AECOM

Drainage Services Department

Contract No. CM 12/2019

Expansion of Sha Tau Kok Sewage Treatment Works

Environmental Team Services for Construction Phase (2020-2021)

Monthly EM&A Report for July 2020

[August 2020]

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Version:0	Date: 14 August 2020

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ANEWR

Drainage Services Department
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Your reference:

Our reference: HKDSD206/50/106707

Date: 14 August 2020

Attention: Mr K K Leung

BY EMAIL & POST
(email: kkleung04@dsd.gov.hk)

Dear Sirs

Agreement No.: CM 14/2018
Independent Environmental Checker Services for
Expansion of Sha Tau Kok Sewage Treatment Works
Environmental Monitoring and Audit Monthly Report (July 2020)

We refer to emails of 11, 13 and 14 August 2020 from AECOM Asia Co. Ltd attaching the Environmental Monitoring and Audit Monthly Report (July 2020).

We have no comment and hereby verify the captioned Report in accordance with Clause 3.4 of the Environmental Permit no. EP-517/2017/A.

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Adi Lee at 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LYMA/lhmh

cc DSD – Ms Roxana Yeung (email: hcyeung@dsd.gov.hk)
Black & Veatch Hong Kong Limited – Mr Anthony Leung (email: re_em2@dc1803.com.hk)
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EXECUTIVE SUMMARY

(i) Introduction

This is the 14th EM&A Report prepared by AECOM for the Expansion of Sha Tau Kok Sewage Treatment Works. This report summarized the monitoring results and audits findings of the EM&A programme under the issued EP (EP No.: EP-517/2017/A) and in accordance with the EM&A Manual during the reporting period from 01/07/2020 to 31/07/2020.

(ii) Summary of Main Works Undertaken and Key Measures Implemented

The main works undertaken during the reporting period are as follows:

- TSTP Testing and Commissioning
- Set up of submarine outfall drilling rig (Land).

Implementation of the key mitigation measures during the reporting period are as follow:

- All construction plants / machineries should be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission.
- All C&D materials generated should be transported and stored at temporary storage area. Cover should be provided during transportation of dusty materials. Suitable materials should be sorted for reuse on-site. Only non-inert C&D material should be disposed off-site to NENT Landfill.
- All dump trucks should be equipped with mechanical covers to prevent the dust emission during transportation when necessary.
- Dust control measures, such as water spraying, should be provided during demolition works when necessary.
- Maintaining of wet surface on access road and keep slow speed in the site.
- Wastewater to be treated by wastewater treatment facilities before discharge.
- Conditions in the Environmental Permit and Discharge License should be followed.
- Fueling of equipment should be conducted carefully on-site by mobile tanker to avoid storage of fuel and oil spillage.
- Provision of drip trays for equipment likely cause spillage of chemical / fuel, and provide routine maintenance.
- Predict required quantity of concrete accurately and collect the unused fresh concrete at designated locations in the site for subsequent disposal.

(iii) Summary of Exceedances, Investigation and Follow-up

No Action or Limit Level exceedance of construction noise was recorded in the reporting period. No noise complaints related to 0700 – 1900 hours on normal weekdays was received in the reporting period.

Three (3) Action Level and ten (10) Limit Level exceedances were recorded at measured SS level; five (5) Action Limit Level and seven (7) Limit Level exceedances were recorded at measured total phosphorus Level; and one (1) Action Limit Level exceedance and no Limit level exceedance were recorded at measured ammonia nitrogen Level of marine water quality in the reporting period.

Based on the investigation findings, the exceedance was likely due to local factors on 22 July 2020; and the measured levels of SS, NH3-N and TP were similar with baseline levels on 27 and 29 July 2020. Therefore, the exceedances were considered not related to the Project.

Non-compliance of BOD_5 of effluent quality were recorded on 23 and 24 July 2020, the cases of non-compliance were notified to the plant operator and ad-hoc meeting among DSD, ER, IEC, ET and Contractor were held to review the likely cause of exceedance and follow up actions.

(iv) Complaint Handling, Prosecution and Public Engagement

No complaints, notification of summons and successful prosecution was received in the reporting period.

No public engagement activity was conducted in the reporting period.

(v) Reporting Change

There was no reporting change in the reporting period.

(vi) Future Key Issues

The main works will be anticipated in the next reporting period are as follows:

- TSTP Testing and Commissioning
- Demolition of the existing STKSTW and Casing Installation (Land).

The corresponding mitigation measures to be implemented in the next reporting period are as follow:

- All construction plants / machineries should be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission.
- All C&D materials generated should be transported and stored at temporary storage area. Cover should be provided during transportation of dusty materials. Suitable materials should be sorted for reuse on-site. Only non-inert C&D material should be disposed off-site to NENT Landfill.
- All dump trucks should be equipped with mechanical covers to prevent the dust emission during transportation when necessary.
- Dust control measures, such as water spraying, should be provided during demolition works when necessary.
- Maintaining of wet surface on access road and keep slow speed in the site.
- Wastewater to be treated by wastewater treatment facilities before discharge.
- Conditions in the Environmental Permit and Discharge License should be followed.
- Fueling of equipment should be conducted carefully on-site by mobile tanker to avoid storage of fuel and oil spillage.
- Provision of drip trays for equipment likely cause spillage of chemical / fuel,and provide routine maintenance.
- Predict required quantity of concrete accurately and collect the unused fresh concrete at designated locations in the site for subsequent disposal.

The following EP submission (EP No.: EP-517/2017/A) was submitted during the reporting period:

The Condition 3.4:

The 13th Monthly EM&A Report (June 2020) was submitted to EPD on 13 July 2020.

1 INTRODUCTION

1.1 Background

1.1.1. The Project in Sha Tau Kok mainly comprises of the following items:

i) Increase the treatment capacity of Sha Tau Kok Sewage Treatment Works (STKSTW) to 5,000 m^3/day at Average Dry Weather Flow (ADWF) in Phase 1, with suitable allowance to cater for a further increase of treatment capacity to 10,000 m^3/day at ADWF in Phase 2;
ii) Construct a Temporary Sewage Treatment Plant (TSTP);
iii) Demolish the existing Sha Tau Kok Sewage Pumping Station (STKSPS) and decommission the rising main between STKSPS and STKSTW;
iv) Construct a new gravity sewer; and
v) Decommission the existing submarine outfall and construct a new one.

1.1.2. The Project site will be within the existing STKSTW while the construction of the gravity sewers and demolition of STKSPS will be carried out in Sha Tau Kok Town. The proposed submarine outfall will be constructed by Horizontal Directional Drilling (HDD) method under the seabed of Starling Inlet.

1.1.3. The Environmental Impact Assessment (EIA) Report for Expansion of Sha Tau Kok Sewage Treatment Works (Register No: AEIAR-207/2017) was approved on 14 February 2017. A Variation of an Environmental Permit (EP) EP-517/2017/A was issued on 18 October 2019 and it is the current permit for the Project.

1.1.4. Fugro Technical Services Limited (FTS) has been appointed to work as the additional services for Environmental Team (ET) services at early stage of construction phase (27 May 2019 to 26 February 2020) to implement the EM&A programme for the Project.

1.1.5. Since 27 February 2020, AECOM Asia Co. Ltd (AECOM) has been appointed as the ET to undertake the EM&A programme during construction phase (2020 – 2021) of the Project.

1.1.6. The EM&A programme of this Project shall be implemented in accordance with the requirements and procedures set out in the EM&A Manual and the EP No. EP-517/2017/A.

1.1.7. A baseline noise monitoring work was conducted between 25 February 2019 and 11 March 2019 and an Environmental Monitoring Report (Noise) Report (Report No.: 0118/18/ED/0259D) had submitted to EPD on 2 April 2019 and was approved by EPD on 21 June 2019.

1.1.8. A baseline water quality monitoring was conducted between 26 February 2019 and 23 Mar 2019 and an Environmental Monitoring Report (Water) Report (Report No.: 0118/18/ED/0307E) had submitted to EPD on 14 Jun 2019 and comments of report were received from EPD on 21 November 2019. An updated Environmental Monitoring Report (Water) Report (Report No.: 0118/18/ED/0307F) had submitted to EPD on 6 January 2020 and the report was approved by EPD on 2 March 2020.

1.1.9. A pre-construction survey on night roosting site for great egret was conducted in October 2019 and a Pre-construction Survey Report (Report No.: 0118/18/ED/0382 03) had submitted to EPD on 12 December 2019 and the report was found in order by Agriculture, Fisheries and Conservation Department on 30 December 2019.

1.1.10. A proposal for changes of the environmental monitoring methodology and requirement (Operation Phase of Odour Monitoring) had submitted to EPD on 29 April 2020 and comments from EPD were received on 26 May 2020. A revised proposal was submitted on 28 May 2020 and approved by EPD on 4 June 2020.

1.1.11. The construction phase and EM&A programme of the Project commenced on 27 May 2019. The operation of TSTP was commenced on 22 July 2020.

1.2 Scope of Report

1.2.1 This is the 14th EM&A Report prepared by AECOM for the Expansion of Sha Tau Kok Sewage Treatment Works. This report summarized the monitoring results and audits findings of the EM&A programme under the issued EP (Condition 3.4 of EP No.: EP-517/2017/A) and in accordance with the EM&A Manual during the reporting period from 01/07/2020 to 31/07/2020.

1.3 Project Organization

1.3.1 The project organization structure is shown in **Appendix A**. The key personnel contact names and numbers are summarized in **Table 1.2**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone
DSD Drainage Services Department	Engineer	Gary Leung	2594 7594
ER Black & Veatch Hong Kong Limited	Resident Engineer	Anthony Leung	2946 8708
IEC ANewR Consulting Limited	Independent Environmental Checker	James Choi	2618 2836
Contractor Build King – Kum Shing J.V.	Environmental Officer	Jimmy Wong	6576 7729
ET AECOM Asia Company Limited	ET Leader	Y W Fung	3922 9393

1.4 Construction Programme and Activities

1.4.1 The construction phase of the Project under the EP commenced on 27 May 2019. The operation of TSTP was commenced on 22 July 2020.

1.4.2 Details of the construction works undertaken during the reporting period are listed below:

- TSTP testing and commissioning
- Set up of submarine outfall drilling rig (Land)

1.4.3 The Construction Programme is shown in **Appendix B**.

1.4.4 The general layout plan of the Project site is shown in **Figure 1.**

1.5 Status of Environmental Licenses, Notification and Permits

1.5.1 The environmental licenses and permits for the Project and valid in the reporting period are summarized in **Table 1.2**.

Table 1.2 Summary Status of Environmental License, Notification and Permit

License/ Notification/ Permit	Reference No.	Valid Period	
		From	To
Environmental Permit	EP-517/2017/A	18/10/2019	N/A
Wastewater Discharge License	WT00033567-2019 (superseded by WT00035755-2020)	02/05/2019	31/05/2024
	WT00035755-2020	12/06/2020	30/06/2022
Chemical Waste Producer Registration	5213-652-B2548-01	14/12/2018	N/A
Billing Account	WFG19965	02/01/2019	N/A
Construction Noise Permit	GW-RN0218-20	28/03/2020	14/09/2020

2 ENVIRONMENTAL MONITORING REQUIREMENTS

2.1 Odour Monitoring (Operation Phase for TSTP)

2.1.1 In accordance with the EM&A Manual, a commissioning test for the deodorization facilities of the TSTP was performed on 12 June 2020, exhaust air flow rate, temperature of exhaust and H_2S concentration were recorded during the measurement. The measurement details were presented in the odour commissioning test report. The odour commissioning test report was submitted to EPD on 16 June 2020.

Impact Monitoring Requirement

2.1.2 Weekly monitoring of odour emission at the exhausts of deodorization facilities (TSTP No.1 and TSTP No.2) will be conducted in the first two months of the first year of the TSTP operation. Odour monitoring will be performed at the exhaust of operating deodorization facility at TSTP. The approved alternative method for odour monitoring is presented in Error! Reference source n ot found.

Table 2.1 Approved Alternative Odour Monitoring Methodology

Measurement Locations	Parameter	Equipment
At the Exhaust of TSTP No.1 and TSTP No.2	▪ Exhaust air flow rate ▪ Temperature of exhaust ▪ H_2S Concentration (ppm)	H_2S Analyzer Anemometer

Monitoring Equipment

2.1.3 The details of monitoring equipment are presented in **Table 2.2**. The calibration certificate of H_2S analyzer and air velocity meter are presented in **Appendix C**.

Table 2.2 Details of Odour Monitoring Equipment

Equipment	Equipment Model
H2S Analyzer	Jerome 631X
Air Velocity Meter	TSI 9555-P

Monitoring Locations

2.1.4 As the operation mode of the deodorization system at TSTP shall be one in operation (TSTP No.2) and one in standby (TSTP No.1). Odour monitoring will be undertaken at the exhaust of operating facility. The odour monitoring locations is presented in **Table 2.3** and shown in Error! Reference source not found.**.**

Table 2.3 Location of Odour Monitoring

ID	Monitoring Location	Operation mode
TSTP No.1	At the exhaust of TSTP No.1	Standby
TSTP No.2	At the exhaust of TSTP No.2	Operation

Monitoring Parameters and Frequency

2.1.5 **Table 2.4** summarizes the monitoring parameters, frequency and duration of impact noise monitoring.

Table 2.4 Monitoring Parameters, Frequency

Measurement Parameters	Frequency
15-minute H_2S Measurement (every 5 minutes measure one reading) - Average value of the three 5-minute readings will be used. Exhaust air flow rate, ambient temperature, temperature of exhaust, weather condition and wind speed will be recorded.	At least once per week in the first two months of 1st year of the TSTP operation.

Results and Observation

2.1.6 TSTP No.2 was in operation in the reporting period. Odour monitoring was undertaken at the exhaust of operating facility TSTP No.2 in the reporting period.

2.1.7 The schedule for environmental monitoring in the reporting period is provided in **Appendix D.**

2.1.8 The odour monitoring results are summarized in **Table 2.5**.Non-compliance was found and the operator was reminded to inspect the deodorization facility frequently.

Table 2.5 Summary of Odour Monitoring Results in the Reporting Period

Location	Date & Weather	Time	Ambient		Exhaust				
			Temp., °C	Wind speed, m/s	Temp., °C	Air velocity, m/s	Average Air flow rate, m^3/s	H_2S concentration, ppm	H_2S Conc. Expressed in Odour Unit (*), OU/m^3
Exhaust of TSTP No.2	22-Jul-20 Sunny	12:30	33.2	1.43	36.4	7.26	2.49	<0.003	6.4
		12:35			35.6	7.25		<0.003	6.4
		12:40			35.3	7.32		<0.003	6.4
Exhaust of TSTP No.2	30-Jul-20 Sunny	11:00	35	1.98	36.5	15.34	4.30^	<0.003	6.4
		11:05			36.3	15.23		<0.003	6.4
		11:10			36.3	15.01		<0.003	6.4

Note: * equivalent detection threshold criterion: 1OU= 0.00047ppm of H_2S
^ non-compliance on the exhaust flow rate was noted.

2.2 Noise Monitoring

Monitoring Requirements

2.2.1 In accordance with the EM&A Manual, impact noise monitoring was conducted for at least once per week during the construction phase of the Project. The Action and Limit levels for construction noise is provided in **Table 2.6**.

Table 2.6 Action and Limit Levels for Construction Noise

Station ID	Noise Sensitive Receivers	Description	Action Level	Limit Level
NM1	NSR 6	Block 45, Sha Tau Kok Chuen	When one documented complaint is received from any one of the noise sensitive receivers	75 dB(A)*
NM2	NSR 8	Building along Shun Lung Street		

Note: *75 dB(A) for residential premises.

Monitoring Equipment

2.2.2 Noise monitoring was performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 2.7.**

Table 2.7 Noise Monitoring Equipment

Equipment	Brand and Model
Integrated Sound Level Meter	B&K 2238, B&K2250L
Acoustic Calibrator	B&K 4231

Monitoring Locations

2.2.3 Monitoring stations NM1 and NM2 were set up at the proposed locations in accordance with EM&A Manual. **Figure 3**Figure 3 Location of Noise Monitoring Stations shows the location of the monitoring stations. **Table 2.8** describes the details of the monitoring stations.

Table 2.8 Location of Impact Noise Monitoring Stations

Station ID	Noise Sensitive Receivers	Description	Type of measurement
NM1	NSR 6	Block 45, Sha Tau Kok Chuen	Free-field
NM2	NSR 8	Building along Shun Lung Street	Free-field

Note: For Free-field measurement, a correction of +3dB(A) should be made to the measured results.

Monitoring Parameters and Frequency

2.2.4 **Table 2.9** summarizes the monitoring parameters, frequency and duration of impact noise monitoring.

Table 2.9 Noise Monitoring Parameters, Frequency and Duration

Parameter and Duration	Frequency
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. L_{eq}, L_{10} and L_{90} would be recorded.	At least once per week

Monitoring Methodology

2.2.5 Monitoring Procedure

(a) Free-field measurement was made at monitoring stations NM1 and NM2. For free-field measurement, a correction factor of +3 dB (A) would be applied.

(b) The sound level meter was set on a tripod at a point 1m from the exterior of the façade of the sensitive receivers building and at a height of 1.2 m above the ground for free-field measurements at monitoring stations.

(c) The battery condition was checked to ensure the correct functioning of the meter.

(d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

(i) frequency weighting: A
(ii) time weighting: Fast
(iii) time measurement: $L_{eq(30\text{-}minutes)}$ during 07:00 – 1900 on normal weekdays

(e) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

(f) During the monitoring period, the L_{eq}, L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.

(g) Noise measurement would be paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations would be recorded when intrusive noise was unavoidable.

(h) The wind speed at the monitoring station was checked with the portable wind speed meter. Noise monitoring would be cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

2.2.6 Maintenance and Calibration

(a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.

(b) The meter and calibrator were sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.

(c) Calibration certificates of the sound level meters and acoustic calibrators are provided in **Appendix C.**

Monitoring Results and Observations

2.2.7 The schedule for environmental monitoring in the reporting period is provided in **Appendix D.**

2.2.8 The monitoring results for construction noise are summarized in **Table 2.10** and the monitoring data is provided in **Appendix F**.

Table 2.10 Summary of Construction Noise Monitoring Results in the Reporting Period

Station ID	Construction Noise Level, dB(A)*, $L_{eq\ (30\ min)}$	Baseline Level, dB(A)	Limit Level, dB(A)
NM1	59.2 - 61.8	65	75
NM2	60.1 - 61.2	65	75

Note: *A correction of +3 dB(A) was made to the free field measurements.
Leq (30min) was measured at 0700-1900 hours on normal weekdays.

2.2.9 No Action or Limit Level exceedance of construction noise was recorded in the reporting period. No noise complaints related to 0700 – 1900 hours on normal weekdays was received in the reporting period.

2.2.10 The event and action plan is annexed in **Appendix H**.

Other factor influencing the monitoring results

2.2.11 Major noise sources during noise monitoring in the reporting period were mainly road traffic noise.

2.3 Water Quality Monitoring (Construction Phase)

2.3.1 In accordance with the recommendations of the EIA, water quality monitoring is required during the installation, maintenance and removal of sheetpiles and sediment removal works for construction of diffuser.

2.3.2 No construction of diffuser was carried out in the reporting period.

2.4 Water Quality Monitoring (1-year Operation phase for TSTP)

Marine Water Quality and Continuous Effluent Quality

Monitoring Requirements

2.4.1 In accordance with the EM&A Manual, marine water quality and continuous effluent quality monitoring for first year operation of TSTP were conducted in the reporting period. The Action and Limit levels for marine water quality and effluent quality is presented in **Appendix E.**

2.4.2 Water quality monitoring programme for operation phase of TSTP was commenced on 22 July 2020.

Monitoring Equipment

2.4.3 Equipment used in the marine water quality and effluent quality monitoring programme are summarized in **Table 2.11.**

Table 2.11 Marine Water Quality & Effluent Quality Monitoring Equipment

Monitoring Equipment	Equipment Model
Multifunctional Meter (measurement of Dissolved Oxygen, pH, temperature, salinity and turbidity)	YSI 6820V2
Water Depth	Lowrance x-4
Positioning Equipment	Garmin GPS72H
Multifunctional Meter (measurement of Dissolved Oxygen, temperature, salinity and turbidity)	YSI Professional Plus
pH meter	WTW 3210
Turbidimeter	OAKTON T-100

Monitoring Locations

2.4.4 In accordance with the EM&A Manual, marine water quality and effluent quality monitoring stations are summarized in **Table 2.12** and shown in **Figure 4**.

Table 2.12 Location of Water Quality Monitoring Stations for 1-Year TSTP Operation

Station	Description	Easting	Northing
FCZ1B	Sha Tau Kok Fish Culture Zone – West	841565	844299
FCZ7*	Temporary Relocation Site for Fish Rafts of the Sha Tau Kok Fish Culture Zone	842282	844451
FCZ8*	Temporary Relocation Site for Fish Rafts of the Sha Tau Kok Fish Culture Zone	841511	843959
SGA	Seagrass Colony	841064	844580
M1A	Mangrove Stand	840744	844853
H1A	Horseshoe Crab	840645	844398
H4A	Horseshoe Crab	840304	843546
N1	Impact Station of the Expanded STKSTW (Ebb Tide)	842863	845378
N2	Impact Station of the Expanded STKSTW (Flood Tide)	842109	844631
C	Control Station	844690	845886
Effluent	At the effluent discharge point of TSTP	-	-

Note:
Due to accessibility and safety concern during the baseline period, alternative water quality monitoring stations of SGA, M1A, H1A and H4A were proposed and adopted.
* No sediment dredging was conducted at Sha Tau Kok Fish Culture Zone, Approach Channel, Boat Shelter, etc in the reporting period. Therefore, no relocation for FCZ1 and monitoring at FCZ7 and FCZ8 is not required.

Monitoring Parameters and Frequency

2.4.5 **Table 2.13** summarizes the monitoring parameters, frequency of water quality monitoring.

Table 2.13 Marine Water and Effluent Quality Monitoring Parameters, Frequency

Monitoring Parameters, unit	Frequency
In-situ Measurement: • Temperature, °C • pH • Salinity, ppt • Dissolved Oxygen (DO), mg/L • Turbidity, NTU **Laboratory Analysis:** • Suspended Solids (SS), mg/L • Biochemical Oxygen Demand (BOD_5), mg/L • Total Phosphorus (TP) mg/L • Total Nitrogen (TN), mg/L • Ammonia Nitrogen (NH_3-N), mg/L • Total Inorganic Nitrogen, (TIN), mg/L • *E.coli*, cfu/100mL	**For Marine Water Quality:** Once per day for 3 days per week for 1-year (the interval between two sets of monitoring should not be less than 36 hours) **For Continuous Effluent Quality Monitoring:** Daily for 1-year

Monitoring Methodology

2.4.6 In-situ measurement

For marine water quality monitoring

(a) The in-situ marine water quality parameters, viz. dissolved oxygen, pH, temperature, salinity and turbidity were measured by multifunctional meter YSI6820.

(b) Digital Differential Global Positioning System (DGPS) was used to ensure that the correct location was selected prior to sample collection. Portable battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.

(c) All in-situ measurements were taken at 3 water depths, 1 m below water surface, mid-depth and 1 m above sea bed, except where the water depth was less than 6 m, in which case the mid-depth station was omitted. Should the water depth be less than 3 m, only the mid-depth station was monitored. Duplicate water samples were collected using the water sampler at the monitoring stations. Other relevant data were recorded, including monitoring location, time, water depth, tidal stages, weather conditions, sea conditions and any special phenomena or work undertaken in the field log sheet for information.

For effluent quality monitoring

(a) Effluent sub-samples at bi-hourly interval over a 24-hour period were collected by refrigerated autosampler. Flow record of the project for the 24-hour sampling period was obtained to calculate the volume of each sub-sample. All of measured volume sub-samples were mixed in a clean container act as a flow-weighted composite effluent sample.

(b) The in-situ effluent quality parameters, viz. dissolved oxygen, pH, temperature, salinity and turbidity were measured by YSI Professional Plus, pH meter and Turbidimeter.

2.4.7 Laboratory Analysis

(a) The collected samples were stored in high-density polythene bottles and/or preservatives added bottles and packed in cool-boxes (cooled at 4^{o}C without being frozen) and delivered to a HOKLAS laboratory for laboratory analysis. The analysis will be commenced in a HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066) within 24 hours after collection of the samples.

(b) The QAQC laboratory reports are attached in **Appendix G.**

2.4.8 Maintenance and Calibration

(a) Before monitoring, the dissolved oxygen probe of YSI 6820 was calibrated by the wet bulb method. A zero check in distilled water was performed with the turbidity probe once per monitoring day. The probe was then calibrated with a solution of known NTU.

(b) The monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS before use and subsequently re-calibrated at 3-monthly intervals throughout all stages of the water quality monitoring. Calibration details are provided in **Appendix C.**

Monitoring Results and Observations

2.4.9 The schedule for environmental monitoring in the reporting period is provided in **Appendix D.**

2.4.10 Operation water quality monitoring was conducted at all designated monitoring stations and continuous effluent quality monitoring was conducted in the reporting period. No emergency discharge was happened in the reporting period.

2.4.11 All monitoring data and graphical presentation of the monitoring results are provided in **Appendix G**.

2.4.12 Exceedances of marine water quality and effluent quality were recorded in the reporting period. Number of exceedances recorded in the reporting period at each monitoring station are

summarised in **Table 2.14**.

Table 2.14 Summary of Water Quality Exceedances

Station	Exceedance Level	DO (S&M)	DO (Bottom)	Salinity	Turbidity	SS	NH3-N	TN	TIN	TP	BOD5	*E.Coli*	Total
N1	Action	0	0	0	0	0	0	0	0	0	0	0	**0**
	Limit	0	0	0	0	0	0	0	0	0	0	0	**0**
N2	Action	0	0	0	0	0	0	0	0	0	0	0	**0**
	Limit	0	0	0	0	1	0	0	0	1	0	0	**2**
FCZ1B	Action	0	0	0	0	0	0	0	0	0	0	0	**0**
	Limit	0	0	0	0	1	0	0	0	1	0	0	**2**
H4A	Action	0	0	0	0	1	0	0	0	0	0	0	**1**
	Limit	0	0	0	0	2	0	0	0	2	0	0	**4**
H1A	Action	0	0	0	0	0	0	0	0	1	0	0	**1**
	Limit	0	0	0	0	2	0	0	0	1	0	0	**3**
M1A	Action	0	0	0	0	1	0	0	0	2	0	0	**3**
	Limit	0	0	0	0	2	0	0	0	1	0	0	**3**
SGA	Action	0	0	0	0	1	1	0	0	2	0	0	**4**
	Limit	0	0	0	0	2	0	0	0	1	0	0	**3**
Effluent	Action	0	0	0	0	0	0	0	0	0	2	0	**0**
	Limit	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	Action	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**5**	**2**	**0**	**9**
	Limit	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**7**	**0**	**0**	**17**

2.4.13 Three (3) Action Level and ten (10) Limit Level exceedances were recorded at measured SS level; five (5) Action Limit Level and seven (7) Limit Level exceedances were recorded at measured total phosphorus Level; and one (1) Action Limit Level exceedance and no Limit level exceedance were recorded at measured ammonia nitrogen Level of marine water quality in the reporting period.

2.4.14 The investigation findings on marine water quality exceedances were summarized on below:

For exceedances on 22 July 2020, Limit Level exceedances of SS were recorded at H4A and M1A and Action Level exceedance of SS was recorded at SGA. The SS measured at H1A and H4A (as upstream station) were similar to M1A and SGA. The TP measured at H4A (as upstream station) were similar to M1A and SGA. And SS and TP measured at effluent quality were well below the effluent quality's Action/Limit Level.

For exceedances on 27 July 2020, Limit Level exceedances (130% of Control Station) of SS were recorded at H1A, H4A, M1A and SGA. Action Level exceedance (120% of Control Station) of NH3-N was recorded at SGA. Limit Level exceedances (130% of Control Station) of TP were recorded at N2, FCZ1B, H1A, H4A, M1A and SGA. With reference to the baseline monitoring results, these SS, NH3-N and TP exceedances were within the baseline results and as similar with the mean of baseline. And SS and TP measured at effluent quality were well below the effluent quality's Action/Limit Level.

For exceedances on 29 July 2020, Limit Level exceedances (130% of Control Station) of SS were recorded at N2, FCZ1B, H1A, H4A, M1A and SGA. Action Limit exceedances (120% of Control Station) of TP were recorded at H1A, M1A and SGA and Limit Level exceedance (130% of Control Station) was recorded at H4A. With reference to the baseline monitoring results, these SS and TP exceedances were within the baseline results. And SS and TP measured at effluent quality were well below the effluent quality's Action/Limit Level.

2.4.15 Based on the investigation findings, the exceedance was likely due to local factors on 22 July 2020; and the measured levels of SS, NH3-N and TP were similar with baseline levels on 27 and 29 July 2020. Therefore, the exceedances were considered not related to the Project.

2.4.16 Non-compliance of BOD_5 of effluent quality were recorded on 23 and 24 July 2020, the cases of non-compliance were notified to the plant operator and ad-hoc meeting among DSD, ER,

IEC, ET and Contractor were held to review the likely cause of exceedance and follow up actions.

2.4.17 The event and action plan is annexed in **Appendix H**.

2.5 Waste Management Status

2.5.1 Auditing of waste management practices during regular site inspections will confirm that the waste generated during construction are properly, stored, handled and disposed of. The construction Contractor(s) will be responsible for the implementation of any mitigation measures to reduce waste or redress issues arising from the waste materials.

2.5.2 The C&D waste under this contract should be disposal of at North East New Territories (NENT) Landfill and Tseung Kwan O Area 137 Fill Bank (TKO137FB).

2.5.3 Monthly summary of waste flow table is detailed in **Appendix I**.

2.6 Landscape and Visual

2.6.1 Inspections of the implementation of landscape and visual mitigation measures were conducted on 8 and 22 July 2020. The observations and recommendations made during the audit sessions are summarized in **Table 4.1**. A summary of the mitigation measures implementation schedule is provided in **Appendix J**. The event and action plan is annexed in **Appendix H**.

3 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

3.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the EP and EM&A Manual. The implementation status of the environmental mitigation measures of the reporting period is summarized in **Appendix J.** The implementation of the key mitigation measures during the reporting period is presented in **Appendix K**.

4 ENVIRONMENTAL SITE INSPECTION AND AUDIT

4.1 Site Inspection

4.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix J.**

4.1.2 In the reporting period, 4 site inspections were carried out on 8, 15, 22, and 29 July 2020. A joint site inspection with IEC was carried out on 29 July 2020. No non-compliance was recorded during the site inspections. Details of observations recorded during the site inspections are presented in **Table 4.1**.

Table 4.1 Observations and Recommendations of Site Inspection

Parameters	Date	Observations and Recommendations	Follow up
Water Quality	22 Jul 2020	• Silty water generated from GI works was observed seepage into drainage channel. Sandbags should be provided for the drainage channel and silty water should be collected properly to avoid surface runoff from site.	The item was rectified by the Contractor on 27 Jul 2020.
Air Quality	N/A	N/A	N/A
Noise	N/A	N/A	N/A
Waste/ Chemical Management	15 Jul 2020	• The Contractor was reminded to store the empty chemical containers at chemical waste storage area properly.	The item was rectified by the Contractor on 20 Jul 2020.
	22 Jul 2020	• The Contractor was reminded to label the chemical containers and provide drip tray for the chemical containers to avoid leakage, if any.	The item was rectified by the Contractor on 27 Jul 2020.
Landscape & Visual	N/A	N/A	N/A
Permits/ Licenses	N/A	N/A	N/A

4.2 Summary of Complaints, Notification of Summons, Successful Prosecutions and Public Engagement Activities

4.2.1 No complaints, notification of summons and successful prosecution was received in the reporting period.

4.2.2 No public engagement activities were conducted in the reporting period.

4.2.3 Statistics on complaints, notifications of summons, successful prosecutions and public engagement activities are summarized in **Appendix L**.

5 FUTURE KEY ISSUES

5.1 Construction Programme for the Coming Month

5.1.1 The major construction works for the Project in the coming month will be:

- TSTP Testing and Commissioning
- Demolition of the existing STKSTW and Casing Installation (Land)

5.2 Key Issues for the Coming Month

5.2.1 Potential environmental impacts due to the construction activities, including air quality, noise, water quality, waste, landscape and visual, will be monitored or reviewed. The ET will continue to implement the environmental monitoring & audit programme in accordance with the EM&A Manual and Environmental Permit requirement. The recommended environmental mitigation measures shall be implemented on site and regular inspections as required will be carried out to ensure that the environmental conditions are acceptable.

5.2.2 The anticipated impact of major work activities within the site and the recommended mitigation measures are shown in **Appendix K**.

5.3 Monitoring Schedule for the Coming Month

5.3.1 The tentative schedule for environmental monitoring in August 2020 is provided in **Appendix D**.

6 CONCLUSIONS

6.1.1 No Action or Limit Level exceedance of construction noise was recorded in the reporting period. No noise complaints related to 0700 – 1900 hours on normal weekdays was received in the reporting period.

6.1.2 Three (3) Action Level and ten (10) Limit Level exceedances were recorded at measured SS level; five (5) Action Limit Level and seven (7) Limit Level exceedances were recorded at measured total phosphorus Level; and one (1) Action Limit Level exceedance and no Limit level exceedance were recorded at measured ammonia nitrogen Level of marine water quality in the reporting period.

6.1.3 Based on the findings from the completed IRs on marine water quality, the exceedance was likely due to local factors on 22 July 2020; and the measured levels of SS, NH3-N and TP were similar with baseline levels on 27 and 29 July 2020. Therefore, the exceedances were considered not related to the Project.

6.1.4 Non-compliance of BOD5 of effluent quality were recorded on 23 and 24 July 2020, the cases of non-compliance were notified to the plant operator and ad-hoc meeting among DSD, ER, IEC, ET and Contractor were held to review the likely cause of exceedance and follow up actions.

6.1.5 4 environmental site inspections were carried out in the reporting period. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.

6.1.6 No complaints, notification of summons and successful prosecution was received in the reporting period.

FIGURES

Figure 1 General Layout Plan

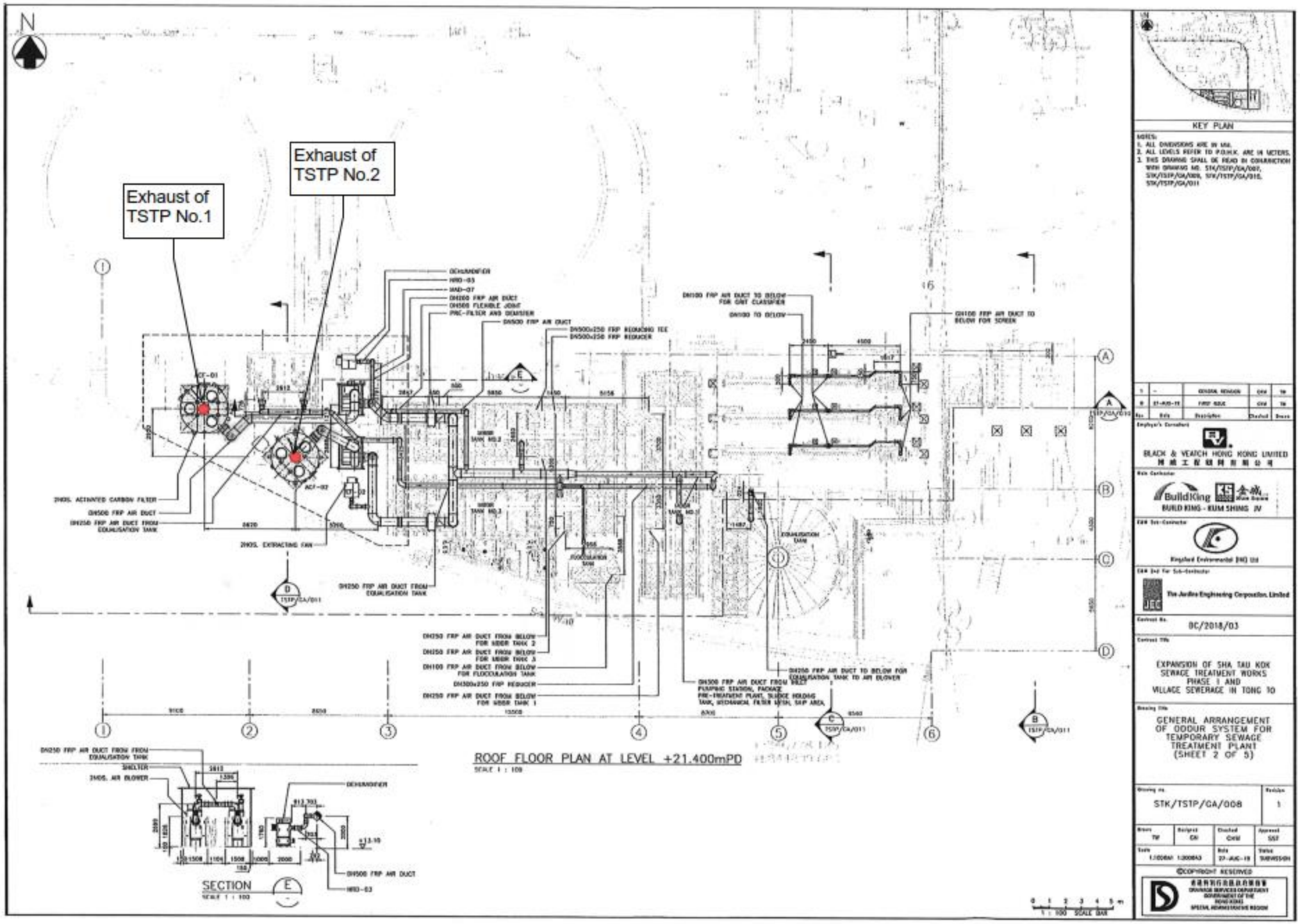


Figure 2 Locations of Odour monitoring for 1-Year Operation of TSTP

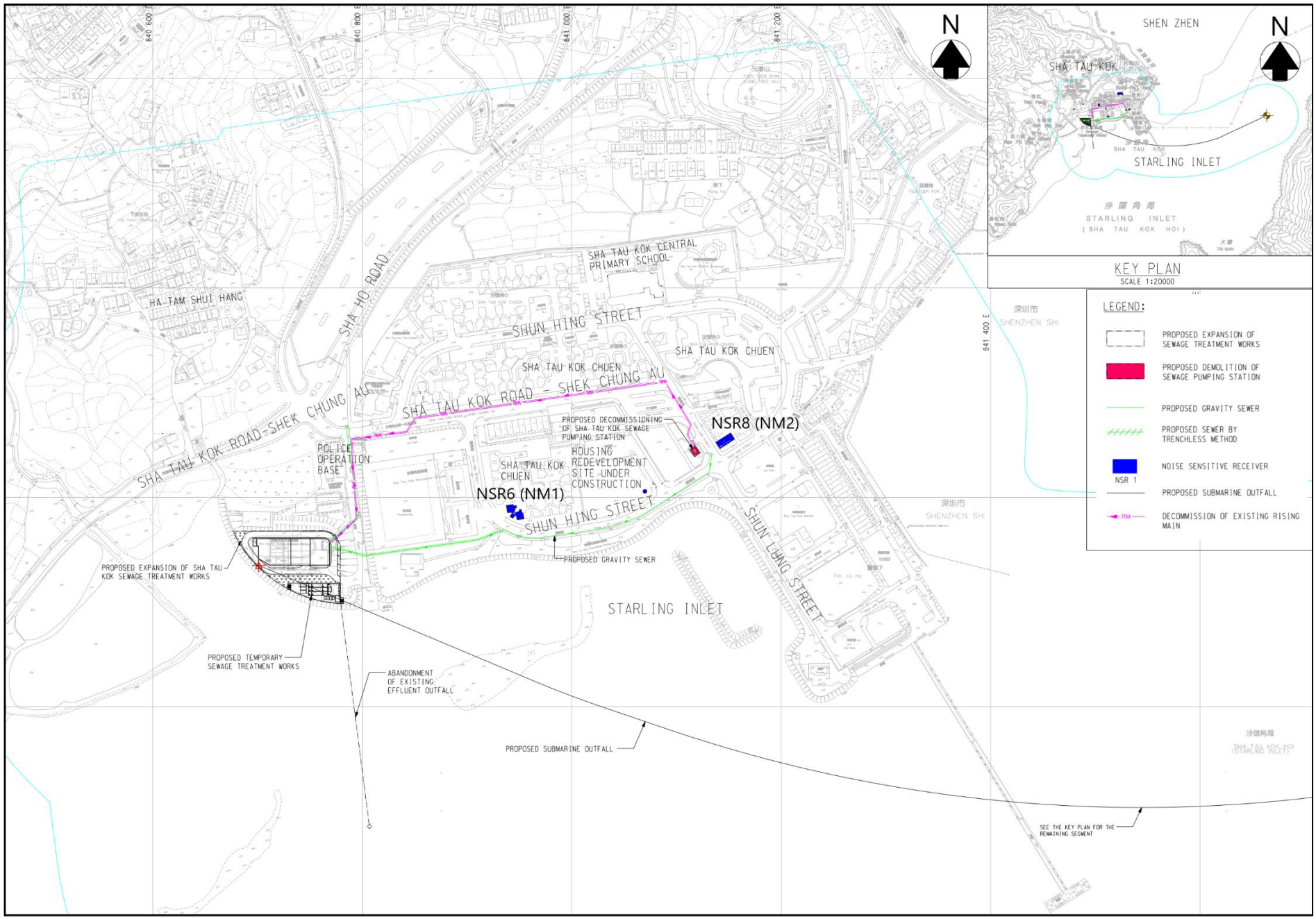


Figure 3 Location of Noise Monitoring Stations

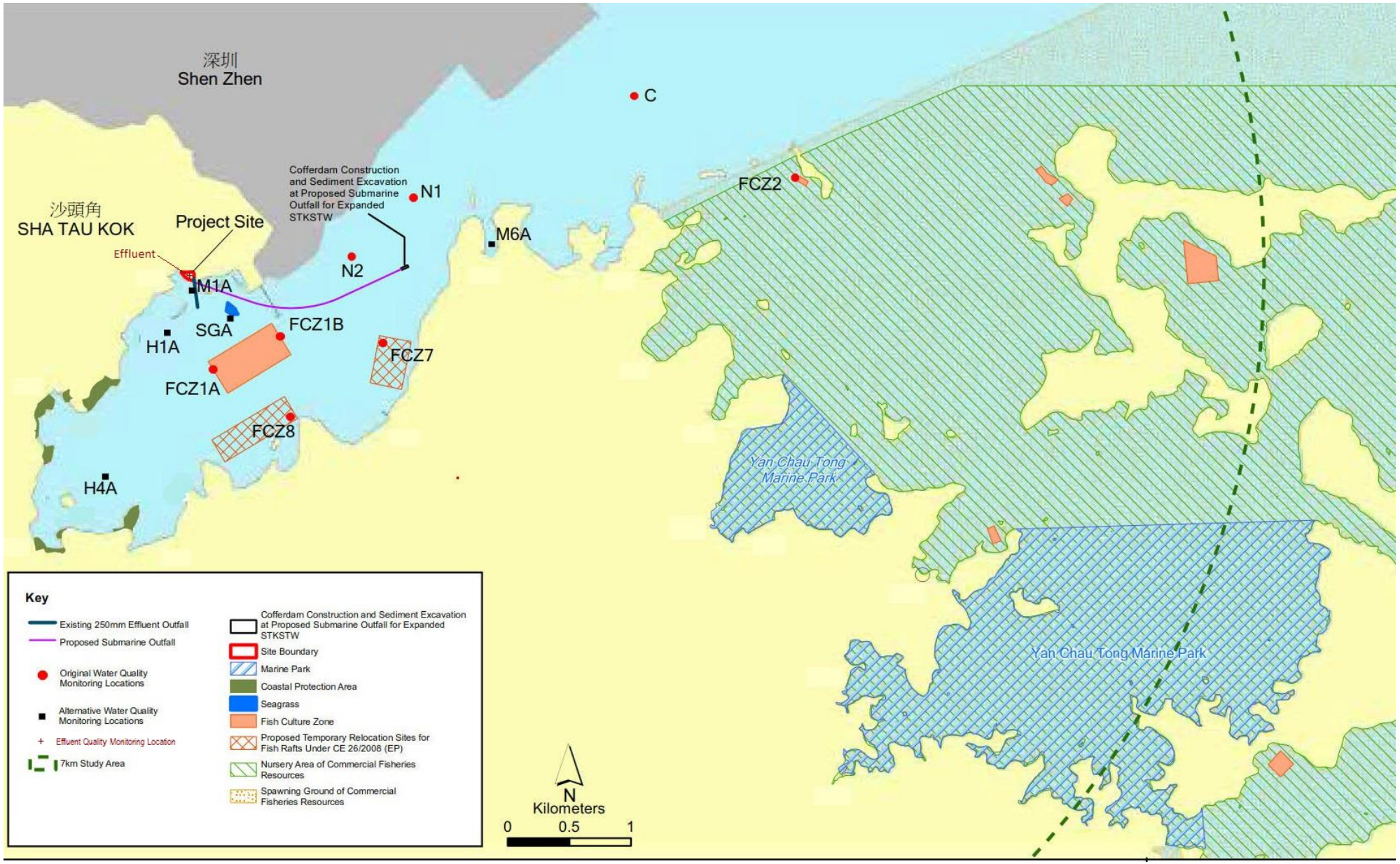
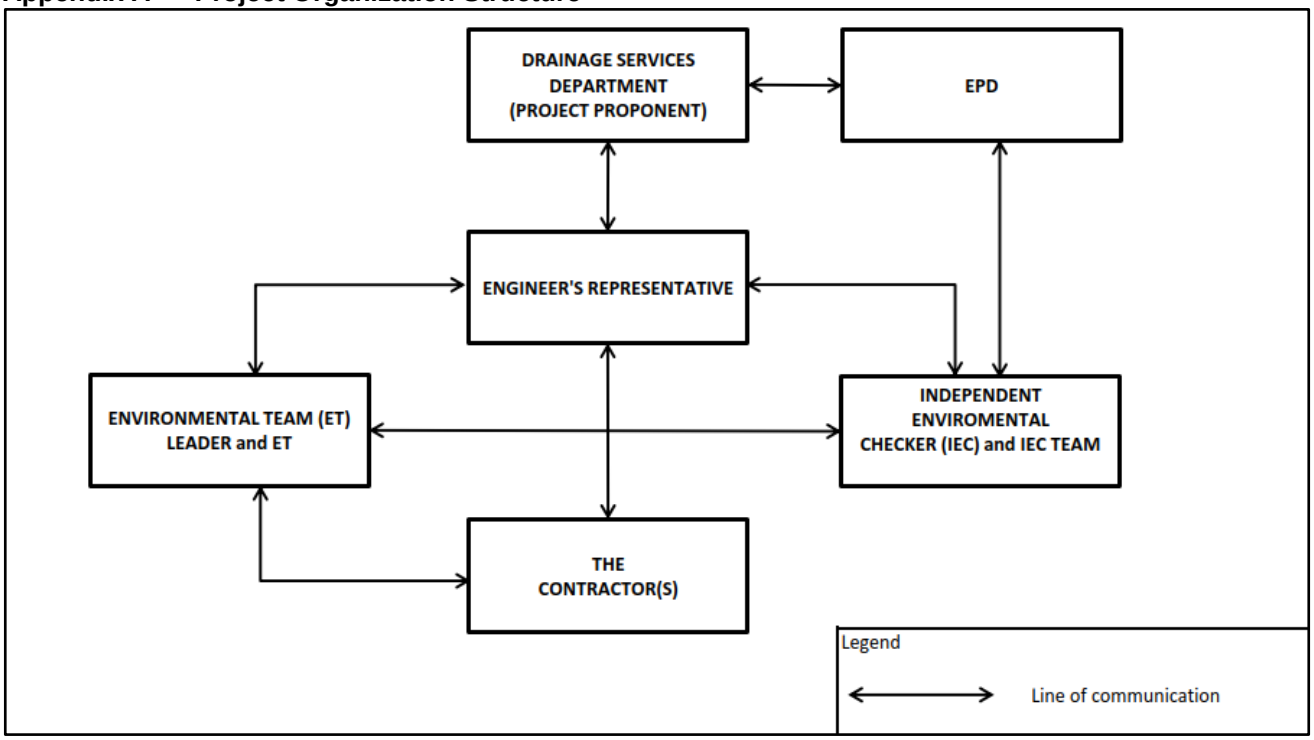


Figure 4 Location of Water Quality Monitoring Stations for 1-Year Operation of TSTP

APPENDIX A

Project Organization Structure

Appendix A Project Organization Structure



Note: Detailed key personnel contact names and telephone numbers refer to Table 1.1.

APPENDIX B

Construction Programme

Appendix B Construction Programme

Expansion of Sha Tau Kok Sewage Treatment Works - Construction Programme

STAGE	Activities	2019												2020												2021												2022												2023											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Construction of Temporary Sewage Treatment Plant																																																													
1	Ground Investigation																																																												
2	Piling																																																											
3	Construction of RC Structures																																																											
4	E&M Installations																																																											
5	Testing & Commissioning																																																											
Demolition of the exisitng STKSTW																																																											
Construction of Submarine Outfall																																																											
1	Casing Installation (Land)																																																											
2	Pilot Hole Drilling (Land)																																																											
3	Reaming (Land)																																																											
4	Casing Installation (Sea)																																																											
5	Pilot Hole Drilling (Sea)																																																											
6	Reaming (Sea)																																																											
7	Pipe Installation																																																											
8	Construction of Cofferdam at the location of diffuser																																																											
9	Installation of Diffuser																																																											
10	Backfilling and Removal of Sheetpiles																																																											
Constrution of the expanded STKSTW																																																											
1	Piling																																																											
2	Construction of RC Structures																																																											
3	E&M Installations																																																											
4	Testing & Commissioning																																																											
Sewer Laying*																																																											
Operation of TSTP																																																											
Operation of STKSTW																																																											
Demcommisioning of Existing STKSPS																																																											

APPENDIX C

Calibration Certificates of Monitoring Equipment

Appendix C Calibration Certificates of Monitoring Equipment

CALIBRATION

ACCREDITED
Certificate #3815.01

Calibration Certificate

Certificate No.: CC0071910

1. Description

Calibration item :	a) Hydrogen Sulfide (H_2S)
Equipment description :	Gold Film Hydrogen Sulfide Analyzer
Manufacturer :	ARIZONA INSTRUMENT LLC
Type / Model No. :	Jerome® 631X
Serial No. :	1914
Assigned equipment no. :	N/A
Adjustment :	N/A
Remark :	Received with good condition

2. Customer information

Customer :	AECOM
Address :	8/F, Tower 2, Grand Central Plaza, 138 Shatin Rural Committee Road, Shatin, N.T. HK
Date of receipt :	4 October 2019

3. Date of performance of the calibration

Date of calibration :	10 October 2019

Approved Signatory
WM Ling

Company Chop:

Certificate issue date: 11 October 2019

Cal Lab Limited
Address: Room 2103, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, NT, Hong Kong
Tel : (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk

CALIBRATION

4. Result of Calibration

a) Hydrogen Sulfide (H_2S)

Reference Setting ; ppm	Measured reading ; ppm	Error of indication ; % FS
0	0.000	0.0
0.5	0.46	-0.1
1.0	0.96	-0.1
5.0	4.2	-1.6
10.0	9.1	-1.8

Estimated expanded uncertainty: 2.1 % FS Technical Requirement: ± 5 ppm

Hydrogen Sulfide (H_2S) - Repeatability

Reference reading ; ppm	RSD ; %
10.0	1.6

Technical Requirement: ± 2 %

Hydrogen Sulfide (H_2S) – Response Time

Reference reading ; ppm	Response time ; second
10.0	13

Technical Requirement:
≤ 30 seconds (Pump)

Note: The technical requirement is refer to JJG 695-2003

Cal Lab Limited
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Tel : (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk

CALIBRATION

5. Reference method for calibration

Hydrogen Sulfide	JJG 695-2003

6. Environment condition of calibration

Temperature ; ℃	24.5 ℃
Relative humidity ; %RH	43 %RH

7. Reference equipment used in the calibration

Item	Model	Serial No.	Expiry date	Traceable to
Hydrogen Sulfide	N/A	L193414080	28 Jan 2020	NIM

Note1: The estimated expanded uncertainties have been calculated in "Evaluation and expression of uncertainty in measurement" and give an internal estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Note2: The standard (s) and instrument used in the calibration are traceable to national or international recognized standard and are calibrated on a schedule to maintain the accuracy and good condition.

Note3: The result reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long term stability of the instrument.

Note4: The result shows in this calibration certificate relate only to the item calibrated, and the result only applies to the calibration item as received.

Calibrated by: Date: 10 October 2019

Checked by: Date: 10 October 2019

*** End of Certificate ***

CT-END-02

Cal Lab Limited
Address: Room 2103, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, NT, Hong Kong
Tel : (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C202803
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC20-0967) Date of Receipt / 收件日期 : 7 May 2020

Description / 儀器名稱 : Air Velocity Meter
Manufacturer / 製造商 : TSI
Model No. / 型號 : 9555-P
Serial No. / 編號 : 9555P0836010
Supplied By / 委託者 : Aecom Asia Co., Ltd.
13/F., Tower 2, Grand Central Plaza,
138 Shatin Rural Committee Road, Shatin, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 20 to 21 May 2020

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- South China National Centre of Metrology, China
- Agilent Technologies / Keysight Technologies
- Testo Industrial Services GmbH, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : T F Lee, Assistant Engineer

Certified By 核證 : H C Chan, Engineer

Date of Issue 簽發日期 : 22 May 2020

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C202803
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. Test equipment :

Equipment ID	Description	Certificate No.
CL018	Portable Calibrator	C191834
CL041 & CL041B	Digital Thermometer	C201018
CL042 & CL042B	Digital Thermometer	C201019
CL272 & CL272A	Humidity Control Chamber	C183502 & C183457
CL292	Recorder	C192930
CL316 & CL316A	Precision Multi-function Measuring Instrument	C180363
CL330	Environmental Chamber	C190296
CL360	Portable Air Pressure	RYB201909837
CL410 & CL410D	Multi Functionally Measuring Instrument & Psychrometer	C195787

3. Test procedure : MA006, MA103N, MA109N & MA130N.

4. Results :

4.1 Air Velocity

Applied Value (m/s)	UUT Reading (m/s)	Measured Correction		
		Value (m/s)	Measurement Uncertainty	
			Expanded Uncertainty (m/s)	Coverage Factor
2.00	2.10	-0.10	0.31	2.0
4.00	4.11	-0.11	0.36	2.0
6.03	6.21	-0.18	0.41	2.0
8.02	8.46	-0.44	0.50	2.0
10.01	10.95	-0.94	0.57	2.0

The results presented are the mean of 10 measurements at each calibration point.

4.2 Temperature

Applied Value (°C)	UUT Reading (°C)	Measured Correction		
		Value (°C)	Measurement Uncertainty	
			Expanded Uncertainty (°C)	Coverage Factor
25.0	24.8	+0.2	0.5	2.0

The results presented are the mean of 3 measurements at each calibration point.

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4.3 Relative Humidity (23°C)

Applied Value (%)	UUT Reading (%)	Measured Correction		
		Value (%)	Measurement Uncertainty	
			Expanded Uncertainty (%)	Coverage Factor
60.0	63.8	-3.8	1.5	2.0

The results presented are the mean of 3 measurements at each calibration point.

4.4 Barometric Pressure

Applied Value (hPa)	UUT Reading (hPa)	Measured Correction		
		Value (hPa)	Measurement Uncertainty	
			Expanded Uncertainty (hPa)	Coverage Factor
1 001.3	995.3	+6.0	2.0	2.0

The results presented are the mean of 3 measurements at each calibration point.
Test Medium : Air

Remarks :
- UUT Probe Model : 964
  S/N : P08350010
- UUT Setting : ACTUAL/STANDARD : ACTUAL
  Temperature Source : Probe
- The Measured Corrections are defined as :
  Value = Applied Value - UUT Reading
- The expanded uncertainties are for a level of confidence of 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道37號利達中心12樓
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel: (852) 2873 6860
Fax: (852) 2555 7533

CERTIFICATE OF CALIBRATION

Certificate No.: 19CA0912 01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2800927	,	2791211
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	12-Sep-2019

Date of test: 16-Sep-2019

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2020	CIGISMEC
Signal generator	DS 360	61227	26-Dec-2019	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1000 ± 5 hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory: Feng Junqi **Date:** 16-Sep-2019 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道37號利達中心12樓
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel: (852) 2873 6860
Fax: (852) 2555 7533

CERTIFICATE OF CALIBRATION

(Continuation Page)

1, Electrical Tests

The electrical tests were perfomed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertanity (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	1.0	2.1
	Lin	Pass	2.0	2.2
Linearity range for Leq	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100μs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertanity (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip **Date:** 16-Sep-2019

Checked by: Shek Kwong Tai **Date:** 16-Sep-2019

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道37號利達中心12樓
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel: (852) 2873 6860
Fax: (852) 2555 7533

CERTIFICATE OF CALIBRATION

Certificate No.: 20CA0318 01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	B & K	B & K	B & K
Type/Model No.:	2250-L	4950	ZC0032
Serial/Equipment No.:	2681366	2665582	17190
Adaptors used:	- N.211.01	-	-

Item submitted by

Customer Name:	AECOM ASIA CO LTD
Address of Customer:	-
Request No.:	-
Date of receipt:	18-Mar-2020

Date of test: 19-Mar-2020

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2020	CIGISMEC
Signal generator	DS 360	33873	10-May-2020	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

1. The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
2. The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
3. The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory: Feng Junqi **Date:** 19-Mar-2020 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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CERTIFICATE OF CALIBRATION

(Continuation Page)

1, Electrical Tests

The electrical tests were perfomed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	
	Lin	Pass	1.6	
Linearity range for Leq	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100μs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip Date: 19-Mar-2020

Checked by: Shek Kwong Tat Date: 19-Mar-2020

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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CERTIFICATE OF CALIBRATION

Certificate No.: 20CA0330 01 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	B & K
Type/Model No.:	4231
Serial/Equipment No.:	3006428
Adaptors used:	-

Item submitted by

Curstomer:	AECOM
Address of Customer:	-
Request No.:	-
Date of receipt:	30-Mar-2020 LN.004.037

Date of test: 31-Mar-2020

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	03-May-2020	SCL
Preamplifier	B&K 2673	2239857	17-May-2020	CEPREI
Measuring amplifier	B&K 2610	2346941	05-Jun-2020	CEPREI
Signal generator	DS 360	33873	10-May-2020	CEPREI
Digital multi-meter	34401A	US36087050	08-May-2020	CEPREI
Audio analyzer	8903B	GB41300350	13-May-2020	CEPREI
Universal counter	53132A	MY40003662	10-May-2020	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

1. The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
2. The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
3. The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Approved Signatory: Feng Junqi **Date:** 31-Mar-2020 **Company Chop:**

Comments: The results reported in this certificate refer to the conditon of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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CERTIFICATE OF CALIBRATION

(Continuation Page)

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.21	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz **STF = 0.011 dB**

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz **Actual Frequency = 1000.0 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz **TND = 0.3 %**

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip **Checked by:** Shek Kwong Tat

Date: 31-Mar-2020 **Date:** 31-Mar-2020

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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CERTIFICATE OF CALIBRATION

Certificate No.: 19CA1017 01-02 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	B & K
Type/Model No.:	4231
Serial/Equipment No.:	3014024 / N004.04
Adaptors used:	-

Item submitted by

Curstomer:	AECOM ASIA CO LIMITED
Address of Customer:	-
Request No.:	-
Date of receipt:	17-Oct-2019

Date of test: 21-Oct-2019

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	03-May-2020	SCL
Preamplifier	B&K 2673	2239857	17-May-2020	CEPREI
Measuring amplifier	B&K 2610	2346941	05-Jun-2020	CEPREI
Signal generator	DS 360	61227	10-May-2020	CEPREI
Digital multi-meter	34401A	US36087050	08-May-2020	CEPREI
Audio analyzer	8903B	GB41300350	13-May-2020	CEPREI
Universal counter	53132A	MY40003662	10-May-2020	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1000 ± 5 hPa

Test specifications

1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory: Feng Junqi **Date:** 21-Oct-2019 **Company Chop:** 綜合試驗有限公司 SOILS & MATERIALS ENGINEERING CO., LTD.

Comments: The results reported in this certificate refer to the conditon of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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CERTIFICATE OF CALIBRATION

(Continuation Page)

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.25	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz **STF = 0.013 dB**

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz **Actual Frequency = 1000 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz **TND = 0.4 %**

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip **Checked by:** Shek Kwong Tat

Date: 21-Oct-2019 **Date:** 21-Oct-2019

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MIKE SHEK	**WORK ORDER:**	HK2024830
CLIENT:	AECOM ASIA COMPANY LIMITED		
ADDRESS:	13/F, TOWER 2, GRAND CENTRAL PLAZA, 138 SHATIN RURAL COMMITTEE ROAD, SHATIN, HONG KONG	**SUB- BATCH:**	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	06-Jul-2020
		DATE OF ISSUE:	09-Jul-2020

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.
The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.
The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Brand Name/ Model No.:	YSI 6820 V2
Serial No./ Equipment No.:	12A101545 (W.026.35)
Date of Calibration:	06-July-2020

GENERAL COMMENTS

This is the Final Report and supersedes any preliminary report with this batch number.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2024830

SUB- BATCH: 0
DATE OF ISSUE: 09-Jul-2020
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: YSI 6820 V2
Serial No./ Equipment No.: 12A101545 (W.026.35)
Date of Calibration: 06-July-2020 Date of Next Calibration: 06-October-2020

PARAMETERS:

Conductivity Method Ref: APHA (21st edition), 2510B

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	144.0	-2.0
6667	6610	-0.9
12890	12650	-1.9
58670	58400	-0.5
	Tolerance Limit (%)	±10.0

Dissolved Oxygen Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.80	2.81	+0.01
5.55	5.52	-0.03
7.55	7.51	-0.04
	Tolerance Limit (mg/L)	±0.20

pH Value Method Ref: APHA (21st edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.02	+0.02
7.0	7.03	+0.03
10.0	9.97	-0.03
	Tolerance Limit (pH unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2024830

SUB- BATCH: 0
DATE OF ISSUE: 09-Jul-2020
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: YSI 6820 V2
Serial No./ Equipment No.: 12A101545 (W.026.35)
Date of Calibration: 06-July-2020 Date of Next Calibration: 06-October-2020

PARAMETERS:

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.0	--
4	4.1	+2.5
10	9.8	-2.0
20	19.5	-2.5
50	48.9	-2.2
100	98.5	-1.5
	Tolerance Limit (%)	±10.0

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.18	+1.8
20	19.92	-0.4
30	29.88	-0.4
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2024830

SUB- BATCH: 0
DATE OF ISSUE: 09-Jul-2020
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: YSI 6820 V2
Serial No./ Equipment No.: 12A101545 (W.026.35)
Date of Calibration: 06-July-2020 Date of Next Calibration: 06-October-2020

PARAMETERS:

Temperature **Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.**

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10.5	10.46	-0.0
20.0	20.02	+0.0
39.5	39.47	-0.0
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR MIKE SHEK	**WORK ORDER:**	HK2017558
CLIENT:	AECOM ASIA COMPANY LIMITED		
ADDRESS:	1501-10, 15/F, TOWER 1, GRAND CENTRAL PLAZA, 138 SHATIN RURAL COMMITTEE ROAD, SHATIN, NEW TERRITORIES, HONG KONG	**SUB- BATCH:**	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	12-May-2020
		DATE OF ISSUE:	19-May-2020

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.
The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.
The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, Salinity and Temperature
Brand Name/ Model No.:	YSI Professional Plus
Serial No./ Equipment No.:	12M100515 W.040.01
Date of Calibration:	15-May-2020

GENERAL COMMENTS

This is the Final Report and supersedes any preliminary report with this batch number.
All pages of this report have been checked and approved for release.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2017558

SUB- BATCH: 0
DATE OF ISSUE: 19-May-2020
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: YSI Professional Plus
Serial No./ Equipment No.: 12M100515 W.040.01
Date of Calibration: 15-May-2020 Date of Next Calibration: 15-August-2020

PARAMETERS:

Conductivity Method Ref: APHA (21st edition), 2510B

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	139.5	-5.0
6667	6139	-7.9
12890	11799	-8.5
58670	54970	-6.3
	Tolerance Limit (%)	±10.0

Dissolved Oxygen Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.67	3.59	-0.08
5.92	5.94	+0.02
6.67	6.53	-0.14
	Tolerance Limit (mg/L)	±0.20

Salinity Method Ref: APHA (21st edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.02	--
10	9.69	-3.1
20	19.84	-0.8
30	29.92	-0.3
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2017558

SUB- BATCH: 0
DATE OF ISSUE: 19-May-2020
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: YSI Professional Plus
Serial No./ Equipment No.: 12M100515 W.040.01
Date of Calibration: 15-May-2020 Date of Next Calibration: 15-August-2020

PARAMETERS:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10.0	10.3	+0.3
20.0	19.0	-1.0
40.5	39.5	-1.0
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR MIKE SHEK	**WORK ORDER:**	HK2016529
CLIENT:	AECOM ASIA COMPANY LIMITED		
ADDRESS:	1501- 10, 15/F, TOWER 1, GRAND CENTRAL PLAZA, 138 SHATIN RURAL COMMITTEE ROAD, SHATIN, NEW TERRITORIES, HONG KONG	**SUB- BATCH:**	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	06- May- 2020
		DATE OF ISSUE:	11- May- 2020

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.
The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.
The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	pH meter
Service Nature:	Performance Check
Scope:	pH Value and Temperature
Brand Name/ Model No.:	WTW 3210
Serial No./ Equipment No.:	12340605 (W-029-08)
Date of Calibration:	13- May- 2020

GENERAL COMMENTS

This is the Final Report and supersedes any preliminary report with this batch number.
All pages of this report have been checked and approved for release.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2016529

SUB- BATCH: 0
DATE OF ISSUE: 11- May- 2020
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: pH meter
Brand Name/ Model No.: WTW 3210
Serial No./ Equipment No.: 12340605
Date of Calibration: 13- May- 2020 Date of Next Calibration: 13- August- 2020

PARAMETERS:

pH Value

Method Ref: APHA (21st edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.921	- 0.08
7.0	7.035	+ 0.04
10.0	9.906	- 0.09
	Tolerance Limit (pH unit)	± 0.20

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
9.5	9.4	- 0.1
20.0	19.9	- 0.1
41.0	40.3	- 0.7
	Tolerance Limit (°C)	± 2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
Manager - Inorganic

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T: +852 2610 1044 | F: +852 2610 2021

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR MIKE SHEK	**WORK ORDER:**	HK2016509
CLIENT:	AECOM ASIA COMPANY LIMITED		
ADDRESS:	1501- 10, 15/F, TOWER 1, GRAND CENTRAL PLAZA, 138 SHATIN RURAL COMMITTEE ROAD, SHATIN, NEW TERRITORIES, HONG KONG	**SUB- BATCH:**	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	06- May- 2020
		DATE OF ISSUE:	13- May- 2020

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.
The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.
The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Turbidimeter
Service Nature:	Performance Check
Scope:	Turbidity
Brand Name/ Model No.:	OAKTON T- 100
Serial No./ Equipment No.:	2869838 (EJ 001.12)
Date of Calibration:	13- May- 2020

GENERAL COMMENTS

This is the Final Report and supersedes any preliminary report with this batch number.
All pages of this report have been checked and approved for release.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2016509

SUB- BATCH: 0
DATE OF ISSUE: 13- May- 2020
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: Turbidimeter
Brand Name/ Model No.: OAKTON T- 100
Serial No./ Equipment No.: 2869838
Date of Calibration: 13- May- 2020 Date of Next Calibration: 13- August- 2020

PARAMETERS:

Turbidity Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.14	- -
4	4.09	+ 2.3
40	39.7	- 0.7
80	86.2	+ 7.8
400	416	+ 4.0
800	810	+ 1.3
	Tolerance Limit (%)	± 10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
Manager - Inorganic

APPENDIX D

EM&A Monitoring Schedules

Appendix D EM&A Monitoring Schedules

Expansion of Sha Tau Kok Sewage Treatment Works
Environmental Monitoring Schedule for July 2020

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Jul	2-Jul	3-Jul	4-Jul
5-Jul	6-Jul	7-Jul	8-Jul	9-Jul	10-Jul	11-Jul
	Impact Noise					
12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul
	Impact Noise					
19-Jul	20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul
		Impact Noise	Water Quality Mid-Ebb 13:46 Odour	Effluent Quality	Water Quality Mid-Ebb 15:13 Effluent Quality	Effluent Quality
26-Jul	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	
Effluent Quality	Water Quality Mid-Flood 11:17 Effluent Quality	Effluent Quality	Water Quality Mid-Flood 13:59 Effluent Quality	Impact Noise Odour Effluent Quality	Water Quality Mid-Ebb 9:46 Effluent Quality	

Expansion of Sha Tau Kok Sewage Treatment Works
Tentative Environmental Monitoring Schedule for August 2020

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Aug
						Effluent Quality
2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	8-Aug
Effluent Quality	Water Quality Mid-Ebb 12:18 Effluent Quality	Effluent Quality	Water Quality Mid-Ebb 13:41 Noise Odour Effluent Quality	Effluent Quality	Water Quality Mid-Ebb 14:51 Effluent Quality	Effluent Quality
9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	15-Aug
Effluent Quality	Water Quality Mid-Ebb 16:20 Effluent Quality	Noise Odour Effluent Quality	Water Quality Mid-Flood 12:11 Effluent Quality	Effluent Quality	Water Quality Mid-Ebb 9:02 Effluent Quality	Effluent Quality
16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug
Effluent Quality	Water Quality Mid-Ebb 10:20 Noise Effluent Quality	Effluent Quality	Water Quality Mid-Ebb 12:42 Effluent Quality	Effluent Quality	Water Quality Mid-Ebb 14:08 Odour Effluent Quality	Effluent Quality
23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug
Effluent Quality	Water Quality Mid-Ebb 16:17 Effluent Quality	Noise Effluent Quality	Water Quality Mid-Flood 12:27 Effluent Quality	Odour Effluent Quality	Water Quality Mid-Ebb 9:50 Effluent Quality	Effluent Quality
30-Aug	31-Aug					
Effluent Quality	Water Quality Mid-Ebb 11:17 Effluent Quality					

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

APPENDIX E

Action and Limit Levels

Appendix E Action and Limit Levels

Action and Limit Levels for Marine Water Monitoring for First-year Operation of TSTP

Monitoring Location	Depth Level	DO (mg/L)		Turbidity (NTU)		Salinity (ppt)		Total Suspended Solids (mg/L)		BOD_5 (mg/L)		Total Phosphorus (mg/L)		Total Nitrogen (mg/L-N)		Ammonia Nitrogen (mg/L-N)		Total Inorganic Nitrogen (mg/L-N)		*E.coli (cfu/100mL)*	
		AL	LL	AL	LL	AL[c]	LL[c]	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL
N1	S & M	5.36	5.34	7.5*	13.1^	31.49	31.44	5*	8^	3*	4^	0.02*	0.02^	0.50*	0.60^	0.20*	0.21^	0.33	0.36	536	707
	B	5.06	5.05																		
N2	S & M	5.95	5.71	4.7*	5.9^	31.29	31.28	5*	6^	3*	4^	0.04*	0.04^	0.60*	0.72^	0.21*	0.26^	0.35	0.48	495	529
	B	5.56	5.53																		
FCZ1B	S & M	5.10#	5.00#	4.5*	5.5^	30.93	30.92	8*	12^	6*	8^	0.07*	0.08^	0.60*	0.73^	0.22*	0.25^	0.36	0.39	600	610
	B	5.10#	5.00#																		
H4A	M	5.94	5.86	4.7*	4.8^	30.42	30.42	8*	9^	3*	3^	0.06*	0.06^	0.60*	0.60^	0.23*	0.26^	0.44	0.57	78	91
H1A	M	6.01	5.97	6.5*	6.6^	30.39	30.39	14*	15^	3*	3^	0.03*	0.04^	2.32*	2.60^	0.97*	1.10^	2.31	2.50	127	153
M1A	M	5.63	5.54	5.8*	6.1^	30.43	30.42	9*	10^	3*	3^	0.04*	0.04^	0.69*	0.70^	1.49*	1.70^	1.58	1.80	864	1385
SGA	M	6.00	5.90	6.0*	6.2^	30.82	30.81	10*	11^	3*	3^	0.03*	0.04^	0.60*	0.68^	1.06*	1.20^	1.08	1.26	129	138
FCZ7@	S & M	5.10#	5.00#	6.0*	6.4^	31.13	31.1	5*	5^	3*	3^	0.02*	0.03^	0.50*	0.56^	0.21*	0.22^	0.34	0.36	600	610
	B	5.10#	5.00#																		
FCZ8	S	5.10#	5.00#	5.2*	9.1^	31.14	31.13	6*	7^	5*	6^	0.04*	0.04^	0.60*	0.80^	0.32*	0.62^	0.41	0.70	600	610
	B	5.10#	5.00#																		

Remarks:
AL: Action Level; LL: Limit Level
According to the EM&A Manual, for FCZ: AL of DO is 5.1 mg/L or level at control station at same tide of the same day (whichever lower) and LL of DO is 5.0 mg/L or level at control station at same tide of the same day (whichever lower);
* Or 120% of control station's level at the same tide of the same day;
^ Or 130% of control station's level at the same tide of the same day.
[c] According to the EM&A Manual, AL of Salinity is Below 91% of baseline level or 9% less than value at any impact station compared with corresponding data from control station and LL of Salinity is Below 90% of baseline level or 10% less than value at any impact station compared with corresponding data from control station

Action and Limit Levels for Continuous Effluent Quality Monitoring for First-year Operation of TSTP

Parameter	Action Level	Limit Level
SS in mg/L	TSTP 20 mg/L	TSTP 40 mg/L
Biochemical Oxygen Demand in mg/L	TSTP 13.3 mg/L	TSTP 26.6 mg/L
Total Nitrogen in mg/L	TSTP 28.6 mg/L	TSTP 57.1 mg/L
Total Phosphorus in mg/L	TSTP 3.3 mg/L	TSTP 6.6 mg/L
E.coli in cfu/100 mL	TSTP 664 cfu/100ml	TSTP 996 cfu/100ml

APPENDIX F

Noise Monitoring Results and their Graphical Presentations

Appendix F Noise Monitoring Results and their Graphical Presentations

Construction Noise Monitoring Results

Daytime Noise Monitoring Results at NM 1 (Block 45, Sha Tau Kok Chuen)

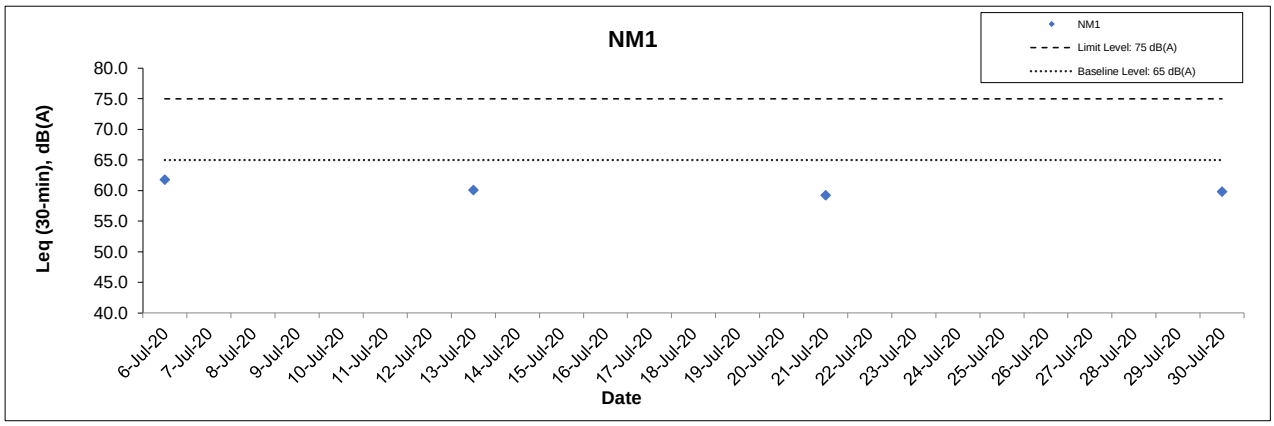
Date	Weather Condition	Measured Noise Level for 30-min [MNL], dB(A)*				Baseline Noise Level [BNL], dB(A)	Construction Noise Level [CNL]#, dB(A)		Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq					
6-Jul-20	Sunny	14:25	59.5	63.0	61.8	65	61.8	Measured<Baseline	75	N
13-Jul-20	Sunny	13:05	58.0	61.0	60.1	65	60.1	Measured<Baseline	75	N
21-Jul-20	Sunny	14:40	57.5	60.5	59.2	65	59.2	Measured<Baseline	75	N
30-Jul-20	Fine	13:15	56.1	61.3	59.8	65	59.8	Measured<Baseline	75	N

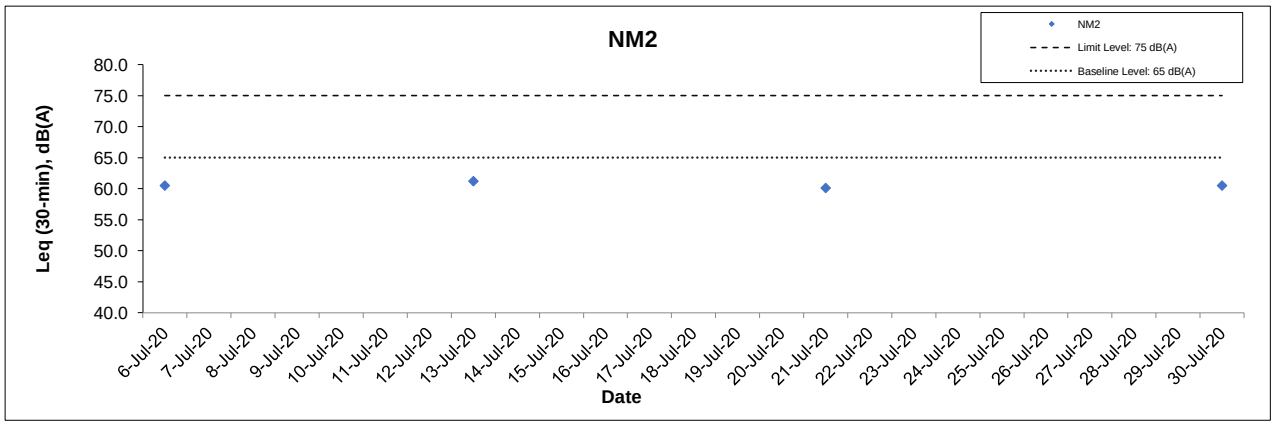
Daytime Noise Monitoring Results at NM 2 (Building along Shun Lung Street)

Date	Weather Condition	Measured Noise Level for 30-min [MNL], dB(A)*				Baseline Noise Level [BNL], dB(A)	Construction Noise Level [CNL]#, dB(A)		Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq					
6-Jul-20	Sunny	15:10	58.2	62.0	60.5	65	60.5	Measured<Baseline	75	N
13-Jul-20	Sunny	13:40	58.5	62.5	61.2	65	61.2	Measured<Baseline	75	N
21-Jul-20	Sunny	14:00	58.0	61.0	60.1	65	60.1	Measured<Baseline	75	N
30-Jul-20	Fine	14:05	56.8	61.7	60.5	65	60.5	Measured<Baseline	75	N

*A correction of +3 dB(A) was made to the free field measurements.
CNL = 10 log ($10^{MNL/10}$ – $10^{BNL/10}$)

Graphical Presentations of Construction Noise Monitoring Results





APPENDIX G

Water Quality Monitoring Results and their Graphical Presentations and QAQC Report

Appendix G Water Quality Monitoring Results & their Graphical Presentations and QAQC Reports

1-year Operation of TSTP - Marine Water Quality Monitoring Results on 22-Jul-20

Date	Tidal	Weather Condition	Sea Condition	Monitoring Station	Time	Water Depth, m	Water Level	Replicate	Sampling Depth	Temperature, °C	pH	DO Saturation, %	DO, mg/L		Salinity, ppt		Turbidity, NTU		Suspended Soild, mg/L		Ammonia Nitrogen, mg/L		Total Nitrogen, mg/L		Total Inorganic Nitrogen, mg/L		Total Phosphorus, mg/L		Biochemical Oxygen Demand, mg/L		*E. Coli, Cfu/100ml*	
													Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
7/22/2020	Mid-Ebb	Sunny	Moderate	C	13:12	9.7	Surface	1	1.0	28.1	8.1	101.1	6.45	6.0	36.65	36.75	2.4	2.4	3.5	3.8	<0.02	<0.02	0.31	0.28	<0.05	<0.05	0.02	0.01	2.4	2.3	NOT DETECTED	ND
7/22/2020	Mid-Ebb	Sunny	Moderate	C			Surface	2	1.0	27.1	8.1	92.5	6.00	-	36.51	-	2.5	-	3.3	-	<0.02	-	0.32	-	<0.05	-	0.01	-	2.4	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	C			Middle	1	4.9	24.9	7.9	74.8	5.28	-	36.74	-	2.4	-	3.8	-	<0.02	-	0.30	-	<0.05	-	0.01	-	2.2	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	C			Middle	2	4.9	24.9	8.0	89.4	6.29	-	36.61	-	2.5	-	4.1	-	<0.02	-	0.27	-	<0.05	-	<0.01	-	2.5	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	C			Bottom	1	8.7	22.1	8.0	82.5	5.55	5.4	36.95	-	2.3	-	4.2	-	<0.02	-	0.25	-	<0.05	-	<0.01	-	2.2	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	C			Bottom	2	8.7	22.0	7.9	73.6	5.22	-	37.01	-	2.5	-	4.0	-	<0.02	-	0.23	-	<0.05	-	<0.01	-	2.0	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	N1	13:31	6.5	Surface	1	1.0	28.2	8.1	92.4	5.88	5.7	36.53	36.68	3.1	4.7	4.1	3.5	<0.02	<0.02	0.27	0.24	<0.05	<0.05	0.02	0.01	2.6	1.8	NOT DETECTED	ND
7/22/2020	Mid-Ebb	Sunny	Moderate	N1			Surface	2	1.0	28.2	8.1	93.5	5.95	-	36.53	-	3.0	-	4.3	-	<0.02	-	0.25	-	<0.05	-	0.01	-	1.5	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	N1			Middle	1	3.3	25.6	8.0	81.5	5.45	-	36.71	-	5.4	-	3.4	-	<0.02	-	0.23	-	<0.05	-	0.01	-	1.9	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	N1			Middle	2	3.3	25.7	8.0	80.6	5.42	-	36.69	-	5.5	-	3.3	-	<0.02	-	0.22	-	<0.05	-	0.01	-	1.8	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	N1			Bottom	1	5.5	23.9	8.0	74.5	5.25	5.2	36.81	-	5.6	-	3.2	-	<0.02	-	0.22	-	<0.05	-	0.01	-	1.5	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	N1			Bottom	2	5.5	23.8	8.0	73.8	5.22	-	36.81	-	5.5	-	2.9	-	<0.02	-	0.22	-	<0.05	-	<0.01	-	1.2	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	FCZ1B	13:57	4.8	Surface	1	1.0	28.7	8.1	113.1	7.15	7.1	36.49	36.59	2.0	2.2	5.4	4.7	<0.02	<0.02	0.30	0.28	<0.05	<0.05	0.02	0.02	3.0	2.2	NOT DETECTED	ND
7/22/2020	Mid-Ebb	Sunny	Moderate	FCZ1B			Surface	2	1.0	28.7	8.1	107.6	7.09	-	36.49	-	2.1	-	5.3	-	<0.02	-	0.29	-	<0.05	-	0.02	-	1.6	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	FCZ1B			Bottom	1	3.8	25.0	8.0	105.2	6.77	6.8	36.71	-	2.5	-	4.2	-	<0.02	-	0.28	-	<0.05	-	0.02	-	2.0	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	FCZ1B			Bottom	2	3.8	25.1	8.1	105.9	6.80	-	36.67	-	2.3	-	3.8	-	<0.02	-	0.26	-	<0.05	-	0.01	-	2.0	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	H4A	14:11	1.8	Middle	1	0.9	29.7	8.0	95.5	5.99	6.0	36.57	36.58	4.2	4.2	10.4	**10.2**	0.05	0.05	0.33	0.34	0.07	0.08	0.05	0.04	2.5	2.1	NOT DETECTED	ND
7/22/2020	Mid-Ebb	Sunny	Moderate	H4A			Middle	2	0.9	29.7	7.9	98.5	6.02	-	36.58	-	4.1	-	10.0	-	0.05	-	0.34	-	0.08	-	0.03	-	1.7	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	H1A	14:25	1.0	Middle	1	0.5	30.2	7.9	98.8	6.05	6.1	36.42	36.43	4.1	4.1	11.1	11.0	0.05	0.06	0.36	0.37	0.09	0.09	0.03	0.03	2.6	2.8	NOT DETECTED	ND
7/22/2020	Mid-Ebb	Sunny	Moderate	H1A			Middle	2	0.5	30.2	7.9	98.9	6.05	-	36.43	-	4.1	-	10.8	-	0.06	-	0.37	-	0.08	-	0.03	-	2.9	-	NOT DETECTED	-
7/22/2020	Mid-Ebb	Sunny	Moderate	M1A	14:41	0.6	Middle	1	0.3	30.1	8.0	96.7	5.99	5.9	35.98	36.03	5.2	5.3	13.8	**13.9**	<0.02	<0.02	0.43	0.43	0.07	0.07	0.04	**0.05**	2.8	3.0	29	34
7/22/2020	Mid-Ebb	Sunny	Moderate	M1A			Middle	2	0.3	30.2	8.0	95.1	5.88	-	36.08	-	5.4	-	14.0	-	<0.02	-	0.42	-	0.07	-	0.05	-	3.1	-	38	-
7/22/2020	Mid-Ebb	Sunny	Moderate	SGA	14:57	0.8	Middle	1	0.4	29.7	8.0	101.5	6.32	6.3	36.42	36.42	5.8	5.8	10.8	**11.0**	0.03	0.04	0.34	0.34	<0.05	0.06	0.04	**0.04**	1.4	1.3	NOT DETECTED	ND
7/22/2020	Mid-Ebb	Sunny	Moderate	SGA			Middle	2	0.4	29.7	8.0	102.0	6.34	-	36.42	-	5.8	-	11.2	-	0.04	-	0.33	-	0.06	-	0.03	-	1.2	-	NOT DETECTED	-

DA - Depth-averaged
ND - Not Detected
* denoted the estimated count
Action Level - Value presented in bold
Limit Level - Value presented in bold and underlined

1-year Operation of TSTP - Marine Water Quality Monitoring Results on 24-Jul-20

Date	Tidal	Weather Condition	Sea Condition	Monitoring Station	Time	Water Depth, m	Water Level	Replicate	Sampling Depth	Temperature, °C	pH	DO Saturation, %	DO, mg/L		Salinity, ppt		Turbidity, NTU		Suspended Soild, mg/L		Ammonia Nitrogen, mg/L		Total Nitrogen, mg/L		Total Inorganic Nitrogen, mg/L		Total Phosphorus, mg/L		Biochemical Oxygen Demand, mg/L		*E. Coli, Cfu/100ml*	
													Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
7/24/2020	Mid-Ebb	Sunny	Moderate	C	14:01	9.8	Surface	1	1.0	28.5	8.1	110.9	7.03	6.8	36.52	36.64	0.9	1.3	1.6	1.6	0.05	0.06	0.20	0.25	0.05	0.06	<0.01	<0.01	<1.0	1.1	NOT DETECTED	ND
7/24/2020	Mid-Ebb	Sunny	Moderate	C			Surface	2	1.0	28.6	8.2	112.5	7.11	-	36.51	-	1.0	-	1.9	-	0.05	-	0.24	-	<0.05	-	<0.01	-	<1.0	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	C			Middle	1	4.9	27.1	8.1	100.5	6.51	-	36.66	-	1.3	-	1.6	-	0.06	-	0.22	-	0.06	-	<0.01	-	1.0	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	C			Middle	2	4.9	27.1	8.1	100.2	6.48	-	36.68	-	1.3	-	1.7	-	0.06	-	0.19	-	0.06	-	<0.01	-	<1.0	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	C			Bottom	1	8.8	25.6	8.1	92.9	6.18	6.2	36.71	-	1.5	-	1.4	-	0.06	-	0.42	-	0.06	-	<0.01	-	1.6	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	C			Bottom	2	8.8	25.6	8.1	94.1	6.25	-	36.73	-	1.6	-	1.2	-	0.05	-	0.21	-	<0.05	-	<0.01	-	<1.0	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	N1	14:18	6.6	Surface	1	1.0	28.6	8.2	143.6	9.09	8.1	36.42	36.55	1.4	2.3	3.0	3.4	0.04	<0.02	0.43	0.43	<0.05	<0.05	0.02	0.02	1.8	1.5	NOT DETECTED	ND
7/24/2020	Mid-Ebb	Sunny	Moderate	N1			Surface	2	1.0	28.6	8.2	144.4	9.14	-	36.42	-	1.4	-	2.8	-	0.03	-	0.51	-	<0.05	-	0.02	-	1.6	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	N1			Middle	1	3.3	27.9	8.1	111.2	7.12	-	36.53	-	2.6	-	3.3	-	<0.02	-	0.33	-	<0.05	-	0.02	-	1.3	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	N1			Middle	2	3.3	27.9	8.1	110.9	7.09	-	36.54	-	2.6	-	3.2	-	<0.02	-	0.63	-	<0.05	-	0.02	-	2.2	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	N1			Bottom	1	5.6	26.1	8.1	94.8	6.25	6.3	36.68	-	3.0	-	4.0	-	0.03	-	0.27	-	<0.05	-	0.02	-	<1.0	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	N1			Bottom	2	5.6	26.1	8.1	95.6	6.29	-	36.68	-	3.0	-	4.3	-	<0.02	-	0.41	-	<0.05	-	0.02	-	1.3	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	FCZ1B	14:36	3.9	Surface	1	1.0	29.7	8.2	140.6	8.74	8.7	36.49	36.55	1.5	1.8	3.4	3.5	<0.02	0.03	0.34	0.37	<0.05	0.05	0.02	0.02	<1.0	1.4	NOT DETECTED	ND
7/24/2020	Mid-Ebb	Sunny	Moderate	FCZ1B			Surface	2	1.0	29.7	8.2	140.8	8.72	-	36.48	-	1.6	-	3.2	-	<0.02	-	0.37	-	<0.05	-	0.02	-	1.4	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	FCZ1B			Bottom	1	2.9	27.3	8.2	116.9	7.55	7.6	36.60	-	2.0	-	3.9	-	0.04	-	0.50	-	0.06	-	0.02	-	1.9	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	FCZ1B			Bottom	2	2.9	27.3	8.2	117.0	7.55	-	36.61	-	2.1	-	3.5	-	0.05	-	0.26	-	<0.05	-	0.02	-	1.1	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	H4A	14:50	1.8	Middle	1	0.9	31.0	8.0	112.2	6.83	6.8	36.47	36.49	4.0	4.1	4.6	4.9	0.04	0.05	0.41	0.37	<0.05	0.06	0.03	0.04	1.5	1.3	NOT DETECTED	ND
7/24/2020	Mid-Ebb	Sunny	Moderate	H4A			Middle	2	0.9	31.0	8.0	111.0	6.76	-	36.50	-	4.2	-	5.1	-	0.06	-	0.33	-	0.07	-	0.04	-	1.0	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	H1A	15:00	1.2	Middle	1	0.6	31.0	8.0	107.9	6.57	6.6	36.46	36.46	5.7	5.7	5.1	5.3	0.04	0.04	0.36	0.36	0.1	0.10	0.03	0.03	<1.0	<1.0	1*	ND
7/24/2020	Mid-Ebb	Sunny	Moderate	H1A			Middle	2	0.6	31.0	8.0	108.1	6.58	-	36.45	-	5.6	-	5.5	-	0.04	-	0.36	-	0.09	-	0.03	-	<1.0	-	NOT DETECTED	-
7/24/2020	Mid-Ebb	Sunny	Moderate	M1A	15:10	1.0	Middle	1	0.5	29.4	8.0	107.5	6.67	6.7	36.36	36.37	5.2	5.3	4.9	5.1	0.05	0.04	0.43	0.44	0.09	0.09	0.04	0.04	<1.0	<1.0	27	25
7/24/2020	Mid-Ebb	Sunny	Moderate	M1A			Middle	2	0.5	29.4	8.0	106.3	6.64	-	36.38	-	5.4	-	5.2	-	0.03	-	0.45	-	0.08	-	0.03	-	<1.0	-	22	-
7/24/2020	Mid-Ebb	Sunny	Moderate	SGA	15:20	0.6	Middle	1	0.3	29.3	8.1	133.7	8.37	8.4	36.48	36.48	3.7	3.8	5.7	5.7	<0.02	<0.02	0.37	0.38	<0.05	<0.05	0.03	0.03	<1.0	1.0	1*	ND
7/24/2020	Mid-Ebb	Sunny	Moderate	SGA			Middle	2	0.3	29.3	8.1	133.5	8.35	-	36.47	-	3.8	-	5.7	-	<0.02	-	0.38	-	<0.05	-	0.03	-	1.0	-	NOT DETECTED	-

DA - Depth-averaged
ND - Not Detected
* denoted the estimated count

1-year Operation of TSTP - Marine Water Quality Monitoring Results on 27-Jul-20

Date	Tidal	Weather Condition	Sea Condition	Monitoring Station	Time	Water Depth, m	Water Level	Replicate	Sampling Depth	Temperature, °C	pH	DO Saturation, %	DO, mg/L		Salinity, ppt		Turbidity, NTU		Suspended Soild, mg/L		Ammonia Nitrogen, mg/L		Total Nitrogen, mg/L		Total Inorganic Nitrogen, mg/L		Total Phosphorus, mg/L		Biochemical Oxygen Demand, mg/L		*E. Coli*, Cfu/100ml	
													Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
7/27/2020	Mid-Flood	Sunny	Moderate	C	10:59	9.5	Surface	1	1.0	29.4	8.2	85.6	5.79	5.52	35.67	36.14	4.3	4.3	2.6	2.5	<0.02	<0.02	0.42	0.43	<0.05	<0.05	0.01	0.01	2.3	4.0	NOT DETECTED	ND
7/27/2020	Mid-Flood	Sunny	Moderate	C			Surface	2	1.0	29.1	8.2	85.9	5.83	-	35.67	-	4.2	-	2.5	-	<0.02	-	0.45	-	<0.05	-	0.02	-	2.7	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	C			Middle	1	4.8	24.6	8.1	82.6	5.14	-	36.25	-	4.1	-	2.7	-	<0.02	-	0.82	-	<0.05	-	0.02	-	6.3	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	C			Middle	2	4.8	24.4	8.1	84.6	5.30	-	36.28	-	4.2	-	2.5	-	<0.02	-	0.23	-	<0.05	-	0.01	-	6.3	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	C			Bottom	1	8.5	24.1	8.1	81.8	5.13	5.07	36.56	-	4.6	-	2.4	-	<0.02	-	0.38	-	<0.05	-	0.01	-	2.4	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	C			Bottom	2	8.5	24.4	8.1	80.4	5.01	-	36.38	-	4.4	-	2.2	-	<0.02	-	0.30	-	<0.05	-	0.01	-	3.9	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	N2	11:46	5.6	Surface	1	1.0	29.9	8.1	90.4	6.17	6.04	36.04	36.42	4.5	4.7	2.2	2.5	<0.02	<0.02	0.44	0.36	<0.05	<0.05	0.02	**0.02**	4.3	2.6	NOT DETECTED	ND
7/27/2020	Mid-Flood	Sunny	Moderate	N2			Surface	2	1.0	29.7	8.1	86.9	5.90	-	36.07	-	4.3	-	2.4	-	<0.02	-	0.33	-	<0.05	-	0.02	-	2.6	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	N2			Bottom	1	4.6	24.5	8.0	88.5	6.02	5.95	36.77	-	4.8	-	2.5	-	<0.02	-	0.32	-	<0.05	-	0.02	-	1.6	-	1*	-
7/27/2020	Mid-Flood	Sunny	Moderate	N2			Bottom	2	4.6	24.5	8.1	86.6	5.88	-	36.78	-	5.0	-	2.8	-	<0.02	-	0.34	-	<0.05	-	0.02	-	1.9	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	FCZ1B	11:59	5.3	Surface	1	1.0	29.8	8.1	91.7	6.13	6.16	36.14	36.40	4.0	4.2	2.9	2.9	<0.02	<0.02	0.30	0.33	<0.05	<0.05	0.02	**0.02**	2.5	2.8	1*	ND
7/27/2020	Mid-Flood	Sunny	Moderate	FCZ1B			Surface	2	1.0	29.8	8.0	92.8	6.18	-	36.11	-	3.8	-	2.5	-	<0.02	-	0.32	-	<0.05	-	0.02	-	2.8	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	FCZ1B			Bottom	1	4.3	26.2	8.0	87.4	5.93	5.99	36.68	-	4.6	-	3.0	-	<0.02	-	0.33	-	<0.05	-	0.02	-	3.1	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	FCZ1B			Bottom	2	4.3	26.2	8.0	89.1	6.05	-	36.67	-	4.4	-	3.3	-	<0.02	-	0.35	-	<0.05	-	0.02	-	2.6	-	NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	H4A	12:14	1.8	Middle	1	0.9	30.4	8.0	96.6	5.93	5.97	36.52	36.52	3.6	3.8	6.4	**6.2**	<0.02	<0.02	0.28	0.30	<0.05	<0.05	0.03	**0.03**	<1.0	<1.0	NOT DETECTED	ND
7/27/2020	Mid-Flood	Sunny	Moderate	H4A			Middle	2	0.9	30.4	8.0	97.8	6.01	-	36.52	-	3.9	-	6.0	-	<0.02	-	0.31	-	<0.05	-	0.03	-	<1.0		NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	H1A	12:24	1.2	Middle	1	0.6	30.2	8.1	107.1	6.62	6.67	36.10	36.10	4.0	3.9	5.6	**5.4**	<0.02	<0.02	0.30	0.30	<0.05	<0.05	0.02	**0.02**	<1.0	<1.0	NOT DETECTED	ND
7/27/2020	Mid-Flood	Sunny	Moderate	H1A			Middle	2	0.6	30.2	8.1	108.8	6.72	-	36.09	-	3.7	-	5.1	-	<0.02	-	0.29	-	<0.05	-	0.02	-	<1.0		NOT DETECTED	-
7/27/2020	Mid-Flood	Sunny	Moderate	M1A	12:35	1.2	Middle	1	0.6	30.7	8.1	105.1	6.46	6.40	35.72	35.77	4.3	4.3	5.1	**5.0**	<0.02	<0.02	0.35	0.36	<0.05	<0.05	0.04	**0.04**	1.5	1.5	49	52
7/27/2020	Mid-Flood	Sunny	Moderate	M1A			Middle	2	0.6	30.6	8.0	102.9	6.33	-	35.82	-	4.2	-	4.9	-	<0.02	-	0.36	-	<0.05	-	0.04	-	1.5		55	-
7/27/2020	Mid-Flood	Sunny	Moderate	SGA	12:44	1.4	Middle	1	0.7	30.1	8.1	102.3	6.34	6.27	35.95	35.97	4.8	4.7	6.6	**6.4**	0.02	0.03	0.32	0.33	0.06	0.06	0.02	**0.03**	2.0	2.3	NOT DETECTED	ND
7/27/2020	Mid-Flood	Sunny	Moderate	SGA			Middle	2	0.7	30.1	8.1	100.0	6.19	-	35.98	-	4.6	-	6.2	-	0.03	-	0.34	-	0.06	-	0.03	-	2.6		NOT DETECTED	-

DA - Depth-averaged
ND - Not Detected
* denoted the estimated count
Action Level - Value presented in bold
Limit Level - Value presented in bold and underlined

1-year Operation of TSTP - Marine Water Quality Monitoring Results on 29-Jul-20

Date	Tidal	Weather Condition	Sea Condition	Monitoring Station	Time	Water Depth, m	Water Level	Replicate	Sampling Depth	Temperature, °C	pH	DO Saturation, %	DO, mg/L		Salinity, ppt		Turbidity, NTU		Suspended Soild, mg/L		Ammonia Nitrogen, mg/L		Total Nitrogen, mg/L		Total Inorganic Nitrogen, mg/L		Total Phosphorus, mg/L		Biochemical Oxygen Demand, mg/L		*E. Coli*, Cfu/100ml	
													Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	C	13:55	9.5	Surface	1	1.0	29.7	8.3	101.9	6.21	6.15	35.65	36.09	3.3	3.4	<1.0	1.4	<0.02	<0.02	0.22	0.34	<0.05	<0.05	<0.01	0.02	<1.0	1.7	NOT DETECTED	ND
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	C			Surface	2	1.0	29.7	8.3	102.5	6.22	-	35.64	-	3.4	-	<1.0	-	<0.02	-	0.24	-	<0.05	-	0.01	-	<1.0	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	C			Middle	1	4.8	25.9	8.1	99.1	6.10	-	35.97	-	3.5	-	1.7	-	<0.02	-	0.64	-	<0.05	-	0.02	-	2.9	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	C			Middle	2	4.8	25.9	8.1	99.2	6.08	-	35.97	-	3.3	-	1.4	-	<0.02	-	0.42	-	<0.05	-	0.02	-	2.8	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	C			Bottom	1	8.5	23.4	8.0	96.8	5.90	5.88	36.60	-	3.5	-	2.1	-	<0.02	-	0.26	-	<0.05	-	0.02	-	1.2	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	C			Bottom	2	8.5	23.3	8.1	95.6	5.86	-	36.71	-	3.4	-	1.4	-	<0.02	-	0.27	-	<0.05	-	0.01	-	<1.0	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	N2	14:29	5.4	Surface	1	1.0	30.2	8.2	125.6	7.76	7.60	36.24	36.25	2.9	2.9	2.8	**3.0**	<0.02	<0.02	0.55	0.41	<0.05	<0.05	0.02	0.02	2	1.9	NOT DETECTED	ND
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	N2			Surface	2	1.0	30.2	8.2	113.8	7.44	-	36.18	-	2.8	-	3.7	-	<0.02	-	0.43	-	<0.05	-	0.02	-	2.1	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	N2			Bottom	1	4.4	26.4	8.2	111.4	7.31	7.28	36.31	-	2.9	-	2.5	-	<0.02	-	0.36	-	<0.05	-	0.02	-	2	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	N2			Bottom	2	4.4	26.7	8.2	117.3	7.25	-	36.26	-	2.9	-	2.9	-	<0.02	-	0.29	-	<0.05	-	0.02	-	1.4	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	FCZ1B	14:39	4.7	Surface	1	1.0	30.8	8.2	115.7	7.08	7.08	36.12	36.27	2.7	2.6	3.3	**3.2**	<0.02	<0.02	0.35	0.33	<0.05	<0.05	0.02	0.02	1.7	1.7	1*	<1
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	FCZ1B			Surface	2	1.0	30.7	8.2	115.4	7.07	-	36.14	-	2.5	-	4.4	-	<0.02	-	0.36	-	<0.05	-	0.02	-	1.8	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	FCZ1B			Bottom	1	3.7	27.2	8.2	115.2	7.06	7.03	36.22	-	2.5	-	3.0	-	<0.02	-	0.31	-	<0.05	-	0.02	-	2	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	FCZ1B			Bottom	2	3.7	27.3	8.2	108.3	6.99	-	36.60	-	2.7	-	2.2	-	<0.02	-	0.30	-	<0.05	-	0.02	-	1.2	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	H4A	14:50	1.8	Middle	1	0.9	31.1	8.0	104.1	6.31	6.32	36.60	36.60	3.8	3.8	7.2	**6.8**	<0.02	<0.02	0.37	0.38	<0.05	<0.05	0.05	**0.05**	<1.0	<1.0	NOT DETECTED	ND
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	H4A			Middle	2	0.9	31.1	8.0	104.5	6.33	-	36.60	-	3.8	-	6.3	-	<0.02	-	0.39	-	<0.05	-	0.05	-	<1.0	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	H1A	14:58	1.2	Middle	1	0.6	31.1	8.0	101.8	6.21	6.23	36.20	36.21	3.7	3.8	4.0	**4.4**	<0.02	<0.02	0.30	0.30	<0.05	<0.05	0.02	**0.03**	1.4	1.8	NOT DETECTED	ND
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	H1A			Middle	2	0.6	30.9	8.0	102.8	6.25	-	36.22	-	3.8	-	4.8	-	<0.02	-	0.30	-	<0.05	-	0.03	-	2.1	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	M1A	15:06	0.8	Middle	1	0.4	31.5	8.1	105.7	6.41	6.47	35.84	35.79	3.8	3.8	3.9	**4.4**	<0.02	<0.02	0.30	0.30	<0.05	<0.05	0.03	**0.03**	<1.0	<1.0	NOT DETECTED	ND
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	M1A			Middle	2	0.4	31.7	8.1	108.0	6.53	-	35.73	-	3.8	-	4.8	-	<0.02	-	0.29	-	<0.05	-	0.03	-	<1.0	-	NOT DETECTED	-
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	SGA	15:15	0.8	Middle	1	0.4	31.3	8.1	103.0	6.25	6.32	36.15	36.15	3.7	3.8	4.4	**4.6**	<0.02	<0.02	0.28	0.29	<0.05	<0.05	0.03	**0.03**	<1.0	<1.0	NOT DETECTED	ND
7/29/2020	Mid-Flood	Cloudy & rainy	Moderate	SGA			Middle	2	0.4	31.4	8.1	105.3	6.38	-	36.15	-	3.8	-	4.7	-	<0.02	-	0.30	-	<0.05	-	0.03	-	<1.0	-	NOT DETECTED	-

DA - Depth-averaged
ND - Not Detected
* denoted the estimated count
Action Level - Value presented in bold
Limit Level - Value presented in bold and underlined

1-year Operation of TSTP - Marine Water Quality Monitoring Results on 31-Jul-20

Date	Tidal	Weather Condition	Sea Condition	Monitoring Station	Time	Water Depth, m	Water Level	Replicate	Sampling Depth	Temperature, °C	pH	DO Saturation, %	DO, mg/L		Salinity, ppt		Turbidity, NTU		Suspended Soild, mg/L		Ammonia Nitrogen, mg/L		Total Nitrogen, mg/L		Total Inorganic Nitrogen, mg/L		Total Phosphorus, mg/L		Biochemical Oxygen Demand, mg/L		*E. Coli*, *Cfu/100ml*	
													Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
7/31/2020	Mid-Ebb	Sunny	Moderate	C	9:20	9.6	Surface	1	1.0	29.4	8.1	87.7	5.86	5.9	36.24	36.34	3.2	3.3	5.2	4.9	<0.02	<0.02	0.27	0.30	<0.05	<0.05	0.02	0.02	1.6	1.2	17	15
7/31/2020	Mid-Ebb	Sunny	Moderate	C			Surface	2	1.0	29.4	8.1	90.2	6.04	-	36.10	-	3.1	-	4.9	-	<0.02	-	0.28	-	<0.05	-	0.02	-	1.0	-	25	-
7/31/2020	Mid-Ebb	Sunny	Moderate	C			Middle	1	4.8	25.7	8.1	86.2	5.81	-	36.20	-	3.2	-	4.5	-	<0.02	-	0.33	-	<0.05	-	0.02	-	1.2	-	13	-
7/31/2020	Mid-Ebb	Sunny	Moderate	C			Middle	2	4.8	25.6	8.0	87.7	5.90	-	36.33	-	3.4	-	5.0	-	<0.02	-	0.30	-	<0.05	-	0.02	-	<1.0	-	9	-
7/31/2020	Mid-Ebb	Sunny	Moderate	C			Bottom	1	8.6	23.3	8.1	85.2	5.71	5.8	36.54	-	3.5	-	5.0	-	<0.02	-	0.29	-	<0.05	-	0.02	-	1.3	-	11	-
7/31/2020	Mid-Ebb	Sunny	Moderate	C			Bottom	2	8.6	23.2	8.0	86.2	5.78	-	36.60	-	3.4	-	4.8	-	<0.02	-	0.33	-	<0.05	-	0.02	-	<1.0	-	15	-
7/31/2020	Mid-Ebb	Sunny	Moderate	N1	9:42	6.2	Surface	1	1.0	28.9	8.1	96.5	6.48	6.5	36.06	36.21	3.4	3.4	3.8	4.7	<0.02	<0.02	0.30	0.30	<0.05	<0.05	0.02	0.02	<1.0	<1.0	18	15
7/31/2020	Mid-Ebb	Sunny	Moderate	N1			Surface	2	1.0	29.0	8.1	98.1	6.60	-	36.06	-	3.3	-	3.7	-	<0.02	-	0.30	-	<0.05	-	0.02	-	<1.0	-	15	-
7/31/2020	Mid-Ebb	Sunny	Moderate	N1			Middle	1	3.1	28.8	8.0	97.4	6.54	-	36.22	-	3.3	-	4.9	-	<0.02	-	0.30	-	<0.05	-	0.02	-	<1.0	-	8	-
7/31/2020	Mid-Ebb	Sunny	Moderate	N1			Middle	2	3.1	28.7	8.0	95.8	6.45	-	36.24	-	3.4	-	4.3	-	<0.02	-	0.29	-	<0.05	-	0.02	-	<1.0	-	11	-
7/31/2020	Mid-Ebb	Sunny	Moderate	N1			Bottom	1	5.2	26.2	8.0	94.5	6.36	6.4	36.34	-	3.5	-	6.0	-	<0.02	-	0.29	-	<0.05	-	0.02	-	<1.0	-	16	-
7/31/2020	Mid-Ebb	Sunny	Moderate	N1			Bottom	2	5.2	26.6	8.0	96.5	6.49	-	36.34	-	3.3	-	5.7	-	<0.02	-	0.30	-	<0.05	-	0.03	-	<1.0	-	22	-
7/31/2020	Mid-Ebb	Sunny	Moderate	FCZ1B	10:04	4.7	Surface	1	1.0	28.6	8.1	94.6	6.38	6.4	36.02	36.12	2.8	2.8	6.4	5.8	<0.02	<0.02	0.31	0.30	<0.05	<0.05	0.02	0.02	1.1	1.0	19	18
7/31/2020	Mid-Ebb	Sunny	Moderate	FCZ1B			Surface	2	1.0	28.7	8.1	94.6	6.37	-	36.02	-	2.7	-	7.6	-	<0.02	-	0.31	-	<0.05	-	0.02	-	1.0	-	15	-
7/31/2020	Mid-Ebb	Sunny	Moderate	FCZ1B			Bottom	1	3.7	26.9	8.1	94.4	6.30	6.3	36.20	-	2.8	-	4.5	-	<0.02	-	0.29	-	<0.05	-	0.02	-	<1.0	-	22	-
7/31/2020	Mid-Ebb	Sunny	Moderate	FCZ1B			Bottom	2	3.7	27.0	8.0	93.9	6.29	-	36.24	-	2.8	-	4.8	-	<0.02	-	0.28	-	<0.05	-	0.02	-	<1.0	-	17	-
7/31/2020	Mid-Ebb	Sunny	Moderate	H4A	10:19	1.6	Middle	1	0.8	28.9	8.0	94.3	6.33	6.3	35.86	35.86	2.8	2.8	7.0	7.1	<0.02	<0.02	0.28	0.29	<0.05	<0.05	0.02	0.02	1.0	1.0	27	31
7/31/2020	Mid-Ebb	Sunny	Moderate	H4A			Middle	2	0.8	28.9	8.0	93.9	6.30	-	35.85	-	2.8	-	7.1	-	<0.02	-	0.30	-	<0.05	-	0.02	-	<1.0	-	35	-
7/31/2020	Mid-Ebb	Sunny	Moderate	H1A	10:29	1.0	Middle	1	0.5	28.9	7.9	94.9	6.37	6.4	35.60	35.55	3.0	3.1	5.3	5.2	<0.02	<0.02	0.32	0.31	<0.05	<0.05	0.02	0.02	1.6	1.7	11	10
7/31/2020	Mid-Ebb	Sunny	Moderate	H1A			Middle	2	0.5	28.9	7.9	94.3	6.33	-	35.50	-	3.1	-	5.1	-	<0.02	-	0.29	-	<0.05	-	0.02	-	1.8	-	8	-
7/31/2020	Mid-Ebb	Sunny	Moderate	M1A	10:40	0.6	Middle	1	0.3	28.6	8.1	95.1	6.38	6.4	36.00	36.01	2.9	2.9	7.0	7.4	<0.02	<0.02	0.29	0.30	<0.05	<0.05	0.02	0.02	1.1	1.1	23	26
7/31/2020	Mid-Ebb	Sunny	Moderate	M1A			Middle	2	0.3	28.6	8.1	96.5	6.47	-	36.01	-	2.9	-	7.8	-	<0.02	-	0.31	-	<0.05	-	0.02	-	1.0	-	29	-
7/31/2020	Mid-Ebb	Sunny	Moderate	SGA	10:51	0.8	Middle	1	0.4	28.7	8.0	96.0	6.44	6.5	35.94	35.94	3.1	3.2	4.5	4.3	<0.02	<0.02	0.28	0.28	<0.05	<0.05	0.02	0.02	<1.0	<1.0	20	23
7/31/2020	Mid-Ebb	Sunny	Moderate	SGA			Middle	2	0.4	28.7	8.0	96.4	6.49	-	35.94	-	3.2	-	4.0	-	<0.02	-	0.27	-	<0.05	-	0.02	-	<1.0	-	26	-

DA - Depth-averaged
ND - Not Detected

Composite Effluent Quality Monitoring Results (1-year Operation of TSTP)

Date	Monitoring Station	Replicate	Temperature* °C	pH	DO Saturation %	DO mg/L	Salinity ppt	Turbidity NTU	Suspended Solids mg/L	Ammonia Nitrogen mg/L	Total Nitrogen mg/L	Total Inorganic Nitrogen mg/L	Total Phosphorus mg/L	Biochemical Oxygen Demand# mg/L	E.Coli cfu/100ml	Biochemical Oxygen Demand^ (re-measured)
7/22/2020	Effluent	1	5.5	7.6	80.5	10.10	0.48	0.9	2	0.07	9.8	8.55	1.06	**15**	Not Detected	9
		2	5.5	7.6	80.0	10.05	0.48	0.9	-	-	-	-	-	-	-	-
7/23/2020	Effluent	1	4.9	7.4	86.3	9.81	0.43	2.3	6	1.1	12.8	10.9	1.38	**20**	Not Detected	**14**
		2	4.9	7.4	85.9	9.75	0.43	2.3	-	-	-	-	-	-	-	-
7/24/2020	Effluent	1	5.1	7.8	90.1	9.45	0.37	2.2	5	0.56	15.5	15.2	2.16	**24**	16	**14**
		2	5.1	7.8	88.3	9.32	0.37	2.0	-	-	-	-	-	-	-	-
7/25/2020	Effluent	1	4.6	7.4	88.2	9.60	0.33	3.1	9	1.85	11.5	10.2	2.27	9	71	3
		2	4.6	7.4	87.3	9.50	0.33	3.2	-	-	-	-	-	-	-	-
7/26/2020	Effluent	1	4.9	7.4	90.0	9.02	0.34	2.6	4	2.54	12.4	11.4	2.58	**21**	28	10
		2	4.9	7.4	88.9	8.91	0.34	2.6	-	-	-	-	-	-	-	-
7/27/2020	Effluent	1	7.7	7.4	83.0	9.90	0.21	2.6	4	2.02	13.7	13	2.45	**15**	53	12
		2	7.7	7.4	82.5	9.85	0.21	2.6	-	-	-	-	-	-	-	-
7/28/2020	Effluent	1	6.2	8.1	80.6	9.97	0.28	2.0	5	0.39	13.5	11.7	2.25	**19**	51	12
		2	6.2	8.1	80.0	9.90	0.28	2.1	-	-	-	-	-	-	-	-
7/29/2020	Effluent	1	7.6	8.0	86.7	10.34	0.27	2.5	5	1.24	11.9	10.5	2.18	**18**	42	9
		2	7.6	8.0	84.6	10.10	0.27	2.4	-	-	-	-	-	-	-	-
7/30/2020	Effluent	1	7.4	8.4	76.1	9.21	0.27	2.7	4	2.04	13.8	12.5	2.67	12	18	8
		2	7.4	8.4	77.1	9.39	0.27	2.6	-	-	-	-	-	-	-	-
7/31/2020	Effluent	1	8.4	7.8	80.6	9.19	0.38	2.9	3	1.64	12.8	11.2	2.05	8	62	7
		2	8.4	7.8	80.3	9.20	0.38	3.1	-	-	-	-	-	-	-	-

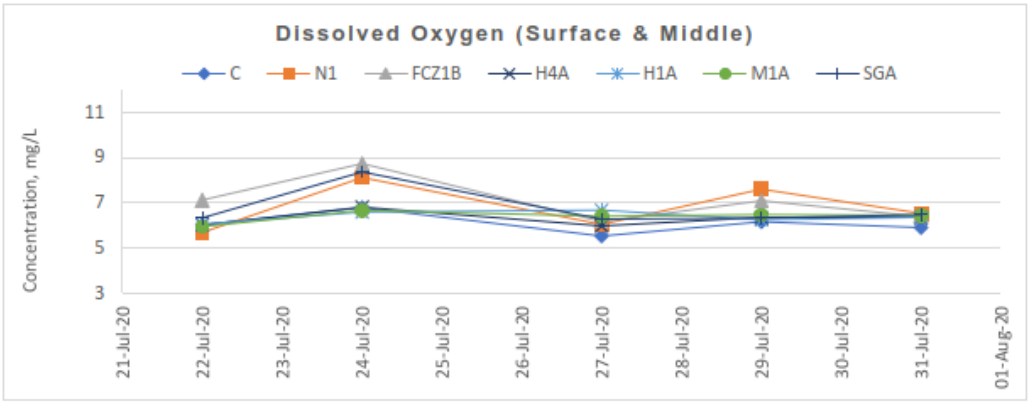
Action Level	20	-	28.6	-	3.3	-	664	13.3
Limit Level	40	-	57.1	-	6.6	-	996	26.6

A 24-hour flow-weighted composite effluent sample was collected and mixed.
* Effluent sample was collected by refrigerated autosampler. The collected samples were kept in low temperature during 24-hr sampling period.

The effluent samples were tested of total biochemical oxygen demand which composed of both carbonaceous oxygen demand (organic BOD_5) and nitrogenous oxygen demand.
For secondary effluent sample, chemical inhibition of nitrogenous demand will be used in the BOD5 test for effluent samples to provide a more direct and reliable measures the concentration of the biodegradable carbonaceous materials.

^ As such, as discussed with DSD, re-measurement of BOD5 of samples by adding nitrification inhibitor were conducted and presented in the table.

Action Level - Value presented in bold
Limit Level - Value presented in bold and underlined


Dissolved Oxygen (Surface & Middle)
C
N1
FCZ1B
H4A
H1A
M1A
SGA
Concentration, mg/L
11
9
7
5
3
21-Jul-20
22-Jul-20
23-Jul-20
24-Jul-20
25-Jul-20
26-Jul-20
27-Jul-20
28-Jul-20
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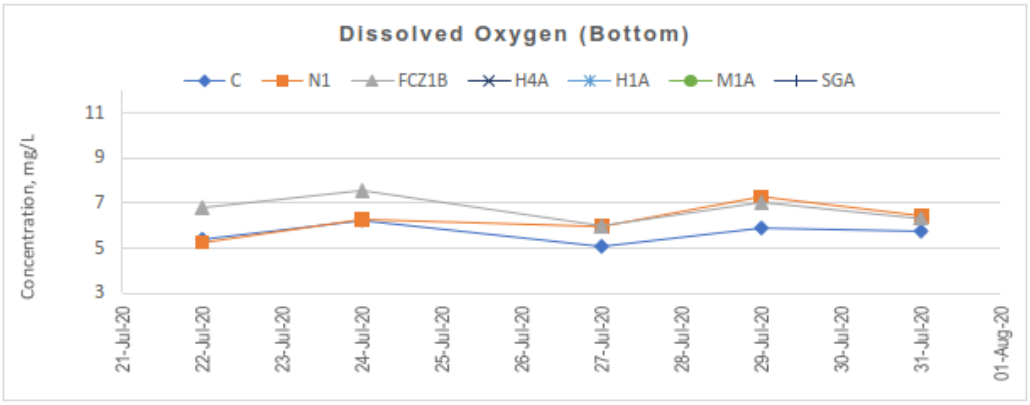
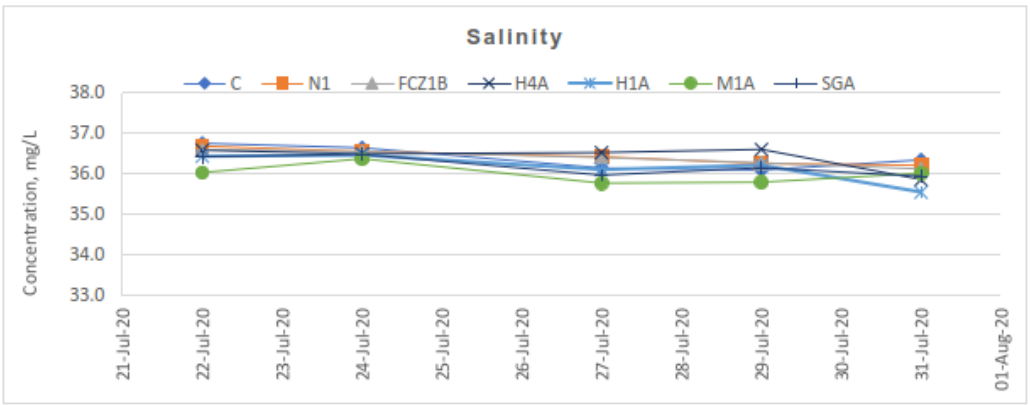
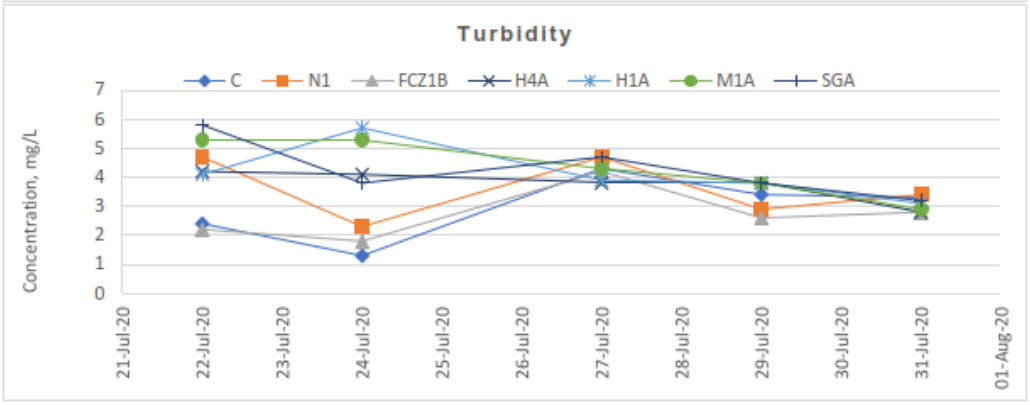
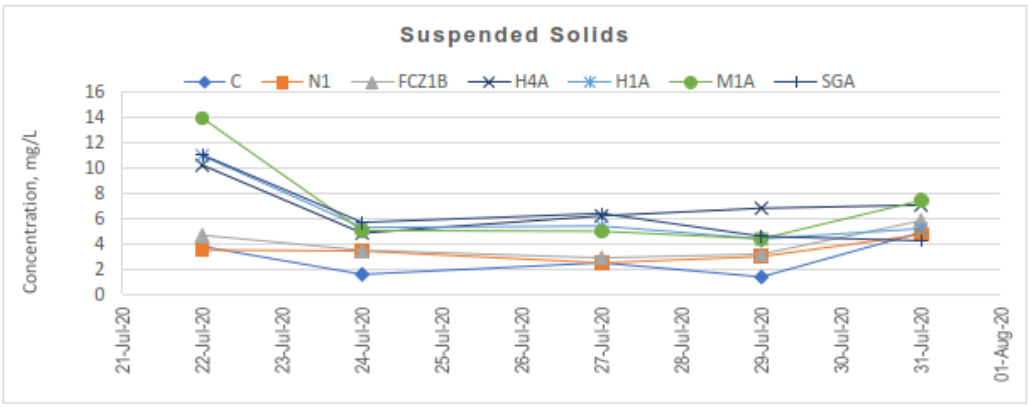
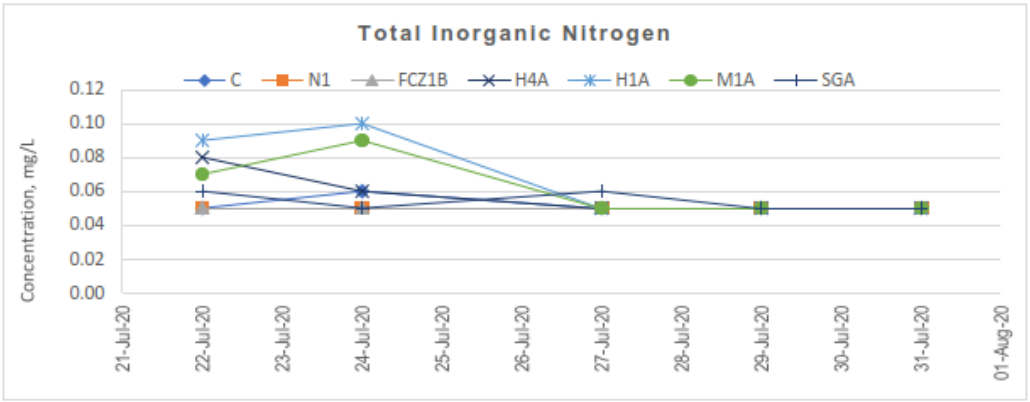
31-Jul-20
01-Aug-20

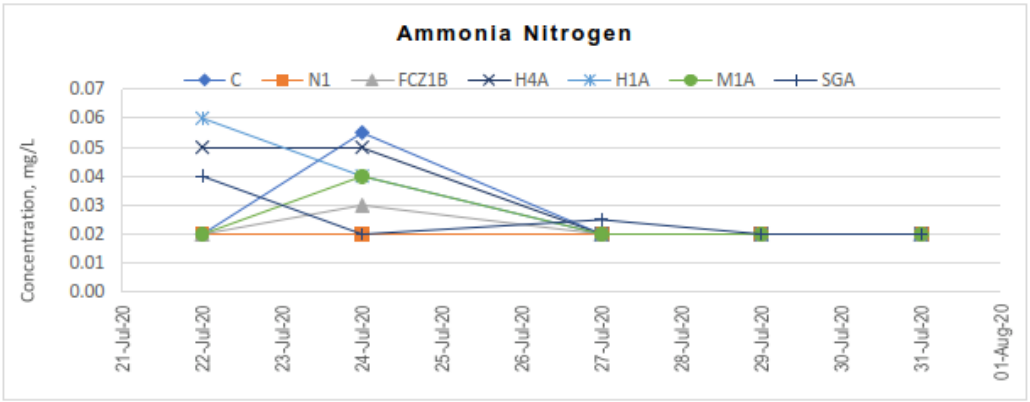

Dissolved Oxygen (Bottom)
C
N1
FCZ1B
H4A
H1A
M1A
SGA
Concentration, mg/L
11
9
7
5
3
21-Jul-20
22-Jul-20
23-Jul-20
24-Jul-20
25-Jul-20
26-Jul-20
27-Jul-20
28-Jul-20
29-Jul-20
30-Jul-20
31-Jul-20
01-Aug-20

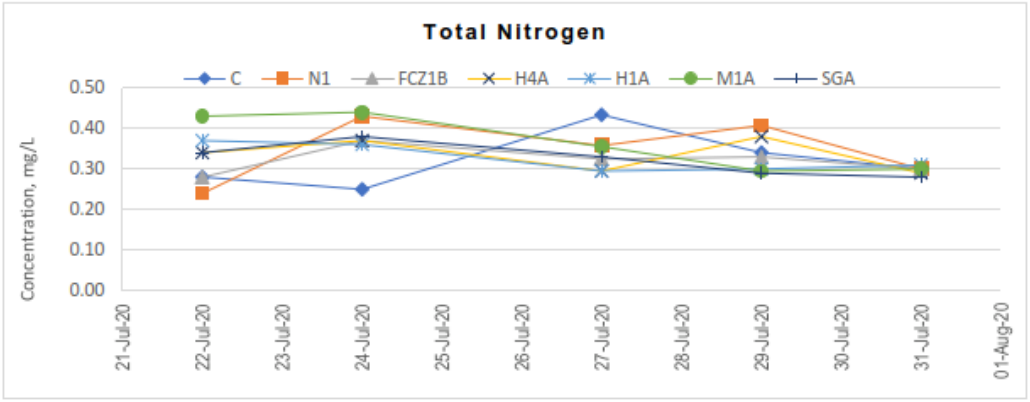

Salinity
C
N1
FCZ1B
H4A
H1A
M1A
SGA
Concentration, mg/L
38.0
37.0
36.0
35.0
34.0
33.0
21-Jul-20
22-Jul-20
23-Jul-20
24-Jul-20
25-Jul-20
26-Jul-20
27-Jul-20
28-Jul-20
29-Jul-20
30-Jul-20
31-Jul-20
01-Aug-20


Turbidity
C
N1
FCZ1B
H4A
H1A
M1A
SGA
Concentration, mg/L
7
6
5
4
3
2
1
0
21-Jul-20
22-Jul-20
23-Jul-20
24-Jul-20
25-Jul-20
26-Jul-20
27-Jul-20
28-Jul-20
29-Jul-20
30-Jul-20
31-Jul-20
01-Aug-20

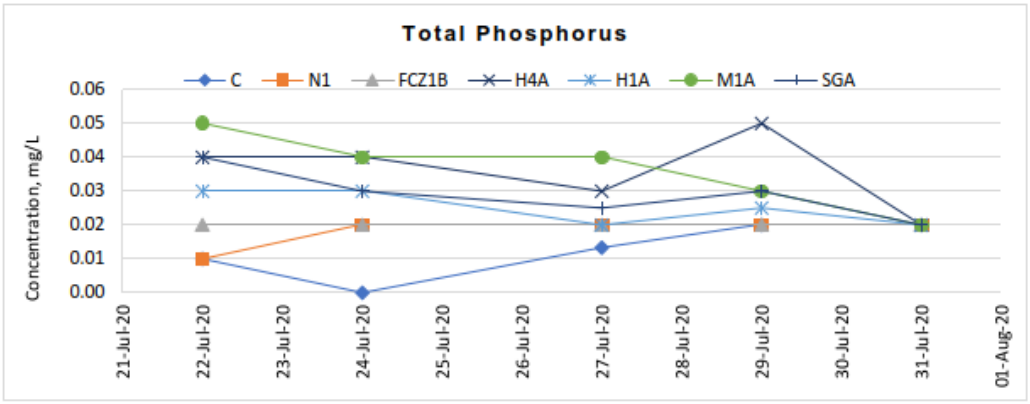


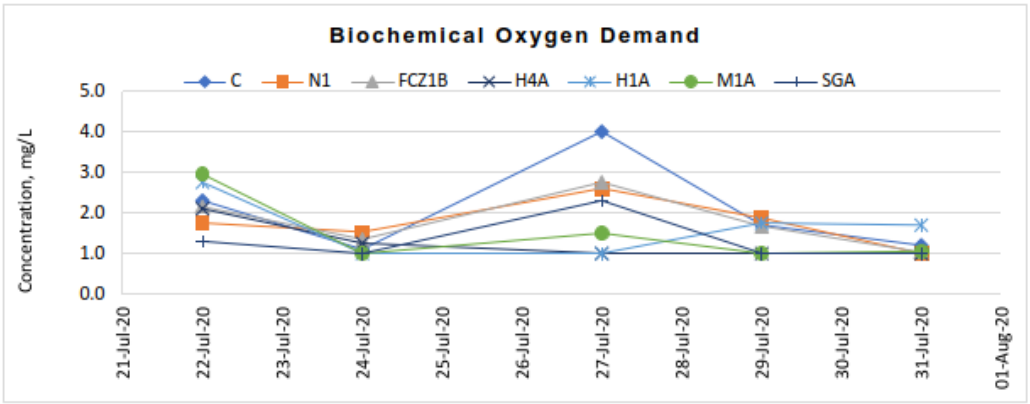


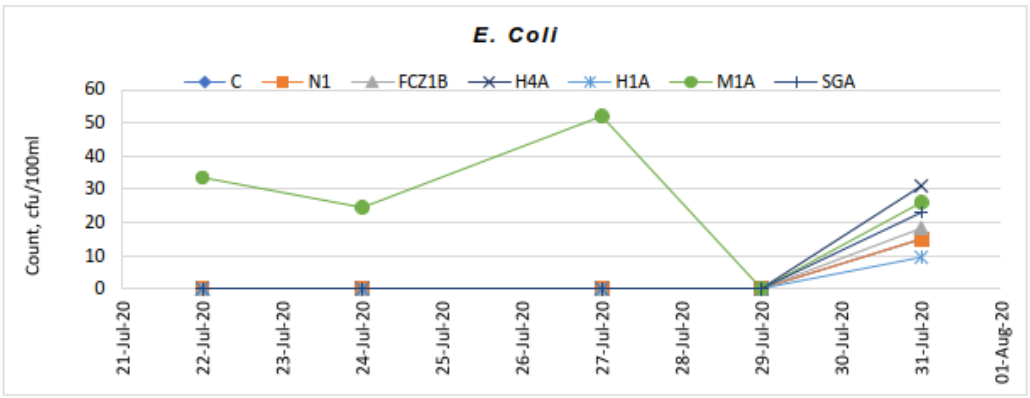




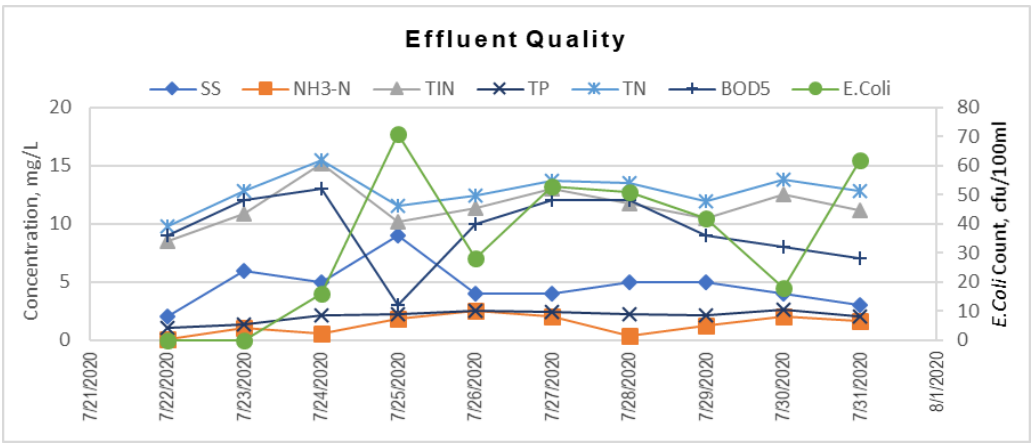
*For Total Inorganic Nitrogen, the <0.05 will be presented as value of 0.05 in the plot.
*For Ammonia Nitrogen, the <0.02 will be presented as value of 0.02 in the plot.







For E.Coli, the Not Detected will be presented as zero in the plot.



QAQC Reports

22 July 2020

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*
EA/ED: Physical and Aggregate Properties (QC Lot: 3157087)								
HK2026930-001	FCZ1B _S Ebb	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	5.4	5.0	8.65
HK2026930-039	H4A _M Ebb	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	10.4	10.1	2.93
EA/ED: Physical and Aggregate Properties (QC Lot: 3157088)								
HK2026930-057	C _M Ebb	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	3.8	3.6	8.11
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3157208)								
HK2026930-056	C _S _Dup Ebb	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	<0.02	<0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3157209)								
HK2026930-060	C _B _Dup Ebb	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	<0.02	<0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3159960)								
HK2026930-056	C _S _Dup Ebb	**EK062P: Total Nitrogen as N**	----	0.01	mg/L	0.32	0.30	4.81
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3159961)								
HK2026930-056	C _S _Dup Ebb	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.01	0.01	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3159962)								
HK2026930-060	C _B _Dup Ebb	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	<0.01	<0.01	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3159963)								
HK2026930-060	C _B _Dup Ebb	**EK062P: Total Nitrogen as N**	----	0.01	mg/L	0.23	0.23	0.00

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: **WATER**

		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	*Spike Recovery (%)*		*Recovery Limits(%)*		*RPD (%)*	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*		*LCS*	*DCS*	*Low*	*High*	*Value*	*Control Limit*
EA/ED: Physical and Aggregate Properties (QC Lot: 3157087)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	96.0	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 3157088)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	102	----	85.9	117	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3157208)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	----	93.1	107	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3157209)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	100	----	93.1	107	----	----

Matrix: **WATER**

		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	*Spike Recovery (%)*		*Recovery Limits(%)*		*RPD (%)*	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*		*LCS*	*DCS*	*Low*	*High*	*Value*	*Control Limit*
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3159960)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	115	----	85.0	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3159961)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.0	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3159962)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	99.4	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3159963)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	112	----	85.0	115	----	----
EP: Aggregate Organics (QC Lot: 3157385)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	100	----	81.0	115	----	----
EP: Aggregate Organics (QC Lot: 3157386)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	101	----	81.0	115	----	----

24 July 2020

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3162653)								
HK2027183-001	FCZ1B _S	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.4	3.8	10.5
HK2027183-039	H4A _M	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.6	4.9	4.72
EA/ED: Physical and Aggregate Properties (QC Lot: 3162654)								
HK2027183-057	C _M	EA025: Suspended Solids (SS)	----	0.5	mg/L	1.6	1.4	12.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3162986)								
HK2027183-001	FCZ1B _S	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.02	<0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3162987)								
HK2027183-060	C _B _Dup	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.05	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166016)								
HK2027183-046	N1 _M _Dup	EK067P: Total Phosphorus as P	----	0.01	mg/L	0.02	0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166018)								
HK2027183-046	N1 _M _Dup	EK062P: Total Nitrogen as N	----	0.01	mg/L	0.63	0.63	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166019)								
HK2027224-040	Anonymous	EK067P: Total Phosphorus as P	----	0.01	mg/L	0.03	0.03	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166020)								
HK2027224-040	Anonymous	EK062P: Total Nitrogen as N	----	0.01	mg/L	0.31	0.30	0.00

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3162653)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	94.5	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 3162654)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	108	----	85.9	117	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3162986)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	102	----	93.1	107	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3162987)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	----	93.1	107	----	----

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166016)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	96.0	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166018)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	----	85.0	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166019)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	97.1	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166020)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	----	85.0	115	----	----
EP: Aggregate Organics (QC Lot: 3161683)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	105	----	81.0	115	----	----
EP: Aggregate Organics (QC Lot: 3161684)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	108	----	81.0	115	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3162986)										
HK2027183-001	FCZ1B _S	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	102	----	75.0	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3162987)										
HK2027183-060	C _B _Dup	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	109	----	75.0	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166018)										
HK2027183-046	N1 _M _Dup	EK062P: Total Nitrogen as N	----	0.5 mg/L	110	----	75.0	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166019)										
HK2027224-040	Anonymous	EK067P: Total Phosphorus as P	----	0.5 mg/L	98.1	----	75.0	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166020)										
HK2027224-040	Anonymous	EK062P: Total Nitrogen as N	----	0.5 mg/L	107	----	75.0	125	----	----

27 July 2020

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3166449)								
HK2027224-001	FCZ1B _S Flood	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	2.9	2.6	10.0
HK2027224-039	H4A _M Flood	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	6.4	6.2	2.77
EA/ED: Physical and Aggregate Properties (QC Lot: 3166450)								
HK2027224-059	C _B Flood	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	2.4	2.2	6.52
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3164401)								
HK2027224-001	FCZ1B _S Flood	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	<0.02	<0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3164402)								
HK2027224-060	C _B _Dup Flood	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	<0.02	<0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166019)								
HK2027224-040	H4A _M _Dup Flood	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.03	0.03	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166020)								
HK2027224-040	H4A _M _Dup Flood	**EK062P: Total Nitrogen as N**	----	0.01	mg/L	0.31	0.30	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166021)								
HK2027224-060	C _B _Dup Flood	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.01	0.01	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166022)								
HK2027224-060	C _B _Dup Flood	**EK062P: Total Nitrogen as N**	----	0.01	mg/L	0.30	0.29	3.66

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3166449)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	96.5	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 3166450)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	106	----	85.9	117	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3164401)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	----	93.1	107	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3164402)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	102	----	93.1	107	----	----

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166019)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	97.1	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166020)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	----	85.0	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166021)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	97.3	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3166022)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	----	85.0	115	----	----
EP: Aggregate Organics (QC Lot: 3164341)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	105	----	81.0	115	----	----
EP: Aggregate Organics (QC Lot: 3164342)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	107	----	81.0	115	----	----

29 July 2020

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3171161)								
HK2027686-001	FCZ1B _S Flood	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	3.3	3.4	5.20
HK2027686-039	H4A _M Flood	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	17.2	17.3	0.00
EA/ED: Physical and Aggregate Properties (QC Lot: 3171162)								
HK2027686-059	C _B Flood	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	2.1	2.2	4.70
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3171497)								
HK2027686-001	FCZ1B _S Flood	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.02	0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3171499)								
HK2027686-001	FCZ1B _S Flood	**EK062P: Total Nitrogen as N**	----	0.01	mg/L	0.35	0.35	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3171500)								
HK2027686-060	C _B _Dup Flood	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.01	0.01	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3171501)								
HK2027686-060	C _B _Dup Flood	**EK062P: Total Nitrogen as N**	----	0.01	mg/L	0.27	0.27	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3172945)								
HK2027059-001	Anonymous	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	0.39	0.39	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3172946)								
HK2027686-058	C _M _Dup Flood	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	<0.02	<0.02	0.00

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3171161)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	93.0	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 3171162)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	103	----	85.9	117	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3171497)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	100	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3171499)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.6	----	85.0	115	----	----

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3171500)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	99.6	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3171501)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	----	85.0	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3172945)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.6	----	93.1	107	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3172946)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	101	----	93.1	107	----	----
EP: Aggregate Organics (QC Lot: 3169135)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	106	----	81.0	115	----	----
EP: Aggregate Organics (QC Lot: 3169398)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	103	----	81.0	115	----	----

31 July 2020

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3176467)								
HK2027876-001	FCZ1B _S Ebb	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	6.4	6.7	4.56
HK2027876-039	H4A _M Ebb	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	7.0	7.4	5.89
EA/ED: Physical and Aggregate Properties (QC Lot: 3176468)								
HK2027876-057	C _M Ebb	**EA025: Suspended Solids (SS)**	----	0.5	mg/L	4.5	4.3	5.68
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3173998)								
HK2027876-001	FCZ1B _S Ebb	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	<0.02	<0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3173999)								
HK2027876-060	C _B _Dup Ebb	**EK055K: Ammonia as N**	7664-41-7	0.01	mg/L	<0.02	<0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3176423)								
HK2027876-001	FCZ1B _S Ebb	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.02	0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3176424)								
HK2027876-001	FCZ1B _S Ebb	**EK062P: Total Nitrogen as N**	----	0.01	mg/L	0.31	0.30	3.84
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3176425)								
HK2027876-060	C _B _Dup Ebb	**EK067P: Total Phosphorus as P**	----	0.01	mg/L	0.02	0.02	0.00
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3176426)								
HK2027876-060	C _B _Dup Ebb	**EK062P: Total Nitrogen as N**	----	0.01	mg/L	0.33	0.31	7.48

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3176467)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	105	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 3176468)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	110	----	85.9	117	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3173998)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	100	----	93.1	107	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3173999)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	98.6	----	93.1	107	----	----

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits(%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3176423)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	98.7	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3176424)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	107	----	85.0	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3176425)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	99.0	----	93.6	102	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3176426)											
EK062P: Total Nitrogen as N	----	0.01	mg/L	<0.01	0.5 mg/L	108	----	85.0	115	----	----
EP: Aggregate Organics (QC Lot: 3172931)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	106	----	81.0	115	----	----
EP: Aggregate Organics (QC Lot: 3174036)											
EP030: Biochemical Oxygen Demand	----	----	mg/L	----	198 mg/L	93.9	----	81.0	115	----	----

APPENDIX H

Event and Action Plan

Appendix H Event and Action Plan

EVENT	ACTION			
	ET	IEC	ER	Contractor
Construction Noise				
Action Level	1. Carry out investigation to identify the source and cause of the complaint/ exceedance(s) 2. Notify IEC, ER, and Contractor and report the results of investigation to the Contractor, ER and the IEC 3. Discuss with the Contractor and IEC for remedial measures required 4. If the complaint is related to the Project, conduct additional monitoring for checking mitigation effectiveness and report the findings and results to the IEC, ER and the Contractor	1. Review the analyzed results submitted by the ET. 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of Exceedance in writing. 2. Require Contractor to propose remedial measures for the analyzed noise problem. 3. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals, if required, to the IEC and ER 2. Implement noise mitigation proposals
Limit Level	1. Carry out investigation to identify the source and cause of the exceedance 2. Notify IEC, ER, Project Proponent, EPD and Contractor 3. Repeat measurements to confirm findings 4. Provide investigation report to IEC, ER, EPD and Contractor of the exceedances 5. If the exceedance is related to the Project, assess effectiveness by additional monitoring. 6. Report the remedial action implemented and the additional monitoring results to IEC, EPD, ER and Contractor 7. If exceedance stops, cease additional monitoring	1. Review the analyzed results submitted by the ET 2. Discuss the potential remedial measures with ER, ET Leader and Contractor 3. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 4. Supervise the implementation of remedial measures	1. Confirm receipt of notification of Exceedance in writing. 2. Require the Contractor to propose remedial measures for the analyzed noise problem. 3. Ensure remedial measures are properly implemented. 4. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor, in agreement with the Project Proponent, to stop that activity of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC and RE within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the Project Proponent until the exceedance is abated.
Landscape and Visual				
Non-conformity on one occasion	1. Inform the Contractor, IEC and ER; 2. Discuss remedial actions with IEC, ER and Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures	1. Confirm receipt of notification of non-conformity in writing 2. Review and agree on the remedial measures proposed by the Contractor 3. Supervise implementation of remedial measures	1. Identify source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify source(s) 2. Inform the Contractor, IEC and ER; 3. Discuss inspection frequency 4. Discuss remedial actions with IEC, ER and Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures	1. Identify source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by ER until the non-conformity is abated.

EVENT	ACTION			
	ET	IEC	ER	Contractor
Water Quality				
Action Level being exceeded by one sampling day	1. Repeat in situ measurement on the next day of exceedance to confirm findings; 2. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 3. Identify source(s) of impact and record in notification of exceedance; 4. Inform IEC, Contractor(s) and ER.	1. Check monitoring data submitted by ET and Contractor(s)'s working methods; 2. Inform EPD and AFCD.	1. Confirm receipt of notification of exceedance in writing; 2. Check plant and equipment and rectify unacceptable practice	1. Confirm receipt of notification of exceedance in writing.
Action Level being exceeded by two or more consecutive sampling days	1. Repeat in situ measurement on the next day of exceedance to confirm findings; 2. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 3. Identify source(s) of impact and record in notification of exceedance; 4. Inform IEC, Contractor(s) and ER; 5. Discuss with IEC and Contractor(s) on additional mitigation measures and ensure that they are implemented	1. Check monitoring data submitted by ET and Contractor(s)'s working methods; 2. Inform EPD and AFCD; 3. Discuss with ET and Contractor(s) on additional mitigation measures and advise ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Check plant and equipment and rectify unacceptable practice; 3. Consider changes of working methods; 4. Discuss with ET and IEC on additional mitigation measures and propose them to ER within 3 working days; 5. Implement the agreed mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Discuss with the IEC on the proposed additional mitigation measures and agree on the mitigation measures to be implemented. 3. Ensure additional mitigation measures are properly implemented.
Limit Level being exceeded by one sampling day	1. Repeat in situ measurement on the next day of exceedance to confirm findings; 2. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 3. Identify source(s) of impact and record in notification of exceedance; 4. Inform IEC, Contractor(s) and ER; 5. Discuss with IEC and Contractor(s) on additional mitigation measures and ensure that they are implemented	1. Check monitoring data submitted by ET and Contractor(s)'s working methods; 2. Inform EPD and AFCD; 3. Discuss with ET and Contractor(s) on additional mitigation measures and advise ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Check plant and equipment and rectify unacceptable practice; 3. Critically review the need to change working methods; 4. Discuss with ET and IEC on additional mitigation measures and propose them to ER within 3 working days; 5. Implement the agreed mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Discuss with the IEC on the proposed additional mitigation measures and agree on the mitigation measures to be implemented. 3. Ensure additional mitigation measures are properly implemented. 4. Request Contractor(s) to critically review the working methods.
Limit Level being exceeded by two or more consecutive sampling days	1. Repeat in situ measurement on the next day of exceedance to confirm findings; 2. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 3. Identify source(s) of impact and record in notification of exceedance; 4. Inform IEC, Contractor(s) and ER; 5. Discuss with IEC and Contractor(s) on additional mitigation measures and ensure that they are implemented	1. Check monitoring data submitted by ET and Contractor(s)'s working methods; 2. Inform EPD and AFCD; 3. Discuss with ET and Contractor(s) on additional mitigation measures and advise ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Check plant and equipment and rectify unacceptable practice; 3. Critically review the need to change working methods; 4. Discuss with ET and IEC on additional mitigation measures and propose them to ER within 3 working days; 5. Implement the agreed mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Discuss with the IEC on the proposed additional mitigation measures and agree on the mitigation measures to be implemented. 3. Ensure additional mitigation measures are properly implemented. 4. Request Contractor(s) to critically review the working methods.

Notes:
ET – Environmental Team, IEC – Independent Environmental Checker; ER = Engineering Representatives

APPENDIX I

Waste Flow Table

Appendix I Waste Flow Table

Monthly Summary Waste Flow Table for 2020 (year)

Name of Person completing the record: Jimmy Wong (EO)

Project : Expansion of Sha Tau Kok Sewage Treatment Works Phase 1 and Village Sewerage in Tong To Contract No.: DC/2018/03

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-Inert C&D Wastes Generated Monthly				
	Total Quantity Generate	Hard Rock and Large	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan	0.158	0.000	0.000	0.000	0.158	0.000	0.000	0.000	0.000	0.000	0.011
Feb	0.067	0.000	0.000	0.000	0.067	0.000	0.000	0.000	0.000	0.000	0.002
Mar	0.109	0.000	0.000	0.000	0.109	0.000	0.000	0.000	0.000	0.000	0.014
Apr	0.353	0.000	0.000	0.000	0.353	0.000	0.000	0.000	0.000	0.000	0.015
May	0.047	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.023
Jun	0.028	0.000	0.000	0.000	0.028	0.000	0.000	0.000	0.000	0.000	0.007
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jul	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sep	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nov	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dec	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.762	0.000	0.000	0.000	0.762	0.000	0.000	0.000	0.000	0.000	0.072

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.
(3) Broken concrete for recycling into aggregates.

APPENDIX J

Implementation Schedule of Environmental Mitigation Measures

Appendix J Environmental Mitigation Implementation Schedule

EIA Ref	Objective & Address	Stage^ (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
Air Quality				
S3.7.1	Land site/ During Construction	C	- Dust control measures stipulated in the Air Pollution Control (Construction Dust) Regulation shall be implemented during the construction of the Project to control potential fugitive dust emissions.	^
			- Regular water spraying on exposed area.	^
			- Vehicle wheel-washing and body washing facilities shall be provided at the site entrance.	^
			- Shielding or covering with impervious sheet of stockpiled materials or exposed area when it is not used to reduce dust nuisance	^
			- Site practices such as regular maintenance and checking of the diesel-driven PMEs should be adopted to avoid any black smoke emissions and to reduce gaseous emissions	^
			- Open trench construction of the gravity sewers, each work front should be around 20m to 30m in length to control potential dust emission.	N.O.
S3.6.1			- The existing sewage pumping station and rising mains should be cleaned and flushed out properly to clear away any remaining potential sources of odour emission, such as sewage sludge from the facilities. ~~The decommissioning including removal of the pumping station and rising mains should take place after the cleaning and flushing out.~~	N.O.
S3.9.1			- Regular site inspections on a weekly basis shall be carried out in order to confirm that the mitigation and control measures are properly implemented and are working effectively to ensure proper control of construction dust and gaseous emissions.	
S3.7.2	During operation (Odour: for operation of TSTP)	O	- To minimize odour problem, the sludge tankers for disposal of sludge shall be fully enclosed	^
		O	- Sludge produced will be thickened and dewatered to 30% dry solids prior to disposal at the landfill.	N.O.
		D/O	- Deodourizing facility using activated carbon filters and/or bio-trickling filters were equipped for both TSTP.	^
		D/O	- The deodorization system would undergo maintenance annually or when the average odour removal efficiency of deodorization facility is smaller than the required odour removal efficiency.	N.A.
		D/O	- Ventilation system was provided inside the TSTP to ensure adequate air change within the plant.	^
S3.9.2	During operation (Odour: for operation of TSTP)	O	- A commissioning test is recommended to be performed for the operation phase to ascertain the effectiveness of the deodorization systems at the TSTP. Exhaust air flow rate, temperature of exhaust, odour concentrations at the outlet of the deodorization systems should be monitored during the commissioning test.	^
		O	- Weekly monitoring of odour emission at the exhausts at TSTP by taking odour samples is recommended to be conducted in the first two months of the first year of the operation.	^
		O	- Provided that the monitoring results show no non-compliance on a weekly basis during the first two months, it is recommended to reduce the frequency to monthly in the subsequent four months and further reduce to quarterly in the remaining six months of the first year if no non-compliance is found. If there is any non-compliance, the operator should inspect the deodorization unit. Frequency of odour monitoring should not be reduced unless no non-compliance is found. Quarterly odour monitoring is also recommended to continue in the second year of the operation. If compliance can be achieved consistently throughout the first two years of operation, the Project Proponent may propose and seek approval with EPD to reduce monitoring frequency to every six month or yearly basis for subsequent years of operation.	N.A.
S3.9.2	During operation (Odour: for operation of TSTP)	O	- Odour patrol is proposed during the period of maintenance or cleaning of the deodorization system for TSTP. It is generally defined as Level 0 to Level 4 in which Level 0 means no odour and Level 4 means unacceptable odour. If Level 3 – 4 is reported and the source of odour is confirmed to be originated from the exhaust of TSTP, the operator should be notified immediately and should investigate and rectify the problem of the cleaning or maintenance works within 24 hours in order to restore the level to below Level 2.	N.A.
Noise				

EIA Ref	Objective & Address	Stage^ (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
S4.8	Noise Control / During construction	C	- Use of quiet PME / quiet construction method.	^
			- Movable noise barriers of 3m in height with skid footing should be used and located within a few metres of stationary plant and mobile plant such that the line of sight to the NSR is blocked by the barriers. The length of the barrier should be at least five times greater than its height. The noise barrier material should have a superficial surface density of at least 7 kg m^2 and have no openings or gaps.	N.O.
			- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase.	^
			- Silencers or mufflers on construction equipment should be utilised and properly maintained during the construction phase.	^
			- Mobile plant, if any, should be sited as far away from NSRs as possible.	^
			- Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	^
			- Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.	^
			- Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.	N.O.
			- The construction activities should be planned and carried out in sequence rather than simultaneously at each location. Therefore, only one unit of each type of equipment should be operated at any one time.	^
			- Open trench construction of the gravity sewers, each work front should be around 20m to 30m in length.	N.O.
	During operation	O	- Include noise levels specification when ordering new equipment items	^
	During operation	O	- Develop and implement a regularly scheduled equipment maintenance programme so that equipment items are properly operated and serviced. The programme should be implemented by properly trained personnel.	N.A.
S4.11	During construction	C	- Designated monitoring stations as defined in EM&A Manual/During construction phase.	^
Water Quality				
S5.9.3	Marine Dredging/ During construction	C	- A number of standard measures and good site practices should be implemented to avoid / minimize the potential impacts from marine construction. These measures include: • All vessels should be well maintained and inspected before use to limit any potential discharges to the marine environment; • All vessels must have a clean ballast system; • No soil waste is allowed to be disposed overboard.	N.A.
S5.9.3	Marine Dredging/ During construction	C	- No discharge of sewage/grey wastewater should be allowed. Wastewater from potentially contaminated area on working vessels should be minimized and collected. These kinds of wastewater should be brought back to port and discharged at appropriate collection and treatment system.	N.A.
EP Clause 2.11	Marine Dredging/ During construction	C	- The submarine outfall in Starling Inlet shall be constructed by trenchless method such as Horizontal Directional Drilling or equivalent such that the seabed (except at the diffuser location) will not be disturbed.	N.A.
			- Cofferdam shall be installed at the receiving pit of the diffuser of submarine outfall. Excavation of sediment and construction of the diffuser shall be conducted in dry condition within the fully-drained cofferdam.	N.A.
S5.9.4	Land site & drainage/	C	**General Construction Activities** - Standard site practices outlined in ProPECC PN 1/94 “Construction Site Drainage” should be followed as far as practicable in order to reduce surface runoff, minimize erosion, and also to retain and reduce any SS prior to discharge.	^

EIA Ref	Objective & Address	Stage^ (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
	During construction		- Silt removal facilities such as silt traps or sedimentation facilities should be provided to remove silt particles from runoff to meet the requirements of the TM standard under the WPCO. The design of silt removal facilities should be based on the guidelines provided in ProPECC PN 1/94.	^
			- All drainage facilities and erosion and sediment control structures should be inspected on a regular basis and maintained to confirm proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be removed regularly.	^
			- Earthworks to form the final surfaces should be followed up with surface protection and drainage works to prevent erosion caused by rainstorms.	^
			- Appropriate surface drainage should be designed and provided where necessary.	^
			- The precautions to be taken at any time of year when rainstorms are likely together with the actions to be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94.	^
			- Oil interceptors should be provided in the drainage system where necessary and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages.	^
S5.9.4	Land site & drainage/ During construction	C	- Temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge, if any, should be adequately designed for the controlled release of storm flows. The temporary diverted drainage, if any, should be reinstated to the original condition when the construction work has finished or when the temporary diversion is no longer required.	^
S5.9.5	Land site & drainage/ During construction	C	- Appropriate infiltration control, such as cofferdam wall, should be adopted to limit groundwater inflow to the excavation works areas in the Project site. Groundwater pumped out from excavation area should be discharged into the storm system via silt removal facilities.	N.O.
S5.9.6	Land site & drainage/ During construction	C	- If needed, appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment.	^
S5.9.7			**Spillage of Chemicals** - Site drainage should be well maintained and good construction practices should be observed to ensure that oil, fuels, solvents and other chemicals are managed, stored and handled properly and do not enter the nearby streams or marine water.	^
S5.9.9	During operation	O	- The following design measures are also provided in the TSTP ~~and the expanded STKSTW~~ to avoid the risk of emergency discharge: •Provision of dual power supply and backup generator to eliminate the risk of power failure; •Provision of standby equipment (online and on-shelf) for all treatment units; ~~•Operation of STKSTW is under 24-hour monitoring by Shift Team of Sha Tau Kok (for new STKSTW) and/or Shek Wu Hui STW in order to allow inspection and any necessary repair works by DSD at the earliest possible time;~~ ~~•A remote control and monitoring system (SCADA) will also be installed to allow off-site DSD staff (Shift Team) to monitor the operation of STKST~~W; and •Provision of on-site storage of raw sewage up to 6 hours for the TSTP ~~and STKSTW~~	^
S5.9.10	During operation	O	- Additional measures provided to avoid plant failure associated fine screen include: •2 duties + 1 standby fine screens would be provided; •Uninstalled spare parts would be provided; •Monitoring equipment of fine screens would be installed; •Routine inspection and scheduled maintenance works would be strengthened and carried out regularly; and •Equipment and necessary measures such as lifting opening would be provided to shorten the time required for replacement of screen.	N.A.

EIA Ref	Objective & Address	Stage^ (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
S5.9.12	During operation	O	- To avoid cross-connection of the reclaimed water supply to the potable water supply, the pipes for the reclaimed water will be specially arranged to differentiate them from that of the potable water pipe, e.g. clearly labelled with warning signs and notices, colour-coded, and/or using different pipe size.	N.A.
			- Caution would also be taken to avoid the use of high pressure jet in cleansing and landscape irrigation to minimize aerosol formation from the reclaimed effluent	N.A.
S5.12.1	Marine Dredging/ During construction	C	- Marine water quality monitoring at selected WSRs is recommended for installation, maintenance and removal of sheetpile and sediment removal works under this Project. Site audit would also be conducted throughout the marine and land-based construction under this Project. Details environmental monitoring procedures and audit requirements are provided in the standalone EM&A manual.	N.A.
S5.12.2	During operation	O	- Marine water quality monitoring at selected WSRs is recommended for the first year of (1) interim operation of the TSTP~~, (2) operation of phase 1 and (3) phase 2 expansion of the STKSTW.~~ Follow-up water quality monitoring should be commenced within 24 hours after an emergency discharge event and continue until the recovery of water quality. Monitoring of effluent quality would also be required for WPCO permit requirement. Detailed environmental monitoring procedures are provided in the standalone EM&A manual.	^
Waste Management & Land Contamination				
S6.6.1	During construction	C	- An Environmental Management Plan (EMP) in accordance with ETWB TCW No. 19/2005 – "Environmental Management on Construction Sites" should be prepared by the main Contractor of each construction contract upon appointment. The EMP should describe the arrangements for avoidance, reduction, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities.	^
S6.6.3	During construction	C	- An appropriate person, such as site agent or environmental officer should be nominated, to be responsible for good site practices, arrangement for collection and effective disposal of all wastes generated at the site to an approved facility. Training of construction staff should be undertaken by the Contractor about the concept of site cleanliness and appropriate waste management procedures. Requirements for staff training should be included in the EMP.	^
S6.6.4	During construction	C	- Good planning and site management practices should be employed to eliminate over ordering or mixing of construction materials to reduce wastage. Regular cleaning and maintenance of the waste storage area should be provided.	^
S6.6.5	During construction	C	- A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be implemented in accordance with DEVB TCW No. 6/2010. In order to monitor the disposal of C&D materials and solid wastes at public fill reception facilities and landfills and to control fly-tipping, a trip-ticket system should be included.	^
S6.6.6	During construction	C	- Imported soft fill and rocks, if required, should be sourced from CEDD's fill bank, other projects or other approved sources instead of using new materials. Approval from the Engineer and all other relevant parties should be obtained by the Contractor before importation of the fill materials.	N.O.
S6.6.7	During construction	C	- All waste materials should be segregated into categories covering: •inert C&D materials suitable for public filling facilities; •recyclable materials / waste; •remaining non-inert C&D materials for landfill; •spent bentonite for public filling facilities; •chemical waste; and •general refuse for landfill	^
S6.6.9	During construction	C	- Proper segregation and disposal of construction waste should be implemented. Separate containers should be provided for inert and non-inert wastes.	^
S6.6.11	During construction	C	- The reuse of inert C&D materials such as soil, rock and broken concrete should be maximised. Waste should be separated into fine, soft and hard materials.	N.A.

EIA Ref	Objective & Address	Stage^ (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
S6.6.12	During construction	C	- Prior to export of material from the site, the potential for it to be reused should be assessed. Most C&D materials can easily be reused with minimum processing. Waste separation methods should be followed to ensure that C&D waste is separated at source. Suitable soft materials should be used for landscaping and grading of embankments. Fine material should be separated out and used as topsoil.	N.A.
S6.6.13	During construction	D & C	- Use of recycled aggregates whenever possible.	N.A.
S6.6.14, S6.6.30	During construction	C	- All C&D materials should be sorted on-site into inert and non-inert components by the Contractor. Non-inert C&D materials (C&D waste) such as wood, glass and plastic should be reused and recycled before disposal to a designated landfill as a last resort. Inert C&D materials (public fill) should be reused onsite or in other projects approved by relevant parties before disposed of at public fill reception facilities. Steel and other metals if any should be recovered from C&D materials and recycled.	^
S6.6.15	During construction	C	- Good quality reusable topsoil should be stockpiled for later landscaping works. Stockpiles should be less than 2m in height, formed to a safe angle of repose and hydroseeded or covered with tarpaulin to prevent erosion during the rainy season and to minimise dust generation.	^
S6.6.16	During construction	C	- Control measures for temporary stockpiles on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact.	^
S6.6.17	During construction	C	- The public fill to be disposed to public fill reception facilities must consist entirely of inert construction materials. Disposal of C&D waste to landfill must not have more than 50% by weight of inert material. The C&D waste delivered for landfill disposal should contain no free water and the liquid content should not exceed 70% by weight.	^
S6.6.18	During construction	C	- In order to avoid dust or odour impacts, any vehicles leaving a works area carrying C&D waste or public fill should have their load covered up before leaving the construction site.	^
S6.6.20	During construction	C	- With reference to the Sediment Quality Report in the EIA, only Category L sediment was identified. In accordance with ETWB TCW No. 34/2002, Type 1 – Open Sea Disposal should be adopted for the disposal of 3,040 m^3 excavated sediment during construction of the proposed outfall diffuser. The location of marine disposal site should be sought with MFC/CEDD. The Contractor shall obtain a Marine Dumping Permit in accordance with the Dumping at Sea Ordinance. The Contractor should provide separate submissions (e.g. Sediment Sampling and Testing Plan / Sediment Quality Report) to EPD / DASO authority when applying for the marine dumping permit under the Dumping at Sea Ordinance.	N.A.
S6.6.21	During construction	C	- Bentonite slurry used in the drilling works should be treated and recycled at the works area in STKSTW. Any bentonite that is not suitable for recycling should be suitably dewatered before disposed of at public fill reception facilities.	^
S6.6.22 & S6.6.37	During construction and operation	C & O	- Where the construction/ operation processes produce chemical waste, the Contractor must register with EPD as a chemical waste producer. Wastes classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation. These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be registered with EPD.	^
S6.6.23 & S6.6.37	During construction	C & O	- Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD, and should be collected by a licensed chemical waste collector.	^
S6.6.24 & S6.6.37	During construction	C & O	- Suitable containers should be used for specific types of chemical wastes, containers should be properly labelled (English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations), resistance to corrosion, safely stored and securely closed. Stored volume should not be kept more than 450 liters unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition of fence that is at least 2 m height or height of tallest container with adequate ventilation and space.	^
S6.6.25 & S6.6.37	During construction	C & O	- Hard standing, impermeable surfaces draining via oil interceptors should be provided in works area compounds. Interceptors should be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental	^

EIA Ref	Objective & Address	Stage^ (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
			spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunding should be of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste, whichever is largest. Waste collected from any grease traps should be collected and disposed of by a licensed contractor.	
S6.6.26 & S6.6.37	During construction	C & O	- Lubricants, waste oils and other chemical wastes are likely to be generated during the maintenance of vehicles and mechanical equipment. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. If possible, such waste should be sent to oil recycling companies, and the empty oil drums collected by appropriate companies for reuse or refill.	^
S6.6.27	During construction	C	- The registered chemical waste producer (i.e. the Contractor) has to arrange for the chemical waste to be collected by licensed collectors. The licensed collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the Chemical Waste Treatment Centre in Tsing Yi). A trip ticket system operates to control the movement of chemical wastes.	^
S6.6.28	During construction	C	- No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.	^
S6.6.29	During construction	C	- All wooden materials used on-site should be kept separate from other wastes to avoid damage and to facilitate reuse. Timber which cannot be reused should be sorted out from other waste and stored separately from all inert waste before being disposed of to landfill.	^
S6.6.32	During construction	C	- General refuse generated on-site should be stored in enclosed bins or skips and collected separately from other construction and chemical wastes and disposed of at designated landfill. A temporary refuse collection point should be set up by the Contractor at the works area to facilitate the collection of refuse by licensed waste collector. The removal of waste from the site should be arranged on a daily or at least on every second day by the Contractor to minimise any potential odour impacts, minimise the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste.	^
S6.6.33	During construction	C	- 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.	^
S6.6.35	During operation	O	- Dewatered sludge should be delivered by sealed sludge tanker for treatment at the Sludge Treatment Facility in Tuen Mun.	N.A.
S6.6.36	During operation	O	- Screenings should be collected and stored in covered containers before disposed of at landfill. Likewise, worn membrane filters and general refuse should be properly stored and disposed of at landfill.	N.A.
Ecology				
S7.7.3	All area / During construction	C	- Erect fences along the boundary of the works area before the commencement of works to prevent vehicle movements and encroachment of personnel onto adjacent areas.	^
			- Regularly check the work site boundaries to ensure that they are not breached and that damage does not occur to surrounding areas.	^
			- Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the surrounding habitats through proper management of waste disposal.	^
			- To avoid/ minimise the potential disturbance on the Night Roosting Site for Great Egret if confirmed to be continuing their usage before the construction activities, major noisy works such as concrete breaking should not be undertaken within an area of 100m from the Night Roosting Site after 16:00 under normal working hours. (i.e. 16:00 to 07:00 of the following day).	N.A.
			- Strong artificial lighting should not be used in the area at night to avoid disturbance to the roosting ardeids.	N.O.
Landscape & Visual				

EIA Ref	Objective & Address	Stage^ (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
Table 9.6of EM&A Manual	To protect existing landscape resources during construction stage	C	**Preservation of Existing Vegetation:** - Existing trees designated to be retained in-situ should be properly protected. Tree protection measures to be undertaken shall be in accordance with DEVB TC(W) 7/2015 on "Tree Preservation" and Guidelines on Tree Preservation during Development" by DEVB. This may include the clear demarcation and fencing-off of tree protection zones, tight site supervision and monitoring to prevent tree damage by construction activities, and periodic arboricultural inspection and maintenance to uphold tree health. A total of around 108 nos. of trees should be retained in-situ within the tree survey area. - Under current proposal, no tree is recommended to be transplanted since the trees in conflict with the proposed works are not suitable to be transplanted. However, should transplantation be proposed in the detailed design stage after an update tree survey, the recommended final recipient sites should be adjacent to their current locations. Enough time should be reserved for tree transplantation works to increase the survival rate of the transplanting trees. To ensure the survival of transplanted trees, protection work should be considered. The tree transplantation proposal shall be submitted to relevant authorities for approval together with the formal tree removal application. Tree transplanting works shall be undertaken in accordance with Guidelines on Tree Transplanting by DEVB.	^
	To reduce construction disturbance during construction stage	C	**Control of Site Construction Activities:** - Construction site controls shall be enforced, where possible, to ensure that the landscape and visual impacts arising from the construction phase activities are minimised. These construction site controls should include but not limited to the following: •Storage of materials should be carefully arranged to minimise potential landscape and visual impact. •The location and appearance of site accommodation should be carefully designed to minimize potential landscape and visual impact. •Site lighting should be carefully designed to prevent light spillage. •Extent of the works area and construction period should be minimised as far as practicable. •Screen hoarding with compatible design to blend into the surrounding natural environmental should be considered (Screen hoarding may not be practicable for works of upgrading existing rising mains due to the spatial constraints of the works area along the Shun Hing Street). •Temporary works areas should be reinstated at the earliest possible opportunity.	^
Table 9.7of EM&A Manual	To reduce landscape and visual impact during construction	D & C	**Suitable design of the proposed TSTP:** - Colour of natural tones and non-reflective building materials shall be used for any outward facing building facades to avoid visual and glare disturbance. - Responsive lighting design •Directional and full cut off lighting is recommended within the boundaries of STKSTW to minimise light spillage to the surroundings; •Minimise geographical spread of lighting, only applying for safety at the key access points of the STKSTW; and - Limited lighting intensity to meet the minimum safety and operation requirement.	^
Cultural Heritage				
S10.3.50	During construction	C	- Undertake trenchless excavation in the vicinity of the Tin Hau Temple and provide a buffer zone of 10m between the works area for the open cut section and the Tin Hau Temple.	N.O.
S10.3.51			- A condition survey and vibration impact assessment should be undertaken and if construction vibration monitoring and structural strengthening measures are required.	N.A.
S10.3.52			- Vibration and settlement monitoring should also be undertaken during the construction works to ensure that safe levels of vibration are not exceeded, if it is recommended in the condition survey report.	N.A.

EIA Ref	Objective & Address	Stage^ (D/C/O)	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status in Construction Phase
S10.3.53			- If the maximum level is exceeded all works must stop and the structure must be examined to determine if it has been damaged. The contractor must also take measures, such as using smaller pneumatic drills to ensure that the levels are reduced to acceptable limits.	N.A.
S10.3.54			- If at any time during the construction period the foundation of the structure is affected by the works; the works shall be immediately suspended and the AMO notified. If the works cause any damage to the structures, the proponent should be responsible for the restoration and repair at their own cost. A method statement should be submitted to AMO for comment and the works should be under AMO's supervision.	N.O.
S10.3.55			- Protective covering should be provided as an additional mitigation measure to the Tin Hau Temple.	N.O.

Remarks: ^ *Compliance of mitigation measure*
x Non-compliance of mitigation measure
N.A Not Applicable at this stage as no such site activities were conducted in the reporting period
N.O Not Observed during site inspection in the reporting period.

APPENDIX K

Proactive Environmental Protection Proforma

Appendix K Proactive Environmental Protection Proforma

Reporting Period	01/07/2020 – 31/07/2020
Construction Works	• Testing and Commissioning • Set up of submarine outfall drilling rig.
Anticipated Impacts	Dust, Noise and water quality impact.
Corresponding Mitigation Measures	• All construction plants / machineries will be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission. • All C&D materials generated will be transported and stored at temporary storage area. Cover will be provided during transportation of dusty materials. Suitable materials will be sorted for reuse on-site. Only non-inert C&D material will be disposed off-site to NENT Landfill. • All dump trucks will be equipped with mechanical covers to prevent the dust emission during transportation when necessary. • Dust control measures, such as water spraying, will be provided during demolition works when necessary. • Maintaining of wet surface on access road and keep slow speed in the site. • Wastewater to be treated by wastewater treatment facilities before discharge. • Conditions in the Environmental Permit and Discharge License should be followed. • Fueling of equipment will be conducted carefully on-site by mobile tanker to avoid storage of fuel and oil spillage. • Provision of drip trays for equipment likely cause spillage of chemical / fuel, and provide routine maintenance. • Predict required quantity of concrete accurately and collect the unused fresh concrete at designated locations in the site for subsequent disposal. • Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.

Coming Month	01/08/2020 – 31/08/2020
Construction Works	• Testing and Commissioning • Demolition of the existing STKSTW and Casing Installation (Land).
Anticipated Impacts	Dust, Noise and water quality impact.
Corresponding Mitigation Measures	• All construction plants / machineries will be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission. • All C&D materials generated will be transported and stored at temporary storage area. Cover will be provided during transportation of dusty materials. Suitable materials will be sorted for reuse on-site. Only non-inert C&D material will be disposed off-site to NENT Landfill. • All dump trucks will be equipped with mechanical covers to prevent the dust emission during transportation when necessary. • Dust control measures, such as water spraying, will be provided during demolition works when necessary. • Maintaining of wet surface on access road and keep slow speed in the site. • Wastewater to be treated by wastewater treatment facilities before discharge. • Conditions in the Environmental Permit and Discharge License should be followed. • Fueling of equipment will be conducted carefully on-site by mobile tanker to avoid storage of fuel and oil spillage. • Provision of drip trays for equipment likely cause spillage of chemical / fuel, and provide routine maintenance. • Predict required quantity of concrete accurately and collect the unused fresh concrete at designated locations in the site for subsequent disposal. • Provide sufficient mitigation measures as recommended in approved EIA Manual requirement.

APPENDIX L

Cumulative Statistics on Complaints, Notification of Summons, Successful Prosecutions and Public Engagement Activities

Appendix L Cumulative Statistics on Complaints, Notifications of Summons, Successful Prosecutions and Public Engagement Activities

Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From	Received By	Nature of Complaint	Investigation/ Mitigation Action	Status
-	-	-	-	-	-	-

Remark:
** No Complaints, Notifications of Summons or Successful Prosecutions was received in the reporting period.*

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions and Public Engagement Activities

Reporting Period	Complaints	Notifications of Summons and Prosecutions	Public Engagement Activities
This Month	0	0	0
Cumulative Project-to-Date	0	0	0