



Monthly EM&A Report (September 2022)

0120/20/ED/0524 01

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

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Your Reference

Contract No. SPW 03/2022

Our Reference
AFK/EC/TC/BW/bw/
T601100019/02/02/L015

Independent Environmental Checker for Construction of Yuen Long Effluent Polishing Plant Stage 1 (2022-2023)

Environmental Permit No. EP-565/2019

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EP Condition 3.4 – Monthly EM&A Report for September 2022

13 October 2022

By Hand and By Email

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Dear Sir,

I refer to the captioned Monthly EM&A Report for September 2022 (Document No. 0120/20/ED/0524, Issue No. 01) which was certified by the Environmental Team Leader and received via e-mail on 11 October 2022.

I have no comment on the captioned report and hereby verify that this submission has complied with the requirements set out in the EM&A Manual for the captioned project, in accordance with Condition 3.4 of Environmental Permit No. EP-565/2019.

Should you have any queries regarding the captioned or require any further information, please contact the undersigned at 2828 5875.

Yours faithfully

for MOTT MACDONALD HONG KONG LIMITED



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Client Information

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EXECUTIVE SUMMARY

- i. This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. SPW 07/2020 "Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1". Drainage Services Department (DSD) has appointed Fugro Technical Services Limited (FTS) to undertake the Environmental Team services for the project and implement the EM&A works.
- ii. This is the 18th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 September 2022 to 30 September 2022. As informed by the Contractor, major activities in the reporting month were:
 - Piling work at STB;
 - ELS works and RC structure works at IW & PST;
 - Zone 3 Diversion works:
 - a. Temp. Gravity thickening tank – Pipe laying and E&M installation work;
 - b. Temp. Sludge Holding Tank – Pipe laying and E&M installation work;
 - c. Temp. Water heater house – Pipe laying and E&M installation work;
 - d. Temp. Primary Sludge Pumping Station – Pipe laying and E&M installation work;
 - e. Temp. Digested sludge pump / Supernatant Pumping – Pipe laying and E&M installation work;
 - f. Digested Sludge Pumping Station house – Pipe laying and E&M installation work;
 - Installation of sheet piles at DS;
 - Installation of 813mm pipe pile at south of AGS;
 - Backfilling work at Sludge Holding Tank no. 1 & 3;
 - Superstructure works at CLP substation;
 - Installation of MIC unit at MIC office;
 - Backfill work at A. Tank 5-8;
 - E&M installation work for at Zone 2B chamber;
 - Pipe laying for Zone 2B; and
 - Disposal of construction waste as indicated in **Appendix I**.

Breaches of Environmental Quality Performance Limits (AL levels)

- iii. No Action and Limit Level exceedance was recorded for air quality monitoring and construction noise monitoring in the reporting month.
- iv. No Action and Limit Level exceedance was recorded for water quality monitoring in the reporting month.
- v. No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the two active ardeid night roosts (ANR1 and ANR2) observed within the Survey Area during the reporting month.
- vi. No Action / Limit exceedance for the ecological monitoring of birds in the reporting month.
- vii. No corrective actions were required according to the Event and Action Plans for the Monitoring Parameters.

Land Contamination

- viii. Regular site inspection was carried out to ensure the recommended mitigation measures are properly implemented. The signed final Contamination Assessment Report (CAR) for "Main Storeroom & Workshops", "Mechanical Workshop", "Waste Storage Area" and "SAS Thickener House-1" were submitted to EPD respectively on 1st November 2021, 23rd November 2021, 29th April 2022 and 6th July 2022. No contaminated soil and ground water was found within the Main Storeroom & Workshop, Mechanical Workshop, Waste Storage Area and SAS Thickener House-1, and no remedial action is required for both locations.

Complaint Log

- ix. No complaints were received in the reporting period.

Notifications of Summons and Successful Prosecutions

- x. No notifications of summons and successful prosecutions were received in the reporting period.

Reporting Change

- xi. There were no reporting changes during the reporting month.

Future Key Issues

- xii. The main works will be anticipated in the next three months are as follow:
- Demolition of Admin. Building, Settled Sewage Overflow Chamber, Sludge Holding Tanks no. 2, PST no. 4, Water Heater House, Return Activated Sludge Screw Pump Pumping station, Air Floatation Thickener and Auxiliary Pumping Station (below ground);
 - Pipe Laying for Zone 2B diversion works;
 - ELS work and RC structure at IW & PST;
 - Installation of Sheet pile at TTB;
 - Piling work at Sludge Thickening Building;
 - E&M work at 3 zone (Location D -Temp. Primary Sludge Pumping Station);
 - Pipe laying for Zone 2B diversion work;
 - Backfilling work and installation of pipe pile wall for demolition of Aeration Tank no. 5 at AGS;
 - Construction of CLP Substation;
 - Construction of MiC office;
 - Ground investigation at AGS, SDB, SDT & STB;
 - Sheet piling work around Sludge digester no. 1 – 3;
 - Installation of brand drain at Biogas Holder no. 1;
 - Installation of concrete blocks and soil Surcharge at Biogas Holder no. 1;
 - Construction of temp. traffic road at north of SHT no. 3 & 4;
 - Construction of IW/PST RC structure;
 - 3 zone diversion works:
 - a. E&M work at temp. Gravity thickening tank (Atal);
 - b. E&M work at temp. Sludge Holding Tank (Atal);
 - c. E&M work at temp. water heater house (Atal);
 - d. E&M work at temp. Primary sludge pumping station;
 - e. E&M work at temp. digested sludge pump, Ferric Chloride and Chemical Dosing System;
 - f. E&M work at Digested Sludge Pumping Station;
 - E&M installation at Zone 2B chamber.

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1. INTRODUCTION

1.1 Background

- 1.1.1 The existing Yuen Long Sewage Treatment Works (YLSTW) is a secondary sewage treatment works, located at Yuen Long Industrial Estate serves Yuen Long Town, Yuen Long Industrial Estate and Kam Tin areas with a design capacity of 70,000 m³ per day. Based on the latest planning data, the volume of sewage generation from the YLSTW catchment is estimated to increase to 150,000 m³ per day after 20 years. In addition, since YLSTW has been operating for over 30 years and most of its facilities are of out-dated design and reaching the end of their design life, the environmental facilities of the plant will also be upgraded and hence improving the adjacent environment through upgrading the YLSTW to Yuen Long Effluent Polishing Plant (YLEPP). The Location of Proposed Yuen Long Effluent Polishing Plant is given in **Figure 1**.
- 1.1.2 YLSTW will be reconstructed in two stages to increase its capacity to 150,000 m³ per day. The proposed works, as Stage 1 of the project, will firstly increase the treatment capacity to 100,000 m³ per day. In the course of Stage 1 construction, about half of the existing facilities of YLSTW would be demolished, while the other half would be kept in operation to maintain the sewage treatment service for Yuen Long area. This 72-month works contract commenced on 9 November 2020. Demolition of existing YLSTW for construction of new treatment facilities are in progress.
- 1.1.3 The Project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) for which Environmental Impact Assessment (EIA) report and Environmental Monitoring and Audit (EM&A) Manual was approved by EPD (Register No.: AEIAR-220/2019) on 25 April 2019. The Environmental Permit (EP) (EP No. EP-565/2019) was issued by EPD on 26 April 2019.
- 1.1.4 Fugro Technical Services Limited (FTS) has been appointed as the Environmental Team (ET) by Drainage Services Department (DSD) to undertake the Environmental Team services for the Project and implement the EM&A works under the Contract No. DC/2019/10 Yuen Long Effluent Polishing Plant -Main Works for Stage 1 (hereinafter referred as "the Contract").
- 1.1.5 This is the 18th Monthly EM&A report to document the findings of site inspection activities and EM&A programme for this project from 1 September 2022 to 30 September 2022 (reporting period) and is submitted to fulfil Condition 3.4 of the EP and Section 12.4.1 of the EM&A Manual. According to Condition 4 of the EP, electronic reporting is provided on the internet website to facilitate public inspection of the report.

1.2 Project Organization

1.2.1 The Project Organization structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1 – Contact Information of Key Personnel

Party	Position	Name	Telephone
Project Proponent (Drainage Services Department)	Engineer	Mr. Wallace Cheng	2594 7473
Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Mr. Simon Yeung	9075 7172
	Senior Resident Engineer	Mr. Patrick Leung	6124 8838
Independent Environmental Checker (Mott MacDonald Hong Kong Limited)	Independent Environmental Checker (IEC)	Mr. Brandon Wong	2828 5875
Contractor (Paul Y. - CREC Joint Venture)	Environmental Officer	Ms. Diana Lee	5490 5271
	Assistant Environmental Officer	Mr. Sam Tsang	4634 2581
Environmental Team (Fugro Technical Services Limited)	Environmental Team Leader (ETL)	Mr. Alvin Yu	3565 4373

1.3 Construction Programme and Activities

1.3.1 The construction programme of this project is shown in **Appendix A**.

1.4 Works undertaken during the month

1.4.1 The main construction works carried out in the reporting period were as follow:

- Piling work at STB;
- ELS works and RC structure works at IW & PST;
- Zone 3 Diversion works:
 - a. Temp. Gravity thickening tank – Pipe laying and E&M installation work;
 - b. Temp. Sludge Holding Tank – Pipe laying and E&M installation work;
 - c. Temp. Water heater house – Pipe laying and E&M installation work;
 - d. Temp. Primary Sludge Pumping Station – Pipe laying and E&M installation work;
 - e. Temp. Digested sludge pump / Supernatant Pumping – Pipe laying and E&M installation work;
 - f. Digested Sludge Pumping Station house – Pipe laying and E&M installation work;
- Installation of sheet piles at DS;
- Installation of 813mm pipe pile at south of AGS;
- Backfilling work at Sludge Holding Tank no. 1 & 3;
- Superstructure works at CLP substation;
- Installation of MIC unit at MIC office;
- Backfill work at A. Tank 5-8;
- E&M installation work for at Zone 2B chamber;
- Pipe laying for Zone 2B; and
- Disposal of construction waste as indicated in **Appendix I**.

1.4.2 The environmental mitigation measures corresponding to the main construction works implemented in the reporting period can be referred to **Appendix J**.

1.5 Status of Environmental Licences, Notification and Permits

1.5.1 A summary of the status of the relevant permits, licenses and/or notifications on environmental protection for this project is presented in **Table 1.2**.

Table 1.2 – Environmental Licenses, Notification and Permits Summary

Permit/ Notification/ License	Reference No	Valid From	Valid Till
Environmental Permit	EP-565/2019	26-Apr-2019	The whole construction and operation period of the Project
Notification of Works under APCO	461616	6-Nov-2020	The whole construction period of the Project
Construction Waste Disposal Billing Account	7038933	20-Nov-2020	The whole construction period of the Project
Registration as Chemical Waste Producer under WDO	WPN5213-528-P2796-03	4-Feb-2021	The whole construction period of the Project
Construction Noise Permit (Percussive Piling)	PP-RN0023-22	6-Jul-2022	5-Oct-2022
Construction Noise Permit	GW-RN0489-22	8-Jun-2022	7-Sep-2022
Construction Noise Permit (Night Works)	GW-RN0685-22	1-Aug-2022	31-Oct-2022
Construction Noise Permit	GW-RN0793-22	8-Sep-2022	7-Dec-2022
Water Pollution Control Ordinance (CAP. 358) Licence pursuant to Section 20	WT00038102-2021	4-Aug-2021	31-Aug-2026
Marine Dumping Permit Type 1 – Open Sea Disposal	EP/MD/22-030	10-Mar-2022	9-Sep-2022
Marine Dumping Permit Type 1 – Open Sea Disposal	EP/MD/23-040	10-Sep-2022	9-Mar-2023
Marine Dumping Permit Type 1 – Open Sea Disposal (Dedicated Site) and Type 2 – Confined Marine Disposal	EP/MD/23-024	10-Aug-2022	9-Sep-2022
Marine Dumping Permit Type 1 – Open Sea Disposal (Dedicated Site) and Type 2 – Confined Marine Disposal	EP/MD/23-039	10-Sep-2022	9-Oct-2022
Disposal of Special waste at Landfills Admission Ticket (Pond Sediment)	Admission Ticket Number: 16792	1-May-2022	30-May-2022, Extended till 7-Sep-2022
Disposal of Special waste at Landfills Admission Ticket (Sludge)	Admission Ticket Number: 16811	11-Apr-2022	10-Oct-2022
Disposal of Special waste at Landfills Admission Ticket (Sludge)	Admission Ticket Number: 16919	22-Jun-2022	21-Dec-2022

Permit/ Notification/ License	Reference No	Valid From	Valid Till
Disposal of Special waste at Landfills Admission Ticket (Pond Sediment)	Admission Ticket Number: 17050	9-Sep-2022	8-Oct-2022

2. AIR QUALITY

2.1 Monitoring Requirement

2.1.1 In accordance with the EM&A Manual, 1-hour Total Suspended Particulates (TSP) levels should be measured at the designated air quality monitoring stations to ensure that any deteriorating air quality could be readily detected and timely action shall be undertaken to rectify such situation. Impact 1-hour TSP monitoring was conducted for at least three times every 6 days when the highest dust impact occurs.

2.2 Monitoring Equipment

2.2.1 A portable direct reading dust meter was used to carry out the 1-hour TSP monitoring at the designated monitoring stations.

2.2.2 Wind data monitoring equipment is provided at the conspicuous locations for logging wind speed and wind direction near to the dust monitoring locations. The equipment installation location is agreed with the ER and the IEC.

2.2.3 The details of the air quality monitoring equipment used are summarized in **Table 2.1**.

Table 2.1 – Air Quality Monitoring Equipment

Item	Location	Brand	Model	Equipment	Serial No.
1	AM1	Sibata	Model LD-5R	SIBATA LD-5R Digital Dust Indicator	620408
2	AM2		Model LD-5R		761105
3		Global Water	GL500-7-2	Wind Station	2012000974

2.3 Monitoring Methodology for Direct Reading Dust Meter

2.3.1 SIBATA LD-5R Digital Dust Indicator complete with appropriate sampling inlets are employed for 1-hour TSP measurement.

Measuring Procedures

- a) Pulling up the air sampling inlet cover
- b) Changing the Mode 0 to BG
- c) Pressing Start/Stop switch
- d) Turning the knob to SENSI.ADJ and press it
- e) Pressing Start/Stop switch again
- f) Returning the knob to the position MEASURE slowly
- g) Pressing the timer set switch to set measuring time
- h) Removing the cap and start the measurement

Equipment Calibration

1-hour dust meter should be calibrated at 1 year intervals. The calibration certificates are presented in **Appendix D**.

2.4 Maintenance and Calibration for Direct Reading Dust Meter

2.4.1 ET shall submit sufficient information to the IEC to prove that the instrument is capable of achieving comparable results to the HVS. The instrument should also be calibrated regularly, and the 1-hour sampling shall be determined periodically by the HVS to check the validity and accuracy of the results measured by direct reading method. The calibration certificate for the direct reading dust meter is provided in **Appendix D**.

2.5 Monitoring Locations

2.5.1 In accordance with the EM&A Manual, two air quality monitoring locations, namely AM1, AM2 are covered under Contract No. SPW 07/2020 "Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1".

2.5.2 The most updated locations are summarized in **Table 2.2** and the locations of the air monitoring stations shown in **Figure 2**.

Table 2.2 – Air Quality Monitoring Location

Monitoring Station	Location
AM1	Topfine Machinery (China) Co. Ltd
AM2	Squatter house at the west of YLSTW

2.6 Monitoring Results

2.6.1 The schedule of air quality monitoring in reporting month is provided in **Appendix E**.

2.6.2 No Action / Limit Level exceedance was recorded for 1-hr TSP at AM1 and AM2.

2.6.3 No effect that arose from the other special phenomena and work progress of the concerned site was noted during the current monitoring month.

2.6.4 The weather and meteorological conditions during the monitoring are provided in **Appendix K**.

2.6.5 The Air Quality Monitoring Results of 1-hr TSP are summarized in **Table 2.3**. Detailed monitoring data are presented in **Appendix F**.

Table 2.3 – Summary of Air Quality Monitoring Results

Monitoring Station	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
1-hour TSP				
AM1	123	77-161	291	500
AM2	136	84-179	296	

2.6.6 The Action and Limit Levels for air quality monitoring have been set and are presented in **Appendix C**.

2.6.7 The Event and Action Plan for air quality is given in **Appendix H**.

2.6.8 The wind data obtained from the on-site wind station during the reporting period is provided in **Appendix G**.

2.7 Comparison of 1-hr TSP Monitoring Results with EIA Predictions

2.7.1 The monitoring data of 1-hr TSP was compared with the EIA predictions as summarized in **Table 2.4**.

Table 2.4 – Comparison of 1-hr TSP data with EIA predictions

Monitoring Station	EIA ID	Predicted Maximum Hourly Average TSP Concentration ($\mu\text{g}/\text{m}^3$)	Maximum 1-hr TSP Monitoring Results in September 2022 ($\mu\text{g}/\text{m}^3$)
1-hour TSP			
AM1	ASR A09	205-451	161
AM2	ASR A11		179

Notes:

Predicted TSP Concentration extracted from Table 3.20 of EIA Report, AEIAR-220/2019

2.7.2 The 1-hr TSP monitoring results at AM1 and AM2 were below the Predicted Maximum Hourly Average TSP Concentration in the approved Environmental Impact Assessment (EIA) Report.

3. NOISE

3.1 Monitoring Requirement

3.1.1 In accordance with the EM&A Manual, Leq (30min) monitoring is conducted at least once a week when there are Project-related construction activities being undertaken within a radius of 300 m from the monitoring stations. The monitoring is conducted during the construction phase between 0700 and 1900 on normal weekdays at the designated monitoring locations.

3.2 Monitoring Equipment

3.2.1 As referred to the requirements of the Technical Memorandum (TM) issued under the NCO, the sound level meters in compliance with the International Electro technical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications should be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement, the accuracy of the sound level meter should be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The measurements may be accepted as valid only if the difference between calibration levels obtained before and after the noise measurement is less than 1.0 dB (94 dB \pm 0.1 dB).

3.2.2 The details of the noise monitoring equipment used are summarized in **Table 3.1**.

Table 3.1 – Construction Noise Monitoring Equipment

Item	Brand	Model	Equipment	Serial No.
1	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	1488304
2	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	1488272
3	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	2383982
4	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	3321858
5	SENSOR	AR816	Anemometer	N/A

3.3 Monitoring Parameters and Frequency

3.3.1 The parameters and frequencies of impact noise monitoring is summarized in **Table 3.2**.

Table 3.2 – Monitoring Parameters and Frequencies of Noise Monitoring

Parameter	Frequency
L _{Aeq} (30 min) (L ₁₀ and L ₉₀ will be recorded for reference)	At each station at 0700-1900 hours on normal weekdays at a frequency of once a week when construction activities are underway

3.4 Monitoring Methodology

3.4.1 Noise measurement should be conducted as the following procedures:

- The monitoring station will set at a point 1m from the exterior of the sensitive receivers building façade and set at a position 1.2m above the ground. (In case façade measurement is not feasible on-site, a free field correction of +3dB(A) will be applied.)
- The battery condition was checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time will set as follows:
 - frequency weighting: A
 - time weighting: Fast
 - measurement time: 30 minutes
- Prior to and after noise measurement, the meter shall be calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement will considered invalid and repeat of noise measurement is required after re-calibration or repair of the equipment.
- Noise measurement should be paused during periods of high intrusive noise if possible and observation shall be recorded when intrusive noise is not avoided.
- Noise measurements shall not be made in fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s. Calibration certificate of the anemometer is provided in **Appendix D**.

3.5 Maintenance and Calibration

3.5.1 Maintenance and calibration procedures should also be carried out, including:

- The microphone head of the sound level meter and calibrator should be cleaned with a soft cloth at quarterly intervals.
- The sound level meter and calibrator should be calibrated annually by a HOKLAS laboratory.
- Relevant calibration certificates are provided in **Appendix D**.

3.6 Monitoring Locations

- 3.6.1 In accordance with the EM&A Manual, three noise monitoring locations, namely CM1, CM2 and CM3 are covered under Contract No. SPW 07/2020 "Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1".
- 3.6.2 The most updated locations are summarized in **Table 3.3** and the locations of the noise monitoring stations shown in **Figure 3**.

Table 3.3 – Construction Noise Monitoring Location

Monitoring Station ID	Location	Measurements
CM1	Squatter house at the north of YLSTW	Free Field
CM2	Squatter house at the west of YLSTW	Free Field
CM3	Squatter house at the east of YLSTW	Free Field

Note: Correction of +3 dB(A) shall be made to the free field measurements.

3.7 Monitoring Results

- 3.7.1 The schedule of noise monitoring in reporting month is provided in **Appendix E**.
- 3.7.2 No Action / Limit Level exceedance of location CM1, CM2 and CM3 was recorded for construction noise in the reporting month.
- 3.7.3 During the monitoring month, at CM2, road traffic from the squatter house at the west of Yuen Long STW was observed, at CM3, road traffic from the Nam Sang Wai Road was observed. No effect that arose from the other special phenomena and work progress of the concerned site for CM1 was noted during the current monitoring month.
- 3.7.4 No raining and wind with speed over 5 m/s was observed during noise monitoring according to the onsite observation. The weather and meteorological conditions during the monitoring month are provided in **Appendix K**.
- 3.7.5 The Construction Noise Monitoring Results are summarized in **Table 3.4**. Detailed monitoring data are presented in **Appendix F**.

Table 3.4 – Summary of Construction Noise Monitoring Results

Time Period	Noise Monitoring Stations	L_{eq} (30min) dB(A) (Range)	Action Level	Limit Level dB(A)
0700-1900 hrs on normal weekdays	CM1	51-52	When one documented complaint is received	75
	CM2	62-63		75
	CM3	61-63		75

Remark:

CM1, CM2 and CM3: Free-field measurement (+3 dB(A) correction has been applied).

- 3.7.6 The Action and Limit Levels for Construction Noise have been set and are presented in **Appendix C**.
- 3.7.7 The Event and Action Plan for Construction Noise is given in **Appendix H**.

3.8 Comparison of Noise Monitoring data with EIA Predictions

3.8.1 The noise monitoring data was compared with the EIA predictions as summarized in **Table 3.5**.

Table 3.5 – Comparison of Noise monitoring data with EIA predictions

Monitoring Station	EIA ID	Maximum Predicted Mitigated Construction Noise Level L_{eq} (30min) dB(A)	Maximum Construction Noise Level in September 2022 L_{eq} (30min) dB(A)
CM1	NSR1	72	52
CM2	NSR2	74	63
CM3	NSR3	75	63

Notes:

Predicted TSP Concentration extracted from Table 4.9 of EIA Report, AEIAR-220/2019

3.8.2 The construction noise monitoring results at CM1, CM2 and CM3 were below the Maximum Predicted mitigated Construction Noise Level in the approved Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-220/2019).

4. WATER QUALITY

4.1 Monitoring Requirement

4.1.1 In accordance with the EM&A Manual, impact monitoring is conducted for three days per week at mid-flood and mid-ebb with sampling and measurement at the designated monitoring stations.

4.2 Monitoring Equipment

4.2.1 Equipment used for in-situ measurement and water sampling during impact water quality monitoring is summarised in **Table 4.1**. The equipment is in compliance with the requirements set out in the EM&A Manual. All in-situ monitoring instruments were calibrated by a HOKLAS-accredited laboratory. Calibration of temperature, DO, salinity, pH and turbidity is conducted in three month interval. Calibration certificates for the water quality monitoring equipment are attached in **Appendix D**.

Table 4.1 – Water Quality Monitoring and Sampling Equipment

Parameter	Equipment	Model	Range	Equipment Accuracy	Serial No.
Temperature, Dissolved Oxygen, Salinity, pH, Turbidity	YSI Water Quality Multipara meter Sonde	Xylem EXO 3	Temp: -5 to 50°C DO: 0-50mg/L DO%: 0-500% Sal: 0 to 70ppt pH: 0 to 14 pH units Turb: 0- 4000NTU	Temp: $\pm 0.2^{\circ}\text{C}$ DO: $\pm 0.1\text{mg/L}$ or 1% for 0-20mg/L; $\pm 5\%$ for 20-50mg/L Sal: $\pm 2\%$ of the reading or 0.2 ppt (whichever greater) pH: ± 0.2 units Turb: $\pm 3\%$ or 0.3NTU (FNU) (whichever greater)	19E100633
		Xylem EXO 1	21D101383		
Current Velocity and Direction	Current Meter	Valeport Model 106	Speed: 0.03 to 5 m/s Direction: 0 to 360	Speed: $\pm 1.5\%$ of reading above 0.15m/s, ± 0.004 m/s below 0.15m/s Direction: $\pm 2.5^{\circ}$	67738
		River Surveyor M9	Water Depth: 0- 80m	Water Depth: 1% Current speed: $\pm 0.25\%$ of measured velocity or $\pm 0.2\text{cm/s}$ Current direction: $\pm 2^{\circ}$ magnetic	5906
Water Sampling	Water Sampler	Acrylic Beta Water Bottle Kit,	NA	NA	NA

Parameter	Equipment	Model	Range	Equipment Accuracy	Serial No.
		Horizontal, 3.2L / 4.2L			
Positioning	DGPS	Simrad MX521B Smart Antenna with Simrad MX610 CDU	NA	GPS: ±1m	NA
Water Depth	Echo Sounder	Garmin ECHO 101	Maximum depth: 457.2 m	0.1 m	NA

4.3 Equipment Calibration

- 4.3.1 All in-situ monitoring instruments shall be checked, calibrated and certified by a laboratory accredited under HOKLAS before use and subsequently re-calibrated at three monthly intervals throughout all stages of the water quality monitoring programme. Responses of sensors and electrodes shall be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter shall be carried out before measurement at each monitoring location.
- 4.3.2 Sufficient stocks of spare parts shall be maintained for replacements when necessary. Backup monitoring equipment shall also be made available so that monitoring is uninterrupted even when some equipment is under maintenance or calibration etc.

4.4 Monitoring Parameters

The monitoring parameters and frequency for both in-situ measurement and laboratory analysis are summarised in **Table 4.2**.

Table 4.2 – Monitoring Parameters and Frequency

Parameters	Monitoring Frequency
<u>In-situ Measurement</u> Turbidity (in NTU), pH, DO (in mg/L and % of saturation), Temperature (in °C), Salinity (in ppt)	3 days per week, at mid-flood and mid-ebb tides (The interval between two sets of monitoring shall not be less than 36 hours.)
<u>Laboratory Analysis</u> Suspended Solids	

4.5 Monitoring Operation

- 4.5.1 The position of water monitoring station will be located by the Differential Global Positioning System (DGPS) or equivalent. The water depth of water monitoring station will be determined by the echo sounder affixed to the bottom of the monitoring vessel or a portable echo sounder depth detector.
- 4.5.2 Once the location and water depth are confirmed, water samples shall be collected at 3 depths (1m below the surface, mid-depth, and 1m above the seabed) of the water column at each location, except where water depth is less than 6m, the mid-depth will be omitted and if the

water depth is less than 3m only the mid-depth station will be monitored. Duplicate marine samples will be collected in each sampling event. The water samples are decanted from the water sampler into the water sample bottles. The bottles are labelled, tightly sealed, placed into a cool-box and packed with ice ready for delivery to the laboratory.

- 4.5.3 Two consecutive measurements of water quality data, including pH, salinity, dissolved oxygen and turbidity will be recorded according to the monitoring locations. Separate deployment of the monitoring instruments and water samplers will be conducted for the consecutive measurements or samplings. The monitoring location / position, time, water depth, sampling depth, tidal stages, weather conditions, sea condition and any special phenomena or work underway nearby shall also be recorded. If the difference in value between the first and second measurement of DO or turbidity parameters is more than 25% of the value of the first reading, the reading shall be discarded and further readings should be taken.

4.6 Laboratory Measurement / Analysis

Background

- 4.6.1 Fugro Technical Services Limited (HOKLAS Reg: No.015) has been appointed to conduct the laboratory measurement or analysis of water sample in this project.

Quality Assurance / Quality Control

- 4.6.2 The laboratory incorporates a variety of QA/QC monitoring programme into their testing system. Where applicable or available, the quality of the analysis will be monitored by conducting the following QC analysis:

For each batch of 20 samples:

- A minimal of 1 laboratory method blank will be analyzed;
- A minimal of 1 sample duplicate will be analyzed;
- A minimal of 1 sample matrix spike will be analyzed.

4.7 Monitoring Locations

- 4.7.1 In accordance with the EM&A Manual, water quality monitoring should be carried out at 3 designated monitoring locations.
- 4.7.2 The coordinates of the monitoring location stated in the EM&A Manual is summarised in **Table 4.3** and the locations of the water quality monitoring stations shown in **Figure 4**.

Table 4.3 – Coordinates of Water Quality Monitoring Locations

Sampling Location		Easting	Northing
M1	Serve as the control station at upstream location of construction site (Flood Tide) / Serve as the impact station at downstream location of construction site (Ebb Tide)	821 086	836 656
M2	Serve as the impact station at downstream location of construction site (Flood Tide)/ Serve as the control station at upstream location of construction site (Ebb Tide)	820 996	836 246

Sampling Location		Easting	Northing
M3	Serve as the impact station at downstream location of construction site (Flood Tide) / Serve as the control station at upstream location of construction site (Ebb Tide)	820 645	836 335

4.8 Monitoring Results

- 4.8.1 The schedule of water quality monitoring in reporting month is provided in **Appendix E**.
- 4.8.2 Impact water quality monitoring was conducted at all designated monitoring stations in the reporting month. Impact water quality monitoring results and graphical presentations are provided in **Appendix F**.
- 4.8.3 The weather and meteorological conditions during the monitoring are provided in **Appendix K**.
- 4.8.4 Number of Action/ Limit exceedance recorded in the reporting month at each impact stations is summarized in **Table 4.4**.

Table 4.4 – Summary of Water Quality Exceedance

Sampling Location	Exceedance Level	DO		Turbidity		Suspended Solids		Total	
		Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb
M1	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
M2	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
M3	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
Total	Action	0	0	0	0	0	0	0	
	Limit	0	0	0	0	0	0	0	

- 4.8.5 During the reporting period, no Action and Limit Level exceedance was recorded for water quality monitoring.
- 4.8.6 The Event and Action Plan for water quality is given in **Appendix H**.

4.9 WetSeeps

- 4.9.1 Two WetSeeps are deployed within the site for treatment of the site runoff prior to disposal in compliance with the conditions stipulated in the water discharge license.

5. ECOLOGY MONITORING

5.1 Ardeid Night Roost Monitoring

5.1.1 Monitoring Requirement

With reference to the Pre-construction Ardeid Night Roost survey (January 2021) findings that identified two active ardeid night roosts within 100 m from the Project boundary (one approximately 40 m east of the Project boundary and the other one approximately 45 m northeast of the Project boundary), consequent monthly monitoring of these active ardeid night roosts was done in accordance to the **EM&A Manual Sections 7.3.10 and 7.3.11**; and **EIA Report Section 8.12.1.3**.

The Ardeid Night Roost Monitoring survey was conducted with the following objectives:

- Check the status and location of any active ardeid night roosts within 100 m from the Project boundary (Survey Area) with reference to **EM&A Manual Section 7.3.10**;
- Monitor the effectiveness of proposed mitigation measures and detect any unpredicted indirect ecological impacts arising from the proposed Project as specified in **EIA Report Section 8.12.1.3**; and
- Recommend remedial actions, where appropriate, based on the impact monitoring results (**EIA Report Section 8.12.1.3**) for the implementation of the contractor as only necessary.

5.1.2 Monitoring Methodology

5.1.2.1 Monitoring Area

With reference from **Section 7.3.10 of the approved EM&A Manual**, the monitoring was conducted in areas within 100 m from the Project boundary. The monitoring area and vantage points for direct observation of any active night roosts are shown in **Appendix O**.

5.1.2.2 Monitoring Activity

5.1.2.2.1 Active Ardeid Night Roost

Current Ardeid Night Roost Monitoring Survey focused on the two active night roosts within the Survey Area (100 m from the Project boundary) that were previously confirmed during the pre-construction Survey. These roosts include one that was approximately 40 m east of the Project boundary and another around 45 m northeast of the mentioned boundary (**Section 3 of the approved Pre-construction Survey Report of Ardeid Night Roost**). Primary data collection with the use of 7x and 10x binoculars; and field guides including the Avifauna of Hong Kong (Carey et al., 2001) and The Birds of Hong Kong and South China (Viney et al., 2005), was from about one hour before sunset time until one hour after sunset with reference to **Section 7.3.10 of the approved EM&A Manual**. Sunset time was according to Hong Kong Observatory (HKO). The survey was conducted on 16 September 2022.

Species composition, abundance and locations of night roosts were recorded. Species composition, abundance and location of pre-roosting aggregations (PRA) were also noted. PRAs are gatherings of avian individuals prior to flying into a night roost (Moore and Switzer, 1998). The time of return of the ardeids to the pre-roost and the final night roost were also recorded. Direct observations were made from vantage points adjacent the Project site with clear and unobstructed view of any active roosting location (s) within the Survey Area. However, aside from the established vantage points for the focused mangrove strips along Shan Pui River, observations were also conducted throughout the whole 100 m study site to cover other areas aside from the mangrove strips.

Observations such as any changes in site condition or disturbances detected or observed at the monitoring locations, including both construction and non-construction related activities, during the monitoring activity was recorded with reference to **Section 7.3.10 of the approved EM&A Manual**. Additionally, other observations such as bird droppings on the ground which may possibly indicate presence of night roosts were noted in addition to noting of the roosting substrate (i.e. substrate species and approximate height). Any breeding activity usage of the roosting locations within the Survey Area was also noted.

5.1.2.2.2 Noise Monitoring

Monitoring Locations, Frequency, Time and Parameters

The noise monitoring locations were established at 22°28'4.25"N, 114°1'41.32"E; and 22°28'10.43"N, 114°1'42.17"E for NMS1 and NMS2 stations, respectively. Monitoring frequency was only once a month in concurrence with the construction phase monthly monitoring of the active night roosts for correlation. Monitoring time for both stations started around 18:30, the earliest final night roost period recorded during the survey and lasted for 30 minutes. **Table 5.1** presents the monitoring parameters.

Table 5.1 – Noise Monitoring Parameters (For Active Ardeid Night Roost Survey)

Parameter	Frequency and Period
LAeq (30 min) (L10 and L90 will be recorded for reference)	Monthly in concurrence with the construction phase monthly monitoring of the active night roosts

The Action and Limit Levels for Active Ardeid Night Roost Survey have been set and are presented in **Appendix C**.

However, exceedances to the limit level were endeavoured to be prevented by the full implementation of mitigation measures (**Section 4.2 of the approved Pre-construction Survey Report of Ardeid Night Roost and Sections 5.2.1-5.2.2 of this Report**) during the construction phase.

Event and Action Plan

In instances of exceedance/s in the action and/or limit levels, the different measures as specified in **Table 3.3 Event and Action Plan for Construction Noise** of the approved EM&A

Manual and likewise presented in **Appendix H** of this report shall be implemented as responses.

5.1.3 Monitoring Results

5.1.3.1 Active Ardeid Night Roost

The monitoring activity was conducted on 16 September 2022 and started around 17:26 (one hour before sunset) on a low tide condition. During the pre-roost period (PRP), the period when avian individuals gather first before flying into a night roost, two Little Egret *Egretta garzetta*, and one Grey Heron *Ardea cinerea* individuals were observed in pre-roost aggregate (PRA) around 18:10 at the mudflat east side (ANR1) of the Project boundary while another two individuals of Little Egret were concurrently noted at the mudflat northeast side (ANR2) of the Project boundary during the period (**Table 5.2**).

For the final night roost at around 18:30, 10 individuals of Chinese Pond Heron *Ardeola bacchus* were observed at the roosting area ANR1 utilizing the understory to canopy layer of the roosting substrate *Sonneratia apetala* and *S. caseolaris*; while 15 individuals of Chinese Pond Heron, and two individuals of Little Egret were also noted at ANR2 that utilized the understory layer of the aforementioned roosting substrate.

No disturbance (construction related and/or otherwise) to the active night roost areas was observed during the period. Bird droppings were observed within the vicinity of the roosting area located east of the Project boundary.

Table 5.2 – Active Ardeid Night Roost Survey Findings

Date: 16 September 2022		Sunset Time: 18:26			
		Tidal Condition: Low Tide			
Pre-roost Period		Final roost Period			
Time of Return:	Little Egret <i>Egretta garzetta</i> and Grey Heron <i>Ardea cinerea</i> (18:10)		Time of Return:	Chinese Pond Heron <i>Ardeola bacchus</i> , and Little Egret <i>Egretta garzetta</i> (18:30)	
Parameters	Location		Parameters	Location	
	ANR1	ANR2		ANR1	ANR2
Pre-roost Aggregation (Y/N):	Y	N	Substrate Species:	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>
Substrate Species:	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>	Substrate Height (m):	Approx. 5 m.	Approx. 3-4 m.
Substrate Height (m):	Approx. 5 m.	Approx. 3-4 m.			
Ardeid Species Composition	Abundance (individuals)		Ardeid Species Composition	Abundance (individuals)	
	ANR1	ANR2		ANR1	ANR2
Little Egret <i>Egretta garzetta</i>	2	2	Chinese Pond Heron <i>Ardeola bacchus</i>	10	15
Grey Heron <i>Ardea cinerea</i>	1	-	Little Egret <i>Egretta garzetta</i>	-	2
Breeding Activity (Y/N):	ANR1	N			
	ANR2	N			

Notes:

Pre-roost Period: Period when avian individuals gather first before flying into a night roost

ANR1: Active ardeid night roost area east of the Project boundary

ANR2: Active ardeid night roost area northeast of the Project boundary

-: not recorded

5.1.3.2 Noise Monitoring

Noise monitoring activities were conducted on 16 September 2022 in concurrence with the construction phase monthly monitoring of the pre-identified active night roosts. Noise monitoring started at 18:30 and lasted for 30 minutes, until 19:00.

Current survey results showed noise levels (L_{Aeq} (30 min.)) at both monitoring stations to be well below the action and limit levels as presented in **Table 5.3**.

Table 5.3 – Noise Monitoring Results

Frequency and Period	Location	Start Time	L_{Aeq} (30 min.)	Action Level	Limit Level
Monthly in concurrence with the construction phase monthly monitoring of the active night roosts	NMS1	18:30	50.7	65.5 dB(A) ¹	72.2 dB(A) ²
	NMS2	18:30	45.3		

Notes:

NMS1= Noise monitoring station 1 located east of the Project boundary

NMS2= Noise monitoring station 2 located northeast of the Project boundary

1= Behavioural response of some kind more likely to occur (Wright et al. 2010)

2= Flight with abandonment of the site becomes the most likely outcome of the disturbance (Wright et al. 2010)

5.1.4 Detection of Any Unpredicted Indirect Ecological Impacts Arising from the Project

No unpredicted indirect ecological impacts that arose from the project were noted during the current monitoring period.

5.1.5 Summary

5.1.5.1 Status and Location of Any Active Ardeid Night Roost

Two active ardeid night roost areas (ANR1 and ANR2) were observed within the Survey Area during the September 2022 monitoring period. These roosts were located at the mangrove strips in the east and northeast portions of the Project boundary. These were used by individuals of Chinese Pond Heron, and Little Egret.

5.1.5.2 Noise Monitoring Results

Both noise levels at each of the monitoring stations were below the action and limit levels.

5.2 Ecological Monitoring of Birds

5.2.1 Monitoring Requirement

With reference to **Section 7.3.6** of the **EM&A Manual**, monthly ecological monitoring of birds, focusing on avifauna species of conservation interest, and overwintering waterbirds utilising wetland habitats in Fung Lok Wai and Nam Sang Wai as well as along Shan Pui River and Kam Tin River within the monitoring area (500 m from the Project Boundary) was conducted in addition to monitoring on the utilization of wetland habitats by birds also within the same monitoring area as required by **Section 7.3.1** of the **EM&A Manual**.

5.2.2 Monitoring Methodology

5.2.2.1 Monitoring Area

The monitoring area included wetland habitats in Fung Lok Wai and Nam Sang Wai as well as along Shan Pui River and Kam Tin River within 500m from the Project boundary with reference to **Section 7.3.6** of the **EM&A Manual**. The location of point count sites and transect routes is shown in **Appendix P**.

5.2.2.2 Monitoring Activity

Avifauna surveys on the different wetland habitats using the transect count and point count methods were conducted last 15 September 2022 (daytime) which started around 07:45; and 16 September 2022 (night-time) which started around 18:28. For the survey overlooking the mudflats and mangroves in the Shan Pui River that was concurrently conducted on the same date with the daytime survey during the low tide (generally 1.5m or below) period, it started at around 07:45. The methodology for the monitoring activity followed **Sections 8.3.3.6** and **8.3.3.7** of the **EIA Report (AEIAR-220/2019)** and as detailed below.

For the transect count and point count methods, the presence and relative abundance of avifauna species at various wetland habitats were recorded visually and aurally.

Avifauna species were detected either by direct sighting or by their call and identified to species level. Any notable behaviours such as feeding, roosting and breeding were also recorded. Bird species encountered outside the point count locations and walk transects were also recorded. A comprehensive list of species recorded from the Assessment Area was prepared, with wetland-dependence, conservation and/or protection status indicated. Ornithological nomenclature in this report follows Carey et al. (2001), Viney et al. (2005) and the most recent updated list from Hong Kong Bird Watching Society (HKBWS).

Noise levels were recorded with the methodology and equipment as mentioned in **Section 3.4 and Section 3.2**, respectively, of this EM&A report. The parameter as shown in was recorded at each of the point count locations.

Table 5.4 - Noise Monitoring Parameters

Parameter	Frequency and Location
L _{Aeq} (30 min) (L ₁₀ and L ₉₀ will be recorded for reference)	Monthly in concurrence with the monthly ecological bird monitoring at the different point count locations

In addition to recording of noise levels, any changes in site condition or disturbances detected or observed at the monitoring locations, including both construction and non-construction related activities with reference to **Section 7.3.7** of the **EM&A Manual** were also noted.

5.2.2.3 Data Analysis

For the bird communities, the monitoring results were compared to pre-construction baseline condition during the dry and wet seasons as summarized in the Baseline Bird Survey Report

with reference to **Section 7.3.8** of the **EM&A Manual**. However, to further account the seasonality, monitoring results of the current month were compared to the results of the corresponding month of the baseline data.

The data for point count method and transect walk method were presented separately to account for the difference in the survey effort of the two methods. For each method, abundance and species composition of the avifauna communities during the monitoring month were summarized.

To check the presence of variation in bird abundance between baseline and impact monitoring, t-test was applied ($\alpha = 0.05$). Moreover, to check the presence of variation in bird species diversity, the two-sided Hutcheson t-test was also used. The two-sided Hutcheson t-test was developed as a method to compare the diversity of two community samples using the Shannon diversity index (Hutcheson 1970). Shannon diversity index will be computed using the formula,

$$H' = - \sum_{i=1}^s p_i \ln p_i$$

where, H' = Shannon Diversity Index; P_i = proportion of the population of species; i = number of species in sample; \ln = natural logarithm. Shannon diversity index is used as it accounts the proportion (relative abundance) of each species; thus, it gives a better description of diversity than a plain number of species (species richness).

The Action and Limit Levels for ecological monitoring of birds have been set and are presented in **Appendix C**.

Wetland habitat utilization during the construction phase monitoring shall only be compared seasonally, hence the comparison shall only be done after all the data (dry season and wet season) were collected with reference to **Appendix 8.5** of the approved **EIA Report**.

5.2.3 Monitoring Results

Results of the avifauna survey on the different habitats within the monitoring area using the transect count and point count methods as conducted last 15 September 2022 (daytime) which started around 07:45; and 16 September 2022 which started around 18:28 are presented in **Sections 5.2.3.1** and **5.2.3.2**. Meanwhile, results for the surveys overlooking the mudflats and mangroves in the Shan Pui River, with monitoring activities conducted on similar date with the daytime survey during the low tide (generally 1.5m or below) period around 07:45 had results presented in **Section 5.2.3.3**.

5.2.3.1 Abundance

5.2.3.1.1 All Avifauna Species

An overall total of 255 avifauna individuals was recorded in the monitoring area during the September 2022 monitoring period, of which 180 individuals were recorded from the point count method and 75 individuals from the transect walk method. Relative to the September 2016 baseline data (point count method = 222; and transect walk = 119), current decreases in

total abundance for the point count method (t-value = 1.90; p-value = 0.06; α = 0.05); and transect walk method (t-value = 1.45; p-value = 0.15; α = 0.05) were observed. These decreases are consistent with the trend observed in the nearby Deep Bay Area, where it was reported that from 2000 to 2018 there has been a consistent decline in coverage of intertidal mudflat, consistent increase in coverage of mangrove and other vegetation (Sung Y-H et. al., 2021). Additionally, within the monitoring area, the mudflat at the confluence area of Shan Pui River and Kam Tin River, adjacent to Project site was progressively invaded most probably by the fast-growing exotic mangrove species *Sonneratia* spp. as also initially reported in the EIA report. The decrease in mudflat coverage may imply a decrease in foraging area for waterbirds, hence, could have led the current decreases in abundances.

Details of these findings are summarized in **Table 5.5**; and **Appendices F.6.1 and F.6.2**.

Table 5.5 – Abundance of all Avifauna Species

Abundance of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	September-16	September-22 ¹	Remarks
P1	FLW1	0	11	+
P2	FLW2	3	7	+
P3	FLW3	12	7	-
P4	FLW4	18	9	-
P5	FLW5	29	23	-
P6	FLW6	16	15	-
P7	FLW7	14	16	+
P9	SP/NSW3	71	30	-
P10	SP/NSW2	50	19	-
P11	NSW1	0	21	+
P12	SP/NSW1	9	22	+
Total		222	180	-
Mean		20	16	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	September-16	September-22 ¹	Remarks
Fung Lok Wai	FLW	109	34	-
Nam Sang Wai	NSW	2	28	+
YLIE-CW	YLIE-CW	8	13	+
Total		119	75	-
Mean		40	25	-
Notes:				
1 Sung, Y-H, Chun-chiu Pang, Tom Chung-hoi Li, Paulina Pui Yun Wong and Yat-tung Yu. 2021. Ecological Correlates of 20-Year Population Trends of Wintering Waterbirds in Deep Bay, South China. Front. Ecol. Evol. https://doi.org/10.3389/fevo.2021.658084				

Abundance of all Avifauna Species

+ increased abundance; - decreased abundance

5.2.3.1.2 Avifauna Species of Conservation Importance

Of the 255 avifauna individuals recorded in the monitoring area during the September 2022 monitoring period, 98 individuals (point count method = 77 individuals; transect walk method = 21 individuals) were of conservation importance. With reference to September 2016 data, current results showed decreases in total abundance for the point count method (t-value = 1.35; p-value = 0.18; $\alpha = 0.05$); and in transect walk method (t-value = 1.36; p-value = 0.19; $\alpha = 0.05$) results were noted. Details of these findings are summarized in **Table 5.6**; and **Appendices F.6.3 and F.6.4**.

Table 5.6 – Abundance of Species of Conservation Importance

Abundance of Species of Conservation Importance				
Point Count Method				
EIA Report ID	EM&A Manual ID	September-16	September-22	Remarks
P1	FLW1	0	3	+
P2	FLW2	1	0	-
P3	FLW3	5	0	-
P4	FLW4	7	1	-
P5	FLW5	3	3	=
P6	FLW6	10	10	=
P7	FLW7	4	11	+
P9	SP/NSW3	64	24	-
P10	SP/NSW2	22	2	-
P11	NSW1	0	7	+
P12	SP/NSW1	3	16	+
Total		119	77	-
Mean		11	7	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	September-16	September-22	Remarks
Fung Lok Wai	FLW	36	10	-
Nam Sang Wai	NSW	1	3	+
YLIE-CW	YLIE-CW	8	8	=
Total		45	21	-
Mean		15	7	-
Notes:				

Abundance of Species of Conservation Importance

1 Sung, Y-H, Chun-chiu Pang, Tom Chung-hoi Li, Paulina Pui Yun Wong and Yat-tung Yu. 2021. Ecological Correlates of 20-Year Population Trends of Wintering Waterbirds in Deep Bay, South China. *Front. Ecol. Evol.*

<https://doi.org/10.3389/fevo.2021.658084>

+ increased abundance; - decreased abundance; = similar abundance

5.2.3.2 Diversity (Species Richness¹ and Shannon Diversity Index²)

5.2.3.2.1 All Avifauna Species

A total of 35 avifauna species (species richness) were recorded during the September 2022 monitoring period, of which, 32 species were recorded by the point count method while 21 species were noted by the transect walk method. Relative to the baseline data (point count method = 34 species; transect walk method = 27 species), decreases in total species richness for both the point count and transect walk methods were noted. In terms of Shannon diversity index (H') values, current result in point count method showed an increase from baseline reference value while a decrease (t-value = 1.34; t-crit = 1.97; p-value = 0.18; α = 0.05) in transect walk method was noted. Details of these findings are summarized in **Table 5.7** and **Appendix F.7.1**.

Table 5.7 – Shannon Diversity Index Value of all Avifauna Species

Shannon Diversity Index Value of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	September-16	September-22	Remarks
P1	FLW1	**	1.72	+
P2	FLW2	1.10	0.96	-
P3	FLW3	1.14	1.28	+
P4	FLW4	2.11	1.74	-
P5	FLW5	1.48	1.99	+
P6	FLW6	1.91	1.84	-
P7	FLW7	1.83	1.68	-
P9	SP/NSW3	2.23	2.15	-
P10	SP/NSW2	1.98	1.81	-
P11	NSW1	**	2.14	+
P12	SP/NSW1	1.68	1.69	+
Overall H'		3.01	3.14	+
Species Richness		34	32	-
Transect Walk Method				

¹ actual number of species

² use to account the proportion (in terms of relative abundance) of each species

Shannon Diversity Index Value of all Avifauna Species				
EIA Report ID	EM&A Manual ID	September-16	September-22	Remarks
Fung Lok Wai	FLW	2.62	2.31	-
Nam Sang Wai	NSW	0.69	2.31	+
YLIE-CW	YLIE-CW	1.49	1.78	+
Overall H'		2.95	2.79	-
Species Richness		27	21	-

Notes:

** result when no species recorded; + increased Shannon diversity index (H'); - decreased Shannon diversity index (H'); = no change in Shannon diversity index (H')

5.2.3.2.2 Avifauna Species of Conservation Importance

Of the 35 avifauna species identified during the September 2022 monitoring period, 12 species were of conservation importance (point count method = 12 species; transect walk method = 7 species). Relative to the baseline values in September 2016, the number of species with conservation importance recorded from the point count method remained the same while the number of species with conservation importance from the transect walk method decreased. In terms of Shannon diversity index (H'), increases in point count and transect walk methods were noted relative to the baseline reference values. Details of these findings are summarized in Table 5.8.

Table 5.8 – Shannon Diversity Index Value of Species with Conservation Importance

Shannon Diversity Index Value of Species with Conservation Importance				
Point Count Method				
EIA Report ID	EM&A Manual ID	September-16	September-22	Remarks
P1	FLW1	**	0.64	+
P2	FLW2	0	**	-
P3	FLW3	0	**	-
P4	FLW4	1.28	0	-
P5	FLW5	0.64	0.64	=
P6	FLW6	1.61	1.47	-
P7	FLW7	0.56	1.07	+
P9	SP/NSW3	1.92	1.81	-
P10	SP/NSW2	1.21	0	-
P11	NSW1	**	0.41	+
P12	SP/NSW1	1.10	1.28	+
Overall H'		2.04	2.08	+
Species Richness		12	12	=
Transect Walk Method				

Shannon Diversity Index Value of Species with Conservation Importance				
EIA Report ID	EM&A Manual ID	September-16	September-22	Remarks
Fung Lok Wai	FLW	1.37	1.37	=
Nam Sang Wai	NSW	0	0.64	+
YLIE-CW	YLIE-CW	1.49	1.39	-
Overall H'		1.79	1.89	+
Species Richness		9	7	-

Notes:

** result when no species recorded; 0 computation result from only one recorded species;

+ increased Shannon diversity index (H'); - decreased Shannon diversity index (H'); = similar Shannon diversity index (H')

5.2.3.3 Wetland Habitat Utilization

Avifauna communities were observed during the current monitoring period in the different wetland habitats, i.e. mangrove, modified watercourse, ponds, and reedbed.

With reference to **Section 7.3.1** of the **EM&A Manual**, the utilization of the wetland habitats by birds within the monitoring area was recorded and monitored.

5.2.3.3.1 All Avifauna Species

During the current monitoring period, all of the different wetland habitats were observed with very low (VL) abundance. In terms of species richness, majority of these wetland habitats were observed with very low to low (VL-L) number of species (**Table 5.9**).

Table 5.9 – Wetland habitat utilization of all avifauna species

Wetland Habitats	Area Description	Abundance ¹	Species Richness ²
Modified Watercourse	Confluence of Shan Pui River and Kam Tin River	VL	L
	Shan Pui River adjacent to Project site	VL	VL-L
	Upper course of Shan Pui River along YLIE	VL	VL-L
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai	VL	L
	Active Ponds North to Nullah 2 in Fung Lok Wai	VL	M-H
	Inactive Ponds in Fung Lok Wai	VL	VL-L
	Active and Inactive Ponds in Nam Sang Wai	VL	VL-L
Mangrove	Mangrove within Assessment Area	VL	VL
Reedbed	Reedbed in Nam Sang Wai	VL	VL

Notes:

1. Abundance of avifauna species of conservation importance amongst wetland habitats within the assessment area: VL = Very Low (~<50 individuals); L = Low (~100 individuals); M = Moderate (~300 individuals); H = High (~500 individuals), VH = Very High (>700 individuals)
2. Species richness (total number of species) amongst wetland habitats within the assessment area: VL = Very Low (≤5 species); L = Low (~10 species); M = Moderate (~15 species); H = High (~20 species), VH = Very High (>25 species)

Wetland Habitats	Area Description	Abundance ¹	Species Richness ²
------------------	------------------	------------------------	-------------------------------

-: no recorded individuals

Source: approved EIA Report (AEIAR-220/2019)

5.2.3.3.2 Avifauna Species of Conservation Importance

Majority of the different wetland habitats had very low (VL) abundance of avifauna species of conservation importance; and were also utilized by a majority of very low (VL) number of these species (Table 5.10).

Table 5.10 – Wetland habitat utilization of avifauna species of conservation importance

Wetland Habitats	Area Description	Abundance ¹	Species Richness ²
Modified Watercourse	Confluence of Shan Pui River and Kam Tin River	VL	VL-L
	Shan Pui River adjacent to Project site	VL	VL
	Upper course of Shan Pui River along YLIE	VL	VL-L
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai	VL	VL
	Active Ponds North to Nullah 2 in Fung Lok Wai	VL	VL-L
	Inactive Ponds in Fung Lok Wai	VL	VL
	Active and Inactive Ponds in Nam Sang Wai	VL	VL
Mangrove	Mangrove within Assessment Area	VL	VL
Reedbed	Reedbed in Nam Sang Wai	-	-

Notes:

1. Abundance of avifauna species of conservation importance amongst wetland habitats within the assessment area: VL = Very Low (~<50 individuals); L = Low (~100 individuals); M = Moderate (~300 individuals); H = High (~500 individuals), VH = Very High (>700 individuals)
2. Species richness (total number of species) amongst wetland habitats within the assessment area: VL = Very Low (≤5 species); L = Low (~10 species); M = Moderate (~15 species); H = High (~20 species), VH = Very High (>25 species)

-: no recorded individuals

Source: approved EIA Report (AEIAR-220/2019)

5.2.3.4 Noise Levels

Noise levels L_{Aeq} (30 min) recorded on 15 September 2022 (daytime) and 16 September 2022 (night-time) from each of the point count locations during the ecological bird monitoring are shown in Table 5.11.

Table 5.11 – Noise Monitoring Results (For Ecological Monitoring of Birds)

Frequency and Period	Location	Day time (15/09/2022)		Night-time (16/09/2022)	
		Start Time	L _{Aeq} (30 min) dB(A)	Start Time	L _{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1	10:46	51.0	21:55	49.5
	FLW2	10:20	49.6	21:22	50.1
	FLW3	10:10	48.3	21:19	49.5
	FLW4	09:10	46.8	20:15	46.5
	FLW5	09:14	47.6	20:16	47.4
	FLW6	09:37	44.9	20:47	46.2
	FLW7	09:39	43.9	20:50	46.8
	SP/NSW3	08:28	51.1	19:17	53.8
	SP/NSW2	08:20	51.5	19:10	53.1
	NSW1	07:48	49.6	18:30	47.2
	SP/NSW1	07:46	51.4	18:28	54.1

6. LANDSCAPE AND VISUAL

6.1 Audit Requirements

6.1.1 According to the EM&A Manual, a Landscape Architect or related professional shall be employed to audit the implementation of landscape construction works particularly during site clearance operations when the proposed tree felling and transplanting will take place and subsequent maintenance operations. Site audits should be undertaken every week during the construction phase to check that the proposed landscape and visual mitigation measures are properly implemented and maintained as per their intended objectives. The mitigation measure recommended in the EIA Report as the audit requirements for landscape and visual, including: preservation of existing vegetation, transplanting of affected trees, compensatory tree planting, control of night-time lighting glare, erection of decorative screen hoarding and management of construction activities and facilities are summarized in **Appendix J**.

6.2 Results and Observations

6.2.1 To monitor and audit the implementation of landscape and visual mitigation measures, four weekly landscape and visual site audits were carried out on 7, 13, 21 and 28 September 2022.

6.2.2 No outstanding issues were reported during the reporting month. The ET Leader's Site Environmental Audit are summarized in **Appendix M**.

7. LAND CONTAMINATION

7.1 Contamination Assessment Report

- 7.1.1 Risk-Based Remediation Goals (RBRGs) for Industrial have been adopted for the "Main Storeroom & Workshops" and the laboratory results for the sampling works (conducted between 30 June 2021 to 16 July 2021) show that there are no exceedances of the adopted RBRGs for the "Main Storeroom & Workshops". As no contaminated soil and groundwater was found within the "Main Storeroom & Workshops", no remediation actions are required for contaminated soil and groundwater for the scheduled land use of the "Main Storeroom & Workshops". Their findings are summarized in Contamination Assessment Report (CAR) and submitted to EPD on 1 November 2021.
- 7.1.2 Risk-Based Remediation Goals (RBRGs) for Industrial have been adopted for the "Mechanical Workshop" and the laboratory results for the sampling works (conducted between 23 July 2021 to 4 August 2021) show that there are no exceedances of the adopted RBRGs for the "Mechanical Workshop". As no contaminated soil and groundwater was found within the "Mechanical Workshop", no remediation actions are required for contaminated soil and groundwater for the scheduled land use of the "Mechanical Workshop". Their findings are summarized in Contamination Assessment Report (CAR) and submitted to EPD on 23 November 2021.
- 7.1.3 Risk-Based Remediation Goals (RBRGs) for Industrial have been adopted for the "Waste Storage Area" and the laboratory results for the sampling works (conducted between 24 November 2021 to 6 January 2022) show that there are no exceedances of the adopted RBRGs for the "Waste Storage Area". As no contaminated soil and groundwater was found within the "Waste Storage Area", no remediation actions are required for contaminated soil and groundwater for the scheduled land use of the "Waste Storage Area". Their findings are summarized in Contamination Assessment Report (CAR) and submitted to EPD on 29 April 2022.
- 7.1.4 Risk-Based Remediation Goals (RBRGs) for Industrial have been adopted for the "SAS Thickener House-1" and the laboratory results for the sampling works (conducted between 13 April 2022 to 16 May 2022) show that there are no exceedances of the adopted RBRGs for the "SAS Thickener House-1". As no contaminated soil and groundwater was found within the "SAS Thickener House-1", no remediation actions are required for contaminated soil and groundwater for the scheduled land use of the "SAS Thickener House-1". Their findings are summarized in Contamination Assessment Report (CAR) and submitted to EPD on 6 July 2022.

8. SITE INSPECTION AND AUDIT

8.1 Site Inspection

- 8.1.1 Site audits were carried out by ET on weekly basis at least once per week to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.
- 8.1.2 In the reporting month, four site inspections were carried out on 7, 13, 21 and 28 September 2022.
- 8.1.3 No outstanding issues were reported during the reporting month. The ET Leader's Site Environmental Audit are summarized in **Appendix M**.

8.2 Advice on the Solid and Liquid Waste Management Status

- 8.2.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.
- 8.2.2 The management of waste generated by the construction is presented in **Table 8.1**.

Table 8.1 – Waste Generated by the Construction and Disposal Ground

Types of Waste	Disposal Ground
Inert C&D Waste (Excluding slurry and bentonite)	Tuen Mun Area 38
Inert C&D Waste (For slurry and bentonite)	Tseung Kwan O Area 137
Non-inert C&D Materials	North East New Territories Landfill (NENT)
Sludge	West New Territories Landfill (WENT)
Marine Sediment	Type 1 – Open Sea Disposal: South Cheung Chau Open Sea Sediment Disposal Area Type 1 – Open Sea Disposal (Dedicate Site) and Type 2 – Confined Marine Disposal: Contaminated Mud Pit Vb of the Confined Marine Disposal Facilities to the East of Sha Chau

- 8.2.3 The monthly summary of waste flow table is detailed in **Appendix I**.
- 8.2.4 If off-site disposal is required, the excavated marine mud from the land-based works shall be disposed of at the designated disposal sites within Hong Kong as allocated by the Marine Fill Committee or other locations as agreed by the Director. The Contractor shall ensure no spilling and overflowing of materials during loading / unloading / transportation is allowed.
- 8.2.5 The Contractor was reminded that chemical waste should be properly handled temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.

9. NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

9.1 Non-compliance (Exceedances of AL levels)

- 9.1.1 No Action / Limit Level exceedance was recorded for 1-hr TSP level at AM1 and AM2 in the reporting month.
- 9.1.2 No Action / Limit Level exceedance was recorded for construction noise at CM1, CM2 and CM3 in the reporting month.
- 9.1.3 No Action and Limit Level exceedance were recorded for water quality at M1, M2 and M3 in the reporting month.
- 9.1.4 No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the active ardeid night roosts in the reporting month.
- 9.1.5 No Action / Limit exceedance was noted for the ecological monitoring of birds in the reporting month.
- 9.1.6 No corrective actions were required according to the Event and Action Plans for the Monitoring Parameters.

9.2 Complaints, Notification of Summons and Successful Prosecutions

- 9.2.1 No environmental complaints, notification of summons and successful prosecutions was recorded in the reporting month.
- 9.2.2 Cumulative complaint log, summaries of complaints, notification of summons and successful prosecutions are presented in **Appendix L**.
- 9.2.3 No corrective actions were required.

10. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE

10.1 Implementation Status of Environmental Protection and Pollution Control / Mitigation Measures

The Contractor had implemented environmental protection and pollution control / mitigation measures as stated in the EIA Report, the EP and EM&A Manual. **Appendix J** summarized the Implementation Status of Environmental Mitigation Measures.

The status of required submissions under the EP as of the reporting period are summarized in **Table 10.1**.

Table 10.1 – Status of submissions required under the EP

EP Condition (EP-565/2019)	Submission Title	Submission Status
Condition 2.9	Construction Phase Emergency Response Plan	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.11	Pre-construction Ardeid Night Roost Survey Report	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
EM&A Manual Sec. 7.3.3 & 7.3.4	Baseline Bird Survey Report	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.12	Noise Mitigation Measures Plan	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.13	Proposal for Minimization of Overspill Light to Ecological Sensitive Areas	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.14	Supplementary Contamination Assessment Plan	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.14	Contamination Assessment Report for Main Storeroom & Workshops	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.14	Contamination Assessment Report for Mechanical Workshop	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.14	Contamination Assessment Report for Waste Storage Area	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.14	Contamination Assessment Report for SAS Thickener House-1	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.15	Landscape and Visual Mitigation Plan	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.

EP Condition (EP-565/2019)	Submission Title	Submission Status
Condition 3.3	Baseline Monitoring Report	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 3.4	Monthly EM&A Report (from April 2021 to August 2022)	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 3.5	Quarterly EM&A Report (from April 2021 to June 2022)	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 4.2	Environmental Monitoring Data from April 2021 to August 2022	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.

11. FUTURE KEY ISSUES

11.1 Construction Programme for the Next Three Month

- Demolition of Admin. Building, Settled Sewage Overflow Chamber, Sludge Holding Tanks no. 2, PST no. 4, Water Heater House, Return Activated Sludge Screw Pump Pumping station, Air Floatation Thickener and Auxiliary Pumping Station (below ground);
- Pipe Laying for Zone 2B diversion works;
- ELS work and RC structure at IW & PST;
- Installation of Sheet pile at TTB;
- Piling work at Sludge Thickening Building;
- E&M work at 3 zone (Location D -Temp. Primary Sludge Pumping Station);
- Pipe laying for Zone 2B diversion work;
- Backfilling work and installation of pipe pile wall for demolition of Aeration Tank no. 5 at AGS;
- Construction of CLP Substation;
- Construction of MiC office;
- Ground investigation at AGS, SDB, SDT & STB;
- Sheet piling work around Sludge digester no. 1 – 3;
- Installation of brand drain at Biogas Holder no. 1;
- Installation of concrete blocks and soil Surcharge at Biogas Holder no. 1;
- Construction of temp. traffic road at north of SHT no. 3 & 4;
- Construction of IW/PST RC structure;
- 3 zone diversion works:
 - a. E&M work at temp. Gravity thickening tank (Atal);
 - b. E&M work at temp. Sludge Holding Tank (Atal);
 - c. E&M work at temp. water heater house (Atal);
 - d. E&M work at temp. Primary sludge pumping station;
 - e. E&M work at temp. digested sludge pump, Ferric Chloride and Chemical Dosing System;
 - f. E&M work at Digested Sludge Pumping Station;
- E&M installation at Zone 2B chamber.

11.2 Key Issues for the Coming Month

- 11.2.1 Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, waste management, ecology, land contamination and landscape and visual impact issues.

11.3 Monitoring Schedules for the next three months

- 11.3.1 The tentative schedule for environmental monitoring in the next three months is provided in **Appendix E**.

12. CONCLUSION AND RECOMMENDATION

12.1 Conclusions

- 12.1.1 1-hour TSP impact monitoring was carried out in the reporting month. No Action / Limit Level exceedance at AM1 and AM2 was recorded during the period.
- 12.1.2 Construction noise monitoring was carried out in the reporting month. No Action / Limit Level exceedance at CM1, CM2 and CM3 was recorded during the period.
- 12.1.3 No Action and Limit Level exceedance was recorded for water quality at M1, M2 and M3 in the reporting month.
- 12.1.4 Ardeid night roost monitoring was carried out in the reporting month. Two active ardeid night roost areas (ANR1 and ANR2) were observed within the Survey Area. These roosts were located at the mangrove strips in the east and northeast portions of the Project boundary. No Action / Limit Level exceedance at NMS1 and NMS2 was recorded during the period.
- 12.1.5 Ecological bird monitoring was carried out in the reporting month. No Action / Limit Level exceedance was recorded for the ecological monitoring of birds on this period.
- 12.1.6 Four environmental site inspections were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.
- 12.1.7 Four landscape and visual site audits were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.
- 12.1.8 No environmental complaint, notification of summons and successful prosecution was recorded in the reporting month.

12.2 Comment and Recommendations

12.2.1 The recommended environmental mitigation measures, as proposed in the EIA report and EM&A Manual shall be effectively implemented to minimize the potential environmental impacts from the Project. The EM&A programme would effectively monitor the environmental impacts generated from the construction activities and ensure the proper implementation of mitigation measures.

12.2.2 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality Impact

- The Contractor is reminded to increase watering for dust suppression at haul roads.
- The Contractor is reminded to increase watering for dust suppression during the demolition of S.A.S. Thickener House.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- No specific observation was identified in the reporting month.

Chemical Waste and Construction Waste Management

- The Contractor is reminded to clean up the oil stain on road with chemical absorbent pad and treat it as chemical waste for disposal.

Land Contamination

- No specific observation was identified in the reporting month.

Ecological Impact

- No specific observation was identified in the reporting month.

Landscape and Visual Impact

- No specific observation was identified in the reporting month.

Hazard to Life

- No specific observation was identified in the reporting month.

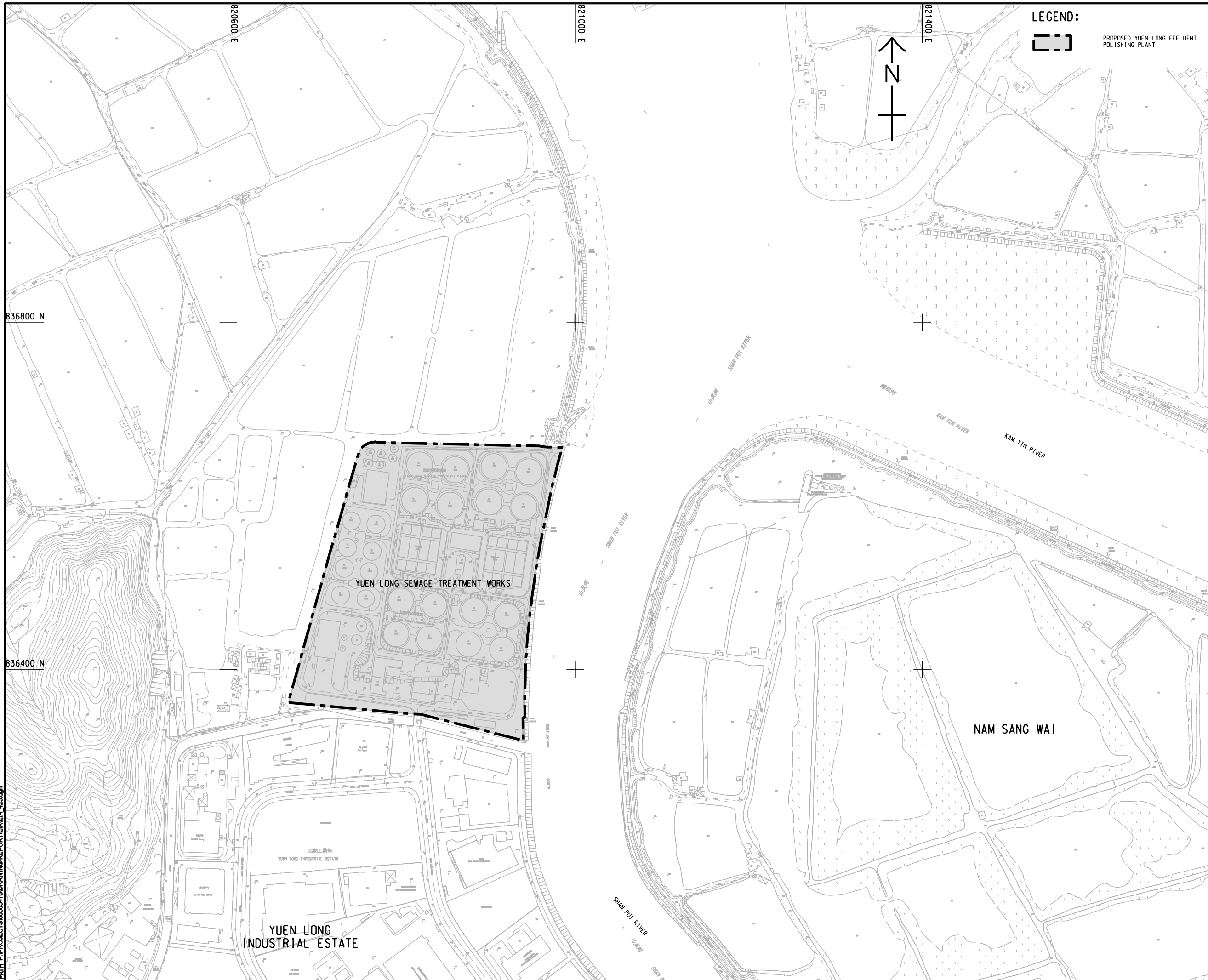
Permit/ Licenses


- No specific observation was identified in the reporting month.

Figure 1

Location of Proposed Yuen Long Effluent
Polishing Plant

Plot File by: SongYN 2018/02/27
 PATH: P:\PROJECTS\6056547\DRAWING\REPORT\EA\EA_425.dgn
 Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



LEGEND:
 PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

AECOM
PROJECT
YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

CLIENT
 渠務署
 Drainage Services Department

CONSULTANT
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 分判工程顧問公司

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE
 1:2000
KEY PLAN

DIMENSION UNIT
 METRES

PROJECT NO.
 60505476

CONTRACT NO.
 CE 3/2015 (DS)

SHEET TITLE
 LOCATION OF PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

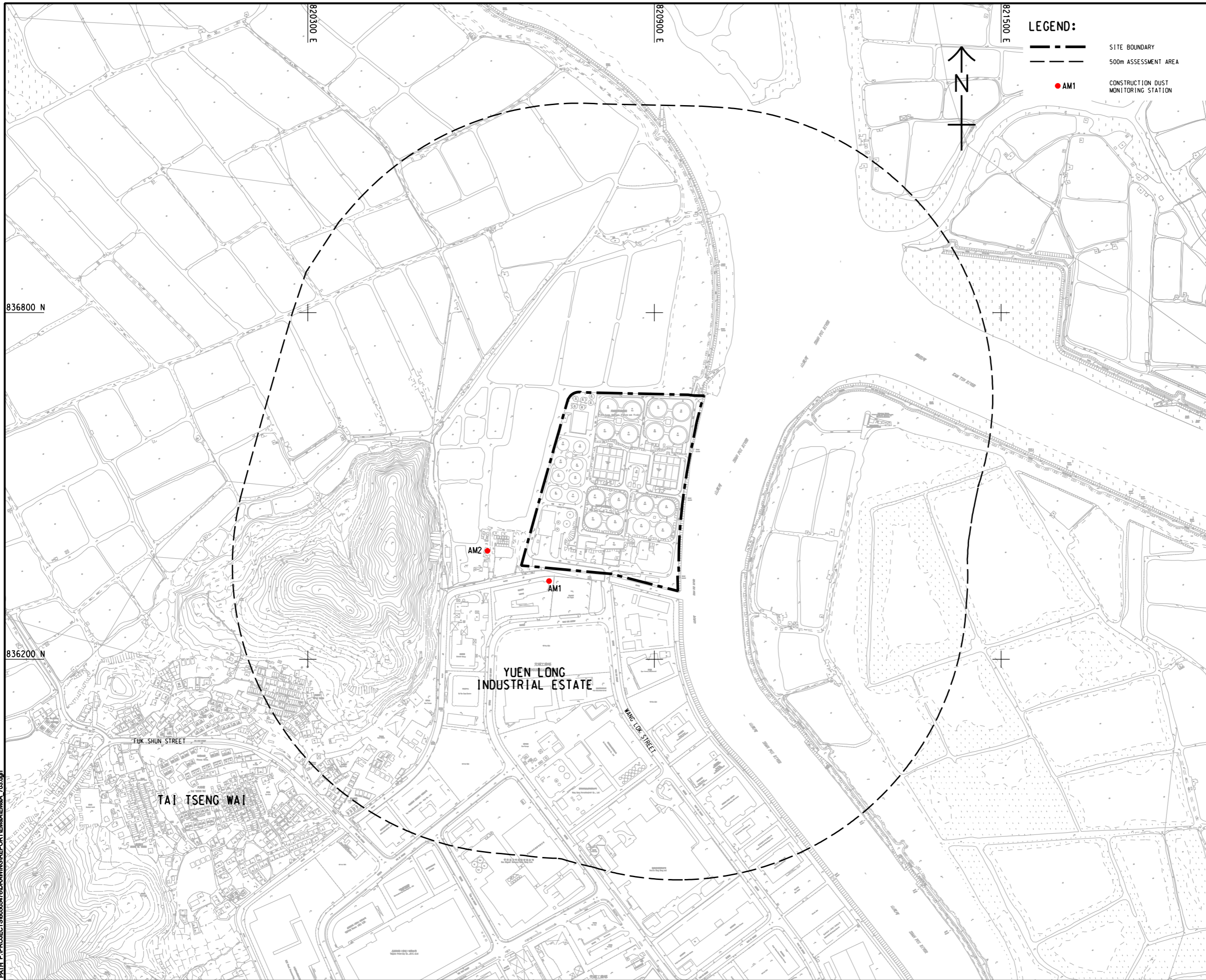
SHEET NUMBER

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Figure 2

Location of Construction Dust
Monitoring Stations

ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 836800 N
 836200 N
 P:\PROJECTS\60565476\DRAWING\REPORT\EM\EA\EA_703.dgn
 11/29
 P:\PROJECTS\60565476\DRAWING\REPORT\EM\EA\EA_703.dgn



LEGEND:

- SITE BOUNDARY
- 500m ASSESSMENT AREA
- AM1 CONSTRUCTION DUST MONITORING STATION



PROJECT
 項目
YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

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ISSUE/REVISION
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I/R	DATE	DESCRIPTION	CHK.
號	日期	內容摘要	核

STATUS
 階段

SCALE
 比例
 A1 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60505476

CONTRACT NO.
 合約編號
 CE 3/2015 (DS)

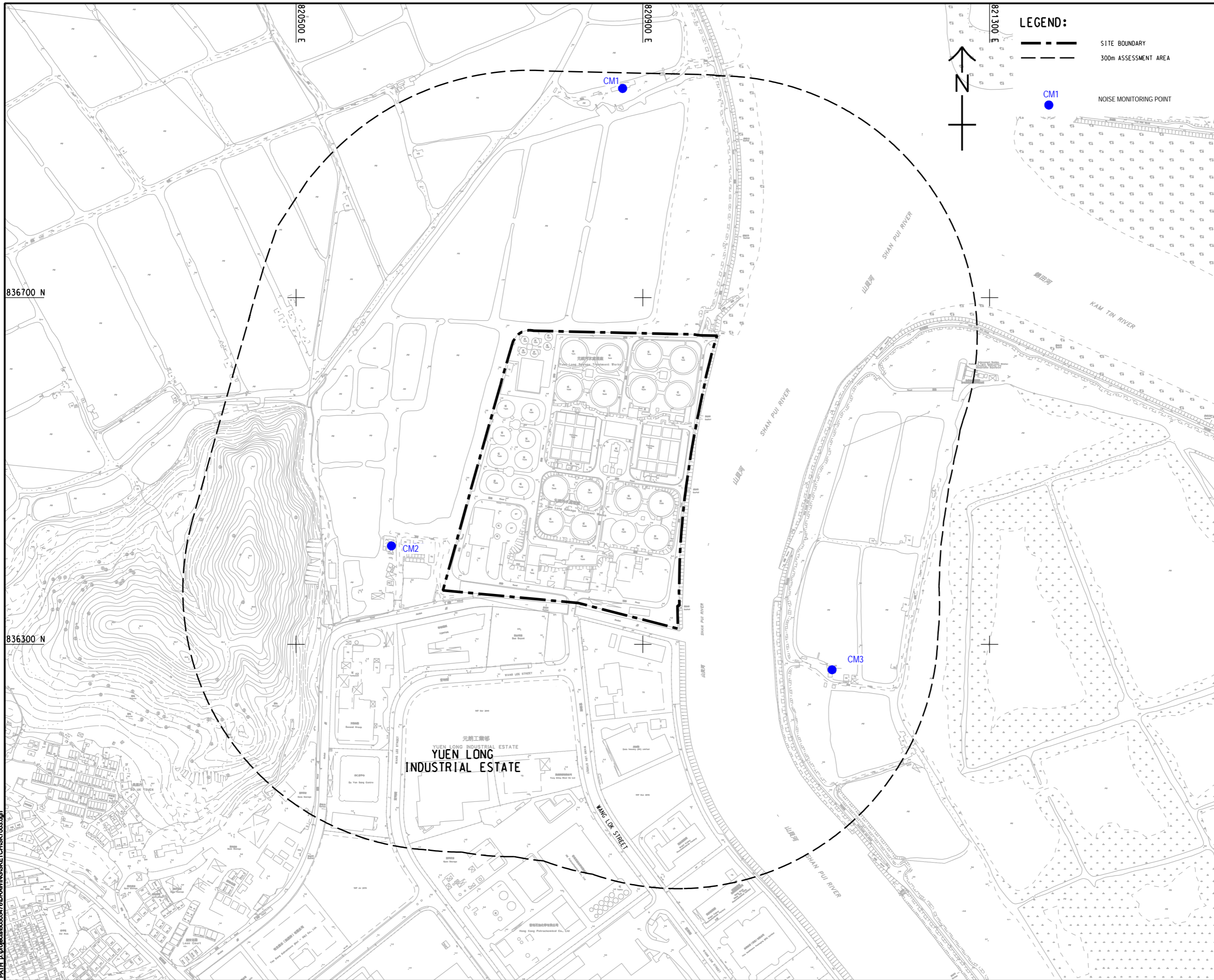
SHEET TITLE
 圖紙名稱
 LOCATION OF CONSTRUCTION DUST MONITORING STATIONS

SHEET NUMBER
 圖紙編號

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Figure 3

Noise Monitoring Locations



LEGEND:

- SITE BOUNDARY
- 300m ASSESSMENT AREA
- NOISE MONITORING POINT



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I/R	DATE	DESCRIPTION	CHK.

STATUS
階段

SCALE
比例

A1 1:2000

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號

60505476

CONTRACT NO.
合約編號

CE 3/2015 (DS)

SHEET TITLE
圖紙名稱

LOCATIONS OF NOISE MONITORING POINTS

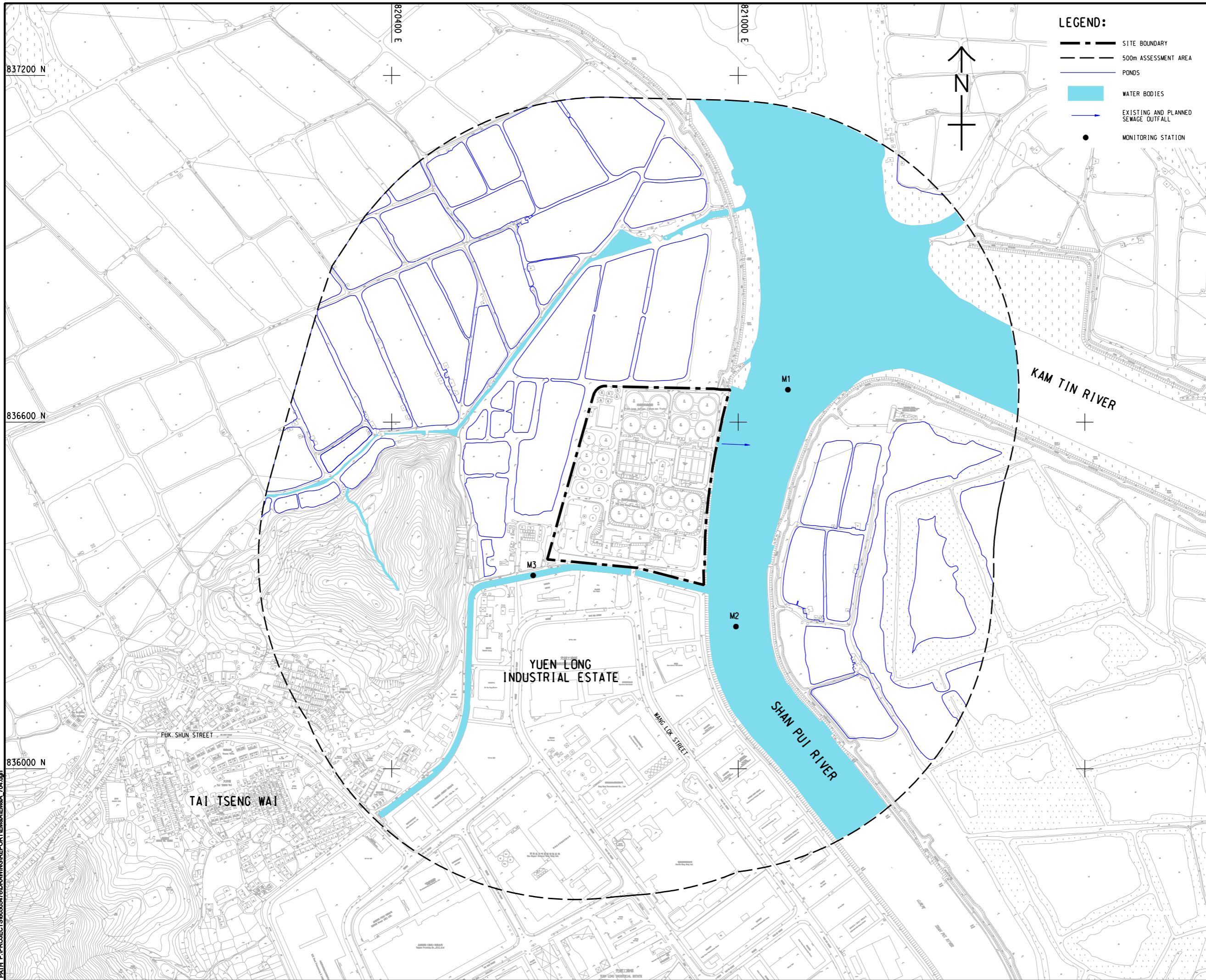
SHEET NUMBER
圖紙編號

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Figure 4

Water Quality Monitoring Locations

ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 12/18
 P:\PROJECTS\60505476\DRAWING\REPORT\EMBA\6A_704.dgn



PROJECT
 項目
YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

CLIENT
 業主
 渠務署
 Drainage Services Department

CONSULTANT
 工程顧問公司
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分門工程顧問公司

ISSUE/REVISION
 修訂

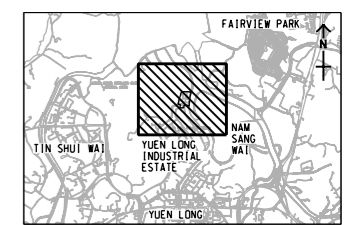
I/R	DATE	DESCRIPTION	CHK.

STATUS
 階段

SCALE
 比例
 A3 1: 8000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN A3 1: 180000
 索引圖



PROJECT NO.
 項目編號
 60505476

CONTRACT NO.
 合約編號
 CE 3/2015 (DS)

SHEET TITLE
 圖名
 LOCATIONS OF WATER QUALITY MONITORING STATIONS FOR CONSTRUCTION PHASE

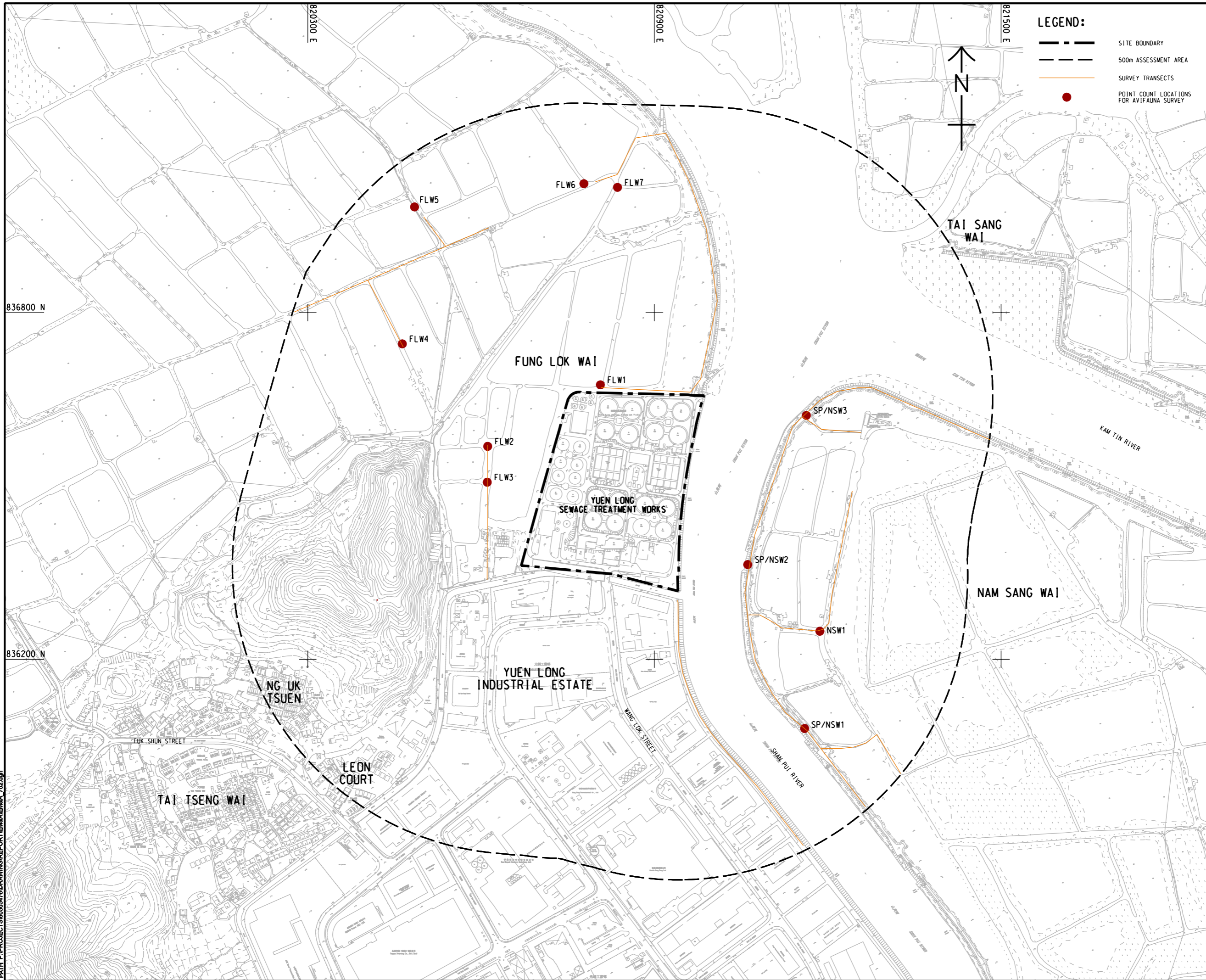
SHEET NUMBER
 圖號

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Figure 5

Ecology Monitoring Locations

ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 836800 N
 836200 N
 Pld File by: ZENGFY 2018/05/30
 PATH: P:\PROJECTS\60505476\DRAWING\REPORT\EM\A\EM_A_702.dgn



LEGEND:

- SITE BOUNDARY
- 500m ASSESSMENT AREA
- SURVEY TRANSECTS
- POINT COUNT LOCATIONS FOR AVIFAUNA SURVEY



AECOM

PROJECT
 項目
YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

CLIENT
 業主
 渠務署
 Drainage Services Department

CONSULTANT
 工程顧問公司
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分判工程顧問公司

ISSUE/REVISION
 修訂

I/R	DATE	DESCRIPTION	CHK.

STATUS
 階段

SCALE
 比例
 A1 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60505476

CONTRACT NO.
 合約編號
 CE 3/2015 (DS)

SHEET TITLE
 圖紙名稱
 ECOLOGICAL MONITORING LOCATIONS

SHEET NUMBER
 圖紙編號

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Appendix A

Construction Programme

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	August				September				October				November				December		
						31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04
YL Effluent Polishing Plant - Main Works Stage 1 - Detailed Works Programme DPv17_20220919_r1																								
Contract Data Part 1																								
Access Dates																								
ADWA2	Work Area WA2 (sd) (new site possession) validity for 12 months and subject to renewal	757	05-Mar-2021 A	31-Mar-2023*	0																			
Contract Section Completion																								
CSC1	Section 1- Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.)	0		07-Oct-2022*	0	◆ Section 1- Civil, Structural and Architectural works of CLP Substations No. 1																		
Environmental Constraints																								
NMM-2155	PS 1.105A Noise Mitigation Measures 2022-2023	151	01-Nov-2022*	31-Mar-2023	0																			
Planned Completion																								
Planned Section Completion																								
PSC1	Section 1 - Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.)	0		25-Nov-2022*	-49	◆ Section 1 - Civ																		
Preliminary and Preparation Works																								
Subletting																								
SUB-270	Subletting for ELS works for IW, PST, SDB, STB, SD, MBB, TTB, underpass and open cut for admin. bldg	312	12-Oct-2021 A	21-Oct-2022	-33	Subletting for ELS works for IW, PST, SDB, STB, SD, MBB																		
SUB-280	Subletting for RC works for IW, PST, SDB, STB, SD, Biogas holder, underpass and admin. bldg	256	29-Nov-2021 A	13-Oct-2022	-114	Subletting for RC works for IW, PST, SDB, STB, SD, Biogas holder,																		
SUB-290	Subletting for ABWF works for IW, PST, SDB, STB, MBR, TTB and admin. bldg	60	14-Oct-2022	12-Dec-2022	-26																			
SUB-310	Subletting for Utilities Corridor ELS	60	08-Aug-2022 A	10-Oct-2022	-138	Subletting for Utilities Corridor ELS																		
SUB-350	Subletting for Waterproofing membrane and protection board	300	29-Nov-2021 A	25-Nov-2022	115	Subletting for																		
SUB-380	Subletting for Sheet piling works for remaining areas	333	12-Oct-2021 A	11-Nov-2022	-133	Subletting for Sheet piling works																		
Design Submission																								
Temporary Works Design																								
Mainstream Bio-Reactor System																								
TWD-240	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	20-Jun-2022 A	14-Sep-2022	-78	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																		
TWD-250	ELS - Obtain Approval	7	10-Sep-2022	16-Sep-2022	-21	ELS - Obtain Approval																		
TWD-520	ELS - Submit to GEO (Dewatering Proposal)	28	17-Sep-2022	14-Oct-2022	-21	ELS - Submit to GEO (Dewatering Proposal)																		
Sludge Thickening Building																								
TWD-200	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	26-May-2022 A	12-Sep-2022	-80	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																		
TWD-210	ELS - Obtain Approval	7	13-Sep-2022	19-Sep-2022	-80	ELS - Obtain Approval																		
TWD-540	ELS - Submit to GEO (Dewatering Proposal)	28	13-Sep-2022	10-Oct-2022	-41	ELS - Submit to GEO (Dewatering Proposal)																		
Tertiary Treatment System																								
TWD-150	ELS - Review by PM's & ICE review (28 d + 7d)	35	10-Jun-2022 A	15-Sep-2022	-71	ELS - Review by PM's & ICE review (28 d + 7d)																		
TWD-160	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	16-Sep-2022	29-Sep-2022	-71	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																		
TWD-170	ELS - Obtain Approval	7	30-Sep-2022	06-Oct-2022	-71	ELS - Obtain Approval																		
TWD-550	ELS - Submit to GEO (Dewatering Proposal)	28	30-Sep-2022	27-Oct-2022	-50	ELS - Submit to GEO (Dewatering Proposal)																		
Sludge Digester 1-3 & Utilities Corridor																								
TWD-360	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	21-Jun-2022 A	14-Sep-2022	-138	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																		
TWD-370	ELS - Obtain Approval	7	15-Sep-2022	21-Sep-2022	-49	ELS - Obtain Approval																		
TWD-560	ELS - Submit to GEO (Dewatering Proposal)	28	15-Sep-2022	12-Oct-2022	-52	ELS - Submit to GEO (Dewatering Proposal)																		
Sludge Digester 4-6																								
TWD-460	ELS - Prepare & Submission for PM's review	45	22-Sep-2022	05-Nov-2022	638	ELS - Prepare & Submission for PM's r																		
TWD-470	ELS - Review by PM's & ICE review (28 d + 7d)	35	06-Nov-2022	10-Dec-2022	638																			
Sludge Dewatering and Underpass																								
TWD-260	ELS - Prepare & Submission for PM's review	45	30-Sep-2022	13-Nov-2022	558	ELS - Prepare & Submission																		
TWD-270	ELS - Review by PM's & ICE review (28 d + 7d)	35	14-Nov-2022	18-Dec-2022	558																			
Contractor's Permanent Works Design (include ATAL)																								
AIP																								
Package 3A - Plant Service Water																								
AIP-520	E&M AIP Report for Plant Service Water - Resubmission for further review	45	20-Dec-2021 A	30-Sep-2022	85	E&M AIP Report for Plant Service Water - Resubmission for further review																		
AIP-530	E&M AIP Report for Plant Service Water - Obtain Approval	7	01-Oct-2022	07-Oct-2022	85	E&M AIP Report for Plant Service Water - Obtain Approval																		
Package 6A - Control & Monitoring System																								
AIP-200	Control & Monitoring System - Resubmission for further review	14	24-Jan-2022 A	13-Sep-2022	-21	Control & Monitoring System - Resubmission for further review																		
AIP-620	Control & Monitoring System - Obtain Approval	7	14-Sep-2022	20-Sep-2022	-21	Control & Monitoring System - Obtain Approval																		
Package 7A - Building Services System																								
AIP-240	BS System - Resubmission for further review	14	28-Mar-2022 A	10-Sep-2022	431	BS System - Resubmission for further review																		
AIP-250	BS System - Obtain Approval	7	11-Sep-2022	17-Sep-2022	431	BS System - Obtain Approval																		
Package 14A - E&M AIP Report for Deodorization Unit System																								
AIP-850	DEO - Resubmission for further review	45	25-Nov-2021 A	23-Sep-2022	1601	DEO - Resubmission for further review																		
AIP-860	DEO - Obtain Approval	7	24-Sep-2022	30-Sep-2022	1601	DEO - Obtain Approval																		
Package 22A - Sampling System of YLEPP																								
AIP-910	Sampling System - Prepare & Submission for PM's review	45	05-Aug-2022 A	05-Oct-2022	282	Sampling System - Prepare & Submission for PM's review																		



- Remaining Level of Ef...
- Actual Work
- Remaining Work
- Critical Remaining Work
- ◆ Milestone

Contract DC/2019/10 - YLEPP - Main Works for Stage 1

Monthly Progress Report No. 22 - 3MRP (Aug 2022)

Project ID : DWPr17_220905-1
 Layout : DC201910 MPR22-3MRP
 Page 1 of 9

Monthly Progress Report No. 21 - 3MRP			
Date	Revision	Checked	Approved
31-Aug-22	Rev. 0		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	August 22					September 23					October 24					November 25					December 26					
						31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04							
						Gantt Chart Area																									
AIP-920	Sampling System - Review by PM's & ICE review (28 d + 7d)	35	06-Oct-2022	09-Nov-2022	282	Sampling System - Review by PM's & ICE review (28 d + 7d)																									
AIP-930	Sampling System - Resubmission for further review	45	10-Nov-2022	24-Dec-2022	282	Sampling System - Resubmission for further review																									
Package 23A - Security, Public Address and Communication System																															
AIP-950	SPC - Prepare & Submission for PM's review	45	01-Jun-2022 A	10-Oct-2022	278	SPC - Prepare & Submission for PM's review																									
AIP-960	SPC - Review by PM's & ICE review (28 d + 7d)	45	11-Oct-2022	24-Nov-2022	278	SPC - Review by PM's & ICE review (28 d + 7d)																									
AIP-970	SPC - Resubmission for further review	55	25-Nov-2022	18-Jan-2023	278	SPC - Resubmission for further review																									
DDA																															
Package 1A - Hydraulic Detailed Design Approval (DDA) Report																															
DDA-1480	Contractor's Design for Hydraulic - Resubmission for further review	45	25-Mar-2022 A	02-Oct-2022	197	Contractor's Design for Hydraulic - Resubmission for further review																									
DDA-1490	Contractor's Design for Hydraulic - Obtain Approval	7	03-Oct-2022	09-Oct-2022	197	Contractor's Design for Hydraulic - Obtain Approval																									
Package 1B - General Notes and Typical Details Drawings for Civil, Structural and Geotechnical																															
DDA-1080	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Submit to GEO for comment and approval	28	07-Oct-2022	03-Nov-2022	78	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Submit to GEO for comment and approval																									
DDA-120	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Resubmission for further review	45	25-Mar-2022 A	06-Oct-2022	78	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Resubmission for further review																									
DDA-130	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Obtain Approval	7	28-Oct-2022	03-Nov-2022	78	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Obtain Approval																									
Package 2 - Tertiary Treatment System																															
DDA-140	Architectural for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	04-Nov-2022*	09-Mar-2023	78	Architectural for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-150	Foundation for TTS - Prepare (90d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d), GEO (28d)	213	08-Oct-2021 A	11-Mar-2023	-55	Foundation for TTS - Prepare (90d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d), GEO (28d)																									
DDA-160	Civil & Structural for TTS - Prepare (120d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	187	25-Nov-2022	30-May-2023	-55	Civil & Structural for TTS - Prepare (120d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-170	Civil Req. for TTS (Foundation design) - Prepare(27d), Sub. & Review(45d), Comment & Resub.(14d), GEO(28d)& Approval (7d)	121	13-Jun-2021 A	13-Sep-2022	204	Civil Req. for TTS (Foundation design) - Prepare(27d), Sub. & Review(45d), Comment & Resub.(14d), GEO(28d)& Approval (7d)																									
DDA-180	Civil Req. for TTS (Superstruct. design) - Prepare (147d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	213	11-Oct-2021 A	01-Dec-2022	273	Civil Req. for TTS (Superstruct. design) - Prepare (147d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-190	P&ID for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	213	31-Dec-2021 A	22-Mar-2023	273	P&ID for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-200	Mechanical for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	213	31-Dec-2021 A	22-Mar-2023	273	Mechanical for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-210	Electrical& Control for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	213	31-Dec-2021 A	22-Mar-2023	273	Electrical& Control for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-220	Building Services (BS) for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	08-Oct-2022*	10-Feb-2023	313	Building Services (BS) for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
Package 3 - Mainstream Bio-Reactor System																															
DDA-240	Foundation for MBS - Prepare (97d), Sub. & Review(45d), Comment & Resub.(14d),GEO(28d)& Approval (7d)	230	18-Mar-2022 A	08-Apr-2023	48	Foundation for MBS - Prepare (97d), Sub. & Review(45d), Comment & Resub.(14d),GEO(28d)& Approval (7d)																									
DDA-260	Civil Req. for MBS-AGS (Foundation design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	09-Jun-2021 A	11-Oct-2022	-8	Civil Req. for MBS-AGS (Foundation design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-270	Civil Req. for MBS-AGS (Superstruct. design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	01-Mar-2022 A	17-Dec-2022	-8	Civil Req. for MBS-AGS (Superstruct. design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-280	P&ID for TTS - MBS (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	08-Oct-2021 A	18-Oct-2022	125	P&ID for TTS - MBS (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-290	Mechanical for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	08-Oct-2021 A	18-Oct-2022	449	Mechanical for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-300	Electrical& Control for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	405	08-Oct-2021 A	18-Sep-2023	114	Electrical& Control for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-310	Building Services (BS) for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	324	30-Oct-2022*	18-Sep-2023	114	Building Services (BS) for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
Package 5A - Master Water Meter Cabinet																															
DDA-360	Foundation for Master WM Cabinet- Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d),GEO(28d)& Approval (7d)	154	15-Feb-2022 A	01-Jan-2023	-32	Foundation for Master WM Cabinet- Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d),GEO(28d)& Approval (7d)																									
DDA-370	Civil & Struct. for WM Cabinet- Prepare (90d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	156	15-Apr-2022 A	14-Jan-2023	-32	Civil & Struct. for WM Cabinet- Prepare (90d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
Package 5B - Plant Service Water (PSW)																															
DDA-1040	Piping & Instrumentation Diagram (P&ID) - Prep(30d), Sub.&Review(28d), Comment&Resub (14d) & Approval (7d)	354	08-Oct-2022	26-Sep-2023	85	Piping & Instrumentation Diagram (P&ID) - Prep(30d), Sub.&Review(28d), Comment&Resub (14d) & Approval (7d)																									
DDA-1050	Civil Requirement Drawings - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	12-Jun-2021 A	29-Dec-2022	148	Civil Requirement Drawings - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																									
DDA-1060	Electrical & Control for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	08-Oct-2022	10-Feb-2023	85	Electrical & Control for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																									
DDA-1070	Mechanical for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	354	08-Oct-2022	26-Sep-2023	85	Mechanical for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																									
Package 6 - Sludge Thickening Chemical and Dosing System																															
DDA-1120	P&ID for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	335	14-Aug-2021 A	15-Jul-2023	474	P&ID for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-1130	Mechanical for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	340	15-Nov-2021 A	15-Jul-2023	745	Mechanical for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-1140	Electrical & Control for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	315	30-Nov-2021 A	15-Jul-2023	745	Electrical & Control for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-1500	Fire Services Design for Sludge Thickening Building (STB)	320	08-Jul-2022 A	15-Jul-2023	571	Fire Services Design for Sludge Thickening Building (STB)																									
DDA-1510	Plumbing and Drainage System Design for Sludge Thickening Building (STB)	320	07-Jul-2022 A	15-Jul-2023	571	Plumbing and Drainage System Design for Sludge Thickening Building (STB)																									
DDA-1520	Mechanical Ventilation and Air conditional System Design for Sludge Thickening Building (STB)	320	16-Jun-2022 A	15-Jul-2023	571	Mechanical Ventilation and Air conditional System Design for Sludge Thickening Building (STB)																									
DDA-440	Civil & Struct. for STCS, WGB & Guard Hse - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	250	09-Nov-2021 A	14-Jan-2023	41	Civil & Struct. for STCS, WGB & Guard Hse - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-440B	Civil Req. for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	300	15-Nov-2021 A	22-Feb-2023	617	Civil Req. for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
Package 7 - CLP Substation and 11kV Switchgear House																															
DDA-1160	Earthing & Lighting System Design Report - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	78	02-Jul-2021 A	05-Sep-2022	-25	Earthing & Lighting System Design Report - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)																									
DDA-1450	VCAB, FSD & WSD Design Report - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	78	02-Jul-2021 A	24-Sep-2022	-25	VCAB, FSD & WSD Design Report - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)																									
DDA-460	Civil&Struct. for CLP Sub. & 11kV Switchgear Hse- Prep. (30d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)	82	01-Jun-2021 A	09-Sep-2022	-25	Civil&Struct. for CLP Sub. & 11kV Switchgear Hse- Prep. (30d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)																									
DDA-470	Electrical System for all facilities - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	78	01-Jun-2021 A	16-Sep-2022	-25	Electrical System for all facilities - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)																									
DDA-480	UPS System for CLPSub.&11kV Switchgear Hse - Prepare (102d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	168	03-Jun-2021 A	17-Sep-2022	-1	UPS System for CLPSub.&11kV Switchgear Hse - Prepare (102d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-490	BS for CLP Sub. & 11kV Switchgear Hse - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	78	01-Jun-2021 A	16-Sep-2022	-19	BS for CLP Sub. & 11kV Switchgear Hse - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)																									
Package 8 - Advance Works and SCADA Relocation																															
DDA-500	Mechanical for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	78	22-May-2021 A	16-Sep-2022	2016	Mechanical for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-510	Electrical & Control for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	78	04-Jun-2021 A	16-Sep-2022	2016	Electrical & Control for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-520	BS for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	78	04-May-2021 A	16-Sep-2022	2016	BS for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
DDA-530	E&M for Advance Works - SCADA Relocation - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	76	24-Jun-2021 A	08-Sep-2022	2024	E&M for Advance Works - SCADA Relocation - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																									
Package 9 - Inlet Work (IW)																															



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

Contract DC/2019/10 - YLEPP - Main Works for Stage 1

Monthly Progress Report No. 22 - 3MRP (Aug 2022)

Project ID : DWPr17_220905-1
 Layout : DC201910 MPR22-3MRP
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Monthly Progress Report No. 21 - 3MRP			
Date	Revision	Checked	Approved
31-Aug-22	Rev. 0		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	August 22				September 23				October 24				November 25				December 26			
						31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04	
DDA-1170	Civil Req. Drawing for Inlet Work - Prepare (30d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)	82	04-Aug-2021 A	03-Oct-2022	74	Civil Req. Drawing for Inlet Work - Prepare (30d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1180	PID for Inlet Work - Prepare (30d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)	120	10-Jul-2021 A	10-Dec-2022	74	PID for Inlet Work - Prepare (30d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1190	Mechanical for Inlet Work - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	120	09-Aug-2021 A	10-Dec-2022	74	Mechanical for Inlet Work - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1200	Electrical & Control for Inlet Work - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	120	30-Oct-2021 A	10-Dec-2022	74	Electrical & Control for Inlet Work - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1210	Building Services for Inlet Work - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	76	30-Mar-2022 A	23-Dec-2022	221	Building Services for Inlet Work - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)																			
Package 10 - Primary Sedimentation Tank (PST)																									
DDA-1220	Civil Req. Drawing for PST - Prepare (46d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)	98	01-Jun-2021 A	10-Sep-2022	-3	Civil Req. Drawing for PST - Prepare (46d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1230	PID for PST - Prepare (46d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)	120	01-Jun-2021 A	19-Nov-2022	-3	PID for PST - Prepare (46d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1240	Mechanical for PST - Prepare (46d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)	120	01-Jun-2021 A	19-Nov-2022	-3	Mechanical for PST - Prepare (46d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1250	Electrical & Control for PST - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	48	31-Aug-2021 A	16-Oct-2022	-3	Electrical & Control for PST - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1260	Building Services for PST - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	90	01-Oct-2021 A	19-Nov-2022	-3	Building Services for PST - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)																			
Package 11 - Control and Monitoring System																									
DDA-580	Power Quality & Energy Management System (PQEMS) - Prep(28d), Sub.&Review(28d), Comment&Resub (14d)	130	02-Oct-2021 A	19-Dec-2022	99	Power Quality & Energy Management System (PQEMS) - Prep(28d), Sub.&Review(28d), Comment&Resub (14d)																			
Package 13 - Pipework System																									
DDA-1030	Pipeworks System for Sludge Digesters - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &Approval (7d)	126	18-Sep-2022	21-Jan-2023	162	Pipeworks System for Sludge Digesters - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &Approval (7d)																			
DDA-670	Pipeworks System for Primary Sedimentation Tanks (PST) - Prep(57d), Sub.&Review(45d), Comment&Resub(14d) &Approval (7d)	123	18-Sep-2021 A	01-Oct-2022	127	Pipeworks System for Primary Sedimentation Tanks (PST) - Prep(57d), Sub.&Review(45d), Comment&Resub(14d) &Approval (7d)																			
DDA-680	Pipeworks System for Biogas Holder (BH) - Prep(57d), Sub.&Review(45d), Comment&Resub (14d) &Approval (7d)	123	18-Sep-2021 A	01-Oct-2022	127	Pipeworks System for Biogas Holder (BH) - Prep(57d), Sub.&Review(45d), Comment&Resub (14d) &Approval (7d)																			
DDA-690	Pipeworks System for Sludge Dewatering Building (SDB) - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &Approval (7d)	126	18-Sep-2022	21-Jan-2023	162	Pipeworks System for Sludge Dewatering Building (SDB) - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &Approval (7d)																			
DDA-700	Pipeworks System for Utility Corridor&Pipe Portal (UC/PP) - Prep(103d),Sub.&Review(45d),Comment&Resub(14d) &Approval (7d)	126	18-Sep-2022	21-Jan-2023	492	Pipeworks System for Utility Corridor&Pipe Portal (UC/PP) - Prep(103d),Sub.&Review(45d),Comment&Resub(14d) &Approval (7d)																			
Package 14 - Sludge Anaerobic Digestion System (SDT)																									
DDA-1290	Civil Req. Drawing for SDT - Prepare (47d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	200	10-Jul-2021 A	01-Mar-2023	-118	Civil Req. Drawing for SDT - Prepare (47d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1300	PID for SDT - Prepare (47d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	460	10-Jul-2021 A	10-Nov-2023	-74	PID for SDT - Prepare (47d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1310	Mechanical for SDT & UC/PP - Prepare (47d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	460	10-Jul-2021 A	10-Nov-2023	-74	Mechanical for SDT & UC/PP - Prepare (47d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1320	Electrical & Control for SDT & UC/PP - Prepare (55d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	460	02-Jul-2021 A	10-Nov-2023	-74	Electrical & Control for SDT & UC/PP - Prepare (55d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																			
DDA-1340	Civil Req. Drawing for UC/PP - Prepare (47d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	580	10-Jul-2021 A	01-Mar-2024	32	Civil Req. Drawing for UC/PP - Prepare (47d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																			
Package 15 - Biogas H2S Removal, Storage and Delivery System																									
DDA-1350	Civil Req. Drawing for Biogas Storage&Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)	78	31-Aug-2021 A	19-Sep-2022	-118	Civil Req. Drawing for Biogas Storage&Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)																			
DDA-1360	PID for Biogas H2S Removal, Storage and Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)	75	13-Jul-2021 A	15-Sep-2022	134	PID for Biogas H2S Removal, Storage and Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)																			
DDA-1370	Mechanical for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)	78	05-Oct-2021 A	24-Sep-2022	134	Mechanical for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)																			
DDA-1380	Electrical & Control for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)	274	01-Oct-2022	01-Jul-2023	-32	Electrical & Control for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)																			
DDA-1390	Building Services for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)	274	01-Oct-2022	01-Jul-2023	265	Building Services for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)																			
DDA-1400	Civil Req. Drawing for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)	78	07-Dec-2021 A	16-Sep-2022	-32	Civil Req. Drawing for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)																			
Package 16 - Deodorization Unit System																									
DDA-1410	PID for DOU System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)	78	03-Sep-2021 A	08-Oct-2022	1601	PID for DOU System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)																			
DDA-1420	Mechanical for DOU No. 1 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)	78	04-Mar-2022 A	10-Dec-2022	1601	Mechanical for DOU No. 1 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)																			
DDA-1440	Mechanical for DOU No. 3 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)	300	17-Jul-2022 A	15-Jul-2023	1714	Mechanical for DOU No. 3 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d) &Approval (7d)																			
Package 17 - Sludge Dewatering Building (SDB)																									
DDA-890	Architectural for Sludge Dewatering Building (SDB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	200	07-Jun-2021 A	20-Oct-2022	1298	Architectural for Sludge Dewatering Building (SDB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																			
DDA-900	Found. for Sludge Dewatering Building (SDB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d)	200	10-Nov-2021 A	09-Jan-2023	315	Found. for Sludge Dewatering Building (SDB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d)																			
Package 19 - Elevated Walkways																									
DDA-710	Civil & Structural for Elevated Walkways - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), GEO (28d)	124	01-Sep-2022*	02-Jan-2023	1139	Civil & Structural for Elevated Walkways - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), GEO (28d)																			
Package 21 - Steel Working Platform																									
DDA-730	Civil & Structural for Steel Working Platform - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), GEO (28d)	126	01-Sep-2022	04-Jan-2023	1139	Civil & Structural for Steel Working Platform - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), GEO (28d)																			
Building Services																									
DDA-590	BS for Inlet Works (IW) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	31-Aug-2021 A	05-Oct-2022	300	BS for Inlet Works (IW) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																			
DDA-600	BS for Sludge Thickening Building (STB) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	31-Aug-2021 A	05-Oct-2022	474	BS for Sludge Thickening Building (STB) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																			
DDA-610	BS for Primary Sedimentation Tanks (PST) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	30-Sep-2021 A	04-Nov-2022	353	BS for Primary Sedimentation Tanks (PST) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																			
DDA-620	BS for Biogas Holder (BH) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	31-Aug-2021 A	05-Oct-2022	123	BS for Biogas Holder (BH) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																			
Technical Submission																									
Inlet Works (IW)																									
TS-890	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-2021 A	23-Sep-2022	39	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																			
TS-900	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-2021 A	23-Sep-2022	39	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																			
TS-910	General Arrangement Drawing - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	30-May-2021 A	26-Sep-2022	149	General Arrangement Drawing - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																			
TS-920	Civil Requirement Drawings (Superstructure) - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	30-May-2021 A	26-Sep-2022	149	Civil Requirement Drawings (Superstructure) - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																			
Primary Sedimentation Tank (PST)																									
TS-930	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-2021 A	23-Sep-2022	39	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																			
TS-940	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-2021 A	07-Oct-2022	39	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																			
TS-950	General Arrangement Drawing - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	01-Sep-2022	05-Nov-2022	39	General Arrangement Drawing - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																			
TS-960	Civil Requirement Drawings (Superstructure) - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	01-Sep-2022	05-Nov-2022	39	Civil Requirement Drawings (Superstructure) - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																			
Sludge Thickening Building (STB)																									
TS-820	Architectural for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	01-Jun-2021 A	19-Sep-2022	40	Architectural for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																			
TS-830	Found. for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO(28d)	154	01-Jun-2021 A	19-Sep-2022	134	Found. for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO(28d)																			



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

Contract DC/2019/10 - YLEPP - Main Works for Stage 1

Monthly Progress Report No. 22 - 3MRP (Aug 2022)

Project ID : DWPr17_220905-1
 Layout : DC201910 MPR22-3MRP
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Monthly Progress Report No. 21 - 3MRP			
Date	Revision	Checked	Approved
31-Aug-22	Rev. 0		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	August					September				October				November				December	
						22					23				24				25				26	
						31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04
NSWSPS Sensors																								
ATALGA-1160	CGS - Method Statement for Installation	101	03-Aug-2021 A	21-Sep-2022	98	CGS - Method Statement for Installation																		
ATALGA-1170	Procurement & Delivery of Sensor	101	03-Aug-2021 A	21-Sep-2022	98	Procurement & Delivery of Sensor																		
ATALGA-1260	Installation of pressure sensors at NSWSPS	22	22-Sep-2022	19-Oct-2022	80	Installation of pressure sensors at NSWSPS																		
Air Blower House																								
ATALGA-1280	CMS - Air Blower System	128	20-Oct-2022	28-Mar-2023	80	CMS - Air Blower System																		
Disc Filter (DF) Pilot Plant																								
ATALGA-1140	E&M installation of DF Pilot Plant	51	10-Feb-2022 A	20-Sep-2022	409	E&M installation of DF Pilot Plant																		
ATALGA-1190	T&C	22	21-Sep-2022	18-Oct-2022	409	T&C																		
Dissolved Air Flotation (DAF) Pilot Plant																								
ATALGA-1200	T&C	11	21-Jul-2022 A	14-Sep-2022	292	T&C																		
ATALGA-1220	Post-commissioning	144	15-Sep-2022	14-Mar-2023	292	Post-commissioning																		
Aerobic Granular Sludge (AGS) Pilot Plant																								
ATALGA-1210	Seeding, process start-up and T&C	52	16-Jun-2022 A	26-Sep-2022	287	Seeding, process start-up and T&C																		
ATALGA-1270	Post-commissioning	139	27-Sep-2022	20-Mar-2023	287	Post-commissioning																		
Zone 1 Construction																								
Inlet Works (IW)																								
IW Foundation & ELS Works																								
IW Basement																								
Z1-IW-3950	Pumping Test & Commissioning Period	14	30-Jun-2022 A	26-Jul-2022 A		Pumping Test & Commissioning Period																		
Z1-IW-4300	Submit to GEO (28d)	28	10-May-2022 A	21-Sep-2022	-66	Submit to GEO (28d)																		
IW Excavation Works & ELS																								
IW Zone A/D - ELS																								
Z1-IW-5760	IW- Excavation: 1st Layer +5.5 ~ +3.5mPD	5	20-Jul-2022 A	13-Aug-2022		IW- Excavation: 1st Layer +5.5 ~ +3.5mPD																		
Z1-IW-5770	IW- Strutting: 1st Layer @+4.0mPD	10	15-Aug-2022 A	05-Oct-2022	-96	IW- Strutting: 1st Layer @+4.0mPD																		
Z1-IW-5780	IW- Excavation: 2nd Layer +3.5 ~ 1.0mPD	5	06-Oct-2022	11-Oct-2022	-96	IW- Excavation: 2nd Layer +3.5 ~ 1.0mPD																		
Z1-IW-5790	IW- Strutting: 2nd Layer @+1.5mPD	10	12-Oct-2022	22-Oct-2022	-96	IW- Strutting: 2nd Layer @+1.5mPD																		
Z1-IW-5800	IW- Excavation: 3rd Layer +1.0 ~ -1.625mPD	8	24-Oct-2022	01-Nov-2022	-96	IW- Excavation: 3rd Layer +1.0 ~ -1.625mPD																		
Z1-IW-5810	IW- Strutting: 3rd Layer @-1.125mPD	10	02-Nov-2022	12-Nov-2022	-96	IW- Strutting: 3rd Layer @-1.125mPD																		
Z1-IW-5820	IW- Excavation: 4th Layer -1.625 ~ -3.38mPD	7	14-Nov-2022	21-Nov-2022	-96	IW- Excavation: 4th Layer -1.625 ~ -3.38mPD																		
IW Zone C - ELS																								
Z1-IW-5660	IW- Strutting: 1st Layer @+4.35mPD	10	23-Jul-2022 A	05-Sep-2022	-82	IW- Strutting: 1st Layer @+4.35mPD																		
Z1-IW-5670	IW- Excavation: 2nd layer +3.5~+1.0mPD	9	06-Sep-2022	16-Sep-2022	-82	IW- Excavation: 2nd layer +3.5~+1.0mPD																		
Z1-IW-5680	IW- Strutting: 2nd Layer @+2.50mPD	10	17-Sep-2022	28-Sep-2022	-82	IW- Strutting: 2nd Layer @+2.50mPD																		
Z1-IW-5690	IW- Excavation: 3rd Layer +1.0~-1.625mPD	10	29-Sep-2022	12-Oct-2022	-82	IW- Excavation: 3rd Layer +1.0~-1.625mPD																		
Z1-IW-5700	IW- Backprop installation	7	05-Nov-2022	12-Nov-2022	-82	IW- Backprop installation																		
Z1-IW-5710	IW- Excavation to Formation -1.625~-3.125mPD	5	14-Nov-2022	18-Nov-2022	-82	IW- Excavation to Formation -1.625~-3.125mPD																		
IW Base Slab																								
Z1-IW-6060	IW- Zone D - Pile Cap @-3.225mPD	27	22-Nov-2022	22-Dec-2022	-96	IW- Zone D - Pile Cap @-3.225mPD																		
Z1-IW-6070	IW- Zone C - Pile Cap @-1.625mPD	20	13-Oct-2022	04-Nov-2022	-82	IW- Zone C - Pile Cap @-1.625mPD																		
Z1-IW-6080	IW- Zone C - Pile Cap @-3.05mPD	27	19-Nov-2022	20-Dec-2022	-82	IW- Zone C - Pile Cap @-3.05mPD																		
Primary Sedimentation Tank (PST)																								
PST Stage 1 of Works																								
PST Stage 1 - Foundation (At First 3 Tanks, PST 7-8 Footprint)																								
PST-3020	PST Stage 1 - Submit to GEO (28d)	28	31-Mar-2022 A	06-Sep-2022	-89	PST Stage 1 - Submit to GEO (28d)																		
PST Stage 1																								
Excavation Works Zone B (Southern Trench), (Excavation Volume: 5,795m3)																								
Z1-PST-3810	PST (S1) - Time Risk Allowance for Excavation and ELS Installation	2	20-Jul-2022 A	20-Jul-2022 A		Time Risk Allowance for Excavation and ELS Installation																		
ELS for Northern Trench (Zone E1)																								
Z1-PST-3611	Excavation FEL Level (-1.125mPD)	10	29-Jul-2022 A	05-Sep-2022	-48	Excavation FEL Level (-1.125mPD)																		
Basement RC Works (Stage 1 - Southern Portion)																								
Southern Trench (Zone B)																								
Z1-PST-3630	PST(S1) - Install Reprops R1	3	30-Sep-2022	05-Oct-2022	-96	PST(S1) - Install Reprops R1																		
Z1-PST-3640	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level)	10	19-Sep-2022	29-Sep-2022	-96	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level)																		
Z1-PST-3800	PST(S1) - Removal of S1	2	16-Sep-2022	17-Sep-2022	-96	PST(S1) - Removal of S1																		
Z1-PST-3860	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (-1.625 to -3.225 mPD)	14	21-Jul-2022 A	15-Sep-2022	-96	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (-1.625 to -3.225 mPD)																		
Northern Trench (Zone E1)																								
Z1-PST-3620	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (-1.125 mPD)	9	06-Sep-2022	16-Sep-2022	-48	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (-1.125 mPD)																		
Z1-PST-4240	PST(S1) - Removal of S1	2	17-Sep-2022	19-Sep-2022	-48	PST(S1) - Removal of S1																		
Z1-PST-4260	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level)	6	20-Sep-2022	26-Sep-2022	-48	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level)																		
Excavation Works (North Portion), (Excavation Volume: 3,840m3)																								



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

Contract DC/2019/10 - YLEPP - Main Works for Stage 1

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	August 22				September 23				October 24				November 25				December 26			
						31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04	
						Gantt Chart Area																			
Z1-PST-4180	PST(S1) - Excavation F.E.L. Level (+1.875 mPD) (3,840m3, 1000m3/day) after stage 2 piling	13	27-Sep-2022	13-Oct-2022	-48	PST(S1) - Excavation F.E.L. Level (+1.875 mPD) (3,840m3, 1000m3/day) after stage 2 piling																			
Basement RC Works (North Portion)																									
Z1-PST-4190	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (+3.00 mPD) after stage 2 piling	14	14-Oct-2022	29-Oct-2022	-48	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (+3.00 mPD) after stage 2 piling																			
Z1-PST-4200	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level) after stage 2 piling	6	31-Oct-2022	05-Nov-2022	-48	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level) after stage 2 piling																			
PST Stage 2 of Works																									
PST Foundation - Stage 2 (At Remaining 2 Tanks, PST 5-6 Footprint)																									
Z1-PST-3980	PST Stage 2 - Pile Loading Test (Batch 2 PST: 75nos.+8 nos. of piles at TX1+Additional Piles)	21	03-Oct-2022*	27-Oct-2022	72	PST Stage 2 - Pile Loading Test (Batch 2 PST: 75nos.+8 nos. of piles at TX1+Additional Piles)																			
Z1-PST-4230	PST Stage 2 - Submit to GEO (28d)	28	20-Oct-2022	16-Nov-2022	87	PST Stage 2 - Submit to GEO (28d)																			
PST Superstructure																									
Stage 1																									
RC Works																									
Z1-PST-3660	PST - Wall Erection of Formworks and RC Works (+7.5mPD)	8	07-Nov-2022	15-Nov-2022	-48	PST - Wall Erection of Formworks and RC Works (+7.5mPD)																			
Z1-PST-3670	PST - Intermediate Slab (+7.88mPD) and Wall Erection (+9mPD) of Falseworks, Formworks and RC Works	10	16-Nov-2022	26-Nov-2022	-48	PST - Intermediate Slab (+7.88mPD) and Wall Erection (+9mPD) of Falseworks, Formworks and RC Works																			
Z1-PST-3680	PST - Intermediate Slab of Falseworks, Formworks and RC Works (+9mPD)	15	28-Nov-2022	14-Dec-2022	-48	PST - Intermediate Slab of Falseworks, Formworks and RC Works (+9mPD)																			
PST Stage 1 - Early T&C (Delink PST Stage 1 Commissioning from IW)																									
Z2D-2160	Complete Demolition of PST4	0		23-Sep-2022	230	◆ Complete Demolition of PST4																			
CLP Substations No. 1 & 2																									
Civil Provision for CLP (drawpits & ductings)																									
CLP-1270	Ducting and Drawpits construction	45	01-Sep-2022	26-Oct-2022	30	Ducting and Drawpits construction																			
CLP Substation No. 1																									
CLP-1010	CLP Substation No.1 - Structure Level +3.7 to +6mPD (G/F)	15	13-Jul-2022 A	23-Sep-2022	-42	CLP Substation No.1 - Structure Level +3.7 to +6mPD (G/F)																			
CLP-1040	CLP Substation No.1 - BS and ABWF Works	30	20-Oct-2022	23-Nov-2022	-40	CLP Substation No.1 - BS and ABWF Works																			
CLP-1070	CLP Substation No.1 - CLP Installation	90	26-Nov-2022	21-Mar-2023	4	CLP Substation No.1 - CLP Installation																			
CLP-1280	CLP Substation No.1 - Structure Level +6 to +11.73mPD (1/F) incl. Waterproofing and Testing	22	24-Sep-2022	21-Oct-2022	-42	CLP Substation No.1 - Structure Level +6 to +11.73mPD (1/F) incl. Waterproofing and Testing																			
CLP-1290	CLP Substation No.1 - Structure Level +11.73 to +13.11mPD (R/F) incl. Waterproofing and Testing	28	20-Oct-2022	21-Nov-2022	-38	CLP Substation No.1 - Structure Level +11.73 to +13.11mPD (R/F) incl. Waterproofing and Testing																			
CLP-1340	CLP Substation No.1 - E&M Installation	30	22-Oct-2022	25-Nov-2022	-42	CLP Substation No.1 - E&M Installation																			
CLP Substation No. 2																									
CLP-1020	CLP Substation No.2 - Structure Level +3.7 to +6mPD (G/F)	15	13-Jul-2022 A	23-Sep-2022	-42	CLP Substation No.2 - Structure Level +3.7 to +6mPD (G/F)																			
CLP-1050	CLP Substation No.2 - BS and ABWF Works	30	20-Oct-2022	23-Nov-2022	-40	CLP Substation No.2 - BS and ABWF Works																			
CLP-1080	CLP Substation No.2 - CLP Installation	90	26-Nov-2022	21-Mar-2023	4	CLP Substation No.2 - CLP Installation																			
CLP-1140	CLP Substation 1 & 2 - Ready for Handover to CLP and Early Section 1 Completion	0		25-Nov-2022	-42	◆ CLP Substation 1 & 2 - Ready for Handover to CLP and Early Section 1 Completion																			
CLP-1300	CLP Substation No.2 - Structure Level +6 to +11.73mPD (1/F) incl. Waterproofing and Testing	22	24-Sep-2022	21-Oct-2022	-42	CLP Substation No.2 - Structure Level +6 to +11.73mPD (1/F) incl. Waterproofing and Testing																			
CLP-1310	CLP Substation No.2 - Structure Level +11.73 to +13.11mPD (R/F) incl. Waterproofing and Testing	28	20-Oct-2022	21-Nov-2022	-38	CLP Substation No.2 - Structure Level +11.73 to +13.11mPD (R/F) incl. Waterproofing and Testing																			
CLP-1350	CLP Substation No.2 - E&M Installation	30	22-Oct-2022	25-Nov-2022	-42	CLP Substation No.2 - E&M Installation																			
DSD 11kV Switchgear																									
CLP-1030	DSD11kV Switchgear - Structure Level +3.7 to +6mPD (G/F)	18	13-Jul-2022 A	19-Sep-2022	-38	DSD11kV Switchgear - Structure Level +3.7 to +6mPD (G/F)																			
CLP-1060	DSD11kV Switchgear - BS and ABWF Works (excl. GRC Cladding Installation)	32	15-Oct-2022	21-Nov-2022	-38	DSD11kV Switchgear - BS and ABWF Works (excl. GRC Cladding Installation)																			
CLP-1110	DSD11kV Switchgear - Installation	78	26-Nov-2022	07-Mar-2023	4	DSD11kV Switchgear - Installation																			
CLP-1320	DSD11kV Switchgear - Structure Level +6 to +11.73mPD (1/F)	23	20-Sep-2022	18-Oct-2022	-38	DSD11kV Switchgear - Structure Level +6 to +11.73mPD (1/F)																			
CLP-1330	DSD11kV Switchgear - Structure Level +11.73 to +13.11mPD (R/F)	25	17-Oct-2022	14-Nov-2022	-32	DSD11kV Switchgear - Structure Level +11.73 to +13.11mPD (R/F)																			
Sludge Dewatering Building (SDB)																									
SDB Foundation & ELS - Stage 1																									
SDB GI - Pre-drilling Works																									
SDB At PST 2,4 Footprint																									
SDB-1350	PD4 w/ obstruction (PST4)	12	24-Sep-2022	10-Oct-2022	500	PD4 w/ obstruction (PST4)																			
SDB-1360	PD5 w/ obstruction (PST4)	12	24-Sep-2022	10-Oct-2022	500	PD5 w/ obstruction (PST4)																			
Administration Building (ADB)																									
Temporary Admin Office and Control Room																									
ADB-1040	Handover of Temp. Admin Office and Control Room	20	22-Sep-2022	17-Oct-2022	254	Handover of Temp. Admin Office and Control Room																			
ADB-1050	Demolition of Admin Bldg (23) and Document Centre (24)	20	19-Oct-2022	10-Nov-2022	254	Demolition of Admin Bldg (23) and Document Centre (24)																			
ADB-1250	Relocation of Existing SCADA System of Admin Bldg (23) and Document Centre (24)	21	22-Sep-2022	18-Oct-2022	254	Relocation of Existing SCADA System of Admin Bldg (23) and Document Centre (24)																			
Temp Admin Office - MIC Section																									
ADB-1020A20	Construction/Installation	41	22-Jul-2022 A	03-Sep-2022	268	Construction/Installation																			
ADB-1020A30	E&M Installation and T&C	24	15-Aug-2022 A	21-Sep-2022	254	E&M Installation and T&C																			
ADB-1020A40	Relocation of Admin Office (MiC)	18	22-Sep-2022	14-Oct-2022	256	Relocation of Admin Office (MiC)																			
ADB-1020A90	Completion of Admin Office (MiC)	0		14-Oct-2022	257	◆ Completion of Admin Office (MiC)																			
Zone 2 Construction																									
Temporary Diversion																									
Zone 2B : FST, Temporary RAS to Aeration Tanks																									
Temporary RAS																									
Z2B-1030	Construction of Temp RAS	21	17-May-2022 A	01-Sep-2022	-102	Construction of Temp RAS																			



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

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	August 22					September 23					October 24					November 25					December 26	
						31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04			
Z2B-1040	Temp RAS E&M installation *Calendar Day	20	09-Sep-2022	28-Sep-2022	-122	Temp RAS E&M installation *Calendar Day																					
Z2B-1180	Complete Zone 2B Temporary Diversion	0		13-Oct-2022	-101	◆ Complete Zone 2B Temporary Diversion																					
Z2B-1190	Break Wall for connection to temporary RAS & Switch over	4	10-Oct-2022	13-Oct-2022	-101	■ Break Wall for connection to temporary RAS & Switch over																					
Z2B-1200	Laying of pipes from temp. RAS to Consolidation tanks & Aeration tanks	25	19-Aug-2022 A	19-Sep-2022	-94	■ Laying of pipes from temp. RAS to Consolidation tanks & Aeration tanks																					
Z2B-1210	T&C *Calendar Day	10	29-Sep-2022	08-Oct-2022	-122	■ T&C *Calendar Day																					
Z2B-1220	Plug-off abandoned pipes	1	14-Oct-2022	14-Oct-2022	-48	■ Plug-off abandoned pipes																					
Z2B-1230	Watertightness test to temp. RAS pumping station	7	02-Sep-2022	08-Sep-2022	-122	■ Watertightness test to temp. RAS pumping station																					
Demolition Works																											
Advance Works																											
MBR-1480	MBR - Relocation of Noise barrier/ bird curtain	58	20-Jun-2022 A	07-Oct-2022	-66	■ MBR - Relocation of Noise barrier/ bird curtain																					
MBR-1540	MBR- G.I. Works batch 2 (4 nos., 1rig, nos. of G.I. subject to GEO Further Comment)	60	08-Jul-2022 A	12-Oct-2022	-14	■ MBR- G.I. Works batch 2 (4 nos., 1rig, nos. of G.I. subject to GEO FL																					
Z2D-4280	Submit/Approve Method Statement for Pipe Pile Works	15	11-Sep-2021 A	01-Sep-2022	-60	■ Submit/Approve Method Statement for Pipe Pile Works																					
Other Existing Pumping Stations																											
Z2T-152	Demolition of Return Activated Sludge ScrewPumps PS (16) & Chamber (33)	40	14-Oct-2022	29-Nov-2022	-73	■ Demolition																					
Z2T-154	Demolition of Flow Measurement Chamber (34) & SSD Chamber (32)	40	14-Oct-2022	29-Nov-2022	-73	■ Demolition																					
Z2T-154B	Demolition of Settled Sewage Overflow Chamber (31)	25	06-Jul-2022 A	09-Sep-2022	-42	■ Demolition of Settled Sewage Overflow Chamber (31)																					
Mainstream Bio-Reactor & Auxiliary Facility (MBR and AF)																											
MBR and AF Structure																											
MBR - ELS Excavation & Demolition stage 1																											
MBRAF-1460	MBR - Monitoring Installation	18	13-Oct-2022	02-Nov-2022	-32	■ MBR - Monitoring Installation																					
MBRAF-1540	MBR - Backfilling, advance coring for king post installation & wells installation	25	15-Jun-2022 A	29-Sep-2022	-69	■ MBR - Backfilling, advance coring for king post installation & wells installation																					
MBRAF-1550	MBR - King post installation at AT footprint (10nos.)	30	30-Sep-2022	05-Nov-2022	-35	■ MBR - King post installation at AT foot																					
Southern Side (Pipe Pile P118-P220, P222-P242)																											
MBRAF-1010	MBR - Pipe Pile Installation (88os. @1.5nos./day/rig, 1rig)	58	05-Aug-2022 A	12-Oct-2022	-66	■ MBR - Pipe Pile Installation (88os. @1.5nos./day/rig, 1rig)																					
MBRAF-1500	MBR - Decommissioning & Demolition of PST 4	31	22-Aug-2022 A	23-Sep-2022	-42	■ MBR - Decommissioning & Demolition of PST 4																					
MBRAF-1820	MBR - Pipe Pile Installation (36nos. @1.5nos./day/rig, 1rig) after Demolition of PST 4	10	13-Oct-2022	24-Oct-2022	-56	■ MBR - Pipe Pile Installation (36nos. @1.5nos./day/rig)																					
Eastern Side (Pipe Pile P001-P117)																											
MBRAF-1760	MBR - Pipe Pile Installation (117nos. @1.5nos./day/rig, 1rig)	78	14-Sep-2022	15-Dec-2022	-69	■ MBR - Pipe Pile Installation (117nos. @1.5nos./day/rig, 1rig)																					
Northern Side (Pipe Pile P338-P443)																											
MBRAF-1780	MBR - Pipe Pile Installation (106nos. @1.5nos./day/rig, 1rig)	71	14-Sep-2022	07-Dec-2022	-62	■ MBR - Pipe Pile Installation (106nos. @1.5nos./day/rig, 1rig)																					
Western Side (Pipe Pile P243-P292, P294-P337)																											
MBRAF-1510	MBR - Pipe Pile Install after demolition of existing RAS (16,31,32,33,34) (94nos. @1.5nos./day/rig, 2rigs)	32	14-Nov-2022	20-Dec-2022	-73	■ MBR - Pipe Pile Install after demolition of existing RAS (16,31,32,33,34) (94nos. @1.5nos./day/rig, 2rigs)																					
MBRAF-1570	MBR - King post installation at RAS footprint and remaining area (7nos.)	21	07-Nov-2022	30-Nov-2022	-56	■ MBR - K																					
Tertiary Treatment System (TTS)																											
Foundation and ELS																											
TTS-1000	TTS - Site Clearance	15	11-May-2022 A	15-Oct-2022	-66	■ TTS - Site Clearance																					
TTS-1010	TTS - Sheet Piles Install (4,639m2 @120m2/d)	52	17-Oct-2022	15-Dec-2022	-66	■ TTS - Sheet Piles Install (4,639m2 @120m2/d)																					
TTS-1230	TTS - Monitoring Installation and Pumping Test	21	28-Nov-2022	21-Dec-2022	-66	■ TTS - Monitoring Installation and Pumping Test																					
Zone 3 Construction																											
Stage 1 Advance Works																											
Stage 1 - Advance Works																											
Zone 3A (at SHT)																											
Relocation of Heater Room (Location C)																											
Z3A-000550	Relocation and T&C (ATAL)	24	30-Jun-2022 A	03-Sep-2022	-89	■ Relocation and T&C (ATAL)																					
Digested Sludge Pumping Station (Location F)																											
Z3B-330	T&C Works (ATAL)	8	29-Jul-2022 A	09-Aug-2022		■ T&C Works (ATAL)																					
Pipe Connection																											
Z3A-000390	Digested Sludge Pumping Station Completion (Location F)	0		09-Aug-2022		◆ Digested Sludge Pumping Station Completion (Location F)																					
Z3A-000400	Temp. Water Heater House Completion (Location C)	0		03-Sep-2022	-89	◆ Temp. Water Heater House Completion (Location C)																					
Z3A-000410	Completion of Zone 3A Diversion	0		31-Aug-2022	-116	◆ Completion of Zone 3A Diversion																					
Sludge/Supernatant DI Pipe																											
Z3A-000360	Connection between SDT and Temp. SHT & SDB	5	10-Aug-2022 A	20-Aug-2022		■ Connection between SDT and Temp. SHT & SDB																					
Gas Pipe - SS316L																											
DN300 from SDT, Compressor House to Gas Holders																											
Z3A-000490	Connection at SDT No.1	1	30-Jun-2022 A	30-Jun-2022		■ Connection at SDT No.1																					
Zone 3B (at STB)																											
Gravity Thickening Tank (Location A)																											
Z3B-000260	Temp. Gravity Thickening Tank (Location A) Completion	0		23-Aug-2022		◆ Temp. Gravity Thickening Tank (Location A) Completion																					
Temporary Primary Sludge Pumping Station (Location D)																											
Z3A-300	E&M Installation (ATAL)	14	22-Jul-2022 A	30-Aug-2022		■ E&M Installation (ATAL)																					
Z3A-310	T&C Works (ATAL)	14	31-Aug-2022 A	05-Sep-2022	-113	■ T&C Works (ATAL)																					



- Remaining Level of Ef...
- Actual Work
- Remaining Work
- Critical Remaining Work
- ◆ Milestone

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	August 22				September 23				October 24				November 25				December 26			
						31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04	
Z3A-430	Temp. Primary Sludge Pumping Station (Location D) Completion	0		05-Sep-2022	-113	◆ Temp. Primary Sludge Pumping Station (Location D) Completion																			
Temporary Thickened Sludge / Supernatant Pumping Station (Location E1)																									
Z3B-000150	E&M Works (ATAL) & T&C (ATAL)	28	30-Jul-2022 A	17-Sep-2022	-101	E&M Works (ATAL) & T&C (ATAL)																			
Z3B-000270	Temp. Thickening Sludge/Supernatant Pumping Station (Location E1) Completion	0		17-Sep-2022	-101	◆ Temp. Thickening Sludge/Supernatant Pumping Station (Location E1) Completion																			
Relocation of Ferric Chloride (FeCl3) Dosing System & LV Switchboard (Location E2)																									
Z3B-000200	E&M Works (ATAL) & T&C Works (ATAL)	40	09-Jun-2022 A	05-Sep-2022	-91	E&M Works (ATAL) & T&C Works (ATAL)																			
Z3B-000280	FeCl3 Relocation (Location E2) Completion	0		05-Sep-2022	-91	◆ FeCl3 Relocation (Location E2) Completion																			
Pipe Laying																									
Z3B-000240	Pipe Installation from CT to MH2 (Batch 1 - DN250 Supernatant)	20	18-Dec-2021 A	07-Sep-2022	-92	Pipe Installation from CT to MH2 (Batch 1 - DN250 Supernatant)																			
Z3B-000350	Pipe Installation from Location A to Location E (Batch 6 - DN250 Supernatant)	36	31-Dec-2021 A	14-Sep-2022	-98	Pipe Installation from Location A to Location E (Batch 6 - DN250 Supernatant)																			
Z3B-000360	Pipe Installation from Location A to Location E & SDT (Batch 7 - DN200 Sludge)	36	17-Jan-2022 A	14-Sep-2022	-98	Pipe Installation from Location A to Location E & SDT (Batch 7 - DN200 Sludge)																			
Z3B-000370	Pipe Installation from Temp. Primary Sludge Pumping Station (Location D) to CT (Batch 7 - DN200 Sludge)	20	17-Jan-2022 A	05-Sep-2022	-91	Pipe Installation from Temp. Primary Sludge Pumping Station (Location D) to CT (Batch 7 - DN200 Sludge)																			
Pipe Connection																									
Z3B-000380	Connection at Temp. Thickened Sludge/ Supernatant Pumping Station (Location E1)	1	19-Sep-2022	19-Sep-2022	-101	Connection at Temp. Thickened Sludge/ Supernatant Pumping Station (Location E1)																			
Z3B-000390	Temp. Gravity Thickening Tank (Location A) Completion	0		23-Aug-2022		◆ Temp. Gravity Thickening Tank (Location A) Completion																			
Z3B-000400	Temp. Primary Sludge Pumping Station (Location D) Completion	0		05-Sep-2022	-91	◆ Temp. Primary Sludge Pumping Station (Location D) Completion																			
Z3B-000410	Connection at Temp. Primary Sludge Pumping Station (Location D)	1	06-Sep-2022	06-Sep-2022	-91	◆ Connection at Temp. Primary Sludge Pumping Station (Location D)																			
Z3B-000420	FeCl3 System (Location E) Relocation Completion	0		05-Sep-2022	-91	◆ FeCl3 System (Location E) Relocation Completion																			
Z3B-000430	Temp. Thickened Sludge/ Supernatant Pumping Station (Location E1) Completion	0		17-Sep-2022	1645	◆ Temp. Thickened Sludge/ Supernatant Pumping Station (Location E1) Completion																			
Z3B-000440	Completion of Zone 3B Diversion	0		19-Sep-2022	-101	◆ Completion of Zone 3B Diversion																			
Advance Works																									
Z3S1A-3010	Completion of Stage 1 (Construction & E&M for Temporary facilities)	0		03-Sep-2022	-89	◆ Completion of Stage 1 (Construction & E&M for Temporary facilities)																			
Stage 1 Demolition Works																									
SHT 3&4 Demolition Works below ground																									
Z3A-000140	Backfill to Ground Level	7	13-Jul-2022 A	08-Sep-2022	-102	Backfill to Ground Level																			
UC Decommission Works																									
Z3A-000110	Decommission Works for Existing Utilities Gallery	12	01-Sep-2022	15-Sep-2022	-116	Decommission Works for Existing Utilities Gallery																			
Zone 3 North Portion (Z3N)																									
Demolition																									
Existing Sludge Thickening House (8, Air Floatation Thickener)																									
ATALZ3S1-2210	Switching Duty from SDT No. 2 to 4	4	16-Aug-2022 A	19-Aug-2022		Switching Duty from SDT No. 2 to 4																			
Z3S2-2030	Demolition of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 1	12	20-Sep-2022	05-Oct-2022	-101	Demolition of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 1																			
Z3S2-2030a	Demolition of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 3 (affected by Zone 2B Diversi	15	14-Oct-2022	31-Oct-2022	-101	Demolition of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 3 (affected by Zone 2B Diversi																			
Z3S2-2030b	Demolition of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 2 (affecting Zone P2A piling)	6	06-Oct-2022	12-Oct-2022	-101	Demolition of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 2 (affecting Zone P2A piling)																			
Z3S2-2030c	Backfilling of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 2	3	13-Oct-2022	15-Oct-2022	-101	Backfilling of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 2																			
Z3S2-2040	Demolition of Consolidation Tank (7) C1 & C2	20	20-Sep-2022	14-Oct-2022	-101	Demolition of Consolidation Tank (7) C1 & C2																			
Z3S2-2050	Submission of Demolition Plan for STB, Review by PM(28d), Resubmission(14d), Obtain Approval(7d)	49	15-Mar-2022 A	16-Sep-2022	-99	Submission of Demolition Plan for STB, Review by PM(28d), Resubmission(14d), Obtain Approval(7d)																			
Z3S2-2310	Submission of Method Statement for demolition of STB, Review by PM(28d), Resubmission(14d), Obtain Approva	26	15-Jul-2022 A	16-Sep-2022	-99	Submission of Method Statement for demolition of STB, Review by PM(28d), Resubmission(14d), Obtain Approva																			
New Sludge Thickening Building (STB)																									
STB : Pre-drilling Works																									
Z3S1a.7-70	Complete Pre-drilling Works for STB	0		14-Oct-2022	-16	◆ Complete Pre-drilling Works for STB																			
Z3S3-3480	Pre-drilling Works (2 nos. STB-PD7,9)	10	03-Oct-2022	14-Oct-2022	-87	Pre-drilling Works (2 nos. STB-PD7,9)																			
Z3S3-3490	Environment GI (4 nos., 7d/no., 2 rigs) & Submit RAP Report to EPD (30 days)	6	17-Oct-2022	22-Oct-2022	-101	Environment GI (4 nos., 7d/no., 2 rigs) & Submit RAP Report to EPD (30 days)																			
STB : Driven H-pile																									
Z3S3-2091	STB - H-pile Testing	21	01-Nov-2022	24-Nov-2022	42	STB - H-pile Testing																			
Z3S3-3010	STB - Site Setup & Mobilization	9	15-Jun-2022 A	01-Sep-2022	-115	STB - Site Setup & Mobilization																			
Z3S3-3370	STB - Submit to GEO (28d)	28	25-Nov-2022	29-Dec-2022	42	STB - Submit to GEO (28d)																			
Z3S3-3500	STB - Driven H-pile Start	0	06-Jul-2022 A			STB - Driven H-pile Start																			
Z3S3-3510	STB - Driven H-pile Zone P1 (28 nos., 1431m) @40m/day	31	06-Jul-2022 A	17-Sep-2022	-115	STB - Driven H-pile Zone P1 (28 nos., 1431m) @40m/day																			
Z3S3-3520	STB - Driven H-pile Zone P2 (33 nos., 1749m) @70m/day, 2rigs	25	30-Sep-2022	31-Oct-2022	-101	STB - Driven H-pile Zone P2 (33 nos., 1749m) @70m/day, 2rigs																			
Z3S3-3530	STB - Driven H-pile Zone P2A (5 nos., 265m) @40m/day, 1rig	7	24-Oct-2022	31-Oct-2022	-101	STB - Driven H-pile Zone P2A (5 nos., 265m) @40m/day, 1rig																			
Z3S3-3540	STB - Driven H-pile Zone P3 (12 nos., 636m) @30m/day, 1rig	21	08-Sep-2022	05-Oct-2022	-115	STB - Driven H-pile Zone P3 (12 nos., 636m) @30m/day, 1rig																			
Z3S3-3550	STB - Driven H-pile Zone P4A (14 nos., 866m) @40m/day, 1rig	28	26-Jul-2022 A	17-Sep-2022	-115	STB - Driven H-pile Zone P4A (14 nos., 866m) @40m/day, 1rig																			
Z3S3-3550a	STB - Driven H-pile Zone P4B (4 nos., 247m) @40m/day, 1rig	7	09-Aug-2022 A	13-Sep-2022	-62	STB - Driven H-pile Zone P4B (4 nos., 247m) @40m/day, 1rig																			
Z3S3-3560	STB - Driven H-pile Zone P5 (5 nos., 265m) @40m/day, 1rig	7	15-Oct-2022	22-Oct-2022	-101	STB - Driven H-pile Zone P5 (5 nos., 265m) @40m/day, 1rig																			
Z3S3-3590	STB - Driven H-pile Finish	0		31-Oct-2022	-101	◆ STB - Driven H-pile Finish																			
STB : Foundation and ELS																									
Z3S3-2180	STB - Sheetpile Installation (3,997m2 @90m2/d)	51	12-Nov-2022	13-Jan-2023	-111	STB - Sheetpile Installation (3,997m2 @90m2/d)																			
Utility Corridor (UC5) (Connect to STB)																									
UC5 : Foundation and ELS Works																									
Z3S2-3070	UC5 - Site Setup & Mobilization	6	06-Oct-2022	12-Oct-2022	-115	UC5 - Site Setup & Mobilization																			
Z3S2-3080	UC5 - Sheetpile Installation (1,806m2 @90m2/d)	20	13-Oct-2022	04-Nov-2022	-115	UC5 - Sheetpile Installation (1,806m2 @90m2/d)																			



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

Contract DC/2019/10 - YLEPP - Main Works for Stage 1

Monthly Progress Report No. 22 - 3MRP (Aug 2022)

Project ID : DWPr17_220905-1
 Layout : DC201910 MPR22-3MRP
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Monthly Progress Report No. 21 - 3MRP			
Date	Revision	Checked	Approved
31-Aug-22	Rev. 0		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	August 22					September 23					October 24					November 25					December 26	
						31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04			
Z3S2-3090	UC5 - Monitoring Installation and Pumping Test	21	29-Oct-2022	18-Nov-2022	-137																					UC5 - Monitoring Install	
Z3S2-3100	UC5 - ELS, Excavation (+6.0 to +4.0mPD) (526m3, 300m3/d)	2	19-Nov-2022	21-Nov-2022	-115																					UC5 - ELS, Excava	
Z3S2-3110	UC5 - ELS, Strut Installation S1 (+4.0mPD)	5	22-Nov-2022	26-Nov-2022	-115																					UC5 - ELS, S	
Z3S2-3120	UC5 - Marine Sediments Treatment and Disposal	14	22-Nov-2022	07-Dec-2022	-108																					UC5	
Z3S2-3130	UC5 - ELS, Excavation (+4.0 to -0.5mPD) (1184m3, 200m3/d)	6	28-Nov-2022	03-Dec-2022	-115																					UC5	
Zone 3 South Portion (Z3S)																											
Demolition																											
Existing Sludge Holding Tank SHT 1 (10)																											
Z3S1a.7-60	Completion Connection to Temporary SHT & Dewatering House	0		03-Sep-2022	-47																					◆ Completion Connection to Temporary SHT & Dewatering House	
Z3S2-2010	Demolition of SHT 2 (10) superstructure	20	20-Sep-2022	14-Oct-2022	-59																					Demolition of SHT 2 (10) superstructure	
Z3S2.5-10	Demolition of Existing Water Heater House	25	05-Sep-2022	06-Oct-2022	-88																					Demolition of Existing Water Heater House	
Sludge Digester No. 1-3 (SD1-3)																											
SD1-3 : Foundation and ELS																											
SD1-3 : Sheetpiling																											
Z3S3-2045	Backfilling after SHT 4 demolition	10	13-Jul-2022 A	29-Jul-2022 A																						Backfilling after SHT 4 demolition	
Z3S3-2050	Sludge Digester No. 1-3 - Sheet Piles Install Portion 1 (SHT 4 area)	16	17-Aug-2022 A	20-Sep-2022	-40																					Sludge Digester No. 1-3 - Sheet Piles Install Portion 1 (SHT 4 area)	
Z3S3-2060	Sludge Digester No. 1-3 - Sheet Piles Install Portion 2 (3,128m2 @90m2/d)	36	15-Oct-2022	25-Nov-2022	-59																					Sludge Digest	
Z3S3-3350	Sludge Digester No. 1-3 - Monitoring Installation and Pumping Test	28	02-Nov-2022	29-Nov-2022	-72																					Sludge D	
Biogas Holder No. 1 (BH1)																											
BH1 : Foundation																											
Z3BH-0995	Biogas Holder No. 1 - GI Works	21	16-May-2022 A	26-Sep-2022	-116																					Biogas Holder No. 1 - GI Works	
Z3BH-0996	Biogas Holder No. 1 - backfilling	10	25-Jul-2022 A	26-Sep-2022	-116																					Biogas Holder No. 1 - backfilling	
Z3BH-1000	Biogas Holder No. 1 - Band drain Installation for Ground Improvement	20	27-Sep-2022	21-Oct-2022	-116																					Biogas Holder No. 1 - Band drain Installation for Ground I	
Z3BH-1040	Biogas Holder No. 1 - Surcharge	6	03-Nov-2022	09-Nov-2022	-116																					Biogas Holder No. 1 - Surcharge	
Z3BH-1050	Biogas Holder No. 1 - Consolidation	75	10-Nov-2022	23-Jan-2023	-140																					Biogas Holder No. 1 - Consolidation	
Z3BH-1060	Biogas Holder No. 1 - Band drain Installation for Ground Improvement @ SHT 1 and existing water heater house f	10	22-Oct-2022	02-Nov-2022	-116																					Biogas Holder No. 1 - Band drain Installatio	
Zone 3 Middle Portion (Z3M)																											
Sludge Digester No. 4-6 (SD4-6)																											
SD4-6 : Foundation and ELS																											
Pre-drilling Works																											
Z3S8SD-1010	Sludge Digester No. 5-6 - Pre-drill (3 nos. SD-BH1,SD-BH3,SD-BH4)	48	13-Oct-2022	07-Dec-2022	740																						



- █ Remaining Level of Ef...
- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work
- ◆ Milestone

Contract DC/2019/10 - YLEPP - Main Works for Stage 1

Monthly Progress Report No. 22 - 3MRP (Aug 2022)

Project ID : DWPr17_220905-1
 Layout : DC201910 MPR22-3MRP
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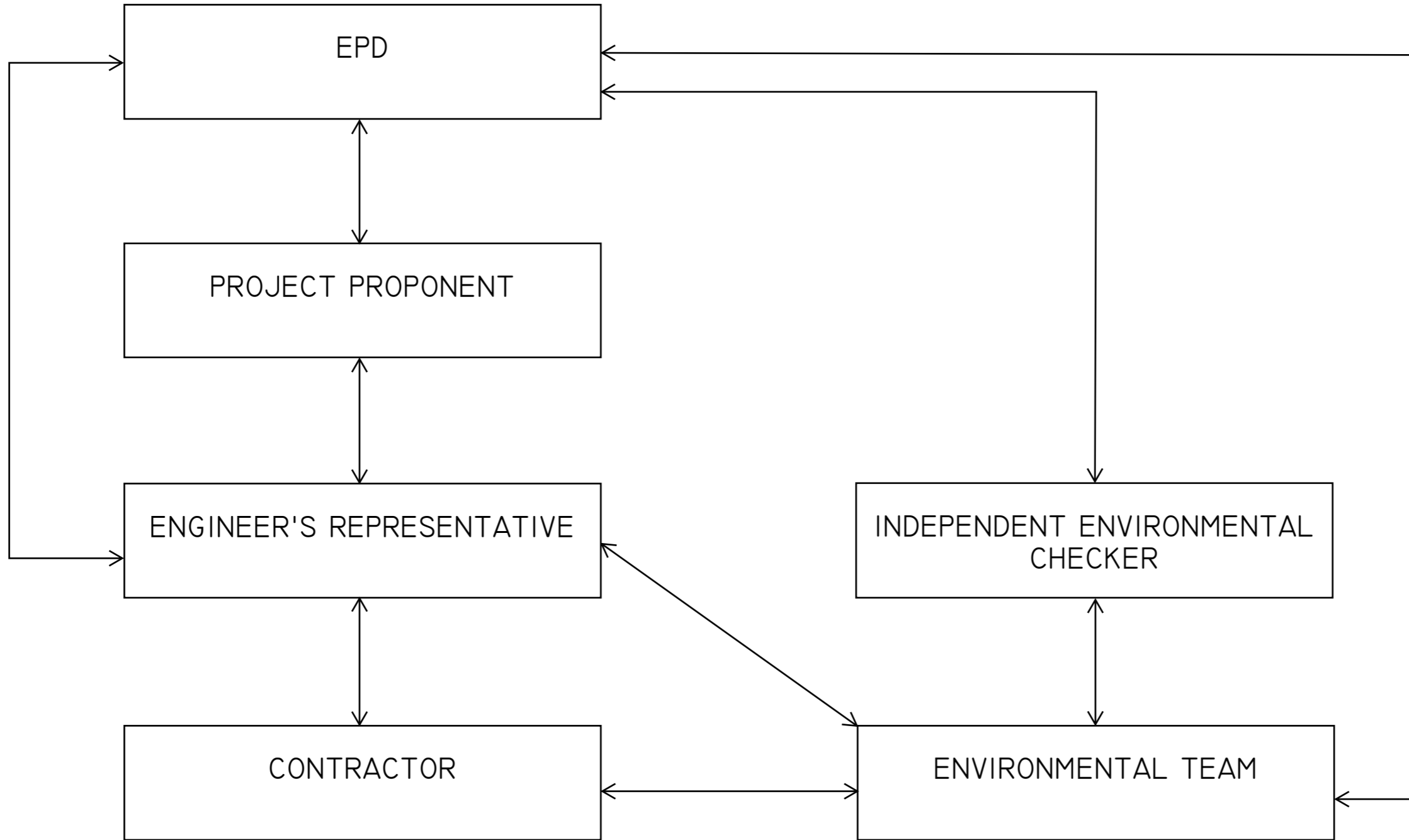
Monthly Progress Report No. 21 - 3MRP			
Date	Revision	Checked	Approved
31-Aug-22	Rev. 0		

Appendix B

Project Organization Chart

LEGEND:

↔ LINE OF COMMUNICATION



PROJECT

YUEN LONG EFFLUENT
POLISHING PLANT -
INVESTIGATION, DESIGN
AND CONSTRUCTION

CLIENT

渠務署
Drainage Services Department

CONSULTANT

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.

STATUS

SCALE

A3 1 : 40000

DIMENSION UNIT

METRES

KEY PLAN

PROJECT NO.

60505476

CONTRACT NO.

CE 3/2015 (DS)

SHEET TITLE

PROJECT ORGANISATION

SHEET NUMBER

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Appendix C

Action and Limit Levels

Action and Limit Levels for Air Quality

Parameters	Action Level	Limit Level
1-hour TSP Level in $\mu\text{g}/\text{m}^3$	¹ For baseline level $\leq 384 \mu\text{g}/\text{m}^3$, Action level = $(\text{baseline level} * 1.3 + \text{Limit level})/2$; For baseline level $> 384 \mu\text{g}/\text{m}^3$, Action level = Limit level	500 $\mu\text{g}/\text{m}^3$

Notes:

1. The Action Level for 1-hour TSP Level:

a) $AM1 = (63 * 1.3 + 500) / 2 = 291 \mu\text{g}/\text{m}^3$;

b) $AM2 = (70 * 1.3 + 500) / 2 = 296 \mu\text{g}/\text{m}^3$.

Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700 - 1900 hours on normal weekdays	When one documented complaint is received	75 dB(A) *

Notes:

- If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
- Correction of +3 dB(A) shall be made to the free field measurements.

Action and Limit Levels for Water Quality

Parameters	Action Levels	Limit Levels
<i>Construction Phase Water Quality Monitoring</i>		
DO in mg/L (Surface, Middle & Bottom) ²	<p>Surface & Middle 5%-ile of baseline data for surface and middle layer.</p> <p>Bottom 5%-ile of baseline data for bottom layer.</p>	<p>Surface & Middle 4 mg/L or 1%-ile of baseline data for surface and middle layer.</p> <p>Bottom 2 mg/L or 1%-ile of baseline data for bottom layer.</p>
SS in mg/L (depth-averaged ¹) ³	95%-ile of baseline data or 120% of upstream control station's SS recorded on the same day	99%-ile of baseline data or 130% of upstream control station's SS recorded on the same day
Turbidity in NTU (depth-averaged ¹) ³	95%-ile of baseline data or 120% of upstream control station's turbidity recorded on the same day	99%-ile of baseline data or 130% of upstream control station's turbidity recorded on the same day

Notes:

- "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths;
- For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits;
- For SS and turbidity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

Action and Limit Levels for Ecology

Active Ardeid Night Roost Survey

As there are no specific guidelines on noise thresholds for roosting ardeids, the Action and Limit levels specified in below table were based on study conducted on exploring behavioural responses of shorebirds to impulsive noise (Wright et al. 2010).

Time Period	Action Level	Limit Level
after 17:30 during dry season after 18:00 during wet season	65.5 dB(A) ¹	72.2 dB(A) ²

Notes:

1. Behavioural response of some kind more likely to occur
2. Flight with abandonment of the site becomes the most likely outcome of the disturbance

Ecological Monitoring of Birds

Method	Parameters	Action Level ³	Limit Level ³
Transect	Abundance of all avifauna species (including but not only limited to overwintering waterbirds) in the community	Significant decline ^{1,2} in any of these parameters during the current monitoring month relative to the corresponding month during the baseline survey.	Significant decline in any of these parameters for three consecutive months.
	Species diversity of all avifauna species (including but not only limited to overwintering waterbirds) in the community		
	Abundance of species with conservation importance only		
	Species diversity of species with conservation importance only		
Point Count	Abundance of all avifauna species (including but not only limited to overwintering waterbirds) in the community		
	Species diversity of all avifauna species (including but not only limited to overwintering waterbirds) in the community		
	Abundance of species with conservation importance only		
	Species diversity of species with conservation importance only		

Notes:

1. Significant decline in abundance will be determined using two-tailed t-test, $\alpha = 0.05$.
2. Significant decline in species diversity will be determined using the Hutcheson t-test, two tailed.
3. Response will be triggered if any of the above level is reached for each parameter.

Appendix D

Calibration Certificates/ reports of
Monitoring Equipments

Air Quality Monitoring Equipments

Report no. : 940891CA220067

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser dust monitor
Manufacturer : SIBATA
Model No. : LD-5R
Serial No. : 620408
Specification Limit : NA
Next Calibration Date : 07-Dec-2022

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
Equipment ID. / Serial no : 1. C-065-5 2. 4350
Date of Calibration : 08-Dec-2021 Ambient Temperature : 23 ± 5 °C
Calibration Location : General Chemical Laboratory of FTS and Ma Wan A1 Site Boundary
Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m ³)	Total count for 1 hour	CPM (Count per minute)
0.0757	2041	34.02
0.0820	2112	35.20
0.0907	2256	37.60

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x [UUT reading (CPM)], where K = 0.002326
3. Correlation coefficient (r) : 0.9953

Checked by : Curry Date : 11-1-2022 Certified by : K.T. Leung Date : 11-1-2022
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report no. : 940891CA220067(1)

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser dust monitor

Manufacturer : SIBATA

Model No. : LD-5R

Serial No. : 761105

Specification Limit : NA

Next Calibration Date : 07-Dec-2022

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler

Equipment ID. / Serial no : 1. C-065-5 2. 4350

Date of Calibration : 08-Dec-2021 Ambient Temperature : 23 ± 5 °C

Calibration Location : General Chemical Laboratory of FTS and Ma Wan A1 Site Boundary

Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m ³)	Total count for 1 hour	CPM (Count per minute)
0.0757	1814	30.23
0.0820	2015	33.58
0.0907	2501	41.68

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x [UUT reading (CPM)], where K = 0.002355
3. Correlation coefficient (r) : 0.9904

 Checked by : Cenny Date : 11-1-2022 Certified by : K.T. Leung Date : 11-1-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : MaWTF, Ma Wan	Date of Calibration: 19-Oct-21
Location ID: A1 Site Boundary	Next Calibration Date: 18-Jan-22
	Technician: Herman Wang

CONDITIONS

Sea Level Pressure (hPa):	1017.8	Corrected Pressure (mm Hg):	763
Temperature (°C):	25.7	Temperature (K):	299

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.04731
Model:	TE-5025A	Qstd Intercept:	0.00573
Calibration Date:	4-Jun-21	Expiry Date:	4-Jun-22

CALIBRATIONS

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m ³ /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	6.00	-6.40	12.400	1.719	60.00	60.06	Slope = 27.9500 Intercept = 11.5355 Corr. coeff.= 0.9976
13	5.20	-5.50	10.700	1.597	56.00	56.06	
10	4.30	-4.60	8.900	1.456	52.00	52.06	
7	3.20	-3.50	6.700	1.263	46.00	46.05	
5	2.00	-2.20	4.200	0.999	40.00	40.04	

Calculations:

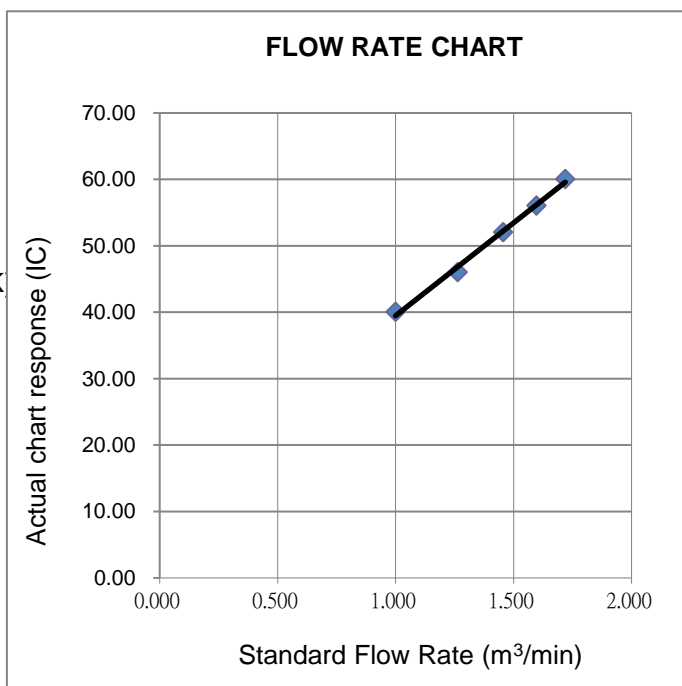
Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

- Qstd = standard flow rate
- IC = corrected chart response
- I = actual chart response
- m = calibrator Qstd slope
- b = calibrator Qstd intercept
- Ta = actual temperature during calibration (deg K)
- Pa = actual pressure during calibration (mm Hg)
- Tstd = 298 deg K
- Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

- m = sampler slope
- b = sampler intercept
- I = chart response
- Tav = daily average temperature
- Pav = daily average pressure



CALIBRATION REPORT OF WIND METER

Project: Contract No. SPW 07/2020	Date of Calibration: 26-Mar-2022
Location: Yuen Long Sewage Treatment Works	Next Calibration Date: 25-Sep-2022
Brand: Global Water	Technician: Sam Fong
Model: GL500-7-2	Serial No: 2012000974
Anemometer	
Brand: Benetech	Equipment ID: 08
Model: GM816	
Procedures:	
1. Wind Still Test:	The wind speed sensor was held by hand until stabilized.
2. Wind Speed Test:	The wind meter was calibrated in-situ and compared with the Anemometer.
3. Wind Direction Test:	The wind meter was calibrated in-situ and compared with a marine compass from four directions.

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

Global Water (m/s)	Anemometer (m/s)
1.4	1.2
2.1	2.3
2.9	2.8

Wind Direction Test:

	Marine Compass (o)
348	352
206	208
267	265
293	290



Wan Ka Ho
 Project Consultant

Report Date: 28/3/2022

CALIBRATION REPORT OF WIND METER

Project: Contract No. SPW 07/2020 Location: Yuen Long Sewage Treatment Works	Date of Calibration: 24-Sep-2022 Next Calibration Date: 23-Mar-2023 Technician: Sam Fong
Brand: Global Water Model: GL500-7-2	Serial No: 2012000974
Anemometer	
Brand: Benetech Model: GM816	Equipment ID: 08
Procedures:	
1. Wind Still Test: 2. Wind Speed Test: 3. Wind Direction Test:	The wind speed sensor was held by hand until stabilized. The wind meter was calibrated in-situ and compared with the Anemometer. The wind meter was calibrated in-situ and compared with a marine compass from four directions.

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

Global Water (m/s)	Anemometer (m/s)
1.8	1.7
2.5	2.6
3.2	3.3

Wind Direction Test:

	Marine Compass (o)
347	344
65	69
22	24
334	340



Wan Ka Ho
 Project Consultant

Report Date: 26/9/2022

Noise Monitoring Equipments

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Level Meter
 Manufacturer : Casella
 Model No. :
 Serial No. :
 Equipment ID : N/A
 Next Calibration Date : 27-Oct-2022
 Specification Limit : EN 61672-1: 2003 Class 1

	Meter	Microphone	Preamplifier
Model No.	CEL-63X	CE-251	CEL-495
Serial No.	1488272	03876	002752

Laboratory Information

Details of Reference Equipment -

Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)
 Equipment ID. : R-108-1
 Date of Calibration : 28-Oct-2021
 Calibration Location : Calibration Laboratory of FTS Ambient Temperature : 20±2 °C
 Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

Parameters	Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	1.8 2.6 to -0.6
	2000Hz	1.5 2.8 to -0.4
	1000Hz	0.2 1.1 to -1.1
	500Hz	-3.2 -1.8 to -4.6
	250Hz	-8.7 -7.2 to -10.0
	125Hz	-16.1 -14.6 to -17.6
	63Hz	-26.2 -24.7 to -27.7
Differential level linearity	94dB-104dB	0.0 ± 0.6
	104dB-114dB	0.0 ± 0.6

Remarks :

- The equipment used in this calibration is traceable to recognized National Standards.
- The mean value is the average of four measurements.
- For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
- The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
- The values given in this Calibration Certificate only relate to unit under test and the values measured at the time of the test. Any uncertainties 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 :

Checked by : Date : 3-11-2021 Certified by : K.T. Leung Date : 4.11.2021
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 212769CA220043

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description	: Sound Level Meter									
Manufacturer	: Casella									
Model No.	: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <th>Meter</th> <th>Microphone</th> <th>Preamplifier</th> </tr> <tr> <td>CEL-63X</td> <td>CE-251</td> <td>CEL-495</td> </tr> <tr> <td>1488304</td> <td>03456</td> <td>002850</td> </tr> </table>	Meter	Microphone	Preamplifier	CEL-63X	CE-251	CEL-495	1488304	03456	002850
Meter	Microphone	Preamplifier								
CEL-63X	CE-251	CEL-495								
1488304	03456	002850								
Serial No.	: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <th>Meter</th> <th>Microphone</th> <th>Preamplifier</th> </tr> <tr> <td>CEL-63X</td> <td>CE-251</td> <td>CEL-495</td> </tr> <tr> <td>1488304</td> <td>03456</td> <td>002850</td> </tr> </table>	Meter	Microphone	Preamplifier	CEL-63X	CE-251	CEL-495	1488304	03456	002850
Meter	Microphone	Preamplifier								
CEL-63X	CE-251	CEL-495								
1488304	03456	002850								
Equipment ID	: N-62									
Next Calibration Date	: 05-Jan-2023									
Specification Limit	: EN 61672-1: 2003 Class 1									

Laboratory Information

Details of Reference Equipment -

Description	: B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)
Equipment ID.	: R-108-1
Date of Calibration	: 06-Jan-2022
Calibration Location	: Calibration Laboratory of FTS
Method Used	: By direct comparison
Ambient Temperature	: 20±2 °C
Relative Humidity	: <80% R.H.

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	2.0	2.6 to -0.6
	2000Hz	1.0	2.8 to -0.4
	1000Hz	-0.5	1.1 to -1.1
	500Hz	-3.9	-1.8 to -4.6
	250Hz	-9.3	-7.2 to -10.0
	125Hz	-16.8	-14.6 to -17.6
	63Hz	-26.9	-24.7 to -27.7
Differential level linearity	94dB-104dB	0.1	± 0.6
	104dB-114dB	0.1	± 0.6

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast.
4. The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
5. The values given in this Calibration Certificate only relate to the values at the time of the test and any uncertainties 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.

Checked by : Cuny Date : 10-1-2022 Certified by : K.H. Leung Date : 11-1-2022
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 212769CA220043(1)

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Calibrator
 Manufacturer : Casella (Model CEL-120/1)
 Serial No. : 2383982
 Equipment ID : N/A
 Next Calibration Date : 05-Jan-2023
 Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Description : Reference Sound level meter
 Equipment ID. : R-119-1
 Date of Calibration : 06-Jan-2022 Ambient Temperature : 22 °C
 Calibration Location : Calibration Laboratory of FTS Relative Humidity : <80% R.H.
 Method Used : By direct comparison

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	0.0 dB	±0.4dB
114dB	-0.2 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment does comply with the specification limit.
4. The values given in this Calibration Certificate only relate to the values at the time of the test and any uncertainties 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.

Checked by : *C. Wong* Date : 10-1-2022 Certified by : *K.T. Leung* Date : 11-1-2022
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report no.: 212769CA221230

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Sound Calibrator
Manufacturer : Casella (Model CEL-120/1)
Serial No. : 3321858
Equipment ID : N/A

Next Calibration Date : 08-Jun-2023

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

Description : Reference Sound level meter
Equipment ID. : R-119-2

Date of Calibration : 09-Jun-2022

Calibration Location : Calibration Laboratory of FTS Ambient Temperature : 20 ± 2 °CMethod Used : By direct comparison Relative Humidity : < 80 %RH**Calibration Results :**

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	0.1 dB	±0.4dB
114dB	0.1 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The unit under test complies with the specification limit.
4. The values given in this Calibration Certificate only relate to the unit-under-test and the values measured at the time of the test. Any uncertainties quoted will not include allowances for the environmental changes, variation and shock during transportation, or the capability of any other laboratory to repeat the measurement.

Checked by : Cenny Date : 24-6-2022 Certified by : K.T. Leung Date : 25-6-2022
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)**** End of Report ****

CALIBRATION CERTIFICATE OF ANEMOMETER**Client Supplied Information**

Client : Fugro Technical Services Limited

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : Smart Sensor

Model No. : AR816

Serial No. : N/A

Equipment ID. : AM-001

Next Calibration Date : 28-Mar-2023

Laboratory Information

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID. : R-101-4

Date of Calibration : 29-Mar-2022 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of FTS

Method Used : In-house Method R-C-279

Calibration Results :

Reference Reading (m/s)	UUT Reading (m/s)	Error (m/s)
2.1	2.0	-0.1
3.6	4.0	0.4
5.4	6.0	0.6
7.0	8.0	1.0
8.8	10.0	1.2

Remarks :

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The expanded uncertainty is 0.5 m/s with a coverage factor of 2 at a confidence level of 95%.
3. The reported readings in this calibration are an average from 10 trials.

Checked by : Cenny Date : 31-3-2022 Certified by : K. T. Leung Date : 1-4-2022
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)**** End of Report ****

Water Quality Monitoring Equipments

Report No. : 142626WA221442



Page 1 of 3

Report on Calibration of YSI EXO-3 Multi-parameter Water Quality Meter**Information Supplied by Client**

Client : Fugro Technical Services Limited (MCL)

Client's address : 13/F, Fugro House – KCC2, No. 1 Kwai On Road, Kwai Chung, N.T., H.K.

Sample description : One YSI EXO-3 Multi-parameter Water Quality Meter

Client sample ID : Serial No. 19E100633

Test required : Calibration of the YSI EXO-3 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID : WA221442/1

Date sample received : 13/07/2022

Date of calibration : 27/07/2022

Next calibration date : 26/10/2022

Test method used : In-house comparison method

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA221442

Page 2 of 3

Results :
A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.17	-0.01
6.86	6.96	+0.10

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.00	0	± 0.1
10	9.99	-0.01	± 0.5
20	20.16	+0.16	± 1.0
30	30.10	+0.10	± 1.5
40	40.19	+0.19	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	7.53	7.50
2	7.53	7.49
3	7.53	7.49
Average	7.53	7.49

Differences of D.O. Content between Wrinkler Titration and D.O. meter should be less than 0.2 mg/L.

 Certified by : 

 Approved Signatory : HO Kin Man, John
 Assistant General Manager – Laboratories

Date : 5/8/2022

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA221442

Page 3 of 3


Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
24.8	24.850

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.50	+0.50	± 0.6
8	7.80	-0.20	± 0.8
40	40.96	+0.96	± 3.0
80	79.48	-0.52	± 4.0

Certified by : 
 Approved Signatory : HO Kin Man, John
 Assistant General Manager – Laboratories
 Date : 5/8/2022

** End of Report **

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA221480(1)



Page 1 of 3

Report on Calibration of YSI EXO-1 Multi-parameter Water Quality Meter**Information Supplied by Client**

Client : Fugro Technical Services Limited (MCL)

Client's address : 13/F, Fugro House – KCC2, No. 1 Kwai On Road, Kwai Chung, N.T., H.K.

Sample description : One YSI EXO-1 Multi-parameter Water Quality Meter

Client sample ID : Serial No. 21D101383

Test required : Calibration of the YSI EXO-1 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID : WA220729(1)/1

Date sample received : 21/07/2022

Date of calibration : 04/08/2022

Next calibration date : 03/11/2022

Test method used : In-house comparison method

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA221480(1)

Page 2 of 3

Results :
A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
6.86	6.82	-0.04
9.18	9.13	-0.05

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	0.96	-0.04	± 0.1
10	9.91	-0.09	± 0.5
20	20.02	+0.02	± 1.0
30	29.81	-0.19	± 1.5
40	39.74	-0.26	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	7.63	7.54
2	7.43	7.55
3	7.78	7.60
Average	7.61	7.56

Differences of D.O. Content between Winkler Titration and D.O. meter should be less than 0.2 mg/L

Certified by : Chan Hoi Yan
 Approved Signatory : CHAN Hoi Yan, Winnie
 Assistant Manager

Date : 15-8-2022

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

Report No. : 142626WA221480(1)

Page 3 of 3

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
24.646	24.8

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.36	+0.36	± 0.6
8	7.94	+0.6	± 0.8
40	40.06	+0.06	± 3.0
80	79.66	-0.34	± 4.0

Certified by : Chan Hoi Yan
 Approved Signatory : CHAN Hoi Yan, Winnie
 Assistant Manager

Date : 15-8-2022
 ** End of Report **

Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.

CALIBRATION CERTIFICATE

This document certifies that the instrument detailed below has been calibrated according to Valeport Limited's Standard Procedures, using equipment with calibrations traceable to UKAS or National Standards.

Calibration Certificate Number: 61134

Instrument Type: MODEL 106

Instrument Serial Number: 67738

Calibrated By: N.PADDON

Date: 11TH NOVEMBER 2019

Signed: 

Full details of the results from the calibration procedure applied to each fitted sensor are available, on request, via email. This summary certificate should be kept with the instrument.

A large, stylized number '50' in a bold, sans-serif font, with a small square icon above the '0'.

Valeport Limited
St. Peter's Quay, Totnes,
Devon TQ9 5EW UK

+44 (0) 1803 869292
sales@valeport.co.uk
www.valeport.co.uk

VAT No: CB 165 8753 67
Registered in England No: 1950444





a xylem brand

9940 Summers Ridge Road
San Diego, CA 92121
Tel: (858) 546-8327
support@sontek.com

Certificate of Calibration

TEST REPORT

Serial Number	5906
System Type	M9
System Orientation	Down
Compass Type	Sontek
Compass Offset (degrees)	N/A
Communications Output	RS232
Recorder Size (GB)	14.9
Firmware Version	4.02
Date Tested	05/23/2017

POWER TEST

Command Mode (W):	0.17	Range : 0.00 – 0.30
Sleep Mode (W):	N/A	Range : N/A
Ping Mode - 18V (W):	2.67	Range : 1.50 – 3.50
Power Check		PASS

NOISE TEST

Beam 1 – 3.0 MHz (counts)	95
Beam 2 – 1.0 MHz (counts)	96
Beam 3 – 3.0 MHz (counts)	95
Beam 4 – 1.0 MHz (counts)	101
Beam 5 – 3.0 MHz (counts)	93
Beam 6 – 1.0 MHz (counts)	95
Beam 7 – 3.0 MHz (counts)	91
Beam 8 – 1.0 MHz (counts)	100
Beam Vertical – 500KHz (counts)	88
Noise Test	PASS

VERIFICATION

Velocity Check	PASS
Transmit Output	PASS
Sensitivity	PASS
Temperature Sensor	PASS
Compass Heading Check	PASS
Compass Level Check	PASS
Burn-in (24 hrs)	PASS
Load Default Parameters	DONE

OPTIONS

Bottom Track	Installed
SmartPulse HD TM	Enabled
Stationary	Disabled
GPS Compass Integration	Disabled
RiverSurveyor	Enabled
HydroSurveyor	Disabled

Verified by: **ainthasane**

This report was generated on 5/24/2017.

ATTENTION: New Warranty Terms as of March 4, 2013:

This system is covered under a two year limited warranty that extends to all parts and labor for any malfunction due to workmanship or errors in the manufacturing process. The warranty is valid only if you properly maintain and operate this system under normal use as outlined in the User's Manual. The warranty does not cover shortcomings that are due to the design, or any incidental damages as a result of errors in the measurements.

SonTek will repair and/or replace, at its sole option, any product established to be defective with a product of like type. CLAIMS FOR LABOR COSTS AND/OR OTHER CHARGES RESULTING FROM THE USE OF SonTek GOODS AND/OR PRODUCTS ARE NOT COVERED BY THIS LIMITED WARRANTY.

SonTek DISCLAIMS ALL EXPRESS WARRANTIES OTHER THAN THOSE CONTAINED ABOVE AND ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE. SonTek DISCLAIMS AND WILL NOT BE LIABLE, UNDER ANY CIRCUMSTANCE, IN CONTRACT, TORT OR WARRANTY, FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO LOST PROFITS, BUSINESS INTERRUPTION LOSSES, LOSS OF GOODWILL, OR LOSS OF BUSINESS OR CUSTOMER RELATIONSHIPS.

If your system is not functioning properly, first try to identify the source of the problem. If additional support is required, we encourage you to contact us immediately. We will work to resolve the problem as quickly as possible.

If the system needs to be returned to the factory, please contact SonTek to obtain a Service Request (SR) number. We reserve the right to refuse receipt of shipments without SRs. We require the system to be shipped back in the original shipping container using the original packing material with all delivery costs covered by the customer (including all taxes and duties). If the system is returned without appropriate packing, the customer will be required to cover the cost of a new packaging crate and material.

The warranty for repairs performed at an authorized SonTek Service Center is one year.

Appendix E

Environmental Monitoring Schedule

Project: Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Environmental Monitoring Schedule (September 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
				1 WQM Mid Flood(10:29) Mid Ebb(16:36)	2	3 WQM Mid Flood(12:13) Mid Ebb(17:55)
4	5 AQM, NM	6 WQM Mid Flood(17:57) Mid Ebb(9:40)	7	8 WQM Mid Flood(19:31) Mid Ebb(12:05)	9	10 AQM WQM Mid Flood(20:33) Mid Ebb(13:43)
11	12	13 WQM Mid Flood(9:15) Mid Ebb(15:29)	14	15 WQM Mid Flood(10:38) Mid Ebb(16:23) EMB (Daytime)	16 AQM, NM, ANRM, EMB (Night-time)	17 WQM Mid Flood(12:46) Mid Ebb(17:49)
18	19	20 WQM Mid Flood(18:00) Mid Ebb(9:24)	21	22 AQM, NM WQM Mid Flood(18:47) Mid Ebb(11:34)	23	24 WQM Mid Flood(19:33) Mid Ebb(12:54)
25	26	27 WQM Mid Flood(8:21) Mid Ebb(14:38)	28 AQM, NM	29 WQM Mid Flood(9:44) Mid Ebb(15:41)	30	

Remarks

1. Air Quality Monitoring (**AQM**): 3 x 1-hour TSP Monitoring per 6 days.
2. Noise Monitoring (**NM**): L_{eq} (30 min) during between 0700 - 1900.
3. Water Quality Monitoring (**WQM**): Once per day for 3 days per week.
4. Ecological Monitoring of Birds (**EMB**): Once per month.
5. Ardeid Night Roost Monitoring (**ANRM**): Once per month.
6. Air Quality Location: AM1 and AM2
7. Noise Monitoring Location: CM1, CM2 and CM3
8. Water Quality Monitoring Location: M1, M2, M3

Project: Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Environmental Monitoring Schedule (October 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1 WQM Mid Flood(11:46) Mid Ebb(17:15)
2	3 AQM, NM	4 WQM Mid Flood(16:44) Mid Ebb(7:47)	5	6 WQM Mid Flood(18:20) Mid Ebb(10:49)	7	8 AQM WQM Mid Flood(19:21) Mid Ebb(12:35)
9	10	11 WQM Mid Flood(8:23) Mid Ebb(14:26)	12	13 WQM Mid Flood(9:50) Mid Ebb(15:25)	14 AQM, NM	15 WQM Mid Flood(11:37) Mid Ebb(16:39)
16	17	18 WQM Mid Flood(19:18) Mid Ebb(6:37)	19	20 AQM, NM WQM Mid Flood(17:30) Mid Ebb(9:52)	21	22 WQM Mid Flood(18:14) Mid Ebb(11:37)
23	24	25 WQM Mid Flood(7:30) Mid Ebb(13:35)	26 AQM, NM	27 WQM Mid Flood(9:08) Mid Ebb(14:53)	28	29 WQM Mid Flood(11:08) Mid Ebb(16:24)
	30	31				

Remarks

- Actual monitoring may be subjected to change due to any safety concern or adverse weather condition.
- Air Quality Monitoring (**AQM**): 3 x 1-hour TSP Monitoring per 6 days.
- Noise Monitoring (**NM**): L_{eq} (30 min) during between 0700 - 1900.
- Water Quality Monitoring (**WQM**): Once per day for 3 days per week.
- Ecological Monitoring of Birds (**EMB**): Once per month.
- Ardeid Night Roost Monitoring (**ANRM**): Once per month.
- Air Quality Location: AM1 and AM2
- Noise Monitoring Location: CM1, CM2 and CM3
- Water Quality Monitoring Location: M1, M2, M3

Project: Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Environmental Monitoring Schedule (November 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
		1 AQM, NM WQM Mid Flood(18:59) Mid Ebb(6:16)	2	3 WQM Mid Flood(16:59) Mid Ebb(9:09)	4	5 WQM Mid Flood(18:09) Mid Ebb(11:22)
6	7 AQM, NM	8 WQM Mid Flood(19:12) Mid Ebb(13:25)	9	10 WQM Mid Flood(19:45) Mid Ebb(14:32)	11	12 AQM WQM Mid Flood(20:27) Mid Ebb(15:40)
13	14	15 WQM Mid Flood(13:28) Mid Ebb(17:39)	16	17 WQM Mid Flood(15:46) Mid Ebb(7:00)	18 AQM, NM	19 WQM Mid Flood(16:49) Mid Ebb(9:55)
20	21	22 WQM Mid Flood(6:35) Mid Ebb(12:28)	23	24 AQM, NM WQM Mid Flood(8:31) Mid Ebb(14:03)	25	26 WQM Mid Flood(10:23) Mid Ebb(15:25)
27	28	29 WQM Mid Flood(13:21) Mid Ebb(18:11)	30 AQM, NM			

Remarks

- Actual monitoring may be subjected to change due to any safety concern or adverse weather condition.
- Air Quality Monitoring (**AQM**): 3 x 1-hour TSP Monitoring per 6 days.
- Noise Monitoring (**NM**): L_{eq} (30 min) during between 0700 - 1900.
- Water Quality Monitoring (**WQM**): Once per day for 3 days per week.
- Ecological Monitoring of Birds (**EMB**): Once per month.
- Ardeid Night Roost Monitoring (**ANRM**): Once per month.
- Air Quality Location: AM1 and AM2
- Noise Monitoring Location: CM1, CM2 and CM3
- Water Quality Monitoring Location: M1, M2, M3

Project: Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Environmental Monitoring Schedule (December 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
				1 WQM Mid Flood(15:25) Mid Ebb(7:13)	2	3 WQM Mid Flood(16:50) Mid Ebb(9:55)
4	5	6 AQM, NM WQM Mid Flood(6:54) Mid Ebb(12:30)	7	8 WQM Mid Flood(8:35) Mid Ebb(13:36)	9	10 WQM Mid Flood(10:03) Mid Ebb(14:44)
11	12 AQM, NM	13 WQM Mid Flood(12:01) Mid Ebb(16:33)	14	15 WQM Mid Flood(13:33) Mid Ebb(5:37)	16	17 AQM WQM Mid Flood(15:02) Mid Ebb(7:16)
18	19	20 WQM Mid Flood(5:33) Mid Ebb(11:15)	21	22 WQM Mid Flood(7:45) Mid Ebb(13:04)	23 AQM, NM	24 WQM Mid Flood(9:34) Mid Ebb(14:28)
25	26	27 WQM Mid Flood(11:58) Mid Ebb(16:57)	28	29 AQM, NM WQM Mid Flood(13:39) Mid Ebb(5:52)	30	31 WQM Mid Flood(15:11) Mid Ebb(7:32)

Remarks

- Actual monitoring may be subjected to change due to any safety concern or adverse weather condition.
- Air Quality Monitoring (**AQM**): 3 x 1-hour TSP Monitoring per 6 days.
- Noise Monitoring (**NM**): L_{eq} (30 min) during between 0700 - 1900.
- Water Quality Monitoring (**WQM**): Once per day for 3 days per week.
- Ecological Monitoring of Birds (**EMB**): Once per month.
- Ardeid Night Roost Monitoring (**ANRM**): Once per month.
- Air Quality Location: AM1 and AM2
- Noise Monitoring Location: CM1, CM2 and CM3
- Water Quality Monitoring Location: M1, M2, M3

Appendix F

Environmental Monitoring Results

Air Quality Monitoring Results

Air Quality Monitoring Results for

Contract No. SPW 07/2020

Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

AM1 - Topfine Machinery (China) Co. Ltd.

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level (ug/m^3)	Limit Level (ug/m^3)
			1st Measurement	2nd Measurement	3rd Measurement		
5-Sep-22	Fine	8:35	119	130	123	291	500
10-Sep-22	Cloudy	8:39	130	147	161		
16-Sep-22	Cloudy	8:31	144	151	133		
22-Sep-22	Cloudy	8:42	77	88	95		
28-Sep-22	Cloudy	8:32	116	109	116		
		Min	77				
		Max	161				
		Average	123				

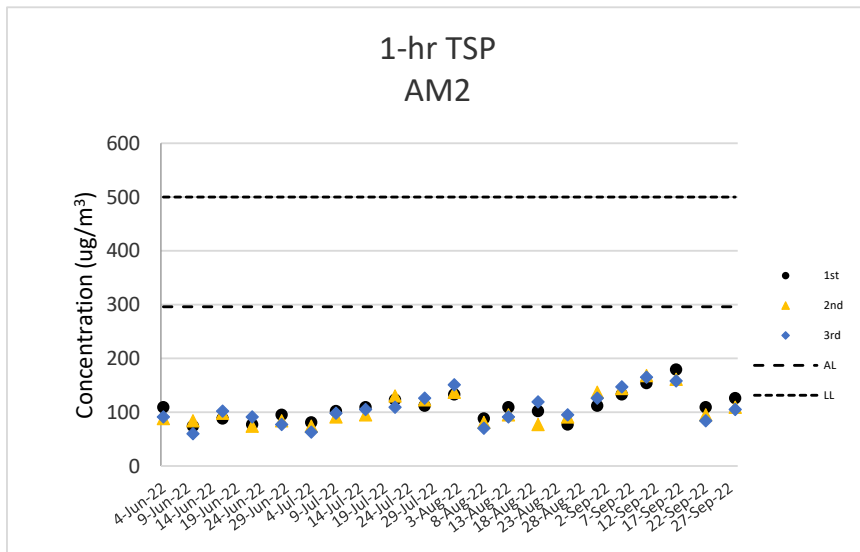
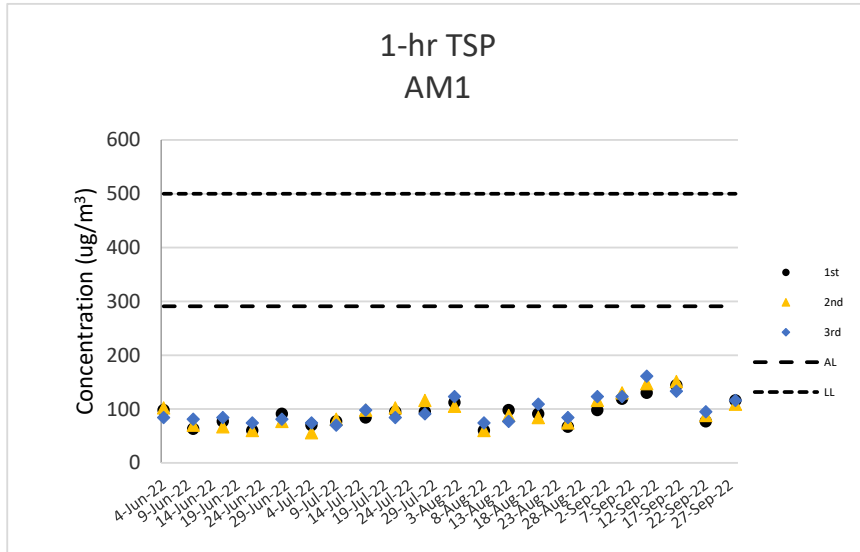
AM2 - Squatter house at the west of Yuen Long STW

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level (ug/m^3)	Limit Level (ug/m^3)
			1st Measurement	2nd Measurement	3rd Measurement		
5-Sep-22	Fine	8:49	133	144	147	296	500
10-Sep-22	Cloudy	8:52	154	168	165		
16-Sep-22	Cloudy	8:40	179	161	158		
22-Sep-22	Cloudy	8:31	109	95	84		
28-Sep-22	Cloudy	8:41	126	109	105		
		Min	84				
		Max	179				
		Average	136				

Note:

Underline: Exceedance of Action Level

Underline and Bold: Exceedance of Limit Level



Air Quality Monitoring Results

Noise Monitoring Results

**Noise Monitoring Results for
Contract No. SPW 07/2020
Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1**

CM1 - Squatter house to the north of YLSTW

Date	Start Time	L _{eq} 30min dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
5-Sep-22	10:22	52	54	50	0.1	Fine	75
16-Sep-22	10:03	51	53	50	0.1	Cloudy	75
22-Sep-22	9:29	52	54	50	0.1	Cloudy	75
28-Sep-22	10:03	52	54	50	0.2	Cloudy	75
	Max	52					
	Min	51					

CM2 - Squatter house to the west of YLSTW

Date	Start Time	L _{eq} 30min dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
5-Sep-22	8:57	63	67	55	0.1	Fine	75
16-Sep-22	8:46	62	65	55	0.2	Cloudy	75
22-Sep-22	10:58	62	64	55	0.2	Cloudy	75
28-Sep-22	8:46	62	65	55	0.2	Cloudy	75
	Max	63					
	Min	62					

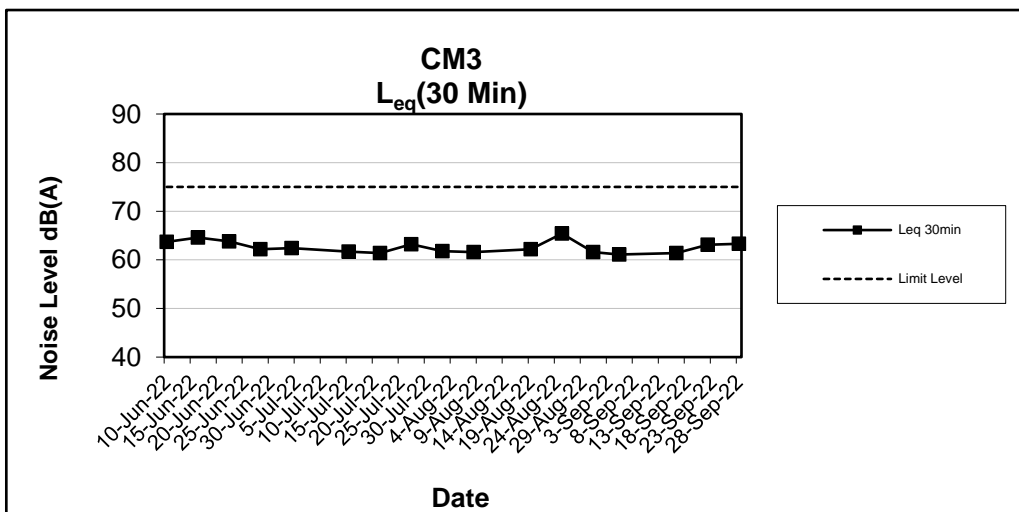
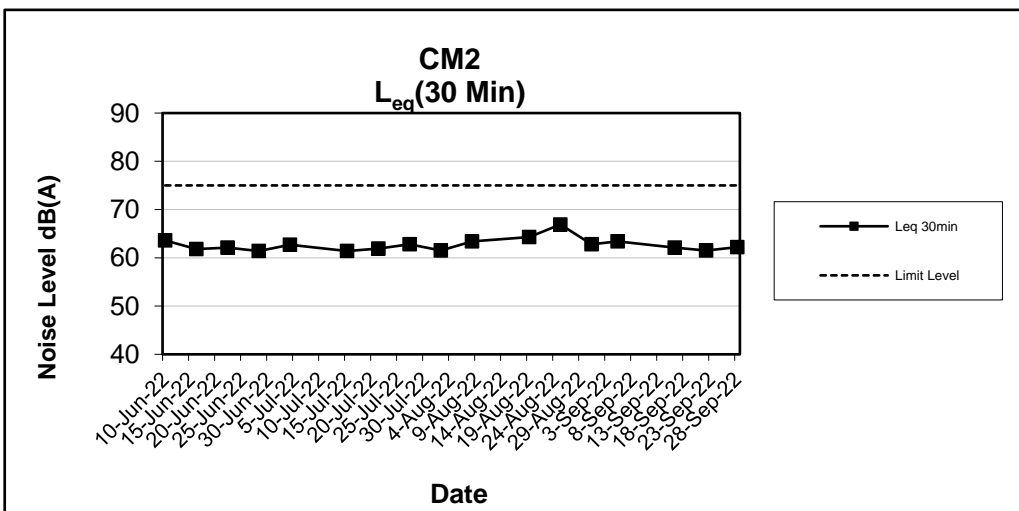
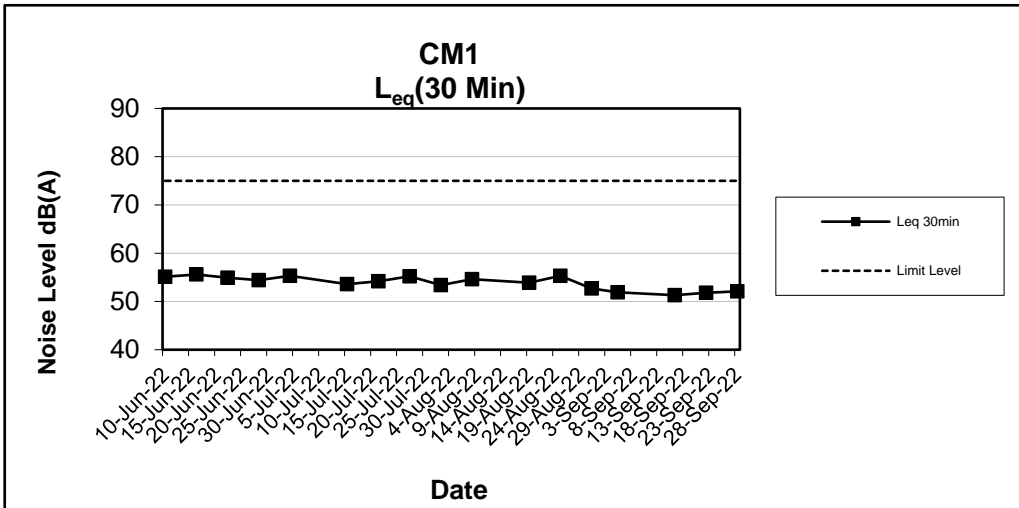
CM3 - Squatter house to the east of YLSTW

Date	Start Time	L _{eq} 30min dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
5-Sep-22	13:02	61	64	56	0.2	Fine	75
16-Sep-22	11:28	61	64	57	0.1	Cloudy	75
22-Sep-22	13:13	63	66	57	0.3	Cloudy	75
28-Sep-22	11:25	63	66	58	0.3	Cloudy	75
	Max	63					
	Min	61					

Note:

CM1, CM2 and CM3: Free-field measurement (+3dB(A) correction has been applied).

No raining or wind with speed over 5 m/s was observed during noise monitoring according to the onsite observation.



Noise Monitoring Results

Water Quality Monitoring Results

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	1/9/2022	Mid-Flood	Fine	Moderate	10:40	1.1	M	0.55	1	0.042	212	7.49	7.47	1.46	1.45	30.20	30.50	82.5	82.3	6.17	6.13	26.7	26.7	24	24
M1	1/9/2022	Mid-Flood	Fine	Moderate	10:40	1.1	M	0.55	2			7.44		1.44		30.80		82.1		6.09		26.6		23	
M2	1/9/2022	Mid-Flood	Fine	Moderate	10:59	1	M	0.5	1	0.053	234	7.23	7.24	1.82	1.83	30.04	30.06	77.3	77.3	6.01	6.01	24.7	24.7	24	25
M2	1/9/2022	Mid-Flood	Fine	Moderate	10:59	1	M	0.5	2			7.24		1.83		30.07		77.2		6.00		24.7		26	
M3	1/9/2022	Mid-Flood	Fine	Moderate	10:30	1.2	M	0.6	1	0.063	144	7.24	7.25	1.31	1.32	30.27	30.27	51.5	51.7	3.85	3.86	33.9	33.9	34	34
M3	1/9/2022	Mid-Flood	Fine	Moderate	10:30	1.2	M	0.6	2			7.26		1.32		30.26		51.8		3.87		33.9		34	
M1	1/9/2022	Mid-Ebb	Fine	Moderate	16:53	1	M	0.5	1	0.076	33	7.70	7.71	1.93	1.94	29.24	29.26	80.6	80.4	6.31	6.29	18.9	18.9	24	24
M1	1/9/2022	Mid-Ebb	Fine	Moderate	16:53	1	M	0.5	2			7.71		1.94		29.27		80.2		6.27		18.9		23	
M2	1/9/2022	Mid-Ebb	Fine	Moderate	16:36	0.8	M	0.4	1	0.07	103	7.51	7.52	1.83	1.84	29.14	29.13	79.1	79.2	6.24	6.27	22.0	22.0	21	22
M2	1/9/2022	Mid-Ebb	Fine	Moderate	16:36	0.8	M	0.4	2			7.52		1.84		29.11		79.3		6.29		22.0		23	
M3	1/9/2022	Mid-Ebb	Fine	Moderate	16:47	1	M	0.5	1	0.053	76	7.01	7.02	1.35	1.36	29.73	29.74	53.4	53.6	3.99	4.01	34.9	34.8	24	25
M3	1/9/2022	Mid-Ebb	Fine	Moderate	16:47	1	M	0.5	2			7.02		1.36		29.74		53.7		4.02		34.8		26	

Remark

1. Orange and Bold: Action Level Exceedance (For Impact Station Only)
2. Red and Bold: Limit Level Exceedance (For Impact Station Only)
3. Action Level for Turbidity: 95%-ile of baseline data or 120% of upstream control station's turbidity recorded on the same day.
4. Limit Level for Turbidity: 99%-ile of baseline data or 130% of upstream control station's turbidity recorded on the same day.
5. Action Level for SS: 95%-ile of baseline data or 120% of upstream control station's SS recorded on the same day.
6. Limit Level for SS: 99%-ile of baseline data or 130% of upstream control station's SS recorded on the same day.

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis				
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)		
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value
M1	3/9/2022	Mid-Flood	Fine	Moderate	12:13	1.1	M	0.55	1	0.043	123	7.24	7.23	0.67	0.68	0.68	28.78	28.76	55.2	55.3	4.25	4.27	23.8	23.9	30	29
M1	3/9/2022	Mid-Flood	Fine	Moderate	12:13	1.1	M	0.55	2			7.22		28.74			55.4		4.29		23.9		27			
M2	3/9/2022	Mid-Flood	Fine	Moderate	12:31	0.9	M	0.45	1	0.059	55	7.05	7.05	0.93	0.94	0.94	29.01	29.01	60.7	60.6	4.43	4.42	25.2	25.2	18	19
M2	3/9/2022	Mid-Flood	Fine	Moderate	12:31	0.9	M	0.45	2			7.04		29.01			60.4		4.41		25.1		20			
M3	3/9/2022	Mid-Flood	Fine	Moderate	12:43	1.4	M	0.7	1	0.034	73	7.08	7.09	1.35	1.35	1.35	28.64	28.65	59.1	59.2	4.32	4.33	32.8	32.8	30	31
M3	3/9/2022	Mid-Flood	Fine	Moderate	12:43	1.4	M	0.7	2			7.09		28.66			59.2		4.34		32.9		32			
M1	3/9/2022	Mid-Ebb	Fine	Moderate	18:20	1	M	0.5	1	0.033	284	7.33	7.31	1.38	1.39	1.39	28.84	28.86	52.6	53.2	4.37	4.39	25.1	25.1	18	19
M1	3/9/2022	Mid-Ebb	Fine	Moderate	18:20	1	M	0.5	2			7.29		28.87			53.8		4.41		25.1		19			
M2	3/9/2022	Mid-Ebb	Fine	Moderate	18:02	0.8	M	0.4	1	0.055	79	7.09	7.09	0.74	0.73	0.73	28.24	28.23	47.1	47.2	4.09	4.10	24.1	24.1	31	31
M2	3/9/2022	Mid-Ebb	Fine	Moderate	18:02	0.8	M	0.4	2			7.08		28.22			47.3		4.10		24.2		30			
M3	3/9/2022	Mid-Ebb	Fine	Moderate	18:32	1.2	M	0.6	1	0.067	44	7.08	7.06	1.48	1.49	1.49	27.94	27.97	62.8	62.6	4.41	4.42	34.8	34.4	13	14
M3	3/9/2022	Mid-Ebb	Fine	Moderate	18:32	1.2	M	0.6	2			7.04		27.99			62.4		4.42		34.0		14			

Remark

1. Orange and Bold: Action Level Exceedance (For Impact Station Only)
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3. Action Level for Turbidity: 95%-ile of baseline data or 120% of upstream control station's turbidity recorded on the same day.
4. Limit Level for Turbidity: 99%-ile of baseline data or 130% of upstream control station's turbidity recorded on the same day.
5. Action Level for SS: 95%-ile of baseline data or 120% of upstream control station's SS recorded on the same day.
6. Limit Level for SS: 99%-ile of baseline data or 130% of upstream control station's SS recorded on the same day.

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	6/9/2022	Mid-Flood	Fine	Moderate	18:16	0.8	M	0.4	1	0.056	73	7.46	7.48	2.94	2.94	27.92	27.93	84.5	84.3	6.73	6.72	25.1	25.1	26	26
M1	6/9/2022	Mid-Flood	Fine	Moderate	18:16	0.8	M	0.4	2			7.49		2.93		27.93		84.1		6.70		25.1		25	
M2	6/9/2022	Mid-Flood	Fine	Moderate	17:58	0.7	M	0.35	1	0.056	98	7.76	7.75	2.82	2.83	28.74	28.76	90.2	90.2	6.84	6.84	24.2	24.2	20	22
M2	6/9/2022	Mid-Flood	Fine	Moderate	17:58	0.7	M	0.35	2			7.74		2.83		28.77		90.1		6.83		24.2		23	
M3	6/9/2022	Mid-Flood	Fine	Moderate	18:30	1.4	M	0.7	1	0.042	76	6.91	6.92	1.84	1.85	30.41	30.41	60.8	60.5	4.34	4.32	46.3	46.3	27	26
M3	6/9/2022	Mid-Flood	Fine	Moderate	18:30	1.4	M	0.7	2			6.92		1.86		30.40		60.2		4.30		46.3		25	
M1	6/9/2022	Mid-Ebb	Fine	Moderate	9:47	0.9	M	0.45	1	0.094	104	7.23	7.24	3.46	3.45	30.18	30.16	90.3	90.4	6.43	6.44	25.8	25.7	42	42
M1	6/9/2022	Mid-Ebb	Fine	Moderate	9:47	0.9	M	0.45	2			7.24		3.44		30.14		90.4		6.44		25.7		41	
M2	6/9/2022	Mid-Ebb	Fine	Moderate	10:06	0.8	M	0.4	1	0.047	76	7.31	7.32	3.87	3.87	29.24	29.23	87.6	87.5	6.23	6.22	26.1	26.1	20	21
M2	6/9/2022	Mid-Ebb	Fine	Moderate	10:06	0.8	M	0.4	2			7.32		3.86		29.21		87.4		6.21		26.1		22	
M3	6/9/2022	Mid-Ebb	Fine	Moderate	10:20	0.9	M	0.45	1	0.063	123	7.04	7.04	1.90	1.91	30.83	30.84	57.2	57.3	4.22	4.26	47.8	47.8	34	35
M3	6/9/2022	Mid-Ebb	Fine	Moderate	10:20	0.9	M	0.45	2			7.03		1.91		30.84		57.3		4.29		47.8		35	

Remark

1. Orange and Bold: Action Level Exceedance (For Impact Station Only)
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3. Action Level for Turbidity: 95%-ile of baseline data or 120% of upstream control station's turbidity recorded on the same day.
4. Limit Level for Turbidity: 99%-ile of baseline data or 130% of upstream control station's turbidity recorded on the same day.
5. Action Level for SS: 95%-ile of baseline data or 120% of upstream control station's SS recorded on the same day.
6. Limit Level for SS: 99%-ile of baseline data or 130% of upstream control station's SS recorded on the same day.

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	8/9/2022	Mid-Flood	Fine	Moderate	19:58	1.1	M	0.55	1	0.047	92	6.77	6.80	2.94	2.94	29.22	29.22	62.4	62.4	5.04	5.04	28.3	28.3	48	49
M1	8/9/2022	Mid-Flood	Fine	Moderate	19:58	1.1	M	0.55	2			6.82		2.93		29.21		62.3		5.03		28.3		50	
M2	8/9/2022	Mid-Flood	Fine	Moderate	19:34	1	M	0.5	1	0.054	73	6.82	6.82	2.81	2.82	29.43	29.42	60.7	60.5	4.82	4.78	27.2	27.2	45	45
M2	8/9/2022	Mid-Flood	Fine	Moderate	19:34	1	M	0.5	2			6.81		2.82		29.41		60.3		4.74		27.2		45	
M3	8/9/2022	Mid-Flood	Cloudy	Smooth	19:32	0.6	M	0.3	1	0.286	81	7.35	7.36	3.07	3.07	29.03	29.03	58.9	58.7	4.36	4.35	25.1	25.3	58	57
M3	8/9/2022	Mid-Flood	Cloudy	Smooth	19:32	0.6	M	0.3	2			7.37		3.06		29.02		58.4		4.33		25.4		55	
M1	8/9/2022	Mid-Ebb	Fine	Moderate	12:19	0.9	M	0.45	1	0.065	305	6.81	6.82	4.48	4.49	30.07	30.39	57.4	57.3	4.23	4.22	25.2	25.2	42	43
M1	8/9/2022	Mid-Ebb	Fine	Moderate	12:19	0.9	M	0.45	2			6.82		4.49		30.71		57.2		4.21		25.1		44	
M2	8/9/2022	Mid-Ebb	Fine	Moderate	12:47	0.8	M	0.4	1	0.073	243	6.70	6.72	4.56	4.58	29.23	29.26	53.1	53.2	4.07	4.08	25.8	25.8	35	34
M2	8/9/2022	Mid-Ebb	Fine	Moderate	12:47	0.8	M	0.4	2			6.74		4.59		29.28		53.2		4.08		25.8		33	
M3	8/9/2022	Mid-Ebb	Cloudy	Smooth	12:07	0.8	M	0.4	1	0.331	263	7.18	7.18	4.13	4.14	30.81	30.82	64.7	64.3	4.77	4.74	27.8	28.2	35	34
M3	8/9/2022	Mid-Ebb	Cloudy	Smooth	12:07	0.8	M	0.4	2			7.17		4.14		30.83		63.9		4.71		28.7		32	

Remark

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3. Action Level for Turbidity: 95%-ile of baseline data or 120% of upstream control station's turbidity recorded on the same day.
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5. Action Level for SS: 95%-ile of baseline data or 120% of upstream control station's SS recorded on the same day.
6. Limit Level for SS: 99%-ile of baseline data or 130% of upstream control station's SS recorded on the same day.

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	10/9/2022	Mid-Flood	Fine	Moderate	21:01	1.3	M	0.65	1	0.084	65	7.11	7.12	13.26	13.25	28.46	28.45	70.2	70.2	6.04	6.04	27.5	27.5	37	38
M1	10/9/2022	Mid-Flood	Fine	Moderate	21:01	1.3	M	0.65	2			7.12		13.24		28.43		70.1		6.03		27.5		38	
M2	10/9/2022	Mid-Flood	Fine	Moderate	20:41	1.1	M	0.55	1	0.093	55	7.03	7.04	14.16	14.14	29.98	29.99	74.2	74.3	6.23	6.25	28.3	28.3	32	31
M2	10/9/2022	Mid-Flood	Fine	Moderate	20:41	1.1	M	0.55	2			7.04		14.12		29.99		74.4		6.27		28.3		29	
M3	10/9/2022	Mid-Flood	Cloudy	Calm	20:36	0.6	M	0.3	1	0.356	81	7.89	7.89	7.34	7.35	29.25	29.25	63.1	63.4	4.63	4.66	20.6	20.2	27	26
M3	10/9/2022	Mid-Flood	Cloudy	Calm	20:36	0.6	M	0.3	2			7.88		7.36		29.24		63.7		4.68		19.8		25	
M1	10/9/2022	Mid-Ebb	Fine	Moderate	13:48	0.9	M	0.45	1	0.063	176	7.84	7.83	13.17	13.14	29.48	29.46	90.6	90.5	6.54	6.53	27.5	27.5	19	19
M1	10/9/2022	Mid-Ebb	Fine	Moderate	13:48	0.9	M	0.45	2			7.81		13.11		29.44		90.4		6.52		27.5		19	
M2	10/9/2022	Mid-Ebb	Fine	Moderate	14:08	0.8	M	0.4	1	0.055	43	7.91	7.92	12.10	12.10	29.01	29.02	89.4	89.4	6.43	6.43	26.4	26.4	23	23
M2	10/9/2022	Mid-Ebb	Fine	Moderate	14:08	0.8	M	0.4	2			7.92		12.09		29.02		89.3		6.42		26.4		22	
M3	10/9/2022	Mid-Ebb	Cloudy	Calm	13:44	1	M	0.5	1	0.401	277	7.50	7.51	5.42	5.42	32.01	32.02	70.3	70.1	5.14	5.12	23.9	23.5	38	38
M3	10/9/2022	Mid-Ebb	Cloudy	Calm	13:44	1	M	0.5	2			7.51		5.42		32.03		69.8		5.10		23.1		37	

Remark

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For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	13/9/2022	Mid-Flood	Fine	Moderate	9:24	1.3	M	0.65	1	0.075	106	8.02	8.03	2.41	2.42	30.01	30.02	61.2	61.3	4.56	4.58	20.6	20.6	17	19
M1	13/9/2022	Mid-Flood	Fine	Moderate	9:24	1.3	M	0.65	2			8.04		2.43		30.02		61.4		4.59		20.5		20	
M2	13/9/2022	Mid-Flood	Fine	Moderate	9:49	1.1	M	0.55	1	0.049	75	8.03	8.06	2.77	2.76	29.77	29.74	60.6	60.5	4.51	4.49	23.7	23.8	15	16
M2	13/9/2022	Mid-Flood	Fine	Moderate	9:49	1.1	M	0.55	2			8.09		2.74		29.71		60.3		4.47		23.8		17	
M3	13/9/2022	Mid-Flood	Cloudy	Smooth	9:21	0.8	M	0.4	1	0.307	94	7.57	7.58	3.17	3.18	29.36	29.37	47.7	48.0	3.53	3.55	37.2	37.1	16	17
M3	13/9/2022	Mid-Flood	Cloudy	Smooth	9:21	0.8	M	0.4	2			7.58		3.19		29.37		48.3		3.57		37.0		17	
M1	13/9/2022	Mid-Ebb	Fine	Moderate	15:57	1	M	0.5	1	0.083	351	8.24	8.27	1.51	1.52	28.94	28.97	75.5	75.6	5.64	5.65	22.6	22.6	10	11
M1	13/9/2022	Mid-Ebb	Fine	Moderate	15:57	1	M	0.5	2			8.29		1.52		28.99		75.6		5.66		22.6		11	
M2	13/9/2022	Mid-Ebb	Fine	Moderate	15:38	0.9	M	0.45	1	0.056	72	8.23	8.24	1.84	1.86	29.71	29.72	71.2	71.3	5.32	5.35	25.9	25.9	26	26
M2	13/9/2022	Mid-Ebb	Fine	Moderate	15:38	0.9	M	0.45	2			8.24		1.88		29.72		71.4		5.38		25.9		26	
M3	13/9/2022	Mid-Ebb	Cloudy	Smooth	15:31	0.6	M	0.3	1	0.318	258	7.83	7.82	2.05	2.05	34.02	34.03	68.9	68.7	5.14	5.13	30.5	30.6	27	28
M3	13/9/2022	Mid-Ebb	Cloudy	Smooth	15:31	0.6	M	0.3	2			7.81		2.04		34.04		68.5		5.11		30.8		29	

Remark

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For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	15/9/2022	Mid-Flood	Fine	Moderate	10:53	1.3	M	0.65	1	0.064	123	7.97	7.97	2.93	2.94	30.19	30.19	98.5	98.4	7.30	7.29	28.4	28.4	45	43
M1	15/9/2022	Mid-Flood	Fine	Moderate	10:53	1.3	M	0.65	2			7.96		2.94		30.18		98.3		7.28		28.3		41	
M2	15/9/2022	Mid-Flood	Fine	Moderate	11:12	1.1	M	0.55	1	0.05	72	7.96	7.95	2.73	2.74	29.94	30.01	97.4	97.5	7.24	7.26	28.6	28.6	38	39
M2	15/9/2022	Mid-Flood	Fine	Moderate	11:12	1.1	M	0.55	2			7.93		2.74		30.07		97.6		7.28		28.7		39	
M3	15/9/2022	Mid-Flood	Cloudy	Calm	10:39	0.4	M	0.2	1	0.248	90	7.53	7.54	3.47	3.47	30.12	30.13	58.4	58.1	4.39	4.37	26.4	26.1	33	32
M3	15/9/2022	Mid-Flood	Cloudy	Calm	10:39	0.4	M	0.2	2			7.54		3.47		30.13		57.7		4.34		25.9		31	
M1	15/9/2022	Mid-Ebb	Fine	Moderate	16:49	1	M	0.5	1	0.07	46	7.94	7.93	2.86	2.87	29.83	29.84	89.1	89.2	6.63	6.64	27.6	27.6	42	41
M1	15/9/2022	Mid-Ebb	Fine	Moderate	16:49	1	M	0.5	2			7.91		2.88		29.84		89.2		6.64		27.6		39	
M2	15/9/2022	Mid-Ebb	Fine	Moderate	16:30	0.9	M	0.45	1	0.047	60	7.80	7.81	2.49	2.47	30.01	30.01	95.6	95.5	7.13	7.12	26.2	26.2	36	36
M2	15/9/2022	Mid-Ebb	Fine	Moderate	16:30	0.9	M	0.45	2			7.81		2.44		30.01		95.4		7.11		26.2		35	
M3	15/9/2022	Mid-Ebb	Cloudy	Calm	16:26	0.4	M	0.2	1	0.223	250	7.82	7.82	0.78	0.77	32.98	32.98	63.5	63.7	4.77	4.79	39.3	38.8	24	24
M3	15/9/2022	Mid-Ebb	Cloudy	Calm	16:26	0.4	M	0.2	2			7.81		0.76		32.97		63.9		4.81		38.2		24	

Remark

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For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	17/9/2022	Mid-Flood	Fine	Moderate	12:53	0.9	M	0.45	1	0.046	91	7.49	7.47	2.83	2.84	31.12	31.13	60.7	60.5	4.94	4.93	17.7	17.7	24	24
M1	17/9/2022	Mid-Flood	Fine	Moderate	12:53	0.9	M	0.45	2			7.44		2.84		31.14		60.3		4.91		17.3		23	
M2	17/9/2022	Mid-Flood	Fine	Moderate	13:11	0.8	M	0.4	1	0.058	71	7.44	7.43	2.86	2.87	30.84	30.83	68.8	68.6	5.32	5.31	17.3	17.3	23	25
M2	17/9/2022	Mid-Flood	Fine	Moderate	13:11	0.8	M	0.4	2			7.42		2.88		30.81		68.4		5.29		17.3		26	
M3	17/9/2022	Mid-Flood	Cloudy	Calm	12:49	0.2	M	0.1	1	0.23	94	7.82	7.82	2.20	2.21	32.11	32.12	56.5	56.9	4.12	4.15	24.0	23.8	26	26
M3	17/9/2022	Mid-Flood	Cloudy	Calm	12:49	0.2	M	0.1	2			7.81		2.21		32.13		57.2		4.18		23.6		26	
M1	17/9/2022	Mid-Ebb	Fine	Moderate	18:16	0.8	M	0.4	1	0.065	323	7.28	7.29	3.77	3.75	29.27	29.26	60.3	60.2	4.77	4.77	21.5	21.4	37	37
M1	17/9/2022	Mid-Ebb	Fine	Moderate	18:16	0.8	M	0.4	2			7.29		3.72		29.24		60.1		4.76		21.4		37	
M2	17/9/2022	Mid-Ebb	Fine	Moderate	17:57	0.7	M	0.35	1	0.096	145	7.30	7.31	3.81	3.82	30.23	30.24	57.7	57.7	4.83	4.83	21.8	21.8	57	55
M2	17/9/2022	Mid-Ebb	Fine	Moderate	17:57	0.7	M	0.35	2			7.31		3.82		30.24		57.6		4.82		21.7		53	
M3	17/9/2022	Mid-Ebb	Cloudy	Calm	17:51	0.4	M	0.2	1	0.204	261	7.67	7.66	0.92	0.93	33.68	33.68	69.9	70.2	5.17	5.19	34.0	34.5	35	34
M3	17/9/2022	Mid-Ebb	Cloudy	Calm	17:51	0.4	M	0.2	2			7.65		0.94		33.67		70.4		5.21		35.1		32	

Remark

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For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	20/9/2022	Mid-Flood	Fine	Moderate	18:34	1.4	M	0.7	1	0.072	213	6.84	6.84	1.04	1.05	29.14	29.13	74.2	74.3	5.61	5.62	18.1	18.1	17	18
M1	20/9/2022	Mid-Flood	Fine	Moderate	18:34	1.4	M	0.7	2			6.83		1.05		29.11		74.3		5.62		18.1		18	
M2	20/9/2022	Mid-Flood	Fine	Moderate	18:07	1.1	M	0.55	1	0.083	92	6.74	6.76	0.92	0.93	30.37	30.36	76.3	76.3	5.72	5.73	17.8	17.7	15	16
M2	20/9/2022	Mid-Flood	Fine	Moderate	18:07	1.1	M	0.55	2			6.77		0.93		30.34		76.2		5.74		17.7		16	
M3	20/9/2022	Mid-Flood	Cloudy	Calm	18:02	0.4	M	0.2	1	0.199	84	7.88	7.87	2.91	2.92	29.87	29.88	60.4	60.2	4.53	4.52	25.9	25.4	27	27
M3	20/9/2022	Mid-Flood	Cloudy	Calm	18:02	0.4	M	0.2	2			7.86		2.93		29.88		59.9		4.50		24.9		27	
M1	20/9/2022	Mid-Ebb	Fine	Moderate	9:38	1.2	M	0.6	1	0.059	106	7.20	7.21	0.61	0.62	30.80	30.80	88.8	88.6	6.60	6.56	18.6	18.6	11	12
M1	20/9/2022	Mid-Ebb	Fine	Moderate	9:38	1.2	M	0.6	2			7.21		0.62		30.80		88.4		6.52		18.5		13	
M2	20/9/2022	Mid-Ebb	Fine	Moderate	9:56	1	M	0.5	1	0.056	72	7.32	7.33	0.93	0.94	29.23	29.26	87.1	87.2	6.42	6.43	18.2	18.2	14	14
M2	20/9/2022	Mid-Ebb	Fine	Moderate	9:56	1	M	0.5	2			7.34		0.94		29.29		87.3		6.44		18.2		14	
M3	20/9/2022	Mid-Ebb	Cloudy	Calm	9:24	0.6	M	0.3	1	0.234	269	7.53	7.53	1.33	1.33	30.29	30.30	67.9	67.5	5.10	5.08	21.1	21.4	13	12
M3	20/9/2022	Mid-Ebb	Cloudy	Calm	9:24	0.6	M	0.3	2			7.52		1.32		30.31		67.1		5.05		21.8		10	

Remark

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For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	22/9/2022	Mid-Flood	Fine	Moderate	19:15	1.3	M	0.65	1	0.075	41	7.90	7.91	14.81	14.82	29.24	29.23	59.6	59.8	4.24	4.25	19.1	19.1	27	28
M1	22/9/2022	Mid-Flood	Fine	Moderate	19:15	1.3	M	0.65	2			7.91		14.82		29.22		59.9		4.26		19.1		29	
M2	22/9/2022	Mid-Flood	Fine	Moderate	18:57	1	M	0.5	1	0.083	72	7.89	7.89	14.57	14.58	29.17	29.18	59.4	59.5	4.21	4.22	19.4	19.4	27	28
M2	22/9/2022	Mid-Flood	Fine	Moderate	18:57	1	M	0.5	2			7.88		14.58		29.18		59.6		4.23		19.3		29	
M3	22/9/2022	Mid-Flood	Cloudy	Calm	18:49	0.4	M	0.2	1	0.276	70	7.78	7.78	7.55	7.55	30.97	30.97	64.8	64.5	4.68	4.66	20.3	20.5	25	24
M3	22/9/2022	Mid-Flood	Cloudy	Calm	18:49	0.4	M	0.2	2			7.77		7.54		30.96		64.1		4.63		20.8		23	
M1	22/9/2022	Mid-Ebb	Fine	Moderate	11:38	1.1	M	0.55	1	0.063	236	7.89	7.89	8.80	8.72	30.49	30.48	62.8	62.1	5.03	5.00	14.5	14.6	19	21
M1	22/9/2022	Mid-Ebb	Fine	Moderate	11:38	1.1	M	0.55	2			7.88		8.64		30.47		61.4		4.97		14.6		22	
M2	22/9/2022	Mid-Ebb	Fine	Moderate	11:49	0.9	M	0.45	1	0.056	92	7.89	7.88	8.77	8.76	30.53	30.56	64.6	64.8	5.13	5.15	14.9	14.9	18	18
M2	22/9/2022	Mid-Ebb	Fine	Moderate	11:49	0.9	M	0.45	2			7.87		8.74		30.58		64.9		5.17		14.9		17	
M3	22/9/2022	Mid-Ebb	Cloudy	Calm	11:38	0.6	M	0.3	1	0.303	277	7.57	7.58	5.84	5.83	29.61	29.62	68.9	69.1	5.02	5.04	13.8	13.5	20	21
M3	22/9/2022	Mid-Ebb	Cloudy	Calm	11:38	0.6	M	0.3	2			7.59		5.82		29.62		69.3		5.05		13.2		21	

Remark

1. Orange and Bold: Action Level Exceedance (For Impact Station Only)
2. Red and Bold: Limit Level Exceedance (For Impact Station Only)
3. Action Level for Turbidity: 95%-ile of baseline data or 120% of upstream control station's turbidity recorded on the same day.
4. Limit Level for Turbidity: 99%-ile of baseline data or 130% of upstream control station's turbidity recorded on the same day.
5. Action Level for SS: 95%-ile of baseline data or 120% of upstream control station's SS recorded on the same day.
6. Limit Level for SS: 99%-ile of baseline data or 130% of upstream control station's SS recorded on the same day.

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	24/9/2022	Mid-Flood	Fine	Moderate	19:56	0.8	M	0.4	1	0.053	90	7.88	7.86	5.11	5.12	29.44	29.48	54.6	54.5	4.37	4.36	14.3	14.2	13	14
M1	24/9/2022	Mid-Flood	Fine	Moderate	19:56	0.8	M	0.4	2			7.84		5.13		29.52		54.4		4.34		14.2		14	
M2	24/9/2022	Mid-Flood	Fine	Moderate	19:38	0.7	M	0.35	1	0.046	76	8.11	8.12	4.73	4.75	29.77	29.76	50.2	50.2	4.06	4.06	13.9	13.9	15	16
M2	24/9/2022	Mid-Flood	Fine	Moderate	19:38	0.7	M	0.35	2			8.12		4.77		29.74		50.1		4.05		13.9		16	
M3	24/9/2022	Mid-Flood	Cloudy	Calm	19:33	0.6	M	0.3	1	0.312	82	7.85	7.84	7.01	7.00	28.92	28.92	54.3	54.6	3.92	3.95	14.4	14.7	14	14
M3	24/9/2022	Mid-Flood	Cloudy	Calm	19:33	0.6	M	0.3	2			7.83		6.99		28.91		54.9		3.97		15.0		13	
M1	24/9/2022	Mid-Ebb	Fine	Moderate	12:57	0.9	M	0.45	1	0.063	186	8.00	8.01	12.64	12.65	29.51	29.50	60.7	60.8	4.31	4.33	16.5	16.5	10	10
M1	24/9/2022	Mid-Ebb	Fine	Moderate	12:57	0.9	M	0.45	2			8.01		12.66		29.49		60.8		4.34		16.4		10	
M2	24/9/2022	Mid-Ebb	Fine	Moderate	13:16	0.8	M	0.4	1	0.075	76	8.03	8.04	11.46	11.47	29.82	29.85	71.3	71.4	4.89	4.90	15.2	15.2	16	16
M2	24/9/2022	Mid-Ebb	Fine	Moderate	13:16	0.8	M	0.4	2			8.04		11.47		29.88		71.4		4.91		15.2		15	
M3	24/9/2022	Mid-Ebb	Cloudy	Calm	12:56	0.8	M	0.4	1	0.344	269	7.31	7.30	4.61	4.61	30.78	30.79	71.3	71.0	5.31	5.29	19.4	19.0	12	13
M3	24/9/2022	Mid-Ebb	Cloudy	Calm	12:56	0.8	M	0.4	2			7.29		4.60		30.79		70.7		5.26		18.5		14	

Remark

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4. Limit Level for Turbidity: 99%-ile of baseline data or 130% of upstream control station's turbidity recorded on the same day.
5. Action Level for SS: 95%-ile of baseline data or 120% of upstream control station's SS recorded on the same day.
6. Limit Level for SS: 99%-ile of baseline data or 130% of upstream control station's SS recorded on the same day.

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	27/9/2022	Mid-Flood	Cloudy	Calm	8:32	2.2	M	1.1	1	0.341	229	7.41	7.42	11.27	11.28	28.03	28.04	61.6	61.9	4.48	4.50	13.1	12.9	26	26
M1	27/9/2022	Mid-Flood	Cloudy	Calm	8:32	2.2	M	1.1	2			7.43		11.29		28.04		62.1		4.51		12.7		25	
M2	27/9/2022	Mid-Flood	Cloudy	Calm	8:49	1.2	M	0.6	1	0.319	288	7.31	7.32	10.13	10.12	28.26	28.27	56.9	57.1	4.11	4.12	14.0	14.4	30	29
M2	27/9/2022	Mid-Flood	Cloudy	Calm	8:49	1.2	M	0.6	2			7.32		10.11		28.28		57.2		4.13		14.8		28	
M3	27/9/2022	Mid-Flood	Fine	Moderate	8:34	1.4	M	0.7	1	0.068	34	7.29	7.27	13.97	13.97	28.94	28.94	57.8	57.9	4.12	4.13	20.5	20.5	61	60
M3	27/9/2022	Mid-Flood	Fine	Moderate	8:34	1.4	M	0.7	2			7.25		13.96		28.93		57.9		4.13		20.5		58	
M1	27/9/2022	Mid-Ebb	Cloudy	Calm	14:58	2	M	1	1	0.327	239	7.26	7.27	8.30	8.31	31.93	31.94	63.1	62.9	4.58	4.56	20.3	20.0	26	27
M1	27/9/2022	Mid-Ebb	Cloudy	Calm	14:58	2	M	1	2			7.28		8.32		31.95		62.6		4.54		19.7		27	
M2	27/9/2022	Mid-Ebb	Cloudy	Calm	14:39	1.2	M	0.6	1	0.306	258	7.22	7.22	8.13	8.14	31.62	31.62	65.9	65.7	4.74	4.73	17.8	18.2	30	29
M2	27/9/2022	Mid-Ebb	Cloudy	Calm	14:39	1.2	M	0.6	2			7.21		8.14		31.61		65.5		4.71		18.6		28	
M3	27/9/2022	Mid-Ebb	Fine	Moderate	14:50	1.2	M	0.6	1	0.072	265	7.33	7.32	9.48	9.46	29.23	29.24	59.1	59.2	4.32	4.34	15.8	15.9	30	29
M3	27/9/2022	Mid-Ebb	Fine	Moderate	14:50	1.2	M	0.6	2			7.31		9.44		29.24		59.3		4.35		15.9		27	

Remark

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For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	29/9/2022	Mid-Flood	Fine	Moderate	9:52	1.1	M	0.55	1	0.092	76	7.54	7.55	6.09	6.09	28.40	28.35	82.2	82.3	6.17	6.18	21.9	22.0	24	23
M1	29/9/2022	Mid-Flood	Fine	Moderate	9:52	1.1	M	0.55	2			7.55		6.08		28.30		82.4		6.19		22.0		22	
M2	29/9/2022	Mid-Flood	Fine	Moderate	10:12	1	M	0.5	1	0.048	310	7.34	7.34	6.13	6.14	28.11	28.13	84.9	84.9	6.31	6.30	20.3	20.2	30	30
M2	29/9/2022	Mid-Flood	Fine	Moderate	10:12	1	M	0.5	2			7.33		6.14		28.14		84.8		6.29		20.2		29	
M3	29/9/2022	Mid-Flood	Cloudy	Smooth	9:46	0.8	M	0.4	1	0.316	96	7.39	7.39	5.82	5.83	28.02	28.03	56.7	56.4	4.24	4.22	31.3	30.9	39	39
M3	29/9/2022	Mid-Flood	Cloudy	Smooth	9:46	0.8	M	0.4	2			7.38		5.84		28.03		56.1		4.19		30.4		38	
M1	29/9/2022	Mid-Ebb	Fine	Moderate	16:09	1	M	0.5	1	0.045	51	7.22	7.23	6.56	6.55	27.91	27.92	81.1	81.0	6.06	6.06	21.8	21.8	11	12
M1	29/9/2022	Mid-Ebb	Fine	Moderate	16:09	1	M	0.5	2			7.23		6.54		27.93		80.9		6.05		21.7		13	
M2	29/9/2022	Mid-Ebb	Fine	Moderate	15:45	0.9	M	0.45	1	0.055	71	7.21	7.22	6.44	6.47	27.74	27.75	80.7	80.7	6.04	6.03	21.9	21.9	30	29
M2	29/9/2022	Mid-Ebb	Fine	Moderate	15:45	0.9	M	0.45	2			7.23		6.49		27.76		80.6		6.02		21.9		28	
M3	29/9/2022	Mid-Ebb	Cloudy	Smooth	15:45	0.6	M	0.3	1	0.295	267	7.13	7.14	4.91	4.92	30.12	30.12	60.8	61.0	4.56	4.58	22.9	22.7	32	32
M3	29/9/2022	Mid-Ebb	Cloudy	Smooth	15:45	0.6	M	0.3	2			7.14		4.92		30.11		61.2		4.59		22.4		31	

Remark

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6. Limit Level for SS: 99%-ile of baseline data or 130% of upstream control station's SS recorded on the same day.

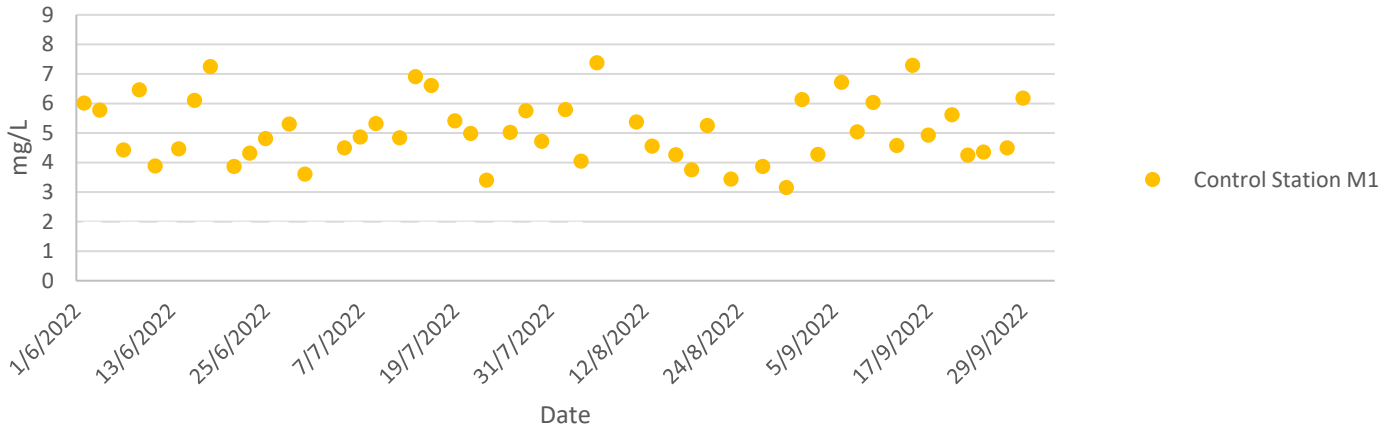
For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

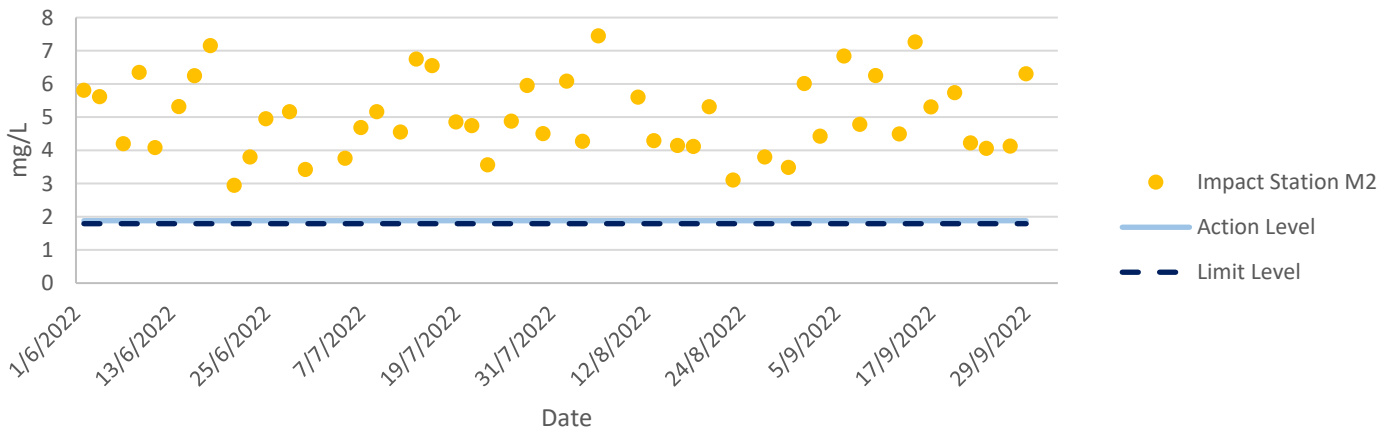
For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

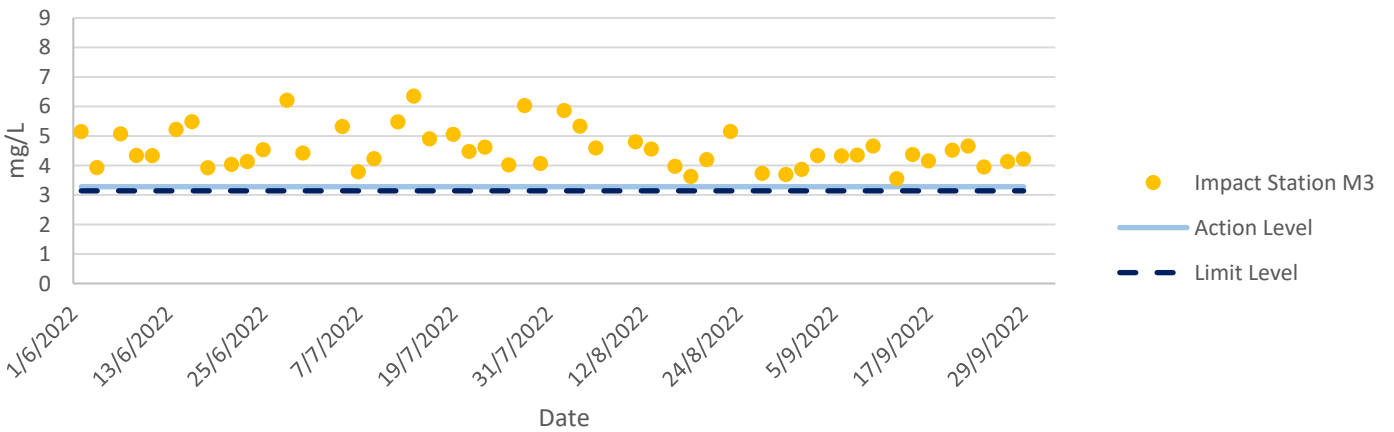
Dissolved Oxygen at Mid-Flood Tide



Dissolved Oxygen at Mid-Flood Tide

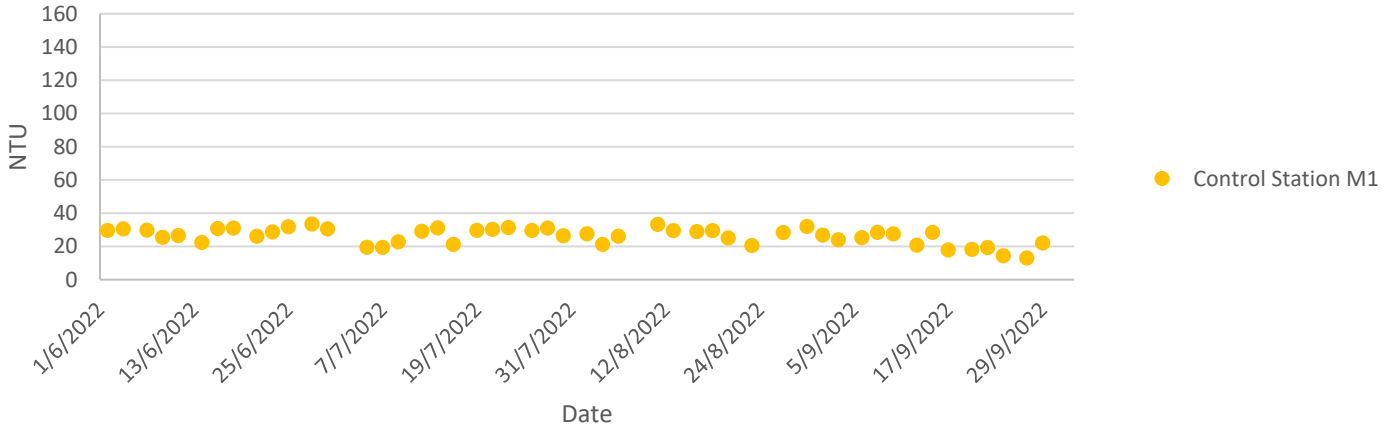


Dissolved Oxygen at Mid-Flood Tide

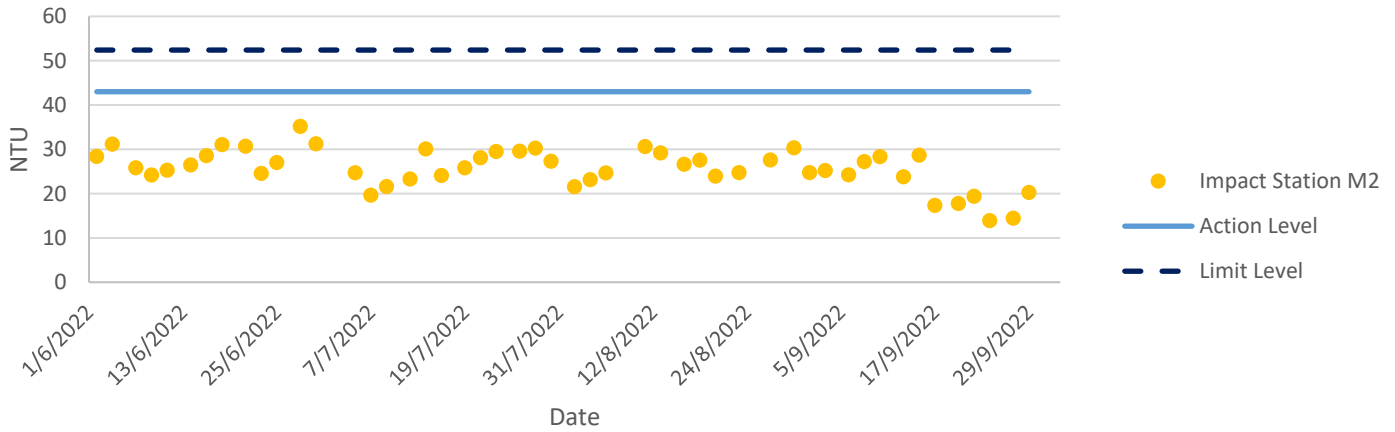


Water Quality Monitoring Results

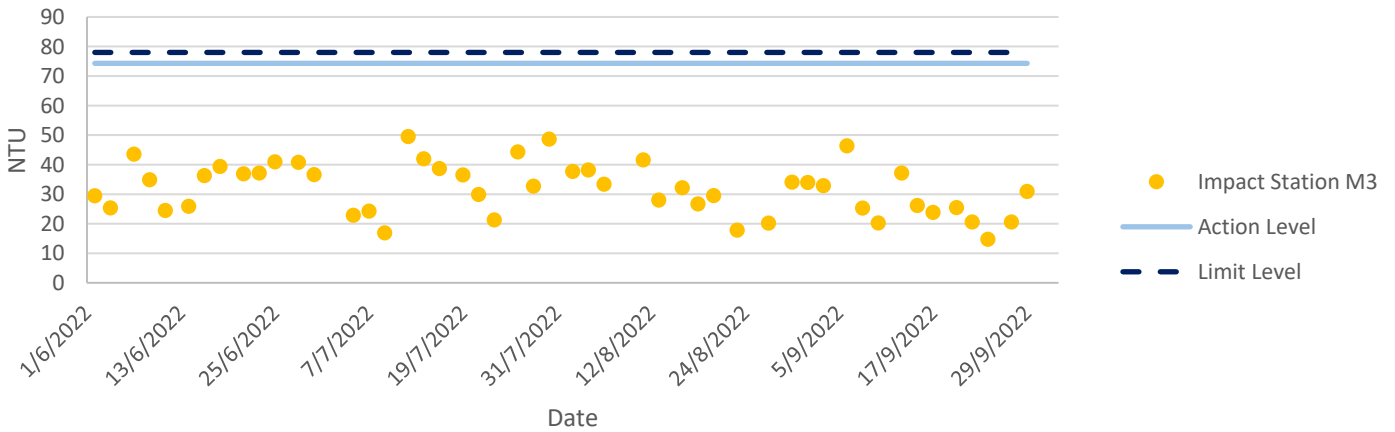
Turbidity at Mid-Flood Tide



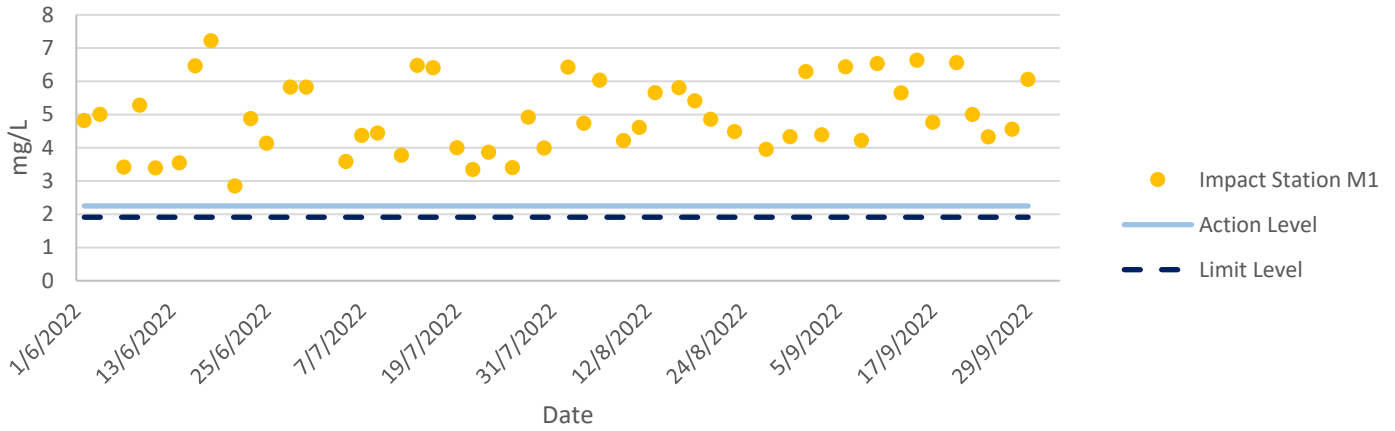
Turbidity at Mid-Flood Tide



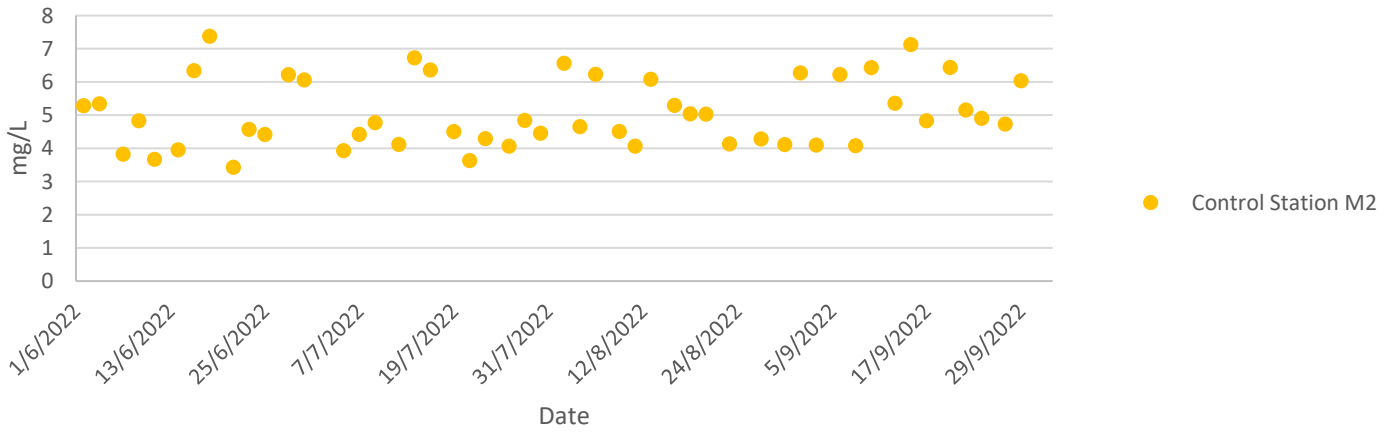
Turbidity at Mid-Flood Tide



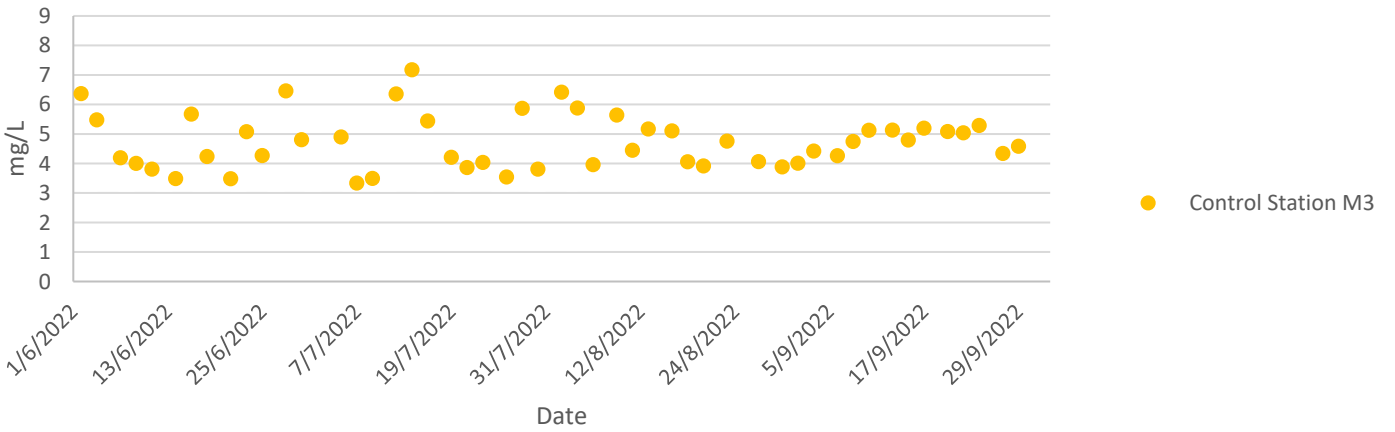
Dissolved Oxygen at Mid-Ebb Tide



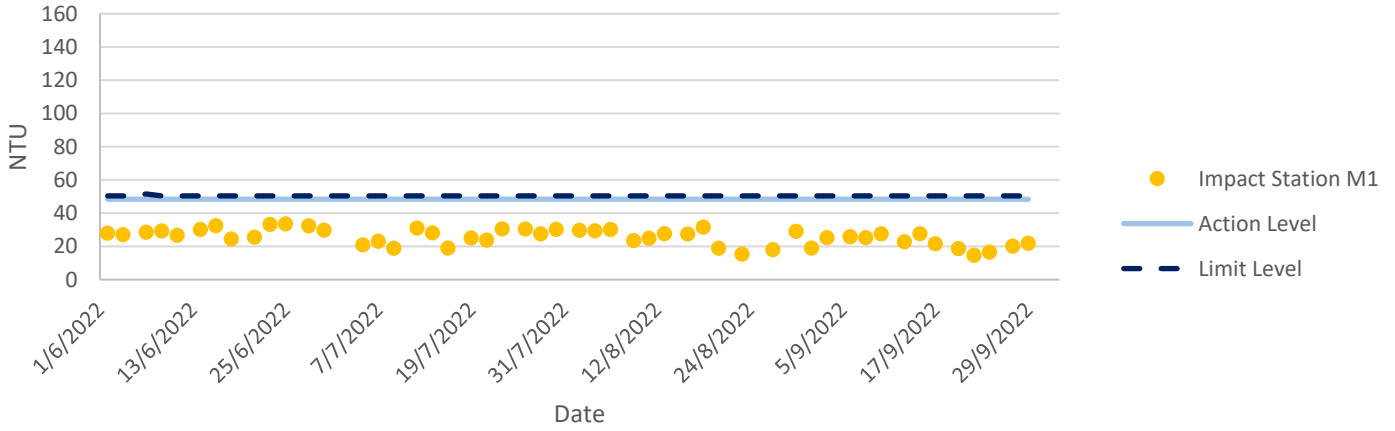
Dissolved Oxygen at Mid-Ebb Tide



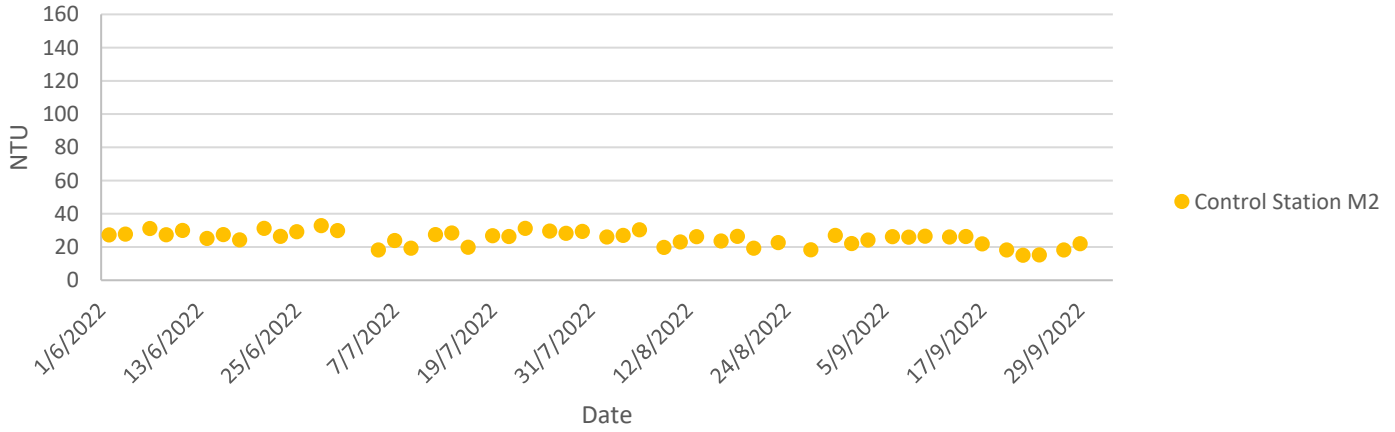
Dissolved Oxygen at Mid-Ebb Tide



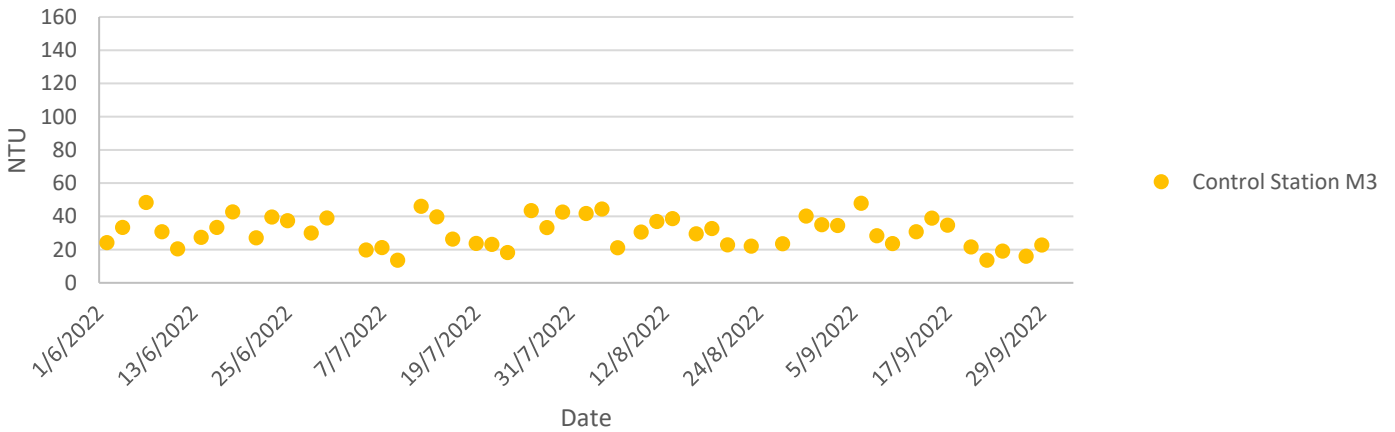
Turbidity at Mid-Ebb Tide



Turbidity at Mid-Ebb Tide

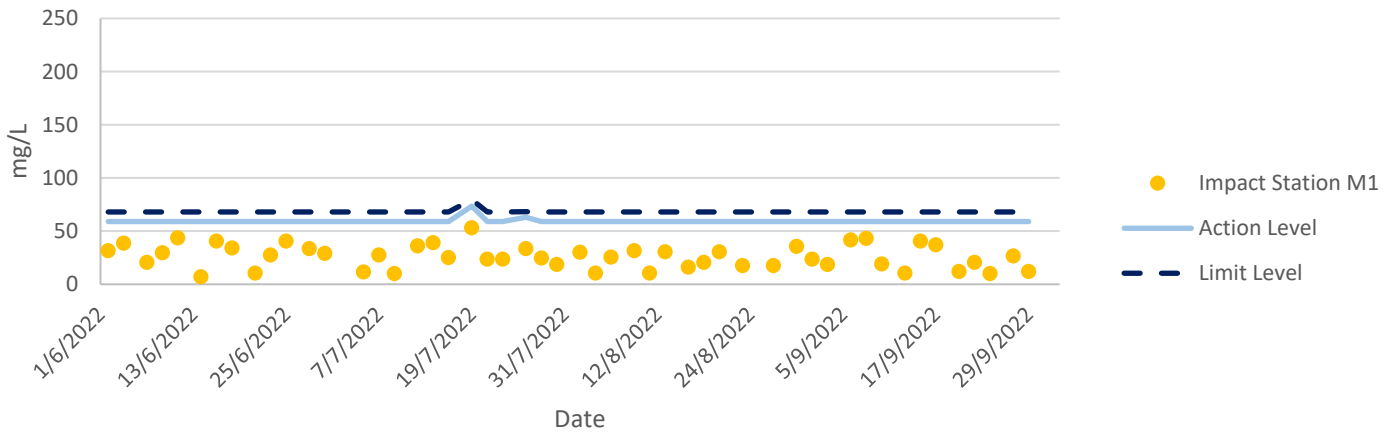


Turbidity at Mid-Ebb Tide

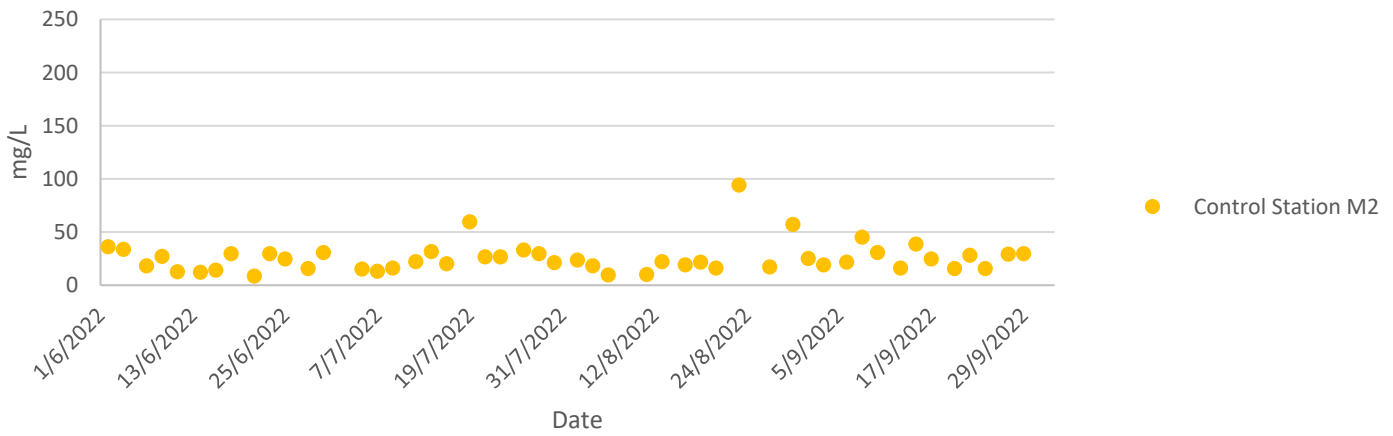


Water Quality Monitoring Results

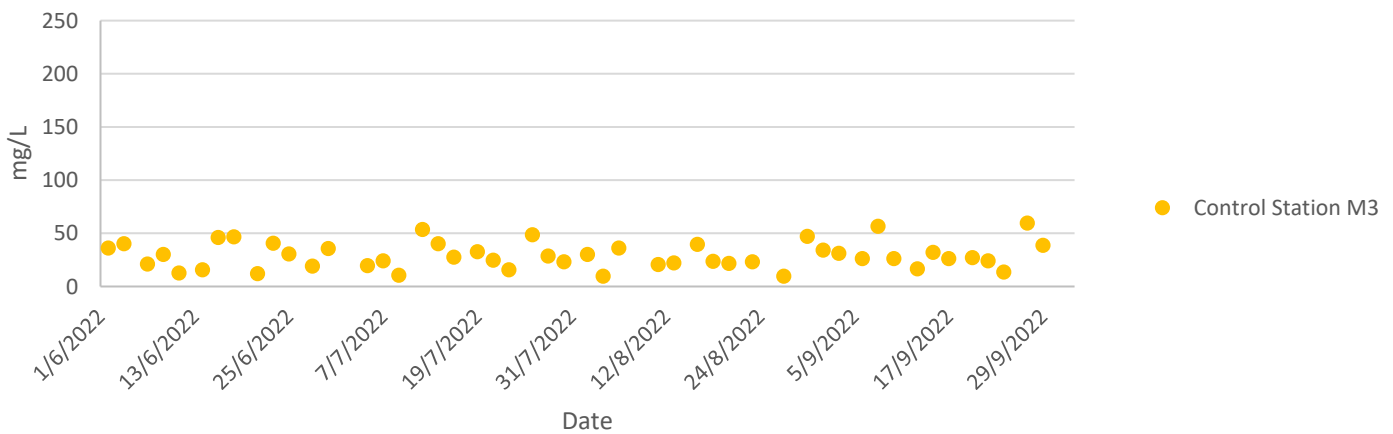
Total Suspended Solids at Mid-Ebb Tide



Total Suspended Solids at Mid-Ebb Tide



Total Suspended Solids at Mid-Ebb Tide



Ecology Monitoring Results

Ecology Monitoring Results for

Contract No. SPW 07/2020

Environmental Team for Construction of Yuen long Effluent Polishing Plant Stage 1

Appendix F.1 Ecological Bird Monitoring Result (15 and 16 September 2022)

Date (dd/mm/yyyy)	Daytime/Night time	Season	Area	Transect/Point Count	Point Count (Location)/Transect Impact	Habitat	Common Name	Scientific Name	Abundance	Distribution in Hong Kong ²	Principal Status ³	Level of Concern ⁴	Protection Status in China ⁵	China Red Data Book ⁶	Red List of China's Vertebrates ¹⁰	IUCN Red List ⁷ (v.2020-3)	Species of Conservation Importance	Wetland Dependent
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Great Egret	<i>Ardea alba</i>	2	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Plantation-FLW	Azure-winged Magpie	<i>Cyanopica cyanus</i>	1	Introduced	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	In-flight	Black Drongo	<i>Dicrurus macrocercus</i>	7	Common	SV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Intermediate Egret	<i>Egretta intermedia</i>	3	Common	PM	RC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Plantation-FLW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	3	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	In-flight	Barn Swallow	<i>Hirundo rustica</i>	5	Abundant	PM,SV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	4	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	1	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Greater Coucal	<i>Centropus sinensis</i>	1	Common	R	-	Class II	Vulnerable	LC	LC	Y	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Azure-winged Magpie	<i>Cyanopica cyanus</i>	3	Introduced	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Yellow Bittern	<i>Ixobrychus sinensis</i>	1	Uncommon	PM,SV	-	-	-	LC	LC	N	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	4	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Japanese White-eye	<i>Zosterops japonicus</i>	1	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	3	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Large-billed Crow	<i>Corvus macrorhynchos</i>	1	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Black Drongo	<i>Dicrurus macrocercus</i>	1	Common	SV	-	-	-	LC	LC	N	N

15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	2	Common	R	-	-	-	LC	LC	N	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Azure-winged Magpie	<i>Cyanopica cyanus</i>	1	Introduced	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Eurasian Tree Sparrow	<i>Passer montanus</i>	6	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	5	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	3	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	2	Common	Common	LC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	3	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Intermediate Egret	<i>Egretta intermedia</i>	4	Common	PM	RC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Intermediate Egret	<i>Egretta intermedia</i>	5	Common	PM	RC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	In-flight	Black Drongo	<i>Dicrurus macrocercus</i>	3	Common	SV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	2	Abundant	R	-	-	-	LC	LC	N	N

15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Black-collared Starling	<i>Gracupica nigricollis</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	In-flight	Barn Swallow	<i>Hirundo rustica</i>	4	Abundant	PM,SV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Common Tailorbird	<i>Orthotomus sutorius</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Eurasian Tree Sparrow	<i>Passer montanus</i>	5	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Japanese White-eye	<i>Zosterops japonicus</i>	3	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Chinese Pond Heron	<i>Ardeola bacchus</i>	6	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Oriental Magpie Robin	<i>Copsychus saularis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Black-collared Starling	<i>Gracupica nigricollis</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Reedbed	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Plain Prinia	<i>Prinia inornata</i>	1	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Japanese White-eye	<i>Zosterops japonicus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Sandpiper	<i>Actitis hypoleucos</i>	4	Common	PM,WV	-	-	-	LC	LC	N	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	4	Common	PM	RC	-	-	LC	LC	Y	Y
16/09/2022	Night-time	Wet Season	NSW	Point Count	SP/NSW1	In-flight	Black Kite	<i>Milvus migrans</i>	7	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Mangrove	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Mangrove	Large-billed Crow	<i>Corvus macrorhynchos</i>	2	Common	R	-	-	-	LC	LC	N	N
16/09/2022	Night-time	Wet Season	NSW	Point Count	SP/NSW2	In-flight	Large-billed Crow	<i>Corvus macrorhynchos</i>	4	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Plantation-NSW	Asian Koel	<i>Eudynamys scolopaceus</i>	1	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Plantation-NSW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	3	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Plantation-NSW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	3	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Plantation-NSW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Sandpiper	<i>Actitis hypoleucos</i>	2	Common	PM,WV	-	-	-	LC	LC	N	Y

15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Egret	<i>Ardea alba</i>	2	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Mangrove	Chinese Pond Heron	<i>Ardeola bacchus</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/09/2022	Night-time	Wet Season	NSW	Point Count	SP/NSW3	In-flight	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	In-flight	Black Drongo	<i>Dicrurus macrocercus</i>	1	Common	SV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Mangrove	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/09/2022	Night-time	Wet Season	NSW	Point Count	SP/NSW3	In-flight	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	5	Common	PM	RC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	3	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Greenshank	<i>Tringa nebularia</i>	2	Abundant	PM,WV	RC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Redshank	<i>Tringa totanus</i>	3	Common	PM	RC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	2	Common	PM	RC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Barn Swallow	<i>Hirundo rustica</i>	3	Abundant	PM,SV	-	-	-	LC	LC	N	N
15/09/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	2	Common	Common	LC	-	-	LC	LC	Y	Y
15/09/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Greenshank	<i>Tringa nebularia</i>	2	Abundant	PM,WV	RC	-	-	LC	LC	Y	Y

Notes:

- (1) All wild birds are protected under Wild Animals Protection Ordinance (Cap. 170).
- (2) AFCD (2021). Hong Kong Biodiversity Database.
- (3) Carey et al. (2001): R=resident; WV=winter visitor; SV=summer visitor; PM=passage migrant; Sp=spring; A=autumn;
- (4) Fellowes et al. (2002): GC=Global Concern; LC=Local Concern; RC=Regional Concern; PRC=Potential Regional Concern; PGC: Potential Global Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in nesting and/or roosting sites rather than in general occurrence.
- (5) List of Wild Animals under State Protection (promulgated by State Forestry Administration and Ministry of Agriculture on 14 January, 1989).
- (6) Zheng, G. M. and Wang, Q. S. (1998). China Red Data Book
- (7) IUCN 2021. The IUCN Red List of Threatened Species. Version 2020-3.
- (9) Wetland-dependent species (including wetland-dependent species and waterbirds).
- (10) Jiang et al. (2016). Red List of China's Vertebrates

Appendix F.2.1 Ecological Bird Monitoring Diversity (All avifauna species in Point Count Method) in All Habitats (15 and 16 September 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Acridotheres cristatellus</i>	9	0.05	-2.99573	-0.14979	0.448721
<i>Actitis hypoleucos</i>	6	0.033333	-3.4012	-0.11337	0.385605
<i>Alcedo atthis</i>	1	0.005556	-5.19296	-0.02885	0.149816
<i>Amaurornis phoenicurus</i>	2	0.011111	-4.49981	-0.05	0.224981
<i>Ardea alba</i>	3	0.016667	-4.09434	-0.06824	0.279394
<i>Ardea cinerea</i>	3	0.016667	-4.09434	-0.06824	0.279394
<i>Ardeola bacchus</i>	21	0.116667	-2.14843	-0.25065	0.538507
<i>Centropus sinensis</i>	1	0.005556	-5.19296	-0.02885	0.149816
<i>Copsychus saularis</i>	3	0.016667	-4.09434	-0.06824	0.279394
<i>Corvus macrorhynchos</i>	7	0.038889	-3.24705	-0.12627	0.410018
<i>Cyanopica cyanus</i>	4	0.022222	-3.80666	-0.08459	0.322015
<i>Dicrurus macrocercus</i>	2	0.011111	-4.49981	-0.05	0.224981
<i>Egretta garzetta</i>	16	0.088889	-2.42037	-0.21514	0.520727
<i>Egretta intermedia</i>	9	0.05	-2.99573	-0.14979	0.448721
<i>Eudynamis scolopaceus</i>	1	0.005556	-5.19296	-0.02885	0.149816
<i>Gracupica nigricollis</i>	4	0.022222	-3.80666	-0.08459	0.322015
<i>Himantopus himantopus</i>	9	0.05	-2.99573	-0.14979	0.448721
<i>Ixobrychus sinensis</i>	1	0.005556	-5.19296	-0.02885	0.149816
<i>Milvus migrans</i>	7	0.038889	-3.24705	-0.12627	0.410018
<i>Motacilla alba</i>	4	0.022222	-3.80666	-0.08459	0.322015
<i>Passer montanus</i>	6	0.033333	-3.4012	-0.11337	0.385605
<i>Phalacrocorax carbo</i>	1	0.005556	-5.19296	-0.02885	0.149816
<i>Prinia flaviventris</i>	4	0.022222	-3.80666	-0.08459	0.322015
<i>Prinia inornata</i>	17	0.094444	-2.35974	-0.22286	0.525903
<i>Pycnonotus jocosus</i>	10	0.055556	-2.89037	-0.16058	0.464125
<i>Pycnonotus sinensis</i>	5	0.027778	-3.58352	-0.09954	0.356711
<i>Spilopelia chinensis</i>	11	0.061111	-2.79506	-0.17081	0.477423
<i>Streptopelia decaocto</i>	3	0.016667	-4.09434	-0.06824	0.279394
<i>Tachybaptus ruficollis</i>	2	0.011111	-4.49981	-0.05	0.224981
<i>Tringa nebularia</i>	2	0.011111	-4.49981	-0.05	0.224981
<i>Tringa totanus</i>	3	0.016667	-4.09434	-0.06824	0.279394
<i>Zosterops japonicus</i>	3	0.016667	-4.09434	-0.06824	0.279394
Total	180	1	-122.238	-3.14029	10.43423
Richness	32				
SS	10.4				
SQ	9.86				
H	3.14				
S²_H	0				

Appendix F.2.2 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Point Count Method) in All Habitats (15 and 16 September 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Ardea alba</i>	3	0.038961	-3.24519	-0.12644	0.41031
<i>Ardea cinerea</i>	3	0.038961	-3.24519	-0.12644	0.41031

<i>Ardeola bacchus</i>	21	0.272727	-1.29928	-0.35435	0.460401
<i>Centropus sinensis</i>	1	0.012987	-4.34381	-0.05641	0.245047
<i>Egretta garzetta</i>	16	0.207792	-1.57122	-0.32649	0.512981
<i>Egretta intermedia</i>	9	0.116883	-2.14658	-0.2509	0.538575
<i>Himantopus himantopus</i>	9	0.116883	-2.14658	-0.2509	0.538575
<i>Milvus migrans</i>	7	0.090909	-2.3979	-0.21799	0.522718
<i>Phalacrocorax carbo</i>	1	0.012987	-4.34381	-0.05641	0.245047
<i>Tachybaptus ruficollis</i>	2	0.025974	-3.65066	-0.09482	0.346164
<i>Tringa nebularia</i>	2	0.025974	-3.65066	-0.09482	0.346164
<i>Tringa totanus</i>	3	0.038961	-3.24519	-0.12644	0.41031
Total	77	1	-35.2861	-2.0824	4.986601
Richness	12				
SS	4.99				
SQ	4.34				
H	2.08				
S²_H	0.01				

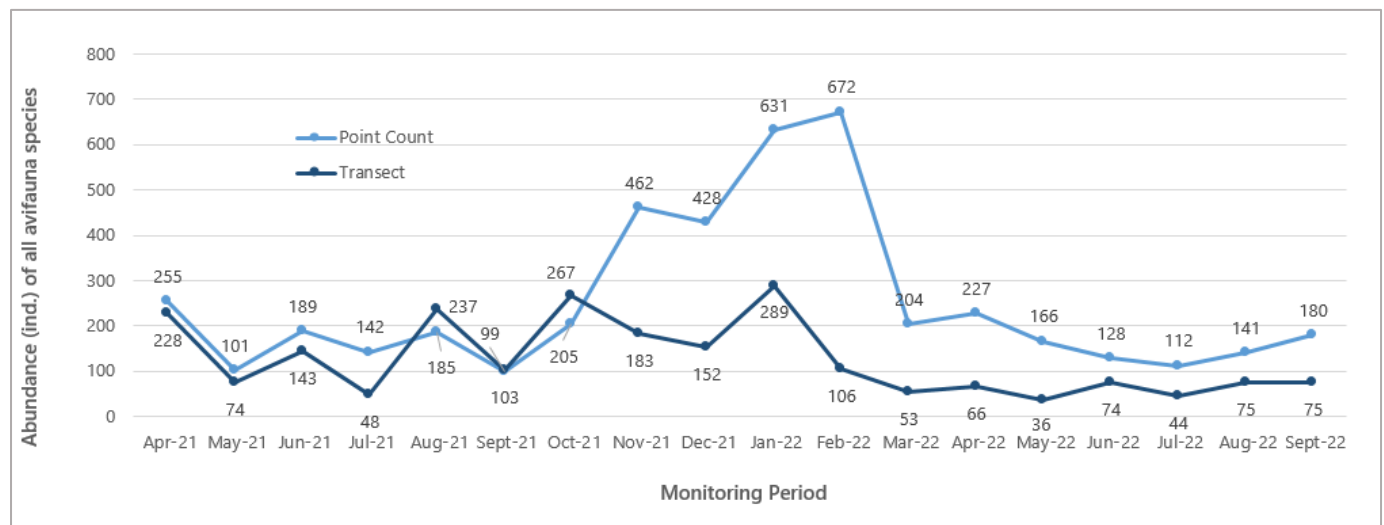
Appendix F.2.3 Ecological Bird Monitoring Diversity (All avifauna species in Transect Walk Method) in All Habitats (15 and 16 September 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Acridotheres cristatellus</i>	2	0.026667	-3.62434	-0.09665	0.350289
<i>Ardea alba</i>	3	0.04	-3.21888	-0.12876	0.414446
<i>Ardeola bacchus</i>	5	0.066667	-2.70805	-0.18054	0.488902
<i>Copsychus saularis</i>	1	0.013333	-4.31749	-0.05757	0.248543
<i>Cyanopica cyanus</i>	1	0.013333	-4.31749	-0.05757	0.248543
<i>Dicrurus macrocercus</i>	10	0.133333	-2.0149	-0.26865	0.541311
<i>Egretta garzetta</i>	4	0.053333	-2.93119	-0.15633	0.458234
<i>Egretta intermedia</i>	3	0.04	-3.21888	-0.12876	0.414446
<i>Garrulax perspicillatus</i>	5	0.066667	-2.70805	-0.18054	0.488902
<i>Gracupica nigricollis</i>	2	0.026667	-3.62434	-0.09665	0.350289
<i>Himantopus himantopus</i>	2	0.026667	-3.62434	-0.09665	0.350289
<i>Hirundo rustica</i>	12	0.16	-1.83258	-0.29321	0.537337
<i>Motacilla alba</i>	2	0.026667	-3.62434	-0.09665	0.350289
<i>Orthotomus sutorius</i>	2	0.026667	-3.62434	-0.09665	0.350289
<i>Passer montanus</i>	5	0.066667	-2.70805	-0.18054	0.488902
<i>Prinia flaviventris</i>	2	0.026667	-3.62434	-0.09665	0.350289
<i>Spilopelia chinensis</i>	6	0.08	-2.52573	-0.20206	0.510344
<i>Streptopelia decaocto</i>	1	0.013333	-4.31749	-0.05757	0.248543
<i>Tachybaptus ruficollis</i>	2	0.026667	-3.62434	-0.09665	0.350289
<i>Tringa nebularia</i>	2	0.026667	-3.62434	-0.09665	0.350289
<i>Zosterops japonicus</i>	3	0.04	-3.21888	-0.12876	0.414446
Total	75	1	-69.0324	-2.79402	8.305216
Richness	21				
SS	8.305216				
SQ	7.806563				
H	2.794023				
S²_H	0.008426				

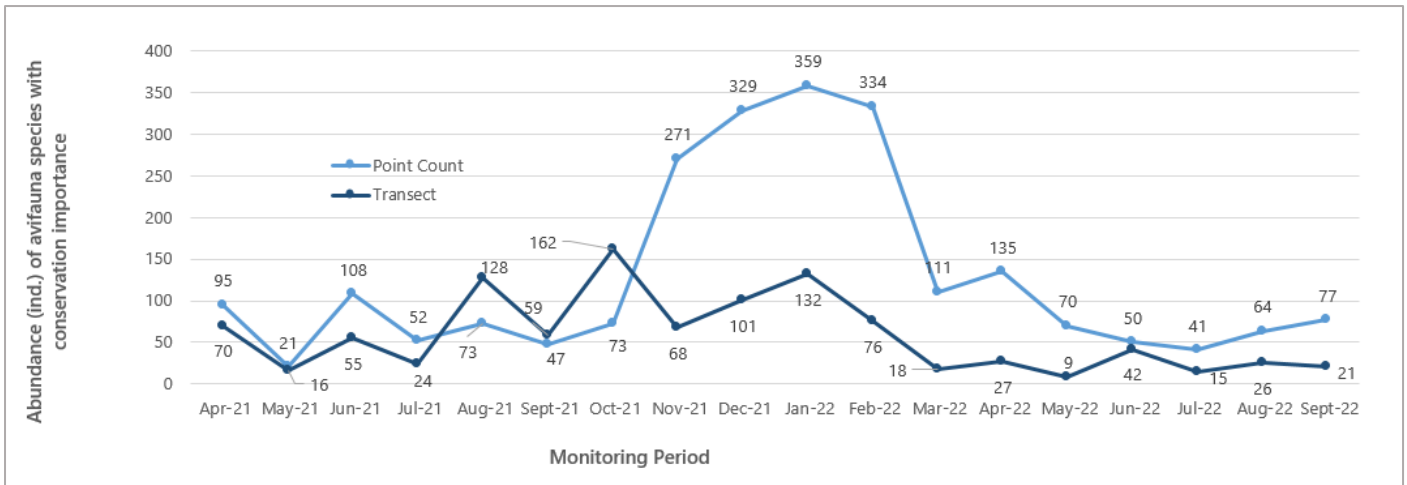
Appendix F.2.4 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Transect Walk Method) in All Habitats (15 and 16 September 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Ardea alba</i>	3	0.142857	-1.94591	-0.27799	0.540938
<i>Ardeola bacchus</i>	5	0.238095	-1.43508	-0.34169	0.490349
<i>Egretta garzetta</i>	4	0.190476	-1.65823	-0.31585	0.523756
<i>Egretta intermedia</i>	3	0.142857	-1.94591	-0.27799	0.540938
<i>Himantopus himantopus</i>	2	0.095238	-2.35138	-0.22394	0.526568
<i>Tachybaptus ruficollis</i>	2	0.095238	-2.35138	-0.22394	0.526568
<i>Tringa nebularia</i>	2	0.095238	-2.35138	-0.22394	0.526568
Total	21	1	-14.0393	-1.88534	3.675686
Richness	7				
SS	3.675686				
SQ	3.55449				
H	1.885336				
S²_H	0.012574				

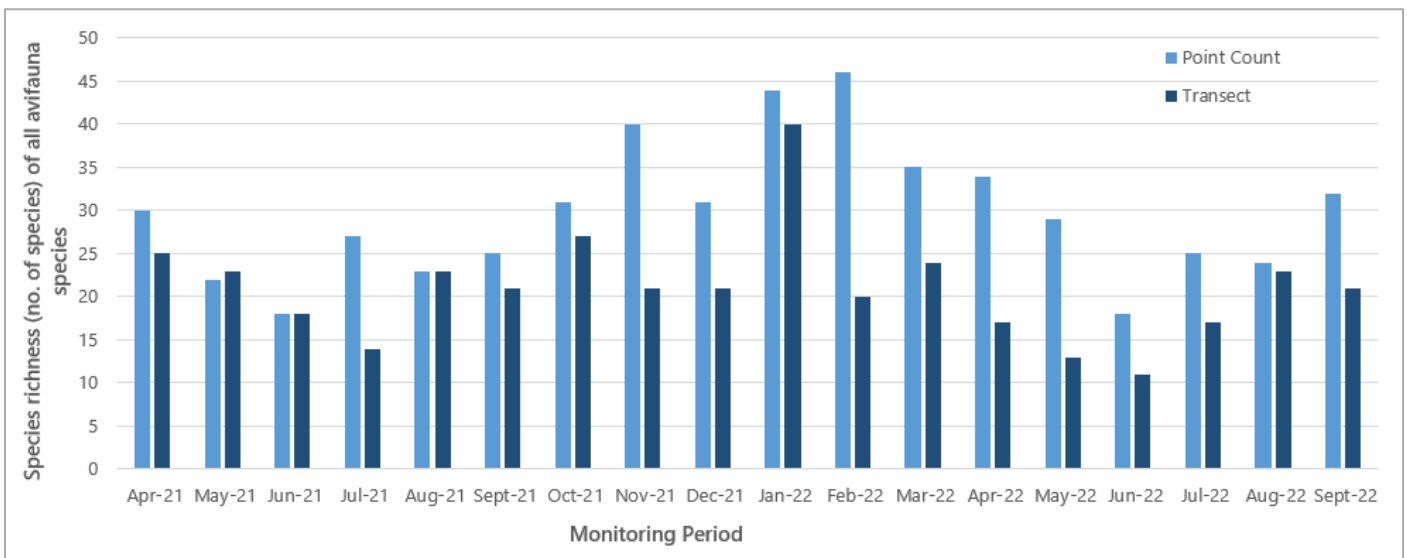
Appendix F.3.1 Abundance of all avifauna species throughout the monitoring period



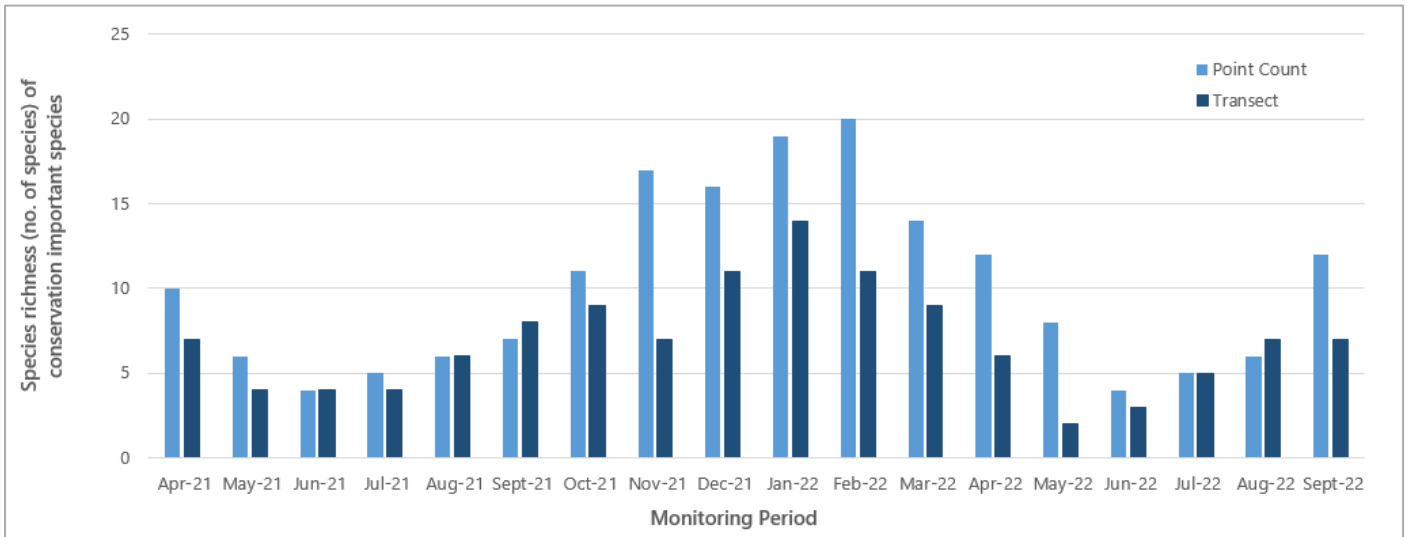
Appendix F.3.2 Abundance of avifauna species with conservation importance throughout the monitoring period



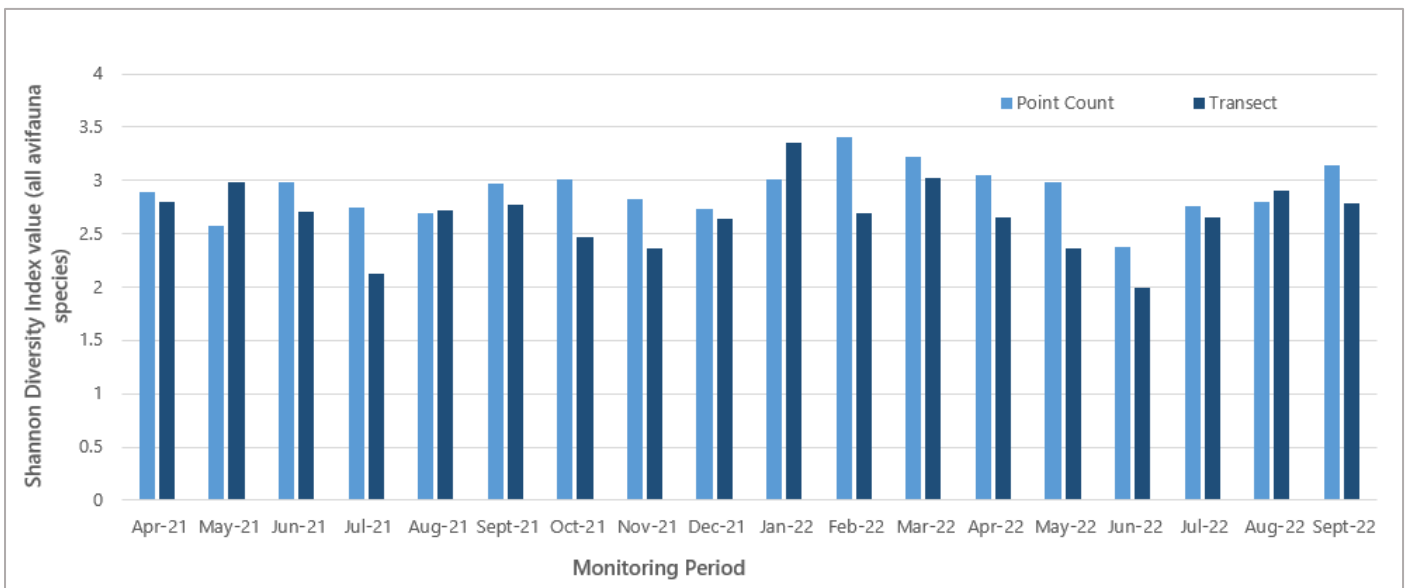
Appendix F.4.1 Species richness of all avifauna species throughout the monitoring period



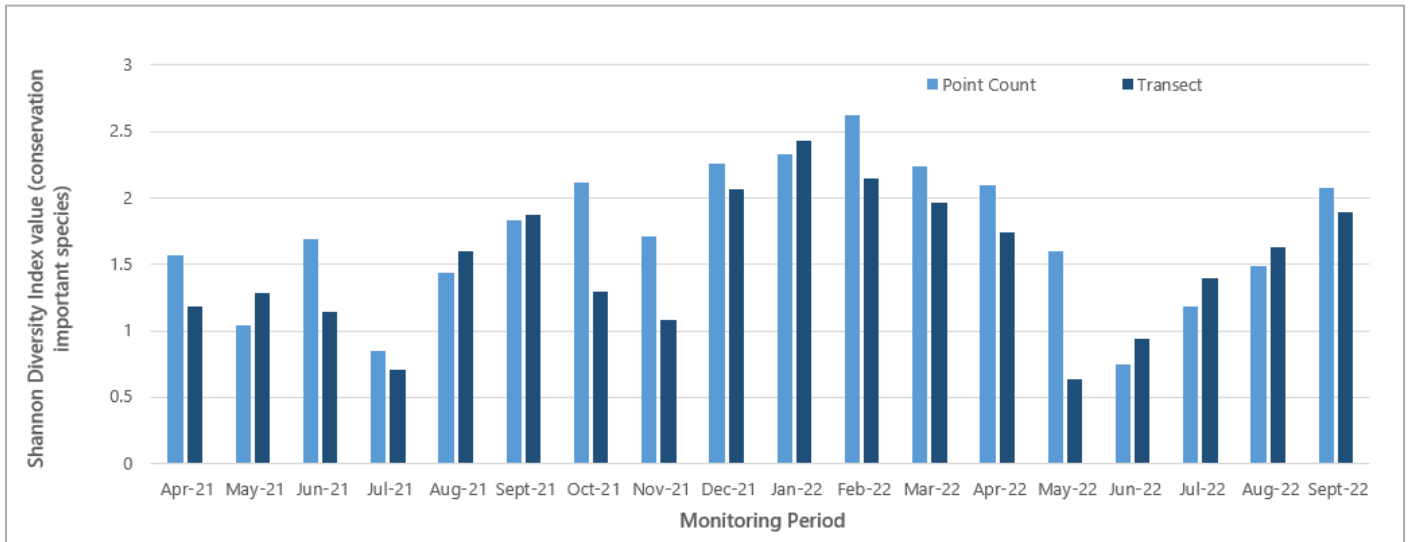
Appendix F.4.2 Species richness of avifauna species with conservation importance throughout the monitoring period



Appendix F.5.1 Shannon Diversity Index values of all avifauna species throughout the monitoring period



Appendix F.5.2 Shannon Diversity Index values of avifauna species with conservation importance throughout the monitoring period



Appendix F.6 Two-tailed Unpaired T-test

Formula:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

Appendix F.6.1 Abundance of all avifauna species – Point Count Method

Months	September 2016	September 2022
N	70	77
df	69	76
M	3.17	2.34
SS	889.94	129.22
S ²	12.9	1.7
t-value	1.90	
p-value	0.06	
Notes: N: Number of samples/observation df: Degrees of freedom M: Mean SS: Sum of Squares S ² : Measure on a random sample that is used to estimate the variance of the population		

Appendix F.6.2 Abundance of all avifauna species – Transect Walk Method

Months	September 2016	September 2022
N	33	29

Months	September 2016	September 2022
df	32	28
M	3.61	2.59
SS	405.88	51.03
S ²	12.68	1.82
t-value	1.45	
p-value	0.15	
Notes: N: Number of samples/observation df: Degrees of freedom M: Mean SS: Sum of Squares S ² : Measure on a random sample that is used to estimate the variance of the population		

Appendix F.6.3 Abundance of avifauna species with conservation importance – Point Count Method

Months	September 2016	September 2022
N	32	29
df	31	28
M	3.72	2.66
SS	488.47	68.55
S ²	15.76	2.45
t-value	1.35	
p-value	0.18	
Notes: N: Number of samples/observation df: Degrees of freedom M: Mean SS: Sum of Squares S ² : Measure on a random sample that is used to estimate the variance of the population		

Appendix F.6.4 Abundance of avifauna species with conservation importance – Transect Walk Method

Months	September 2016	September 2022
N	11	10
df	10	9
M	4.09	2.1
SS	208.91	2.9
S ²	20.89	0.32
t-value	1.36	
p-value	0.19	

Months	September 2016	September 2022
Notes: N: Number of samples/observation df: Degrees of freedom M: Mean SS: Sum of Squares S ² : Measure on a random sample that is used to estimate the variance of the population		

Appendix F.7. Hutcheson t-test testing method and output

Formula:

$$t = \frac{H_a - H_b}{\sqrt{S_{H_a}^2 + S_{H_b}^2}}$$

Appendix F.7.1 Species diversity of all avifauna species – Transect Walk Method

Months	September 2016	September 2022
Total	119	75
Richness	27	21
H	2.95	2.79
S ² _H	0.006	0.008
t	1.34	
df	164	
Crit	1.97	
p	0.18	
CI	0.15	0.18

Appendix G

Wind Data

Wind Data for
Contract No. SPW 07/2020 Environmental Team for Construction of
Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
01/09/2022 00:00	2.4	SSW
01/09/2022 01:00	3.1	E
01/09/2022 02:00	3.3	SSE
01/09/2022 03:00	3.3	SSW
01/09/2022 04:00	3.4	SW
01/09/2022 05:00	3.7	N
01/09/2022 06:00	4.2	N
01/09/2022 07:00	4.3	NW
01/09/2022 08:00	4.5	NEE
01/09/2022 09:00	4.6	NW
01/09/2022 10:00	4.5	NW
01/09/2022 11:00	4.4	NWW
01/09/2022 12:00	4.4	NE
01/09/2022 13:00	4.6	NEE
01/09/2022 14:00	5.2	NEE
01/09/2022 15:00	4.9	N
01/09/2022 16:00	4.6	NW
01/09/2022 17:00	5.1	NW
01/09/2022 18:00	5.2	NW
01/09/2022 19:00	5.7	NW
01/09/2022 20:00	5.7	NE
01/09/2022 21:00	5.7	NE
01/09/2022 22:00	5.1	NE
01/09/2022 23:00	5.1	NNE
02/09/2022 00:00	5.1	W
02/09/2022 01:00	5.4	SWW
02/09/2022 02:00	5.1	NW
02/09/2022 03:00	5.2	NW
02/09/2022 04:00	5.4	NWW
02/09/2022 05:00	5.7	NW
02/09/2022 06:00	6.0	N
02/09/2022 07:00	5.9	N
02/09/2022 08:00	6.0	NE
02/09/2022 09:00	5.8	NE
02/09/2022 10:00	5.9	NE
02/09/2022 11:00	5.8	NE
02/09/2022 12:00	6.1	NE
02/09/2022 13:00	6.0	NE

Wind Data for
Contract No. SPW 07/2020 Environmental Team for Construction of
Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
02/09/2022 14:00	5.9	NE
02/09/2022 15:00	3.0	NE
02/09/2022 16:00	2.4	NE
02/09/2022 17:00	3.1	NE
02/09/2022 18:00	3.3	NE
02/09/2022 19:00	3.3	NE
02/09/2022 20:00	3.4	NE
02/09/2022 21:00	3.7	NE
02/09/2022 22:00	4.2	NE
02/09/2022 23:00	4.3	NE
03/09/2022 00:00	4.5	NNE
03/09/2022 01:00	4.6	NNE
03/09/2022 02:00	4.5	NNE
03/09/2022 03:00	4.4	NNE
03/09/2022 04:00	4.4	NNE
03/09/2022 05:00	4.6	NNE
03/09/2022 06:00	5.2	NNE
03/09/2022 07:00	4.9	NNE
03/09/2022 08:00	4.6	NNE
03/09/2022 09:00	1.8	NNE
03/09/2022 10:00	1.7	NNE
03/09/2022 11:00	1.7	NEE
03/09/2022 12:00	1.7	NNE
03/09/2022 13:00	1.8	NEE
03/09/2022 14:00	1.6	SEE
03/09/2022 15:00	1.8	SEE
03/09/2022 16:00	1.8	SEE
03/09/2022 17:00	2.0	SEE
03/09/2022 18:00	2.1	SEE
03/09/2022 19:00	2.2	SEE
03/09/2022 20:00	2.1	SEE
03/09/2022 21:00	2.2	SE
03/09/2022 22:00	2.2	SE
03/09/2022 23:00	2.2	SE
04/09/2022 00:00	2.1	NNE
04/09/2022 01:00	1.8	NNE
04/09/2022 02:00	2.1	NNE
04/09/2022 03:00	2.1	NE

Wind Data for
Contract No. SPW 07/2020 Environmental Team for Construction of
Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
04/09/2022 04:00	2.1	NE
04/09/2022 05:00	1.8	NE
04/09/2022 06:00	1.6	NNE
04/09/2022 07:00	2.0	NNE
04/09/2022 08:00	2.1	NE
04/09/2022 09:00	2.2	NE
04/09/2022 10:00	2.3	N
04/09/2022 11:00	2.4	NE
04/09/2022 12:00	2.7	NE
04/09/2022 13:00	2.9	NE
04/09/2022 14:00	2.4	NE
04/09/2022 15:00	3.1	N
04/09/2022 16:00	3.3	N
04/09/2022 17:00	3.3	N
04/09/2022 18:00	3.4	NE
04/09/2022 19:00	3.7	N
04/09/2022 20:00	4.2	N
04/09/2022 21:00	4.3	N
04/09/2022 22:00	4.5	N
04/09/2022 23:00	4.6	N
05/09/2022 00:00	4.5	N
05/09/2022 01:00	4.4	N
05/09/2022 02:00	4.4	NNE
05/09/2022 03:00	4.6	N
05/09/2022 04:00	5.2	N
05/09/2022 05:00	4.9	NE
05/09/2022 06:00	4.6	NE
05/09/2022 07:00	5.1	N
05/09/2022 08:00	5.2	NE
05/09/2022 09:00	5.7	N
05/09/2022 10:00	5.7	NE
05/09/2022 11:00	5.7	N
05/09/2022 12:00	5.1	NE
05/09/2022 13:00	5.1	N
05/09/2022 14:00	5.1	NE
05/09/2022 15:00	5.4	N
05/09/2022 16:00	5.1	N
05/09/2022 17:00	5.2	N

Wind Data for
Contract No. SPW 07/2020 Environmental Team for Construction of
Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
05/09/2022 18:00	4.5	N
05/09/2022 19:00	4.3	N
05/09/2022 20:00	4.8	N
05/09/2022 21:00	4.2	N
05/09/2022 22:00	4.4	N
05/09/2022 23:00	4.2	N
06/09/2022 00:00	4.1	N
06/09/2022 01:00	4.1	NNE
06/09/2022 02:00	4.3	NNE
06/09/2022 03:00	4.3	NNE
06/09/2022 04:00	4.1	NNE
06/09/2022 05:00	3.8	NNE
06/09/2022 06:00	3.6	NNE
06/09/2022 07:00	3.4	NNE
06/09/2022 08:00	3.3	NNE
06/09/2022 09:00	3.1	NNE
06/09/2022 10:00	3.1	NNE
06/09/2022 11:00	2.9	NNE
06/09/2022 12:00	2.8	NNE
06/09/2022 13:00	2.7	NNE
06/09/2022 14:00	2.7	NNE
06/09/2022 15:00	2.6	NNE
06/09/2022 16:00	2.6	NNE
06/09/2022 17:00	2.6	NNE
06/09/2022 18:00	2.6	NNE
06/09/2022 19:00	2.6	NNE
06/09/2022 20:00	2.6	NNE
06/09/2022 21:00	2.5	NNE
06/09/2022 22:00	2.5	NNE
06/09/2022 23:00	2.7	NNE
07/09/2022 00:00	4.5	NNE
07/09/2022 01:00	4.3	NNE
07/09/2022 02:00	4.8	NNE
07/09/2022 03:00	4.2	NNE
07/09/2022 04:00	4.4	NNE
07/09/2022 05:00	4.2	NNE
07/09/2022 06:00	4.1	NNE
07/09/2022 07:00	4.1	NNE

Wind Data for
Contract No. SPW 07/2020 Environmental Team for Construction of
Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
07/09/2022 08:00	4.3	NNE
07/09/2022 09:00	4.3	NNE
07/09/2022 10:00	4.1	NNE
07/09/2022 11:00	3.8	NNE
07/09/2022 12:00	3.6	NNE
07/09/2022 13:00	3.4	NNE
07/09/2022 14:00	3.3	NNE
07/09/2022 15:00	3.1	NNE
07/09/2022 16:00	3.1	NNE
07/09/2022 17:00	2.9	NNE
07/09/2022 18:00	2.8	NNE
07/09/2022 19:00	2.7	NNE
07/09/2022 20:00	2.7	NNE
07/09/2022 21:00	2.6	NNE
07/09/2022 22:00	2.6	NNE
07/09/2022 23:00	2.6	NNE
08/09/2022 00:00	2.6	NNE
08/09/2022 01:00	2.6	NNE
08/09/2022 02:00	2.6	NNE
08/09/2022 03:00	2.5	NNE
08/09/2022 04:00	2.5	NNE
08/09/2022 05:00	2.7	NNE
08/09/2022 06:00	2.5	NNE
08/09/2022 07:00	2.6	NNE
08/09/2022 08:00	2.6	NNE
08/09/2022 09:00	2.4	NNE
08/09/2022 10:00	2.2	NNE
08/09/2022 11:00	2.1	NNE
08/09/2022 12:00	2.1	NNE
08/09/2022 13:00	2.1	NNE
08/09/2022 14:00	1.9	NNE
08/09/2022 15:00	1.9	NNE
08/09/2022 16:00	1.9	NNE
08/09/2022 17:00	1.9	NNE
08/09/2022 18:00	1.9	NNE
08/09/2022 19:00	2.0	NNE
08/09/2022 20:00	2.1	NNE
08/09/2022 21:00	2.1	NNE

Wind Data for
Contract No. SPW 07/2020 Environmental Team for Construction of
Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
08/09/2022 22:00	1.9	NNE
08/09/2022 23:00	1.8	NNE
09/09/2022 00:00	1.8	NNE
09/09/2022 01:00	1.8	NNE
09/09/2022 02:00	1.8	NNE
09/09/2022 03:00	1.9	NNE
09/09/2022 04:00	1.9	NNE
09/09/2022 05:00	1.8	NNE
09/09/2022 06:00	1.9	NNE
09/09/2022 07:00	1.9	NNE
09/09/2022 08:00	1.8	NNE
09/09/2022 09:00	1.8	NNE
09/09/2022 10:00	2.0	NNE
09/09/2022 11:00	2.0	NNE
09/09/2022 12:00	2.0	NNE
09/09/2022 13:00	1.9	NNE
09/09/2022 14:00	2.1	NNE
09/09/2022 15:00	1.9	NNE
09/09/2022 16:00	1.9	NNE
09/09/2022 17:00	1.9	NNE
09/09/2022 18:00	1.9	NE
09/09/2022 19:00	1.8	NE
09/09/2022 20:00	1.8	NE
09/09/2022 21:00	1.7	NE
09/09/2022 22:00	1.7	NE
09/09/2022 23:00	1.7	NNE
10/09/2022 00:00	1.8	NNE
10/09/2022 01:00	1.6	NNE
10/09/2022 02:00	1.8	NNE
10/09/2022 03:00	4.2	NNE
10/09/2022 04:00	4.0	NNE
10/09/2022 05:00	9.2	NNE
10/09/2022 06:00	1.3	NNE
10/09/2022 07:00	1.3	NNE
10/09/2022 08:00	1.0	NNE
10/09/2022 09:00	5.8	NE
10/09/2022 10:00	1.6	NE
10/09/2022 11:00	9.0	NE

Wind Data for
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Date	Wind Speed (m/s)	Wind Direction
10/09/2022 12:00	3.1	NE
10/09/2022 13:00	5.0	NE
10/09/2022 14:00	0.6	NE
10/09/2022 15:00	2.9	NE
10/09/2022 16:00	2.6	NE
10/09/2022 17:00	2.0	NE
10/09/2022 18:00	0.2	NE
10/09/2022 19:00	0.2	NE
10/09/2022 20:00	1.3	NE
10/09/2022 21:00	0.2	NE
10/09/2022 22:00	0.2	NNE
10/09/2022 23:00	0.6	NNE
11/09/2022 00:00	0.3	NNE
11/09/2022 01:00	0.3	NNE
11/09/2022 02:00	0.2	NNE
11/09/2022 03:00	0.3	NNE
11/09/2022 04:00	0.2	NNE
11/09/2022 05:00	0.3	NNE
11/09/2022 06:00	0.7	NNE
11/09/2022 07:00	0.2	NNE
11/09/2022 08:00	0.1	NNE
11/09/2022 09:00	0.3	NNE
11/09/2022 10:00	1.8	NNE
11/09/2022 11:00	0.3	NNE
11/09/2022 12:00	0.6	NE
11/09/2022 13:00	3.8	NE
11/09/2022 14:00	2.7	NE
11/09/2022 15:00	0.4	NE
11/09/2022 16:00	0.6	NE
11/09/2022 17:00	1.6	NE
11/09/2022 18:00	0.4	NE
11/09/2022 19:00	0.3	NE
11/09/2022 20:00	0.7	NE
11/09/2022 21:00	0.8	NE
11/09/2022 22:00	0.6	NE
11/09/2022 23:00	0.8	NE
12/09/2022 00:00	0.0	NNE
12/09/2022 01:00	0.1	NNE

Wind Data for
Contract No. SPW 07/2020 Environmental Team for Construction of
Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
12/09/2022 02:00	0.0	NNE
12/09/2022 03:00	0.7	NNE
12/09/2022 04:00	0.8	NNE
12/09/2022 05:00	0.8	NNE
12/09/2022 06:00	0.9	NE
12/09/2022 07:00	1.4	NE
12/09/2022 08:00	0.9	NE
12/09/2022 09:00	1.1	NE
12/09/2022 10:00	1.0	NE
12/09/2022 11:00	2.7	NE
12/09/2022 12:00	1.6	NE
12/09/2022 13:00	0.8	NE
12/09/2022 14:00	1.3	NE
12/09/2022 15:00	0.8	NE
12/09/2022 16:00	3.3	NE
12/09/2022 17:00	2.7	NE
12/09/2022 18:00	1.6	NE
12/09/2022 19:00	1.4	NE
12/09/2022 20:00	1.5	NE
12/09/2022 21:00	1.4	NE
12/09/2022 22:00	1.5	NE
12/09/2022 23:00	1.6	NE
13/09/2022 00:00	1.9	NE
13/09/2022 01:00	2.1	NE
13/09/2022 02:00	2.0	NE
13/09/2022 03:00	2.1	NEE
13/09/2022 04:00	2.1	E
13/09/2022 05:00	2.3	E
13/09/2022 06:00	2.9	NEE
13/09/2022 07:00	2.9	NEE
13/09/2022 08:00	2.4	NEE
13/09/2022 09:00	1.7	NEE
13/09/2022 10:00	2.4	NEE
13/09/2022 11:00	4.4	NEE
13/09/2022 12:00	4.5	NE
13/09/2022 13:00	2.6	NE
13/09/2022 14:00	4.1	NE
13/09/2022 15:00	3.0	NE

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Date	Wind Speed (m/s)	Wind Direction
13/09/2022 16:00	3.3	NE
13/09/2022 17:00	5.3	NE
13/09/2022 18:00	3.8	E
13/09/2022 19:00	4.4	E
13/09/2022 20:00	5.4	E
13/09/2022 21:00	5.7	E
13/09/2022 22:00	5.8	E
13/09/2022 23:00	4.8	SEE
14/09/2022 00:00	3.7	SEE
14/09/2022 01:00	3.9	SEE
14/09/2022 02:00	2.8	SEE
14/09/2022 03:00	2.9	SEE
14/09/2022 04:00	2.8	SEE
14/09/2022 05:00	3.9	SEE
14/09/2022 06:00	4.1	SEE
14/09/2022 07:00	4.0	SEE
14/09/2022 08:00	3.9	SEE
14/09/2022 09:00	0.9	SEE
14/09/2022 10:00	1.0	SEE
14/09/2022 11:00	1.8	SEE
14/09/2022 12:00	1.2	SEE
14/09/2022 13:00	4.6	SEE
14/09/2022 14:00	2.7	SEE
14/09/2022 15:00	1.5	SEE
14/09/2022 16:00	4.0	SEE
14/09/2022 17:00	3.7	SEE
14/09/2022 18:00	2.7	SEE
14/09/2022 19:00	3.1	SEE
14/09/2022 20:00	3.3	SEE
14/09/2022 21:00	1.6	SEE
14/09/2022 22:00	2.3	SEE
14/09/2022 23:00	2.6	SEE
15/09/2022 00:00	2.8	SEE
15/09/2022 01:00	4.0	NE
15/09/2022 02:00	4.0	E
15/09/2022 03:00	2.7	E
15/09/2022 04:00	2.9	NE
15/09/2022 05:00	2.8	NE

Wind Data for
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Date	Wind Speed (m/s)	Wind Direction
15/09/2022 06:00	3.4	E
15/09/2022 07:00	3.5	E
15/09/2022 08:00	3.0	NE
15/09/2022 09:00	2.7	NE
15/09/2022 10:00	2.8	NE
15/09/2022 11:00	0.9	NE
15/09/2022 12:00	0.6	NEE
15/09/2022 13:00	3.5	NEE
15/09/2022 14:00	4.9	E
15/09/2022 15:00	3.8	E
15/09/2022 16:00	2.7	E
15/09/2022 17:00	2.4	E
15/09/2022 18:00	3.0	E
15/09/2022 19:00	2.9	E
15/09/2022 20:00	1.4	E
15/09/2022 21:00	3.1	NE
15/09/2022 22:00	3.5	NE
15/09/2022 23:00	3.8	NE
16/09/2022 00:00	3.6	NE
16/09/2022 01:00	4.1	NE
16/09/2022 02:00	3.7	NE
16/09/2022 03:00	3.5	NEE
16/09/2022 04:00	4.3	NEE
16/09/2022 05:00	4.7	E
16/09/2022 06:00	5.0	NE
16/09/2022 07:00	4.8	NE
16/09/2022 08:00	4.7	NE
16/09/2022 09:00	4.1	E
16/09/2022 10:00	3.1	E
16/09/2022 11:00	4.5	NE
16/09/2022 12:00	4.9	NE
16/09/2022 13:00	3.9	NE
16/09/2022 14:00	5.4	NE
16/09/2022 15:00	3.9	NE
16/09/2022 16:00	4.4	NE
16/09/2022 17:00	4.3	E
16/09/2022 18:00	3.9	E
16/09/2022 19:00	3.5	E

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Date	Wind Speed (m/s)	Wind Direction
16/09/2022 20:00	5.0	E
16/09/2022 21:00	4.7	NE
16/09/2022 22:00	0.9	NE
16/09/2022 23:00	4.1	NE
17/09/2022 00:00	5.0	NE
17/09/2022 01:00	4.9	NE
17/09/2022 02:00	4.5	NE
17/09/2022 03:00	4.1	NE
17/09/2022 04:00	4.6	NE
17/09/2022 05:00	1.9	E
17/09/2022 06:00	5.3	NEE
17/09/2022 07:00	5.1	NEE
17/09/2022 08:00	4.6	E
17/09/2022 09:00	4.9	E
17/09/2022 10:00	4.8	E
17/09/2022 11:00	5.6	E
17/09/2022 12:00	3.9	NEE
17/09/2022 13:00	5.0	NEE
17/09/2022 14:00	5.2	E
17/09/2022 15:00	4.0	E
17/09/2022 16:00	4.8	NEE
17/09/2022 17:00	5.1	NEE
17/09/2022 18:00	3.2	NE
17/09/2022 19:00	0.5	NE
17/09/2022 20:00	0.5	NE
17/09/2022 21:00	0.5	NE
17/09/2022 22:00	0.6	NEE
17/09/2022 23:00	0.6	NEE
18/09/2022 00:00	0.6	E
18/09/2022 01:00	0.7	E
18/09/2022 02:00	0.7	E
18/09/2022 03:00	0.7	NEE
18/09/2022 04:00	0.8	NEE
18/09/2022 05:00	0.7	E
18/09/2022 06:00	0.8	E
18/09/2022 07:00	0.9	E
18/09/2022 08:00	0.7	E
18/09/2022 09:00	0.7	E

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Date	Wind Speed (m/s)	Wind Direction
18/09/2022 10:00	0.3	NE
18/09/2022 11:00	0.2	NE
18/09/2022 12:00	0.7	NE
18/09/2022 13:00	0.6	NE
18/09/2022 14:00	0.4	NEE
18/09/2022 15:00	0.3	NEE
18/09/2022 16:00	0.6	E
18/09/2022 17:00	0.5	NE
18/09/2022 18:00	0.6	NE
18/09/2022 19:00	0.7	E
18/09/2022 20:00	0.7	E
18/09/2022 21:00	0.7	E
18/09/2022 22:00	0.6	E
18/09/2022 23:00	0.7	E
19/09/2022 00:00	0.7	E
19/09/2022 01:00	0.7	E
19/09/2022 02:00	0.6	NEE
19/09/2022 03:00	0.7	E
19/09/2022 04:00	0.8	E
19/09/2022 05:00	0.8	E
19/09/2022 06:00	0.9	E
19/09/2022 07:00	0.8	NEE
19/09/2022 08:00	0.8	NEE
19/09/2022 09:00	0.7	NE
19/09/2022 10:00	0.5	NE
19/09/2022 11:00	0.5	NE
19/09/2022 12:00	0.4	NE
19/09/2022 13:00	0.5	NEE
19/09/2022 14:00	0.8	NEE
19/09/2022 15:00	0.8	E
19/09/2022 16:00	0.5	NE
19/09/2022 17:00	0.7	NE
19/09/2022 18:00	0.8	E
19/09/2022 19:00	0.7	E
19/09/2022 20:00	0.9	E
19/09/2022 21:00	0.8	E
19/09/2022 22:00	0.8	E
19/09/2022 23:00	0.7	E

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Date	Wind Speed (m/s)	Wind Direction
20/09/2022 00:00	0.8	E
20/09/2022 01:00	0.9	NEE
20/09/2022 02:00	0.9	NEE
20/09/2022 03:00	0.9	NEE
20/09/2022 04:00	0.9	NEE
20/09/2022 05:00	1.0	NEE
20/09/2022 06:00	0.9	NEE
20/09/2022 07:00	0.8	E
20/09/2022 08:00	0.8	E
20/09/2022 09:00	0.7	NE
20/09/2022 10:00	0.7	NE
20/09/2022 11:00	0.6	NE
20/09/2022 12:00	0.7	NE
20/09/2022 13:00	0.4	NEE
20/09/2022 14:00	0.6	NEE
20/09/2022 15:00	0.8	E
20/09/2022 16:00	0.8	NE
20/09/2022 17:00	0.9	E
20/09/2022 18:00	1.0	E
20/09/2022 19:00	0.9	E
20/09/2022 20:00	0.9	E
20/09/2022 21:00	1.0	NEE
20/09/2022 22:00	1.0	NEE
20/09/2022 23:00	1.0	NEE
21/09/2022 00:00	1.1	NEE
21/09/2022 01:00	1.1	NEE
21/09/2022 02:00	1.0	NEE
21/09/2022 03:00	1.0	NEE
21/09/2022 04:00	1.0	NEE
21/09/2022 05:00	0.9	NEE
21/09/2022 06:00	0.9	NEE
21/09/2022 07:00	1.0	NEE
21/09/2022 08:00	0.8	NEE
21/09/2022 09:00	0.7	NEE
21/09/2022 10:00	0.5	NEE
21/09/2022 11:00	0.8	NEE
21/09/2022 12:00	0.5	NEE
21/09/2022 13:00	0.8	NEE

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Date	Wind Speed (m/s)	Wind Direction
21/09/2022 14:00	0.6	NEE
21/09/2022 15:00	0.9	NEE
21/09/2022 16:00	0.7	NEE
21/09/2022 17:00	0.2	NEE
21/09/2022 18:00	0.9	NEE
21/09/2022 19:00	0.9	NEE
21/09/2022 20:00	1.0	NEE
21/09/2022 21:00	1.0	NEE
21/09/2022 22:00	1.2	NEE
21/09/2022 23:00	1.1	NEE
22/09/2022 00:00	1.1	NEE
22/09/2022 01:00	1.2	NEE
22/09/2022 02:00	1.5	NEE
22/09/2022 03:00	1.4	NEE
22/09/2022 04:00	1.3	NEE
22/09/2022 05:00	1.5	NEE
22/09/2022 06:00	1.2	NEE
22/09/2022 07:00	1.1	NEE
22/09/2022 08:00	1.0	NEE
22/09/2022 09:00	1.0	NEE
22/09/2022 10:00	0.9	NEE
22/09/2022 11:00	0.9	NEE
22/09/2022 12:00	0.5	NEE
22/09/2022 13:00	0.3	NEE
22/09/2022 14:00	1.1	NEE
22/09/2022 15:00	0.8	NEE
22/09/2022 16:00	0.6	NEE
22/09/2022 17:00	1.0	NEE
22/09/2022 18:00	1.2	NEE
22/09/2022 19:00	1.2	NEE
22/09/2022 20:00	1.3	NEE
22/09/2022 21:00	1.4	NEE
22/09/2022 22:00	1.4	NEE
22/09/2022 23:00	1.4	NEE
23/09/2022 00:00	1.5	NEE
23/09/2022 01:00	1.4	NEE
23/09/2022 02:00	1.2	NEE
23/09/2022 03:00	1.2	NEE

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Date	Wind Speed (m/s)	Wind Direction
23/09/2022 04:00	1.2	NEE
23/09/2022 05:00	1.1	NEE
23/09/2022 06:00	1.1	NEE
23/09/2022 07:00	1.1	NEE
23/09/2022 08:00	1.2	NEE
23/09/2022 09:00	1.0	NEE
23/09/2022 10:00	1.0	NEE
23/09/2022 11:00	0.9	NEE
23/09/2022 12:00	0.9	NE
23/09/2022 13:00	0.6	NEE
23/09/2022 14:00	1.0	NEE
23/09/2022 15:00	0.5	NEE
23/09/2022 16:00	1.1	NE
23/09/2022 17:00	0.8	NE
23/09/2022 18:00	1.2	NE
23/09/2022 19:00	1.2	NEE
23/09/2022 20:00	1.1	NEE
23/09/2022 21:00	1.2	NEE
23/09/2022 22:00	1.5	NE
23/09/2022 23:00	1.4	NEE
24/09/2022 00:00	1.5	NEE
24/09/2022 01:00	1.5	NEE
24/09/2022 02:00	1.3	NEE
24/09/2022 03:00	1.3	NEE
24/09/2022 04:00	1.2	NEE
24/09/2022 05:00	1.4	NE
24/09/2022 06:00	1.4	NEE
24/09/2022 07:00	1.5	NEE
24/09/2022 08:00	1.1	NEE
24/09/2022 09:00	1.1	NEE
24/09/2022 10:00	1.2	NE
24/09/2022 11:00	1.0	NEE
24/09/2022 12:00	0.4	NEE
24/09/2022 13:00	0.3	NEE
24/09/2022 14:00	0.6	NEE
24/09/2022 15:00	1.1	NEE
24/09/2022 16:00	0.8	NEE
24/09/2022 17:00	0.6	NEE

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Date	Wind Speed (m/s)	Wind Direction
24/09/2022 18:00	0.2	NEE
24/09/2022 19:00	0.6	NEE
24/09/2022 20:00	0.5	NEE
24/09/2022 21:00	0.3	NEE
24/09/2022 22:00	1.0	NEE
24/09/2022 23:00	1.3	NEE
25/09/2022 00:00	1.6	NEE
25/09/2022 01:00	1.4	NEE
25/09/2022 02:00	1.4	E
25/09/2022 03:00	1.7	NE
25/09/2022 04:00	1.5	NE
25/09/2022 05:00	1.6	E
25/09/2022 06:00	1.1	NE
25/09/2022 07:00	1.4	NE
25/09/2022 08:00	1.3	E
25/09/2022 09:00	1.7	E
25/09/2022 10:00	1.5	NE
25/09/2022 11:00	1.4	NE
25/09/2022 12:00	3.0	E
25/09/2022 13:00	3.3	NE
25/09/2022 14:00	2.6	NEE
25/09/2022 15:00	2.8	NEE
25/09/2022 16:00	3.3	NEE
25/09/2022 17:00	3.7	NEE
25/09/2022 18:00	6.1	E
25/09/2022 19:00	5.8	NEE
25/09/2022 20:00	3.7	NEE
25/09/2022 21:00	5.0	NEE
25/09/2022 22:00	3.0	NEE
25/09/2022 23:00	3.2	NEE
26/09/2022 00:00	7.0	NE
26/09/2022 01:00	9.9	NEE
26/09/2022 02:00	19.7	NEE
26/09/2022 03:00	10.2	NEE
26/09/2022 04:00	13.8	NEE
26/09/2022 05:00	5.6	NEE
26/09/2022 06:00	4.6	NEE
26/09/2022 07:00	4.8	NEE

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Date	Wind Speed (m/s)	Wind Direction
26/09/2022 08:00	4.9	NEE
26/09/2022 09:00	2.5	NEE
26/09/2022 10:00	2.3	NEE
26/09/2022 11:00	5.8	NE
26/09/2022 12:00	1.3	NEE
26/09/2022 13:00	1.5	NEE
26/09/2022 14:00	1.2	NEE
26/09/2022 15:00	2.3	NEE
26/09/2022 16:00	1.7	NEE
26/09/2022 17:00	0.8	NEE
26/09/2022 18:00	2.3	NEE
26/09/2022 19:00	3.7	NEE
26/09/2022 20:00	2.6	NEE
26/09/2022 21:00	2.0	NEE
26/09/2022 22:00	3.2	NEE
26/09/2022 23:00	3.4	NEE
27/09/2022 00:00	2.4	NEE
27/09/2022 01:00	1.6	NEE
27/09/2022 02:00	1.7	NEE
27/09/2022 03:00	1.8	NEE
27/09/2022 04:00	2.0	NEE
27/09/2022 05:00	1.8	NEE
27/09/2022 06:00	1.6	NEE
27/09/2022 07:00	1.5	NEE
27/09/2022 08:00	1.4	NEE
27/09/2022 09:00	1.2	NEE
27/09/2022 10:00	0.8	NEE
27/09/2022 11:00	1.2	NEE
27/09/2022 12:00	1.0	NEE
27/09/2022 13:00	1.2	NEE
27/09/2022 14:00	1.1	NEE
27/09/2022 15:00	1.0	NEE
27/09/2022 16:00	1.2	NEE
27/09/2022 17:00	1.4	NEE
27/09/2022 18:00	1.5	NEE
27/09/2022 19:00	1.6	NEE
27/09/2022 20:00	1.7	NEE
27/09/2022 21:00	1.7	NE

Wind Data for
Contract No. SPW 07/2020 Environmental Team for Construction of
Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
27/09/2022 22:00	1.5	NE
27/09/2022 23:00	1.7	NE
28/09/2022 00:00	1.7	NE
28/09/2022 01:00	0.5	NE
28/09/2022 02:00	0.9	NE
28/09/2022 03:00	1.6	NE
28/09/2022 04:00	1.7	NEE
28/09/2022 05:00	1.7	NEE
28/09/2022 06:00	1.7	NE
28/09/2022 07:00	1.5	NE
28/09/2022 08:00	1.5	NE
28/09/2022 09:00	1.5	NE
28/09/2022 10:00	1.4	NE
28/09/2022 11:00	1.4	NE
28/09/2022 12:00	1.5	NE
28/09/2022 13:00	1.8	NE
28/09/2022 14:00	1.2	NE
28/09/2022 15:00	0.4	NE
28/09/2022 16:00	2.0	NE
28/09/2022 17:00	2.2	NE
28/09/2022 18:00	2.3	NE
28/09/2022 19:00	2.2	NEE
28/09/2022 20:00	1.7	NEE
28/09/2022 21:00	1.9	NE
28/09/2022 22:00	1.7	NEE
28/09/2022 23:00	1.7	NE
29/09/2022 00:00	2.1	NE
29/09/2022 01:00	2.2	NE
29/09/2022 02:00	2.2	NE
29/09/2022 03:00	2.1	NE
29/09/2022 04:00	2.3	NE
29/09/2022 05:00	2.1	NE
29/09/2022 06:00	2.0	NE
29/09/2022 07:00	1.9	NE
29/09/2022 08:00	1.9	NE
29/09/2022 09:00	1.8	NE
29/09/2022 10:00	1.8	NE
29/09/2022 11:00	1.9	NE

Wind Data for
 Contract No. SPW 07/2020 Environmental Team for Construction of
 Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
29/09/2022 12:00	2.0	NEE
29/09/2022 13:00	2.4	NEE
29/09/2022 14:00	2.0	NEE
29/09/2022 15:00	2.0	NEE
29/09/2022 16:00	2.1	NEE
29/09/2022 17:00	2.2	NEE
29/09/2022 18:00	2.2	NEE
29/09/2022 19:00	2.4	NEE
29/09/2022 20:00	2.2	NE
29/09/2022 21:00	2.3	NEE
29/09/2022 22:00	2.1	NEE
29/09/2022 23:00	2.2	NEE
30/09/2022 00:00	2.1	NE
30/09/2022 01:00	2.4	NE
30/09/2022 02:00	2.3	NEE
30/09/2022 03:00	2.3	NEE
30/09/2022 04:00	2.6	NEE
30/09/2022 05:00	2.3	NEE
30/09/2022 06:00	2.2	NEE
30/09/2022 07:00	2.2	NEE
30/09/2022 08:00	2.1	NEE
30/09/2022 09:00	2.0	NEE
30/09/2022 10:00	1.6	NEE
30/09/2022 11:00	2.0	NEE
30/09/2022 12:00	1.9	NEE
30/09/2022 13:00	2.2	NEE
30/09/2022 14:00	2.2	NEE
30/09/2022 15:00	2.5	NEE
30/09/2022 16:00	2.4	NEE
30/09/2022 17:00	2.3	NEE
30/09/2022 18:00	2.5	N
30/09/2022 19:00	2.3	N
30/09/2022 20:00	2.5	N
30/09/2022 21:00	3.1	N
30/09/2022 22:00	2.7	N
30/09/2022 23:00	2.9	N
01/10/2022 00:00	1.5	N

Sources/ reference of the wind data: On-site wind station

Appendix H

Event and Action Plan

Event and Action Plan for Air Quality (Construction Dust)

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action level being exceeded by one sampling	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform Contractor, IEC and ER; 3. Repeat measurement to confirm finding; and 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; and 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; and 3. Amend working methods agreed with the ER as appropriate.
Action level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> 1. Identify source; 2. Inform Contractor, IEC and ER; 3. Advise the Contractor and ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with Contractor, IEC and ER; and 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Advise the ET and ER on the effectiveness of the proposed remedial measures; and 5. Supervise Implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal as appropriate.
Limit level being exceeded by one sampling	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; and 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; and 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; 4. Implement the agreed proposals; and 5. Amend proposal if appropriate.
Limit level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET; 2. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 4. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; and 4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Noise (Construction)

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; and 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analyzed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; and 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; and 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; and 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; 4. Ensure remedial measures properly implemented; and 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; and 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Water Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor(s)'s working methods; 2. Inform EPD and AFCD. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Check plant and equipment and rectify unacceptable practice
Action level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.

EVENT	ACTION			
	ET	IEC	ER	Contractor
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.
Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.

Event and Action Plan for Ecology Monitoring

Event	Action			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; and 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analyzed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; and 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; and 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; and 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented; and 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; and 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Appendix I

Waste Flow Table

Waste Flow Table for Year 2022											
Monthly Ending	Total Quantity Generated	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
		Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2022 Jan	243.88	Nil	Nil	Nil	215.24	Nil	17.46	0.04	Nil	Nil	11.14
2022 Feb	92.65	Nil	Nil	Nil	38.73	Nil	43.95	Nil	Nil	Nil	9.97
2022 Mar	398.96	Nil	Nil	Nil	312.08	Nil	76.31	Nil	Nil	Nil	10.57
2022 Apr	3619.84	Nil	Nil	Nil	3552.01	Nil	58.86	0.13	Nil	Nil	8.84
2022 May	2708.03	Nil	Nil	Nil	2692.75	Nil	8.61	Nil	Nil	Nil	6.67
2022 Jun	94.92	Nil	Nil	Nil	Nil	Nil	78.34	Nil	Nil	Nil	16.58
2022 Jul	227.99	Nil	Nil	Nil	Nil	Nil	209.20	0.13	Nil	Nil	18.66
2022 Aug	248.65	Nil	Nil	Nil	187.27	Nil	29.60	0.13	Nil	Nil	31.65
2022 Sep	3253.69	Nil	Nil	Nil	211.65	2880.00	136.88	Nil	Nil	0.15	25.01
2022 Oct											
2022 Nov											
2022 Dec											
Total	10888.61	0	0	0	7209.73	2880.00	659.21	0.43	0	0.15	139.09

Note:

- 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.

Sources/ reference of the waste flow data; From the Contractor

Appendix J

Implementation Status of

Environmental Mitigation Measures

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
Air Quality Impact			
Construction Phase			
3.6.1.6	Watering once per every two hours on active works areas to reduce dust emission.	All active works areas during construction phase	Implemented
3.8.1.1	<p>Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices listed below shall be carried out to further minimize construction dust impact:</p> <ul style="list-style-type: none"> • Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. • Use of frequent watering for particularly dusty construction areas and areas close to ASRs. • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines. • Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. • Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. • Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. • Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. • Imposition of speed controls for vehicles on site haul roads. • Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. 	Construction Sites	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>N/A</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	<ul style="list-style-type: none"> Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. 		Implemented
Noise Impact			
Construction Phase			
4.8.1	<p>Movable noise barriers are recommended for hydraulic breakers mounted on excavators to be adopted during construction.</p> <p>Good site practices listed below and the noise control requirements stated in EPD's "Recommended Pollution Control Clauses for Construction Contracts" should be included in the Contract Specification for the Contractors to follow and should be implemented to further minimize the potential noise impacts during the construction phase of the Project.</p> <ul style="list-style-type: none"> Quiet PME, such that those listed in EPD's Quality Powered Mechanical Equipment, should be considered for construction works to further minimize the potential construction noise impact. Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme. Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction programme. Mobile plant, if any, should be sited as far away from noise sensitive receivers (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. 	Construction Sites	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>N/A</p> <p>Implemented</p> <p>N/A</p> <p>N/A</p>
Water Quality Impact			
Construction Phase			
5.8.1.2	<p>Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities</p>	Construction Sites / Construction Phase	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
5.8.1.3	All vehicles and plant should be cleaned before they leave a construction site to minimise the deposition of earth, mud, debris on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfill to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	Construction Sites / Construction Phase	Implemented
5.8.1.4	Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.	Construction Sites / Construction Phase	Implemented
5.8.1.5 – 5.8.1.6	The site practices outlined in ProPECC PN 1/94 “Construction Site Drainage” should be followed where applicable to minimise surface run-off and the chance of erosion. Surface run-off from construction sites should be discharged into storm drains via adequately designed sand / silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries should be provided as necessary to intercept storm run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.	Construction Sites / Construction Phase	Implemented
5.8.1.7	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly (as well as at the onset of and after each rainstorm) to prevent overflows and localised flooding.	Construction Sites / Construction Phase	Implemented
5.8.1.8	Construction works should be programmed to minimise soil excavation in the wet season (i.e. April to September). If soil excavation cannot be avoided in these months or at any time of year when rainstorms are likely, temporarily exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest / edge of excavation) to prevent storm run-off from washing across exposed soil surfaces.	Construction Sites / Construction Phase	Implemented
5.8.1.9	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion	Construction Sites / Construction Phase	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary		
5.8.1.10	Measures should be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in the wet season is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Construction Sites / Construction Phase	Implemented
5.8.1.11	Construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms	Construction Sites / Construction Phase	Implemented
5.8.1.12	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Construction Sites / Construction Phase	Implemented
5.8.1.13	The practices outlined in Environment, Transport and Works Bureau (ETWB) TC (Works) No. 5/2005 "Protection of natural streams/rivers from adverse impacts arising from construction works" should also be adopted where applicable to minimise the water quality impacts upon any natural streams or surface water systems.	Construction Sites / Construction Phase	Implemented
5.8.1.14	Sufficient chemical toilets should be provided in the works areas. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis.	Construction Sites / Construction Phase	Implemented
5.8.1.15	Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment.	Construction Sites / Construction Phase	Implemented
5.8.1.16	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The WDO (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes.	Construction Sites / Construction Phase	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
5.8.1.17	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Construction Sites /Construction Phase	N/A
5.8.1.18	Disposal of chemical wastes should be carried out in compliance with the WDO. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the WDO should be followed to avoid leakage or spillage of chemicals.	Construction Sites / Construction Phase	Implemented
5.8.1.19	All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS).	Construction Sites / Construction Phase	Implemented
5.8.2.11	Chemical should be stored on site at bunded area and separate drainage system as appropriate should be provided to avoid any spilled chemicals from entering the storm drain in case of accidental spillage. Also, adequate tools for cleanup of spilled chemicals should be stored on site and appropriate training shall be provided to staffs to further prevent potential adverse water quality impacts from happening.	Project site / Design and Operation Phase	Implemented

Waste Management Implication
Construction Phase

6.6.1.3	<u>Good Site Practices</u> Recommendations for good site practices during the construction phase include:	Construction Sites	
	<ul style="list-style-type: none"> • Nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility; 		Implemented
	<ul style="list-style-type: none"> • Training of site personnel in proper waste management and chemical waste handling procedures; 		Implemented
	<ul style="list-style-type: none"> • Provision of sufficient waste reception/ disposal points, of a suitable vermin-proof design that minimises windblown litter; 		N/A
	<ul style="list-style-type: none"> • Arrangement for regular collection of waste for transport off-site and final disposal; 		Implemented
	<ul style="list-style-type: none"> • Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; 		Implemented
	<ul style="list-style-type: none"> • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; 		Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.5	<ul style="list-style-type: none"> • A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed; and 		Implemented
	<ul style="list-style-type: none"> • A WMP should be prepared and should be submitted to the Engineer for approval. One may make reference to ETWB TCW No. 19/2005 for details. 		Implemented
	<p>Waste Reduction Measures Recommendations to achieve waste reduction include:</p>	Construction Sites	
	<ul style="list-style-type: none"> • Segregate and store different types of construction related waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; 		Implemented
	<ul style="list-style-type: none"> • Provide separate labelled bins to segregate recyclable waste such as aluminium cans from other general refuse generated by the work force, and to encourage collection by individual collectors; 		Implemented
	<ul style="list-style-type: none"> • Any unused chemicals or those with remaining functional capacity shall be recycled; 		N/A
	<ul style="list-style-type: none"> • Maximising the use of reusable steel formwork to reduce the amount of C&D material; 		N/A
	<ul style="list-style-type: none"> • Prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill; 		Implemented
	<ul style="list-style-type: none"> • Adopt proper storage and site practices to minimise the potential for damage to, or contamination of, construction materials; 		Implemented
	<ul style="list-style-type: none"> • Plan the delivery and stock of construction materials carefully to minimise the amount of surplus waste generated; 		N/A
<ul style="list-style-type: none"> • Adopt pre-cast construction method instead of cast-in-situ method for construction of concrete structures as much as possible; and 	N/A		
<ul style="list-style-type: none"> • Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering. 	N/A		
6.6.1.7	<p><u>Storage of Waste</u> Recommendations to minimise the impacts include:</p>	Construction Sites	
	<ul style="list-style-type: none"> • Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution; 		Implemented
	<ul style="list-style-type: none"> • Maintain and clean storage areas routinely; 		Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	<ul style="list-style-type: none"> • Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and 		Implemented
	<ul style="list-style-type: none"> • Different locations should be designated to stockpile each material to enhance reuse. 		Implemented
6.6.1.8	<p><u>Collection of Waste</u> Licensed waste haulers should be employed for the collection and transportation of waste generated. The following measures should be enforced to minimise the potential adverse impacts:</p> <ul style="list-style-type: none"> • Remove waste in timely manner; • Waste collectors should only collect wastes prescribed by their permits; • Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers; • Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the WDO (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28); • Waste should be disposed of at licensed waste disposal facilities; and • Maintain records of quantities of waste generated, recycled and disposed. 	Construction Sites	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
6.6.1.10	<p><u>Transportation of Waste</u> In order to monitor the disposal of C&D materials at PFRFs and landfills and to control fly-tipping, a trip-ticket system should be established in accordance with DEVB TCW No. 6/2010. A recording system for the amount of waste generated, recycled and disposed, including the disposal sites, should also be set up. Warning signs should be put up to remind the designated disposal sites. CCTV should be installed at the vehicular entrance and exit of the site as additional measures to prevent fly-tipping.</p>	Transportation Route of Waste / Construction Phase	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.12	<p><u>Construction and Demolition Material</u> Careful design, planning together with good site management can reduce over-ordering and generation of C&D materials such as concrete, mortar and cement grouts. Formwork should be designed to maximize the use of standard wooden panels, so that high reuse levels can be achieved. Alternatives such as steel formwork or plastic facing should be considered to increase the potential for reuse</p>	Construction Sites	N/A
6.6.1.13	<p>The excavated material arising from site formation and foundation works should be reused on-site as backfilling material and for landscaping works as far as practicable. Other mitigation requirements are listed below:</p> <ul style="list-style-type: none"> • A WMP, which becomes part of the EMP, should be prepared in accordance with ETWB TCW No.19/2005; • A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be adopted for easy tracking; and • In order to monitor the disposal of C&D materials at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be adopted (refer to DEVB TCW 06/2010). 	Construction Sites	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
6.6.1.14	<p>It is recommended that specific areas should be provided by the Contractors for sorting and to provide temporary storage areas (if required) for the sorted materials. Control measures for temporary stockpiles on-site should be taken in order to minimise the noise, generation of dust and pollution of water. These measures include:</p> <ul style="list-style-type: none"> • Surface of stockpiled soil should be regularly wetted with water especially during dry season; • Disturbance of stockpile soil should be minimised; • Stockpiled soil should be properly covered with tarpaulin especially when heavy storms are predicted; and • Stockpiling areas should be enclosed where space is available. 	Construction Sites	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.15	The Contactor should prepare and implement an EMP in accordance with ETWB TCW No.19/2005, which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from construction activities. Such a management plan should incorporate site-specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should be submitted to the Engineer for approval. The Contractor should implement waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor, preferably on a monthly basis.	Construction Sites	Implemented
6.6.1.16	The Contractor would be responsible for devising a system to work for on-site sorting of C&D materials and promptly removing all sorted and process materials arising from the construction activities to minimise temporary stockpiling on-site. The system should be included in the EMP identifying the source of generation, estimated quantity, arrangement for on-site sorting, collection, temporary storage areas and frequency of collection by recycling Contractors or frequency of removal off-site.	Construction Sites	Implemented
6.6.1.17 – 6.6.1.18	The sediment should be excavated, handled, transported and disposed of in a manner that would minimise adverse environmental impacts. To minimise sediment disposal, it is proposed to reuse the Type 1 sediment generated (e.g. as backfilling materials) as far as possible. Requirements of the Air Pollution Control (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation and disposal of the sediment.	Construction Sites	N/A
6.6.1.19	Workers shall, if necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site.	Construction Sites	Implemented
6.6.1.20	For off-site disposal, the basic requirements and procedures specified under ETWB TC(W) No. 34/2002 shall be followed.	Transportation Route of Waste / Construction Phase	Implemented
6.6.1.24	Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiles should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).	Construction Sites	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.25	In order to minimise the potential odour / dust emissions during excavation and transportation of the sediment, the excavated sediments shall be wetted during excavation / material handling and shall be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge shall be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.	Construction sites & transportation route of waste / Construction phase	N/A
6.6.1.26	The barge transporting the sediments to the designated disposal sites shall be equipped with tight fitting seals to prevent leakage and shall not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP.	Transportation route of waste / Construction phase	N/A
6.6.1.27	Suitable containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall employ a licensed collector to transport and dispose of the chemical wastes, to the licensed CWTC, or other licensed facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Construction and Operation Phases	Implemented
6.6.1.28	It is recommended to place clearly labelled recycling bins at designated locations with convenient access. Other general refuse should be separated from chemical and industrial waste by providing separated bins or skips for storage to maximise the recyclable volume. A reputable licensed waste collector should be employed to remove general refuse on a daily basis to minimise odour, pest and litter impacts.	Construction and Operation Phases	Implemented
6.6.1.29	Should buildings are found with potential ACM, sufficient and reasonable lead time shall be allowed for preparation, vetting and implementation of Asbestos Investigation Report and Asbestos Abatement Plan in accordance with Air Pollution Control Ordinance before commencement of any demolition or site clearance work.	Demolition	N/A
Land Contamination			

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
7.8.1.2 - 7.8.1.3;7.8.2.1	<p>Prior to the commencement of the SI works, a review of the Contamination Assessment Plan (CAP) should be conducted to confirm whether the proposed SI works (e.g. sampling locations, testing parameters etc.) are still valid. Supplementary CAP(s), presenting findings of the review, the latest site conditions and updated sampling strategy and testing protocol, should be submitted to EPD for endorsement. The SI works should be carried out according to EPD's agreed supplementary CAP(s). SI works should be carried out according to the supplementary CAP endorsed by EPD. Following completion of SI works and receipt of laboratory test results, Contamination Assessment Report(s) ((CAR)(s)) should be prepared to present the findings of the SI works and to discuss the presence, nature and extent of contamination. If contamination is identified, Remedial Action Plan(s) ((RAP)(s)) which provides details of the remedial actions for the identified contaminated soil and / or groundwater should be endorsed by EPD. The possible remediation methods are detailed in Section 5.2 of the CAP provided in Appendix 7.1 of the EIA Report. Remediation action, if necessary, will be carried out according to EPD endorsed RAP(s) and Remediation Report(s) (RR(s)) will be submitted after completion of the remediation action. The RR(s) should be endorsed by EPD prior to the commencement of construction works at the respective identified contaminated areas (if any).</p>	Existing YLSTW /Construction Phase (after decommissioning of the concerned facilities / areas but prior to the construction works at the concerned facilities / areas)	Implemented
7.8.3.1	<p>The mitigation measures will be recommended in the RAP and would typically include the following:</p> <ul style="list-style-type: none"> • Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety; • Excavation shall be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils; Supply of suitable clean backfill material (or treated soil) after excavation; • Stockpiling site(s) shall be lined with impermeable sheeting and bunded. Stockpiles shall be fully covered by impermeable sheeting to reduce dust emission. If this is not practicable due to frequent usage, regular watering shall be applied. However, watering shall be avoided on stockpiles of contaminated soil to minimise contaminated runoff. • Vehicles containing any excavated materials shall be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates shall be sealed to prevent any discharge during transport or during wet conditions; • Speed control for the trucks carrying contaminated materials shall be enforced; 	Project Site / Construction Phase	<p>Implemented</p> <p>N/A</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	<ul style="list-style-type: none"> • Vehicle wheel and body washing facilities at the site's exist points shall be established and used; and • Pollution control measures for air emissions (e.g. from biopile blower and handling of cement), noise emissions (e.g. from blower or earthmoving equipment), and water discharges (e.g. runoff control from treatment facility) shall be implemented and complied with relevant regulations and guidelines. 		Implemented
			Implemented
Ecological Impact (Terrestrial and Aquatic)			
Construction Phase			
8.10.2.1	<u>Avoidance of Recognised Site of Conservation Importance</u> Construction works are designed to be confined to the boundary of the existing YLSTW that direct impacts on all other sites of conservation importance within the assessment area, including the Ramsar Site, Priority Site, WCA, WBA, SSSI and CA would be avoided.	Project site / Construction Phase	Implemented
8.10.2.3 – 8.10.2.4	<u>Avoidance of Demolition Works Using Breakers Mounted on Excavators and Percussive Piling during Dry Season</u> In order to minimise the construction noise disturbance on overwintering waterbirds, the noisy construction works, i.e. all percussive piling works and demolition using breakers mounted on excavators, would therefore be scheduled outside the dry season (i.e. November to March, which is the peak overwintering period of waterbirds).	Construction sites / Construction Phase	Implemented
8.10.2.5	<u>Restriction of Construction Hours</u> No construction activities with the use of PME should be conducted within 100m from any night roost confirmed by the pre-construction survey after 18:00 during wet season and 17:30 during dry season to avoid disturbance to the nearby ardeids night roosts.	Construction sites / Construction Phase	Implemented
8.10.3.2 – 8.10.3.3	<u>Minimising Construction Noise Disturbance Impacts through Consideration of Alternative Construction Methods</u> Demolition using concrete crusher is quieter than demolition using breaker that its construction noise level is comparable to other general construction activities and concrete crusher would be used for demolition works to be undertaken during dry season months. The quieter foundation methods, including bored piling, raft foundation and shallow foundation, would be adopted as far as possible.	Construction sites / Construction Phase	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
8.10.3.4 – 8.10.3.5	<p><u>Minimising Construction Noise Disturbance Impacts Through Careful Phasing of Construction Activities</u> Percussive piling works and demolition using breakers mounted on excavators would typically be completed over two wet seasons and not be undertaken in the same construction zone at the same time to localise the construction disturbance and to reduce the duration of high level of disturbances on sensitive wetland habitats and associated waterbirds nearby each construction zone.</p> <p>Facilities in the eastern side of the Project site (i.e. Phase 1A and Phase 1B) are scheduled to be developed first that the new structures could screen the works in the middle and western parts of the site in later stage of the construction phase after the structures in Phase 1A and Phase 1B are completed, hence minimising the construction noise and human disturbance on sensitive wetland habitats adjacent to the Project site in Shan Pui River, including the confluence of Shan Pui River and Kam Tin River and ardeid night roost to the immediate east of the Project site.</p>	Project site / Construction Phase	Implemented
8.10.3.6 – 8.10.3.8	<p><u>Minimising Construction Noise Disturbance Impacts through Use of Noise Barriers</u> Noise barriers with absorptive materials of about 4m high will be erected along the northern, eastern and western sides of the site, throughout the construction phase to screen the construction noise and human disturbance to the waterbirds foraging in ponds in Fung Lok Wai and Shan Pui River during construction phase.</p> <p>Adequate noise barriers should also be provided for demolition works using breakers mounted on excavators and percussive piling works, to further minimise the construction noise disturbance from these construction activities. Movable noise barriers should be provided to breaker mounted on excavator used for demolition works as discussed in Section 4.8 and acoustic mat should be provided to the piling plants around the rig.</p> <p>The contractor should provide enclosure for construction equipment, especially static plants, as appropriate to minimise the noise disturbance as far as practicable.</p>	Construction sites / Construction Phase	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
8.10.3.9	<p><u>Use of Quality Powered Mechanical Equipment</u> The contractor should source QPMEs for construction as far as practicable to further minimise the overall construction noise and other disturbance to the nearby wetland habitats and associated waterbirds to the maximum practical extent.</p>	Construction sites / Construction Phase	Implemented
Ecology & Fisheries Impact			
8.12.1.4, 9.7	<p>Groundwater observation wells and recharge wells will be provided at the northern and western side of the site. Groundwater table will be closely monitored at the observation well. In case of any unlikely events of abnormal drawdown of groundwater table near the excavation area, groundwater dewatering will stop and water will be pumped into the recharge wells to recover the normal groundwater table as necessary.</p>	Construction Phase	N/A
Fisheries Impact			
9.7	<p>The implementation of good site practices during construction could minimise the potential water quality impacts from the land-based construction works. Mitigation measures recommended in the Water Quality Impact Assessment (Section 5) for controlling water quality impact would also serve to protect fisheries resources and activities from indirect impacts.</p>	Construction and Operation Phase	N/A
Landscape and Visual Impact			
Table 10.11	<p><u>Preservation of Existing Vegetation (CM1)</u> All the existing Trees to be retained and not to be affected by the Project shall be carefully protected during construction accordance with DEVB TCW No. 7/2015 - Tree Preservation and the latest Guidelines on Tree Preservation during Development issued by GLTM Section of DevB. Any existing vegetation in landscaped areas and natural terrain not to be affected by the Project shall be carefully preserved.</p>	Project site / Construction Phase	Implemented
Table 10.11	<p><u>Transplanting of Affected Trees (CM2)</u> Trees unavoidably affected by the works shall be transplanted as far as possible in accordance with DEVB TCW No. 7/2015 - Tree Preservation and the latest Guidelines on Tree Transplanting issued by GLTM Section of DevB.</p>	Project site / Construction Phase	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
Table 10.11	<p><u>Compensatory Tree Planting (CM3)</u> Any trees to be felled under the Project shall be compensated in accordance with DEVB TCW No. 7/2015 - Tree Preservation. For trees to be compensated on slopes, the guidelines for tree planting stipulated in GEO Publication No. 1/2011 will be followed.</p>	Project site / Construction Phase	N/A
Table 10.11	<p><u>Control of Night-time Lighting Glare (CM4)</u> All the night time lighting shall be avoided except for safety purpose. No light glare shall illuminate directly outside the site.</p>	Project site / Construction Phase	Implemented
Table 10.11	<p><u>Erection of Decorative Screen Hoarding (CM5)</u> Site hoardings, if any, shall be painted in dull green colour</p>	Project site / Construction Phase	Implemented
Table 10.11	<p><u>Management of Construction Activities and Facilities (CM6)</u> Construction activities shall be well scheduled and avoid powered mechanical equipment's operating simultaneously. All stockpiling areas and idled area shall be covered by tarpaulin sheet or hydroseeded as far as possible.</p>	Project site / Construction Phase	Implemented
Hazard to Life			
Construction Phase			
11.5.6.9-11.5.6.12	<ul style="list-style-type: none"> • Implementation of those major construction works and movement of plants and vehicles would be stringently controlled to have a setback of at least 15m clear distance, or physical barrier with an empty digester / gas holder from the digesters / gas holders in operation; • For those construction works to be carried out in close proximity to the 15m zone from digesters / gas holders in operation, the height of plants for those major construction shall be limited to 15m such that the plants would not damage digesters /gas holders in such incident as plant collapse or overturning; • Whenever practicable, the construction sequence shall be arranged with empty unit(s) for separating the major construction works from these digesters / gas holders in use; and 	Project site / Construction Phase	<p>N/A</p> <hr/> <p>N/A</p> <hr/> <p>N/A</p>

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	<ul style="list-style-type: none"> Physical barriers such as concrete blocks shall be set up at the 15m zone in order to avoid those construction plants or vehicles from colliding to the digester / gas holder units in use. 		N/A
11.5.8	<ul style="list-style-type: none"> Method statements and risk assessments shall be prepared and safety control measures shall be in place before commencement of work 	Project site / Construction Phase	Implemented
	<ul style="list-style-type: none"> All work procedures shall be complied with the operating plant procedures or guidelines and regulatory requirements; 		Implemented
	<ul style="list-style-type: none"> Work permit system, on-site pre-work risk assessment and emergency response procedure shall be in place before commencement of work; 		Implemented
	<ul style="list-style-type: none"> All construction workers shall equip with appropriate personal protective equipment (PPE) when working at the Project Site; 		Implemented
	<ul style="list-style-type: none"> Safety training and briefings shall be provided to all construction workers; 		Implemented
	<ul style="list-style-type: none"> Regular site safety inspections shall be conducted during the construction phase of the Project; 		Implemented
11.9.1.2	<ul style="list-style-type: none"> Ensure speed limit enforcement is specified in the contractor's method statement to limit the speed of construction vehicles onsite; 	Project site / ConstructionPhase	Implemented
	<ul style="list-style-type: none"> Conduct speed checks to ensure enforcement of speed limits and to ensure adequate site access control; 		N/A
	<ul style="list-style-type: none"> A lifting plan, with detailed risk assessment, should be prepared and endorsed for heavy lifting of large equipment; 		Implemented
	<ul style="list-style-type: none"> Vehicle crash barriers should be provided between the construction site and the operating biogas facilities; 		N/A
	<ul style="list-style-type: none"> Ensure that a hazardous are classification study is conducted and hazardous area maps are updated before the start of the construction activities to ensure ignition sources are controlled during both construction and operation phases; 		Implemented
	<ul style="list-style-type: none"> Ensure work permit system for hot work activities within the Project Site is specified in the contractor's method statement to minimize and control the ignition sources during the construction phase; 		Implemented
	<ul style="list-style-type: none"> Ensure effective communication system / protocol is in place between the contractors and the operation staff; 		Implemented
	<ul style="list-style-type: none"> Ensure the Project Construction Emergency Response Plan is integrated with the Emergency Response Plan for the YLEPP during construction phase. The plan should address stop work instructions to be promptly communicated to all construction workers performing hot works in case a confirmed biogas detection at the Project Site; 		Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	<ul style="list-style-type: none"> • Ensure that the construction activities do not impede the functions of fire and gas detection system, fire protection system, muster areas, fire-fighting vehicle access and escape routes; 		Implemented
	<ul style="list-style-type: none"> • Ensure a Job Safety Analysis is conducted for construction activities of the Project during the construction phase, to identify and analyze hazards associated with the construction activities (e.g. lifting operations by cranes) onto the operating biogas facilities. 		Implemented
	Potential risks of the construction activities shall be assessed, and risk precautionary measures shall be implemented in Contractor's works procedures.		Implemented

Note:

Implementation status: Implemented / Partially Implemented / Not Implemented / Not Applicable (N/A)

Sources / reference of the Implementation Status: Appendix B of EIA Report, AEIAR-220/2019

Appendix K

Weather and Meteorological
Conditions

August 2022 Weather

Station: Wetland Park

Date	Mean Pressure (hPa)	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
August 2022						
1	1006.2	37.2	31.6	27.1	74	0.0
2	1007.5	37.2	31.1	27.0	76	0.5
3	1007.2	32.2	27.7	26.4	93	18.0
4	1004.9	27.2	26.4	25.7	98	33.0
5	1007.9	29.5#	26.1	24.4#	98	77.0
6	1008.0	32.3	27.6	25.2	96	16.5
7	1007.3	34.0	29.6	26.2	83	0.0
8	1007.0	33.1#	28.1	25.0#	90	35.5
9	1004.4	27.8#	25.8	24.9#	98	67.0
10	1004.5	30.1	26.7	25.4	96	62.0
11	1008.1	30.9	26.8	24.8	94	15.5
12	1009.3	28.6#	25.6	24.5#	99	28.5
13	1008.4	32.1	27.9	24.4	89	0.0
14	1007.6	34.5	29.5	25.5	83	0.0
15	1006.5	35.5	30.1	26.4	83	0.0
16	1006.1	34.0	29.3	26.5	86	2.0
17	1006.3	32.2	27.6	25.4	93	10.0
18	1005.9	32.6	27.9	25.6	93	6.5
19	1005.4	32.5	28.0	26.1	92	6.0
20	1007.8	32.1	27.8	25.7	88	3.5
21	1008.6	33.2	29.3	26.1	85	0.5
22	1007.3	34.4	30.3	26.8	83	0.0
23	1005.4	35.8	31.3	27.4	82	0.0
24	1002.8	35.5#	30.8	25.6#	80	1.5
25	1006.6	29.3	26.1	24.5	94	41.0
26	1010.6	33.1#	28.9	25.7#	88	0.5
27	1009.0	34.4	29.8	26.0	84	0.0
28	1008.1	35.1	29.3	26.4	92	15.0
29	1010.0	33.2	28.7	24.8	91	9.0
30	1008.6	33.5	29.2	26.3	90	0.5
31	1006.6	34.2	28.5	26.3	92	32.0

Note (From Hong Kong Observatory):

1. # Data incomplete
2. Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

Source: Hong Kong Observatory

September 2022 Weather

Station: Hong Kong Observatory

Date	Mean Pressure (hPa)	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
September 2022						
1	1007.9	32.9	29.4	26.9	78	2.8
2	1005.9	32.3	29.5	27.3	63	0.0
3	1002.8	33.9	30.0	26.9	54	0.0
4	1002.9	34.7	30.8	27.7	55	0.0
5	1004.4	35.3	31.1	28.8	52	0.0
6	1008.2	34.5	30.8	28.4	61	0.0
7	1013.3	29.6	28.4	26.7	81	8.6
8	1014.2	32.8	29.5	27.8	70	Trace
9	1013.1	33.3	29.6	27.5	55	0.0
10	1011.4	31.4	28.9	27.6	76	Trace
11	1009.1	32.1	29.4	27.4	78	0.0
12	1007.4	33.7	30.8	28.2	66	0.0
13	1007.3	35.9	31.7	28.8	56	0.0
14	1007.0	35.5	31.7	29.6	46	0.0
15	1005.9	34.5	31.3	28.7	52	0.0
16	1005.1	33.8	30.8	28.6	63	Trace
17	1006.0	33.9	31.1	29.1	69	Trace
18	1005.7	34.0	30.1	27.4	77	20.3
19	1005.9	32.3	28.8	25.9	77	3.3
20	1008.2	30.7	28.9	26.2	79	3.5
21	1010.7	30.4	28.1	25.8	72	8.5
22	1011.1	31.2	28.5	26.9	73	0.0
23	1010.8	32.1	28.5	25.6	77	13.4
24	1011.2	31.0	28.3	25.8	71	0.0
25	1010.4	32.7	28.8	26.9	71	0.0
26	1009.1	33.7	29.4	27.2	70	0.0
27	1007.7	32.3	29.2	28.1	72	Trace
28	1008.0	31.2	28.8	27.7	73	0.0
29	1010.1	29.7	28.0	25.0	81	8.1
30	1012.3	28.3	26.4	24.8	91	102.7

Note (From Hong Kong Observatory):
Trace means rainfall less than 0.05 mm

Source: Hong Kong Observatory

Remark: The corresponding weather station at Wetland Park were unavailable at the time of preparation of this report. The corresponding month's weather will be provided in the next reporting month.

Appendix L

Cumulative Statistics on Environmental
Complaints, Notifications of Summons and
Successful Prosecutions

Environmental Complaints Log

Reference No.	Date of Complaint Received	Received From	Received By	Nature of Complaint	Date of Investigation	Outcome	Date of Reply

Cumulative Statistics on Complaints

Environmental Parameters	Cumulative No. Brought Forward	No. of Complaints This Month	Cumulative Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

Cumulative Statistics on Notification of Summons and Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Notification of Summons and Prosecutions This Month	Cumulative Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

Appendix M

ET Leader's Site Environmental Audit

Summary of ET Leader's Site Environmental Audit in the Reporting Month

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality	21 Sep 2022	Reminder 1: The Contractor is reminded to increase watering for dust suppression at haul roads (Portion 1 - YLSTW).	NA
	28 Sep 2022	Reminder 1: The Contractor is reminded to increase watering for dust suppression during the demolition of S.A.S. Thickener House (Portion 1 - YLSTW).	NA
Noise		NA	
Water Quality		NA	
Chemical and Waste Management	13 Sep 2022	Reminder 1: The Contractor is reminded to clean up the oil stain on road with chemical absorbent pad and treat it as chemical waste for disposal (Portion 1 - YLSTW).	NA
Land Contamination		NA	
Ecological Impact		NA	
Landscape and Visual Impact		NA	
Permit / Licenses		NA	
Others		NA	

Appendix N

Outstanding Issues and Deficiencies

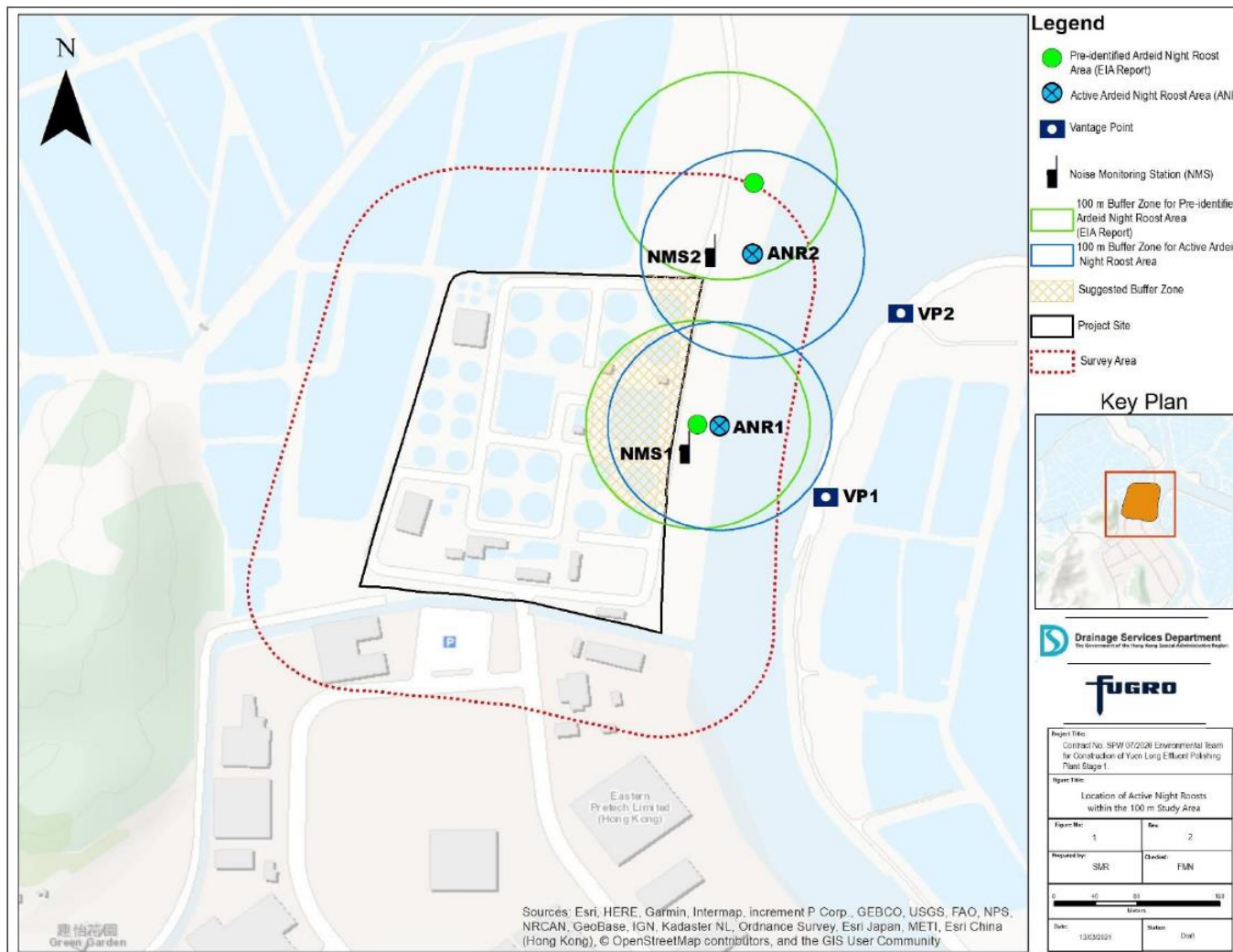
Summary of Outstanding Issues and Deficiencies in the Reporting Month

Parameters	Outstanding Issues	Deficiencies
Air Quality	NA	Any items of deficiencies can be referred to Appendix M .
Noise	NA	
Water Quality	NA	
Chemical and Waste Management	NA	
Land Contamination	NA	
Landscape and Visual Impact	NA	
Permit / Licenses	NA	
Others	NA	

Appendix O

Active Night Roost Monitoring Area and Vantage
Points; and Noise Monitoring Stations

O.1 Map of the Monitoring Area, Vantage Points for Observation of Active Night Roosts and Noise Monitoring Stations



Appendix O.1: Monitoring Area, Vantage Points for Observation of Active Night Roosts and Noise Monitoring Stations

O.2 Survey Photos

O.2.1 Pre-roosting Aggregate



Appendix O.2.1a: Pre-roost aggregate of Little Egret *Egretta garzetta* and Grey Heron *Ardea cinerea* in the mudflat area east of the Project boundary observed on 16 September 2022 around 18:10



Appendix O.2.1b: Pre-roost aggregate of Little Egret *Egretta garzetta* in the mudflat area northeast of the Project boundary observed on 16 September 2022 around 18:10

O.2.2 Active Night Roosting Site and Roosting Substrates



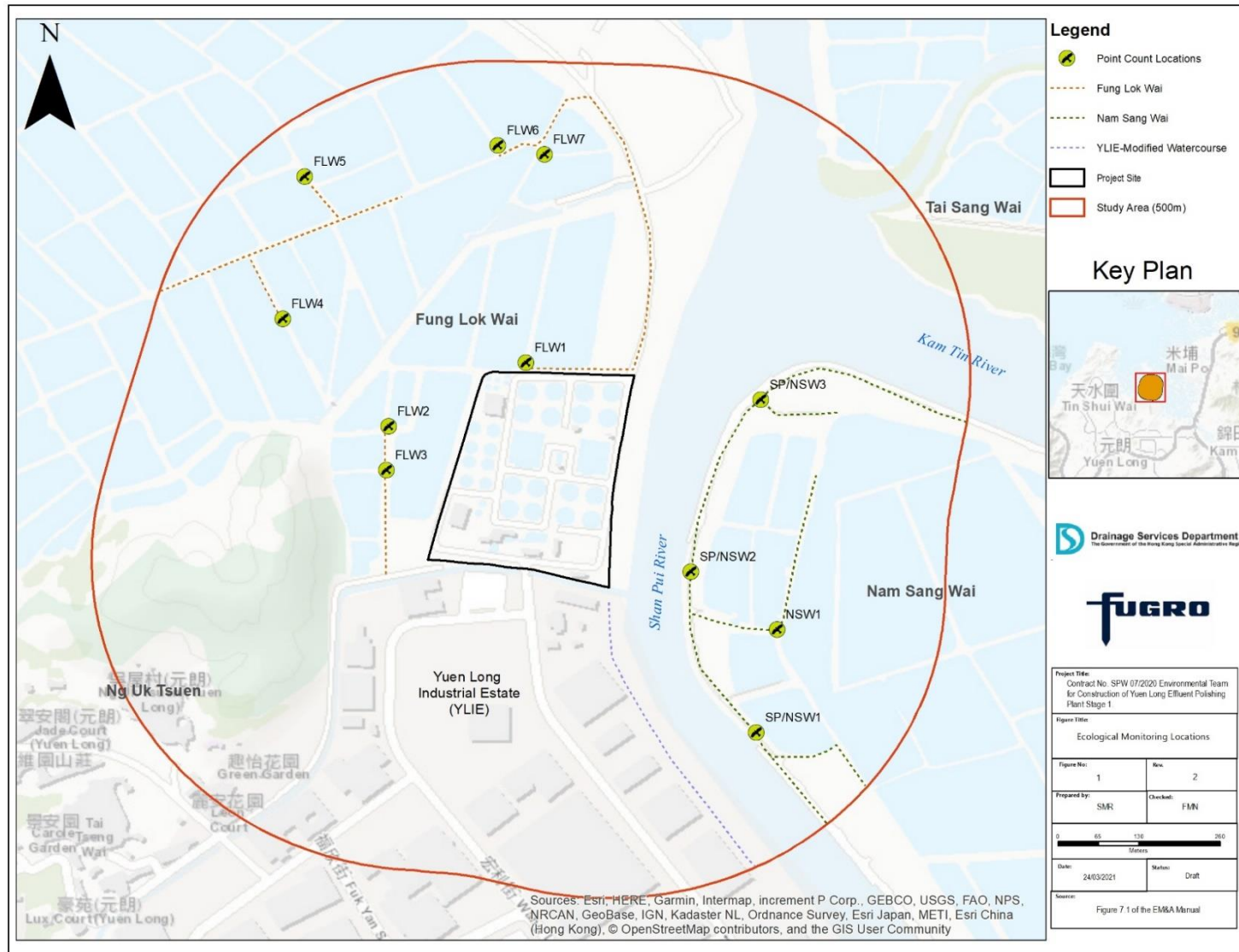
Appendix O.2.2a: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located east of the Project boundary observed on 16 September 2022 around 18:30



Appendix O.2.2b: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located northeast of the Project boundary observed on 16 September 2022 around 18:30

Appendix P

Ecological Bird Monitoring Area with Locations
of Point Count Sites and Transect Routes



Appendix P: Ecological bird monitoring area with the locations of point count sites and transect routes