



Monthly EM&A Report (January 2022)

0120/20/ED/0439 01

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

Ref.: DSDYLSTWEM00_0_0271L.22

15 February 2022

By E-mail and By Hand

AECOM
12/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, Hong Kong.

Attention: Mr YEUNG H. M. Simon

Dear Mr YEUNG,

Re: Contract No. SPW 08/2020
Independent Environmental Checker for
Construction of Yuen Long Effluent Polishing Plant Stage 1
Verification of the Monthly EM&A Report (January 2022)

Reference is made to the Monthly EM&A Report (January 2022) by the ET with Fugro Document No. (0120/20/ED/0439 01) (the Report), which was received via e-mail dated 14 February 2022.

Having reminded that, in accordance with the Condition 3.6 of the EP-565/2019, it is the ET's responsibility to ensure all submitted EM&A data shall be true, valid and correct, we have no further comments and herewith verify that the Report has fulfilled the EP Condition 3.4 as having complied with the requirements set out in the EM&A Manual.

Please contact the undersigned or our Mr. Y.H. HUI should you have any questions on the matter.

Yours sincerely,



WONG Fu Nam
Independent Environmental Checker

c.c.

DSD
Fugro

Mr LAM Yu Wang
Mr YU Lap Bong

By E-mail
By E-mail

Document Control




Document Information

Project Title	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1
Document Title	Monthly EM&A Report (January 2022)
Fugro Project No.	0120/20
Fugro Document No.	0120/20/ED/0439
Issue Number	01

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 10th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 January 2022 to 31 January 2022. As informed by the Contractor, major activities in the reporting month were:
 - Temp. road pavement at PST no. 5 & 6;
 - Demolition of FST no. 5-8 by crusher excavator;
 - Pre-drill work at Aeration tank by 1 rig;
 - Installation of sheet pile at IW & PST;
 - Pile load test at IW & PST;
 - Diversion work at Zone 2A;
 - Diversion work at Zone 2B;
 - Construction of 1600A temp. transformer room;
 - Reinstatement of road pavement at Zone 1;
 - Filter Disc Pilot Plant concrete plinth;
 - AGS Pilot Plant concrete plinth;
 - Pipe laying for Zone 3;
 - Construction RC structure at Zone 3;
 - a. Temp. Gravity thickening tank;
 - b. Temp. Sludge Holding Tank;
 - c. Temp. water heater house;
 - d. Temp. thickened sludge pump;
 - e. Temp. digested sludge pump;
 - Overhaul work at Sludge Digestion Tank; and
 - Ground investigation at A. tank no. 7-8.

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-Action Plans.

Land Contamination

- viii. Regular site inspection was carried out to ensure the recommended mitigation measures are properly implemented. Site investigation (SI) work was completed by 6th January 2022 and the signed final Contamination Assessment Report (CAR) for Main Storeroom & Workshops was submitted to EPD on 1 November 2021. The signed final Contamination Assessment Report (CAR) for Mechanical Workshop was submitted to EPD on 23rd November 2021. No contaminated soil and ground water was found within the Main Storeroom & Workshop and the Mechanical Workshop, and no remedial action is required for both locations. While the laboratory results of sampling works show that there is no contaminated soil or groundwater within the Waste Storage Area, the findings are summarized in the draft CAR for the area which is under review and will be submitted to EPD.

Complaint Log

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

Notifications of any Summons and Successful Prosecutions

- x. No notifications of summons and 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 FST no. 5-8 , Sludge Holding Tanks no. 3 & 4 (below ground), Return Activated Sludge Screw Pump Pumping station, Air Flotation Thickener and Auxiliary Pumping Station;
 - Sheet Pile installation, pipe Laying and construction of RC chamber at Zone 2B and subsequence diversion work;
 - Env. Drill holes inside Air Flotation Thickener;
 - Sheet pile installation, excavation work and RC structure at IW & PST;
 - Sheet pile installation, ELS, construction of RC chamber at Zone 3 (Location E – Temp. Thickened Sludge/Supernatant Pumping Station);
 - Construction of Primary Sludge Draw-off chamber;
 - Installation of sheet pile, excavation and construction of temporary chamber at Zone 2B;
 - Pipe Laying for Zone 3;
 - Installation of sheet pile for demolition of Aeration Tank no. 5-8 at AGS;
 - Installation of sheet pile, excavation work for foundation and RC foundation and structure;
 - Construction of temp. transformer room (1600A);
 - Demolition of Settled Sewage Overflow Chamber;
 - Demolition of PST no. 4;
 - Cone Penetration Test at Sludge Thickening Building; and
 - Ground investigation at Sludge Holding Tank & Sludge Thickening Building.

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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.
- 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 10th Monthly EM&A report to document the findings of site inspection activities and EM&A programme for this project from 1 January 2022 to 31 January 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. Lam Yu Wang	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 (Ramboll Hong Kong Limited)	Independent Environmental Checker (IEC)	Mr. F.N. Wong	3465 2805
Contractor (Paul Y. - CREC Joint Venture)	Environmental Officer	Ms. Iris Ho	5490 5271
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:

- Temp. road pavement at PST no. 5 & 6;
- Demolition of FST no. 5-8 by crusher excavator;
- Pre-drill work at Aeration tank by 1 rig;
- Installation of sheet pile at IW & PST;
- Pile load test at IW & PST;
- Diversion work at Zone 2A;
- Diversion work at Zone 2B;
- Construction of 1600A temp. transformer room;
- Reinstatement of road pavement at Zone 1;
- Filter Disc Pilot Plant concrete plinth;
- AGS Pilot Plant concrete plinth;
- Pipe laying for Zone 3;
- Construction RC structure at Zone 3;
 - a. Temp. Gravity thickening tank;
 - b. Temp. Sludge Holding Tank;
 - c. Temp. water heater house;
 - d. Temp. thickened sludge pump;
 - e. Temp. digested sludge pump;
- Overhaul work at Sludge Digestion Tank; and
- Ground investigation at A. tank no. 7-8.

1.4.2 The environmental protection and 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 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	NA
Notification of Works under APCO	461616	6-Nov-2020	NA
Construction Waste Disposal Billing Account	7038933	20-Nov-2020	NA
Registration as Chemical Waste Producer under WDO	WPN5213-528-P2796-03	4-Feb-2021	NA
Construction Noise Permit	GW-RN0720-21	18-Oct-2021	17-Apr-2022 (Superseded by GW-RN0935-21)
Construction Noise Permit	GW-RN0928-21	16-Dec-2021	26-Feb-2022
Construction Noise Permit	GW-RN0935-21	20-Dec-2021	19-Jun-2022
Admission Ticket for Disposal of Special Waste at Landfill	Admission Ticket No. 16595	4-Nov-2021	31-Jan-2022
Water Pollution Control Ordinance (CAP. 358) Licence pursuant to Section 20	WT00038102-2021	4-Aug-2021	31-Aug-2026
Marine Dumping Permit	Ref. Number: 468850, 468851 and 468852	Under Application	NA

Notes:

NA = Not Applicable

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 model of the air quality monitoring equipment used is 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	155716
2	AM2		Model LD-5R		155717
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 conditions during the monitoring are provided in **Appendix K**.

2.6.5 The monitoring data 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	74	49-95	291	500
AM2	77	56-112	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 January 2022 ($\mu\text{g}/\text{m}^3$)
1-hour TSP			
AM1	ASR09	205-451	95
AM2	ASR11		112

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 ± 0.1 dB).

3.2.2 The model of the noise monitoring equipment used is 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	0873599
2	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	1488272
3	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	4358251
4	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	2383707
5	SENSOR	AR816	Anemometer	2136513

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 conditions during the monitoring month are provided in **Appendix K**.
- 3.7.5 The noise monitoring data 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	53-56	When one documented complaint is received	75
	CM2	60-61		75
	CM3	60-64		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 January 2022 L_{eq} (30min) dB(A)
CM1	NSR1	72	56
CM2	NSR2	74	61
CM3	NSR3	75	64

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)	19A105807
					19A105808
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 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	0
	Limit	0	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**.

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 21 January 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 18:01, 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 21 January 2021 and started around 17:04 (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, seven individuals of Little Egret *Egretta garzetta* were observed in pre-roost aggregate (PRA) around 17:30 at the mudflat northeast (ANR2) of the Project boundary while no PRA was noted at the mudflat east side (ANR1) of the Project boundary during the period (**Table 5.2**).

For the final night roost at around 18:01, Chinese Pond Heron *Ardeola bacchus* individuals were observed at both the roosting areas ANR1 (3 individuals) and ANR2 (7 individuals) utilizing the inside portions of the understory to canopy layers of the roosting substrate *Sonneratia apetala* and *S. caseolaris*; while individuals of Little Egret *Egretta garzetta* (40 individuals) and Great Egret *Ardea alba* (20 individuals) as only noted at ANR2 utilized the canopy 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: 21 January 2022				Sunset Time: 18:04	
				Tidal Condition: Low Tide	
Pre-roost Period			Final roost Period		
Time of Return:	Little Egret <i>Egretta garzetta</i> (17:30)		Time of Return:	Chinese Pond Heron <i>Ardeola bacchus</i> , Little Egret <i>Egretta garzetta</i> and Great Egret <i>Ardea alba</i> (18:01)	
Parameters	Location		Parameters	Location	
	ANR1	ANR2		ANR1	ANR2
Pre-roost Aggregation (Y/N):	N	Y	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>	-	7	Chinese Pond Heron <i>Ardeola bacchus</i>	3	7
			Little Egret <i>Egretta garzetta</i>	-	40
			Great Egret <i>Ardea alba</i>	-	20
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 21 January 2022 in concurrence with the construction phase monthly monitoring of the pre-identified active night roosts. Noise monitoring started at 18:01 and lasted for 30 minutes, until 18:31.

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	18:01	46.3	65.5 dB(A) ¹	72.2 dB(A) ²
	NMS2	18:01	41.3		

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 was 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 January 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, Great Egret 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

Daytime time avifauna survey on the different wetland habitats using the transect count and point count methods was conducted on 17 January 2022 which started around 07:45. For the survey overlooking the mudflats and mangroves in the Shan Pui River, it was concurrently conducted on the same date with the day time survey during the low tide (generally 1.5m or below) period at also 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
LAeq (30 min) (L10 and L90 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 17 January 2022 (daytime survey) 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 which started 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 920 avifauna individuals was recorded in the monitoring area during the January 2022 monitoring period, of which 631 individuals were recorded from the point count method and 289 individuals from the transect walk method. Relative to the January 2017 baseline data (point count method = 708; and transect walk = 347), current insignificant decrease in total abundance for both the point count method (t-value = -0.41; p-value = 0.68;

$\alpha = 0.05$) and transect walk method (t-value = -1.33; p-value = 0.19; $\alpha = 0.05$) results were noted. Details of these findings are summarized in **Table 5.5** and **Appendix F.7**.

Table 5.5 – Abundance of all Avifauna Species

Abundance of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	Jan-17	Jan-22	Remarks
P1	FLW1	9	50	+
P2	FLW2	27	14	-
P3	FLW3	37	12	-
P4	FLW4	0	19	+
P5	FLW5	0	55	+
P6	FLW6	105	83	-
P7	FLW7	45	45	=
P9	SP/NSW3	148	110	-
P10	SP/NSW2	142	70	-
P11	NSW1	117	93	-
P12	SP/NSW1	78	80	+
Total		708	631	-
Mean		64	57	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Jan-17	Jan-22	Remarks
Fung Lok Wai	FLW	292	147	-
Nam Sang Wai	NSW	52	70	+
YLIE-CW	YLIE-CW	3	72	+
Total		347	289	-
Mean		116	96	-

5.2.3.12 Avifauna Species of Conservation Importance

Of the 920 avifauna individuals recorded in the monitoring area during the January 2022 monitoring period, 491 individuals (point count method = 359 individuals; transect walk method = 132 individuals) were of conservation importance. With reference to January 2017 data, current results showed an insignificant decrease in total abundance of point count method (t-value = -0.40; p-value = 0.69; $\alpha = 0.05$) while an increase in transect walk method was noted. Details of these findings are summarized in **Table 5.6** and **Appendix F.7**.

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	Jan-17	Jan-22	Remarks
P1	FLW1	8	9	+
P2	FLW2	12	1	-
P3	FLW3	34	9	-
P4	FLW4	0	12	+
P5	FLW5	0	32	+
P6	FLW6	66	20	-
P7	FLW7	33	11	-
P9	SP/NSW3	146	100	-
P10	SP/NSW2	76	54	-
P11	NSW1	86	52	-
P12	SP/NSW1	67	59	-
Total		528	359	-
Mean		48	33	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Jan-17	Jan-22	Remarks
Fung Lok Wai	FLW	82	42	-
Nam Sang Wai	NSW	1	23	+
YLIE-CW	YLIE-CW	0	67	+
Total		83	132	+
Mean		28	44	+

5.2.3.2 Diversity (Species Richness¹ and Shannon Diversity Index²)

5.2.3.2.1 All Avifauna Species

A total of 57 avifauna species (species richness) were recorded during the January 2022 monitoring period, of which, 44 species were recorded by the point count method while 40 species were noted by the transect walk method. Relative to the baseline data (point count method = 47 species; transect walk method = 50 species), decreases in total species richness for both the point count method and transect walk method were noted. In terms of Shannon diversity index (H'), an increases from baseline reference values were observed in both point count and transect walk methods. Details of these findings are summarized in **Table 5.7**.

¹ actual number of species

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

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	Jan-17	Jan-22	Remarks
P1	FLW1	1.15	0.73	-
P2	FLW2	1.48	1.65	+
P3	FLW3	0.58	1.52	+
P4	FLW4	**	1.41	+
P5	FLW5	**	1.93	+
P6	FLW6	1.13	1.81	+
P7	FLW7	1.92	1.68	-
P9	SP/NSW3	2.35	1.98	-
P10	SP/NSW2	2.68	2.44	-
P11	NSW1	1.31	1.83	+
P12	SP/NSW1	2.36	2.28	-
Overall H'		2.82	3.01	+
Species Richness		47	44	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Jan-17	Jan-22	Remarks
Fung Lok Wai	FLW	3.20	3	-
Nam Sang Wai	NSW	2.12	0.79	-
YLIE-CW	YLIE-CW	0.64	2.45	+
Overall H'		3.31	3.36	+
Species Richness		50	40	-

Note:

** no species recorded

5.2.3.2.2 Avifauna Species of Conservation Importance

Of the 57 species of avifauna identified during the January 2022 monitoring period, 21 species were of conservation importance (point count method = 19 species; transect walk method = 14 species). Relative to the baseline values in January 2017, decrease in the number of species with conservation importance was recorded from the point count method while an increase in the number of species with conservation importance for the transect walk method was noted. In terms of Shannon diversity index (H'), an increases from baseline reference values were observed in both point count and transect walk methods. 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	Jan-17	Jan-22	Remarks
P1	FLW1	0.90	0.94	+
P2	FLW2	0.98	0	-
P3	FLW3	0.22	1.06	+
P4	FLW4	**	0.64	+
P5	FLW5	**	1.26	+
P6	FLW6	0.35	1	+
P7	FLW7	1.56	0	-
P9	SP/NSW3	2.30	1.78	-
P10	SP/NSW2	2.24	2	-
P11	NSW1	0.35	0.65	+
P12	SP/NSW1	2.07	1.90	-
Overall H'		2.24	2.33	+
Species Richness		22	19	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Jan-17	Jan-22	Remarks
Fung Lok Wai	FLW	1.74	1.59	+
Nam Sang Wai	NSW	0	1.75	+
YLIE-CW	YLIE-CW	**	2.32	+
Overall H'		1.79	2.43	+
Species Richness		11	14	+

Note:

** no species recorded

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, the different wetland habitats such as Confluence of Shan Pui River and Kam Tin River; Upper course of Shan Pui River along YLIE; and Active Ponds North to Nullah 2 in Fung Lok Wai, were observed with low to moderate (L-M) abundance. The rest of the habitats were noted with very low (VL); and very low to low (VL-L) abundances. In

terms of species richness, the Active Ponds North to Nullah 2 in Fung Lok Wai were noted with very high (VH) number of species among the other habitats during the period (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	L-M	VL-L
	Shan Pui River adjacent to Project site	VL-L	L-M
	Upper course of Shan Pui River along YLIE	L-M	H-VH
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai	VL-L	L-M
	Active Ponds North to Nullah 2 in Fung Lok Wai	L-M	VH
	Inactive Ponds in Fung Lok Wai	VL	VL
	Active and Inactive Ponds in Nam Sang Wai	VL-L	L-M
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)
- : no recorded individuals

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

5.2.3.3.2 Avifauna Species of Conservation Importance

Among the different wetland habitats, both the Confluence of Shan Pui River and Kam Tin River; and the Upper course of Shan Pui River along YLIE, were observed with low to moderate (L-M) abundance. The rest of the habitats were noted with very low (VL); and very low to low (VL-L) abundances. In terms of species richness, majority of the wetland habitats were also utilized by very low (VL) and very low to low (VL-L) number of 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	L-M	VL-L
	Shan Pui River adjacent to Project site	VL-L	VL-L
	Upper course of Shan Pui River along YLIE	L-M	M-H
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai	VL	VL

	Active Ponds North to Nullah 2 in Fung Lok Wai	VL-L	VL-L
	Inactive Ponds in Fung Lok Wai	VL	VL
	Active and Inactive Ponds in Nam Sang Wai	VL-L	VL
Mangrove	Mangrove within Assessment Area	VL	VL
Reedbed	Reedbed in Nam Sang Wai	-	-

Notes:

- 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)
 - Species richness (total number of species) of conservation important 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)

5.2.3.3 Overwintering Avifauna Species

A total of 22 winter visitor species were observed utilizing the wetland habitats within the survey area during this monitoring period. Majority of these wetland habitats were noted with very low (VL) abundances, and very low to low (VL-L) species richness of overwintering avifauna species (Table 5.11).

Table 5.11 – Wetland habitat utilization of overwintering avifauna species

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

Notes:

- 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)
- Species richness (total number of species) of conservation important 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 17 January 2022 (day time) from each of the point count locations during the ecological bird monitoring are shown in **Table 5.12**.

Table 5.12 – Noise Monitoring Results (For Ecological Monitoring of Birds)

Frequency and Period	Location	Day time (17/01/2022)	
		Start Time	L_{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1	09:38	52.2
	FLW2	09:05	49.8
	FLW3	09:05	48.9
	FLW4	09:51	50.2
	FLW5	09:52	55.6
	FLW6	10:30	49.2
	FLW7	10:34	57.2
	SP/NSW3	08:17	60.6
	SP/NSW2	08:17	59.5
	NSW1	07:45	49.1
	SP/NSW1	07:45	54.5

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 5, 11, 19 and 26 January 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 26 January 2022) show that there are no exceedances of the adopted RBRGs for the “Waste Storage Area”, hence no contaminated soil or groundwater is found within the “Waste Storage Area”. Their findings are summarized in draft Contamination Assessment Report (CAR) which is under review and will be submitted to EPD.

8. SITE INSPECTION AND AUDIT

8.1 Site Inspection

- 8.1.1 Site audits were carried out by ET on weekly basis 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 5, 11, 19 and 26 January 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	(The application is still in progress and EPD will allocate the disposal ground once the application is approved)

- 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 treated and stored 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 Even-Action Plans.

9.2 Complaints, Notification of Summons and Prosecution

- 9.2.1 No environmental complaint, notification of summons and successful prosecution were received 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

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

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

Table 10.1 – Summary of EP Submissions Status

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, to be finalised and made 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, 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.
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 to December 2021)	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.

EP Condition (EP-565/2019)	Submission Title	Submission Status
Condition 3.5	Quarterly EM&A Report (from April to December 2021)	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 to December 2021	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 FST no. 5-8, Sludge Holding Tanks no. 3 & 4 (below ground), Return Activated Sludge Screw Pump Pumping station, Air Flotation Thickener and Auxiliary Pumping Station;
- Sheet Pile installation, pipe Laying and construction of RC chamber at Zone 2B and subsequence diversion work;
- Env. Drill holes inside Air Flotation Thickener;
- Sheet pile installation, excavation work and RC structure at IW & PST;
- Sheet pile installation, ELS, construction of RC chamber at Zone 3 (Location E – Temp. Thickened Sludge/Supernatant Pumping Station);
- Construction of Primary Sludge Draw-off chamber;
- Installation of sheet pile, excavation and construction of temporary chamber at Zone 2B;
- Pipe Laying for Zone 3;
- Installation of sheet pile for demolition of Aeration Tank no. 5-8 at AGS;
- Installation of sheet pile, excavation work for foundation and RC foundation and structure;
- Construction of temp. transformer room (1600A);
- Demolition of Settled Sewage Overflow Chamber;
- Demolition of PST no. 4;
- Cone Penetration Test at Sludge Thickening Building; and
- Ground investigation at Sludge Holding Tank & Sludge Thickening Building.

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 Month

11.3.1 The tentative schedule for environmental monitoring in the coming three month 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 Referring to the Contractor's information, no environmental complaint, notification of summons and successful prosecution was received 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

- No specific observation was identified in the reporting month.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Silty deposit in gullies should be cleaned at Zone 2.
- Mitigation measure should be provided to prevent direct discharge of runoff near the main entrance.
- The Contractor is reminded to de-silt the gullies near the main entrance.

Chemical Waste and Construction Waste Management

- The Contractor is reminded to provide drip tray for the chemical containers.

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.

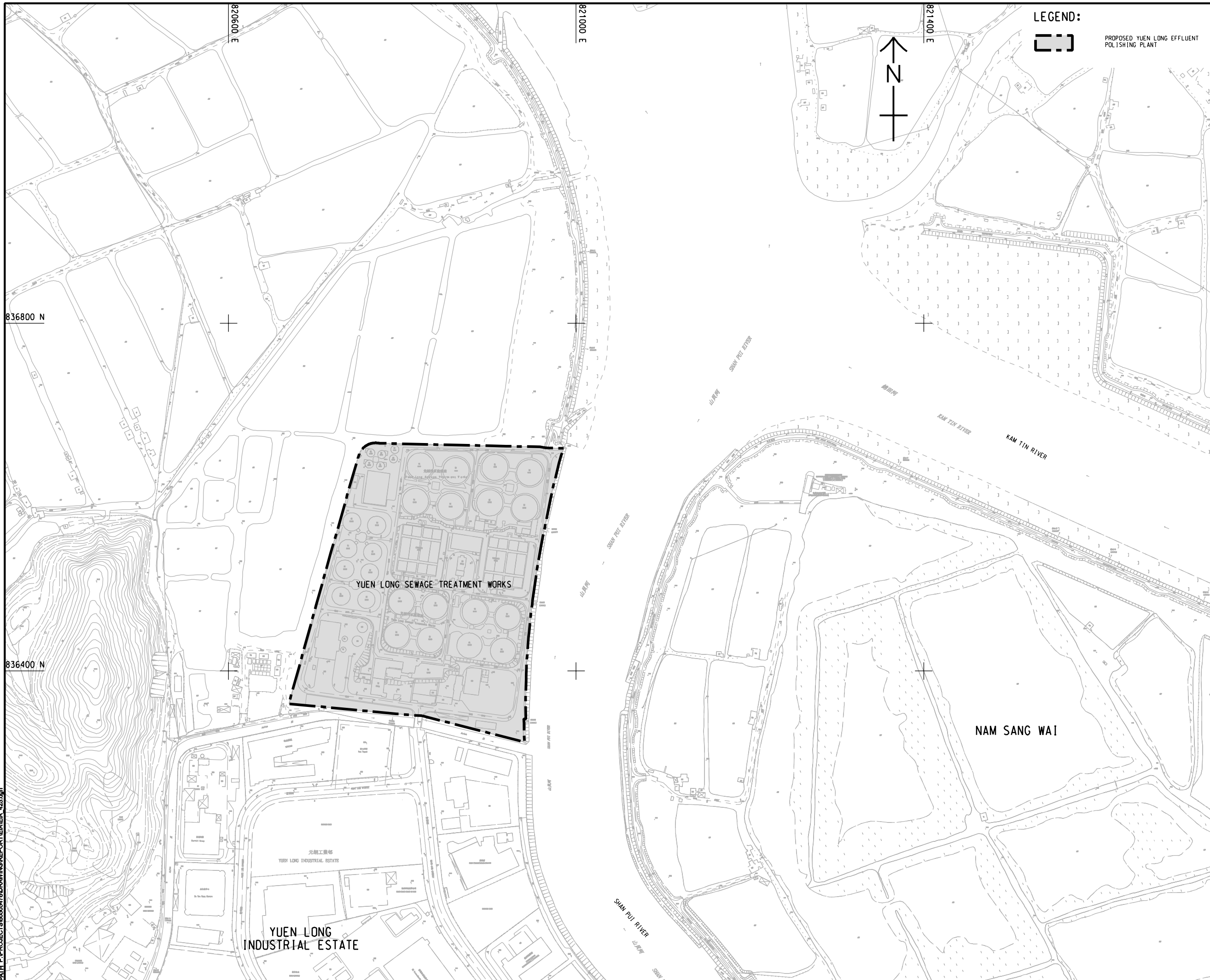
Permit/ Licenses


- No specific observation was identified in the reporting month.

Figure 1

Location of Proposed Yuen Long Effluent
Polishing Plant

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 Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



LEGEND:
 PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

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

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SHEET TITLE
 LOCATION OF PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

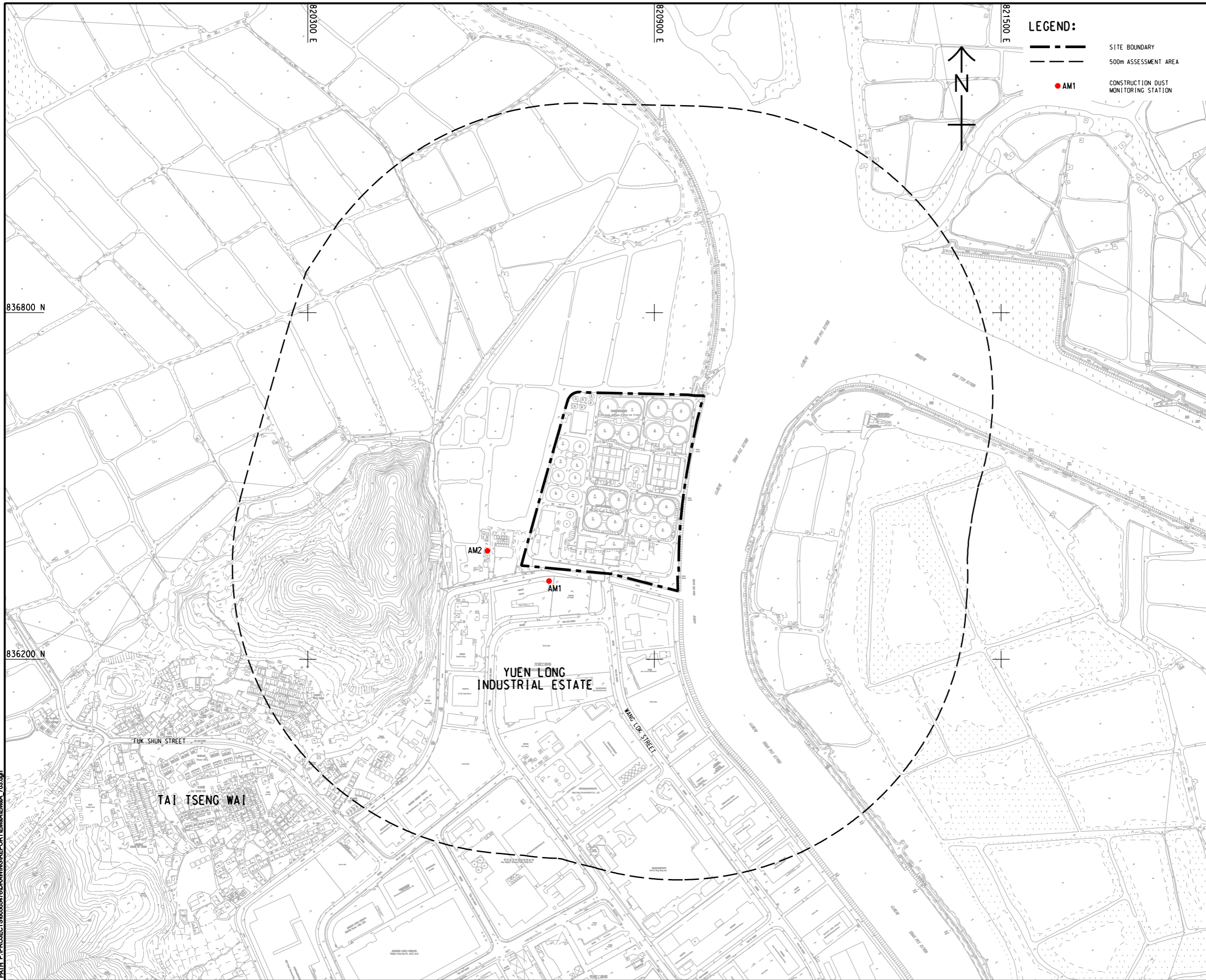
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Figure 2

Air Quality Monitoring Locations

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LEGEND:

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



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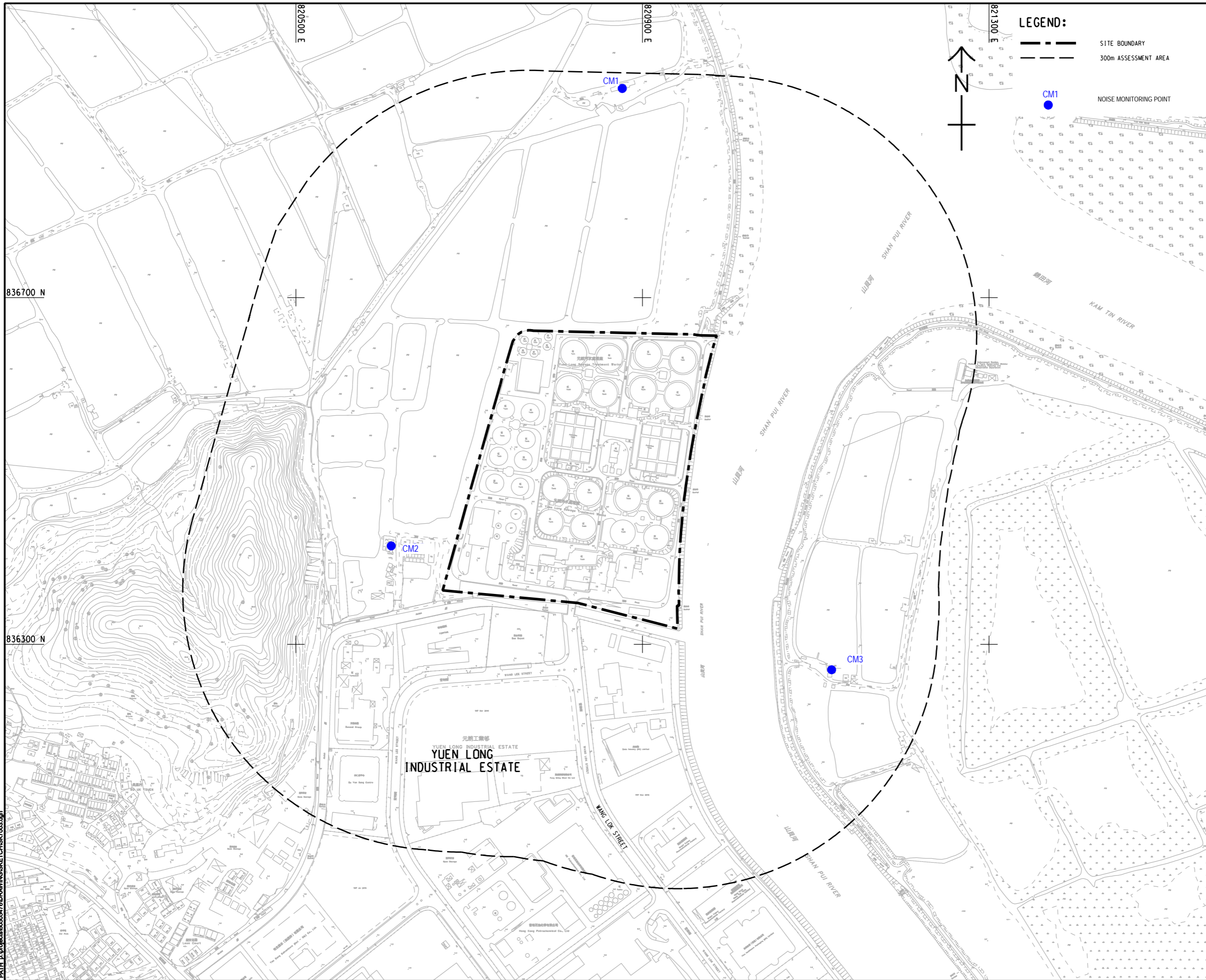
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 LOCATION OF CONSTRUCTION DUST MONITORING STATIONS

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Figure 3

Noise Monitoring Locations



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 LOCATIONS OF NOISE MONITORING POINTS

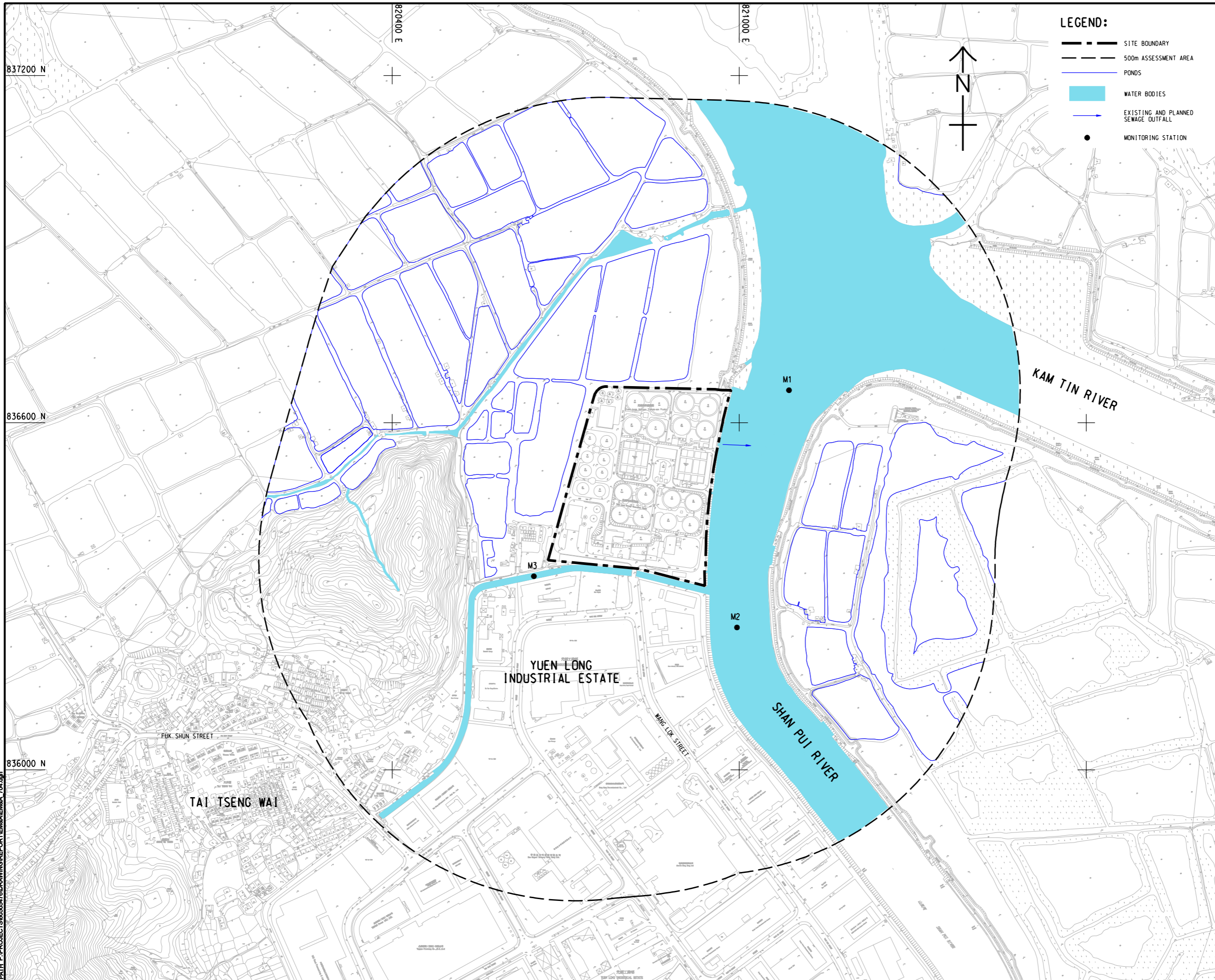
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Figure 4

Water Quality Monitoring Locations

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LEGEND:

- SITE BOUNDARY
- 500m ASSESSMENT AREA
- PONDS
- WATER BODIES
- EXISTING AND PLANNED SEWAGE OUTFALL
- MONITORING STATION

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YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

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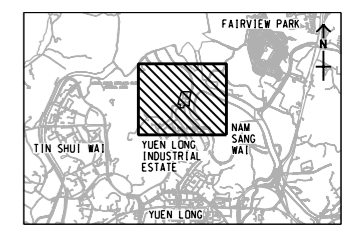
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LOCATIONS OF WATER QUALITY MONITORING STATIONS FOR CONSTRUCTION PHASE

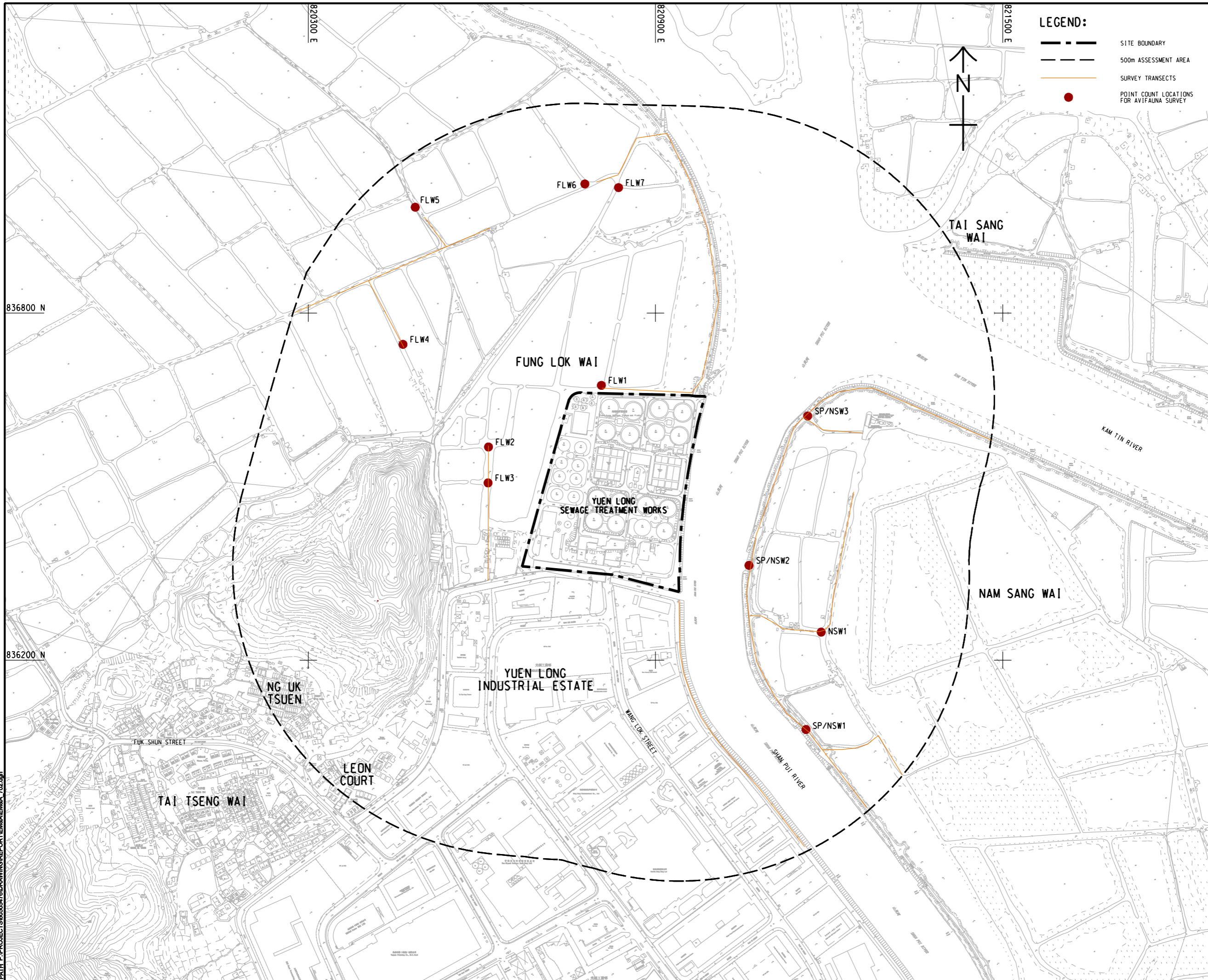
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Figure 5

Ecology Monitoring Locations

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LEGEND:

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



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YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

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SHEET TITLE
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 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	Late Start	Late Finish	Total Float	2022-2028																													
								Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4						
Package 19 - Elevated Walkways								154	05-Feb-22	08-Jul-22	06-Oct-24	08-Mar-25	974	Civil & Structural for Elevated Walkways - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), GEO(28d)																							
DDA-710	Civil & Structural for Elevated Walkways - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), GEO(28d)	154	05-Feb-22	08-Jul-22	06-Oct-24	08-Mar-25	974	Civil & Structural for Elevated Walkways - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), GEO(28d)																													
Package 20 - Trellis								126	31-Aug-21 A	06-Mar-22	31-Aug-24	04-Nov-24	974	Civil & Structural for Trellis - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																							
DDA-720	Civil & Structural for Trellis - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	31-Aug-21 A	06-Mar-22	31-Aug-24	04-Nov-24	974	Civil & Structural for Trellis - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
Package 21 - Steel Working Platform								126	05-Feb-22	10-Jun-22	06-Oct-24	08-Feb-25	974	Civil & Structural for Steel Working Platform - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																							
DDA-730	Civil & Structural for Steel Working Platform - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	05-Feb-22	10-Jun-22	06-Oct-24	08-Feb-25	974	Civil & Structural for Steel Working Platform - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
Administration Building (ADB)								784	19-Mar-23	10-May-25	26-Sep-23	06-Jan-26	241	Architectural for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																							
DDA-0960	Architectural for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	19-Mar-23	22-Jul-23	26-Sep-23	29-Jan-24	191	Architectural for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																													
DDA-0970	Found. for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d) & Approval (7d)	154	23-Jul-23	23-Dec-23	30-Jan-24	01-Jul-24	191	Found. for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d) & Approval (7d)																													
DDA-0980	Civil & Structural for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	24-Dec-23	27-Apr-24	26-Jul-24	28-Nov-24	215	Civil & Structural for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																													
DDA-0990	General Arrangement & Civil Req. Drawings for ADB - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	28-Apr-24	31-Aug-24	25-Dec-24	29-Apr-25	241	General Arrangement & Civil Req. Drawings for ADB - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
DDA-1000	Mechanical for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Sep-24	04-Jan-25	03-Sep-25	06-Jan-26	367	Mechanical for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
DDA-1010	Electrical & Control for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Sep-24	04-Jan-25	30-Apr-25	02-Sep-25	241	Electrical & Control for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
DDA-1020	BS for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	05-Jan-25	10-May-25	03-Sep-25	06-Jan-26	241	BS for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
Building Services								405	31-Aug-21 A	08-Nov-22	25-Apr-22	03-Mar-23	115	BS for Inlet Works (IW) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																							
DDA-590	BS for Inlet Works (IW) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	31-Aug-21 A	06-Mar-22	28-Dec-22	03-Mar-23	362	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-21 A	06-Mar-22	24-Aug-22	28-Oct-22	236	BS for Sludge Thickening Building (STB) - 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-21 A	06-Mar-22	24-Jun-22	28-Aug-22	175	BS for Biogas Holder (BH) - 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-21 A	05-Apr-22	25-Apr-22	29-Jul-22	115	BS for Primary Sedimentation Tanks (PST) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																													
DDA-630	BS for Sludge Dewatering Building (SDB) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	06-May-22	08-Sep-22	29-Aug-22	01-Jan-23	115	BS for Sludge Dewatering Building (SDB) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																													
DDA-640	BS for Utility Corridor&Pipe Portal (UC/PP) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	06-Jul-22	08-Nov-22	29-Oct-22	03-Mar-23	115	BS for Utility Corridor&Pipe Portal (UC/PP) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																													
Technical Submission								641	30-May-21 A	01-Mar-23	28-Jan-22	22-May-25	813	General Arrangement Drawing - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																							
Inlet Works (IW)								192	30-May-21 A	25-Feb-22	28-Jan-22	19-Jan-23	328	Civil Requirement Drawings (Superstructure) - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																							
TS-910	General Arrangement Drawing - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	30-May-21 A	25-Feb-22	24-Nov-22	19-Jan-23	328	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-21 A	25-Feb-22	24-Nov-22	19-Jan-23	328	Civil Requirement Drawings (Superstructure) - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-890	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-21 A	22-Feb-22	28-Jan-22	22-Mar-22	28	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-21 A	22-Feb-22	28-Jan-22	22-Mar-22	28	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
Primary Sedimentation Tank (PST)								183	03-Sep-21 A	03-Apr-22	28-Jan-22	05-Apr-22	2	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																							
TS-940	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-21 A	08-Mar-22	28-Jan-22	05-Apr-22	28	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-930	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-21 A	22-Feb-22	28-Jan-22	22-Mar-22	28	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-950	General Arrangement Drawing - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	28-Jan-22*	03-Apr-22	28-Jan-22	03-Apr-22	0	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	28-Jan-22*	03-Apr-22	28-Jan-22	03-Apr-22	0	Civil Requirement Drawings (Superstructure) - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
Sludge Thickening Building (STB)								633	01-Jun-21 A	23-Feb-23	03-Apr-22	03-Jun-24	466	Architectural for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																							
TS-820	Architectural for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Jun-21 A	18-Feb-22	07-Sep-22	26-Oct-22	250	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) & Approval(7d)	154	01-Jun-21 A	18-Feb-22	03-Apr-22	22-May-22	93	Found. for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO(28d) & Approval(7d)																													
TS-840	Civil & Structural for Sludge Thickening Bldg (STB) - Prep(27d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	93	16-Mar-22	16-Jun-22	21-Nov-22	21-Feb-23	250	Civil & Structural for Sludge Thickening Bldg (STB) - Prep(27d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
TS-850	General Arrangement & Civil Req. Drawings for STB - Prep(27d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	93	16-Mar-22	16-Jun-22	25-Jun-23	25-Sep-23	466	General Arrangement & Civil Req. Drawings for STB - Prep(27d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																													
TS-970	PID - Prep(27d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	93	16-Mar-22	16-Jun-22	21-Nov-22	21-Feb-23	250	PID - Prep(27d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-980	Equipment Loading Summary - Prep(27d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	93	16-Mar-22	16-Jun-22	10-Dec-23	11-Mar-24	634	Equipment Loading Summary - Prep(27d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-860	Mechanical for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	17-Jun-22	20-Oct-22	26-Sep-23	29-Jan-24	466	Mechanical for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																													
TS-880	BS for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	17-Jun-22	20-Oct-22	30-Jan-24	03-Jun-24	592	BS for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																													
TS-870	Electrical & Control for Sludge Thickening Bldg (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	21-Oct-22	23-Feb-23	30-Jan-24	03-Jun-24	466	Electrical & Control for Sludge Thickening Bldg (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
H2S Removal System (H2S)								228	17-Jul-22	01-Mar-23	07-Oct-24	22-May-25	813	Civil Requirement Drawings H2S (Superstructure) - Prep(25d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																							
TS-1000	Civil Requirement Drawings H2S (Superstructure) - Prep(25d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	91	17-Jul-22	15-Oct-22	07-Oct-24	05-Jan-25	813	Civil Requirement Drawings H2S (Superstructure) - Prep(25d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-1020	PID H2S - Prep(25d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	91	17-Jul-22	15-Oct-22	07-Oct-24	05-Jan-25	813	PID H2S - Prep(25d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-1010	Equipment Loading Summary H2S - Prep(25d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	91	17-Jul-22	15-Oct-22	07-Oct-24	05-Jan-25	813	Equipment Loading Summary H2S - Prep(25d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-990	General Arrangement Drawing H2S - Prep(26d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	92	30-Nov-22	01-Mar-23	20-Feb-25	22-May-25	813	General Arrangement Drawing H2S - Prep(26d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
Sludge Digesters (SD)								279	25-Sep-21 A	05-Jul-22	06-Feb-23	25-Sep-24	813	Found. for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d) & Approval (7d)																							
TS-740	Found. for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d) & Approval (7d)	126	25-Sep-21 A	06-Mar-22	06-Feb-23	12-Apr-23	402	Found. for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d) & Approval (7d)																													
TS-750	Civil & Structural for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	25-Sep-21 A	06-Mar-22	01-Dec-23	04-Feb-24	700	Civil & Structural for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
TS-760	General Arrangement & Civil Req. Drawings for SD - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	25-Sep-21 A	06-Mar-22	23-Mar-24	27-May-24	813	General Arrangement & Civil Req. Drawings for SD - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
TS-1030	PID - Prep(60d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	25-Sep-21 A	06-Mar-22	22-Jul-24	25-Sep-24	934	PID - Prep(60d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-1040	Equipment Loading Summary - Prep(60d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	25-Sep-21 A	06-Mar-22	22-Jul-24	25-Sep-24	934	Equipment Loading Summary - Prep(60d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-770	Mechanical for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	02-Mar-22	05-Jul-22	23-May-24	25-Sep-24	813	Mechanical for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
Biogas Holders (BH)								304	12-Jun-21 A	12-Jun-22	05-Feb-22	20-Sep-22	100	Foundation for Biogas Holders (BH) - Prep(53d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d) & Approval(7d)																							
TS-780	Foundation for Biogas Holders (BH) - Prep(53d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d) & Approval(7d)	147	12-Jun-21 A	30-Jan-22	05-Feb-22	07-Mar-22	36	Foundation for Biogas Holders (BH) - Prep(53d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d) & Approval(7d)																													
TS-790	Civil & Structural for Biogas Holders (BH) - Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	66	12-Jun-21 A	30-Jan-22	10-Apr-22	10-May-22	100	Civil & Structural for Biogas Holders (BH) - Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)																													
TS-1050	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	31-Aug-21 A	05-Jan-22	12-Jun-22	17-Jun-22	163	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-1060	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	31-Aug-21 A	05-Jan-22	12-Jun-22	17-Jun-22	163	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-800	General Arrangement & Civil Req. Drawings for BH - Prep(127d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	193	16-Sep-21 A	12-Jun-22	11-May-22	20-Sep-22	100	General Arrangement & Civil Req. Drawings for BH - Prep(127d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																													
TS-810	Mechanical for Biogas Holders (BH) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	05-Nov-21 A	10-Apr-22	12-Jun-22	20-Sep-22	163	Mechanical for Biogas Holders (BH) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																													
SCADA								210	09-Apr-22	04-Nov-22	29-Jul-22	24-Feb-23	112	Layout and Wiring Diagram for YLEPP PLC Panel - Prep(144d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																							
TS-1070	Layout and Wiring Diagram for YLEPP PLC Panel - Prep(144d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	210	09-Apr-22	04-Nov-22	29-Jul-22	24-Feb-23	112	Layout and Wiring Diagram for YLEPP PLC Panel - Prep(144d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																													
TS-1080	System Architecture for Existing YLSTW Temporary SCADA System - Prep(144d), Sub.&Rev(45d), Comments&Resub(14d), Approval(7d)	210	09-Apr-22	04-Nov-22	29-Jul-22	24-Feb-23	112	System Architecture for Existing YLSTW Temporary SCADA System - Prep(144d), Sub.&Rev(45d), Comments&Resub(14d), Approval(7d)																													
TS-1090	Layout and Wiring Diagram for Existing YLSTW Temp PLC Panel - Prep(144d), Sub.&Rev(45d), Comments&Resub(14d), Approval(7d)	210	09-Apr-22	04-Nov-22	29-Jul-22	24-Feb-23	112	Layout and Wiring Diagram for Existing YLSTW Temp PLC Panel - Prep(144d), Sub.&Rev(45d), Comments&Resub(14d), Approval(7d)																													
TS-1100	System Architecture for YLEPP SCADA System - Prep(144d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	210	09-Apr-22	04-Nov-22	29-Jul-22	24-Feb-23	112	System Architecture for YLEPP SCADA System - Prep(144d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																													
Utility Corridor and Pipe Portal								210	09-Apr-22	04-Nov-22	13-Oct-23	09-May-24	552	General Arrangement Drawing - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																							
TS-1110	General Arrangement Drawing - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	210	09-Apr-22	04-Nov-22	13-Oct-23	09-May-24	552	General Arrangement Drawing - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																													
TS-1120	Civil Requirement Drawings (Superstructure) - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	210	09-Apr-22	04-Nov-22	13-Oct-23																																

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart (2022-2028)																																			
								2022	2023	2024	2025	2026	2027	2028																													
PRE-240	Submit/Procure/Manufacture/Deliver TTS & Auxiliary Facility Equip.	270	09-Nov-20 A	31-Dec-21	19-Dec-23	19-Dec-23	718	[Gantt bar: 09-Nov-20 to 31-Dec-21]																																			
PRE-230	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip.	270	09-Nov-20 A	31-Dec-21	09-Jan-24	09-Jan-24	739	[Gantt bar: 09-Nov-20 to 31-Dec-21]																																			
PRE-210	Submit/Procure/Manufacture/Deliver New Inlet Works Equip.	180	09-Nov-20 A	07-May-21 A				[Gantt bar: 09-Nov-20 to 07-May-21]																																			
PRE-220	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip.	180	09-Nov-20 A	07-May-21 A				[Gantt bar: 09-Nov-20 to 07-May-21]																																			
PRE-250	Submit/Procure/Manufacture/Deliver Thickening System Digestion/sludge holding Tanks	300	09-Nov-20 A	04-Jan-22	07-Mar-24	11-Mar-24	797	[Gantt bar: 09-Nov-20 to 04-Jan-22]																																			
PRE-260	Submit/Procure/Manufacture/Deliver Diversion Works	44	09-Nov-20 A	22-Dec-20 A				[Gantt bar: 09-Nov-20 to 22-Dec-20]																																			
Site Establishment Works		1432	09-Nov-20 A	05-Jun-25	31-Dec-21	20-Jun-26	759	[Summary bar for Site Establishment Works]																																			
PG-100	Prepare/Submit Supplementary Contamination Assessment Plan (CAP)	12	21-Dec-20 A	06-Jan-21 A				[Gantt bar: 21-Dec-20 to 06-Jan-21]																																			
PG-120	Procurement Asbestos Specialist	30	21-Dec-20 A	19-Jan-21 A				[Gantt bar: 21-Dec-20 to 19-Jan-21]																																			
PG-110	Approved Supplementary CAP	30	07-Jan-21 A	05-Feb-21 A				[Gantt bar: 07-Jan-21 to 05-Feb-21]																																			
PG-130	Submit/Approve Methos Statement for Asbestos Treatment and Removal	30	20-Jan-21 A	18-Feb-21 A				[Gantt bar: 20-Jan-21 to 18-Feb-21]																																			
Portion 1 - IW Stage 1, PST, MBR, AF, TTS, STCS, Utilities Corridor, Pipe Portal		147	09-Nov-20 A	14-May-21 A				[Summary bar for Portion 1 - IW Stage 1]																																			
P1-100	Portion 1 - Initial Survey and Record, Underground Utilities Detection	60	09-Nov-20 A	20-Jan-21 A				[Gantt bar: 09-Nov-20 to 20-Jan-21]																																			
P1-120	Portion 1 - Land Contamination Site Investigation	13	06-Feb-21 A	27-Feb-21 A				[Gantt bar: 06-Feb-21 to 27-Feb-21]																																			
P1-110	Portion 1 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	48	08-Feb-21 A	15-Apr-21 A				[Gantt bar: 08-Feb-21 to 15-Apr-21]																																			
P1-200	Portion 1 - Asbestos Survey	18	19-Feb-21 A	11-Mar-21 A				[Gantt bar: 19-Feb-21 to 11-Mar-21]																																			
P1-130	Portion 1 - Submit/Approve CAR and RAP	18	01-Mar-21 A	20-Mar-21 A				[Gantt bar: 01-Mar-21 to 20-Mar-21]																																			
P1-210	Portion 1 - Asbestos Removal	48	12-Mar-21 A	12-May-21 A				[Gantt bar: 12-Mar-21 to 12-May-21]																																			
P1-140	Portion 1 - Carry out RAP	24	22-Mar-21 A	22-Apr-21 A				[Gantt bar: 22-Mar-21 to 22-Apr-21]																																			
P1-150	Portion 1 - Submit Remediation Report	18	23-Apr-21 A	14-May-21 A				[Gantt bar: 23-Apr-21 to 14-May-21]																																			
Portion 2 - IW Stage 2		92	08-Jun-21 A	30-Oct-21 A				[Summary bar for Portion 2 - IW Stage 2]																																			
P2-100	Portion 2 - Initial Survey and Record, Underground Utilities Detection	12	08-Jun-21 A	22-Jun-21 A				[Gantt bar: 08-Jun-21 to 22-Jun-21]																																			
P2-110	Portion 2 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	12	08-Jun-21 A	22-Jun-21 A				[Gantt bar: 08-Jun-21 to 22-Jun-21]																																			
P2-120	Portion 2 - Land Contamination Site Investigation	18	14-Jul-21 A	30-Oct-21 A				[Gantt bar: 14-Jul-21 to 30-Oct-21]																																			
P2-140	Portion 2 - Carry out RAP	24	19-Jul-21 A	26-Aug-21 A				[Gantt bar: 19-Jul-21 to 26-Aug-21]																																			
P2-150	Submit Remediation Report	7	27-Aug-21 A	27-Aug-21 A				[Gantt bar: 27-Aug-21 to 27-Aug-21]																																			
Portion 3 - PST, SDB, Admin. Bldg		69	27-Jan-24	27-Apr-24	17-Feb-24	13-May-24	12	[Summary bar for Portion 3 - PST, SDB, Admin. Bldg]																																			
P3-100	Portion 3 - Initial Survey and Record, Underground Utilities Detection	12	27-Jan-24	16-Feb-24	17-Feb-24	01-Mar-24	12	[Gantt bar: 27-Jan-24 to 16-Feb-24]																																			
P3-110	Portion 3 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	17	27-Jan-24	22-Feb-24	17-Feb-24	07-Mar-24	12	[Gantt bar: 27-Jan-24 to 22-Feb-24]																																			
P3-120	Portion 3 - Land Contamination Site Investigation	10	23-Feb-24	05-Mar-24	08-Mar-24	19-Mar-24	12	[Gantt bar: 23-Feb-24 to 05-Mar-24]																																			
P3-140	Portion 3 - Carry out RAP	24	06-Mar-24	06-Apr-24	20-Mar-24	20-Apr-24	12	[Gantt bar: 06-Mar-24 to 06-Apr-24]																																			
P3-150	Portion 3 - Submit Remediation Report	18	08-Apr-24	27-Apr-24	22-Apr-24	13-May-24	12	[Gantt bar: 08-Apr-24 to 27-Apr-24]																																			
Portion 4 - EVA		54	27-Mar-25	05-Jun-25	16-Apr-26	20-Jun-26	307	[Summary bar for Portion 4 - EVA]																																			
P4-100	Portion 4 - Initial Survey and Record, Underground Utilities Detection	12	27-Mar-25	10-Apr-25	06-Jun-26	20-Jun-26	349	[Gantt bar: 27-Mar-25 to 10-Apr-25]																																			
P4-110	Portion 4 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	12	27-Mar-25	10-Apr-25	06-Jun-26	20-Jun-26	349	[Gantt bar: 27-Mar-25 to 10-Apr-25]																																			
P4-120	Portion 4 - Land Contamination Site Investigation	12	27-Mar-25	10-Apr-25	16-Apr-26	29-Apr-26	307	[Gantt bar: 27-Mar-25 to 10-Apr-25]																																			
P4-140	Portion 4 - Carry out RAP	24	11-Apr-25	14-May-25	30-Apr-26	29-May-26	307	[Gantt bar: 11-Apr-25 to 14-May-25]																																			
P4-150	Portion 4 - Submit Remediation Report	18	15-May-25	05-Jun-25	30-May-26	20-Jun-26	307	[Gantt bar: 15-May-25 to 05-Jun-25]																																			
Portion 5 - Walkway		12	12-Jun-23	26-Jun-23	22-Oct-25	05-Nov-25	697	[Summary bar for Portion 5 - Walkway]																																			
P5-100	Portion 5 - Initial Survey and Record, Underground Utilities Detection	12	12-Jun-23	26-Jun-23	22-Oct-25	05-Nov-25	697	[Gantt bar: 12-Jun-23 to 26-Jun-23]																																			
P5-110	Portion 5 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	12	12-Jun-23	26-Jun-23	22-Oct-25	05-Nov-25	697	[Gantt bar: 12-Jun-23 to 26-Jun-23]																																			
Temporary Transformer 1600A		69	23-Aug-21 A	28-Feb-22	31-Dec-21	01-Mar-22	1	[Summary bar for Temporary Transformer 1600A]																																			
1600A-0010	Site Inspection and Design Submission Preparation	10	23-Aug-21 A	03-Sep-21 A				[Gantt bar: 23-Aug-21 to 03-Sep-21]																																			
1600A-0020	Design review and MS Submission & Approval	8	30-Aug-21 A	08-Sep-21 A				[Gantt bar: 30-Aug-21 to 08-Sep-21]																																			
1600A-0030	Trial Holes Opening & UU Facility Checking	2	08-Sep-21 A	10-Sep-21 A				[Gantt bar: 08-Sep-21 to 10-Sep-21]																																			
1600A-0040	Site Clearing, Flatten & Formation	27	10-Sep-21 A	15-Oct-21 A				[Gantt bar: 10-Sep-21 to 15-Oct-21]																																			
1600A-0050	Cable Diversion for UU Cables	11	18-Oct-21 A	30-Oct-21 A				[Gantt bar: 18-Oct-21 to 30-Oct-21]																																			
1600A-0060	Substation Trench Excavation	3	15-Nov-21 A	18-Nov-21 A				[Gantt bar: 15-Nov-21 to 18-Nov-21]																																			
1600A-0070	Rebar Fixing and RC Works (Trench & Floor Slab); Scaffolding Works for Platform	28	14-Dec-21 A	16-Feb-22	31-Dec-21	16-Feb-22	0	[Gantt bar: 14-Dec-21 to 16-Feb-22]																																			
1600A-0080	ABWF & E&M works	6	17-Feb-22	23-Feb-22	18-Feb-22	24-Feb-22	1	[Gantt bar: 17-Feb-22 to 23-Feb-22]																																			
P5-160	LV switchboard metering	2	17-Feb-22	18-Feb-22*	17-Feb-22	18-Feb-22	0	[Gantt bar: 17-Feb-22 to 18-Feb-22]																																			
1600A-0090	Defects Rectification	3	24-Feb-22	25-Feb-22	28-Feb-22	28-Feb-22	1	[Gantt bar: 24-Feb-22 to 25-Feb-22]																																			
P5-140	CLP Inspection	1	28-Feb-22	28-Feb-22	01-Mar-22	01-Mar-22	1	[Gantt bar: 28-Feb-22 to 28-Feb-22]																																			
P5-150	Energization of Temporary Transformer	0		28-Feb-22*		01-Mar-22	1	[Gantt bar: 28-Feb-22 to 28-Feb-22]																																			
PM and Contractor Accomodation		406	18-Feb-21 A	07-Jun-22	07-Jan-22	08-Nov-27	1698	[Summary bar for PM and Contractor Accomodation]																																			
Project Manager's & Contractor Site Accomodation		273	18-Feb-21 A	05-Mar-22	07-Jan-22	08-Nov-27	1686	[Summary bar for Project Manager's & Contractor Site Accomodation]																																			
PMCA-110	Design and Procurement of MIC	45	18-Feb-21 A	15-Apr-21 A				[Gantt bar: 18-Feb-21 to 15-Apr-21]																																			
PMCA-140	Submission and approved MS & PMAC	18	16-Apr-21 A	07-May-21 A				[Gantt bar: 16-Apr-21 to 07-May-21]																																			
MIC Section		90	31-Aug-21 A	05-Mar-22	07-Jan-22	08-Nov-27	1686	[Summary bar for MIC Section]																																			
PMCA-150	Construction of Pad Footing	6	31-Aug-21 A	06-Sep-21 A				[Gantt bar: 31-Aug-21 to 06-Sep-21]																																			
PMCA-160	Construction of Sewage pipeworks and Septic Tank	17	07-Sep-21 A	27-Sep-21 A				[Gantt bar: 07-Sep-21 to 27-Sep-21]																																			
PMCA-170	Construction of G/F Structure Works	16	09-Sep-21 A	20-Oct-21 A				[Gantt bar: 09-Sep-21 to 20-Oct-21]																																			
PMCA-210	Installation of E&M and ABWF Works	12	11-Oct-21 A	16-Dec-21 A				[Gantt bar: 11-Oct-21 to 16-Dec-21]																																			
PMCA-180	Construction of 1/F Structure Works	18	18-Oct-21 A	31-Oct-21 A				[Gantt bar: 18-Oct-21 to 31-Oct-21]																																			
PMCA-190	Installation of Green Roof	16	09-Nov-21 A	05-Mar-22	13-Sep-27	08-Nov-27	1686	[Gantt bar: 09-Nov-21 to 05-Mar-22]																																			
PMCA-230	Construction of Rain and Surface Water Drainage Works	10	12-Nov-21 A	30-Nov-21 A				[Gantt bar: 12-Nov-21 to 30-Nov-21]																																			
PMCA-220	Installation of Energy Efficient Features	12	01-Dec-21 A	14-Dec-21 A				[Gantt bar: 01-Dec-21 to 14-Dec-21]																																			
PMCA-200	Fabrication & Construction of Covered Car Park	39	01-Dec-21 A	18-Jan-22	07-Jan-22	24-Jan-22	5	[Gantt bar: 01-Dec-21 to 18-Jan-22]																																			
PMCA-260	Completion of PM MIC	0		16-Dec-21 A				[Gantt bar: 16-Dec-21 to 16-Dec-21]																																			
Caving System		121	17-Jan-22	07-Jun-22	17-Jan-22	07-Jun-22	1	[Summary bar for Caving System]																																			
PMCA-240	Caving System Construction	48	17-Jan-22*	19-Mar-22	17-Jan-22	21-Mar-22	1	[Gantt bar: 17-Jan-22 to 19-Mar-22]																																			
PMCA-250	Caving System Installation (Set-Up & T&C)	60	21-Mar-22	06-Jun-22	21-Mar-22	07-Jun-22	1	[Gantt bar: 21-Mar-22 to 06-Jun-22]																																			
PMCA-270	Completion of Caving system	0		07-Jun-22*		07-Jun-22	1	[Gantt bar: 07-Jun-22 to 07-Jun-22]																																			
FSI, FSD and OP Requirements		614	15-Oct-21 A	16-Oct-23	24-Nov-22	11-Mar-24	1272	[Summary bar for FSI, FSD and OP Requirements]																																			
FSI Submission & Approval		411	15-Oct-21 A	21-Feb-23	24-Nov-22	15-Jan-24	1475	[Summary bar for FSI Submission & Approval]																																			



	Remaining Level of Effort
	DWP Rev.8
	Actual Work
	Remaining Work
	Critical Remaining Work

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

Detailed Works Programme

Project ID : DWP.DPr9_220111
 Layout : DC201910 DWP rev.9
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Detailed Works Programme			
Date	Revision	Checked	Approved
31-Dec-21	Rev. 9		
30-Nov-21	Rev. 8		
31-Oct-21	Rev. 7		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart (2022-2028)																											
								2022	2023	2024	2025	2026	2027	2028																					
ATALGA-1210	Seeding, process start-up and T&C	52	22-Mar-22	27-May-22	19-Jul-23	16-Sep-23	387	[Gantt bar: 2022 Q1-Q2, 2023 Q1-Q2, 2024 Q1-Q2, 2025 Q1-Q2, 2026 Q1-Q2, 2027 Q1-Q2, 2028 Q1-Q2]																											
ATALGA-1270	Post-commissioning	139	28-May-22	11-Nov-22	18-Sep-23	11-Mar-24	387	[Gantt bar: 2022 Q2, 2023 Q2, 2024 Q2, 2025 Q2, 2026 Q2, 2027 Q2, 2028 Q2]																											
Zone 1 Construction		1878	09-Nov-20 A	08-Nov-26	31-Dec-21	08-Nov-27	313																												
Temporary Works Design		1037	03-Oct-21 A	22-Mar-25	09-Sep-22	08-Nov-27	823																												
IW and PST		0	03-Oct-21 A	25-Oct-21 A																															
TWD-1010	ELS for IW(Inlet works) & PST(Primary Sedimentation Tanks (Stage 1) - Consent Date	0		03-Oct-21 A				[Gantt bar: 2021 Q4, 2022 Q1]																											
TWD-1020	ELS for IW(Inlet works) & PST(Primary Sedimentation Tanks (Stage 2) - Consent Date	0		25-Oct-21 A				[Gantt bar: 2021 Q4, 2022 Q1]																											
SDB		668	16-Jul-22	13-May-24	09-Sep-22	07-Jul-24	55																												
TWD-1030	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - ICE Period Submission	31	16-Jul-22*	15-Aug-22	09-Sep-22	09-Oct-22	55	[Gantt bar: 2022 Q1-Q2, 2023 Q1-Q2, 2024 Q1-Q2, 2025 Q1-Q2, 2026 Q1-Q2, 2027 Q1-Q2, 2028 Q1-Q2]																											
TWD-1060	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - ICE Review Period	31	16-Aug-22	15-Sep-22	10-Oct-22	09-Nov-22	55	[Gantt bar: 2022 Q2, 2023 Q1, 2024 Q1, 2025 Q1, 2026 Q1, 2027 Q1, 2028 Q1]																											
TWD-1070	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - PM Review Period	46	16-Sep-22	31-Oct-22	10-Nov-22	25-Dec-22	55	[Gantt bar: 2022 Q3, 2023 Q2, 2024 Q2, 2025 Q2, 2026 Q2, 2027 Q2, 2028 Q2]																											
TWD-1080	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - Consent Date	0		13-May-24*		07-Jul-24	55	[Gantt bar: 2024 Q2, 2025 Q2, 2026 Q2, 2027 Q2, 2028 Q2]																											
ADB		707	21-Sep-22	27-Aug-24	16-Nov-22	22-Oct-24	56																												
TWD-1040	Excavation for Administration Building (ADB) - ICE Period Submission	30	21-Sep-22*	20-Oct-22	16-Nov-22	15-Dec-22	56	[Gantt bar: 2022 Q3, 2023 Q3, 2024 Q3, 2025 Q3, 2026 Q3, 2027 Q3, 2028 Q3]																											
TWD-1090	Excavation for Administration Building (ADB) - ICE Review Period	28	21-Oct-22	17-Nov-22	16-Dec-22	12-Jan-23	56	[Gantt bar: 2022 Q4, 2023 Q4, 2024 Q4, 2025 Q4, 2026 Q4, 2027 Q4, 2028 Q4]																											
TWD-1100	Excavation for Administration Building (ADB) - PM Review Period	49	18-Nov-22	05-Jan-23	13-Jan-23	02-Mar-23	56	[Gantt bar: 2022 Q4, 2023 Q1, 2024 Q1, 2025 Q1, 2026 Q1, 2027 Q1, 2028 Q1]																											
TWD-1110	Excavation for Administration Building (ADB) - Consent Date	0		27-Aug-24*		22-Oct-24	56	[Gantt bar: 2024 Q3, 2025 Q3, 2026 Q3, 2027 Q3, 2028 Q3]																											
Walkway Abutment		914	21-Sep-22	22-Mar-25	25-Jul-27	08-Nov-27	961																												
TWD-1050	ELS for Walkway Abutment - ICE Period Submission	30	21-Sep-22*	20-Oct-22	25-Jul-27	23-Aug-27	1768	[Gantt bar: 2022 Q3, 2023 Q3, 2024 Q3, 2025 Q3, 2026 Q3, 2027 Q3, 2028 Q3]																											
TWD-1120	ELS for Walkway Abutment - ICE Review Period	28	21-Oct-22	17-Nov-22	24-Aug-27	20-Sep-27	1768	[Gantt bar: 2022 Q4, 2023 Q4, 2024 Q4, 2025 Q4, 2026 Q4, 2027 Q4, 2028 Q4]																											
TWD-1130	ELS for Walkway Abutment - PM Review Period	49	18-Nov-22	05-Jan-23	21-Sep-27	08-Nov-27	1768	[Gantt bar: 2022 Q4, 2023 Q1, 2024 Q1, 2025 Q1, 2026 Q1, 2027 Q1, 2028 Q1]																											
TWD-1140	ELS for Walkway Abutment - Consent Date	0		22-Mar-25*		08-Nov-27	961	[Gantt bar: 2025 Q1, 2026 Q1, 2027 Q1, 2028 Q1]																											
Demolition and Temporary Modification/Diversion Works		311	09-Nov-20 A	13-Nov-21 A																															
PST Overhaul Works		199	09-Nov-20 A	17-Jul-21 A																															
ATALPST-5130	Completion of Overhaul Works (Zone 1)	0		17-Jul-21 A				[Gantt bar: 2021 Q3, 2021 Q4]																											
PST Existing Primary Sedimentation Tanks (PST)		199	09-Nov-20 A	14-Jul-21 A																															
ATALPST-1000	Method Statement / PMAC Submission and Approval for PST	55	09-Nov-20 A	14-Jan-21 A				[Gantt bar: 2020 Q4, 2021 Q1]																											
ATALPST-1030	Procurement of Wheels, Carbon Brush, Motor/Gearbox for PST No. 1 to No. 4	60	15-Jan-21 A	01-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1040	Procurement of Scraper Frame Robs	32	15-Jan-21 A	27-Feb-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
PST No. 2 & 4		84	15-Jan-21 A	13-May-21 A																															
ATALPST-1020	Isolation and Pre-test for PST 2 & 4	14	15-Jan-21 A	30-Jan-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1070	Construction of Bamboo Scaffolding	7	01-Feb-21 A	08-Feb-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1090	Replacement of Screws for the Rotatory Bridge	11	09-Feb-21 A	27-Feb-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1120	Replacement of Scraper Frame Robs	25	01-Mar-21 A	29-Mar-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1160	Disassembly of Scraper Drive Unit / Penstock Actuators / Valves	3	30-Mar-21 A	01-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1170	Disassembly, Condition Checking of Scraper Drive Units	17	07-Apr-21 A	26-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1180	Removal of Centre Bearing from PST 2	17	07-Apr-21 A	26-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1190	Reconditioning and Replacement of Scraper Drive Units	17	07-Apr-21 A	26-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1230	Return of all Drive Units and Centre Bearing for Reassembly	4	27-Apr-21 A	30-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1260	Power Reconnection and Testing	3	03-May-21 A	13-May-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
PST No. 1		52	01-Mar-21 A	13-May-21 A																															
ATALPST-1440	Isolation and Conduct Pre-test for PST No. 1	4	01-Mar-21 A	04-Mar-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1450	Construction of Access and Tank Cleaning of PST No. 1	3	05-Mar-21 A	08-Mar-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1460	Disassembly of Scraper Drive Unit / Penstock Actuators / Valves	21	09-Mar-21 A	01-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1470	Construction of Bamboo Scaffolding	5	09-Mar-21 A	13-Mar-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1480	Replacement of Screws for Rotatory Bridge	12	15-Mar-21 A	27-Mar-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1490	Replacement of Scraper Frame Robs	8	29-Mar-21 A	10-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1500	Reconditioning and Replacement of Scraper Drive Units	13	12-Apr-21 A	26-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1510	Return of all Drive Units and Centre Bearing for Reassembly	4	27-Apr-21 A	30-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1520	Power Reconnection and Testing	3	03-May-21 A	13-May-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
PST No. 3		53	14-May-21 A	14-Jul-21 A																															
ATALPST-1280	Switch Duty from PST 3 to PST 2 or 4	2	14-May-21 A	15-May-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1300	Isolation and Pre-test for PST 3	1	17-May-21 A	17-May-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1310	Drain Sewage and Tank Cleaning for PST 3	4	18-May-21 A	22-May-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1320	Construction of Bamboo Scaffolding	6	24-May-21 A	29-May-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1360	Replacement of Scraper Frame Robs	18	26-May-21 A	16-Jun-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1330	Replacement of Screws for the Rotatory Bridge	7	31-May-21 A	07-Jun-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1380	Disassembly of Scraper Drive Unit / Penstock Actuators / Valves	3	24-Jun-21 A	26-Jun-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1390	Reconditioning and Replacement of Scraper Drive Units	14	24-Jun-21 A	10-Jul-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1400	Disassembly, Condition Checking of Scraper Drive Units	11	28-Jun-21 A	10-Jul-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1430	Power Reconnection and Testing	3	07-Jul-21 A	07-Jul-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1420	Return of all Drive Units and Centre Bearing for Reassembly	3	12-Jul-21 A	14-Jul-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
Detritors 1 & 2		178	09-Nov-20 A	22-Jun-21 A																															
ATALPST-1010	Method Statement / PMAC Submission and Approval for Detritor	57	09-Nov-20 A	16-Jan-21 A				[Gantt bar: 2020 Q4, 2021 Q1]																											
Detritior No. 2		73	18-Jan-21 A	23-Apr-21 A																															
ATALPST-1050	Isolation of Detritior No. 2 and Conduct Pre-test	17	18-Jan-21 A	05-Feb-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1080	Pump out sewage and tank cleaning	6	06-Feb-21 A	19-Feb-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1100	Condition checking for Scrapers/ Classifiers/ Mixer/ Penstocks/ Valves	2	20-Feb-21 A	22-Feb-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1110	Disassembly of Unit and transfer Workshop for Overhaul	8	23-Feb-21 A	03-Mar-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1140	Condition Checking, Replacement of Parts, and Reassembly	29	04-Mar-21 A	10-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1150	Reconditioning at YLSTW and Replacement of Parts	29	04-Mar-21 A	10-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1200	Final Surface Treatment	8	12-Apr-21 A	20-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
ATALPST-1210	Power Reconnection and Testing	3	21-Apr-21 A	23-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											
Detritior No. 1		48	24-Apr-21 A	22-Jun-21 A																															
ATALPST-1220	Switch Duty to Detritior No. 2 and Isolate Detritior No. 1	2	24-Apr-21 A	26-Apr-21 A				[Gantt bar: 2021 Q1, 2021 Q2]																											



- Remaining Level of Effort
- DWP Rev.8
- Actual Work
- Remaining Work
- Critical Remaining Work

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

Detailed Works Programme

Project ID : DWP.DPr9_220111
 Layout : DC201910 DWP rev.9
 Page 9 of 30

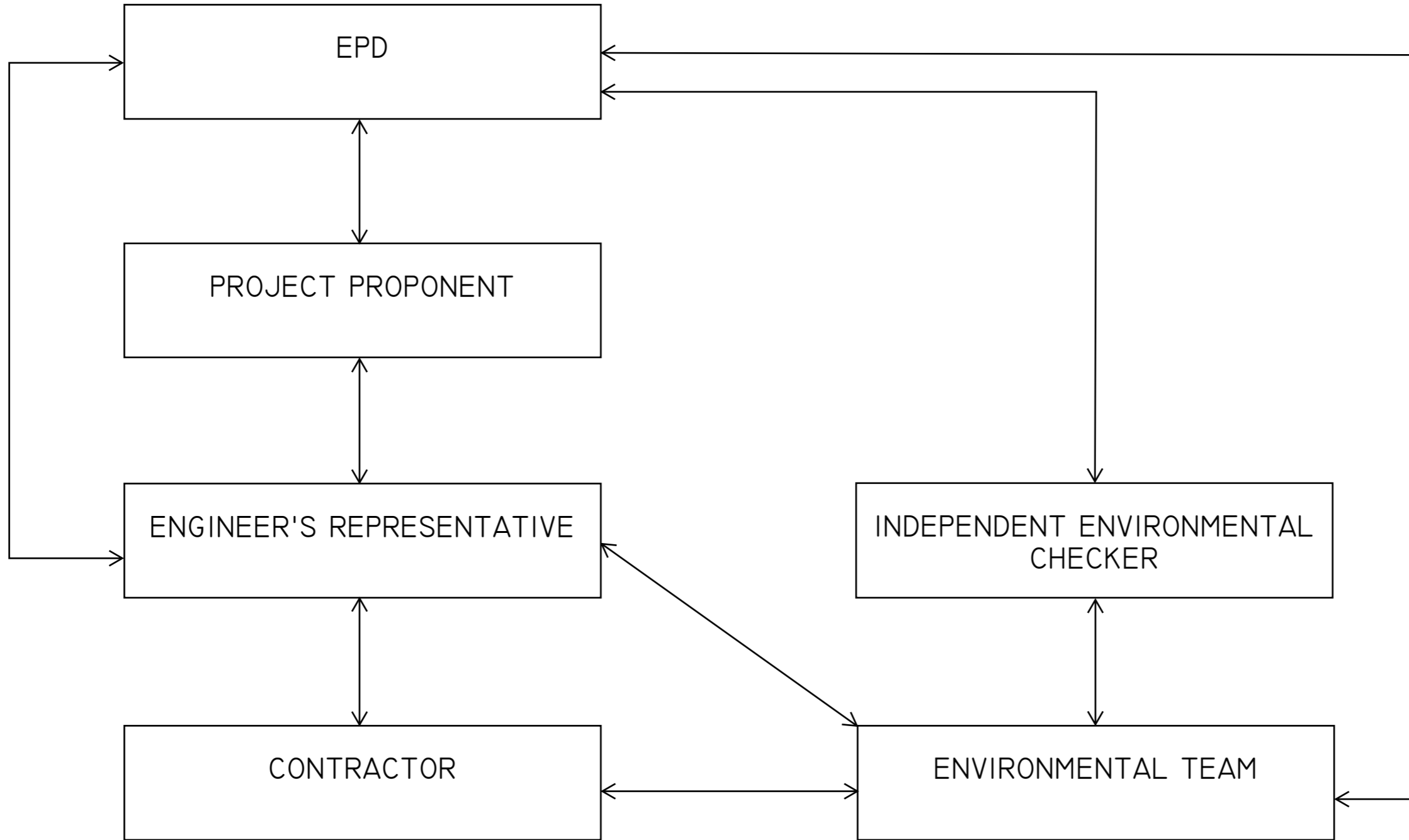
Detailed Works Programme			
Date	Revision	Checked	Approved
31-Dec-21	Rev. 9		
30-Nov-21	Rev. 8		
31-Oct-21	Rev. 7		

Appendix B

Project Organization Chart

LEGEND:

↔ LINE OF COMMUNICATION



PROJECT
項目

YUEN LONG EFFLUENT
POLISHING PLANT -
INVESTIGATION, DESIGN
AND CONSTRUCTION

CLIENT
業主



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
發行

I/R 發行	DATE 日期	DESCRIPTION 內容摘要	CHK. 審核

STATUS
階段

SCALE
比例

A3 1 : 40000

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

PROJECT ORGANISATION

SHEET NUMBER
圖紙編號

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Appendix C

Action and Limit Level

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

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

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><u>Surface & Middle</u> 5%-ile of baseline data for surface and middle layer.</p> <p><u>Bottom</u> 5%-ile of baseline data for bottom layer.</p>	<p><u>Surface & Middle</u> 4 mg/L or 1%-ile of baseline data for surface and middle layer.</p> <p><u>Bottom</u> 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 Certificate of Monitoring
Equipment

Air Quality Monitoring Equipment

Report no. : 940891CA212394(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. : 155716
Specification Limit : NA
Next Calibration Date : 02-Sep-2022

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
Equipment ID. / Serial no. : 1. C-065-9 2. 4350
Date of Calibration : 03-Sep-2021 Ambient Temperature : 25 ± 10 °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)
0.0416	631	10.52
0.0388	626	10.43
0.0266	598	9.97

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 = 0.003460
3. Correlation coefficient (r) : 0.9992

Checked by : Chan Chun Wai Date : 28-9-2021 Certified by : Chan Chun Wai Date : 28-9-2021
CA-R-297 (22/07/2009) Chan Chun Wai (Manager)

**** End of Report ****

Report no. : 940891CA212394

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

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 Manufacturer : SIBATA
 Model No. : LD-5R
 Serial No. : 155717
 Specification Limit : NA
 Next Calibration Date : 02-Sep-2022

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 Equipment ID. / Serial no. : 1. C-065-9 2. 4350
 Date of Calibration : 03-Sep-2021 Ambient Temperature : 25 ± 10 °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)
0.0416	672	11.20
0.0388	650	10.83
0.0266	597	9.95

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 = 0.003345
3. Correlation coefficient (r) : 0.9940

Checked by : Canny Date : 28-9-2021 Certified by : Chan Chun Wai Date : 28-9-2021
 CA-R-297 (22/07/2009) Chan Chun Wai (Manager)

** End of Report **



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : MaWTF, Ma Wan	Date of Calibration: 26-Jul-21
Location ID: A1 Site Boundary	Next Calibration Date: 30-Oct-21
	Technician: Herman Wang

CONDITIONS

Sea Level Pressure (hPa):	998.1	Corrected Pressure (mm Hg):	749
Temperature (°C):	34.0	Temperature (K):	307

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.11508
Model:	TE-5025A	Qstd Intercept:	-0.02962
Calibration Date:	11-Sep-20	Expiry Date:	11-Sep-21

CALIBRATIONS

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m ³ /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.50	-6.50	12.000	1.616	57.00	55.74	Slope = 28.3811 Intercept = 9.9481 Corr. coeff.= 0.9979
13	4.30	-5.40	9.700	1.454	52.00	50.85	
10	2.90	-4.50	7.400	1.272	48.00	46.94	
7	1.90	-2.80	4.700	1.016	39.00	38.14	
5	1.00	-2.00	3.000	0.815	34.00	33.25	

Calculations:

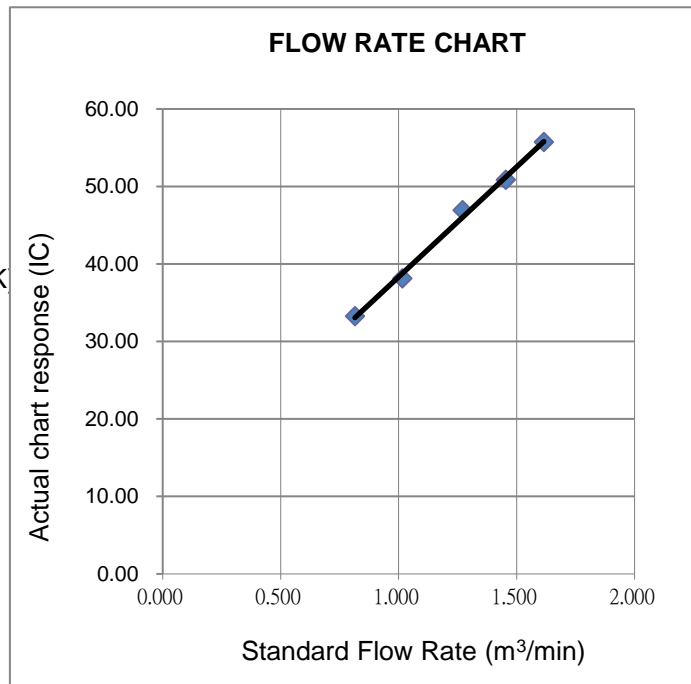
Qstd = 1/m[$\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)}$]-b]
 IC = I[$\sqrt{P_a/P_{std}(T_{std}/T_a)}$]

- 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:

$1/m((I)[\sqrt{298/T_{av}}(P_{av}/760)]-b)$

- 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 Location: Yuen Long Sewage Treatment Works	Date of Calibration: 27-Sep-2021 Next Calibration Date: 26-Mar-2022 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:	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)
1.7	1.5
2.5	2.4
1.4	1.6

Wind Direction Test:

	Marine Compass (o)
137	135
98	96
205	204
314	316



Wan Ka Ho
 Project Consultant

Report Date: 29/9/2021

Noise Monitoring Equipment

Report no.: 203258CA211142

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

	Meter	Microphone	Preamplifier
Model No.	CEL-63X	CE-251	CEL-495
Serial No.	0873599	02374	003916

Equipment ID : N-45

Next Calibration Date : 27-May-2022

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 : 28-May-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	2.6 to -0.6
	2000Hz	2.8 to -0.4
	1000Hz	1.1 to -1.1
	500Hz	-1.8 to -4.6
	250Hz	-7.2 to -10.0
	125Hz	-14.6 to -17.6
	63Hz	-24.7 to -27.7
	31.5Hz	-37.4 to -41.4
Differential level linearity	94dB-104dB	± 0.6
	104dB-114dB	± 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 any other laboratory to repeat the measurement.

 Checked by : William Date : 1-6-2021 Certified by : K. T. Leung Date : 1-6-2021

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

Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report no.: 203258CA210891

Page 1 of 1

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. : 4358251
 Equipment ID : N-34

Next Calibration Date : 10-May-2022

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 : 11-May-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 (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 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 : William Date : 12-5-2021 Certified by : R. T. Leung Date : 12-5-2021

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 212769CA212069(3)

Page 1 of 1

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. : 2383707
Equipment ID : N/A

Next Calibration Date : 25-Aug-2022

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 : 26-Aug-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 (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.4 dB	±0.4dB
114dB	-0.3 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 : Canny Date : 27-8-2021 Certified by : K. Leung Date : 27-8-2021
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report No. : 212769CA211145

Page 1 of 1

CALIBRATION CERTIFICATE OF ANEMOMETER

Client Supplied Information

Client : Fugro Technical Services Limited

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : SENSOR

Model No. : AR816

Serial No. : 2136513

Equipment ID.: NA

Next Calibration Date : 30-May-2022

Laboratory Information

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID.: R-101-4

Date of Calibration : 31-May-2021 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)
1.99	2.0	0.0
4.00	4.3	0.3
6.01	6.3	0.3
7.99	8.2	0.2
10.03	9.9	-0.1

Remark :

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

Checked by : William Date : 2-6-2021 Certified by : P.T. Leung Date : 2-6-2021

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Water Quality Monitoring Equipment



Report No. : 142626WA212610



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-3 Multi-parameter Water Quality Meter

Client sample ID : Serial No. 19A105807

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

Laboratory Information

Lab. sample ID : WA212610/1

Date sample received : 01/12/2021

Date of calibration : 02/12/2021

Next calibration date : 01/03/2022

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. : 142626WA212610

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	9.19	+0.01
6.86	6.90	+0.04

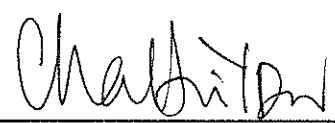
B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.0	0.0	± 0.1
10	9.96	-0.04	± 0.5
20	20.04	+0.04	± 1.0
30	30.01	+0.01	± 1.5
40	39.71	-0.29	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.50	8.54
2	8.50	8.49
3	8.45	8.52
Average	8.48	8.52

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

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

Date : 29-12-2011

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

Report No. : 142626WA212610

Page 3 of 3


Results :

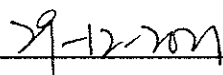
D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
19.9	19.613

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.34	+0.34	± 0.6
8	8.49	+0.49	± 0.8
40	42.49	+2.49	± 3.0
80	80.44	+0.44	± 4.0

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

Date : 
 ** 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. : 142626WA212610(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-3 Multi-parameter Water Quality Meter

Client sample ID : Serial No. 19A105808

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

Laboratory Information

Lab. sample ID : WA212610(1)/1

Date sample received : 01/12/2021

Date of calibration : 02/12/2021

Next calibration date : 01/03/2022

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. : 142626WA212610(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
9.18	9.20	+0.02
6.86	6.93	+0.07

B. Salinity calibration

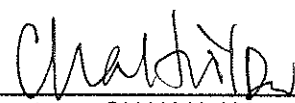
Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.0	0.0	± 0.1
10	9.94	-0.06	± 0.5
20	19.92	-0.08	± 1.0
30	29.95	-0.05	± 1.5
40	39.65	-0.35	± 2.0

C. Dissolved Oxygen calibration

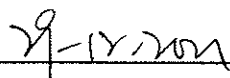
Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.48	8.47
2	8.38	8.46
3	8.33	8.40
Average	8.40	8.44

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

Certified by :


 Approved Signatory : CHAN Hoi Yan, Winnie
 Assistant Manager

Date :



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

Report No. : 142626WA212610(1)

Page 3 of 3

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
19.9	19.849

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.36	+0.36	± 0.6
8	8.50	+0.50	± 0.8
40	38.48	-1.52	± 3.0
80	79.40	-0.60	± 4.0

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

Date : 29-12-2021
 ** 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:

N. Paddon

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.

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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

Impact Monitoring Schedule (January 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1 WQM Mid Flood(7:26) Mid Ebb(12:47)
2	3	4 WQM Mid Flood(10:04) Mid Ebb(14:55)	5 AQM, NM	6 WQM Mid Flood(11:31) Mid Ebb(16:34)	7	8 WQM Mid Flood(13:02) Mid Ebb(18:40)
9	10	11 AQM, NM WQM Mid Flood(15:02) Mid Ebb(7:32)	12	13 WQM Mid Flood(5:41) Mid Ebb(10:41)	14	15 WQM Mid Flood(7:30) Mid Ebb(12:17)
16	17 AQM, NM, EMB	18 WQM Mid Flood(9:18) Mid Ebb(13:59)	19	20 WQM Mid Flood(10:19) Mid Ebb(15:09)	21 ANRM	22 AQM WQM Mid Flood(11:16) Mid Ebb(16:30)
23	24	25 WQM Mid Flood(12:44) Mid Ebb(6:03)	26	27 WQM Mid Flood(14:26) Mid Ebb(8:03)	28 AQM, NM	29 WQM Mid Flood(6:36) Mid Ebb(11:53)
30	31 AQM, NM					

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

Impact Monitoring Schedule (February 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
		1	2	3	4	5 AQM WQM Mid Flood(11:17) Mid Ebb(17:03)
6	7 WQM Mid Flood(11:47) Mid Ebb(5:16)	8	9 WQM Mid Flood(12:41) Mid Ebb(6:22)	10	11 AQM, NM	12 WQM Mid Flood(15:47) Mid Ebb(11:31)
13	14	15 WQM Mid Flood(8:20) Mid Ebb(13:13)	16	17 AQM, NM WQM Mid Flood(9:12) Mid Ebb(14:24)	18	19 WQM Mid Flood(10:01) Mid Ebb(15:36)
20	21	22 WQM Mid Flood(11:12) Mid Ebb(17:25)	23 AQM, NM	24 WQM Mid Flood(12:26) Mid Ebb(19:24)	25	26 WQM Mid Flood(15:00) Mid Ebb(10:55)
27	28					

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
- The impact monitoring is suspended from 1 Feb to 3 Feb, due to no construction works during the Chinese New Year Holidays

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

Impact Monitoring Schedule (March 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
		1 AQM, NM WQM Mid Flood(8:05) Mid Ebb(13:35)	2	3 WQM Mid Flood(9:06) Mid Ebb(14:44)	4	5 WQM Mid Flood(9:52) Mid Ebb(15:44)
6	7 AQM, NM	8 WQM Mid Flood(10:38) Mid Ebb(17:10)	9	10 WQM Mid Flood(11:05) Mid Ebb(18:43)	11	12 AQM WQM Mid Flood(9:09) Mid Ebb(21:50)
13	14	15 WQM Mid Flood(7:14) Mid Ebb(12:27)	16	17 WQM Mid Flood(8:00) Mid Ebb(13:34)	18 AQM, NM	19 WQM Mid Flood(8:49) Mid Ebb(14:39)
20	21	22 WQM Mid Flood(9:59) Mid Ebb(16:20)	23	24 AQM, NM WQM Mid Flood(10:55) Mid Ebb(17:54)	25	26 WQM Mid Flood(7:47) Mid Ebb(20:34)
27	28	29 WQM Mid Flood(6:55) Mid Ebb(12:38)	30 AQM, NM	31 WQM Mid Flood(7:53) Mid Ebb(13:44)		

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

Impact Monitoring Schedule (April 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
					1	2 WQM Mid Flood(8:36) Mid Ebb(14:38)
3	4	5 AQM, NM WQM Mid Flood(9:23) Mid Ebb(16:01)	6	7 WQM Mid Flood(9:55) Mid Ebb(17:10)	8	9 WQM Mid Flood(6:20) Mid Ebb(18:59)
10	11 AQM, NM	12 WQM Mid Flood(5:50) Mid Ebb(11:26)	13	14 WQM Mid Flood(6:40) Mid Ebb(12:32)	15	16 AQM WQM Mid Flood(7:33) Mid Ebb(13:37)
17	18	19 WQM Mid Flood(8:51) Mid Ebb(15:23)	20	21 WQM Mid Flood(9:46) Mid Ebb(16:52)	22 AQM, NM	23 WQM Mid Flood(11:08) Mid Ebb(18:53)
24	25	26 WQM Mid Flood(5:27) Mid Ebb(11:24)	27	28 AQM, NM WQM Mid Flood(6:38) Mid Ebb(12:42)	29	30 WQM Mid Flood(7:20) Mid Ebb(13:35)

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

Monitoring Results

Air Quality Monitoring Results

1-hour TSP Monitoring Result 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-Jan-22	Fine	8:35	70	74	81	291	500
11-Jan-22	Cloudy	8:27	67	81	84		
17-Jan-22	Cloudy	8:30	60	53	49		
22-Jan-22	Cloudy	8:34	70	84	95		
28-Jan-22	Cloudy	8:30	88	91	81		
31-Jan-22	Cloudy	8:32	63	67	77		
		Min	49				
		Max	95				
		Average	74				

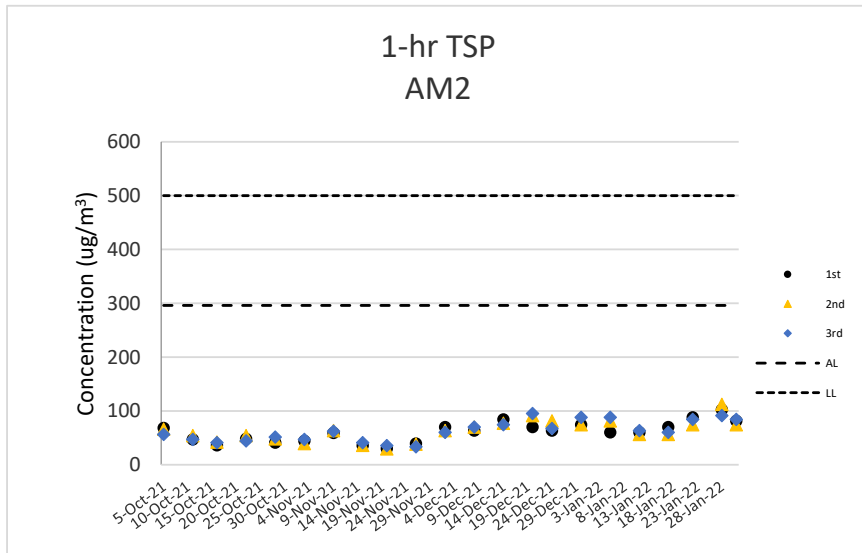
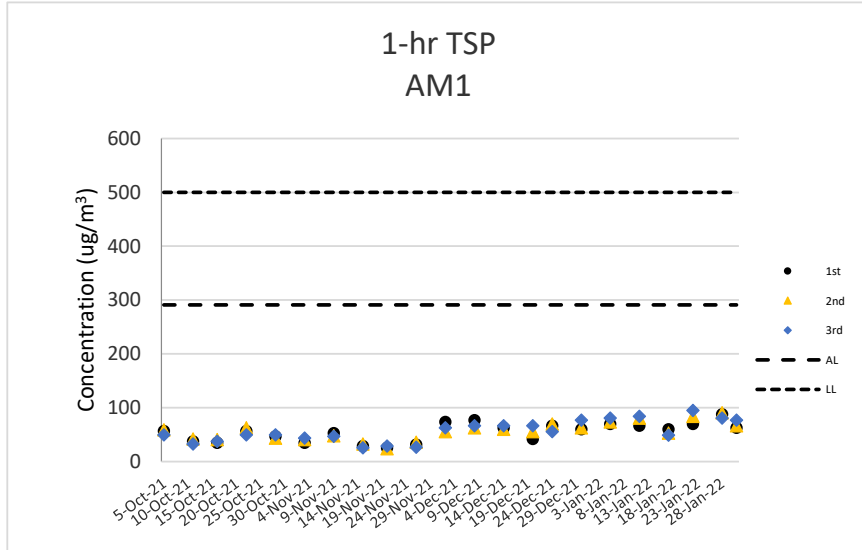
AM2 - Squatter house at the west of Yuen Long STW

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-Jan-22	Fine	8:47	60	81	88	296	500
11-Jan-22	Cloudy	8:41	60	56	63		
17-Jan-22	Cloudy	8:41	70	56	60		
22-Jan-22	Cloudy	8:46	88	74	84		
28-Jan-22	Cloudy	8:44	102	112	91		
31-Jan-22	Cloudy	8:45	81	74	84		
		Min	56				
		Max	112				
		Average	77				

Note:

Underline: Exceedance of Action Level

Underline and Bold: Exceedance of Limit Level



Noise Monitoring Results

**Noise Impact Monitoring Result 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-Jan-22	10:16	54	55	51	0.1	Fine	75
11-Jan-22	9:18	56	59	51	0.6	Cloudy	75
17-Jan-22	10:04	54	56	51	0.2	Cloudy	75
28-Jan-22	10:07	54	56	51	0.2	Cloudy	75
31-Jan-22	10:05	53	55	50	0.1	Cloudy	75
	Max	56					
	Min	53					

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-Jan-22	8:51	61	64	55	0.2	Fine	75
11-Jan-22	9:59	60	64	57	0.7	Cloudy	75
17-Jan-22	8:45	60	63	55	0.3	Cloudy	75
28-Jan-22	8:49	61	64	56	0.4	Cloudy	75
31-Jan-22	8:48	61	63	55	0.4	Cloudy	75
	Max	61					
	Min	60					

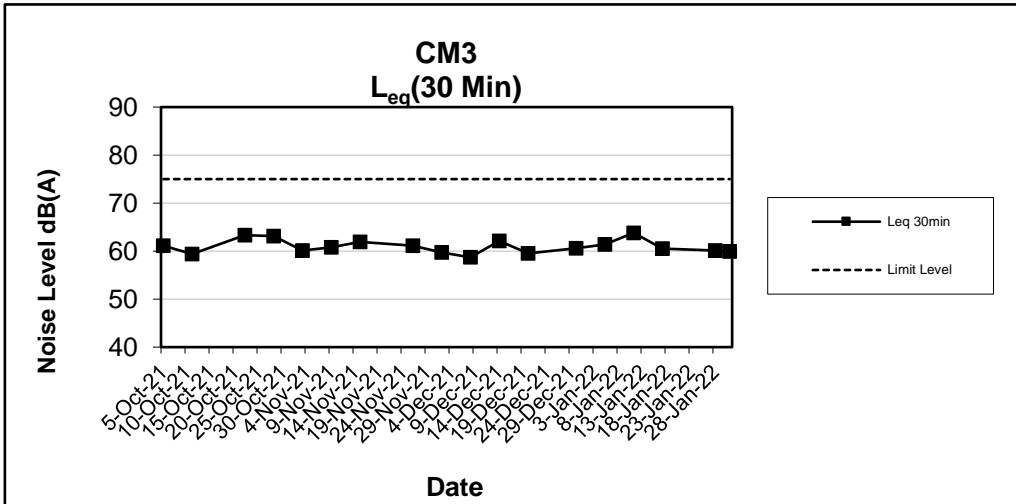
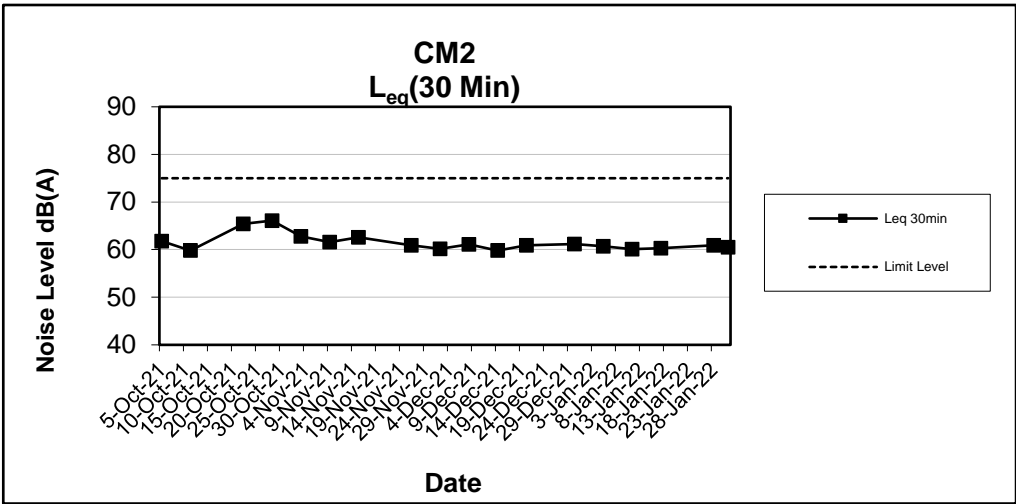
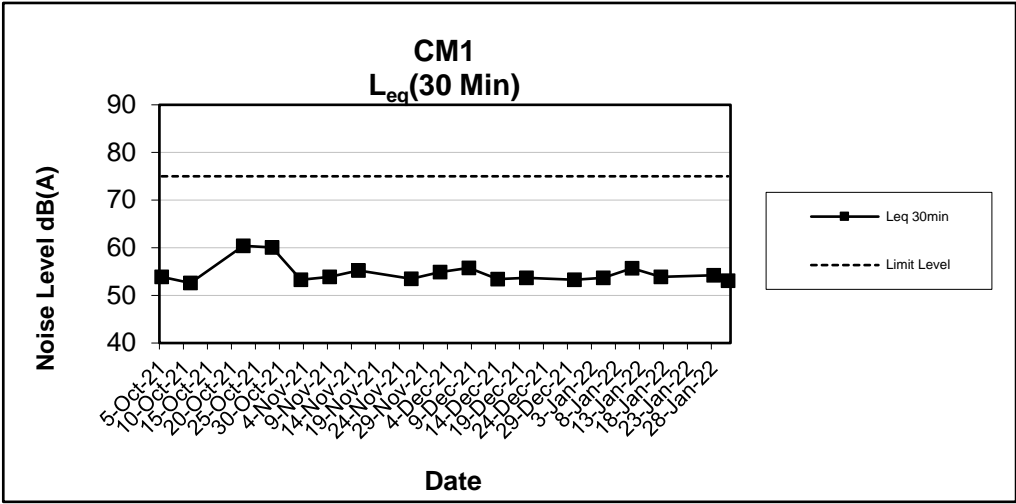
CM3 - Squatter house to the east of YLSTW

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-Jan-22	13:04	61	65	56	0.2	Fine	75
11-Jan-22	10:52	64	66	61	0.6	Cloudy	75
17-Jan-22	11:29	61	64	55	0.3	Cloudy	75
28-Jan-22	11:27	60	63	55	0.4	Cloudy	75
31-Jan-22	11:28	60	63	55	0.3	Cloudy	75
	Max	64					
	Min	60					

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.



Water Quality Monitoring Results

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

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	1/1/2022	Mid-Flood	Fine	Moderate	7:46	1.1	M	0.55	1	0.07	145	7.27	7.28	10.71	10.70	19.36	19.39	43.1	42.8	3.73	3.70	32.5	32.4	39	38
M1	1/1/2022	Mid-Flood	Fine	Moderate	7:46	1.1	M	0.55	2			7.29		10.69		19.43		42.4		3.66		32.3		37	
M2	1/1/2022	Mid-Flood	Fine	Moderate	8:01	1.3	M	0.65	1	0.049	114	7.22	7.18	10.41	10.46	19.63	19.67	40.3	40.5	3.47	3.50	25.6	25.7	45	42
M2	1/1/2022	Mid-Flood	Fine	Moderate	8:01	1.3	M	0.65	2			7.14		10.51		19.71		40.7		3.52		25.7		39	
M3	1/1/2022	Mid-Flood	Cloudy	Smooth	7:39	0.2	M	0.1	1	0.193	86	7.06	7.06	9.68	9.68	17.01	17.02	48.1	48.0	4.15	4.14	25.0	25.3	39	39
M3	1/1/2022	Mid-Flood	Cloudy	Smooth	7:39	0.2	M	0.1	2			7.06		9.67		17.02		47.8		4.12		25.6		38	
M1	1/1/2022	Mid-Ebb	Fine	Moderate	13:13	0.8	M	0.4	1	0.046	292	7.15	7.19	9.72	9.69	19.84	19.76	39.1	39.3	3.34	3.36	35.9	35.7	18	20
M1	1/1/2022	Mid-Ebb	Fine	Moderate	13:13	0.8	M	0.4	2			7.23		9.66		19.69		39.4		3.37		35.4		21	
M2	1/1/2022	Mid-Ebb	Fine	Moderate	12:53	0.9	M	0.45	1	0.073	264	7.14	7.18	10.11	10.09	19.86	19.64	37.2	37.7	3.19	3.22	36.9	36.7	50	49
M2	1/1/2022	Mid-Ebb	Fine	Moderate	12:53	0.9	M	0.45	2			7.22		10.06		19.41		38.2		3.24		36.4		48	
M3	1/1/2022	Mid-Ebb	Cloudy	Smooth	12:51	0.4	M	0.2	1	0.178	251	7.28	7.29	9.22	9.23	21.64	21.65	41.5	41.9	3.56	3.60	19.4	20.1	27	29
M3	1/1/2022	Mid-Ebb	Cloudy	Smooth	12:51	0.4	M	0.2	2			7.29		9.24		21.65		42.3		3.64		20.8		31	

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

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	4/1/2022	Mid-Flood	Cloudy	Smooth	10:17	2	M	1	1	0.264	269	7.22	7.23	12.63	12.62	19.70	19.71	41.4	41.1	3.51	3.48	23.1	23.4	52	51
M1	4/1/2022	Mid-Flood	Cloudy	Smooth	10:17	2	M	1	2			7.23	7.23	12.61	12.62	19.71	19.71	40.7	41.1	3.45	3.48	23.6	23.4	49	51
M2	4/1/2022	Mid-Flood	Cloudy	Smooth	10:32	1	M	0.5	1	0.235	256	7.16	7.17	12.15	12.15	19.92	19.93	46.2	45.7	3.92	3.88	25.5	25.9	47	45
M2	4/1/2022	Mid-Flood	Cloudy	Smooth	10:32	1	M	0.5	2			7.17	7.17	12.15	12.15	19.93	19.93	45.2	45.7	3.84	3.88	26.4	26.4	42	45
M3	4/1/2022	Mid-Flood	Fine	Moderate	10:10	1.1	M	0.55	1	0.065	135	7.11	7.12	11.97	11.96	19.81	19.76	41.7	41.5	3.62	3.60	34.5	34.5	45	43
M3	4/1/2022	Mid-Flood	Fine	Moderate	10:10	1.1	M	0.55	2			7.12	7.12	11.94	11.96	19.71	19.76	41.3	41.5	3.58	3.60	34.4	34.5	41	43
M1	4/1/2022	Mid-Ebb	Cloudy	Smooth	15:22	2.2	M	1.1	1	0.2	291	7.27	7.28	10.18	10.19	24.60	24.59	34.7	35.3	2.94	2.98	29.7	29.4	33	33
M1	4/1/2022	Mid-Ebb	Cloudy	Smooth	15:22	2.2	M	1.1	2			7.28	7.28	10.19	10.19	24.58	24.58	35.8	35.3	3.02	2.98	29.2	29.4	33	33
M2	4/1/2022	Mid-Ebb	Cloudy	Smooth	15:03	1.2	M	0.6	1	0.186	204	7.34	7.35	10.73	10.72	24.13	24.13	36.6	36.8	3.08	3.10	24.1	24.4	26	29
M2	4/1/2022	Mid-Ebb	Cloudy	Smooth	15:03	1.2	M	0.6	2			7.35	7.35	10.71	10.72	24.12	24.12	36.9	36.8	3.11	3.10	24.6	24.4	32	29
M3	4/1/2022	Mid-Ebb	Fine	Moderate	15:02	0.9	M	0.45	1	0.049	125	7.22	7.20	11.06	11.06	20.28	20.28	51.4	51.1	4.35	4.33	34.6	34.7	28	28
M3	4/1/2022	Mid-Ebb	Fine	Moderate	15:02	0.9	M	0.45	2			7.18	7.18	11.05	11.06	20.28	20.28	50.8	51.1	4.30	4.33	34.8	34.7	28	28

Remark

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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

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	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	6/1/2022	Mid-Flood	Fine	Smooth	11:31	2	M	1	1	0.279	298	7.37	7.36	11.37	11.38	21.48	21.48	49.6	48.8	4.10	4.03	15.4	15.5	13	14
M1	6/1/2022	Mid-Flood	Fine	Smooth	11:31	2	M	1	2			7.35		11.38		21.47		47.9		3.96		15.7		15	
M2	6/1/2022	Mid-Flood	Fine	Smooth	11:52	1	M	0.5	1	0.259	226	7.30	7.30	10.57	10.56	21.69	21.70	51.8	52.3	4.30	4.34	20.4	20.6	21	22
M2	6/1/2022	Mid-Flood	Fine	Smooth	11:52	1	M	0.5	2			7.29		10.55		21.71		52.7		4.37		20.7		23	
M3	6/1/2022	Mid-Flood	Fine	Moderate	11:40	1.2	M	0.6	1	0.069	176	7.26	7.26	11.05	11.06	21.65	21.65	61.5	62.1	5.08	5.10	15.4	15.4	39	41
M3	6/1/2022	Mid-Flood	Fine	Moderate	11:40	1.2	M	0.6	2			7.25		11.06		21.65		62.7		5.12		15.4		42	
M1	6/1/2022	Mid-Ebb	Fine	Smooth	16:58	2.2	M	1.1	1	0.216	273	7.22	7.22	8.51	8.52	24.21	24.21	54.2	54.7	4.48	4.52	28.4	28.2	38	38
M1	6/1/2022	Mid-Ebb	Fine	Smooth	16:58	2.2	M	1.1	2			7.21		8.53		24.20		55.1		4.55		28.1		38	
M2	6/1/2022	Mid-Ebb	Fine	Smooth	16:38	1.2	M	0.6	1	0.2	183	7.15	7.16	8.86	8.86	24.02	24.03	47.5	47.9	3.93	3.96	24.0	24.4	33	34
M2	6/1/2022	Mid-Ebb	Fine	Smooth	16:38	1.2	M	0.6	2			7.16		8.86		24.03		48.2		3.99		24.7		35	
M3	6/1/2022	Mid-Ebb	Fine	Moderate	16:50	0.9	M	0.45	1	0.104	266	7.23	7.24	10.69	10.62	21.44	21.51	57.5	57.4	4.74	4.72	28.4	28.4	21	22
M3	6/1/2022	Mid-Ebb	Fine	Moderate	16:50	0.9	M	0.45	2			7.24		10.54		21.57		57.2		4.70		28.3		22	

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

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	8/1/2022	Mid-Flood	Fine	Moderate	13:02	1.4	M	0.7	1	0.06	145	7.09	7.09	7.84	7.85	21.86	21.86	38.4	38.7	3.37	3.39	31.5	31.4	35	37
M1	8/1/2022	Mid-Flood	Fine	Moderate	13:02	1.4	M	0.7	2			7.08		7.86		21.85		38.9		3.41		31.4		38	
M2	8/1/2022	Mid-Flood	Fine	Moderate	13:21	1.2	M	0.6	1	0.048	75	7.08	7.09	7.25	7.25	21.85	21.84	36.8	37.0	3.29	3.32	31.6	31.5	48	47
M2	8/1/2022	Mid-Flood	Fine	Moderate	13:21	1.2	M	0.6	2			7.09		7.24		21.83		37.2		3.34		31.5		46	
M3	8/1/2022	Mid-Flood	Cloudy	Calm	13:06	0.2	M	0.1	1	0.211	96	7.12	7.13	7.14	7.15	22.19	22.20	55.8	55.5	4.80	4.77	28.8	29.4	37	36
M3	8/1/2022	Mid-Flood	Cloudy	Calm	13:06	0.2	M	0.1	2			7.13		7.16		22.21		55.1		4.74		30.0		35	
M1	8/1/2022	Mid-Ebb	Fine	Moderate	19:00	1.1	M	0.55	1	0.052	71	7.04	7.04	10.17	10.17	20.02	20.02	39.2	39.4	3.54	3.56	18.1	18.1	15	15
M1	8/1/2022	Mid-Ebb	Fine	Moderate	19:00	1.1	M	0.55	2			7.03		10.16		20.01		39.6		3.58		18.2		14	
M2	8/1/2022	Mid-Ebb	Fine	Moderate	18:40	0.9	M	0.45	1	0.042	314	7.07	7.07	10.30	10.29	20.02	20.04	40.7	40.6	3.62	3.60	21.9	21.9	33	34
M2	8/1/2022	Mid-Ebb	Fine	Moderate	18:40	0.9	M	0.45	2			7.06		10.27		20.05		40.4		3.58		22.0		35	
M3	8/1/2022	Mid-Ebb	Cloudy	Calm	18:42	0.4	M	0.2	1	0.175	263	7.31	7.31	6.31	6.31	20.68	20.68	50.5	50.7	4.28	4.30	17.4	17.6	35	34
M3	8/1/2022	Mid-Ebb	Cloudy	Calm	18:42	0.4	M	0.2	2			7.30		6.30		20.67		50.9		4.31		17.9		33	

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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

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	11/1/2022	Mid-Flood	Cloudy	Smooth	15:09	2.2	M	1.1	1	0.206	305	7.13	7.14	6.18	6.19	20.74	20.74	35.4	35.8	3.13	3.16	20.6	20.5	18	19
M1	11/1/2022	Mid-Flood	Cloudy	Smooth	15:09	2.2	M	1.1	2			7.14		6.19		20.73		36.1		3.19		20.5		20	
M2	11/1/2022	Mid-Flood	Cloudy	Smooth	15:25	1.2	M	0.6	1	0.196	248	7.20	7.20	6.30	6.31	20.41	20.42	31.8	32.2	2.85	2.88	22.1	22.1	26	27
M2	11/1/2022	Mid-Flood	Cloudy	Smooth	15:25	1.2	M	0.6	2			7.19		6.32		20.42		32.5		2.91		22.1		27	
M3	11/1/2022	Mid-Flood	Fine	Smooth	15:11	1.1	M	0.55	1	0.089	71	7.30	7.30	5.16	5.16	19.31	19.33	45.9	45.4	4.11	4.06	28.9	28.9	40	39
M3	11/1/2022	Mid-Flood	Fine	Smooth	15:11	1.1	M	0.55	2			7.29		5.15		19.36		44.9		4.01		29.0		37	
M1	11/1/2022	Mid-Ebb	Cloudy	Smooth	7:48	2	M	1	1	0.185	225	7.28	7.27	4.92	4.93	15.90	15.89	43.0	43.4	3.89	3.93	25.4	25.9	27	26
M1	11/1/2022	Mid-Ebb	Cloudy	Smooth	7:48	2	M	1	2			7.26		4.93		15.88		43.8		3.96		26.3		25	
M2	11/1/2022	Mid-Ebb	Cloudy	Smooth	8:08	1	M	0.5	1	0.176	132	7.32	7.33	5.12	5.13	16.23	16.24	40.1	40.3	3.63	3.65	23.1	23.1	24	24
M2	11/1/2022	Mid-Ebb	Cloudy	Smooth	8:08	1	M	0.5	2			7.33		5.14		16.24		40.4		3.66		23.1		23	
M3	11/1/2022	Mid-Ebb	Fine	Smooth	7:42	0.9	M	0.45	1	0.034	138	7.27	7.27	5.34	5.35	19.16	19.17	48.3	48.0	4.33	4.31	24.9	24.9	35	37
M3	11/1/2022	Mid-Ebb	Fine	Smooth	7:42	0.9	M	0.45	2			7.26		5.35		19.17		47.7		4.28		25.0		38	

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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

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	13/1/2022	Mid-Flood	Fine	Moderate	6:14	1.1	M	0.55	1	0.064	143	7.21	7.22	7.44	7.42	18.99	18.92	40.6	40.9	3.24	3.31	15.6	15.7	27	27
M1	13/1/2022	Mid-Flood	Fine	Moderate	6:14	1.1	M	0.55	2			7.22		7.39		18.84		41.1		3.37		15.7		26	
M2	13/1/2022	Mid-Flood	Fine	Moderate	6:33	1.3	M	0.65	1	0.053	184	7.23	7.24	7.52	7.52	19.12	19.13	41.4	41.6	3.28	3.30	15.7	15.8	28	28
M2	13/1/2022	Mid-Flood	Fine	Moderate	6:33	1.3	M	0.65	2			7.24		7.51		19.14		41.8		3.31		15.8		28	
M3	13/1/2022	Mid-Flood	Cloudy	Calm	5:57	0.2	M	0.1	1	0.178	83	7.37	7.37	4.30	4.31	15.35	15.36	51.1	50.9	4.82	4.80	17.9	17.5	16	16
M3	13/1/2022	Mid-Flood	Cloudy	Calm	5:57	0.2	M	0.1	2			7.37		4.32		15.37		50.6		4.77		17.1		16	
M1	13/1/2022	Mid-Ebb	Fine	Moderate	11:08	0.9	M	0.45	1	0.042	50	7.34	7.33	7.03	7.03	18.56	18.56	47.2	47.3	3.61	3.62	17.1	17.1	19	20
M1	13/1/2022	Mid-Ebb	Fine	Moderate	11:08	0.9	M	0.45	2			7.32		7.02		18.56		47.4		3.63		17.1		20	
M2	13/1/2022	Mid-Ebb	Fine	Moderate	10:49	1	M	0.5	1	0.034	173	7.24	7.26	6.98	6.96	18.56	18.56	46.7	46.8	3.54	3.56	16.8	16.8	21	19
M2	13/1/2022	Mid-Ebb	Fine	Moderate	10:49	1	M	0.5	2			7.28		6.94		18.56		46.9		3.57		16.8		17	
M3	13/1/2022	Mid-Ebb	Cloudy	Calm	10:45	0.4	M	0.2	1	0.169	254	7.20	7.21	3.24	3.25	18.80	18.80	46.6	46.3	4.37	4.34	27.6	28.2	30	32
M3	13/1/2022	Mid-Ebb	Cloudy	Calm	10:45	0.4	M	0.2	2			7.21		3.25		18.79		45.9		4.31		28.9		33	

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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

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	15/1/2022	Mid-Flood	Fine	Moderate	7:44	1.2	M	0.6	1	0.047	124	7.13	7.14	10.15	10.15	20.36	20.36	41.2	41.3	3.51	3.52	19.6	19.5	36	35
M1	15/1/2022	Mid-Flood	Fine	Moderate	7:44	1.2	M	0.6	2			7.14	7.14	10.14	10.15	20.37	20.36	41.4	41.3	3.53	3.52	19.5	19.5	34	35
M2	15/1/2022	Mid-Flood	Fine	Moderate	8:03	1.4	M	0.7	1	0.053	75	7.12	7.12	10.16	10.18	19.64	19.64	43.4	43.7	3.52	3.53	19.4	19.4	23	23
M2	15/1/2022	Mid-Flood	Fine	Moderate	8:03	1.4	M	0.7	2			7.11	7.11	10.19	10.18	19.64	19.64	43.9	43.7	3.54	3.53	19.4	19.4	22	23
M3	15/1/2022	Mid-Flood	Cloudy	Calm	7:52	0.2	M	0.1	1	0.21	78	7.08	7.09	4.41	4.41	16.07	16.08	57.2	57.0	5.24	5.22	24.9	25.1	15	14
M3	15/1/2022	Mid-Flood	Cloudy	Calm	7:52	0.2	M	0.1	2			7.09	7.09	4.40	4.41	16.09	16.08	56.7	57.0	5.20	5.22	25.3	25.1	13	14
M1	15/1/2022	Mid-Ebb	Fine	Moderate	12:40	0.8	M	0.4	1	0.04	247	7.40	7.41	11.12	11.13	20.09	20.09	58.5	58.5	4.98	4.97	18.2	18.3	23	23
M1	15/1/2022	Mid-Ebb	Fine	Moderate	12:40	0.8	M	0.4	2			7.41	7.41	11.13	11.13	20.08	20.09	58.4	58.5	4.96	4.97	18.3	18.3	22	23
M2	15/1/2022	Mid-Ebb	Fine	Moderate	12:20	0.9	M	0.45	1	0.062	197	7.30	7.30	11.06	11.05	18.90	18.91	47.6	47.4	4.06	4.04	19.1	19.1	19	20
M2	15/1/2022	Mid-Ebb	Fine	Moderate	12:20	0.9	M	0.45	2			7.29	7.29	11.04	11.05	18.91	18.91	47.2	47.4	4.01	4.04	19.0	19.1	19	20
M3	15/1/2022	Mid-Ebb	Cloudy	Calm	12:20	0.4	M	0.2	1	0.175	245	7.26	7.27	5.97	5.98	20.49	20.50	42.3	42.1	3.83	3.82	30.4	30.9	33	35
M3	15/1/2022	Mid-Ebb	Cloudy	Calm	12:20	0.4	M	0.2	2			7.27	7.27	5.99	5.98	20.50	20.50	41.9	42.1	3.80	3.82	31.5	30.9	36	35

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

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	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	18/1/2022	Mid-Flood	Cloudy	Smooth	9:28	2	M	1	1	0.251	345	7.32	7.33	11.33	11.33	17.93	17.94	51.4	50.9	4.47	4.42	23.6	23.4	28	29
M1	18/1/2022	Mid-Flood	Cloudy	Smooth	9:28	2	M	1	2			7.34	7.33	11.32	11.33	17.95	17.94	50.3	50.9	4.36	4.42	23.2	23.4	30	29
M2	18/1/2022	Mid-Flood	Cloudy	Smooth	9:43	1	M	0.5	1	0.238	279	7.28	7.28	11.65	11.66	17.61	17.62	39.2	39.0	3.42	3.41	26.7	26.6	31	33
M2	18/1/2022	Mid-Flood	Cloudy	Smooth	9:43	1	M	0.5	2			7.27	7.28	11.67	11.66	17.62	17.62	38.8	39.0	3.39	3.41	26.5	26.6	35	33
M3	18/1/2022	Mid-Flood	Fine	Moderate	9:20	1.1	M	0.55	1	0.064	103	7.11	7.11	11.31	11.36	18.98	18.99	47.4	46.5	4.12	4.04	20.9	21.1	26	28
M3	18/1/2022	Mid-Flood	Fine	Moderate	9:20	1.1	M	0.55	2			7.10	7.11	11.40	11.36	19.01	18.99	45.6	46.5	3.95	4.04	21.2	21.1	29	28
M1	18/1/2022	Mid-Ebb	Cloudy	Smooth	14:15	2.2	M	1.1	1	0.201	242	7.18	7.17	9.52	9.53	20.34	20.34	43.1	43.5	3.74	3.77	25.1	25.0	28	28
M1	18/1/2022	Mid-Ebb	Cloudy	Smooth	14:15	2.2	M	1.1	2			7.16	7.17	9.53	9.53	20.33	20.34	43.8	43.5	3.80	3.77	24.9	25.0	28	28
M2	18/1/2022	Mid-Ebb	Cloudy	Smooth	13:59	1.2	M	0.6	1	0.19	204	7.11	7.11	9.82	9.81	20.07	20.08	46.6	46.9	4.05	4.07	22.1	22.2	30	29
M2	18/1/2022	Mid-Ebb	Cloudy	Smooth	13:59	1.2	M	0.6	2			7.11	7.11	9.80	9.81	20.08	20.08	47.1	46.9	4.09	4.07	22.3	22.2	27	29
M3	18/1/2022	Mid-Ebb	Fine	Moderate	14:00	0.8	M	0.4	1	0.033	73	7.20	7.21	11.55	11.57	18.80	18.80	62.5	62.5	5.44	5.43	25.8	25.8	31	31
M3	18/1/2022	Mid-Ebb	Fine	Moderate	14:00	0.8	M	0.4	2			7.21	7.21	11.59	11.57	18.80	18.80	62.4	62.5	5.41	5.43	25.8	25.8	31	31

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

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	20/1/2022	Mid-Flood	Fine	Moderate	10:22	1.1	M	0.55	1	0.052	175	7.23	7.24	10.30	10.31	18.93	18.94	41.7	41.7	3.42	3.41	22.8	22.9	31	29
M1	20/1/2022	Mid-Flood	Fine	Moderate	10:22	1.1	M	0.55	2			7.24		10.31		18.94		41.6		3.40		22.9		27	
M2	20/1/2022	Mid-Flood	Fine	Moderate	10:36	1.4	M	0.7	1	0.062	42	7.22	7.23	10.21	10.19	18.86	18.84	44.7	44.5	3.63	3.62	24.1	24.1	29	29
M2	20/1/2022	Mid-Flood	Fine	Moderate	10:36	1.4	M	0.7	2			7.24		10.16		18.81		44.2		3.60		24.2		28	
M3	20/1/2022	Mid-Flood	Fine	Calm	10:22	0.2	M	0.1	1	0.229	92	7.03	7.04	9.46	9.46	18.81	18.82	55.7	55.2	4.87	4.83	18.4	18.7	27	28
M3	20/1/2022	Mid-Flood	Fine	Calm	10:22	0.2	M	0.1	2			7.05		9.45		18.82		54.7		4.79		19.0		28	
M1	20/1/2022	Mid-Ebb	Fine	Moderate	15:40	1	M	0.5	1	0.068	104	7.28	7.29	9.92	9.92	19.07	19.07	43.2	43.2	3.65	3.65	32.6	32.6	33	32
M1	20/1/2022	Mid-Ebb	Fine	Moderate	15:40	1	M	0.5	2			7.29		9.91		19.06		43.1		3.64		32.5		30	
M2	20/1/2022	Mid-Ebb	Fine	Moderate	15:21	0.9	M	0.45	1	0.097	277	7.24	7.24	9.85	9.85	19.12	19.13	45.7	45.7	3.84	3.84	31.8	31.5	11	12
M2	20/1/2022	Mid-Ebb	Fine	Moderate	15:21	0.9	M	0.45	2			7.23		9.84		19.13		45.6		3.83		31.3		13	
M3	20/1/2022	Mid-Ebb	Fine	Calm	15:18	0.4	M	0.2	1	0.192	257	7.11	7.12	8.64	8.63	22.49	22.50	48.7	49.1	4.26	4.29	22.9	22.6	35	33
M3	20/1/2022	Mid-Ebb	Fine	Calm	15:18	0.4	M	0.2	2			7.12		8.61		22.50		49.5		4.32		22.2		31	

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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

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	22/1/2022	Mid-Flood	Fine	Moderate	11:23	0.9	M	0.45	1	0.07	144	7.21	7.23	11.75	11.69	19.79	19.79	44.9	45.1	3.61	3.63	22.0	21.2	32	30
M1	22/1/2022	Mid-Flood	Fine	Moderate	11:23	0.9	M	0.45	2			7.24	7.23	11.62	11.69	19.79	19.79	45.2	45.1	3.64	3.63	20.4	21.2	28	
M2	22/1/2022	Mid-Flood	Fine	Moderate	11:47	1.1	M	0.55	1	0.056	48	7.20	7.21	10.64	10.65	19.46	19.49	46.7	46.6	3.72	3.71	20.9	20.8	27	27
M2	22/1/2022	Mid-Flood	Fine	Moderate	11:47	1.1	M	0.55	2			7.21	7.21	10.66	10.65	19.52	19.49	46.4	46.6	3.70	3.71	20.6	20.8	27	
M3	22/1/2022	Mid-Flood	Cloudy	Calm	11:18	0.2	M	0.1	1	0.221	70	7.16	7.17	9.44	9.45	19.93	19.93	46.4	46.7	3.95	3.97	22.3	22.5	13	14
M3	22/1/2022	Mid-Flood	Cloudy	Calm	11:18	0.2	M	0.1	2			7.17	7.17	9.46	9.45	19.93	19.93	46.9	46.7	3.99	3.97	22.6	22.5	15	
M1	22/1/2022	Mid-Ebb	Fine	Moderate	16:53	0.8	M	0.4	1	0.082	314	7.21	7.21	11.35	11.35	20.00	20.00	40.2	40.8	3.51	3.57	27.1	27.1	21	23
M1	22/1/2022	Mid-Ebb	Fine	Moderate	16:53	0.8	M	0.4	2			7.20	7.21	11.34	11.35	20.00	20.00	41.3	40.8	3.62	3.57	27.1	27.1	24	
M2	22/1/2022	Mid-Ebb	Fine	Moderate	16:34	0.9	M	0.45	1	0.045	134	7.31	7.32	10.41	10.43	20.00	20.00	39.7	39.3	3.46	3.44	27.6	27.6	21	21
M2	22/1/2022	Mid-Ebb	Fine	Moderate	16:34	0.9	M	0.45	2			7.32	7.32	10.44	10.43	20.00	20.00	38.8	39.3	3.42	3.44	27.6	27.6	20	
M3	22/1/2022	Mid-Ebb	Cloudy	Calm	16:34	0.4	M	0.2	1	0.18	238	7.25	7.25	9.10	9.10	20.86	20.87	50.6	50.9	4.29	4.31	25.4	26.1	8	8
M3	22/1/2022	Mid-Ebb	Cloudy	Calm	16:34	0.4	M	0.2	2			7.24	7.24	9.09	9.10	20.87	20.87	51.2	50.9	4.33	4.31	26.8	26.1	8	

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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

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	25/1/2022	Mid-Flood	Cloudy	Smooth	13:12	2.4	M	1.2	1	0.277	313	7.37	7.36	9.03	9.03	21.70	21.70	41.7	42.0	3.57	3.59	15.3	15.5	22	20
M1	25/1/2022	Mid-Flood	Cloudy	Smooth	13:12	2.4	M	1.2	2			7.35		9.03		21.70		42.2		3.61		15.8		18	
M2	25/1/2022	Mid-Flood	Cloudy	Smooth	12:52	1.2	M	0.6	1	0.259	270	7.41	7.42	9.28	9.28	21.27	21.28	34.9	35.3	2.99	3.02	21.4	21.4	21	20
M2	25/1/2022	Mid-Flood	Cloudy	Smooth	12:52	1.2	M	0.6	2			7.43		9.27		21.28		35.7		3.05		21.5		18	
M3	25/1/2022	Mid-Flood	Cloudy	Smooth	12:59	1.2	M	0.6	1	0.054	247	7.32	7.32	8.14	8.14	20.61	20.62	47.5	47.4	4.07	4.06	20.4	20.4	19	20
M3	25/1/2022	Mid-Flood	Cloudy	Smooth	12:59	1.2	M	0.6	2			7.32		8.14		20.62		47.3		4.05		20.4		20	
M1	25/1/2022	Mid-Ebb	Cloudy	Smooth	6:20	2.2	M	1.1	1	0.247	256	7.25	7.25	8.17	8.16	18.14	18.14	46.1	46.0	3.99	3.98	13.9	13.8	20	20
M1	25/1/2022	Mid-Ebb	Cloudy	Smooth	6:20	2.2	M	1.1	2			7.24		8.15		18.13		45.8		3.96		13.7		20	
M2	25/1/2022	Mid-Ebb	Cloudy	Smooth	6:35	1.2	M	0.6	1	0.23	177	7.31	7.31	7.72	7.73	18.65	18.66	40.5	40.0	3.48	3.43	11.6	11.7	11	12
M2	25/1/2022	Mid-Ebb	Cloudy	Smooth	6:35	1.2	M	0.6	2			7.30		7.73		18.66		39.4		3.38		11.8		12	
M3	25/1/2022	Mid-Ebb	Cloudy	Smooth	6:16	0.7	M	0.35	1	0.061	93	7.30	7.30	7.77	7.77	19.62	19.63	40.7	40.7	3.42	3.41	13.4	13.4	19	18
M3	25/1/2022	Mid-Ebb	Cloudy	Smooth	6:16	0.7	M	0.35	2			7.30		7.77		19.65		40.7		3.40		13.5		17	

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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

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	27/1/2022	Mid-Flood	Cloudy	Smooth	14:48	0.8	M	0.4	1	0.116	226	7.24	7.24	5.02	5.02	21.12	21.13	53.6	53.5	4.62	4.62	15.9	15.9	13	13
M1	27/1/2022	Mid-Flood	Cloudy	Smooth	14:48	0.8	M	0.4	2			7.24		5.02		21.13		53.4		4.61		15.9		12	
M2	27/1/2022	Mid-Flood	Cloudy	Smooth	14:28	0.9	M	0.45	1	0.103	218	7.27	7.27	5.06	5.06	21.01	21.01	58.5	58.4	5.09	5.08	16.6	16.6	15	14
M2	27/1/2022	Mid-Flood	Cloudy	Smooth	14:28	0.9	M	0.45	2			7.27		5.06		21.02		58.3		5.07		16.6		13	
M3	27/1/2022	Mid-Flood	Cloudy	Calm	14:29	0.6	M	0.3	1	0.232	80	7.34	7.33	7.14	7.14	25.02	25.03	53.8	54.0	4.64	4.66	16.5	16.5	16	17
M3	27/1/2022	Mid-Flood	Cloudy	Calm	14:29	0.6	M	0.3	2			7.32		7.13		25.03		54.2		4.67		16.4		18	
M1	27/1/2022	Mid-Ebb	Cloudy	Smooth	8:12	0.6	M	0.3	1	0.107	209	7.18	7.18	6.42	6.42	19.90	19.89	65.7	65.6	5.66	5.65	21.8	21.8	28	30
M1	27/1/2022	Mid-Ebb	Cloudy	Smooth	8:12	0.6	M	0.3	2			7.18		6.42		19.89		65.4		5.64		21.8		31	
M2	27/1/2022	Mid-Ebb	Cloudy	Smooth	8:29	0.8	M	0.4	1	0.125	100	7.16	7.16	5.70	5.70	20.03	20.04	63.4	63.3	5.47	5.46	20.4	20.3	23	24
M2	27/1/2022	Mid-Ebb	Cloudy	Smooth	8:29	0.8	M	0.4	2			7.16		5.70		20.04		63.1		5.45		20.3		24	
M3	27/1/2022	Mid-Ebb	Cloudy	Calm	8:21	0.2	M	0.1	1	0.183	254	7.13	7.13	5.71	5.72	19.36	19.37	46.1	45.9	3.98	3.96	18.8	18.9	16	16
M3	27/1/2022	Mid-Ebb	Cloudy	Calm	8:21	0.2	M	0.1	2			7.12		5.73		19.38		45.6		3.94		19.1		16	

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

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	29/1/2022	Mid-Flood	Fine	Calm	6:55	1	M	0.5	1	0.115	232	7.21	7.21	11.60	11.60	19.82	19.82	52.4	52.3	4.58	4.57	23.2	23.2	23	25
M1	29/1/2022	Mid-Flood	Fine	Calm	6:55	1	M	0.5	2			7.21	7.21	11.60	11.60	19.82	19.82	52.2	52.3	4.56	4.57	23.2	23.2	27	25
M2	29/1/2022	Mid-Flood	Fine	Calm	7:16	1.2	M	0.6	1	0.093	224	7.43	7.43	9.91	9.91	19.86	19.86	53.8	53.9	4.69	4.69	13.5	13.5	10	10
M2	29/1/2022	Mid-Flood	Fine	Calm	7:16	1.2	M	0.6	2			7.43	7.43	9.91	9.91	19.86	19.86	53.9	53.9	4.69	4.69	13.5	13.5	9	10
M3	29/1/2022	Mid-Flood	Cloudy	Calm	6:49	0.2	M	0.1	1	0.216	90	7.09	7.08	11.12	11.13	19.07	19.08	56.4	55.9	4.74	4.70	14.5	14.1	18	19
M3	29/1/2022	Mid-Flood	Cloudy	Calm	6:49	0.2	M	0.1	2			7.06	7.08	11.14	11.13	19.08	19.08	55.4	55.9	4.65	4.70	13.6	14.1	19	19
M1	29/1/2022	Mid-Ebb	Fine	Calm	12:20	0.7	M	0.35	1	0.124	191	7.40	7.40	11.49	11.49	20.57	20.57	66.5	66.4	5.91	5.91	18.6	18.6	24	24
M1	29/1/2022	Mid-Ebb	Fine	Calm	12:20	0.7	M	0.35	2			7.40	7.40	11.49	11.49	20.58	20.58	66.3	66.4	5.90	5.91	18.6	18.6	24	24
M2	29/1/2022	Mid-Ebb	Fine	Calm	12:02	0.9	M	0.45	1	0.121	109	7.38	7.38	10.05	10.05	20.70	20.69	62.2	62.1	5.70	5.70	12.7	12.7	12	13
M2	29/1/2022	Mid-Ebb	Fine	Calm	12:02	0.9	M	0.45	2			7.38	7.38	10.05	10.05	20.69	20.69	62.0	62.1	5.69	5.70	12.7	12.7	13	13
M3	29/1/2022	Mid-Ebb	Cloudy	Calm	11:55	0.6	M	0.3	1	0.172	271	7.27	7.28	7.59	7.59	22.20	22.21	45.2	45.0	3.90	3.88	18.3	17.7	13	13
M3	29/1/2022	Mid-Ebb	Cloudy	Calm	11:55	0.6	M	0.3	2			7.28	7.28	7.58	7.59	22.21	22.21	44.8	45.0	3.86	3.88	17.2	17.7	13	13

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.
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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.

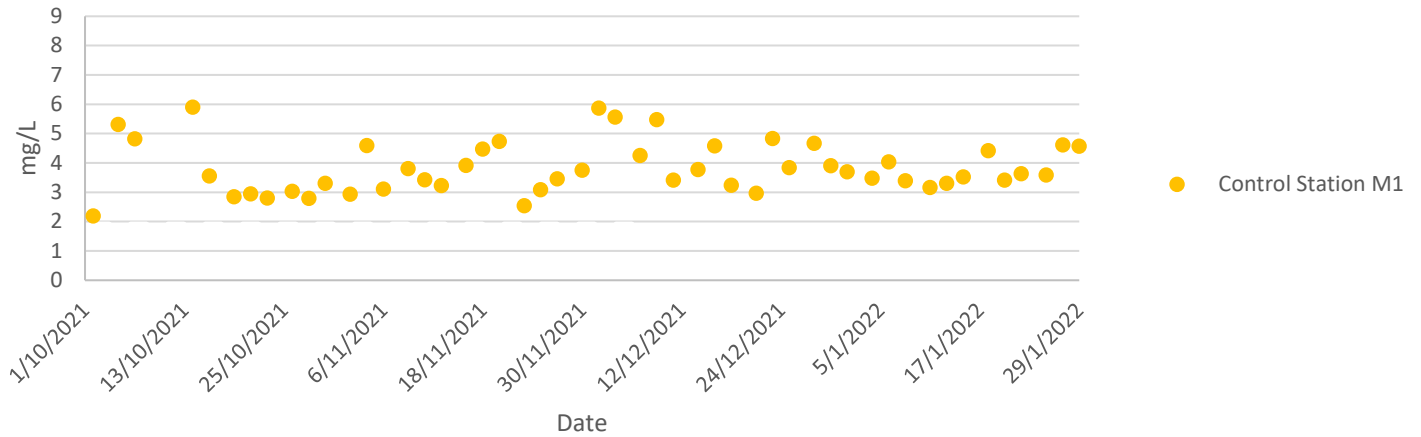
For Flood Tide

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

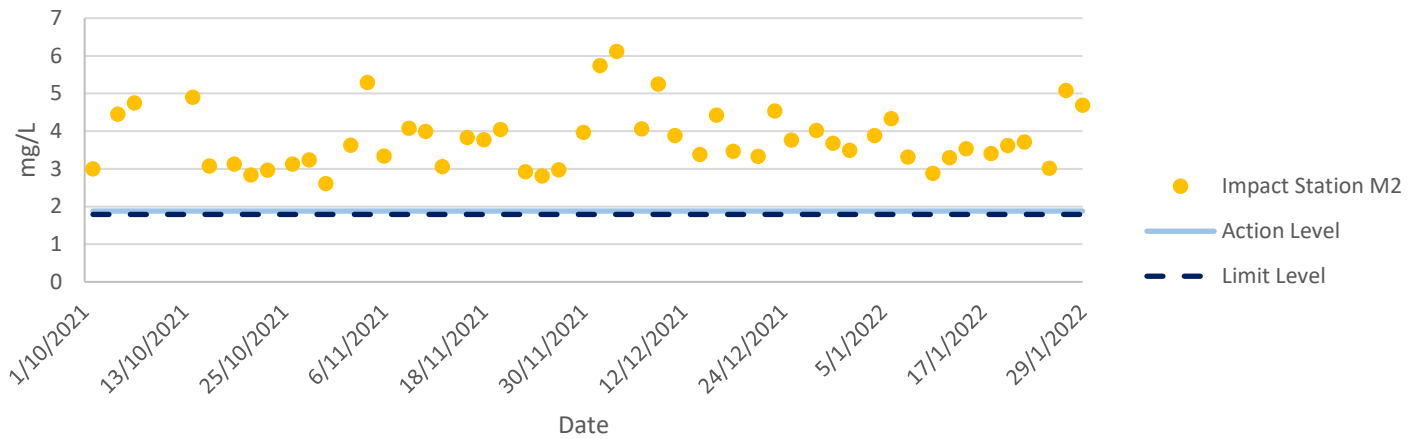
For Ebb Tide

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

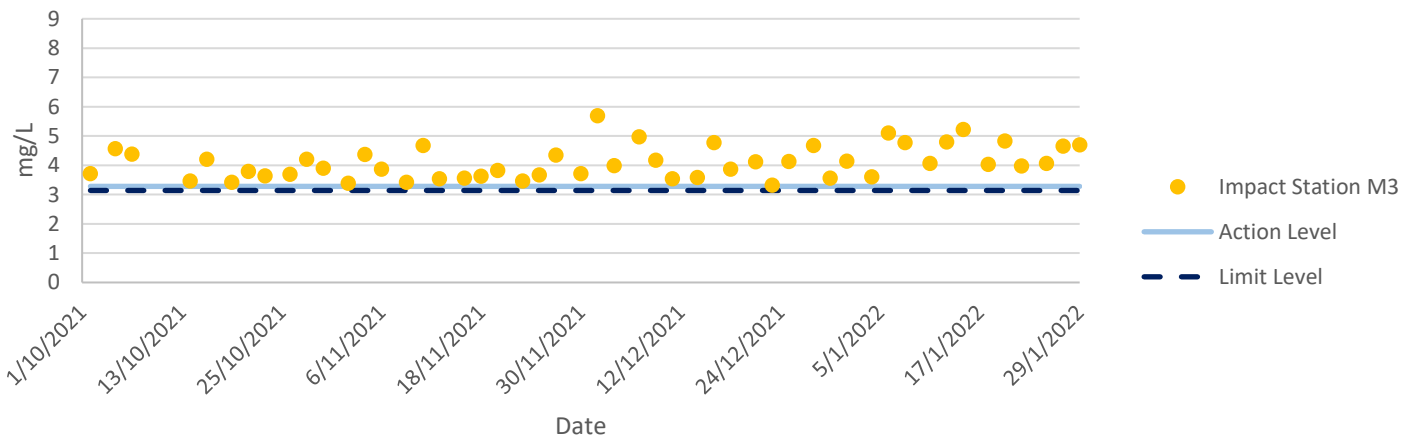
Dissolved Oxygen at Mid-Flood Tide



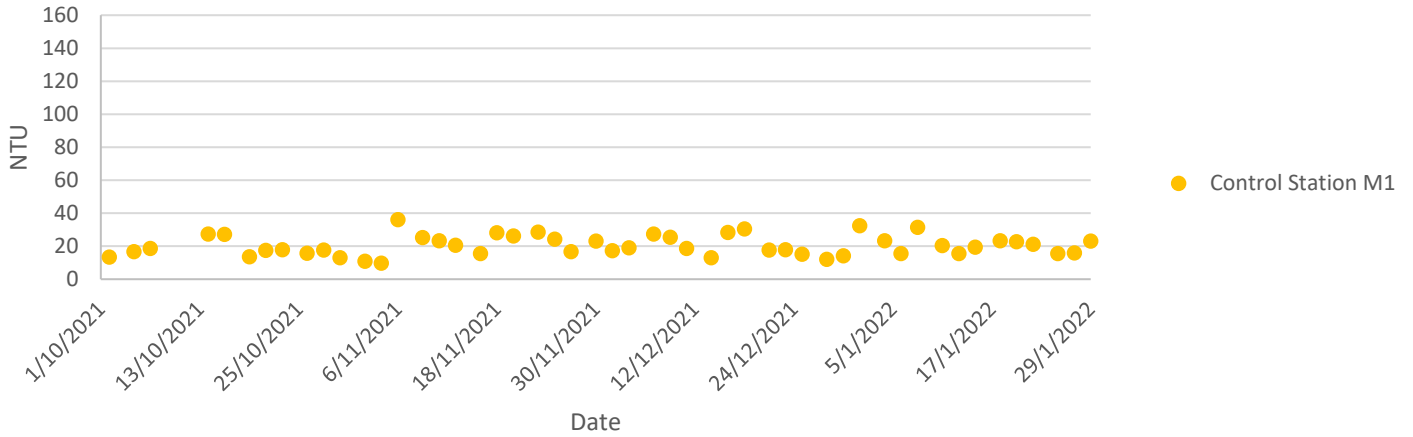
Dissolved Oxygen at Mid-Flood Tide



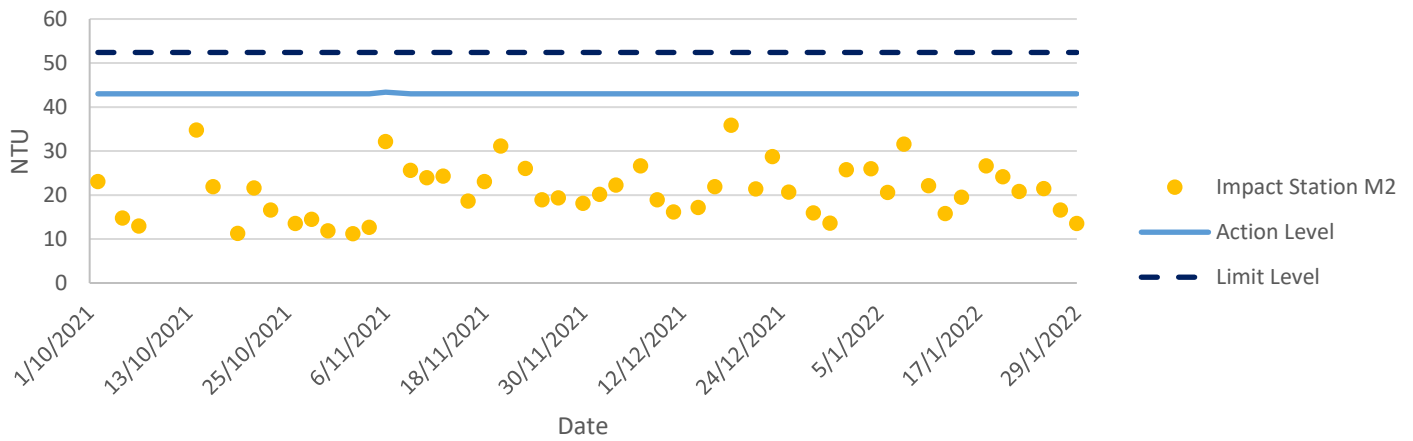
Dissolved Oxygen at Mid-Flood Tide



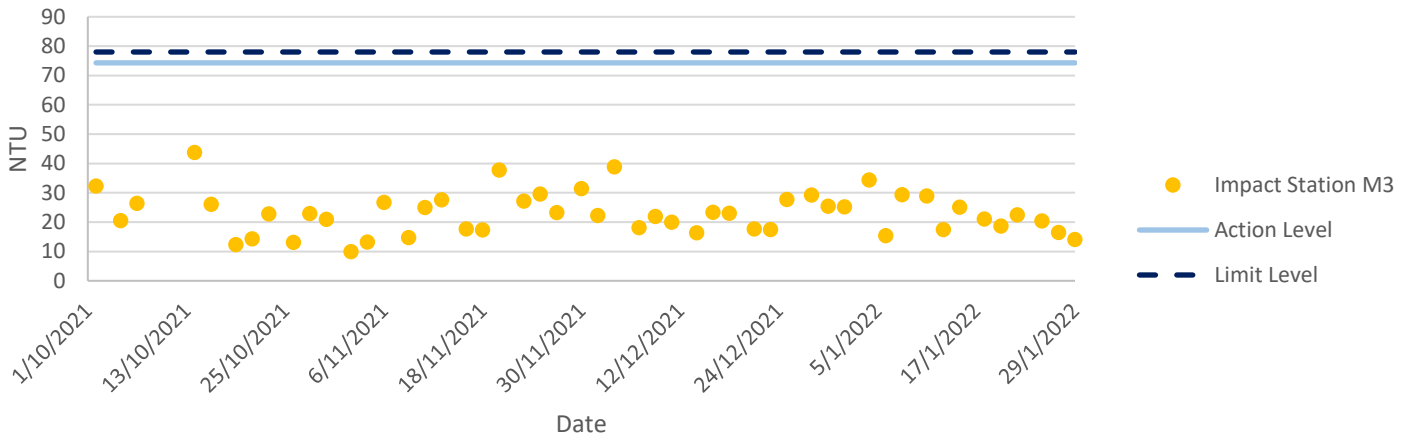
Turbidity at Mid-Flood Tide



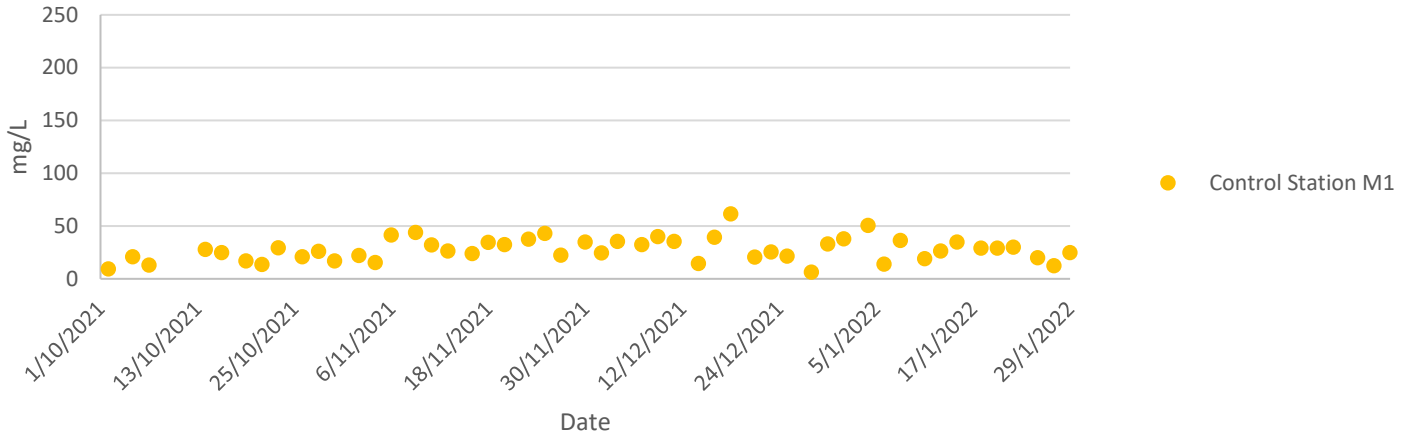
Turbidity at Mid-Flood Tide



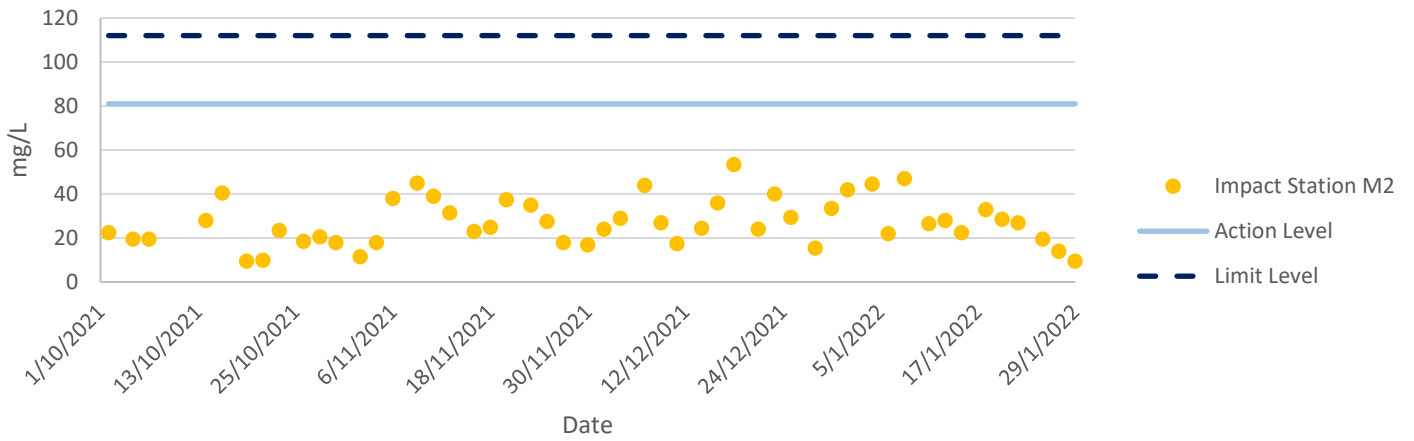
Turbidity at Mid-Flood Tide



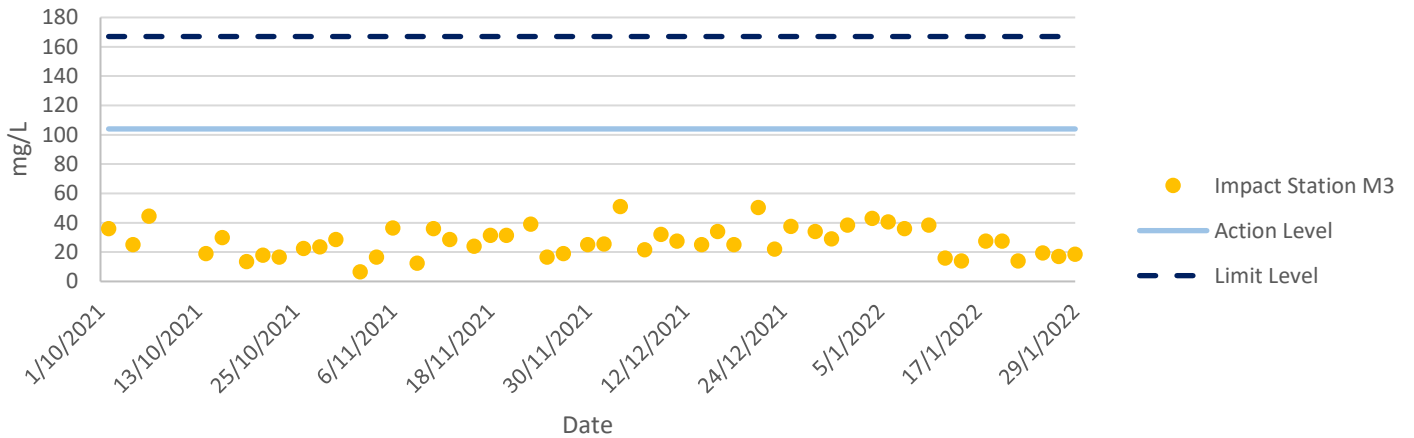
Total Suspended Solids at Mid-Flood Tide



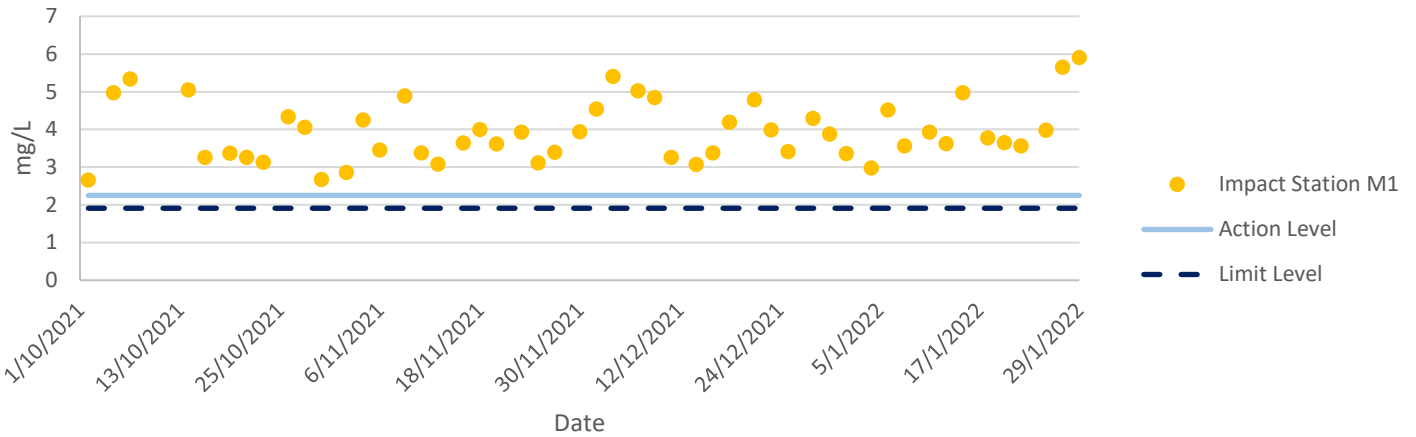
Total Suspended Solids at Mid-Flood Tide



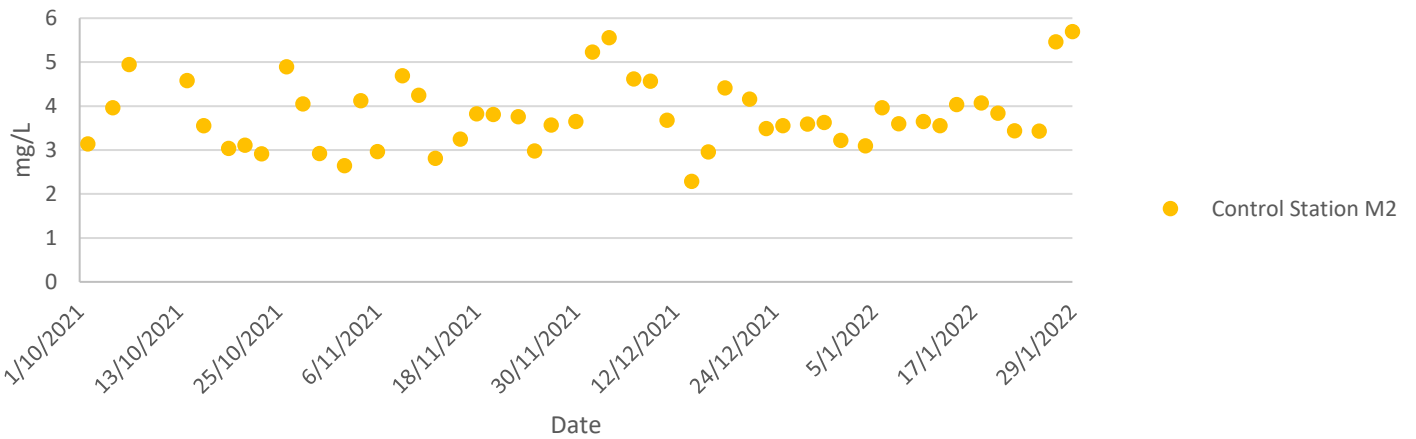
Total Suspended Solids at Mid-Flood Tide



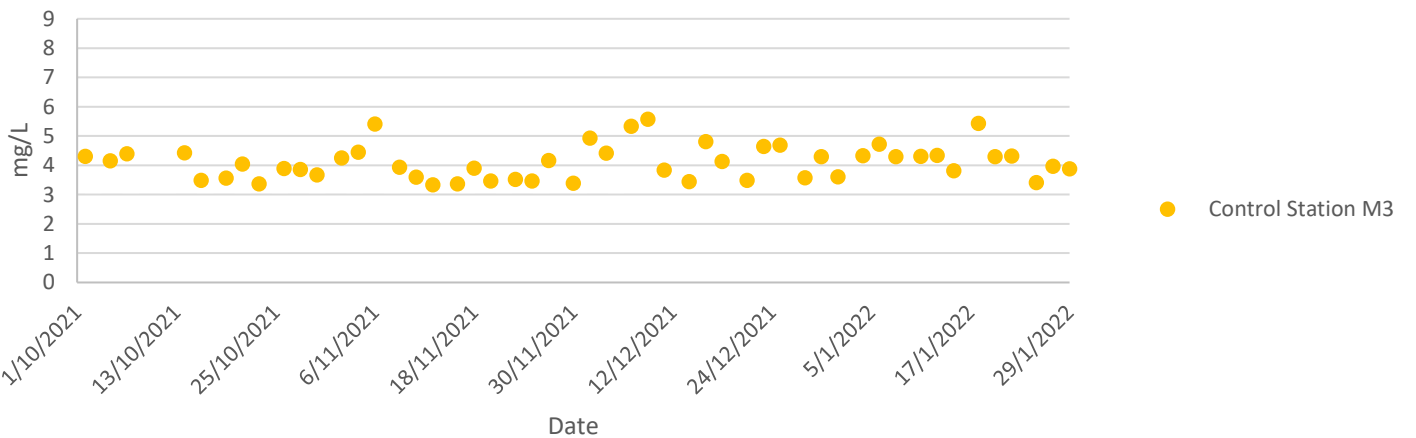
Dissolved Oxygen at Mid-Ebb Tide



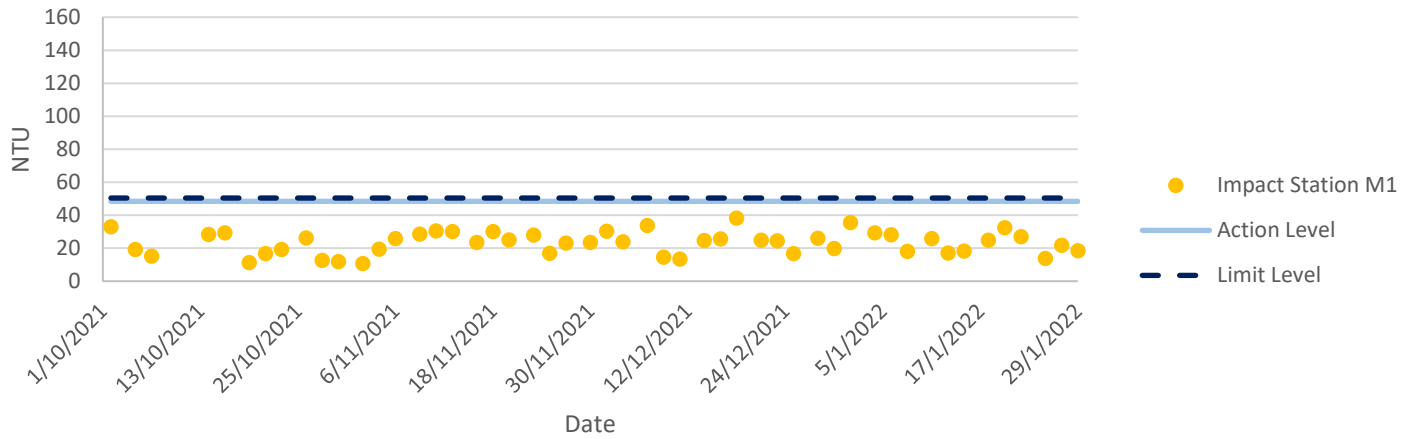
Dissolved Oxygen at Mid-Ebb Tide



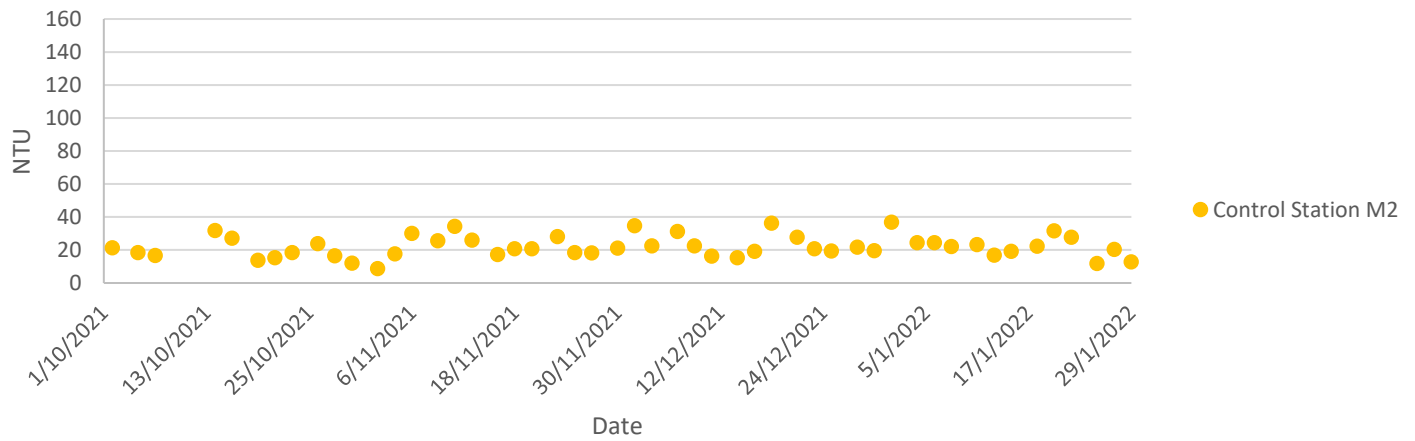
Dissolved Oxygen at Mid-Ebb Tide



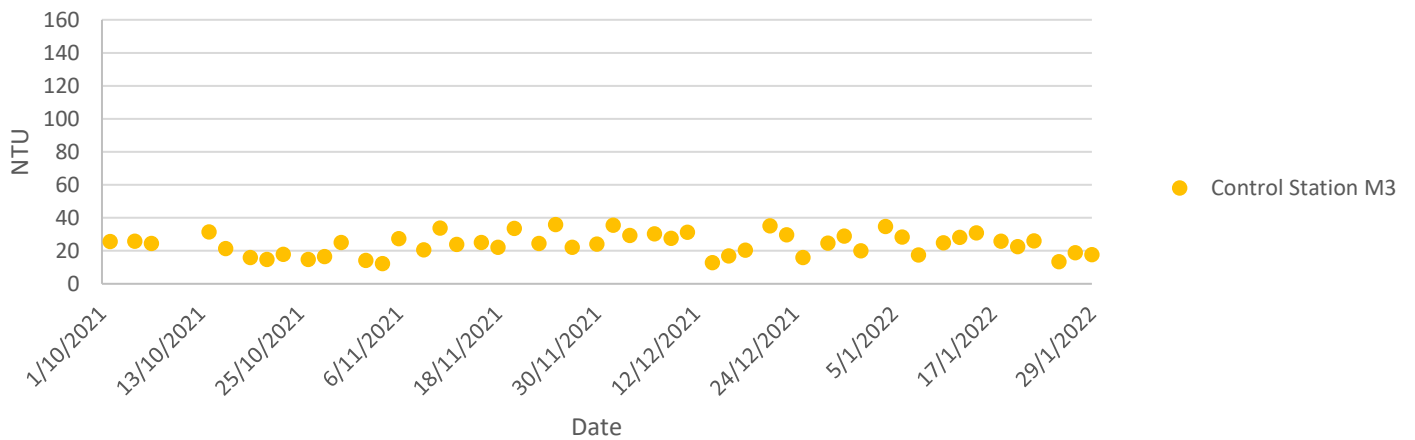
Turbidity at Mid-Ebb Tide

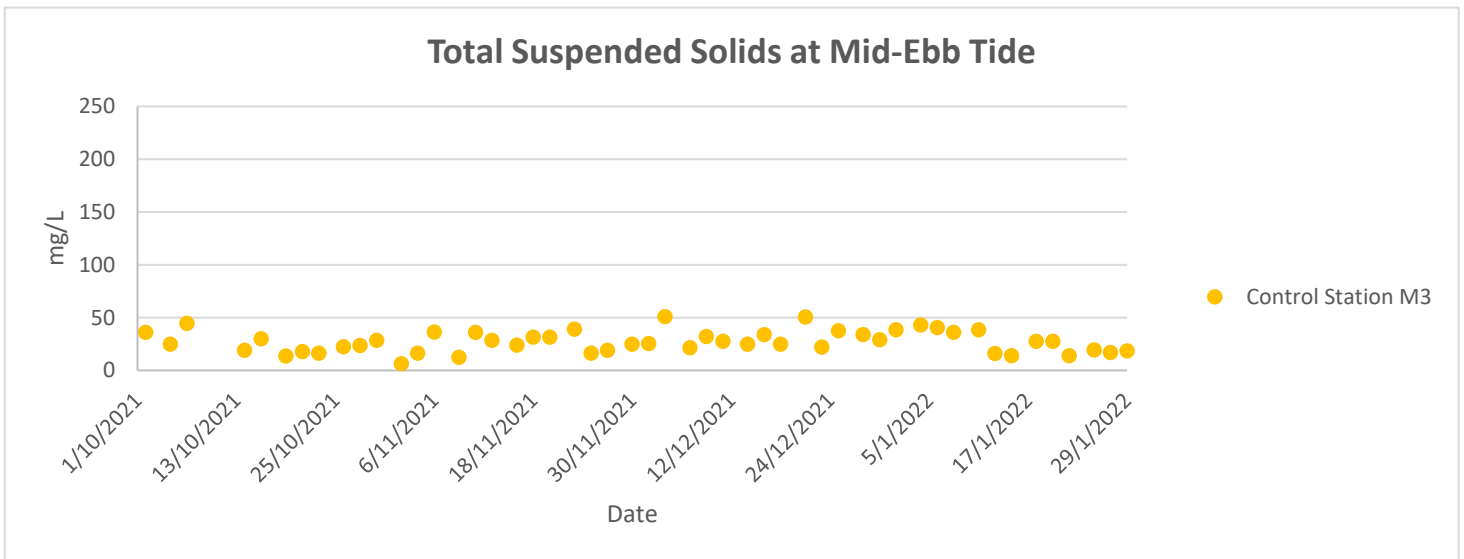
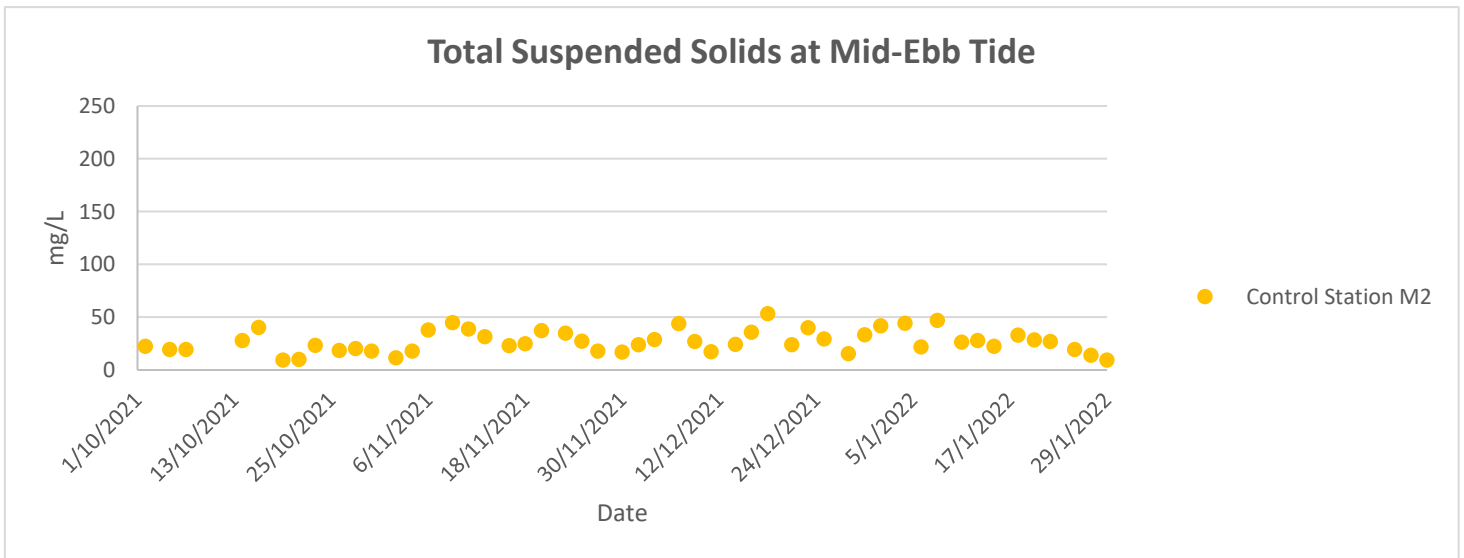
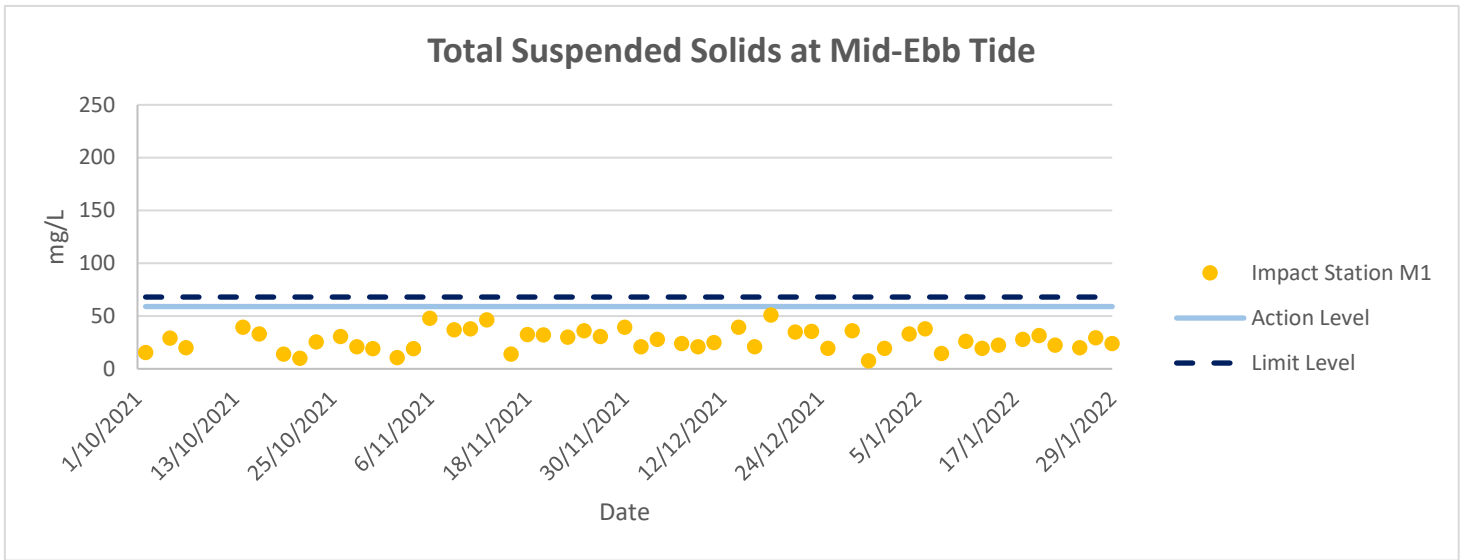


Turbidity at Mid-Ebb Tide



Turbidity at Mid-Ebb Tide





Ecology Monitoring Results

Appendix F.1 Supplemental Discussion

F.1.1 Ecological Monitoring of Birds

F.1.1.1 Abundance

F.1.1.1.1 All Avifauna Species

Point Count

Among the different species recorded, the Great Cormorant *Phalacrocorax carbo* was noted with the highest abundance (110 ind.). On the other hand, species with the least abundance (1 ind. each) include the Black Drongo *Dicrurus macrocercus*, Common Greenshank *Tringa nebularia*, Intermediate Egret *Egretta intermedia*, Marsh Sandpiper *Tringa stagnatilis*, and White-throated Kingfisher *Halcyon smyrnensis*.

Transect Walk

Among the different species recorded, the Great Cormorant was noted with the highest abundance (26 ind.) On the other hand, the Black Drongo *Dicrurus macrocercus*, Daurian Redstart *Phoenicurus aureus*, Long-tailed Shrike *Lanius schach*, Olive-backed Pipit *Anthus hodgsoni*, and Pied Kingfisher *Ceryle rudis* had the lowest abundance (1 ind. each).

F.1.1.1.2 Avifauna Species of Conservation Importance

Point Count

Among the different species recorded, the Great Cormorant was recorded with the highest abundance (110 ind.). On the other hand, the Common Greenshank, Intermediate Egret, and Marsh Sandpiper had the lowest abundance (1 ind. each).

Transect Walk

Among the different species recorded, the the Great Cormorant was noted with the highest abundance (26 ind.) while the Greater Coucal *Centropus sinensis* and Tufted Duck *Aythya fuligula* had the lowest recorded abundance (2 ind. each).

Appendix F.2 Ecological Bird Monitoring Result (17 January 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	Remarks
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Mangrove	Chinese Pond Heron	<i>Ardeola bacchus</i>	6	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Mangrove	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	7	Common	R,PM	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Crested Myna	<i>Acridotheres cristatellus</i>	10	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Northern Pintail	<i>Anas acuta</i>	2	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	14	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Eurasian Teal	<i>Anas crecca</i>	5	Common	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Egret	<i>Ardea alba</i>	5	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Intermediate Egret	<i>Egretta intermedia</i>	1	Common	PM	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	5	Common	R	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	1	Common	R	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	16	Common	PM	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Scaly-breasted Munia	<i>Lonchura punctulata</i>	5	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Pied Avocet	<i>Recurvirostra avosetta</i>	10	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Spotted Redshank	<i>Tringa erythropus</i>	4	Abundant	WV,Sp	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Sandpiper	<i>Actitis hypoleucos</i>	4	Common	PM,WV	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	10	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eurasian Teal	<i>Anas crecca</i>	3	Common	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	1	Common	R,PM	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	8	Common	PM	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	9	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-faced Spoonbill	<i>Platalea minor</i>	5	Common	WV	PGC	Class II	EN	EN	EN	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	6	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Pied Avocet	<i>Recurvirostra avosetta</i>	10	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Greenshank	<i>Tringa nebularia</i>	1	Abundant	PM,WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Marsh Sandpiper	<i>Tringa stagnatilis</i>	1	Common	PM,WV	RC	-	-	LC	LC	Y	Y	

17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Redshank	<i>Tringa totanus</i>	7	Common	PM	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Japanese White-eye	<i>Zosterops japonicus</i>	2	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Egret	<i>Ardea alba</i>	8	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	40	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	9	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	3	Common	R	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	16	Common	PM	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	7	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Pied Avocet	<i>Recurvirostra avosetta</i>	11	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	40	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Great Egret	<i>Ardea alba</i>	3	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	5	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Common	R	LC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	4	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Common Tailorbird	<i>Orthotomus sutorius</i>	2	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Dusky Warbler	<i>Phylloscopus fuscatus</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	4	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Black Kite	<i>Milvus migrans</i>	2	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	4	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Black Drongo	<i>Dicrurus macrocercus</i>	1	Common	SV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	4	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	8	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	10	Common	R	-	-	-	LC	LC	N	N	

17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Egret	<i>Ardea alba</i>	6	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Oriental Magpie Robin	<i>Copsychus saularis</i>	2	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	4	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Eurasian Tree Sparrow	<i>Passer montanus</i>	7	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	15	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	7	Common	R	LC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	10	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	House Swift	<i>Apus nipalensis</i>	35	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	10	Common	R,PM	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Azure-winged Magpie	<i>Cyanopica cyanus</i>	2	Introduced	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	3	Common	PM,WV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	10	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	7	Common	R	LC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	16	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	House Swift	<i>Apus nipalensis</i>	2	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Azure-winged Magpie	<i>Cyanopica cyanus</i>	2	Introduced	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	6	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	11	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	5	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	3	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Crested Myna	<i>Acridotheres cristatellus</i>	10	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Chinese Pond Heron	<i>Ardeola bacchus</i>	7	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Little Ringed Plover	<i>Charadrius dubius</i>	2	Common	WV,PM	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Little Egret	<i>Egretta garzetta</i>	4	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	

17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Eurasian Tree Sparrow	<i>Passer montanus</i>	17	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Cormorant	<i>Phalacrocorax carbo</i>	41	Common	WV	PRC	-	-	LC	LC	Y	Y	Resting
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	3	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Red Turtle Dove	<i>Streptopelia tranquebarica</i>	2	Uncommon	PM	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Reedbed	Scaly-breasted Munia	<i>Lonchura punctulata</i>	2	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	In flight	House Swift	<i>Apus nipalensis</i>	9	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	In flight	Large-billed Crow	<i>Corvus macrorhynchos</i>	5	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	In flight	Great Cormorant	<i>Phalacrocorax carbo</i>	18	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	In flight	Large-billed Crow	<i>Corvus macrorhynchos</i>	2	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	In flight	Great Cormorant	<i>Phalacrocorax carbo</i>	5	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Mangrove	Crested Myna	<i>Acridotheres cristatellus</i>	5	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	3	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	5	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Greater Coucal	<i>Centropus sinensis</i>	2	Common	R	-	Class II	Vulnerable	LC	LC	Y	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	4	Common	PM	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Pied Avocet	<i>Recurvirostra avosetta</i>	4	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	2	Common	R	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	10	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Great Egret	<i>Ardea alba</i>	4	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	5	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Tufted Duck	<i>Aythya fuligula</i>	2	Uncommon	WV	LC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	13	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Oriental Magpie Robin	<i>Copsychus saularis</i>	3	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	9	Common	PM	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Pied Avocet	<i>Recurvirostra avosetta</i>	8	Abundant	WV	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	3	Common	R	LC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Redshank	<i>Tringa totanus</i>	4	Common	PM	RC	-	-	LC	LC	Y	Y	

17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Fork-tailed Sunbird	<i>Aethopyga christinae</i>	2	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Black Drongo	<i>Dicrurus macrocercus</i>	1	Common	SV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	4	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	3	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Long-tailed Shrike	<i>Lanius schach</i>	1	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Common Tailorbird	<i>Orthotomus sutorius</i>	2	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Eurasian Tree Sparrow	<i>Passer montanus</i>	5	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Daurian Redstart	<i>Phoenicurus aureus</i>	1	Common	WV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	7	Common	WV,Sp	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Plain Prinia	<i>Prinia inornata</i>	5	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	8	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Japanese White-eye	<i>Zosterops japonicus</i>	5	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	13	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	5	Common	WV	PRC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	5	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Pied Kingfisher	<i>Ceryle rudis</i>	1	Uncommon	R	-	-	-	LC	LC	N	Y	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Azure-winged Magpie	<i>Cyanopica cyanus</i>	3	Introduced	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	6	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Intermediate Egret	<i>Egretta intermedia</i>	5	Common	PM	RC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Scaly-breasted Munia	<i>Lonchura punctulata</i>	10	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	4	Common	PM,WV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Eurasian Tree Sparrow	<i>Passer montanus</i>	12	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	6	Common	WV,Sp	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	3	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	3	Common	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	9	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	5	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	4	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	3	Common	R	LC	-	-	LC	LC	Y	Y	
17/01/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Japanese White-eye	<i>Zosterops japonicus</i>	9	Abundant	R	-	-	-	LC	LC	N	N	
17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Reedbed	Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	2	Common	PM	-	-	-	LC	LC	N	N	

17/01/2022	Daytime	Dry Season	NSW	Transect	NSW	Reedbed	Olive-backed Pipit	<i>Anthus hodgsoni</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
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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.3.1 Ecological Bird Monitoring Diversity (All avifauna species in Point Count Method) in All Habitats (17 January 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Acridotheres cristatellus</i>	104	0.164818	-1.80291	-0.29715	0.53574
<i>Actitis hypoleucos</i>	4	0.006339	-5.06101	-0.03208	0.16237
<i>Alcedo atthis</i>	3	0.004754	-5.34869	-0.02543	0.136015
<i>Anas acuta</i>	2	0.00317	-5.75416	-0.01824	0.104946
<i>Anas clypeata</i>	24	0.038035	-3.26925	-0.12435	0.406517
<i>Anas crecca</i>	8	0.012678	-4.36786	-0.05538	0.241879
<i>Apus nipalensis</i>	37	0.058637	-2.83639	-0.16632	0.471741
<i>Ardea alba</i>	22	0.034865	-3.35626	-0.11702	0.39274
<i>Ardea cinerea</i>	14	0.022187	-3.80825	-0.08449	0.321773
<i>Ardeola bacchus</i>	13	0.020602	-3.88236	-0.07999	0.310531
<i>Bubulcus coromandus</i>	18	0.028526	-3.55693	-0.10147	0.360907
<i>Charadrius dubius</i>	2	0.00317	-5.75416	-0.01824	0.104946
<i>Chroicocephalus ridibundus</i>	40	0.063391	-2.75843	-0.17486	0.48234
<i>Copsychus saularis</i>	4	0.006339	-5.06101	-0.03208	0.16237
<i>Cyanopica cyanus</i>	4	0.006339	-5.06101	-0.03208	0.16237
<i>Dicrurus macrocercus</i>	1	0.001585	-6.44731	-0.01022	0.065876
<i>Egretta garzetta</i>	19	0.030111	-3.50287	-0.10547	0.369463
<i>Egretta intermedia</i>	1	0.001585	-6.44731	-0.01022	0.065876
<i>Gallinula chloropus</i>	8	0.012678	-4.36786	-0.05538	0.241879
<i>Gracupica nigricollis</i>	10	0.015848	-4.14472	-0.06568	0.272246
<i>Halcyon smyrnensis</i>	1	0.001585	-6.44731	-0.01022	0.065876
<i>Himantopus himantopus</i>	40	0.063391	-2.75843	-0.17486	0.48234
<i>Lonchura punctulata</i>	7	0.011094	-4.5014	-0.04994	0.224783
<i>Milvus migrans</i>	2	0.00317	-5.75416	-0.01824	0.104946
<i>Motacilla alba</i>	5	0.007924	-4.83787	-0.03833	0.185459
<i>Motacilla tschutschensis</i>	5	0.007924	-4.83787	-0.03833	0.185459
<i>Orthotomus sutorius</i>	2	0.00317	-5.75416	-0.01824	0.104946
<i>Passer montanus</i>	24	0.038035	-3.26925	-0.12435	0.406517
<i>Phalacrocorax carbo</i>	110	0.174326	-1.74683	-0.30452	0.53194
<i>Phylloscopus fuscatus</i>	2	0.00317	-5.75416	-0.01824	0.104946
<i>Platalea minor</i>	5	0.007924	-4.83787	-0.03833	0.185459
<i>Prinia inornata</i>	2	0.00317	-5.75416	-0.01824	0.104946
<i>Pycnonotus jocosus</i>	9	0.014263	-4.25008	-0.06062	0.257637
<i>Pycnonotus sinensis</i>	2	0.00317	-5.75416	-0.01824	0.104946
<i>Recurvirostra avosetta</i>	31	0.049128	-3.01332	-0.14804	0.44609
<i>Spilopelia chinensis</i>	11	0.017433	-4.04941	-0.07059	0.285856
<i>Streptopelia decaocto</i>	3	0.004754	-5.34869	-0.02543	0.136015
<i>Streptopelia tranquebarica</i>	2	0.00317	-5.75416	-0.01824	0.104946
<i>Tachybaptus ruficollis</i>	15	0.023772	-3.73926	-0.08889	0.332378
<i>Tringa erythropus</i>	4	0.006339	-5.06101	-0.03208	0.16237
<i>Tringa nebularia</i>	1	0.001585	-6.44731	-0.01022	0.065876
<i>Tringa stagnatilis</i>	1	0.001585	-6.44731	-0.01022	0.065876
<i>Tringa totanus</i>	7	0.011094	-4.5014	-0.04994	0.224783
<i>Zosterops japonicus</i>	2	0.00317	-5.75416	-0.01824	0.104946
Total	631	1	-202.962	-3.00871	10.35186
Richness	44				

SS	10.35				
SQ	9.052				
H	3.01				
S ² _H	0.002				

Appendix F.3.2 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Point Count Method) in All Habitats (17 January 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Anas acuta</i>	2	0.005571	-5.19018	-0.02891	0.150072
<i>Anas clypeata</i>	24	0.066852	-2.70527	-0.18085	0.489258
<i>Anas crecca</i>	8	0.022284	-3.80388	-0.08477	0.32244
<i>Ardea alba</i>	22	0.061281	-2.79228	-0.17111	0.4778
<i>Ardea cinerea</i>	14	0.038997	-3.24427	-0.12652	0.410456
<i>Ardeola bacchus</i>	13	0.036212	-3.31837	-0.12016	0.398749
<i>Chroicocephalus ridibundus</i>	40	0.111421	-2.19444	-0.24451	0.536555
<i>Egretta garzetta</i>	19	0.052925	-2.93888	-0.15554	0.457113
<i>Egretta intermedia</i>	1	0.002786	-5.88332	-0.01639	0.096416
<i>Himantopus himantopus</i>	40	0.111421	-2.19444	-0.24451	0.536555
<i>Milvus migrans</i>	2	0.005571	-5.19018	-0.02891	0.150072
<i>Phalacrocorax carbo</i>	110	0.306407	-1.18284	-0.36243	0.428698
<i>Platalea minor</i>	5	0.013928	-4.27388	-0.05952	0.254402
<i>Recurvirostra avosetta</i>	31	0.086351	-2.44934	-0.2115	0.51804
<i>Tachybaptus ruficollis</i>	15	0.041783	-3.17527	-0.13267	0.421268
<i>Tringa erythropus</i>	4	0.011142	-4.49703	-0.05011	0.225329
<i>Tringa nebularia</i>	1	0.002786	-5.88332	-0.01639	0.096416
<i>Tringa stagnatilis</i>	1	0.002786	-5.88332	-0.01639	0.096416
<i>Tringa totanus</i>	7	0.019499	-3.93741	-0.07677	0.302291
Total	359	1	-70.7379	-2.32797	6.368348
Richness	19				
SS	6.368348				
SQ	5.419449				
H	2.33				
S ² _H	0.002713				

Appendix F.3.3 Ecological Bird Monitoring Diversity (All avifauna species in Transect Walk Method) in All (17 January 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Acridotheres cristatellus</i>	18	0.062284	-2.77605	-0.1729	0.479988
<i>Acrocephalus bistrigiceps</i>	2	0.00692	-4.97328	-0.03442	0.171166
<i>Aethopyga christinae</i>	2	0.00692	-4.97328	-0.03442	0.171166
<i>Amaurornis phoenicurus</i>	2	0.00692	-4.97328	-0.03442	0.171166
<i>Anas clypeata</i>	13	0.044983	-3.10148	-0.13951	0.432696
<i>Anthus hodgsoni</i>	1	0.00346	-5.66643	-0.01961	0.111102
<i>Apus nipalensis</i>	9	0.031142	-3.4692	-0.10804	0.374804
<i>Ardea alba</i>	4	0.013841	-4.28013	-0.05924	0.253558
<i>Ardea cinerea</i>	15	0.051903	-2.95838	-0.15355	0.454256
<i>Ardeola bacchus</i>	8	0.027682	-3.58699	-0.09929	0.356165
<i>Aythya fuligula</i>	2	0.00692	-4.97328	-0.03442	0.171166

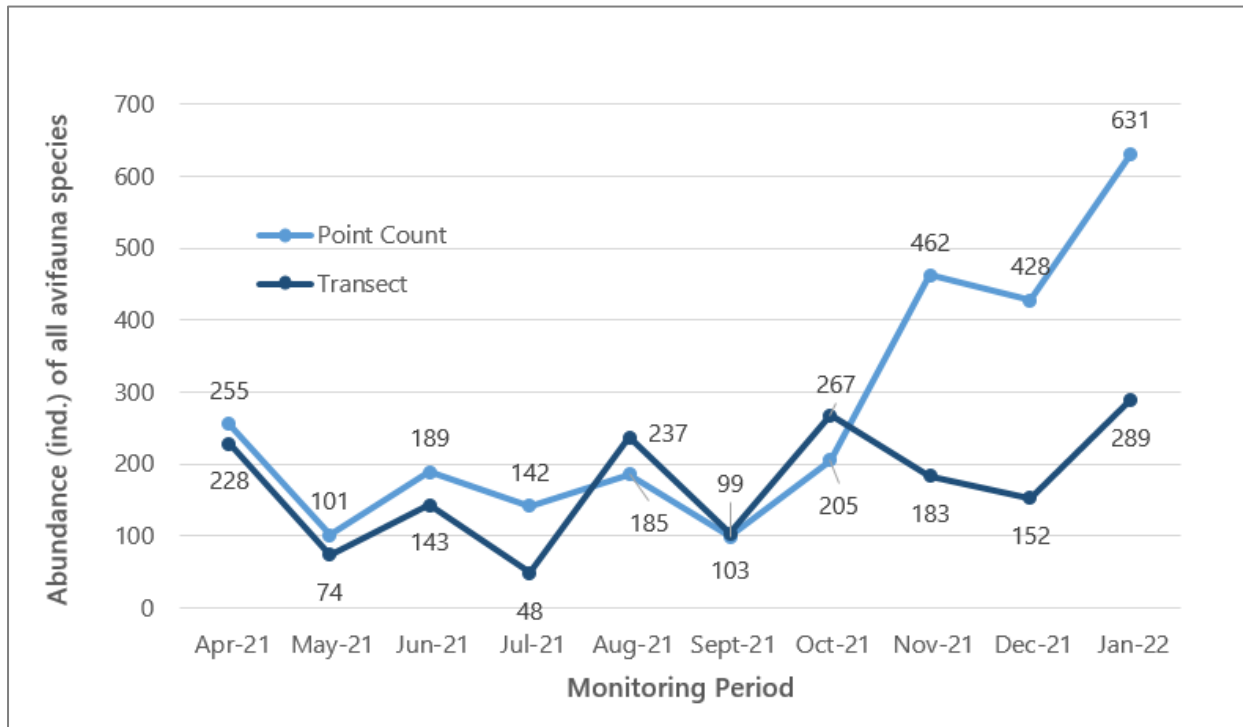
<i>Centropus sinensis</i>	2	0.00692	-4.97328	-0.03442	0.171166
<i>Ceryle rudis</i>	1	0.00346	-5.66643	-0.01961	0.111102
<i>Chroicocephalus ridibundus</i>	13	0.044983	-3.10148	-0.13951	0.432696
<i>Copsychus saularis</i>	3	0.010381	-4.56781	-0.04742	0.216591
<i>Corvus macrorhynchos</i>	7	0.024221	-3.72052	-0.09012	0.335279
<i>Cyanopica cyanus</i>	3	0.010381	-4.56781	-0.04742	0.216591
<i>Dicrurus macrocercus</i>	1	0.00346	-5.66643	-0.01961	0.111102
<i>Egretta garzetta</i>	9	0.031142	-3.4692	-0.10804	0.374804
<i>Egretta intermedia</i>	5	0.017301	-4.05699	-0.07019	0.284761
<i>Garrulax perspicillatus</i>	7	0.024221	-3.72052	-0.09012	0.335279
<i>Himantopus himantopus</i>	13	0.044983	-3.10148	-0.13951	0.432696
<i>Lanius schach</i>	1	0.00346	-5.66643	-0.01961	0.111102
<i>Lonchura punctulata</i>	10	0.034602	-3.36384	-0.1164	0.391537
<i>Motacilla alba</i>	4	0.013841	-4.28013	-0.05924	0.253558
<i>Motacilla tschutschensis</i>	2	0.00692	-4.97328	-0.03442	0.171166
<i>Orthotomus sutorius</i>	2	0.00692	-4.97328	-0.03442	0.171166
<i>Passer montanus</i>	17	0.058824	-2.83321	-0.16666	0.472182
<i>Phalacrocorax carbo</i>	26	0.089965	-2.40833	-0.21667	0.521804
<i>Phoenicurus aureus</i>	1	0.00346	-5.66643	-0.01961	0.111102
<i>Phylloscopus inornatus</i>	13	0.044983	-3.10148	-0.13951	0.432696
<i>Prinia flaviventris</i>	3	0.010381	-4.56781	-0.04742	0.216591
<i>Prinia inornata</i>	8	0.027682	-3.58699	-0.09929	0.356165
<i>Pycnonotus jocosus</i>	17	0.058824	-2.83321	-0.16666	0.472182
<i>Pycnonotus sinensis</i>	5	0.017301	-4.05699	-0.07019	0.284761
<i>Recurvirostra avosetta</i>	12	0.041522	-3.18152	-0.1321	0.420294
<i>Spilopelia chinensis</i>	4	0.013841	-4.28013	-0.05924	0.253558
<i>Tachybaptus ruficollis</i>	6	0.020761	-3.87467	-0.08044	0.31169
<i>Tringa totanus</i>	4	0.013841	-4.28013	-0.05924	0.253558
<i>Zosterops japonicus</i>	14	0.048443	-3.02737	-0.14665	0.443978
Total	289	1	-163.299	-3.36353	11.81839
Richness	40				
SS	11.81839				
SQ	11.31333				
H	3.36				
S²_H	0.001981				

Appendix F.3.4 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Transect Walk Method) in All Habitats (17 January 2022)

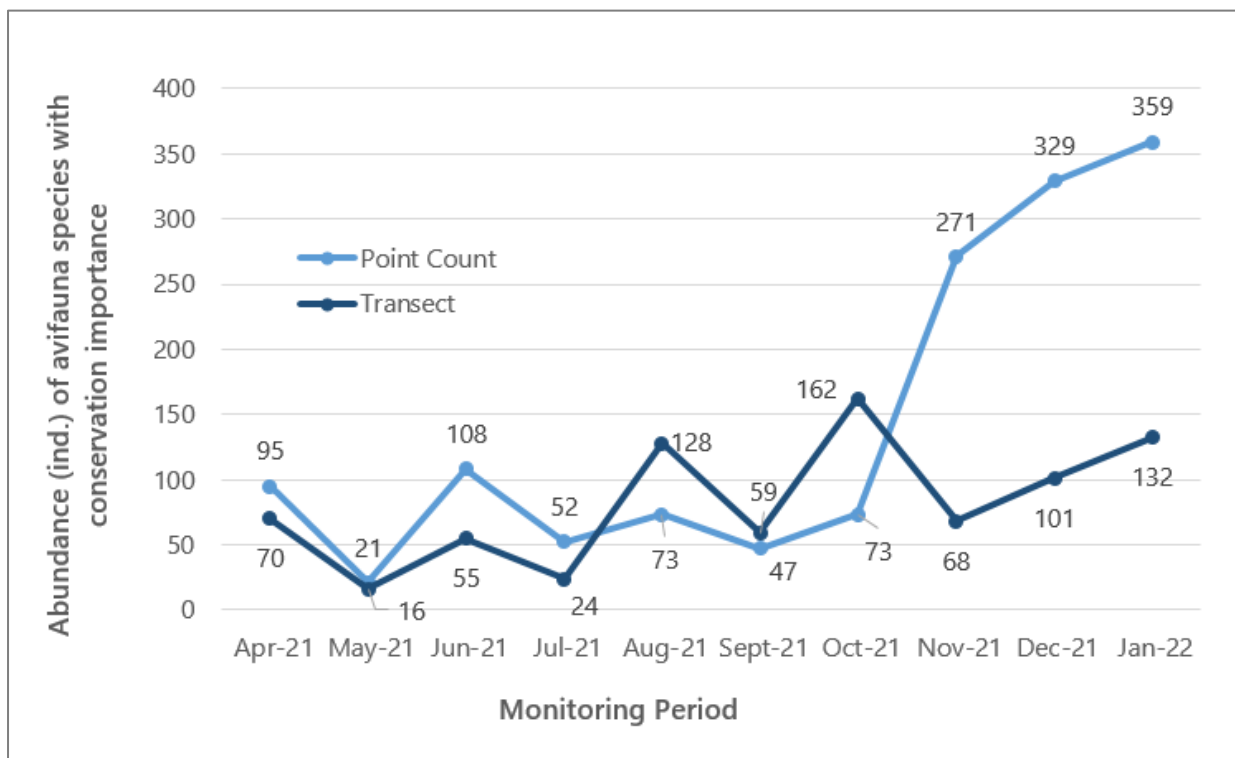
Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Anas clypeata</i>	13	0.098485	-2.31785	-0.22827	0.529104
<i>Ardea alba</i>	4	0.030303	-3.49651	-0.10595	0.370472
<i>Ardea cinerea</i>	15	0.113636	-2.17475	-0.24713	0.537448
<i>Ardeola bacchus</i>	8	0.060606	-2.80336	-0.1699	0.476293
<i>Aythya fuligula</i>	2	0.015152	-4.18965	-0.06348	0.265958
<i>Centropus sinensis</i>	2	0.015152	-4.18965	-0.06348	0.265958
<i>Chroicocephalus ridibundus</i>	13	0.098485	-2.31785	-0.22827	0.529104
<i>Egretta garzetta</i>	9	0.068182	-2.68558	-0.18311	0.491749
<i>Egretta intermedia</i>	5	0.037879	-3.27336	-0.12399	0.405868
<i>Himantopus himantopus</i>	13	0.098485	-2.31785	-0.22827	0.529104
<i>Phalacrocorax carbo</i>	26	0.19697	-1.62471	-0.32002	0.519935

<i>Recurvirostra avosetta</i>	12	0.090909	-2.3979	-0.21799	0.522718
<i>Tachybaptus ruficollis</i>	6	0.045455	-3.09104	-0.1405	0.434297
<i>Tringa totanus</i>	4	0.030303	-3.49651	-0.10595	0.370472
Total	132	1	-40.3766	-2.42633	6.248479
Richness	14				
SS	6.248479				
SQ	5.887073				
H	2.43				
S²_H	0.003111				

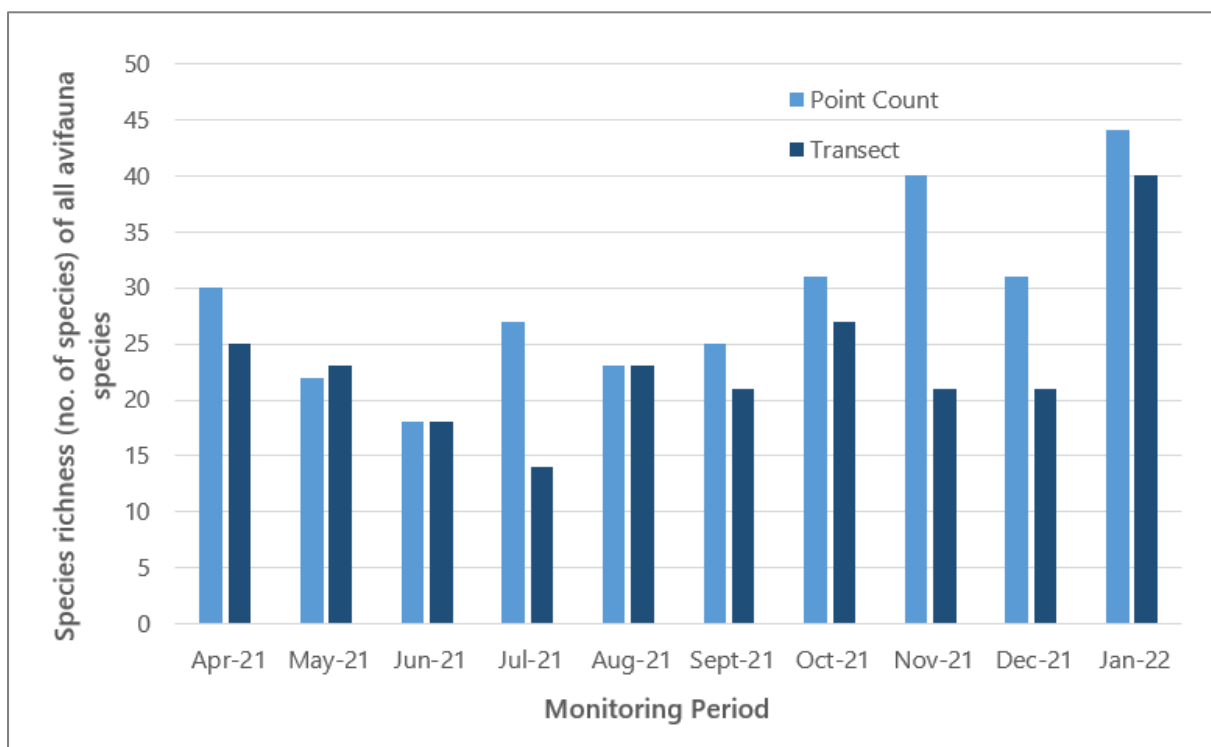
Appendix F.4.1 Abundance of all avifauna species throughout the monitoring period



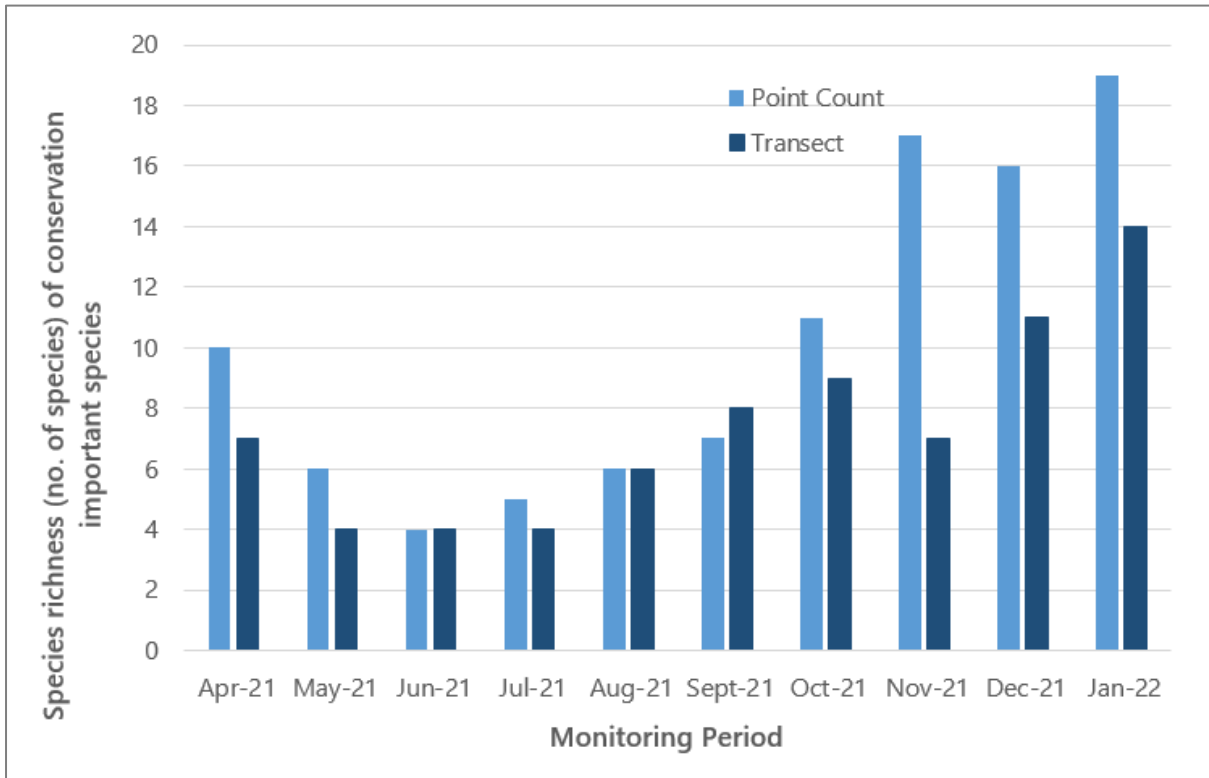
Appendix F.4.2 Abundance of avifauna species with conservation importance throughout the monitoring period



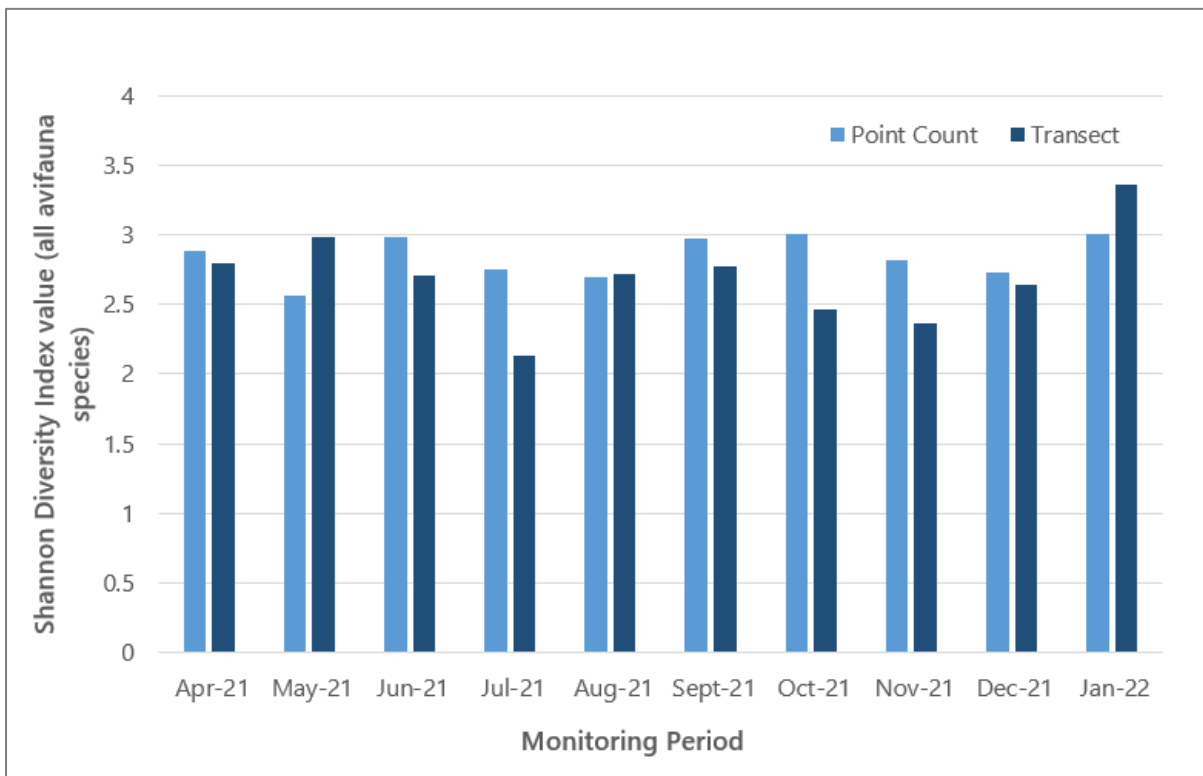
Appendix F.5.1 Species richness of all avifauna species throughout the monitoring period



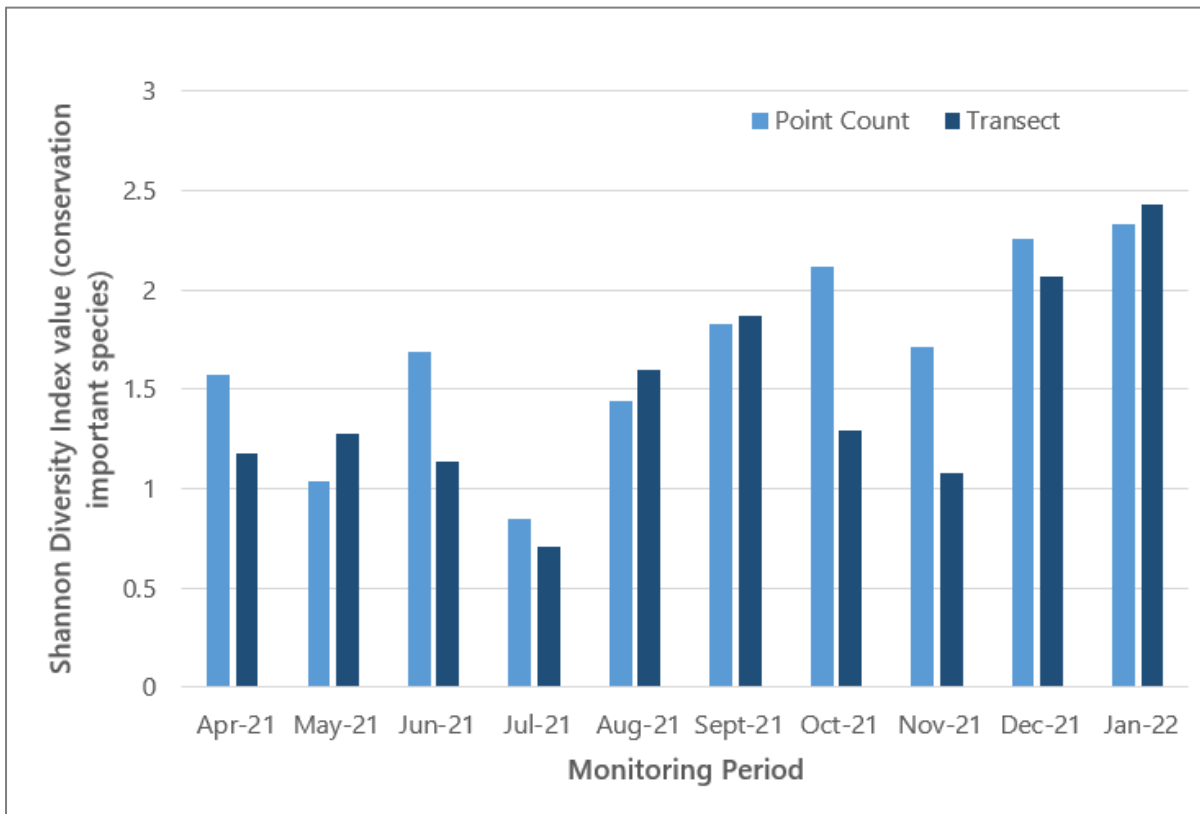
Appendix F.5.2 Species richness of avifauna species with conservation importance throughout the monitoring period



Appendix F.6.1 Shannon Diversity Index values of all avifauna species throughout the monitoring period



Appendix F.6.2 Shannon Diversity Index values of avifauna species with conservation importance throughout the monitoring period



Appendix F.7 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.7.1 Abundance of all avifauna species – Point Count Method

Months	January 2017	January 2022
N	119	97
df	118	96
M	5.95	6.51
SS	14731.7	5966.25
S ²	124.84	62.15
t-value	-0.41	
p-value	0.68	
Notes: N: Number of samples/observation df: Degrees of freedom M: Mean SS: Sum of Squares		

Months	January 2017	January 2022
S ² : Measure on a random sample that is used to estimate the variance of the population		

Appendix F.7.2 Abundance of all avifauna species – Transect Walk Method

Months	January 2017	January 2022
N	89	58
df	88	57
M	3.9	4.98
SS	2714.09	686.98
S ²	30.84	12.05
t-value	-1.33	
p-value	0.19	
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.7.3 Abundance of avifauna species with conservation importance – Point Count Method

Months	January 2017	January 2022
N	76	46
df	75	45
M	6.95	7.8
SS	12591.79	2967.24
S ²	167.89	65.94
t-value	-0.40	
p-value	0.69	
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 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	Wind Direction
01/01/2022 00:00	0.0	NE
01/01/2022 01:00	0.1	NE
01/01/2022 02:00	0.0	NE
01/01/2022 03:00	0.1	NEN
01/01/2022 04:00	0.8	NEE
01/01/2022 05:00	0.0	NE
01/01/2022 06:00	0.0	NEN
01/01/2022 07:00	0.1	NEN
01/01/2022 08:00	0.0	NEE
01/01/2022 09:00	5.6	N
01/01/2022 10:00	1.7	N
01/01/2022 11:00	0.1	NEE
01/01/2022 12:00	1.2	NE
01/01/2022 13:00	0.0	N
01/01/2022 14:00	0.6	SWW
01/01/2022 15:00	0.0	NWW
01/01/2022 16:00	0.0	SWS
01/01/2022 17:00	0.1	SW
01/01/2022 18:00	0.0	SW
01/01/2022 19:00	0.0	SW
01/01/2022 20:00	0.0	SW
01/01/2022 21:00	0.0	S
01/01/2022 22:00	0.1	S
01/01/2022 23:00	0.1	S
01/01/2022 00:00	0.0	S
02/01/2022 01:00	0.1	S
02/01/2022 02:00	0.0	S
02/01/2022 03:00	0.0	S
02/01/2022 04:00	0.1	S
02/01/2022 05:00	0.0	NWW
02/01/2022 06:00	0.0	NWW
02/01/2022 07:00	0.1	NEN
02/01/2022 08:00	1.9	NEN
02/01/2022 09:00	3.6	N
02/01/2022 10:00	4.4	NEN
02/01/2022 11:00	7.6	N
02/01/2022 12:00	0.0	NEE
02/01/2022 13:00	0.1	W

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

Date	Wind Speed	Wind Direction
02/01/2022 14:00	0.8	NEN
02/01/2022 15:00	0.0	S
02/01/2022 16:00	0.3	S
02/01/2022 17:00	0.1	S
02/01/2022 18:00	0.0	SES
02/01/2022 19:00	0.0	S
02/01/2022 20:00	0.1	NEE
02/01/2022 21:00	0.0	NEE
02/01/2022 22:00	0.1	E
02/01/2022 23:00	0.0	NE
02/01/2022 00:00	0.0	NE
03/01/2022 01:00	0.1	NE
03/01/2022 02:00	0.1	N
03/01/2022 03:00	0.1	NEN
03/01/2022 04:00	0.0	NEN
03/01/2022 05:00	0.1	NE
03/01/2022 06:00	0.0	NE
03/01/2022 07:00	0.1	NE
03/01/2022 08:00	0.0	NE
03/01/2022 09:00	0.1	NE
03/01/2022 10:00	1.2	NE
03/01/2022 11:00	3.7	N
03/01/2022 12:00	4.8	NEN
03/01/2022 13:00	2.0	N
03/01/2022 14:00	2.6	NWW
03/01/2022 15:00	0.1	NW
03/01/2022 16:00	0.1	SWW
03/01/2022 17:00	0.1	W
03/01/2022 18:00	0.0	SWW
03/01/2022 19:00	0.0	SWS
03/01/2022 20:00	0.1	SWS
03/01/2022 21:00	0.0	SES
03/01/2022 22:00	0.0	SEE
03/01/2022 23:00	0.1	SEE
03/01/2022 00:00	0.1	SEE
04/01/2022 01:00	0.0	SEE
04/01/2022 02:00	0.1	SEE
04/01/2022 03:00	0.1	NE

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

Date	Wind Speed	Wind Direction
04/01/2022 04:00	0.1	N
04/01/2022 05:00	0.0	E
04/01/2022 06:00	0.0	E
04/01/2022 07:00	0.1	NE
04/01/2022 08:00	1.3	N
04/01/2022 09:00	0.9	NEN
04/01/2022 10:00	2.2	N
04/01/2022 11:00	3.5	NEE
04/01/2022 12:00	0.9	N
04/01/2022 13:00	3.6	NEE
04/01/2022 14:00	1.5	NE
04/01/2022 15:00	0.1	NWN
04/01/2022 16:00	0.1	W
04/01/2022 17:00	0.4	SES
04/01/2022 18:00	0.0	E
04/01/2022 19:00	0.0	NEN
04/01/2022 20:00	0.1	N
04/01/2022 21:00	0.0	N
04/01/2022 22:00	0.1	NE
04/01/2022 23:00	0.1	NE
04/01/2022 00:00	0.1	NE
05/01/2022 01:00	0.0	NE
05/01/2022 02:00	2.2	NEN
05/01/2022 03:00	1.0	NE
05/01/2022 04:00	1.9	NEN
05/01/2022 05:00	0.1	NEN
05/01/2022 06:00	0.1	NEN
05/01/2022 07:00	0.0	NEE
05/01/2022 08:00	2.1	NE
05/01/2022 09:00	0.0	NEE
05/01/2022 10:00	3.3	NEN
05/01/2022 11:00	1.3	NEN
05/01/2022 12:00	7.5	NWW
05/01/2022 13:00	0.0	SES
05/01/2022 14:00	3.6	NWW
05/01/2022 15:00	1.1	SW
05/01/2022 16:00	0.7	SW
05/01/2022 17:00	0.0	SW

Wind Data for
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Date	Wind Speed	Wind Direction
05/01/2022 18:00	0.1	SWS
05/01/2022 19:00	0.1	S
05/01/2022 20:00	0.0	S
05/01/2022 21:00	0.0	S
05/01/2022 22:00	0.1	SES
05/01/2022 23:00	0.1	NEE
06/01/2022 00:00	0.0	NEE
06/01/2022 01:00	0.0	NEE
06/01/2022 02:00	0.0	N
06/01/2022 03:00	0.0	N
06/01/2022 04:00	0.1	SE
06/01/2022 05:00	0.1	SE
06/01/2022 06:00	0.1	SEE
06/01/2022 07:00	0.0	NE
06/01/2022 08:00	1.3	NE
06/01/2022 09:00	3.4	N
06/01/2022 10:00	3.1	NEN
06/01/2022 11:00	7.5	N
06/01/2022 12:00	0.6	NEE
06/01/2022 13:00	2.2	NE
06/01/2022 14:00	0.5	NE
06/01/2022 15:00	0.1	SWS
06/01/2022 16:00	4.2	S
06/01/2022 17:00	0.1	SWS
06/01/2022 18:00	0.0	NE
06/01/2022 19:00	0.1	N
06/01/2022 20:00	0.2	NEE
06/01/2022 21:00	0.7	NEE
06/01/2022 22:00	0.1	E
06/01/2022 23:00	1.9	SEE
07/01/2022 00:00	2.1	NE
07/01/2022 01:00	0.1	NE
07/01/2022 02:00	0.1	NEE
07/01/2022 03:00	0.0	NEN
07/01/2022 04:00	0.1	NEN
07/01/2022 05:00	0.1	NE
07/01/2022 06:00	0.0	NE
07/01/2022 07:00	1.4	NEN

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

Date	Wind Speed	Wind Direction
07/01/2022 08:00	5.3	NEE
07/01/2022 09:00	0.2	NEN
07/01/2022 10:00	0.0	NEE
07/01/2022 11:00	0.1	NE
07/01/2022 12:00	0.1	NE
07/01/2022 13:00	0.1	NEN
07/01/2022 14:00	0.1	NEN
07/01/2022 15:00	0.1	NE
07/01/2022 16:00	0.0	NEE
07/01/2022 17:00	0.1	NE
07/01/2022 18:00	0.4	NE
07/01/2022 19:00	0.1	NE
07/01/2022 20:00	0.0	NE
07/01/2022 21:00	0.1	NE
07/01/2022 22:00	0.0	NE
07/01/2022 23:00	0.1	NE
08/01/2022 00:00	0.2	NEE
08/01/2022 01:00	0.4	NEE
08/01/2022 02:00	0.0	NEE
08/01/2022 03:00	0.0	E
08/01/2022 04:00	0.1	E
08/01/2022 05:00	0.0	NE
08/01/2022 06:00	0.0	NEE
08/01/2022 07:00	0.5	NE
08/01/2022 08:00	0.7	NE
08/01/2022 09:00	0.0	NE
08/01/2022 10:00	0.2	NWN
08/01/2022 11:00	0.1	NEN
08/01/2022 12:00	0.6	NEE
08/01/2022 13:00	0.1	NWW
08/01/2022 14:00	0.3	SW
08/01/2022 15:00	0.0	SES
08/01/2022 16:00	0.0	SES
08/01/2022 17:00	0.1	SWS
08/01/2022 18:00	0.0	SWS
08/01/2022 19:00	0.0	SES
08/01/2022 20:00	0.0	SES
08/01/2022 21:00	0.0	NEN

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Date	Wind Speed	Wind Direction
08/01/2022 22:00	0.0	NEN
08/01/2022 23:00	0.0	NEN
09/01/2022 00:00	0.0	NEN
09/01/2022 01:00	0.0	NE
09/01/2022 02:00	0.0	NE
09/01/2022 03:00	0.0	NE
09/01/2022 04:00	0.1	NE
09/01/2022 05:00	0.0	NE
09/01/2022 06:00	0.1	NE
09/01/2022 07:00	0.0	NE
09/01/2022 08:00	0.0	NEN
09/01/2022 09:00	5.6	NEN
09/01/2022 10:00	2.6	NEN
09/01/2022 11:00	0.2	N
09/01/2022 12:00	1.4	NE
09/01/2022 13:00	0.5	N
09/01/2022 14:00	0.5	NWW
09/01/2022 15:00	0.0	NWN
09/01/2022 16:00	0.8	NWW
09/01/2022 17:00	1.8	N
09/01/2022 18:00	1.0	NEN
09/01/2022 19:00	0.8	NE
09/01/2022 20:00	1.0	NEN
09/01/2022 21:00	0.1	NEE
09/01/2022 22:00	0.5	NEN
09/01/2022 23:00	0.9	NE
10/01/2022 00:00	1.4	NE
10/01/2022 01:00	0.6	NE
10/01/2022 02:00	0.0	NEN
10/01/2022 03:00	0.1	N
10/01/2022 04:00	0.5	NE
10/01/2022 05:00	0.1	NEE
10/01/2022 06:00	0.0	NEE
10/01/2022 07:00	0.6	NEN
10/01/2022 08:00	0.5	N
10/01/2022 09:00	0.1	NWN
10/01/2022 10:00	3.1	N
10/01/2022 11:00	0.4	NEN

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Date	Wind Speed	Wind Direction
10/01/2022 12:00	0.0	SEE
10/01/2022 13:00	0.7	SWW
10/01/2022 14:00	0.1	NEN
10/01/2022 15:00	0.0	NWW
10/01/2022 16:00	0.0	NW
10/01/2022 17:00	0.0	NEN
10/01/2022 18:00	0.0	NW
10/01/2022 19:00	0.0	NEN
10/01/2022 20:00	0.0	NEN
10/01/2022 21:00	0.1	NE
10/01/2022 22:00	0.0	NEN
10/01/2022 23:00	0.2	NWN
11/01/2022 00:00	5.0	NEN
11/01/2022 01:00	0.4	N
11/01/2022 02:00	4.1	N
11/01/2022 03:00	1.8	N
11/01/2022 04:00	1.3	NE
11/01/2022 05:00	5.8	NE
11/01/2022 06:00	1.9	NE
11/01/2022 07:00	1.6	NE
11/01/2022 08:00	2.4	NE
11/01/2022 09:00	3.1	NWN
11/01/2022 10:00	10.8	NEN
11/01/2022 11:00	4.3	NE
11/01/2022 12:00	3.7	NW
11/01/2022 13:00	1.5	N
11/01/2022 14:00	1.2	NWN
11/01/2022 15:00	1.0	NEN
11/01/2022 16:00	2.7	NEN
11/01/2022 17:00	0.1	NE
11/01/2022 18:00	0.3	NE
11/01/2022 19:00	0.1	NEE
11/01/2022 20:00	0.1	NEE
11/01/2022 21:00	0.3	NE
11/01/2022 22:00	0.9	NE
11/01/2022 23:00	0.0	NE
12/01/2022 00:00	1.4	N
12/01/2022 01:00	0.1	NEN

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Date	Wind Speed	Wind Direction
12/01/2022 02:00	0.0	NE
12/01/2022 03:00	0.2	NE
12/01/2022 04:00	0.0	NE
12/01/2022 05:00	0.4	NEE
12/01/2022 06:00	0.1	NE
12/01/2022 07:00	0.0	NEN
12/01/2022 08:00	0.2	NEN
12/01/2022 09:00	0.6	NEN
12/01/2022 10:00	0.1	NE
12/01/2022 11:00	1.1	N
12/01/2022 12:00	0.4	NW
12/01/2022 13:00	1.1	NE
12/01/2022 14:00	0.1	NEN
12/01/2022 15:00	3.1	NE
12/01/2022 16:00	1.1	NE
12/01/2022 17:00	1.4	NE
12/01/2022 18:00	0.1	N
12/01/2022 19:00	0.0	NEE
12/01/2022 20:00	0.0	NE
12/01/2022 21:00	0.1	E
12/01/2022 22:00	0.0	NEN
12/01/2022 23:00	0.1	NE
13/01/2022 00:00	0.0	NEN
13/01/2022 01:00	0.5	NEN
13/01/2022 02:00	0.0	NEN
13/01/2022 03:00	0.1	NE
13/01/2022 04:00	0.0	N
13/01/2022 05:00	0.0	NW
13/01/2022 06:00	0.0	NE
13/01/2022 07:00	0.6	NEE
13/01/2022 08:00	0.0	NEN
13/01/2022 09:00	2.3	NE
13/01/2022 10:00	2.1	NEN
13/01/2022 11:00	5.7	NEN
13/01/2022 12:00	1.4	N
13/01/2022 13:00	2.2	NEN
13/01/2022 14:00	2.5	NEN
13/01/2022 15:00	2.0	NEN

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

Date	Wind Speed	Wind Direction
13/01/2022 16:00	0.0	NEN
13/01/2022 17:00	0.4	NEN
13/01/2022 18:00	0.0	NWN
13/01/2022 19:00	2.4	NEN
13/01/2022 20:00	0.1	NE
13/01/2022 21:00	1.8	N
13/01/2022 22:00	2.3	N
13/01/2022 23:00	0.5	NEN
14/01/2022 00:00	0.0	NEN
14/01/2022 01:00	0.0	NEE
14/01/2022 02:00	0.1	NE
14/01/2022 03:00	0.4	NE
14/01/2022 04:00	0.2	N
14/01/2022 05:00	1.0	N
14/01/2022 06:00	1.3	NEN
14/01/2022 07:00	0.1	N
14/01/2022 08:00	0.0	E
14/01/2022 09:00	0.7	NEN
14/01/2022 10:00	0.1	NE
14/01/2022 11:00	1.7	NE
14/01/2022 12:00	0.5	E
14/01/2022 13:00	0.0	NEE
14/01/2022 14:00	1.8	NEN
14/01/2022 15:00	0.1	NE
14/01/2022 16:00	0.0	NEN
14/01/2022 17:00	0.0	NEN
14/01/2022 18:00	0.1	NE
14/01/2022 19:00	0.0	NEE
14/01/2022 20:00	0.2	NEN
14/01/2022 21:00	0.1	N
14/01/2022 22:00	0.0	N
14/01/2022 23:00	0.1	N
15/01/2022 00:00	0.0	N
15/01/2022 01:00	0.1	NEN
15/01/2022 02:00	0.0	NEN
15/01/2022 03:00	0.0	N
15/01/2022 04:00	0.2	N
15/01/2022 05:00	0.0	N

Wind Data for
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Date	Wind Speed	Wind Direction
15/01/2022 06:00	0.1	NEN
15/01/2022 07:00	0.1	NEE
15/01/2022 08:00	0.0	NWW
15/01/2022 09:00	0.1	NWN
15/01/2022 10:00	0.0	N
15/01/2022 11:00	0.3	NEN
15/01/2022 12:00	1.1	N
15/01/2022 13:00	1.0	NEN
15/01/2022 14:00	0.1	NW
15/01/2022 15:00	1.1	NEN
15/01/2022 16:00	0.2	NEN
15/01/2022 17:00	0.0	SE
15/01/2022 18:00	0.0	SES
15/01/2022 19:00	0.0	NWW
15/01/2022 20:00	0.1	NWN
15/01/2022 21:00	0.1	NE
15/01/2022 22:00	0.1	NE
15/01/2022 23:00	0.1	NE
16/01/2022 00:00	0.1	N
16/01/2022 01:00	0.0	NE
16/01/2022 02:00	0.0	NE
16/01/2022 03:00	0.1	NE
16/01/2022 04:00	0.0	NE
16/01/2022 05:00	0.1	N
16/01/2022 06:00	0.0	NEN
16/01/2022 07:00	0.0	E
16/01/2022 08:00	0.0	NE
16/01/2022 09:00	3.1	NEN
16/01/2022 10:00	8.3	NE
16/01/2022 11:00	0.1	S
16/01/2022 12:00	1.0	NE
16/01/2022 13:00	1.5	NE
16/01/2022 14:00	2.0	N
16/01/2022 15:00	0.3	NEN
16/01/2022 16:00	0.9	SW
16/01/2022 17:00	0.2	SES
16/01/2022 18:00	0.1	S
16/01/2022 19:00	0.0	SES

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Date	Wind Speed	Wind Direction
16/01/2022 20:00	0.0	NEE
16/01/2022 21:00	0.0	NE
16/01/2022 22:00	0.1	NEN
16/01/2022 23:00	0.2	NEN
17/01/2022 00:00	1.8	NEN
17/01/2022 01:00	0.0	NE
17/01/2022 02:00	0.0	NE
17/01/2022 03:00	0.1	NEN
17/01/2022 04:00	0.0	NWN
17/01/2022 05:00	0.0	NEE
17/01/2022 06:00	0.0	NEN
17/01/2022 07:00	0.0	NEN
17/01/2022 08:00	0.0	NEE
17/01/2022 09:00	0.0	NE
17/01/2022 10:00	1.1	NE
17/01/2022 11:00	0.1	NEN
17/01/2022 12:00	0.8	N
17/01/2022 13:00	0.2	NE
17/01/2022 14:00	0.3	N
17/01/2022 15:00	0.5	NE
17/01/2022 16:00	0.1	NEE
17/01/2022 17:00	0.0	NE
17/01/2022 18:00	0.1	NE
17/01/2022 19:00	0.1	NE
17/01/2022 20:00	0.1	NEE
17/01/2022 21:00	0.1	NEN
17/01/2022 22:00	0.0	NE
17/01/2022 23:00	0.0	NEE
18/01/2022 00:00	0.0	SES
18/01/2022 01:00	0.4	SW
18/01/2022 02:00	4.1	NW
18/01/2022 03:00	2.4	NEN
18/01/2022 04:00	0.1	N
18/01/2022 05:00	0.1	NE
18/01/2022 06:00	0.3	NEN
18/01/2022 07:00	0.5	N
18/01/2022 08:00	0.2	NEE
18/01/2022 09:00	0.1	N

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Date	Wind Speed	Wind Direction
18/01/2022 10:00	0.4	NEN
18/01/2022 11:00	0.4	NEN
18/01/2022 12:00	1.4	NEN
18/01/2022 13:00	0.0	N
18/01/2022 14:00	0.7	NE
18/01/2022 15:00	0.0	NEN
18/01/2022 16:00	0.1	NEN
18/01/2022 17:00	0.1	NWN
18/01/2022 18:00	0.1	NW
18/01/2022 19:00	1.1	N
18/01/2022 20:00	3.6	N
18/01/2022 21:00	0.5	NEN
18/01/2022 22:00	1.6	N
18/01/2022 23:00	0.4	N
19/01/2022 00:00	0.3	N
19/01/2022 01:00	0.1	N
19/01/2022 02:00	0.0	NEE
19/01/2022 03:00	0.0	NEN
19/01/2022 04:00	0.2	N
19/01/2022 05:00	0.0	NEN
19/01/2022 06:00	0.0	NE
19/01/2022 07:00	0.0	NEN
19/01/2022 08:00	0.5	NE
19/01/2022 09:00	0.3	NEN
19/01/2022 10:00	6.0	NEN
19/01/2022 11:00	0.0	NWN
19/01/2022 12:00	1.6	NW
19/01/2022 13:00	1.3	N
19/01/2022 14:00	0.4	NWN
19/01/2022 15:00	0.0	NW
19/01/2022 16:00	0.0	NW
19/01/2022 17:00	0.0	NWW
19/01/2022 18:00	2.6	N
19/01/2022 19:00	4.6	NWN
19/01/2022 20:00	0.0	NEN
19/01/2022 21:00	0.0	NEN
19/01/2022 22:00	0.0	NE
19/01/2022 23:00	0.0	NE

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Date	Wind Speed	Wind Direction
20/01/2022 00:00	0.0	NE
20/01/2022 01:00	0.0	NE
20/01/2022 02:00	0.0	NEE
20/01/2022 03:00	0.1	NEN
20/01/2022 04:00	0.0	NEN
20/01/2022 05:00	0.1	NE
20/01/2022 06:00	0.0	NE
20/01/2022 07:00	0.0	NE
20/01/2022 08:00	0.1	NEN
20/01/2022 09:00	2.6	N
20/01/2022 10:00	0.0	NEN
20/01/2022 11:00	0.4	NEN
20/01/2022 12:00	5.3	NEN
20/01/2022 13:00	2.4	N
20/01/2022 14:00	1.4	NEE
20/01/2022 15:00	3.3	NWW
20/01/2022 16:00	0.3	NWW
20/01/2022 17:00	0.0	SWW
20/01/2022 18:00	0.1	SWW
20/01/2022 19:00	0.0	SWS
20/01/2022 20:00	0.1	NEE
20/01/2022 21:00	0.0	NEE
20/01/2022 22:00	0.1	NEE
20/01/2022 23:00	0.1	NEE
21/01/2022 00:00	0.0	E
21/01/2022 01:00	0.1	N
21/01/2022 02:00	0.0	N
21/01/2022 03:00	0.0	N
21/01/2022 04:00	0.0	NE
21/01/2022 05:00	0.0	E
21/01/2022 06:00	0.1	E
21/01/2022 07:00	0.0	SEE
21/01/2022 08:00	0.1	NE
21/01/2022 09:00	0.1	NE
21/01/2022 10:00	1.4	NEN
21/01/2022 11:00	0.1	NEE
21/01/2022 12:00	3.2	N
21/01/2022 13:00	2.9	NEE

Wind Data for
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Date	Wind Speed	Wind Direction
21/01/2022 14:00	1.6	NE
21/01/2022 15:00	3.1	NEE
21/01/2022 16:00	2.3	NE
21/01/2022 17:00	1.9	NE
21/01/2022 18:00	0.0	NEN
21/01/2022 19:00	0.5	NEN
21/01/2022 20:00	0.1	NE
21/01/2022 21:00	0.0	NE
21/01/2022 22:00	0.0	NEE
21/01/2022 23:00	0.0	NE
22/01/2022 00:00	0.3	NE
22/01/2022 01:00	0.0	NE
22/01/2022 02:00	2.4	NE
22/01/2022 03:00	0.1	NEN
22/01/2022 04:00	0.0	NE
22/01/2022 05:00	0.0	NEN
22/01/2022 06:00	0.0	NEN
22/01/2022 07:00	0.0	NEN
22/01/2022 08:00	0.1	NE
22/01/2022 09:00	0.0	NEN
22/01/2022 10:00	0.0	N
22/01/2022 11:00	0.0	NEN
22/01/2022 12:00	0.1	NEE
22/01/2022 13:00	5.0	NE
22/01/2022 14:00	0.0	NWN
22/01/2022 15:00	0.3	NE
22/01/2022 16:00	1.6	NEN
22/01/2022 17:00	0.0	NEN
22/01/2022 18:00	0.2	NE
22/01/2022 19:00	0.1	NE
22/01/2022 20:00	0.0	SEE
22/01/2022 21:00	0.1	NE
22/01/2022 22:00	0.0	SE
22/01/2022 23:00	0.1	NEE
23/01/2022 00:00	0.1	NEN
23/01/2022 01:00	0.1	NEE
23/01/2022 02:00	0.1	NEN
23/01/2022 03:00	0.0	NEN

Wind Data for
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Date	Wind Speed	Wind Direction
23/01/2022 04:00	0.1	NEN
23/01/2022 05:00	0.0	N
23/01/2022 06:00	0.0	W
23/01/2022 07:00	0.0	NEN
23/01/2022 08:00	0.0	N
23/01/2022 09:00	0.0	N
23/01/2022 10:00	0.0	NW
23/01/2022 11:00	0.0	N
23/01/2022 12:00	2.3	N
23/01/2022 13:00	0.3	N
23/01/2022 14:00	0.1	NE
23/01/2022 15:00	0.0	N
23/01/2022 16:00	0.1	NW
23/01/2022 17:00	0.4	SWW
23/01/2022 18:00	0.2	SWW
23/01/2022 19:00	0.1	S
23/01/2022 20:00	0.0	W
23/01/2022 21:00	0.0	W
23/01/2022 22:00	0.0	NEN
23/01/2022 23:00	0.1	SES
24/01/2022 00:00	0.1	NEN
24/01/2022 01:00	0.1	NE
24/01/2022 02:00	0.0	N
24/01/2022 03:00	0.0	NWN
24/01/2022 04:00	0.1	SES
24/01/2022 05:00	0.0	E
24/01/2022 06:00	0.0	NEN
24/01/2022 07:00	0.1	NEN
24/01/2022 08:00	0.0	NEN
24/01/2022 09:00	0.1	N
24/01/2022 10:00	0.0	N
24/01/2022 11:00	0.4	NEN
24/01/2022 12:00	1.1	NE
24/01/2022 13:00	1.4	N
24/01/2022 14:00	0.2	NEE
24/01/2022 15:00	0.1	SEE
24/01/2022 16:00	0.1	NWW
24/01/2022 17:00	0.1	NE

Wind Data for
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Date	Wind Speed	Wind Direction
24/01/2022 18:00	0.0	SE
24/01/2022 19:00	0.2	NE
24/01/2022 20:00	0.0	NEN
24/01/2022 21:00	0.1	SEE
24/01/2022 22:00	0.1	NEN
24/01/2022 23:00	1.3	N
25/01/2022 00:00	0.2	NEE
25/01/2022 01:00	6.1	NE
25/01/2022 02:00	0.0	NE
25/01/2022 03:00	0.7	NE
25/01/2022 04:00	0.6	NEN
25/01/2022 05:00	0.4	NE
25/01/2022 06:00	0.0	NE
25/01/2022 07:00	0.0	SEE
25/01/2022 08:00	0.0	NE
25/01/2022 09:00	0.2	NE
25/01/2022 10:00	5.2	NEN
25/01/2022 11:00	1.0	NE
25/01/2022 12:00	0.4	NE
25/01/2022 13:00	2.1	N
25/01/2022 14:00	0.2	NEN
25/01/2022 15:00	0.0	NEN
25/01/2022 16:00	1.6	NE
25/01/2022 17:00	0.1	NE
25/01/2022 18:00	0.9	NEN
25/01/2022 19:00	0.0	NEN
25/01/2022 20:00	0.1	NE
25/01/2022 21:00	0.0	NE
25/01/2022 22:00	0.1	NE
25/01/2022 23:00	0.6	NE
26/01/2022 00:00	0.2	NE
26/01/2022 01:00	0.0	NE
26/01/2022 02:00	0.1	NE
26/01/2022 03:00	0.2	NEN
26/01/2022 04:00	0.0	NE
26/01/2022 05:00	0.0	NEE
26/01/2022 06:00	0.0	NE
26/01/2022 07:00	0.0	NEN

Wind Data for
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Date	Wind Speed	Wind Direction
26/01/2022 08:00	1.0	NEE
26/01/2022 09:00	0.6	NE
26/01/2022 10:00	1.1	NE
26/01/2022 11:00	2.4	NE
26/01/2022 12:00	2.0	NEN
26/01/2022 13:00	0.1	NEN
26/01/2022 14:00	1.5	NEE
26/01/2022 15:00	0.1	NEN
26/01/2022 16:00	0.3	SWW
26/01/2022 17:00	0.0	W
26/01/2022 18:00	0.6	SWW
26/01/2022 19:00	0.0	SWW
26/01/2022 20:00	0.0	SWW
26/01/2022 21:00	0.1	NEN
26/01/2022 22:00	0.0	NEE
26/01/2022 23:00	0.0	SES
27/01/2022 00:00	0.2	NEN
27/01/2022 01:00	0.8	N
27/01/2022 02:00	0.7	NEN
27/01/2022 03:00	0.1	NE
27/01/2022 04:00	0.7	NEN
27/01/2022 05:00	1.1	NEE
27/01/2022 06:00	0.1	SEE
27/01/2022 07:00	0.0	E
27/01/2022 08:00	0.1	NWW
27/01/2022 09:00	0.1	N
27/01/2022 10:00	0.1	NEN
27/01/2022 11:00	0.0	N
27/01/2022 12:00	2.1	N
27/01/2022 13:00	0.0	NWW
27/01/2022 14:00	0.8	SWW
27/01/2022 15:00	1.7	NE
27/01/2022 16:00	0.1	S
27/01/2022 17:00	1.0	SWW
27/01/2022 18:00	0.1	NW
27/01/2022 19:00	0.1	E
27/01/2022 20:00	0.1	N
27/01/2022 21:00	0.1	N

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

Date	Wind Speed	Wind Direction
27/01/2022 22:00	0.0	NEN
27/01/2022 23:00	0.1	NEN
28/01/2022 00:00	0.1	NEN
28/01/2022 01:00	0.0	NEN
28/01/2022 02:00	0.1	NEE
28/01/2022 03:00	0.0	NE
28/01/2022 04:00	0.0	N
28/01/2022 05:00	0.1	NE
28/01/2022 06:00	0.1	NE
28/01/2022 07:00	0.0	NE
28/01/2022 08:00	0.5	NE
28/01/2022 09:00	2.7	NEN
28/01/2022 10:00	0.3	NE
28/01/2022 11:00	1.8	N
28/01/2022 12:00	2.7	NEN
28/01/2022 13:00	4.9	NE
28/01/2022 14:00	0.8	NE
28/01/2022 15:00	0.6	NEE
28/01/2022 16:00	0.3	NEN
28/01/2022 17:00	0.1	NE
28/01/2022 18:00	0.1	NEN
28/01/2022 19:00	0.1	NE
28/01/2022 20:00	0.0	NEN
28/01/2022 21:00	0.6	N
28/01/2022 22:00	0.2	NE
28/01/2022 23:00	0.2	NE
29/01/2022 00:00	0.0	NEN
29/01/2022 01:00	0.1	NE
29/01/2022 02:00	0.5	N
29/01/2022 03:00	0.6	NEN
29/01/2022 04:00	0.0	NE
29/01/2022 05:00	0.0	NE
29/01/2022 06:00	0.1	NE
29/01/2022 07:00	3.3	N
29/01/2022 08:00	4.5	NEN
29/01/2022 09:00	1.5	NEN
29/01/2022 10:00	0.1	NEN
29/01/2022 11:00	0.9	NEN

Wind Data for
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Date	Wind Speed	Wind Direction
29/01/2022 12:00	1.9	N
29/01/2022 13:00	0.3	NW
29/01/2022 14:00	0.0	NEE
29/01/2022 15:00	0.0	SWW
29/01/2022 16:00	0.0	SW
29/01/2022 17:00	2.7	SW
29/01/2022 18:00	0.0	NEN
29/01/2022 19:00	0.0	W
29/01/2022 20:00	0.1	SWS
29/01/2022 21:00	0.0	SW
29/01/2022 22:00	0.2	N
29/01/2022 23:00	1.7	N
30/01/2022 00:00	0.1	NWN
30/01/2022 01:00	1.6	N
30/01/2022 02:00	0.5	NEN
30/01/2022 03:00	10.1	NWN
30/01/2022 04:00	1.8	NEN
30/01/2022 05:00	2.8	N
30/01/2022 06:00	5.4	N
30/01/2022 07:00	0.0	NEN
30/01/2022 08:00	5.3	N
30/01/2022 09:00	6.5	NEN
30/01/2022 10:00	2.9	N
30/01/2022 11:00	6.4	NEN
30/01/2022 12:00	2.7	NE
30/01/2022 13:00	6.7	N
30/01/2022 14:00	6.5	N
30/01/2022 15:00	4.7	NEN
30/01/2022 16:00	3.8	NEN
30/01/2022 17:00	6.1	NEN
30/01/2022 18:00	2.9	NE
30/01/2022 19:00	1.1	NEN
30/01/2022 20:00	1.1	NE
30/01/2022 21:00	0.2	NE
30/01/2022 22:00	1.6	NE
30/01/2022 23:00	0.3	NE
31/01/2022 00:00	1.0	NE
31/01/2022 01:00	1.7	NEN

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

Date	Wind Speed	Wind Direction
31/01/2022 02:00	8.6	NE
31/01/2022 03:00	8.7	N
31/01/2022 04:00	0.9	NEN
31/01/2022 05:00	8.8	NEN
31/01/2022 06:00	4.2	NEN
31/01/2022 07:00	4.1	NE
31/01/2022 08:00	3.3	N
31/01/2022 09:00	2.4	NEE
31/01/2022 10:00	10.8	NEN
31/01/2022 11:00	1.6	NEE
31/01/2022 12:00	0.1	NE
31/01/2022 13:00	3.3	NEN
31/01/2022 14:00	0.1	N
31/01/2022 15:00	0.4	NEE
31/01/2022 16:00	1.9	NE
31/01/2022 17:00	0.4	NE
31/01/2022 18:00	0.7	NEN
31/01/2022 19:00	2.7	NE
31/01/2022 20:00	0.3	NEN
31/01/2022 21:00	2.2	NEN
31/01/2022 22:00	1.9	NEE
31/01/2022 23:00	0.5	NEN
01/02/2022 00:00	3.4	N

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											
2022 Mar											
2022 Apr											
2022 May											
2022 Jun											
2022 Jul											
2022 Aug											
2022 Sep											
2022 Oct											
2022 Nov											
2022 Dec											
Total	243.88	0	0	0	215.24	0	17.46	0.04	0	0	11.14

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.

Appendix J

Implementation Status of Environment

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>N/A</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>N/A</p> <p>N/A</p> <p>Implemented</p> <p>Implemented</p> <p>N/A</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	N/A
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	N/A

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	N/A
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	Partially 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	N/A
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	Partially 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	N/A
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>	Construction Sites	
	Recommendations for good site practices during the construction phase include:		
	<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; • 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></p> <p>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	N/A

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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>N/A</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	N/A
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	N/A
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	N/A

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	N/A
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>N/A</p> <p>N/A</p>

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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. 		N/A
			N/A
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	<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.	Construction sites / Construction Phase	Implemented
Ecology & Fisheries Impact			
8.12.1.4, 9.7	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.	Construction Phase	N/A
Fisheries Impact			
9.7	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.	Construction and Operation Phase	N/A
Landscape and Visual Impact			
Table 10.11	<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.	Project site / Construction Phase	Implemented
Table 10.11	<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.	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	<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.	Project site / Construction Phase	N/A
Table 10.11	<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.	Project site / Construction Phase	Implemented
Table 10.11	<u>Erection of Decorative Screen Hoarding (CM5)</u> Site hoardings, if any, shall be painted in dull green colour	Project site / Construction Phase	Implemented
Table 10.11	<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.	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	N/A N/A N/A

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; 		N/A

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; 		N/A
	<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)

Appendix K

Weather and Meteorological
Conditions

December 2021 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)		
December 2021						
1	1023.0	22.4	16.8	14.2	38	0
2	1022.9	23.2	15.1	10.7	54	0
3	1022.5	23.7	15.7	9.9	51	0
4	1022.9	24.1	16.7	12.1	47	0
5	1022.0	24.9	17.5	12.9	61	0
6	1021.2	24.3	16.6	10.9	66	0
7	1021.7	24.4	18.7	12.0	67	0
8	1022.9	26.5#	19.8	16.2#	70	0
9	1022.9	26.0	19.4	15.8	80	0
10	1021.3	25.6#	20.1	15.1#	78	0
11	1021.4	27.7#	21.3	17.8#	76	0
12	1021.7	28.0	21.1	16.1	78	0
13	1022.6	23.8	18.7	15.3	68	0
14	1019.2	26.4	20.7	15.3	71	0
15	1016.7	24.0	21.8	19.0	82	0.5
16	1016.3	26.7	23.5	20.9	85	0
17	1020.0	24.1	21.4	17.7	70	0
18	1024.0	22.3#	17.9	16.0#	55	0
19	1022.8	20.4	17.6	15.1	44	0
20	1018.9	18.5	16.2	14.3	78	11.0
21	1015.1	18.2	15.9	14.4	98	12.5
22	1017.3	23.8	19.3	15.4	83	0
23	1017.3	23.4	20.2	18.0	83	0.5
24	1017.9	24.2	19.9	17.5	91	0.5
25	1022.1	21.9	19.1	16.0	77	0
26	1026.7	18.0	14.4	10.6	78	2.0
27	1028.6	12.6	10.7	8.9	84	4.0
28	1025.5	19.2	14.5	11.0	71	0
29	1024.4	22.4	17.7	14.2	76	0
30	1025.5	24.2	18.1	13.9	77	0
31	1025.6	23.2	18.2	16.3	77	0

Note (From Hong Kong Observatory):

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

Source: Hong Kong Observatory

January 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)		
January 2022						
1	1024.4	19.3	17.6	16.4	76	0
2	1022.5	22.0	18.4	16.0	77	0
3	1021.1	20.5	18.3	17.0	79	0
4	1019.6	21.5	19.1	17.4	75	0
5	1017.3	23.6	20.4	18.3	75	Trace
6	1019.2	23.6	20.3	18.3	80	0
7	1021.6	21.1	18.6	17.2	79	0
8	1020.5	20.2	17.8	16.0	75	0
9	1018.2	20.1	18.0	16.7	79	0
10	1017.5	20.9	18.4	16.5	76	0
11	1020.2	18.8	15.8	13.7	70	1.2
12	1020.9	17.9	16.1	14.7	72	0
13	1021.5	18.9	17.0	15.6	64	Trace
14	1020.7	17.3	16.6	15.4	75	0
15	1020.1	19.8	17.9	16.5	82	0
16	1020.4	21.1	18.8	17.4	82	0
17	1020.7	18.4	17.8	17.1	84	0
18	1020.9	18.3	17.3	15.8	82	0.2
19	1019.3	20.3	17.1	14.9	70	0
20	1018.4	20.8	17.6	15.4	73	0
21	1017.6	19.7	17.9	16.5	80	0
22	1014.3	17.8	17.3	16.8	91	1.5
23	1013.1	21.8	19.4	17.5	84	0.1
24	1014.3	21.8	19.7	18.8	88	1.0
25	1016.7	20.9	18.6	17.5	82	0
26	1017.1	21.1	19.2	17.7	83	Trace
27	1016.8	22.1	19.8	18.4	84	Trace
28	1016.3	19.9	18.8	18.1	86	Trace
29	1014.4	20.2	18.1	16.3	81	0.1
30	1017.5	20.0	16.0	13.2	64	0
31	1019.2	15.5	14.6	13.6	70	Trace

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		NA	
Noise		NA	
Water Quality	26 Jan 2022	Observation 1: Silty deposit in gullies should be cleaned at Zone 2.	27 Jan 2022
		Observation 2: Mitigation measure should be provided to prevent direct discharge of runoff near the main entrance.	
		Reminder 1: The Contractor is reminded to de-silt the gullies near the main entrance.	
Chemical and Waste Management	11 Jan 2022	Reminder 1: The Contractor is reminded to provide drip tray for the chemical containers.	11 Jan 2022
Land Contamination		NA	
Ecological Impact		NA	
Landscape and Visual Impact		NA	
Permit / Licenses		NA	
Others		NA	

Appendix N

Outstanding Issues and Deficiencies

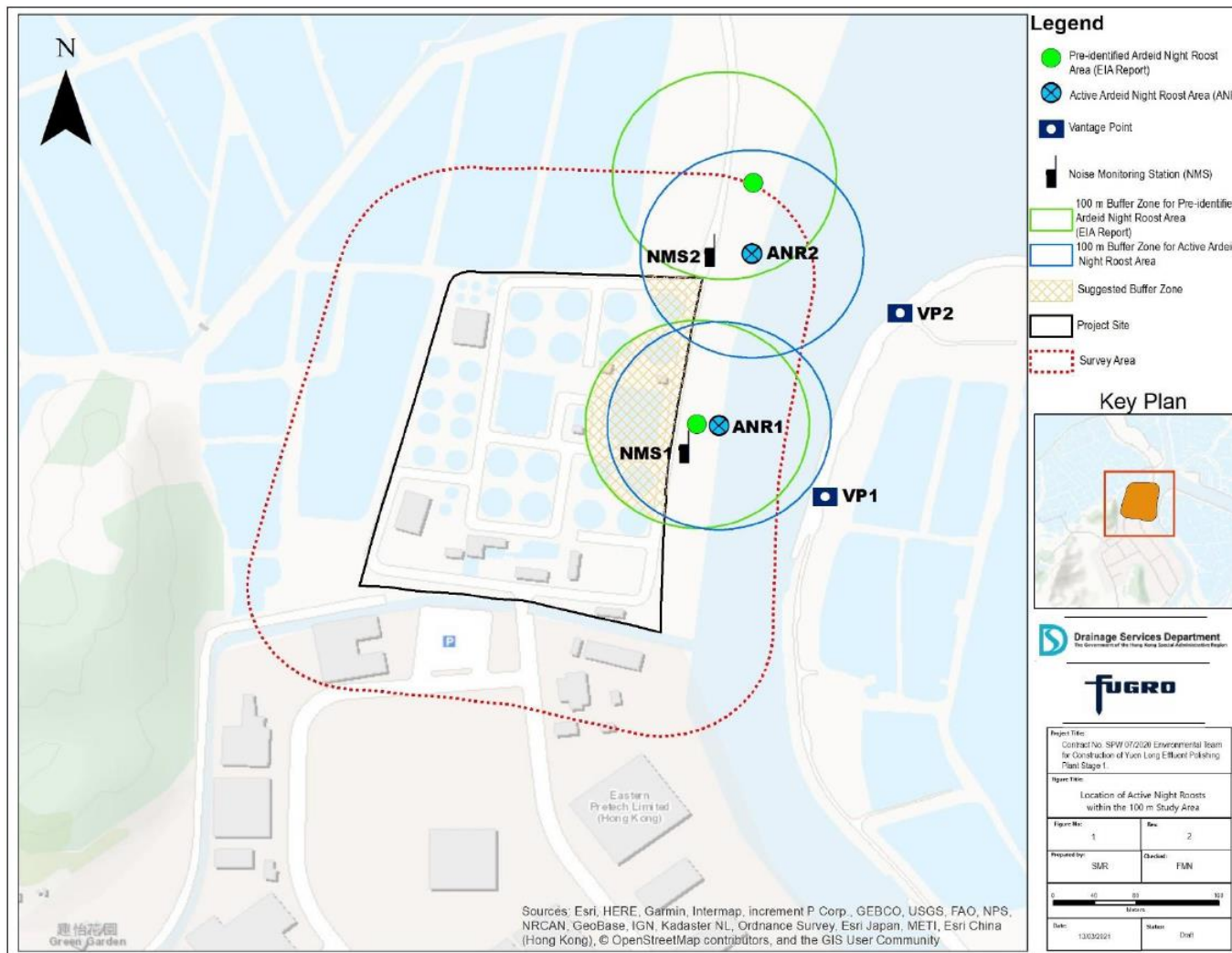
Summary of Outstanding Issues and Deficiencies in the Reporting Month

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* in the mudflat area northeast of the Project boundary observed on 21 January 2022 around 17:30

O.2.2 Active Night Roosting Site and Roosting Substrates



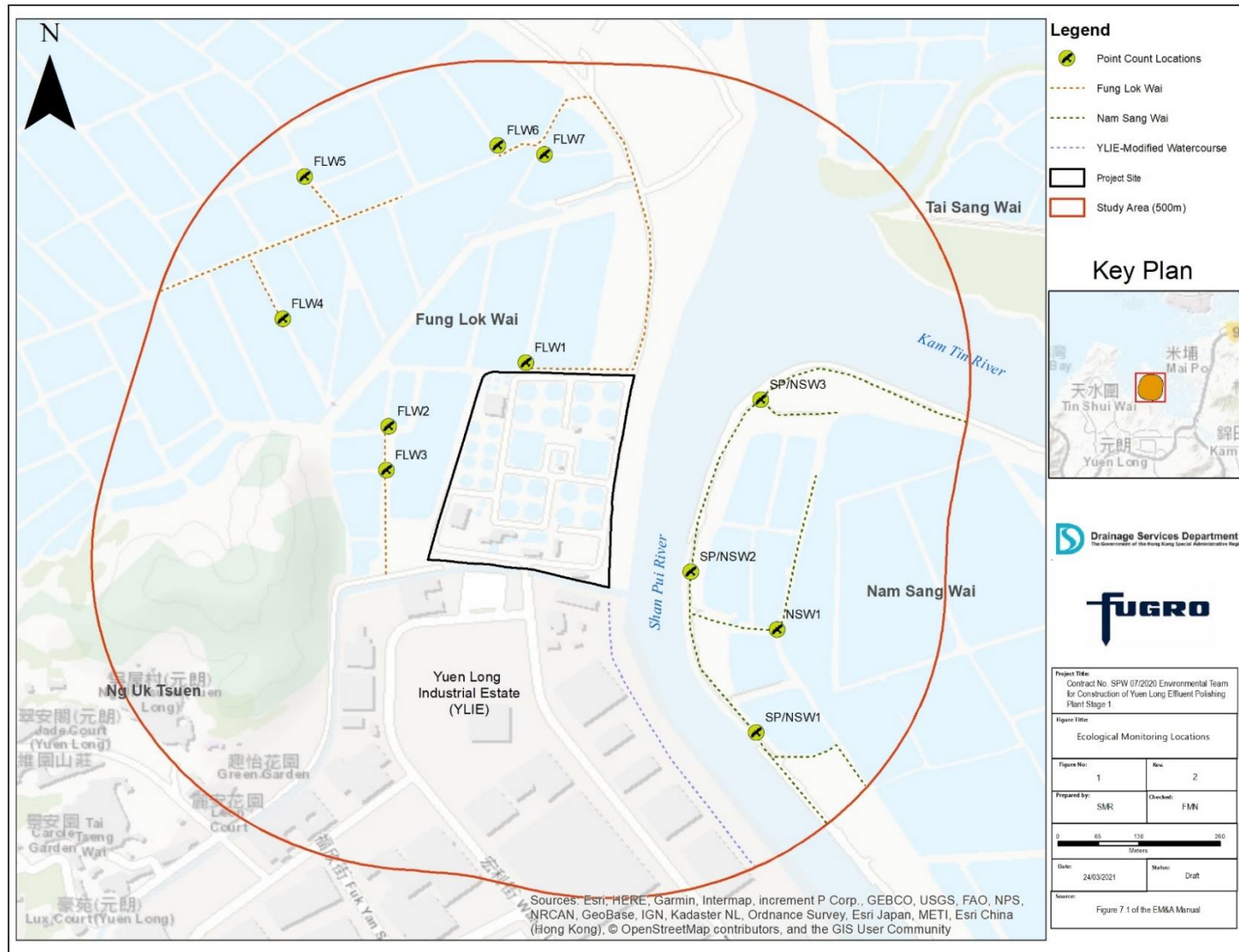
Appendix O.2.2a: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located east of the Project boundary observed on 21 January 2021 around 18:01



Appendix O.2.2b: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located northeast of the Project boundary observed on 21 January 2021 around 18:01

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