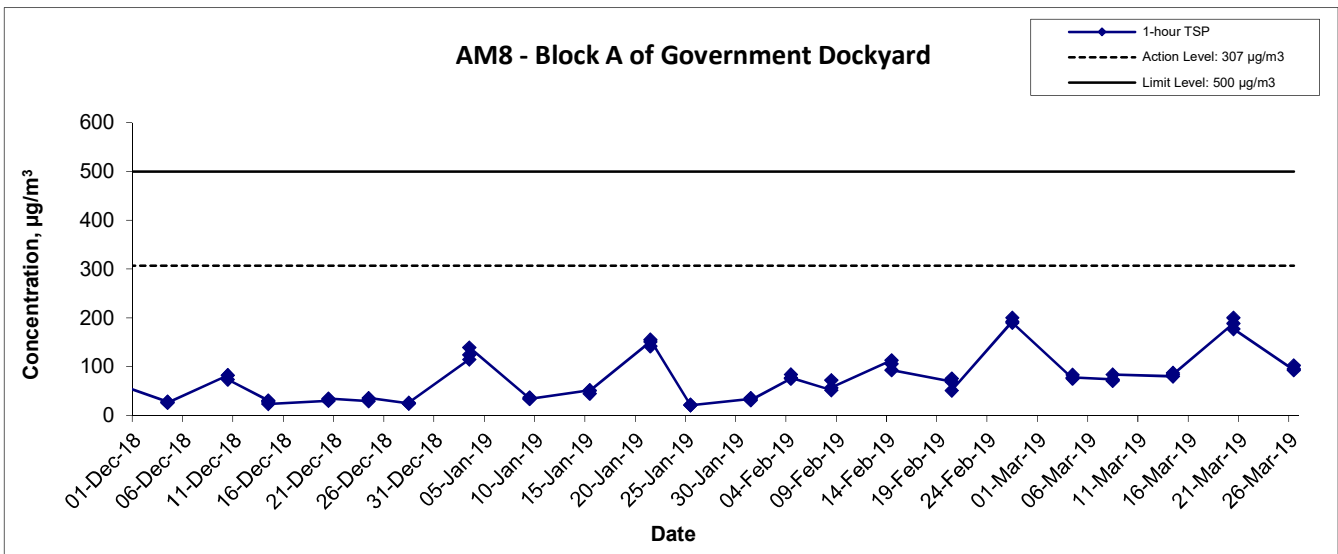
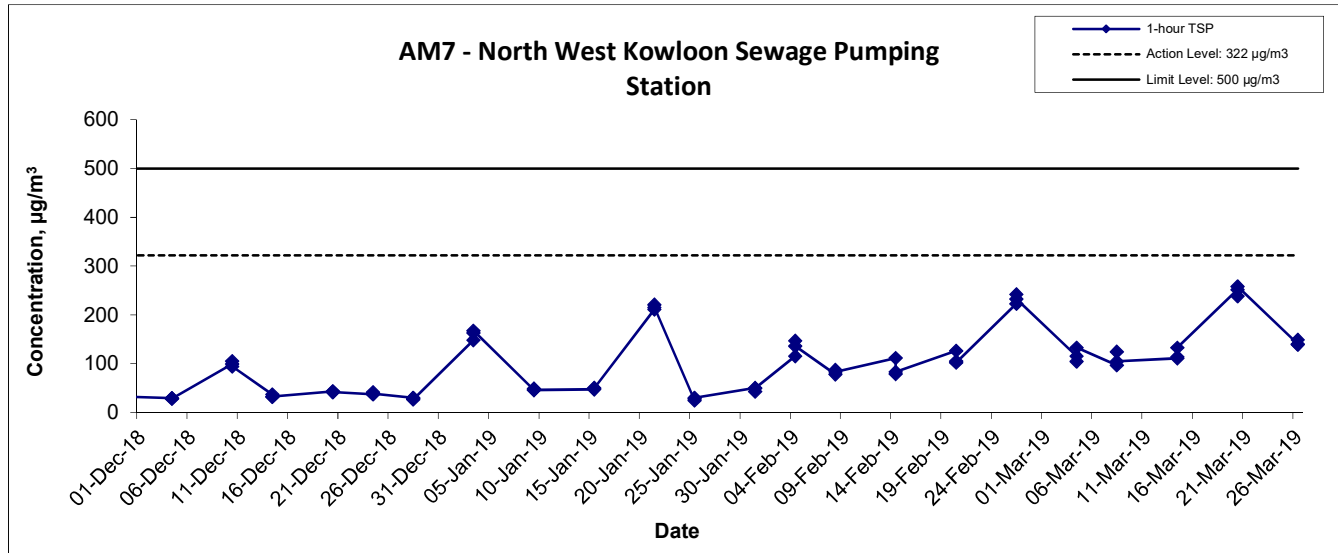
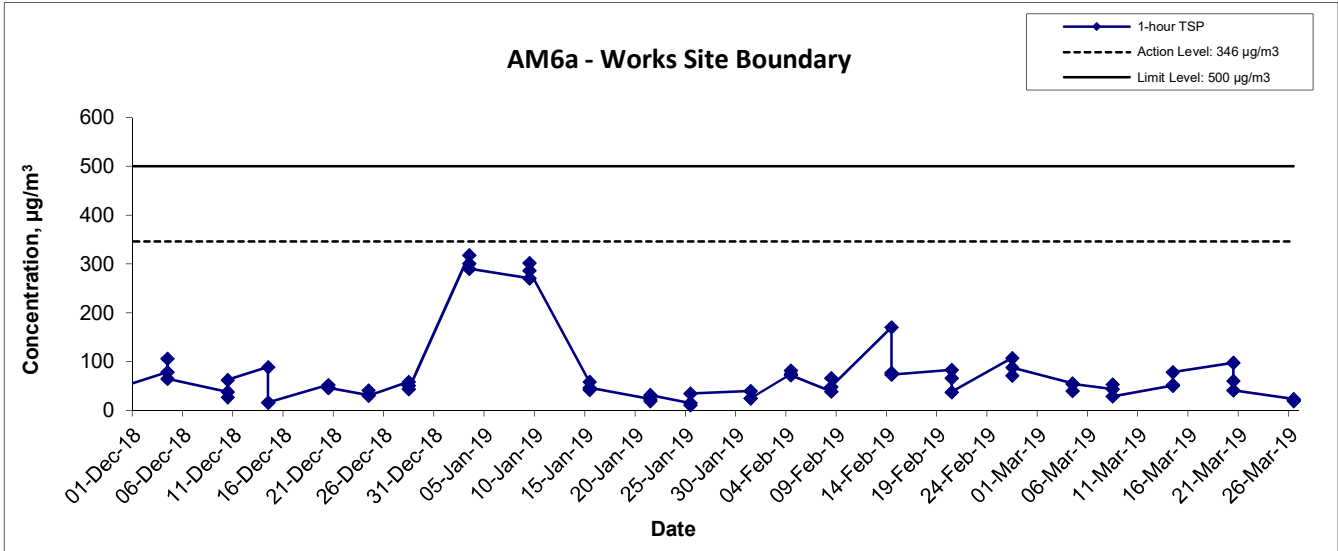
Location AM7 - North West Kowloon Sewage Pumping Station


| Start Date | Weather Condition | Air Temp. (K) | Filter Weight (g) | | Particulate weight (g) | Elapse Time | | Sampling Time(hrs.) | Flow Rate (m ³ /min.) | | Av. flow (m ³ /min) | Total vol. (m ³) | Conc. (µg/m ³) | Filter ID no. |
|------------|-------------------|---------------|-------------------|--------|------------------------|-------------|---------|---------------------|----------------------------------|-------|--------------------------------|------------------------------|----------------------------|---------------|
| | | | Initial | Final | | Initial | Final | | Initial | Final | | | | |
| 1-Mar-19 | Cloudy | 292.8 | 2.9885 | 3.2183 | 0.2298 | 37625.3 | 37649.3 | 24.0 | 1.21 | 1.21 | 1.21 | 1744.0 | 131.8 | 190201/027 |
| 7-Mar-19 | Cloudy | 290.4 | 3.2126 | 3.3138 | 0.1012 | 37649.3 | 37673.3 | 24.0 | 1.22 | 1.21 | 1.22 | 1749.9 | 57.8 | 190202/041 |
| 13-Mar-19 | Cloudy | 293.5 | 3.1038 | 3.3935 | 0.2897 | 37673.3 | 37697.3 | 24.0 | 1.21 | 1.21 | 1.21 | 1743.6 | 166.1 | 190202/075 |
| 19-Mar-19 | Sunny | 296.2 | 3.5123 | 3.7731 | 0.2608 | 37697.3 | 37721.3 | 24.0 | 1.20 | 1.20 | 1.20 | 1733.7 | 150.4 | 190301/037 |
| 25-Mar-19 | Cloudy | 292.4 | 3.4845 | 3.7343 | 0.2498 | 37721.3 | 37745.3 | 24.0 | 1.21 | 1.21 | 1.21 | 1746.7 | 143.0 | 190301/025 |
| 29-Mar-19 | Cloudy | 296.7 | 3.4973 | 3.6524 | 0.1551 | 37745.3 | 37769.3 | 24.0 | 1.20 | 1.20 | 1.20 | 1726.7 | 89.8 | 190302/039 |
| | | | | | | | | | | | | Min | 58 | |
| | | | | | | | | | | | | Max | 166 | |
| | | | | | | | | | | | | Average | 123 | |

Location AM8 - Block A of Government Dockyard

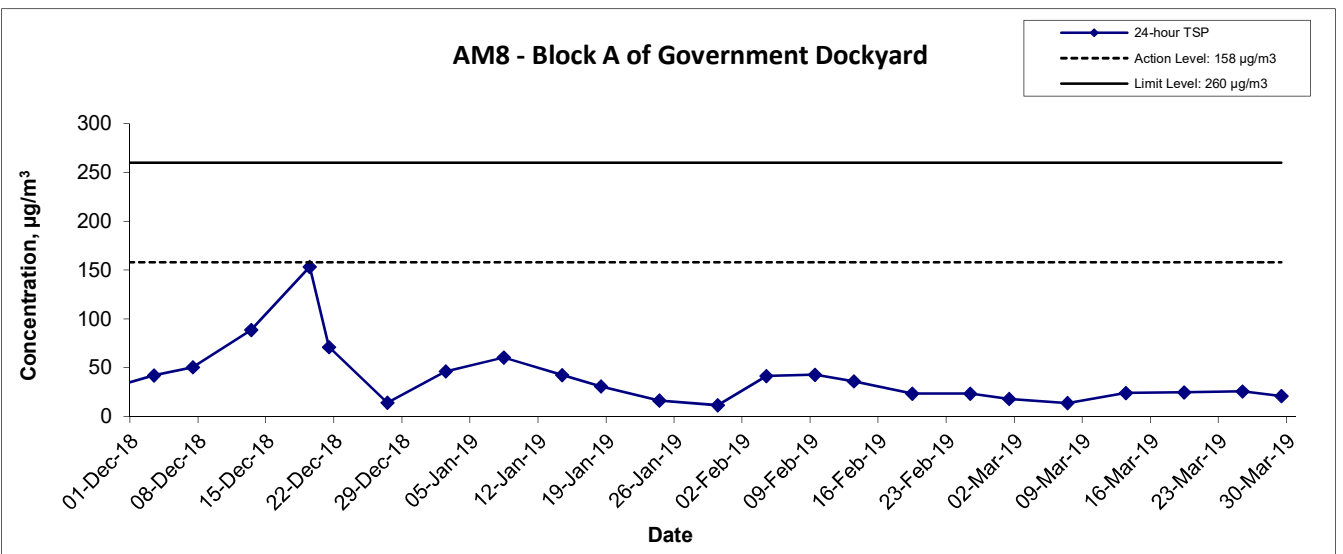
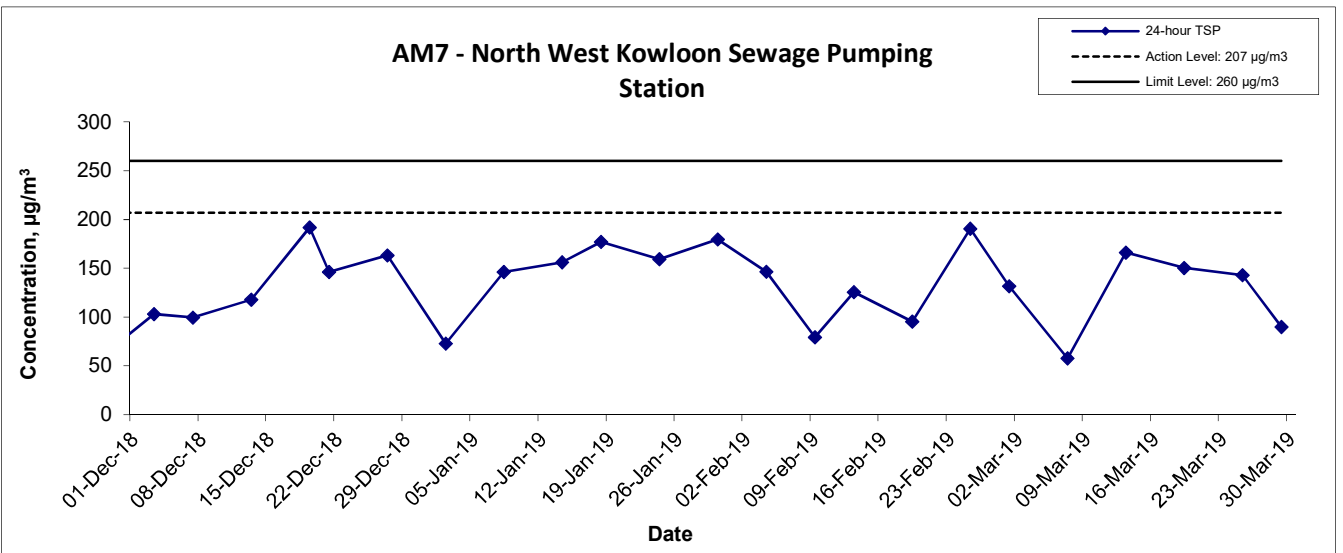
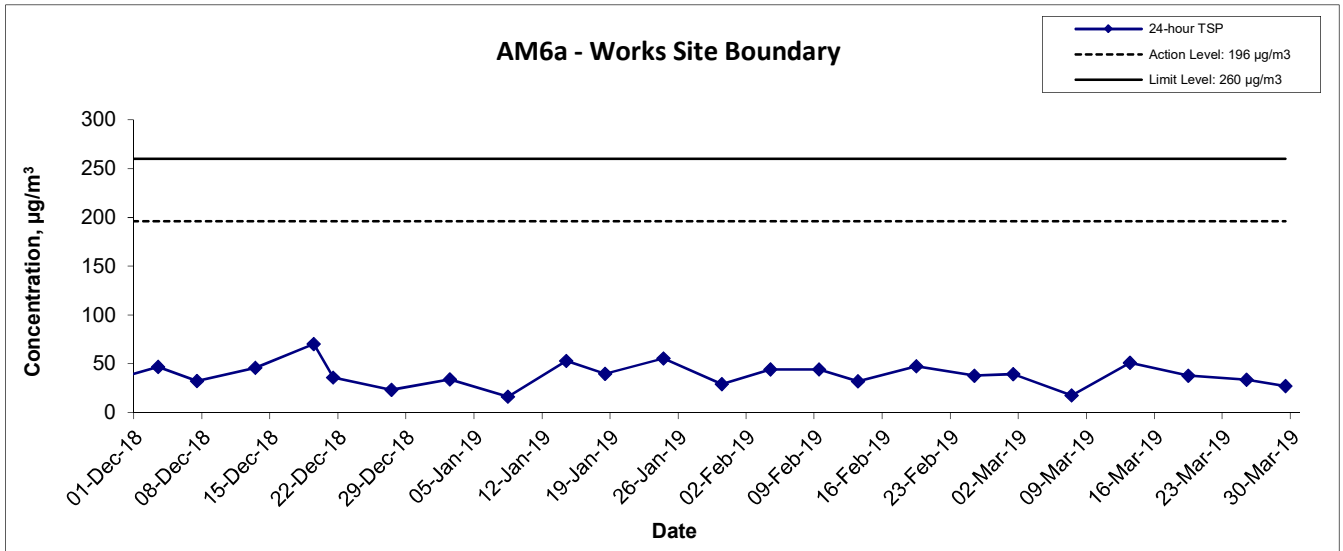
| Start Date | Weather Condition | Air Temp. (K) | Filter Weight (g) | | Particulate weight (g) | Elapse Time | | Sampling Time(hrs.) | Flow Rate (m ³ /min.) | | Av. flow (m ³ /min) | Total vol. (m ³) | Conc. (µg/m ³) | Filter ID no. |
|------------|-------------------|---------------|-------------------|--------|------------------------|-------------|---------|---------------------|----------------------------------|-------|--------------------------------|------------------------------|----------------------------|---------------|
| | | | Initial | Final | | Initial | Final | | Initial | Final | | | | |
| 1-Mar-19 | Cloudy | 292.7 | 2.9636 | 2.9950 | 0.0314 | 11130.0 | 11154.0 | 24.0 | 1.21 | 1.21 | 1.21 | 1747.2 | 18.0 | 190201/026 |
| 7-Mar-19 | Cloudy | 290.7 | 3.0064 | 3.0307 | 0.0243 | 11154.0 | 11178.0 | 24.0 | 1.22 | 1.22 | 1.22 | 1752.4 | 13.9 | 190101/059 |
| 13-Mar-19 | Cloudy | 293.2 | 3.1509 | 3.1932 | 0.0423 | 11178.0 | 11202.0 | 24.0 | 1.21 | 1.21 | 1.21 | 1747.2 | 24.2 | 190202/072 |
| 19-Mar-19 | Sunny | 296.4 | 3.4786 | 3.5217 | 0.0431 | 11202.0 | 11226.0 | 24.0 | 1.21 | 1.21 | 1.21 | 1736.5 | 24.8 | 190301/036 |
| 25-Mar-19 | Cloudy | 292.6 | 2.9969 | 3.0418 | 0.0449 | 11226.0 | 11250.0 | 24.0 | 1.21 | 1.21 | 1.21 | 1748.7 | 25.7 | 190202/022 |
| 29-Mar-19 | Cloudy | 296.6 | 3.6118 | 3.6481 | 0.0363 | 11250.0 | 11274.0 | 24.0 | 1.20 | 1.20 | 1.20 | 1730.4 | 21.0 | 190301/074 |
| | | | | | | | | | | | | Min | 14 | |
| | | | | | | | | | | | | Max | 26 | |
| | | | | | | | | | | | | Average | 21 | |

1-hr TSP Concentration Levels



| | | | | | |
|---|---|--|----------|---------------------|--|
| Title | Contract No. DC/2009/10 | | Scale | Project No. MA11007 | |
| | HATS 2A – Upgrading Works at SCISTW– Main Pumping Station, Sedimentation Tanks and Ancillary | | | N.T.S | |
| Graphical Presentation of 1-hour TSP Monitoring Results | Date | | Appendix | |  consulting . testing . research |
| | Mar-19 | | D | | |

24-hr TSP Concentration Levels



| | | | | |
|--|--|--------|-------------|--|
| Title | Contract No. DC/2009/10 | Scale | Project | |
| | HATS 2A – Upgrading Works at SCISTW– Main Pumping Station, Sedimentation Tanks and Ancillary | N.T.S | No. MA11007 | |
| Graphical Presentation of 24-hour TSP Monitoring Results | | Date | Appendix | |
| | | Mar 19 | D | |

**APPENDIX E
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATIONS**

Appendix E - Noise Monitoring Results

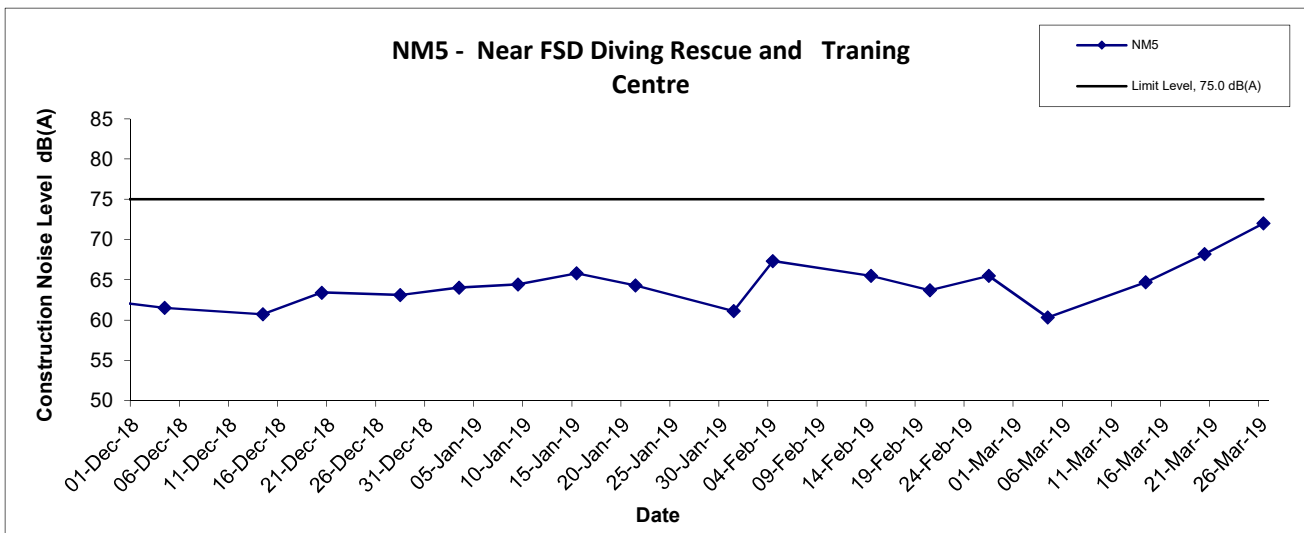
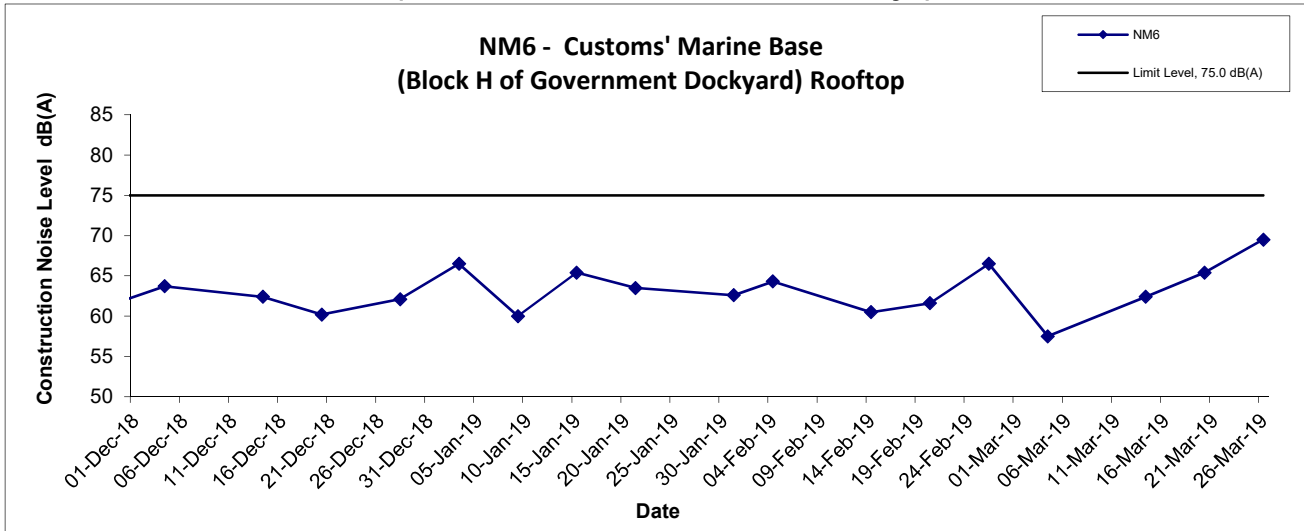
(0700-1900 hrs on Normal Weekdays)

| Location NM5 - Near FSD Diving Rescue and Training Centre | | | | | |
|---|-------|---------|-----------------------|-----------------|-----------------|
| Date | Time | Weather | Unit: dB (A) (30-min) | | |
| | | | Measured Noise Level | | |
| | | | L _{eq} | L ₁₀ | L ₉₀ |
| 4-Mar-19 | 10:00 | Cloudy | 60.3 | 61.4 | 59.5 |
| 14-Mar-19 | 10:30 | Cloudy | 64.7 | 66.8 | 60.4 |
| 20-Mar-19 | 10:30 | Sunny | 68.2 | 70.1 | 61.3 |
| 26-Mar-19 | 10:30 | Cloudy | 72.0 | 75.1 | 68.3 |
| | | Maximum | 72.0 | | |
| | | Minimum | 60.3 | | |

| Location NM6 - Customs' Marine Base (Block H of Government Dockyard) Rooftop | | | | | |
|---|-------|---------|-----------------------|-----------------|-----------------|
| Date | Time | Weather | Unit: dB (A) (30-min) | | |
| | | | Measured Noise Level | | |
| | | | L _{eq} | L ₁₀ | L ₉₀ |
| 4-Mar-19 | 11:30 | Cloudy | 57.5 | 58.6 | 56.6 |
| 14-Mar-19 | 11:30 | Cloudy | 62.4 | 65.4 | 59.3 |
| 20-Mar-19 | 11:30 | Sunny | 65.4 | 66.8 | 60.3 |
| 26-Mar-19 | 11:30 | Cloudy | 69.5 | 72.1 | 63.0 |
| | | Maximum | 69.5 | | |
| | | Minimum | 57.5 | | |

Noise Levels

(0700-1900 hrs on Normal Weekdays)



| | | | | |
|--|-------|--------|-------------|---------|
| Title Contract No. DC/2009/10 HATS 2A – Upgrading Works at SCISTW– Main Pumping Station, Sedimentation Tanks and Ancillary Graphical Presentation of Noise Monitoring Result | Scale | N.T.S | Project No. | MA11007 |
| | Date | Mar 19 | Appendix | E |



APPENDIX F
SUMMARY OF EXCEEDANCE

APPENDIX F – SUMMARY OF EXCEEDANCE

Reporting Month: March 2019

- a) Exceedance Report for 1-hr TSP (NIL)**
- b) Exceedance Report for 24-hr TSP (NIL)**
- c) Exceedance Report for Construction Noise (NIL)**

**APPENDIX G
SITE AUDIT SUMMARY**

Contract No: DC/2009/10

HATS 2A Upgrading Main Pumping Station,

Sedimentation Tanks and Ancillary Facilities at SCISTW

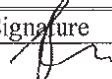

Record Summary of Environmental Site Inspection

Inspection Information

| | |
|----------------------------|--------------------------|
| Checklist Reference Number | 190307 |
| Date | 07 March 2019 (Thursday) |
| Time | 09:30-11:30 |

| Ref. No. | Non-Compliance | Related Item No. |
|----------|-----------------|------------------|
| - | None identified | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|------------|---|------------------|
| 190307-O02 | <p>Part A - Water Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection <p>Part B - Landscape and Visual</p> <ul style="list-style-type: none">Excavator was seen placed near the existing trees, and damage to the tree branches was observed. <p>Part C - Air Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part D - Noise</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. | BI, B2, B4 |
| 190307-R01 | <p>Part E - Waste / Chemical Management</p> <ul style="list-style-type: none">Chemical containers should be banded to avoid any leakage to the surrounding. <p>Part F - Permit / Licence</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Others</p> <ul style="list-style-type: none">- <p>Remark:</p> <ul style="list-style-type: none">Refer to the previous audit session, item 190228-F01 is remarked as 190307-R01. | E 3i |

| | Name | Signature | Date |
|-------------|--------------------|--|---------------|
| Recorded by | Jonathan Lee |  | 11 March 2019 |
| Checked by | Dr. Priscilla Choy |  | 11 March 2019 |

Contract No: DC/2009/10

HATS 2A Upgrading Main Pumping Station,

Sedimentation Tanks and Ancillary Facilities at SCISTW

Record Summary of Environmental Site Inspection

Inspection Information

| | |
|----------------------------|--------------------------|
| Checklist Reference Number | 190314 |
| Date | 14 March 2019 (Thursday) |
| Time | 09:30-11:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|----------|-----------------|------------------|
| - | None identified | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|------------|---|------------------|
| | <p>Part A - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection <p>Part B - Landscape and Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection <p>Part C - Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D - Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E - Waste / Chemical Management</p> <ul style="list-style-type: none"> Chemical containers should be banded to avoid any leakage to the surrounding. | |
| 190314-R01 | | E 3i |
| 190314-R02 | <ul style="list-style-type: none"> General refuse should be cleared regularly to avoid accumulation | E 1i 1iii |
| | <p>Part F - Permit / Licence</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Others</p> <ul style="list-style-type: none"> - <p>Remark:</p> <ul style="list-style-type: none"> Refer to the previous audit session, item 190207-R01 is remarked as 190314-R01. | |

| | Name | Signature | Date |
|-------------|--------------------|---|---------------|
| Recorded by | Jonathan Lee |  | 15 March 2019 |
| Checked by | Dr. Priscilla Choy |  | 15 March 2019 |

Contract No: DC/2009/10

**HATS 2A Upgrading Main Pumping Station,
Sedimentation Tanks and Ancillary Facilities at SCISTW**

Record Summary of Environmental Site Inspection

Inspection Information

| | |
|----------------------------|---------------------------|
| Checklist Reference Number | 190320 |
| Date | 20 March 2019 (Wednesday) |
| Time | 09:30-11:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|----------|-----------------|------------------|
| - | None identified | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|------------|---|------------------|
| 190320-R01 | <p>Part A - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection | C 6 |
| 190320-R02 | <p>Part B - Landscape and Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection <p>Part C - Air Quality</p> <ul style="list-style-type: none"> Stockpile was observed not covered, Contractor was reminded to cover them with impervious material. | C 5 |
| | <p>Part D - Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E - Waste / Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F - Permit / Licence</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Others</p> <ul style="list-style-type: none"> - <p>Remark:</p> <ul style="list-style-type: none"> Refer to the previous audit session, all environmental deficiency were rectified. | |

| | Name | Signature | Date |
|-------------|--------------------|---|---------------|
| Recorded by | Jonathan Lee |  | 20 March 2019 |
| Checked by | Dr. Priscilla Choy |  | 20 March 2019 |

Contract No: DC/2009/10

HATS 2A Upgrading Main Pumping Station,

Sedimentation Tanks and Ancillary Facilities at SCISTW



Record Summary of Environmental Site Inspection

Inspection Information

| | |
|----------------------------|---------------------------|
| Checklist Reference Number | 190328 |
| Date | 28 March 2019 (Wednesday) |
| Time | 09:30-11:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|----------|-----------------|------------------|
| - | None identified | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|------------|---|------------------|
| 190328-R01 | <p>Part A - Water Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection <p>Part B - Landscape and Visual</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection <p>Part C - Air Quality</p> <ul style="list-style-type: none">Sediment/stagnant water should be cleared on the road beside the working area <p>Part D - Noise</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. | C 6 |
| 190328-R02 | <p>Part E - Waste / Chemical Management</p> <ul style="list-style-type: none">Chemical containers should be stored properly to avoid contamination. <p>Part F - Permit / Licence</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Others</p> <ul style="list-style-type: none">- <p>Remark:</p> <ul style="list-style-type: none">Refer to the previous audit session, all environmental deficiency were rectified. | E 3i |

| | Name | Signature | Date |
|-------------|--------------------|--|---------------|
| Recorded by | Jonathan Lee |  | 01 April 2019 |
| Checked by | Dr. Priscilla Choy |  | 01 April 2019 |

**APPENDIX H
SUMMARY OF AMOUNT OF WASTE
GENERATED**

Name of Department: DSD

Contract No. : DC/2009/10

Monthly Summary Waste Flow Table for 2019 (year)

| Month | Actual Quantities of inert C&D Materials Generated Monthly | | | | | | Actual Quantities of C&D Materials Generated Monthly | | | | |
|---|--|--|---------------------------|-----------------------------|----------------------------|--------------------------|--|---------------------|--------------------------|-------------------|-------------------------------|
| | Total Quantity Generated | Hard Rock and Large Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed as Public Fill | Imported Fill | Metals | Paper/ cardboard | Plastics (see Note 3) | Chemical Waste | Other, e.g. general refuse |
| | (In '000m ³) | (In '000m ³) | (In '000m ³) | (In '000m ³) | (In '000m ³) | (In '000m ³) | (In '000kg) | (In '000kg) | (In '000kg) | (In '000kg) | (In '000m ³) |
| Jan | 0.322 | 0.322 | 0.000 | 0.000 | 0.322 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.007 |
| Feb | 0.089 | 0.089 | 0.000 | 0.000 | 0.089 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 |
| Mar | 0.205 | 0.205 | 0.000 | 0.000 | 0.205 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.019 |
| Apr | | | | | | | | | | | |
| May | | | | | | | | | | | |
| June | | | | | | | | | | | |
| Sub-total | 0.615 | 0.615 | 0.000 | 0.000 | 0.615 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.031 |
| July | | | | | | | | | | | |
| Aug | | | | | | | | | | | |
| Sep | | | | | | | | | | | |
| Oct | | | | | | | | | | | |
| Nov | | | | | | | | | | | |
| Dec | | | | | | | | | | | |
| Total | 0.615 | 0.615 | 0 | 0 | 0.615 | 0 | 0.000 | 0.000 | 0.000 | 0 | 0.031 |
| Total since commence ment of project | 60.401 | 60.400 | 0.000 | 0.000 | 60.400 | 0.000 | 372.871 | 9.899 | 3.314 | 2.227 | 1.991 |

Notes:

- (1) The performance targets are given in PS Clause 25.41(14).
- (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
- (4) The conversion factor for tonne to m³ for inert C&D materials is 1.9 tonne/m³.
- (5) The conversion factor for tonne to m³ for general refuse is 1.8 tonne/m³.

**APPENDIX I
EVENT ACTION PLANS**

APPENDIX I – Event / Action Plans

Table I-1 Event / Action Plan For Air Quality

| EVENT | ACTION | | | |
|---|--|---|--|---|
| | ET | IEC | ER | CONTRACTOR |
| ACTION LEVEL | | | | |
| 1. Exceedance for one sample | 1. Identify source, investigate the causes of exceedance and propose remedial measures; 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. |
| 2. Exceedance for two or more consecutive samples | 1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. 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 ET 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 properly implemented | 1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate |

| EVENT | ACTION | | | |
|---|---|--|--|---|
| | ET | IEC | ER | CONTRACTOR |
| LIMIT LEVEL | | | | |
| 1. Exceedance for one sample | 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. | 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 properly implemented | 1. Take 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. Amend proposal if appropriate |
| 2. Exceedance for two or more consecutive samples | 1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be | 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and | 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; | 1. Take 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 |

| EVENT | ACTION | | | |
|-------|---|--|--|---|
| | ET | IEC | ER | CONTRACTOR |
| | <p>implemented;</p> <p>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken;</p> <p>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</p> <p>8. If exceedance stops, cease additional monitoring</p> | <p>advise the ER accordingly;</p> <p>5. Supervise the implementation of remedial measures.</p> | <p>5. 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.</p> | <p>control;</p> <p>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated</p> |

Table I-2 Event / Action Plan For Construction Noise

| EVENT | ACTION | | | |
|-----------------------------|--|--|---|--|
| | ET | IEC | ER | CONTRACTOR |
| Action Level being exceeded | <ol style="list-style-type: none"> 1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness | <ol style="list-style-type: none"> 1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures | <ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures | <ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals |
| Limit Level being exceeded | <ol style="list-style-type: none"> 1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring | <ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. | <ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated | <ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated |

**APPENDIX J
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)**

APPENDIX J IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES (EMIS)

| EIA Ref. | Recommended Mitigation Measures | Location of the measure | Implementation Status |
|-----------------|--|--------------------------------|------------------------------|
| A | Air Quality | | |
| 3.74 | Skip hoist for material transport should be totally enclosed by impervious sheeting. | All construction sites | ^ |
| | Vehicle washing facilities should be provided at every vehicle exit point. | | ^ |
| | 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 hardcore. | | ^ |
| | Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit. | | N/A |
| | Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. | | # |
| | Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines. | | ^ |
| | Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. | | * |
| | Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. | | ^ |
| | Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit. | | ^ |
| | Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides. | | ^ |
| | Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites. | | ^ |
| 3.74 | Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. | All construction sites | ^ |

| EIA Ref. | Recommended Mitigation Measures | Location of the measure | Implementation Status |
|-------------------|--|-------------------------|-----------------------|
| | | | |
| B | Airborne Noise | | |
| 4.56– 4.61 | Use of quiet PME, movable barriers and acoustic mats. | All construction sites | ^ |
| 4.67 | Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program. | | ^ |
| | Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program. | | ^ |
| | Mobile plant, if any, shall be sited as far away from NSRs as possible. | | ^ |
| | Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum. | | ^ |
| 4.67 | Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. | | ^ |
| | Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities. | | ^ |
| C | Water Quality | | |
| 6.349 to 6.375 | Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable. | All construction sites | ^ |
| 6.376 | Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes. | | ^ |
| 6.377 | Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) | | ^ |

| EIA Ref. | Recommended Mitigation Measures | Location of the measure | Implementation Status |
|----------|--|-------------------------|-----------------------|
| | Regulation should be observed and complied with for control of chemical wastes. | | |
| 6.378 | Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges. | | ^ |
| 6.379 | <p>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 details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. | | # |
| 6.380 | <p>Construction Works in Close Proximity of Storm Drains or Seafront:</p> <p>To minimize the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable.</p> <ul style="list-style-type: none"> • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea. | All construction sites | ^ |

| EIA Ref. | Recommended Mitigation Measures | Location of the measure | Implementation Status |
|----------|--|-------------------------|-----------------------|
| | | | |
| D | Waste Management | | |
| 9.107 | Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimize wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork. | All construction sites | ^ |
| 9.109 | All waste materials should be segregated into categories covering: <ul style="list-style-type: none"> • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill. | All construction sites | ^ |
| 9.113 | Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals. | All construction sites | ^ |
| | 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. | | ^ |
| | Encourage collection of aluminum cans, PET bottles and paper by providing separate labeled bins to enable these wastes to be segregated from other general refuse generated by the work force. | | ^ |
| | Any unused chemicals or those with remaining functional capacity shall be recycled. | | ^ |
| | Proper storage and site practices to minimize the potential for damage or contamination of construction materials. | | ^ |
| 9.115 | Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site. | All construction sites | ^ |
| | Training of site personnel in proper waste management and chemical waste handling procedures. | | ^ |
| 9.115 | Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. | All construction sites | ^ |
| | Provision of sufficient waste disposal points and regular collection of waste. | | * |
| | Regular cleaning and maintenance programme for drainage systems, sumps and oil | | ^ |

| EIA Ref. | Recommended Mitigation Measures | Location of the measure | Implementation Status |
|----------|--|-------------------------|-----------------------|
| | | | |
| | interceptors. | | |
| 9.125 | Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage". | All construction sites | ^ |
| 9.131 | Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected. | | ^ |
| 9.133 | General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill. | | ^ |
| 9.135 | The recyclable component of the municipal waste generated by the workforce, such as aluminum cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials. | | ^ |
| 9.137 | If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. | | ^ |
| 9.142 | Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results. | | N/A |

| EIA Ref. | Recommended Mitigation Measures | Location of the measure | Implementation Status |
|-----------------|--|--|------------------------------|
| E | Terrestrial Ecology | | |
| 10.94 | To implement effective noise mitigation measures as recommended in Section 4 of EIA. | All construction sites | N/A |
| 10.95 | Dust control practices such as regular watering, complete coverage of any aggregate or dusty material storage piles, and re-schedule of dusty activities during high-wind conditions as well as other measures recommended in Section 3 of EIA, should be implemented. | | ^ |
| 10.96 | Fences/hoardings should be erected and installed along the boundary of the works areas. | | ^ |
| 10.97 | Standard good site practices as suggested in Section 10 of EIA should be implemented. | | N/A |
| 10.98 | Provision of proper drainage system and runoff control measures such as use of sand/silt traps, oil/grease separators, sedimentation tanks, etc. | | ^ |
| F | Landscape and Visual | | |
| Table 13.7 | Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. | All construction sites | ^ |
| | Existing trees to be retained on site should be carefully protected during construction. | | * |
| | Trees unavoidably affected by the works should be transplanted where practical. | | ^ |
| | Compensatory tree planting should be provided to compensate for felled trees. | | ^ |
| | Control of night-time lighting. | | ^ |
| Table 13.7 | Erection of decorative screen hoarding compatible with the surrounding setting. | All construction sites | N/A |
| G | Marine Ecology | | |
| 11.137 | To minimize the potential indirect impacts on water quality from construction site runoff and various construction activities, the practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted. | All construction sites | ^ |
| H | Hazard to Life | | |
| 14A.201 | Limiting use of cranes in terms of locations, lifting height, swing angle and setting up safety zone. | Exact location will be determined on construction site by the engineer | ^ |

| | |
|----------|---|
| Remarks: | ^ Compliance of mitigation measure; |
| | N/A Not Applicable; |
| | * Recommendation was made during site audit but improved/rectified by the contractor. |
| | # Recommendation was made during site audit and to be improved / rectified by the contractor. |
| | X Non-compliance of mitigation measure; |
| | ● Non-compliance but rectified by the contractor; |

**APPENDIX K
COMPLAINT LOG**

APPENDIX K – COMPLAINT LOG

Reporting Month: March 2019

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|----------|----------|---------------|----------------------|---------------------------------|--------|
| N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |

Remarks: No environmental complaint was received in the reporting month.

APPENDIX L
CONSTRUCTION PROGRAMME

| Activity ID | Activity Name | Activity % Complete | Original Duration | Start | Finish | 2018 | | | | 2019 | | | | 2020 | | |
|---|--|---------------------|-------------------|-------------|------------|------|----|----|----|------|----|----|----|------|----|----|
| | | | | | | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 |
| Target Works Programme (Completion for Section 3, 4 and 5) | | | | | | | | | | | | | | | | |
| Works for Section 3 | | | | | | | | | | | | | | | | |
| MPS2 | | | | | | | | | | | | | | | | |
| Wet Well A | | | | | | | | | | | | | | | | |
| Pump No. #4 (Hall A) | | | | | | | | | | | | | | | | |
| A4710 | Off site RTD repairing No. 4 | 0% | 40 | 28-Mar-18 | 07-May-18 | | | | | | | | | | | |
| A4730 | Reinstall motor | 0% | 15 | 07-May-18 | 28-May-18 | | | | | | | | | | | |
| Pump No. #1 (Hall A) | | | | | | | | | | | | | | | | |
| A8460 | Installation pipe clamps at DN1400 Suction DI pipe at Pump hall level (under monitoring) | 80% | 100 | 14-Sep-17 A | 24-Jan-18 | | | | | | | | | | | |
| Vibration monitoring system (VMS) | | | | | | | | | | | | | | | | |
| A8965 | Rectification works of VMS (Hall A) | 15% | 45 | 25-Dec-17 A | 15-Feb-18 | | | | | | | | | | | |
| A8970 | Verification of site installation of VMS (30 days observation- Hall A) | 0% | 30 | 15-Feb-18 | 17-Mar-18 | | | | | | | | | | | |
| Discharge Channel and Wet well inspection | | | | | | | | | | | | | | | | |
| A8480 | Isolation of MPS2 (B) by closing DN3000 KGV and stoplogs | 0% | 5 | 13-Mar-18 | 19-Mar-18 | | | | | | | | | | | |
| A8490 | Wet well B cleansing | 0% | 35 | 19-Mar-18 | 03-May-18 | | | | | | | | | | | |
| A9300 | Erect scaffold for Sparge System pipes material change | 0% | 18 | 03-May-18 | 25-May-18 | | | | | | | | | | | |
| A9390 | Dismantling of DI pipes of sparging system | 0% | 12 | 25-May-18 | 08-Jun-18 | | | | | | | | | | | |
| A9610 | Replace Stainless steel pipe for sparging system | 0% | 30 | 08-Jun-18 | 16-Jul-18 | | | | | | | | | | | |
| A9615 | Enhancement works for PVC lining inside Wet well (B) | 0% | 12 | 16-Jul-18 | 30-Jul-18 | | | | | | | | | | | |
| A9630 | SAT for sparging system | 0% | 18 | 30-Jul-18 | 20-Aug-18 | | | | | | | | | | | |
| Process water system (Flushing water and cooling water) | | | | | | | | | | | | | | | | |
| A8560 | Re-submit and Approval of WSD WWO542 for flushing water supply | 0% | 30 | 22-Jan-18* | 28-Feb-18 | | | | | | | | | | | |
| A9410 | Ordering and delivery of DN150 DI pipes for replacement | 30% | 20 | 03-Jan-18 A | 17-Jan-18 | | | | | | | | | | | |
| A9420 | Replacement of existing S.S. pipe to DI pipes | 0% | 24 | 18-Jan-18 | 14-Feb-18 | | | | | | | | | | | |
| A9430 | Hydraulic Testing of pipelines | 0% | 6 | 15-Feb-18 | 24-Feb-18 | | | | | | | | | | | |
| A9440 | DCS test for cooling system | 0% | 24 | 26-Feb-18 | 24-Mar-18 | | | | | | | | | | | |
| A9450 | Application of WSD WWO46 and water meter connection | 0% | 45 | 26-Feb-18 | 23-Apr-18 | | | | | | | | | | | |
| F.S system (Office level, FS pump room) | | | | | | | | | | | | | | | | |
| A8380 | Application of WSD WWO46 for FS Water connection | 75% | 60 | 19-Jul-17 A | 18-Jan-18 | | | | | | | | | | | |
| A8580 | Modification works of FS sprinkler in Ground floor external wall | 90% | 15 | 11-Dec-17 A | 03-Jan-18 | | | | | | | | | | | |
| A9460 | Install Beam detection fire system in G/Fand B/4 | 35% | 12 | 26-Dec-17 A | 10-Jan-18 | | | | | | | | | | | |
| A9470 | Install smoke detection fire system in B/3 and B/2 | 60% | 12 | 08-Dec-17 A | 06-Jan-18 | | | | | | | | | | | |
| A9480 | Testing and commissioning | 0% | 5 | 10-Jan-18 | 16-Jan-18 | | | | | | | | | | | |
| A9490 | scaffolding dismantling | 0% | 10 | 15-Jan-18 | 26-Jan-18 | | | | | | | | | | | |
| A9500 | Submission of FS501/314 | 0% | 0 | | 19-Jan-18* | | | | | | | | | | | |
| A9510 | FSD inspection | 0% | 10 | 01-Feb-18 | 12-Feb-18 | | | | | | | | | | | |
| Documentation | | | | | | | | | | | | | | | | |
| A8750 | As-built drawings for MPS2 | 65% | 180 | 19-Jun-17 A | 19-Mar-18 | | | | | | | | | | | |
| A8760 | Final version of O&M manual for MPS2 | 85% | 90 | 19-Jun-17 A | 17-Jan-18 | | | | | | | | | | | |
| A8770 | Final Version of Training material for MPS2 | 0% | 30 | 02-Jan-18 | 05-Feb-18 | | | | | | | | | | | |
| A8774 | Training to DSD/ST2 | 0% | 90 | 16-Apr-18* | 01-Aug-18 | | | | | | | | | | | |
| A8780 | Handover inspection to DSD/ST2 | 0% | 12 | 17-May-18 | 31-May-18 | | | | | | | | | | | |
| A8790 | Handover of spare part to DSD/ST2 | 0% | 18 | 01-Jun-18 | 22-Jun-18 | | | | | | | | | | | |
| A8800 | Handover of MPS2 to DSD/ST2 | 0% | 0 | | 20-Aug-18 | | | | | | | | | | | |
| New CEPT | | | | | | | | | | | | | | | | |
| Sludge Scrapers/ Collection system | | | | | | | | | | | | | | | | |
| A5995 | Visa application for Polychem Engineer | 15% | 45 | 13-Dec-17 A | 15-Feb-18 | | | | | | | | | | | |
| A6005 | Programme download and site trial | 0% | 6 | 15-Feb-18 | 26-Feb-18 | | | | | | | | | | | |
| A6008 | Testing and commissioning | 0% | 12 | 26-Feb-18 | 12-Mar-18 | | | | | | | | | | | |
| A6010 | RT of FMM system of PSTs and FTs | 0% | 30 | 12-Mar-18 | 11-Apr-18 | | | | | | | | | | | |
| A6020 | Rectification works for sludge scraper at FT5 | 15% | 24 | 27-Dec-17 A | 25-Jan-18 | | | | | | | | | | | |
| A6030 | Rectification works for sludge scraper at FT6 | 0% | 24 | 13-Mar-18 | 14-Apr-18 | | | | | | | | | | | |
| A8510 | Install temporary pipelines for sludge pump test | 0% | 7 | 19-Mar-18 | 27-Mar-18 | | | | | | | | | | | |
| A9400 | SAT for sludge pump 1,2 | 0% | 2 | 27-Mar-18 | 29-Mar-18 | | | | | | | | | | | |
| A9640 | Install temporary pipelines for sludge pump test | 0% | 7 | 14-Apr-18 | 23-Apr-18 | | | | | | | | | | | |
| A9890 | SAT for Sludge Pump 5,6 | 0% | 1 | 23-Apr-18 | 24-Apr-18 | | | | | | | | | | | |
| FeCl3 Dosing System | | | | | | | | | | | | | | | | |
| A9520 | Corrective maintenance of FeCl3 pumpset | 0% | 45 | 29-Jan-18* | 24-Mar-18 | | | | | | | | | | | |
| A9530 | Install servo actuator to FeCl3 dosing system (VO) | 0% | 60 | 13-Mar-18 | 28-May-18 | | | | | | | | | | | |
| A9540 | DSC test for installed equipment (VO) | 0% | 24 | 28-May-18 | 26-Jun-18 | | | | | | | | | | | |
| Process Air System | | | | | | | | | | | | | | | | |
| A5550 | SAT for S.S. pipeworks after strenghtening works | 0% | 18 | 22-Jan-18* | 10-Feb-18 | | | | | | | | | | | |
| Lifting appliance | | | | | | | | | | | | | | | | |
| A9650 | Lightning protection installation | 0% | 24 | 12-Mar-18* | 12-Apr-18 | | | | | | | | | | | |
| Documentation | | | | | | | | | | | | | | | | |
| A8835 | Training Session to DSD/ST2 | 65% | 120 | 01-Nov-17 A | 22-Feb-18 | | | | | | | | | | | |
| A8840 | Handover inspection to DSD/ST2 | 0% | 12 | 24-Apr-18 | 08-May-18 | | | | | | | | | | | |
| A8850 | Handover of CEPT to DSD/ST2 | 0% | 0 | | 08-May-18 | | | | | | | | | | | |
| Inlet Chamber | | | | | | | | | | | | | | | | |
| A9550 | Relocation flushing valve onto access platform (VO) | 0% | 18 | 22-Jan-18* | 10-Feb-18 | | | | | | | | | | | |
| A9560 | DCS SAT for flushing system of 3.6KGV | 0% | 24 | 27-Mar-18 | 30-Apr-18 | | | | | | | | | | | |
| E&M installation | | | | | | | | | | | | | | | | |
| A8230 | Installation of monorail lifting appliances | 0% | 30 | 15-Jan-18* | 21-Feb-18 | | | | | | | | | | | |
| A8240 | T&C of monorail lifting appliances | 0% | 3 | 22-Feb-18 | 24-Feb-18 | | | | | | | | | | | |

█ Actual Work ◆ Milestone
█ Remaining Work ▼ Summary
█ Critical Remaining Work

Contract No. DC/2009/10

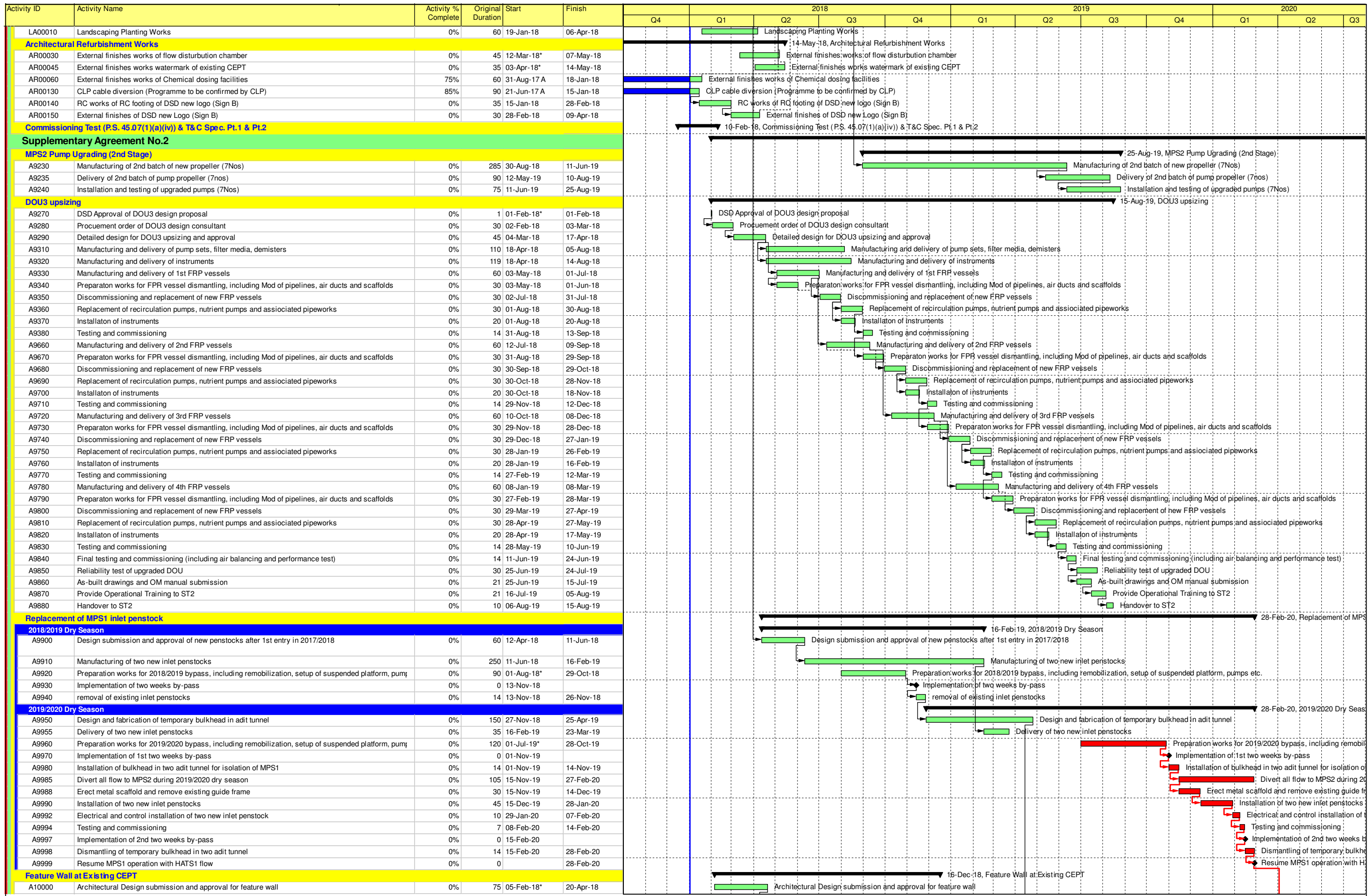
Sheet 1 of 5

| | | | |
|-----------|----------|---------|----------|
| Date | Revision | Checked | Approved |
| 06-Sep-17 | Rev. 1 | | |

HATS Stage 2A - Upgrading works at StoneCutters Island Sewage Treatment Works

Target Works Programme for Completion of Section 3, 4 and 5

| Activity ID | Activity Name | Activity % Complete | Original Duration | Start | Finish | 2018 | | | | 2019 | | | | 2020 | | | | | |
|---|--|---------------------|-------------------|-------------|-----------|------|----|----|----|------|----|----|----|------|----|----|----|--|--|
| | | | | | | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | | |
| Valve Chamber | | | | | | | | | | | | | | | | | | | |
| A3570 | Manufacturing and delivery of FRP platform materials | 80% | 30 | 03-Oct-17 A | 08-Jan-18 | | | | | | | | | | | | | | |
| A3580 | Installation of FRP platform | 0% | 35 | 09-Jan-18 | 21-Feb-18 | | | | | | | | | | | | | | |
| E&M installation | | | | | | | | | | | | | | | | | | | |
| A7525 | Installation of remaining BS on FRP platform (Non-FS requirement) | 0% | 5 | 22-Feb-18 | 27-Feb-18 | | | | | | | | | | | | | | |
| A7526 | Relocation flushing valve onto access platform (VO) | 0% | 14 | 22-Feb-18 | 09-Mar-18 | | | | | | | | | | | | | | |
| A7536 | DCS SAT for valve flushing system in VC | 0% | 18 | 17-May-18 | 07-Jun-18 | | | | | | | | | | | | | | |
| A8120 | Approval of WSD WWO542 for flushing water supply | 0% | 35 | 02-Jan-18 | 10-Feb-18 | | | | | | | | | | | | | | |
| A8130 | Dia. 100 underground watermain tee off from existing DN100 | 80% | 45 | 21-Aug-17 A | 11-Jan-18 | | | | | | | | | | | | | | |
| A8135 | Replacement of S.S. water pipe to DI pipes | 0% | 30 | 26-Feb-18* | 04-Apr-18 | | | | | | | | | | | | | | |
| A8140 | Application of WSD WWO46 and water meter connection | 0% | 35 | 06-Apr-18 | 16-May-18 | | | | | | | | | | | | | | |
| DOU3 | | | | | | | | | | | | | | | | | | | |
| Air duct connection works between DOU2 and DOU3 | | | | | | | | | | | | | | | | | | | |
| A8320 | Existing Steel bridge demolition (TBC by ST2) | 0% | 10 | 03-Apr-18* | 14-Apr-18 | | | | | | | | | | | | | | |
| Sodium Hypochlorite Storage Compound | | | | | | | | | | | | | | | | | | | |
| C3 and C4 dosing pipes | | | | | | | | | | | | | | | | | | | |
| A8010 | Construction and installation of inspection chamber (IP07) and underground PVC pipes (Approx. 30m) | 40% | 18 | 01-Dec-17 A | 13-Jan-18 | | | | | | | | | | | | | | |
| A8020 | Carryout hydraulic test in section | 15% | 4 | 22-Dec-17 A | 18-Jan-18 | | | | | | | | | | | | | | |
| A8030 | Construction and installation of inspection chamber (IP08) and underground PVC pipes (Approx. 30m) | 20% | 18 | 29-Dec-17 A | 03-Feb-18 | | | | | | | | | | | | | | |
| A8040 | Carryout hydraulic test in section | 0% | 4 | 03-Feb-18 | 08-Feb-18 | | | | | | | | | | | | | | |
| A8050 | Construction and installation of new pipe trench and PVC pipes along existing CEPT (Approx. 35m) | 0% | 24 | 11-Jan-18 | 08-Feb-18 | | | | | | | | | | | | | | |
| A8060 | Carryout hydraulic test in section | 0% | 4 | 08-Feb-18 | 13-Feb-18 | | | | | | | | | | | | | | |
| A8070 | Installation of PVC pipes in existing pipe trench to Day tanks (Approx. 35m) | 0% | 12 | 13-Feb-18 | 02-Mar-18 | | | | | | | | | | | | | | |
| A8080 | Carryout hydraulic test in section | 0% | 4 | 02-Mar-18 | 07-Mar-18 | | | | | | | | | | | | | | |
| A8090 | Installation of PVC vertical pipes up to FDC (Approx. 30m) | 0% | 12 | 07-Mar-18 | 21-Mar-18 | | | | | | | | | | | | | | |
| A8100 | Connection to existing pipeline at FDC | 0% | 4 | 21-Mar-18 | 26-Mar-18 | | | | | | | | | | | | | | |
| A8110 | Carryout overall hydraulic test | 0% | 10 | 26-Mar-18 | 11-Apr-18 | | | | | | | | | | | | | | |
| A8720 | DCS upgrading at Daytanks | 0% | 30 | 11-Apr-18 | 23-May-18 | | | | | | | | | | | | | | |
| Documentation | | | | | | | | | | | | | | | | | | | |
| A3578 | Delivery of control panel, cables and software | 85% | 85 | 09-May-17 A | 16-Jan-18 | | | | | | | | | | | | | | |
| A3585 | Intergation of existing and new NaOCl dosing system | 25% | 40 | 09-Sep-17 A | 23-Feb-18 | | | | | | | | | | | | | | |
| A3588 | As-built drawings and OM manual submission (Stage two) | 0% | 26 | 03-Apr-18* | 03-May-18 | | | | | | | | | | | | | | |
| A3589 | Training to ST2 | 0% | 18 | 04-May-18 | 25-May-18 | | | | | | | | | | | | | | |
| A3590 | Handover inspection of NaOCl dosing and intergated system DSD/ST2 (Stage two) | 0% | 14 | 26-May-18 | 11-Jun-18 | | | | | | | | | | | | | | |
| A3600 | Handover of NaOCl (stage two) | 0% | 0 | | 11-Jun-18 | | | | | | | | | | | | | | |
| Works for Section 5 | | | | | | | | | | | | | | | | | | | |
| Time for Sectional Completion | | | | | | | | | | | | | | | | | | | |
| TC0115 | Completion of Outstanding works in Section 5 | 0% | 0 | | 02-Jun-18 | | | | | | | | | | | | | | |
| Portion 7 (Polymer Building) | | | | | | | | | | | | | | | | | | | |
| R.C. Works | | | | | | | | | | | | | | | | | | | |
| Superstructure | | | | | | | | | | | | | | | | | | | |
| P700330 | External underground drainage for PSB | 75% | 60 | 21-Jun-17 A | 18-Jan-18 | | | | | | | | | | | | | | |
| P700340 | Concrete carriageway outside PSB | 35% | 24 | 03-Oct-17 A | 06-Feb-18 | | | | | | | | | | | | | | |
| Builder and finishes Works | | | | | | | | | | | | | | | | | | | |
| Roof Floor | | | | | | | | | | | | | | | | | | | |
| P701140 | Green Roof | 50% | 24 | 15-Sep-17 A | 15-Jan-18 | | | | | | | | | | | | | | |
| Statutory Submission and Inspection | | | | | | | | | | | | | | | | | | | |
| Water Supplier Department (WSD) | | | | | | | | | | | | | | | | | | | |
| P905070 | WM(FS): Submit WWO046 | 0% | 0 | 19-Feb-18* | | | | | | | | | | | | | | | |
| P905080 | WM(FS): WSD inspection and install meter | 0% | 35 | 19-Feb-18 | 25-Mar-18 | | | | | | | | | | | | | | |
| P905090 | WM(FS): Issue water connection advice (Portable water and process water) | 0% | 0 | | 25-Mar-18 | | | | | | | | | | | | | | |
| Fire Service Department (FSD) | | | | | | | | | | | | | | | | | | | |
| P905370 | FS: Install DG room | 0% | 12 | 12-Feb-18* | 28-Feb-18 | | | | | | | | | | | | | | |
| P905380 | FS: FSD DG Good Store Inspection | 0% | 7 | 28-Feb-18 | 07-Mar-18 | | | | | | | | | | | | | | |
| P905390 | FS: Submit Form 314 and Form 501 | 0% | 0 | | 25-Mar-18 | | | | | | | | | | | | | | |
| P905400 | FS: FSD inspection | 0% | 1 | 09-Apr-18 | 09-Apr-18 | | | | | | | | | | | | | | |
| P905410 | FS: Defect rectification | 0% | 9 | 10-Apr-18 | 19-Apr-18 | | | | | | | | | | | | | | |
| P905420 | FS: 2nd FSD inspection | 0% | 1 | 20-Apr-18 | 20-Apr-18 | | | | | | | | | | | | | | |
| Portion 1 (Modification works at NWK overflow chamber and SCIMPS2) | | | | | | | | | | | | | | | | | | | |
| Civil works | | | | | | | | | | | | | | | | | | | |
| P101805 | Construction of DN1200 overflow pipe (CH80-100) | 5% | 30 | 30-Nov-17 A | 03-Feb-18 | | | | | | | | | | | | | | |
| P101806 | Construction of DN1200 flowmeter chamber (CH80-70) | 0% | 30 | 03-Feb-18 | 14-Mar-18 | | | | | | | | | | | | | | |
| P101809 | TTA for traffic diversion (in porous pavement) | 0% | 10 | 14-Mar-18 | 26-Mar-18 | | | | | | | | | | | | | | |
| P101811 | Construction of DN1200 overflow pipe (CH70-30) | 0% | 35 | 26-Mar-18 | 10-May-18 | | | | | | | | | | | | | | |
| P101815 | Construction of DN1200 (0-30) and NWK overflow chamber connection | 5% | 60 | 14-Nov-17 A | 12-Mar-18 | | | | | | | | | | | | | | |
| Connection Works | | | | | | | | | | | | | | | | | | | |
| P100330 | Modification works for connection of overflow Pipe at NWK overflow chamber | 0% | 25 | 13-Mar-18 | 14-Apr-18 | | | | | | | | | | | | | | |
| P100380 | Reliability test of NWKOF | 0% | 14 | 10-May-18 | 28-May-18 | | | | | | | | | | | | | | |
| Portion 1 (SCIMPS1 Transformer Building Extension) | | | | | | | | | | | | | | | | | | | |
| Builder and finishes Works | | | | | | | | | | | | | | | | | | | |
| P100210 | Builders and metal works | 15% | 30 | 26-Jul-17 A | 31-Jan-18 | | | | | | | | | | | | | | |
| MPS1 Inlet chamber | | | | | | | | | | | | | | | | | | | |
| Works in SCISTW | | | | | | | | | | | | | | | | | | | |
| P600118 | Construction temporary steelworks in existing riser shaft | 75% | 150 | 01-May-17 A | 08-Feb-18 | | | | | | | | | | | | | | |



| Activity ID | Activity Name | Activity % Complete | Original Duration | Start | Finish | 2018 | | | | 2019 | | | | 2020 | | | | |
|-----------------------------|--|---------------------|-------------------|-----------|-----------|------|----|----|----|------|----|----|----|------|----|----|----|--|
| | | | | | | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | |
| A10010 | Design and construction of architectural features installation | 0% | 240 | 21-Apr-18 | 16-Dec-18 | | | | | | | | | | | | | |
| Existing Riser shaft | | | | | | | | | | | | | | | | | | |
| A10020 | RC design for top slab of existing riser shaft | 0% | 90 | 26-Apr-19 | 24-Jul-19 | | | | | | | | | | | | | |
| A10030 | Cosntruction top slab of existing riser shaft | 0% | 120 | 14-Apr-20 | 11-Aug-20 | | | | | | | | | | | | | |

- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone
- Summary

Contract No. DC/2009/10

Sheet 5 of 5

| Date | Revision | Checked | Approved |
|-----------|----------|---------|----------|
| 06-Sep-17 | Rev. 1 | | |

HATS Stage 2A - Upgrading works at StoneCutters Island Sewage Treatment Works

Target Works Programme for Completion of Section 3, 4 and 5