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# Monthly EM&A Report (November 2022)

0120/20/ED/0539 02

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

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**Your Reference**

**Contract No. SPW 03/2022**

**Our Reference**  
AFK/EC/TC/BW/bw/  
T601100019/02/02/L020

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

**Environmental Permit No. EP-565/2019**

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**EP Condition 3.4 – Monthly EM&A Report for November 2022**

14 December 2022

**By Hand and By Email**

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Dear Sir,

I refer to the captioned Monthly EM&A Report for November 2022 (Document No. 0120/20/ED/0539, Issue No. 02) which was certified by the Environmental Team Leader and received via e-mail on 14 December 2022.

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

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

Yours faithfully

for MOTT MACDONALD HONG KONG LIMITED

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# Document Control




## Document Information

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## Client Information

Client	Drainage Services Department
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Client Contact	Mr. Wallace Cheng

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Initials	Name	Role	Signature
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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 20th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 November 2022 to 30 November 2022. As informed by the Contractor, major activities in the reporting month were:
  - Piling loading test at STB;
  - ELS works and RC structure works at IW & PST;
  - Installation of 813mm pipe pile at south and East of AGS;
  - Superstructure works at CLP substation;
  - E&M work at MIC office;
  - Demolition work at North of A.tank no. 5-8;
  - Ground investigation at SD & STB;
  - E&M installation work for at Zone 2B chamber;
  - Break through existing manhole by coring machine for Zone 2B diversion work;
  - Sheet piling installation around Sludge digester no. 1 – 3;
  - Backfilling work at Sludge Digester no. 1-3 and Biogas Holder no. 1; and
  - Disposal of construction waste as indicated in **Appendix I**.

### **Breaches of Environmental Quality Performance Limits (AL levels)**

- iii. No Action and Limit Level exceedance was recorded for air quality monitoring and construction noise monitoring in the reporting month.
- iv. No Action and Limit Level exceedance was recorded for water quality monitoring in the reporting month.
- v. No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the two active ardeid night roosts (ANR1 and ANR2) observed within the Survey Area during the reporting month.
- vi. Two exceedances in Action Level were recorded for the ecological monitoring of birds on 10 November 2022. These include significant declines in point count method results for the species diversity of all avifauna species in the community; and species diversity of species of conservation importance only. However, the exceedances were not project-related.
- vii. No corrective actions were required according to the Event and Action Plans for the Monitoring Parameters.

### **Land Contamination**

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

### **Complaint Log**

ix. No complaints were received in the reporting period.

### **Notifications of Summons and Successful Prosecutions**

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

### **Reporting Change**

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

### **Future Key Issues**

xii. The main works will be anticipated in the next three months are as follow:

- Demolition of Admin. Building, Sludge Holding Tanks no. 2, Air Flootation Thickener (remaining Bay 9) and RAS by silent method;
- ELS work and RC structure at IW & PST;
- Installation of Sheet pile at TTB;
- Installation of 813mm pipe pile at North, West and East of AGS;
- Construction of CLP Substation;
- Excavation of temp. trench for laying power cables and cable draw pits near YLSTP's entrance;
- Ground investigation at SDB, SDT & STB;
- Sheet piling work around Sludge digester no. 1 – 3;
- Installation of brand drain at Biogas Holder no. 1;
- Installation of concrete blocks and soil Surcharge at Biogas Holder no. 1;
- Construction of temp. traffic road at north of SHT no. 3 & 4;
- Environmental Drill Holes at AFT;
- Installation of sheet pile at AFT; and
- Construction of temp. traffic road between AGS & PST through PST no.4.

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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 m<sup>3</sup> per day. Based on the latest planning data, the volume of sewage generation from the YLSTW catchment is estimated to increase to 150,000 m<sup>3</sup> 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 m<sup>3</sup> per day. The proposed works, as Stage 1 of the project, will firstly increase the treatment capacity to 100,000 m<sup>3</sup> per day. In the course of Stage 1 construction, about half of the existing facilities of YLSTW would be demolished, while the other half would be kept in operation to maintain the sewage treatment service for Yuen Long area. This 72-month works contract commenced on 9 November 2020. Demolition of existing YLSTW for construction of new treatment facilities are in progress.
- 1.1.3 The Project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) for which Environmental Impact Assessment (EIA) report and Environmental Monitoring and Audit (EM&A) Manual was approved by EPD (Register No.: AEIAR-220/2019) on 25 April 2019. The Environmental Permit (EP) (EP No. EP-565/2019) was issued by EPD on 26 April 2019.
- 1.1.4 Fugro Technical Services Limited (FTS) has been appointed as the Environmental Team (ET) by Drainage Services Department (DSD) to undertake the Environmental Team services for the Project and implement the EM&A works under the Contract No. DC/2019/10 Yuen Long Effluent Polishing Plant -Main Works for Stage 1 (hereinafter referred as "the Contract").
- 1.1.5 This is the 20th Monthly EM&A report to document the findings of site inspection activities and EM&A programme for this project from 1 November 2022 to 30 November 2022 (reporting period) and is submitted to fulfil Condition 3.4 of the EP and Section 12.4.1 of the EM&A Manual. According to Condition 4 of the EP, electronic reporting is provided on the internet website to facilitate public inspection of the report.

## 1.2 Project Organization

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

Table 1.1 – Contact Information of Key Personnel

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

## 1.3 Construction Programme and Activities

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

## 1.4 Works undertaken during the month

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

- Piling loading test at STB;
- ELS works and RC structure works at IW & PST;
- Installation of 813mm pipe pile at south and East of AGS;
- Superstructure works at CLP substation;
- E&M work at MIC office;
- Demolition work at North of A.tank no. 5-8;
- Ground investigation at SD & STB;
- E&M installation work for at Zone 2B chamber;
- Break through existing manhole by coring machine for Zone 2B diversion work;
- Sheet piling installation around Sludge digester no. 1 – 3;
- Backfilling work at Sludge Digester no. 1-3 and Biogas Holder no. 1; and
- Disposal of construction waste as indicated in **Appendix I**.

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

## 1.5 Status of Environmental Licences, Notification and Permits

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

Table 1.2 – Environmental Licenses, Notification and Permits Summary

Permit/ Notification/ License	Reference No	Valid From	Valid Till
Environmental Permit	EP-565/2019	26-Apr-2019	The whole construction and operation period of the Project
Notification of Works under APCO	461616	6-Nov-2020	The whole construction period of the Project
Construction Waste Disposal Billing Account	7038933	20-Nov-2020	The whole construction period of the Project
Registration as Chemical Waste Producer under WDO	WPN5213-528-P2796-03	4-Feb-2021	The whole construction period of the Project
Construction Noise Permit	GW-RN0793-22	8-Sep-2022	Cancelled from 17-Nov-2022
Construction Noise Permit	GW-RN1111-22	17-Nov-2022	16-Feb-2023
Water Pollution Control Ordinance (CAP. 358) Licence pursuant to Section 20	WT00038102-2021	4-Aug-2021	31-Aug-2026
Marine Dumping Permit Type 1 – Open Sea Disposal	EP/MD/23-040	10-Sep-2022	9-Mar-2023
Marine Dumping Permit Type 1 – Open Sea Disposal (Dedicated Site) and Type 2 – Confined Marine Disposal	EP/MD/23-047	10-Oct-2022	9-Nov-2022
Marine Dumping Permit Type 1 – Open Sea Disposal (Dedicated Site) and Type 2 – Confined Marine Disposal	EP/MD/23-060	10-Nov-2022	9-Dec-2022
Disposal of Special waste at Landfills Admission Ticket (Sludge)	Admission Ticket Number: 16919	22-Jun-2022	21-Dec-2022
Disposal of Special waste at Landfills Admission Ticket (Pond Sediment)	Admission Ticket Number: 17080	9-Oct-2022	8-Apr-2023

## 2. AIR QUALITY

### 2.1 Monitoring Requirement

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

### 2.2 Monitoring Equipment

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

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

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

Table 2.1 – Air Quality Monitoring Equipment

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

### 2.3 Monitoring Methodology for Direct Reading Dust Meter

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

#### Measuring Procedures

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

#### Equipment Calibration

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

## 2.4 Maintenance and Calibration for Direct Reading Dust Meter

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

## 2.5 Monitoring Locations

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

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

Table 2.2 – Air Quality Monitoring Location

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

## 2.6 Monitoring Results

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

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

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

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

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

Table 2.3 – Summary of Air Quality Monitoring Results

Monitoring Station	Average ( $\mu\text{g}/\text{m}^3$ )	Range ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
1-hour TSP				
AM1	74	46-102	291	500
AM2	97	63-133	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 November 2022 ( $\mu\text{g}/\text{m}^3$ )
1-hour TSP			
AM1	ASR A09	205-451	102
AM2	ASR A11		133

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

Table 3.1 – Construction Noise Monitoring Equipment

Item	Brand	Model	Equipment	Serial No.
1	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	1488304
2	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	1488300
3	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	2383982
4	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	3321858
5	SENSOR	AR816	Anemometer	N/A

#### 3.3 Monitoring Parameters and Frequency

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

Table 3.2 – Monitoring Parameters and Frequencies of Noise Monitoring

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



### 3.4 Monitoring Methodology

3.4.1 Noise measurement should be conducted as the following procedures:

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

### 3.5 Maintenance and Calibration

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

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

### 3.6 Monitoring Locations

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

Table 3.3 – Construction Noise Monitoring Location

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

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

### 3.7 Monitoring Results

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

Table 3.4 – Summary of Construction Noise Monitoring Results

Time Period	Noise Monitoring Stations	$L_{eq}$ (30min) dB(A) (Range)	Action Level	Limit Level dB(A)
0700-1900 hrs on normal weekdays	CM1	55-58	When one documented complaint is received	75
	CM2	65-67		75
	CM3	64-65		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 November 2022 $L_{eq}$ (30min) dB(A)
CM1	NSR1	72	58
CM2	NSR2	74	67
CM3	NSR3	75	65

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: $\pm 0.2$ 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, $\pm 0.004$ 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 Typhoon Signal No. 3 was hoisted on 1 November 2022. Due to safety concerns, the water quality monitoring on 1 November 2022 has been cancelled.
- 4.8.4 The weather and meteorological conditions during the monitoring are provided in **Appendix K**.
- 4.8.5 Number of Action/ Limit exceedance recorded in the reporting month at each impact stations is summarized in **Table 4.4**.

Table 4.4 – Summary of Water Quality Exceedance

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

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

## 4.9 WetSepts

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

## 5. ECOLOGY MONITORING

### 5.1 Ardeid Night Roost Monitoring

#### 5.1.1 Monitoring Requirement

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

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

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

#### 5.1.2 Monitoring Methodology

##### 5.1.2.1 Monitoring Area

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

##### 5.1.2.2 Monitoring Activity

###### 5.1.2.2.1 Active Ardeid Night Roost

Current Ardeid Night Roost Monitoring Survey focused on the two active night roosts within the Survey Area (100 m from the Project boundary) that were previously confirmed during the pre-construction Survey. These roosts include one that was approximately 40 m east of the Project boundary and another around 45 m northeast of the mentioned boundary (**Section 3 of the approved Pre-construction Survey Report of Ardeid Night Roost**). Primary data collection with the use of 7x and 10x binoculars; and field guides including the Avifauna of Hong Kong (Carey et al., 2001) and The Birds of Hong Kong and South China (Viney et al., 2005), was from about one hour before sunset time until one hour after sunset with reference to **Section 7.3.10 of the approved EM&A Manual**. Sunset time was according to Hong Kong Observatory (HKO). The survey was conducted on 11 November 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 17:41, 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 11 November 2022 and started around 17:00 (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, one Great Egret *Ardea alba* and two Grey Herons *Ardea cinerea* were observed in pre-roost aggregate (PRA) around 17:20 at the mudflat east side (ANR1) of the Project boundary while another one individual of Eastern Cattle Egret *Bubulcus coromandus*, two Little Egrets *Egretta garzetta*, three Great Egrets *Ardea alba*, and one Grey Heron *Ardea cinerea* were concurrently noted at the mudflat northeast side (ANR2) of the Project boundary during the period (**Table 5.2**).

For the final night roost at around 17:40, one individual of Grey Heron *Ardea cinerea* were observed at the roosting area ANR1 utilizing the understory to canopy layer of the roosting substrate *Sonneratia apetala* and *S. caseolaris*; while seven individuals of Chinese Pond Heron *Ardeola bacchus*, seven individuals of Little Egret *Egretta garzetta*, and three individuals of Great Egret *Ardea alba* were also noted at ANR2 that utilized the understory layer of the aforementioned roosting substrate.

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

Table 5.2 – Active Ardeid Night Roost Survey Findings

Date: 11 November 2022			Sunset Time: 17:41		
Tidal Condition: Low Tide					
Pre-roost Period			Final roost Period		
Time of Return:	Little Egret <i>Egretta garzetta</i> , Great Egret <i>Ardea alba</i> , and Grey Heron <i>Ardea cinerea</i> , Eastern Cattle Egret <i>Bubulcus coromandus</i> (17:20)		Time of Return:	Chinese Pond Heron <i>Ardeola bacchus</i> , and Little Egret <i>Egretta garzetta</i> (17:40)	
Parameters	Location		Parameters	Location	
	ANR1	ANR2		ANR1	ANR2
Pre-roost Aggregation (Y/N):	Y	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
Eastern Cattle Egret <i>Bubulcus coromandus</i>	-	1	Chinese Pond Heron <i>Ardeola bacchus</i>	-	7
Little Egret <i>Egretta garzetta</i>	-	2	Little Egret <i>Egretta garzetta</i>	-	7
Great Egret <i>Ardea alba</i>	1	3	Great Egret <i>Ardea alba</i>	-	3
Grey Heron <i>Ardea cinerea</i>	1	1	Grey Heron <i>Ardea cinerea</i>	1	-
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 11 November 2022 in concurrence with the construction phase monthly monitoring of the pre-identified active night roosts. Noise monitoring started at 17:40 and lasted for 30 minutes, until 18:10.

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	17:40	47.8	65.5 dB(A) <sup>1</sup>	72.2 dB(A) <sup>2</sup>
	NMS2	17:40	43.3		

Notes:

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

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

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

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

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

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

### 5.1.5 Summary

#### 5.1.5.1 Status and Location of Any Active Ardeid Night Roost

Two active ardeid night roost areas (ANR1 and ANR2) were observed within the Survey Area during the November 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, Grey Heron, Great Egret, Eastern Cattle 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

Avifauna surveys on the different wetland habitats using the transect count and point count methods were conducted last 10 November 2022 (daytime) which started around 07:45. For the survey overlooking the mudflats and mangroves in the Shan Pui River that was concurrently conducted on the same date with the daytime survey during the low tide (generally 1.5m or below) period, it also started at around 07:45. The methodology for the monitoring activity followed **Sections 8.3.3.6** and **8.3.3.7** of the **EIA Report (AEIAR-220/2019)** and as detailed below.

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

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

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

Table 5.4 - Noise Monitoring Parameters

Parameter	Frequency and Location
L <sub>Aeq</sub> (30 min) (L <sub>10</sub> and L <sub>90</sub> 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 10 November 2022 (daytime) which started around 07:45 are presented in **Sections 5.2.3.1** and **5.2.3.2**. Meanwhile, results for the surveys overlooking the mudflats and mangroves in the Shan Pui River, with monitoring activities conducted on similar date with the daytime survey during the low tide (generally 1.5m or below) period around 07:45 had results presented in **Section 5.2.3.3**.

#### 5.2.3.1 Abundance

##### 5.2.3.1.1 All Avifauna Species

An overall total of 267 avifauna individuals was recorded in the monitoring area during the November 2022 monitoring period, of which 223 individuals were recorded from the point count method and 44 individuals from the transect walk method. Relative to the November 2016 baseline data (point count method = 608; and transect walk = 125), no significant

decreases in total abundance for the point count method (t-value = 0.70; p-value = 0.48;  $\alpha$  = 0.05); and transect walk method (t-value = 1.98; p-value = 0.055;  $\alpha$  = 0.05) were observed.

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

Table 5.5 – Abundance of all Avifauna Species

Abundance of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	November-16	November-22	Remarks
P1	FLW1	8	11	+
P2	FLW2	13	6	-
P3	FLW3	9	4	-
P4	FLW4	66	5	-
P5	FLW5	21	19	-
P6	FLW6	64	13	-
P7	FLW7	48	15	-
P9	SP/NSW3	214	29	-
P10	SP/NSW2	52	26	-
P11	NSW1	48	74	+
P12	SP/NSW1	65	21	-
<b>Total</b>		<b>608</b>	<b>223</b>	-
<b>Mean</b>		<b>55</b>	<b>20</b>	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	November-16	November-22	Remarks
Fung Lok Wai	FLW	107	15	-
Nam Sang Wai	NSW	18	17	-
YLIE-CW	YLIE-CW	0	12	+
<b>Total</b>		<b>125</b>	<b>44</b>	-
<b>Mean</b>		<b>42</b>	<b>14.7</b>	-

Notes:

+ increased abundance; - decreased abundance; = similar abundance

#### 5.2.3.1.2 Avifauna Species of Conservation Importance

Of the 267 avifauna individuals recorded in the monitoring area during the November 2022 monitoring period, 157 individuals (point count method = 149 individuals; transect walk method = 8 individuals) were of conservation importance. With reference to November 2016 data, current results showed no significant decreases in total abundance for the point count method (t-value = 0.42; p-value = 0.68;  $\alpha$  = 0.05); and for the transect walk method (t-value = 1.07; p-value = 0.31;  $\alpha$  = 0.05). Details of these findings are summarized in **Table 5.6**; and **Appendices F.6.3 and F.6.4**.

Table 5.6 – Abundance of Species of Conservation Importance

Abundance of Species of Conservation Importance				
Point Count Method				
EIA Report ID	EM&A Manual ID	November-16	November-22	Remarks
P1	FLW1	4	2	-
P2	FLW2	3	0	-
P3	FLW3	2	0	-
P4	FLW4	65	1	-
P5	FLW5	6	6	=
P6	FLW6	50	8	-
P7	FLW7	30	11	-
P9	SP/NSW3	163	21	-
P10	SP/NSW2	11	18	+
P11	NSW1	31	64	+
P12	SP/NSW1	29	18	-
<b>Total</b>		<b>394</b>	<b>149</b>	-
<b>Mean</b>		<b>36</b>	<b>13.5</b>	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	November-16	November-22	Remarks
Fung Lok Wai	FLW	58	2	-
Nam Sang Wai	NSW	1	0	-
YLIE-CW	YLIE-CW	0	6	+
<b>Total</b>		<b>59</b>	<b>8</b>	-
<b>Mean</b>		<b>20</b>	<b>2.7</b>	-

Notes:

+ increased abundance; - decreased abundance; = similar abundance

### 5.2.3.2 Diversity (Species Richness<sup>1</sup> and Shannon Diversity Index<sup>2</sup>)

#### 5.2.3.2.1 All Avifauna Species

A total of 32 avifauna species (species richness) were recorded during the November 2022 monitoring period, of which, 27 species were recorded by the point count method while 20 species were noted by the transect walk method. Relative to the baseline data (point count method = 48 species; transect walk method = 20 species), a significant decrease in total species richness for the point count method and a significant increase for the transect walk method

<sup>1</sup> actual number of species

<sup>2</sup> use to account the proportion (in terms of relative abundance) of each species



were noted. In terms of Shannon diversity index ( $H'$ ) values, current result in point count method showed a significant decrease (t-value = 3.79; t-crit = 1.97; p-value = 0.00;  $\alpha$  = 0.05) from baseline reference value. Conversely, current results in the transect walk method showed a significant increase (t-value = 3.41; t-crit = 1.98; p-value = 0.0009;  $\alpha$  = 0.05) from baseline reference value. The lower diversity during this period with respect to the baseline data could be due to the current dominance of the Great Cormorants in the community. The current dominance of this species was due to its concurrent migratory season. This dominant species could have decreased the performance of co-occurring species (Gilbert et al. 2009) and forced them to utilize other areas outside the survey area, thus, made the area less diverse. Furthermore, low diversity index usually results from high dominance in the community as these are inversely related (Shaukat et al., 1978). Details of these findings are summarized in **Table 5.7 and Appendix F.7.1.**

Table 5.7 – Shannon Diversity Index Value of all Avifauna Species

Shannon Diversity Index Value of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	November-16	November-22	Remarks
P1	FLW1	1.32	1.55	+
P2	FLW2	1.59	1.01	-
P3	FLW3	1.68	0.56	-
P4	FLW4	0.78	0.95	+
P5	FLW5	1.34	2.11	+
P6	FLW6	1.49	1.99	+
P7	FLW7	1.95	0.99	-
P9	SP/NSW3	2.43	2.32	-
P10	SP/NSW2	2.22	1.88	-
P11	NSW1	1.91	0.64	-
P12	SP/NSW1	2.62	2.22	-
Overall $H'$		2.81	2.39	-
Species Richness		48	27	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	November-16	November-22	Remarks
Fung Lok Wai	FLW	2.12	1.99	-
Nam Sang Wai	NSW	1.77	1.96	+
YLIE-CW	YLIE-CW	**	1.91	+
Overall $H'$		2.39	2.87	+
Species Richness		20	20	=

Notes:

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

### 5.2.3.2.2 Avifauna Species of Conservation Importance

Of the 32 avifauna species identified during the November 2022 monitoring period, 11 species were of conservation importance (point count method = 11 species; transect walk method = 5 species). Relative to the baseline values in November 2016 importance (point count method = 20 species; transect walk method = 7 species), a significant decrease in the number of species with conservation importance was recorded from the point count method while the number of species with conservation importance from the transect walk method had no significant changes. In terms of Shannon diversity index ( $H'$ ), a significant decrease in point count method ( $t$ -value = 3.86;  $t$ -crit = 1.97;  $p$ -value = 0.00;  $\alpha$  = 0.05) was noted while an insignificant decrease in transect walk method ( $t$ -value = 1.73;  $t$ -crit = 2.11;  $p$ -value = 0.10;  $\alpha$  = 0.05) was observed relative to the baseline reference values. Details of these findings are summarized in **Table 5.8** and **Appendix F.7.2**.

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	November-16	November-22	Remarks
P1	FLW1	0.69	0	-
P2	FLW2	0	**	-
P3	FLW3	0.35	**	-
P4	FLW4	0.72	0	-
P5	FLW5	1.01	0.64	-
P6	FLW6	0.92	1.49	+
P7	FLW7	1.33	0.30	-
P9	SP/NSW3	1.97	1.95	-
P10	SP/NSW2	1.26	1.05	-
P11	NSW1	1.19	0.16	-
P12	SP/NSW1	2.35	2.11	-
Overall $H'$		1.91	1.41	-
Species Richness		20	11	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	November-16	November-22	Remarks
Fung Lok Wai	FLW	1.10	0.69	-
Nam Sang Wai	NSW	0	**	-
YLIE-CW	YLIE-CW	**	1.10	+
Overall $H'$		1.12	1.56	+
Species Richness		7	5	-

Notes:

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

### Shannon Diversity Index Value of Species with Conservation Importance

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

#### 5.2.3.3 Wetland Habitat Utilization

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

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, majority of the different wetland habitats were observed with very low (VL) abundance. In terms of species richness, most of these wetland habitats were observed with very low to low (VL-L), and low to moderate (L-M) number of species (**Table 5.9**).

Table 5.9 – Wetland habitat utilization of all avifauna species

Wetland Habitats	Area Description	Abundance <sup>1</sup>	Species Richness <sup>2</sup>
Modified Watercourse	Confluence of Shan Pui River and Kam Tin River (MW1)	VL	L-M
	Shan Pui River adjacent to Project site (MW2)	VL	L-M
	Upper course of Shan Pui River along YLIE (MW3)	VL	L
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai (P1)	VL	VL
	Active Ponds North to Nullah 2 in Fung Lok Wai (P2)	VL	VL
	Inactive Ponds in Fung Lok Wai (P3)	VL	VL
	Active and Inactive Ponds in Nam Sang Wai (P4)	VL	VL
Mangrove	Mangrove within Assessment Area	-	-
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) 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

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

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

Wetland Habitats	Area Description	Abundance <sup>1</sup>	Species Richness <sup>2</sup>
Modified Watercourse	Confluence of Shan Pui River and Kam Tin River (MW1)	VL	VL-L
	Shan Pui River adjacent to Project site (MW2)	VL	VL
	Upper course of Shan Pui River along YLIE (MW3)	VL	VL-L
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai (P1)	VL	VL
	Active Ponds North to Nullah 2 in Fung Lok Wai (P2)	VL	VL
	Inactive Ponds in Fung Lok Wai (P3)	VL	VL
	Active and Inactive Ponds in Nam Sang Wai (P4)	VL	VL
Mangrove	Mangrove within Assessment Area	-	-
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) amongst wetland habitats within the assessment area: VL = Very Low ( $\leq 5$  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 10 November 2022 (daytime) from each of the point count locations during the ecological bird monitoring are shown in **Table 5.11**.

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

Frequency and Period	Location	Day time (10/11/2022)	
		Start Time	L <sub>Aeq</sub> (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1	10:40	56.6
	FLW2	10:17	45.5
	FLW3	10:10	50.2
	FLW4	09:02	45.0
	FLW5	09:09	45.6
	FLW6	09:46	46.1
	FLW7	09:38	46.3
	SP/NSW3	08:25	56.1
	SP/NSW2	08:16	51.0
	NSW1	07:51	47.4
	SP/NSW1	07:45	53.6

## 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, five weekly landscape and visual site audits were carried out on 1, 7, 16, 23 and 30 November 2022.

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

## 7. LAND CONTAMINATION

### 7.1 Contamination Assessment Report

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

## 8. SITE INSPECTION AND AUDIT

### 8.1 Site Inspection

- 8.1.1 Site audits were carried out by ET on weekly basis at least once per week to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.
- 8.1.2 In the reporting month, five site inspections were carried out on 1, 7, 16, 23 and 30 November 2022.
- 8.1.3 No outstanding issues were reported during the reporting month. The ET Leader's Site Environmental Audit are summarized in **Appendix M**.

### 8.2 Advice on the Solid and Liquid Waste Management Status

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

Table 8.1 – Waste Generated by the Construction and Disposal Ground

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

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



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

### 9.1 Non-compliance (Exceedances of AL levels)

- 9.1.1 No Action / Limit Level exceedance was recorded for 1-hr TSP level at AM1 and AM2 in the reporting month.
- 9.1.2 No Action / Limit Level exceedance was recorded for construction noise at CM1, CM2 and CM3 in the reporting month.
- 9.1.3 No Action and Limit Level exceedance were recorded for water quality at M1, M2 and M3 in the reporting month.
- 9.1.4 No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the active ardeid night roosts in the reporting month.
- 9.1.5 Two exceedances in Action Level were recorded for the ecological monitoring of birds on 10 November 2022 which included significant declines in point count method results for both species diversity of all avifauna species in the community; and species diversity of species of conservation importance. However, the exceedances were not project-related.
- 9.1.6 No corrective actions were required according to the Event and Action Plans for the Monitoring Parameters.

### 9.2 Complaints, Notification of Summons and Successful Prosecutions

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

## 10. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE

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

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

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

Table 10.1 – Status of submissions required under the EP

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

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

## 11. FUTURE KEY ISSUES

### 11.1 Construction Programme for the Next Three Month

- Demolition of Admin. Building, Sludge Holding Tanks no. 2, Air Flootation Thickener (remaining Bay 9) and RAS by silent method;
- ELS work and RC structure at IW & PST;
- Installation of Sheet pile at TTB;
- Installation of 813mm pipe pile at North, West and East of AGS;
- Construction of CLP Substation;
- Excavation of temp. trench for laying power cables and cable draw pits near YLSTP's entrance;
- Ground investigation at SDB, SDT & STB;
- Sheet piling work around Sludge digester no. 1 – 3;
- Installation of brand drain at Biogas Holder no. 1;
- Installation of concrete blocks and soil Surcharge at Biogas Holder no. 1;
- Construction of temp. traffic road at north of SHT no. 3 & 4;
- Environmental Drill Holes at AFT;
- Installation of sheet pile at AFT; and
- Construction of temp. traffic road between AGS & PST through PST no.4.

### 11.2 Key Issues for the Coming Month

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

### 11.3 Monitoring Schedules for the next three months

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

## 12. CONCLUSION AND RECOMMENDATION

### 12.1 Conclusions

- 12.1.1 1-hour TSP impact monitoring was carried out in the reporting month. No Action / Limit Level exceedance at AM1 and AM2 was recorded during the period.
- 12.1.2 Construction noise monitoring was carried out in the reporting month. No Action / Limit Level exceedance at CM1, CM2 and CM3 was recorded during the period.
- 12.1.3 No Action and Limit Level exceedance was recorded for water quality at M1, M2 and M3 in the reporting month.
- 12.1.4 Ardeid night roost monitoring was carried out in the reporting month. Two active ardeid night roost areas (ANR1 and ANR2) were observed within the Survey Area. These roosts were located at the mangrove strips in the east and northeast portions of the Project boundary. No Action / Limit Level exceedance at NMS1 and NMS2 was recorded during the period.
- 12.1.5 Ecological bird monitoring was carried out in the reporting month. Two exceedances in Action Level were recorded during this period's monitoring of birds including significant declines in point count method results for species diversity of all avifauna species in the community; and species diversity of species of conservation importance. However, the exceedances were not project-related.
- 12.1.6 Five 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 Five landscape and visual site audits were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.
- 12.1.8 No environmental complaint, notification of summons and successful prosecution was recorded in the reporting month.

## 12.2 Comment and Recommendations

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

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

### Air Quality Impact

- The Contractor is reminded to increase watering for dust suppression during the demolition of sludge digestion tank.

### Construction Noise Impact

- No specific observation was identified in the reporting month.

### Water Quality Impact

- No specific observation was identified in the reporting month.

### Chemical Waste and Construction Waste Management

- The Contractor is reminded to provide drip tray for chemical containers to prevent chemical leakage near Tree T188.

### 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

- T184 – T188: Stockpile shall be removed under dripline areas. Proper fence should be provided to indicate Tree Protection Zone (TPZ).
- Removal of stockpile under T188's dripline and erect Tree Protection Zone (TPZ).

### Hazard to Life

- No specific observation was identified in the reporting month.

### Permit/ Licenses

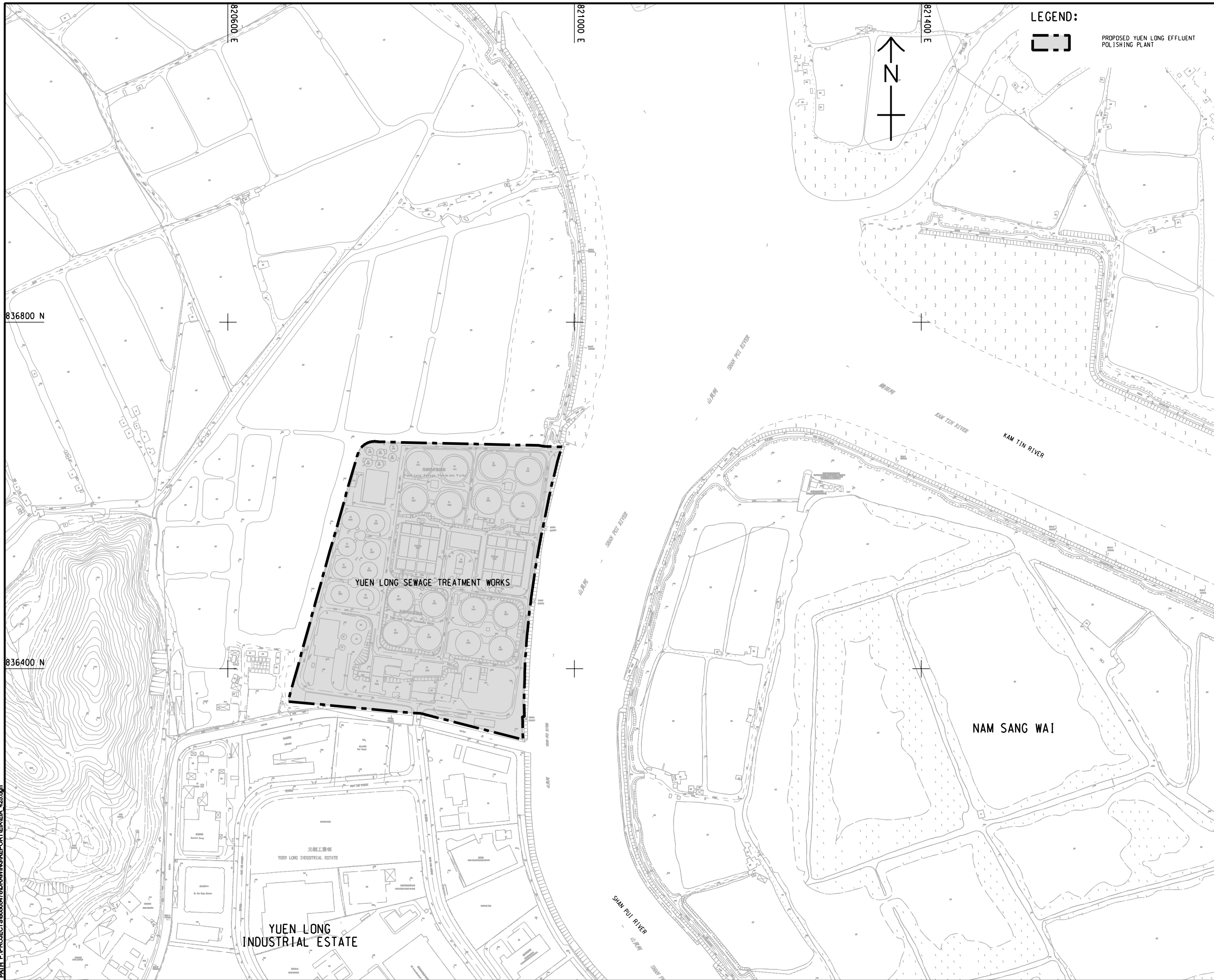
- No specific observation was identified in the reporting month.


# Figure 1

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Location of Proposed Yuen Long Effluent  
Polishing Plant

Plot File by: Song YN 2018/02/27  
 PATH: P:\PROJECTS\6056547\DRAWING\REPORT\EA\EA\_425.dgn  
 Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



**LEGEND:**  
 PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

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

CLIENT  
 渠務署  
 Drainage Services Department

CONSULTANT  
 AECOM Asia Company Ltd.  
 www.aecom.com

SUB-CONSULTANTS  
 分判工程顧問公司

**ISSUE/REVISION**  
 批註

IR	DATE	DESCRIPTION	CHK.
批註	日期	內容摘要	核對

**STATUS**  
 階段

**SCALE**  
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**DIMENSION UNIT**  
 尺寸單位: METRES

**KEY PLAN**  
 索引圖

**PROJECT NO.**  
 項目編號: 60505476

**CONTRACT NO.**  
 合約編號: CE 3/2015 (DS)

**SHEET TITLE**  
 圖紙名稱: LOCATION OF PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

**SHEET NUMBER**  
 圖紙編號

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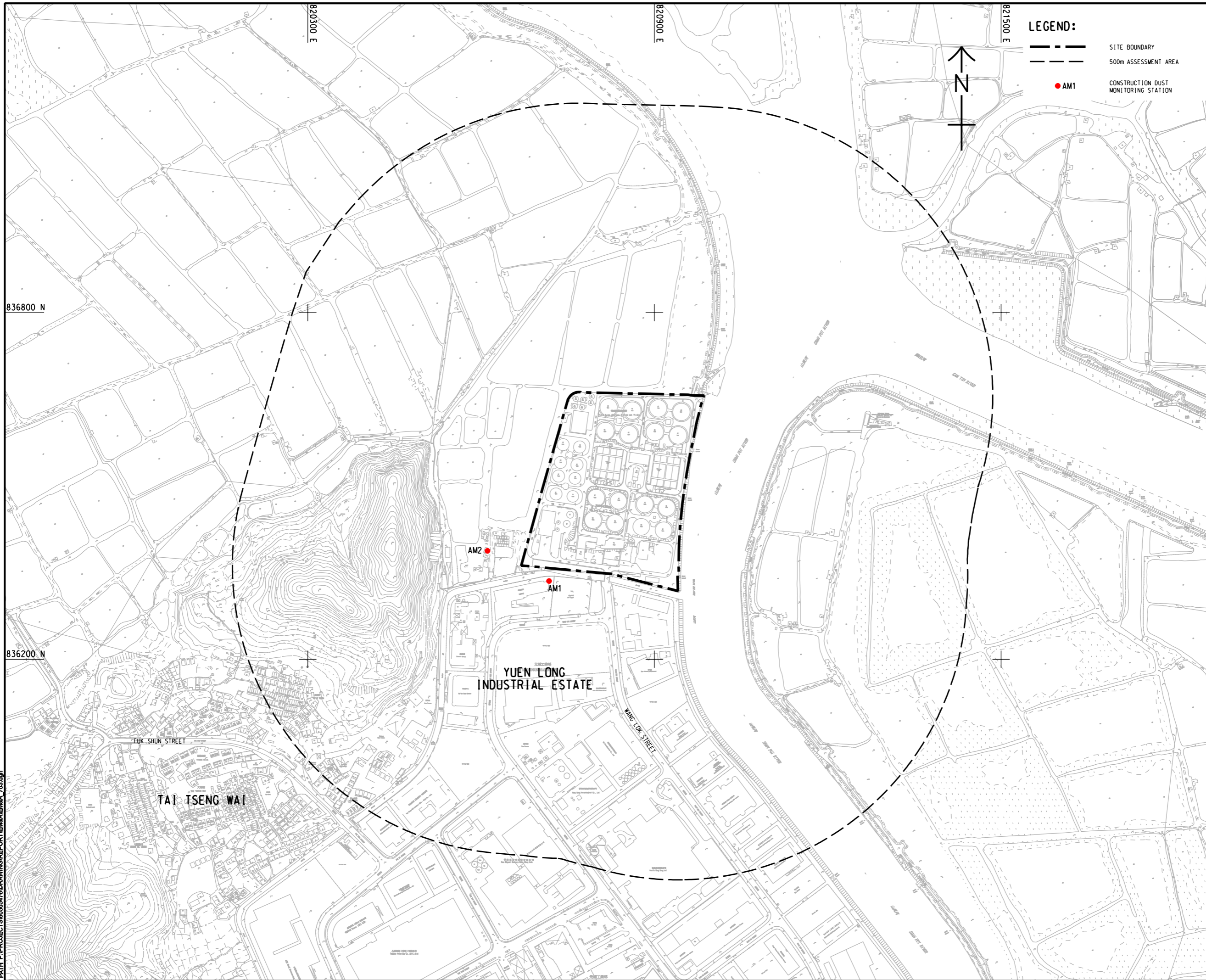


## Figure 2

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Location of Construction Dust  
Monitoring Stations

ISO A1 594mm x 841mm  
 Approved:  
 Checked:  
 Designer:  
 Project Management Initials:  
 836800 N  
 836200 N  
 P:\PROJECTS\6056576\DRAWING\REPORT\EM\EA\EA\_703.dgn  
 11/29  
 P:\PROJECTS\6056576\DRAWING\REPORT\EM\EA\EA\_703.dgn



**LEGEND:**

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



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

**CLIENT**  
 業主  
**渠務署**  
 Drainage Services Department

**CONSULTANT**  
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**ISSUE/REVISION**  
 修訂

I/R	DATE	DESCRIPTION	CHK.
號	日期	內容摘要	核對

**STATUS**  
 階段

**SCALE**  
 比例  
 A1 1 : 3000

**DIMENSION UNIT**  
 尺寸單位  
 METRES

**KEY PLAN**  
 索引圖

**PROJECT NO.**  
 項目編號  
 60505476

**CONTRACT NO.**  
 合約編號  
 CE 3/2015 (DS)

**SHEET TITLE**  
 圖紙名稱  
 LOCATION OF CONSTRUCTION DUST MONITORING STATIONS

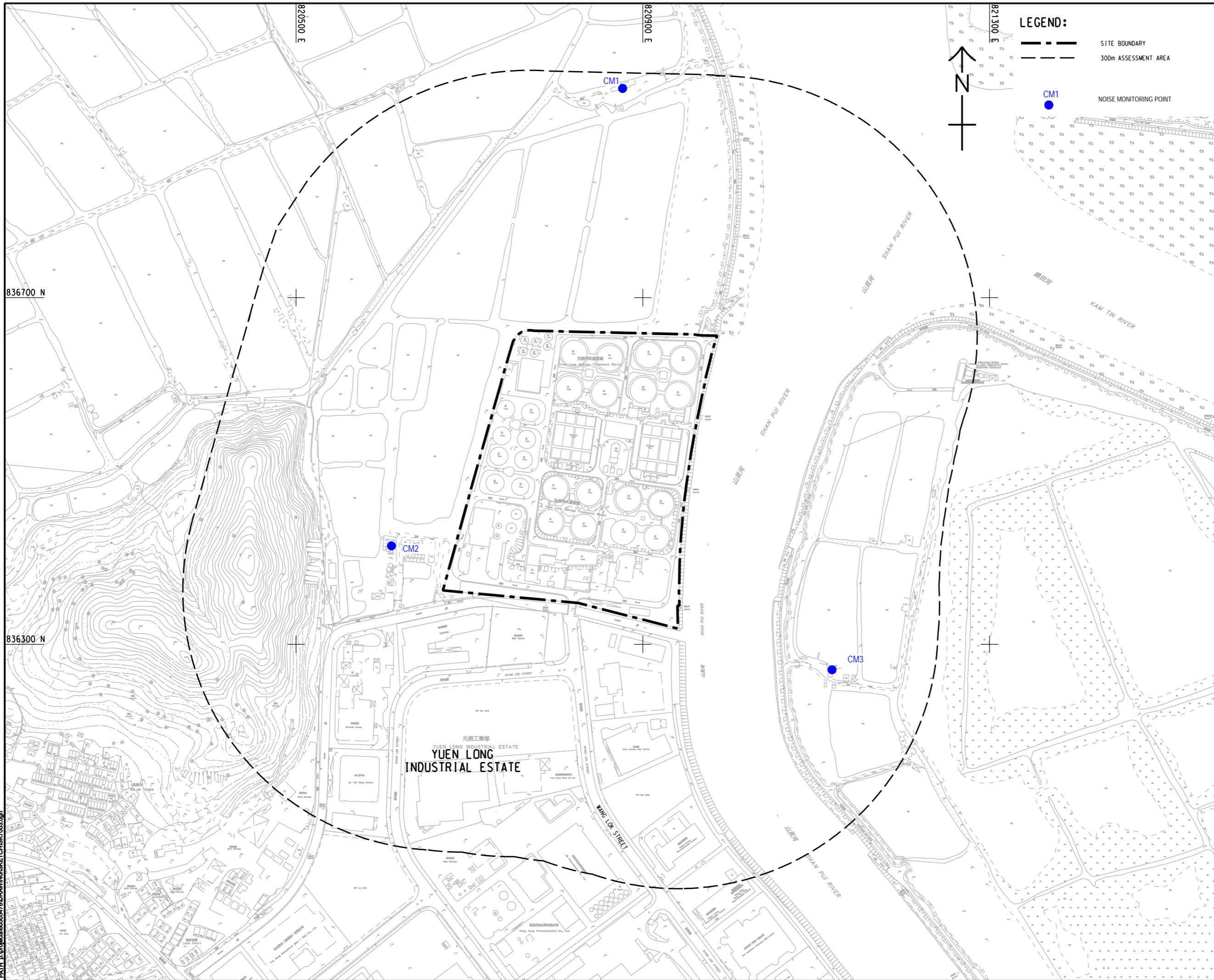
**SHEET NUMBER**  
 圖紙編號

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# Figure 3

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Noise Monitoring Locations



LEGEND:

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



# AECOM

**PROJECT**  
項目

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

**CLIENT**  
業主

渠務署  
Drainage Services Department

**CONSULTANT**  
工程顧問公司

AECOM Asia Company Ltd.  
www.aecom.com

**SUB-CONSULTANTS**  
分判工程顧問公司

**ISSUE/REVISION**  
修訂

I/R	DATE	DESCRIPTION	CHK.

**STATUS**  
圖版

**SCALE**  
比例

A1 1:2000

**DIMENSION UNIT**  
尺寸單位

METRES

**KEY PLAN**  
索引圖

**PROJECT NO.**  
項目編號

60505476

**CONTRACT NO.**  
合約編號

CE 3/2015 (DS)

**SHEET TITLE**  
圖紙名稱

LOCATIONS OF NOISE MONITORING POINTS

**SHEET NUMBER**  
圖紙編號

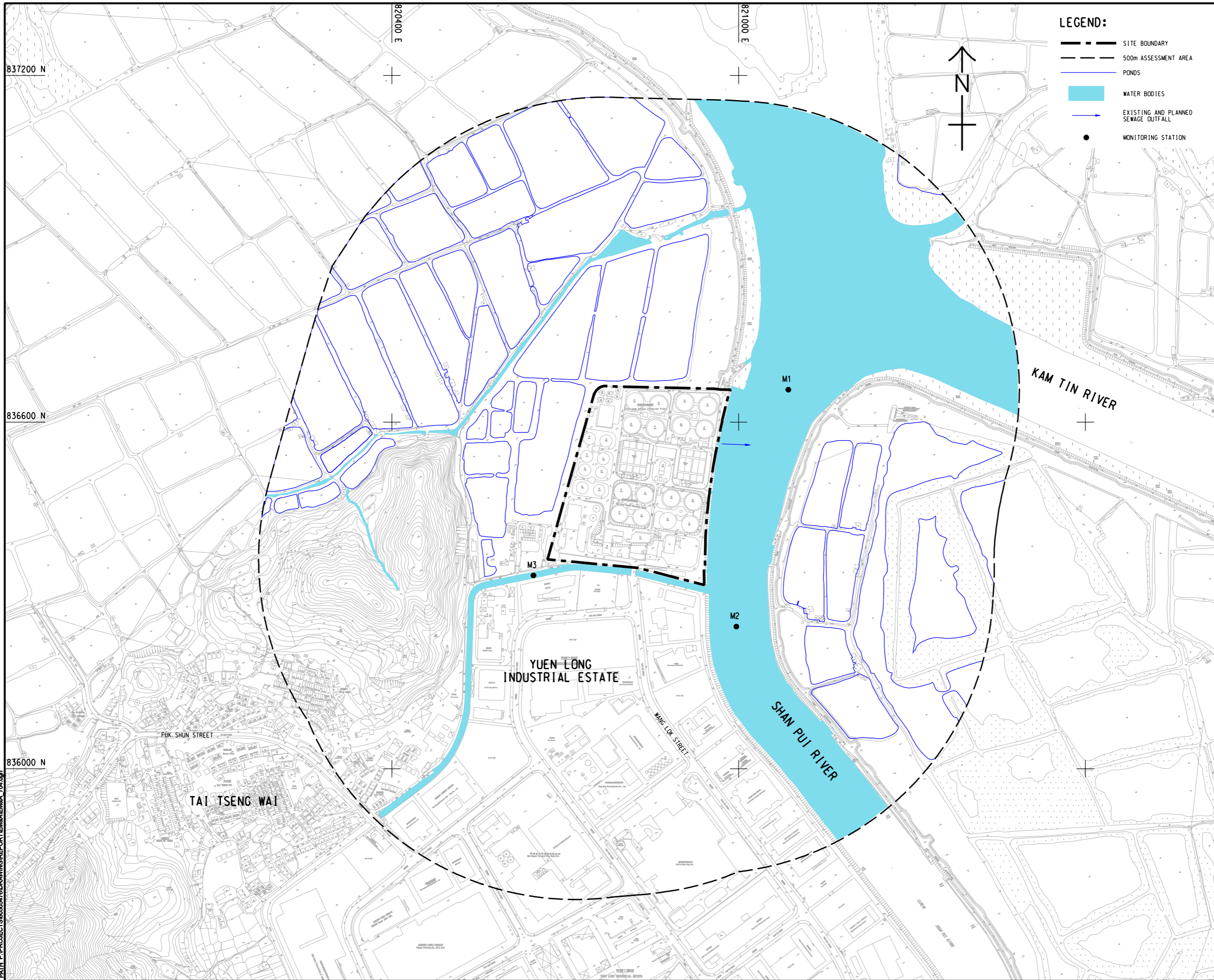
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# Figure 4

---

Water Quality Monitoring Locations

ISO A1 594mm x 841mm  
 Approved:  
 Checked:  
 Designer:  
 Project Management Initials:  
 12/18  
 P:\PROJECTS\60505476\DRAWING\REPORT\EMBA\6A\_704.dgn



**LEGEND:**

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



**AECOM**

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

**CLIENT**  
 業主  
 渠務署  
 Drainage Services Department

**CONSULTANT**  
 工程顧問公司  
 AECOM Asia Company Ltd.  
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**SUB-CONSULTANTS**  
 分門工程顧問公司

**ISSUE/REVISION**  
 修訂

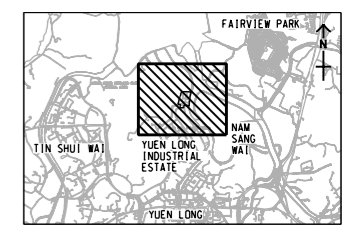
I/R	DATE	DESCRIPTION	CHK.

**STATUS**  
 階段

**SCALE**  
 比例  
 A3 1: 8000

**DIMENSION UNIT**  
 尺寸單位  
 METRES

**KEY PLAN** A3 1: 180000  
 索引圖



**PROJECT NO.**  
 項目編號  
 60505476

**CONTRACT NO.**  
 合約編號  
 CE 3/2015 (DS)

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

**SHEET NUMBER**  
 圖號

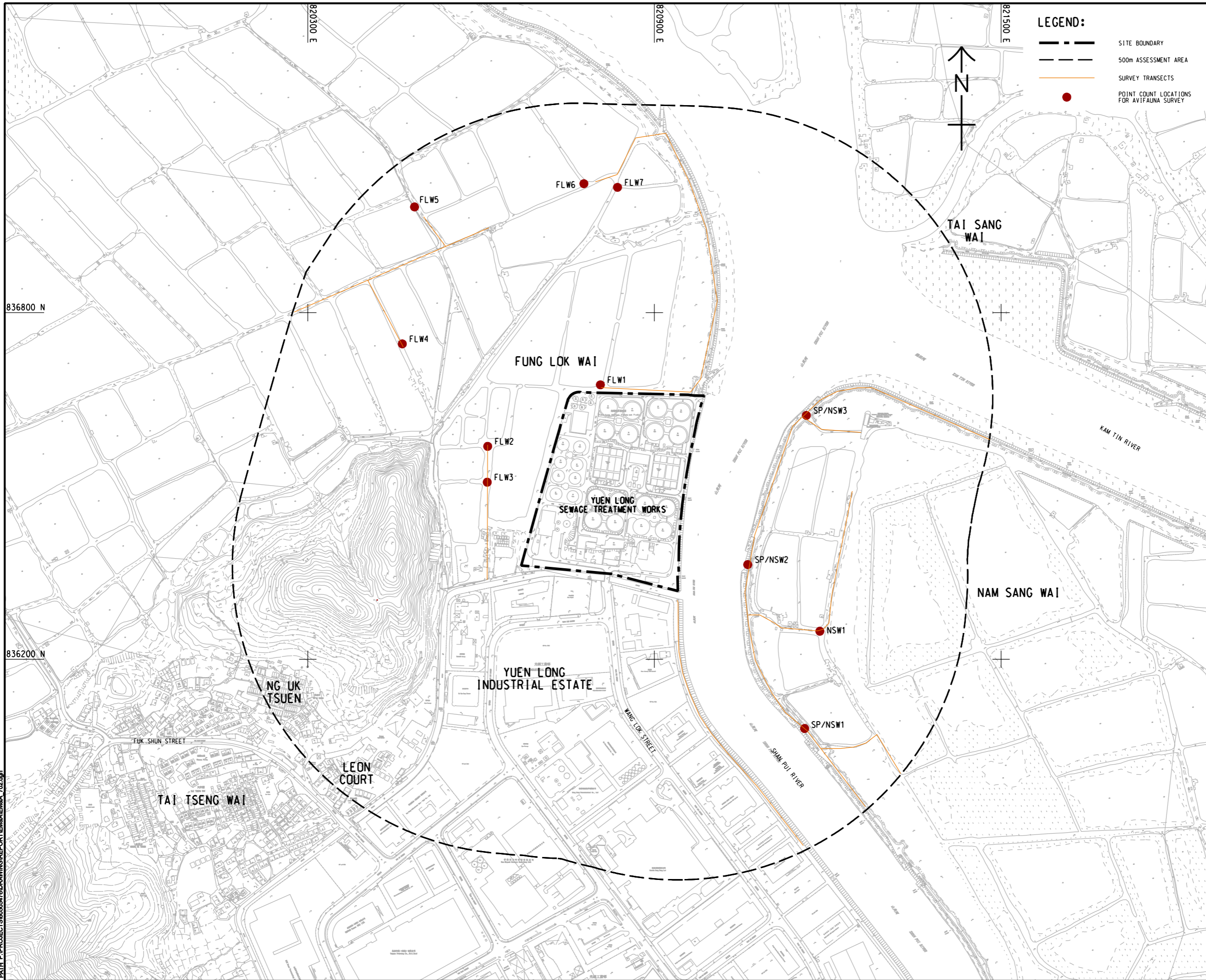
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# Figure 5

---

Ecology Monitoring Locations

ISO A1 594mm x 841mm  
 Approved:  
 Checked:  
 Designer:  
 Project Management Initials:  
 836800 N  
 836200 N  
 P:\PROJECTS\6056547\DRAWING\REPORT\EM\A\EM\_A\_702.dgn  
 Pld File by: ZENGFX 2018/05/30  
 PATH: P:\PROJECTS\6056547\DRAWING\REPORT\EM\A\EM\_A\_702.dgn



**LEGEND:**

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

**AECOM**

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

**CLIENT**  
 業主  
 渠務署  
 Drainage Services Department

**CONSULTANT**  
 工程顧問公司  
 AECOM Asia Company Ltd.  
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**SUB-CONSULTANTS**  
 分判工程顧問公司

**ISSUE/REVISION**  
 修訂

NO.	DATE	DESCRIPTION	CHK.

**STATUS**  
 階段

**SCALE**  
 比例  
 A1 1 : 3000

**DIMENSION UNIT**  
 尺寸單位  
 METRES

**KEY PLAN**  
 索引圖

**PROJECT NO.**  
 項目編號  
 60505476

**CONTRACT NO.**  
 合約編號  
 CE 3/2015 (DS)

**SHEET TITLE**  
 圖紙名稱  
 ECOLOGICAL MONITORING LOCATIONS

**SHEET NUMBER**  
 圖紙編號

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# Appendix A

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Construction Programme

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October					November					December					January					February	
						24					25					26					27					28	
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
<b>YL Effluent Polishing Plant - Main Works Stage 1 - Detailed Works Programme DPv19</b>																											
<b>Contract Data Part 1</b>																											
<b>Access Dates</b>																											
ADWA2	Work Area WA2 (sd) (new site possession) validity for 12 months and subject to renewal	757	05-Mar-21 A	31-Mar-23*	0																						
<b>Contract Section Completion</b>																											
CSC1	Section 1- Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.)	0		31-Oct-22*	-24	◆ Section 1- Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.)																					
<b>Environmental Constraints</b>																											
NMM-2155	PS 1.105A Noise Mitigation Measures 2022-2023	151	01-Nov-22*	31-Mar-23	0																						
<b>Planned Completion</b>																											
<b>Planned Section Completion</b>																											
PSC1	Section 1 - Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.)	0		14-Dec-22*	-68	◆ Section 1 - Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.)																					
<b>Preliminary and Preparation Works</b>																											
<b>Subletting</b>																											
SUB-270	Subletting for ELS works for IW, PST, SDB, STB, SD, MBB, TTB, underpass and open cut for admin. bldg	312	12-Oct-21 A	21-Dec-22	-85	Subletting for ELS works for IW, PST, SDB, STB, SD, MBB, TTB, underpass and open cut for admin. bldg																					
SUB-280	Subletting for RC works for IW, PST, SDB, STB, SD, Biogas holder, underpass and admin. bldg	256	29-Nov-21 A	13-Dec-22	-168	Subletting for RC works for IW, PST, SDB, STB, SD, Biogas holder, underpass and admin. bldg																					
SUB-290	Subletting for ABWF works for IW, PST, SDB, STB, MBR, TTB and admin. bldg	60	14-Dec-22	11-Feb-23	-164	Subletting for ABWF works for IW, PST, SDB, STB, MBR, TTB and admin. bldg																					
SUB-310	Subletting for Utilities Corridor ELS	60	08-Aug-22 A	10-Dec-22	-61	Subletting for Utilities Corridor ELS																					
SUB-350	Subletting for Waterproofing membrane and protection board	300	29-Nov-21 A	25-Jan-23	63	Subletting for Waterproofing membrane and protection board																					
SUB-360	Subletting for Rebar fixing	86	29-Nov-21 A	31-Dec-22	-168	Subletting for Rebar fixing																					
SUB-380	Subletting for Sheet piling works for remaining areas	333	12-Oct-21 A	11-Jan-23	561	Subletting for Sheet piling works for remaining areas																					
<b>Design Submission</b>																											
<b>Temporary Works Design</b>																											
<b>Mainstream Bio-Reactor System</b>																											
TWD-240	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	20-Jun-22 A	14-Nov-22	-118	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																					
TWD-250	ELS - Obtain Approval	7	10-Nov-22	16-Nov-22	-71	ELS - Obtain Approval																					
TWD-520	ELS - Submit to GEO (Dewatering Proposal)	28	17-Nov-22	14-Dec-22	-71	ELS - Submit to GEO (Dewatering Proposal)																					
<b>Sludge Thickening Building</b>																											
TWD-200	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	26-May-22 A	12-Nov-22	-55	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																					
TWD-210	ELS - Obtain Approval	7	13-Nov-22	19-Nov-22	-55	ELS - Obtain Approval																					
TWD-540	ELS - Submit to GEO (Dewatering Proposal)	28	13-Nov-22	10-Dec-22	-30	ELS - Submit to GEO (Dewatering Proposal)																					
<b>Tertiary Treatment System</b>																											
TWD-150	ELS - Review by PM's & ICE review (28 d + 7d)	35	10-Jun-22 A	15-Nov-22	-111	ELS - Review by PM's & ICE review (28 d + 7d)																					
TWD-160	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	16-Nov-22	29-Nov-22	-111	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																					
TWD-170	ELS - Obtain Approval	7	30-Nov-22	06-Dec-22	-90	ELS - Obtain Approval																					
TWD-550	ELS - Submit to GEO (Dewatering Proposal)	28	30-Nov-22	27-Dec-22	-111	ELS - Submit to GEO (Dewatering Proposal)																					
<b>Sludge Digester 1-3 &amp; Utilities Corridor</b>																											
TWD-360	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	21-Jun-22 A	07-Nov-22	-97	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																					
TWD-370	ELS - Obtain Approval	7	08-Nov-22	14-Nov-22	-91	ELS - Obtain Approval																					
TWD-560	ELS - Submit to GEO (Dewatering Proposal)	28	08-Nov-22	05-Dec-22	-97	ELS - Submit to GEO (Dewatering Proposal)																					
<b>Sludge Digester 4-6</b>																											
TWD-460	ELS - Prepare & Submission for PM's review	45	15-Nov-22	29-Dec-22	600	ELS - Prepare & Submission for PM's review																					
TWD-470	ELS - Review by PM's & ICE review (28 d + 7d)	35	30-Dec-22	02-Feb-23	600	ELS - Review by PM's & ICE review (28 d + 7d)																					
<b>Sludge Dewatering and Underpass</b>																											
TWD-260	ELS - Prepare & Submission for PM's review	45	30-Nov-22	13-Jan-23	503	ELS - Prepare & Submission for PM's review																					
TWD-270	ELS - Review by PM's & ICE review (28 d + 7d)	35	14-Jan-23	17-Feb-23	503	ELS - Review by PM's & ICE review (28 d + 7d)																					
<b>Modification of Existing Emergency Bypass Chamber</b>																											
TWD-650	ELS - Prepare & Submission for PM's review	45	30-Sep-22 A	11-Dec-22	180	ELS - Prepare & Submission for PM's review																					
TWD-660	ELS - Review by PM's & ICE review (28 d + 7d)	35	12-Dec-22	15-Jan-23	180	ELS - Review by PM's & ICE review (28 d + 7d)																					



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

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

### Monthly Progress Report No. 24 - 3MRP (Oct 2022)

Project ID : DWPr19\_221114-5  
 Layout : DC201910 MPR24-3MRP  
 Page 1 of 13

Monthly Progress Report - 3MRP			
Date	Revision	Checked	Approved
31-Oct-22	Rev. 0		



Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October					November				December				January			February		
						24					25				26				27			28		
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05
DDA-200	Mechanical for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	213	31-Dec-21 A	29-Mar-23	266																			
DDA-210	Electrical& Control for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	213	31-Dec-21 A	29-Mar-23	266																			
DDA-220	Building Services (BS) for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	29-Nov-22	03-Apr-23	261																			
<b>Package 3 - Mainstream Bio-Reactor System</b>																								
DDA-1530	VCAB for AGS&TTS - Prepare (30d), Sub. & Review(30d)	60	01-Nov-22	30-Dec-22*	1																			
DDA-240	Foundation for MBS - Prepare (97d), Sub. & Review(45d), Comment & Resub.(14d),GEO(28d)& Approval (7d)	230	18-Mar-22 A	10-May-23	25																			
DDA-250	Civil & Structural for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	180	17-Jan-23	15-Jul-23	-41																			
DDA-260	Civil Req. for MBS-AGS (Foundation design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	09-Jun-21 A	10-Dec-22	-50																			
DDA-270	Civil Req. for MBS-AGS (Superstruct. design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	01-Mar-22 A	16-Jan-23	-41																			
DDA-280	P&ID for MBS (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	08-Oct-21 A	06-Jan-23	85																			
DDA-290	Mechanical for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	08-Oct-21 A	15-Feb-23	329																			
DDA-300	Electrical& Control for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	405	08-Oct-21 A	18-Oct-23	84																			
DDA-310	Building Services (BS) for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	324	28-Nov-22	17-Oct-23	85																			
<b>Package 5A - Master Water Meter Room</b>																								
DDA-360	Foundation for Master WM Room- Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d),GEO(28d) & Approval (7d)	154	15-Feb-22 A	19-Jan-23	-54																			
DDA-370	Civil & Struct. for WM Room- Prepare (90d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	156	15-Apr-22 A	15-Feb-23	-54																			
DDA-380	General Arrangement & Civil Req. for MWMC - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	20-Jan-23	25-May-23	33																			
DDA-390	P&ID for MWMC - MBS (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	12-Dec-22	16-Apr-23	-54																			
<b>Package 5B - Plant Service Water (PSW)</b>																								
DDA-1040	Piping & Instrumentation Diagram (P&ID) - Prep(30d), Sub.&Review(28d), Comment&Resub (14d) & Approval (7d)	354	29-Nov-22	17-Nov-23	33																			
DDA-1050	Civil Requirement Drawings - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	12-Jun-21 A	27-Feb-23	97																			
DDA-1060	Electrical & Control for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	29-Nov-22	03-Apr-23	33																			
DDA-1070	Mechanical for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	354	29-Nov-22	17-Nov-23	33																			
<b>Package 6 - Sludge Thickening Chemical and Dosing System</b>																								
DDA-1120	P&ID for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	335	14-Aug-21 A	14-Aug-23	336																			
DDA-1130	Mechanical for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	340	15-Nov-21 A	14-Aug-23	336																			
DDA-1140	Electrical & Control for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	315	30-Nov-21 A	26-Aug-23	325																			
DDA-1500	Fire Services Design for Sludge Thickening Building (STB)	320	08-Jul-22 A	14-Aug-23	541																			
DDA-1510	Plumbing and Drainage System Design for Sludge Thickening Building (STB)	320	07-Jul-22 A	14-Aug-23	541																			
DDA-1520	Mechanical Ventilation and Air conditional System Design for Sludge Thickening Building (STB)	320	16-Jun-22 A	14-Aug-23	541																			
DDA-440	Civil & Struct. for STCS, WGB & Guard Hse - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	250	09-Nov-21 A	02-Mar-23	45																			
DDA-440B	Civil Req. for STCDS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	300	15-Nov-21 A	24-Mar-23	479																			
<b>Package 7 - CLP Substation and 11kV Switchgear House</b>																								
DDA-1160	Earthing & Lighting System Design Report - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	78	02-Jul-21 A	05-Nov-22	-67																			
DDA-1450	VCAB, FSD & WSD Design Report - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	78	02-Jul-21 A	24-Nov-22	-62																			
DDA-470	Electrical System for all facilities - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	78	01-Jun-21 A	16-Nov-22	-67																			
DDA-480	UPS System for CLPSub.&11kV Switchgear Hse - Prepare (102d), Sub. & Review(45d),Comment & Resub.(14d) & Approval (7d)	168	03-Jun-21 A	17-Nov-22	-62																			
DDA-490	BS for CLP Sub. &11kV Switchgear Hse - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	78	01-Jun-21 A	16-Nov-22	-62																			
<b>Package 8 - Advance Works and SCADA Relocation</b>																								
DDA-520	BS for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	78	04-May-21 A	10-Nov-22	-18																			
DDA-530	E&M for Advance Works - SCADA Relocation - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	76	24-Jun-21 A	08-Nov-22	-18																			
<b>Package 9 - Inlet Work (IW)</b>																								
DDA-1170	Civil Req. Drawing for Inlet Work - Prepare (30d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)	82	04-Aug-21 A	23-Nov-22	-124																			
DDA-1180	PID for Inlet Work - Prepare (30d), Sub. & Review(30d), Comment & Resub.(14d) & Approval (7d)	120	10-Jul-21 A	09-Jan-23	63																			
DDA-1190	Mechanical for Inlet Work - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	120	09-Aug-21 A	09-Jan-23	63																			
DDA-1200	Electrical & Control for Inlet Work - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	120	30-Oct-21 A	09-Jan-23	63																			
DDA-1210	Building Services for Inlet Work - Prepare (28d), Sub. & Review(28d), Comment & Resub.(14d) & Approval (7d)	76	30-Mar-22 A	09-Jan-23	183																			
<b>Package 10 - Primary Sedimentation Tank (PST)</b>																								



■ Remaining Level of Eff...  
■ Actual Work  
■ Remaining Work  
■ Critical Remaining Work  
◆ Milestone

### Contract DC/2019/10 - YLEPP - Main Works for Stage 1 Monthly Progress Report No. 24 - 3MRP (Oct 2022)

Project ID : DWPr19\_221114-5  
Layout : DC201910 MPR24-3MRP  
Page 3 of 13

Monthly Progress Report - 3MRP			
Date	Revision	Checked	Approved
31-Oct-22	Rev. 0		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October					November					December					January					February	
						24					25					26					27					28	
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
DDA-1220	Civil Req. Drawing for PST - Prepare (46d), Sub. & Review(30d) ,Comment & Resub.(14d) & Approval (7d)	98	01-Jun-21 A	10-Nov-22	-162	Civil Req. Drawing for PST - Prepare (46d), Sub. & Review(30d) ,Comment & Resub.(14d) & Approval (7d)																					
DDA-1230	PID for PST - Prepare (46d), Sub. & Review(30d) ,Comment & Resub.(14d) & Approval (7d)	120	01-Jun-21 A	21-Dec-22	-118	PID for PST - Prepare (46d), Sub. & Review(30d) ,Comme																					
DDA-1240	Mechanical for PST - Prepare (46d), Sub. & Review(30d) ,Comment & Resub.(14d) & Approval (7d)	120	01-Jun-21 A	16-Jan-23	-138	Mechanical for PST - Prepa																					
DDA-1250	Electrical & Control for PST - Prepare (28d), Sub. & Review(28d) ,Comment & Resub.(14d) & Approval (7d)	48	31-Aug-21 A	16-Jan-23	-138	Electrical & Control for PST																					
DDA-1260	Building Services for PST - Prepare (28d), Sub. & Review(28d) ,Comment & Resub.(14d) & Approval (7d)	90	01-Oct-21 A	16-Jan-23	-138	Building Services for PST -																					
<b>Package 11 - Control and Monitoring System</b>																											
DDA-580	Power Quality & Energy Management System (PQEMS) - Prep(28d), Sub.&Review(28d), Comment&Resub (14d)	130	02-Oct-21 A	30-Jan-23	77	Power Qu																					
<b>Package 13 - Pipework System</b>																											
DDA-1030	Pipeworks System for Sludge Digesters - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &Approval (7d)	126	18-Nov-22	23-Mar-23	167																						
DDA-670	Pipeworks System for Primary Sedimentation Tanks (PST) - Prep(57d), Sub.&Review(45d), Comment&Resub(14d)	123	18-Sep-21 A	01-Dec-22	143	Pipeworks System for Primary Sedimentation Tanks (PST) - Prep(57d), Sub.&Review																					
DDA-680	Pipeworks System for Biogas Holder (BH) - Prep(57d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	123	18-Sep-21 A	01-Dec-22	143	Pipeworks System for Biogas Holder (BH) - Prep(57d), Sub.&Review(45d), Comme																					
DDA-690	Pipeworks System for Sludge Dewatering Building (SDB) - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &	126	18-Nov-22	23-Mar-23	167																						
DDA-700	Pipeworks System for Utility Corridor&Pipe Portal (UC/PP) - Prep(103d),Sub.&Review(45d),Comment&Resub(14d)&	126	18-Nov-22	23-Mar-23	1125																						
<b>Package 14 - Sludge Anaerobic Digestion System (SDT)</b>																											
DDA-1290	Civil Req. Drawing for SDT - Prepare (47d), Sub. & Review(45d) ,Comment & Resub.(14d) & Approval (7d)	200	10-Jul-21 A	29-Apr-23	-94																						
DDA-1300	PID for SDT - Prepare (47d), Sub. & Review(45d) ,Comment & Resub.(14d) & Approval (7d)	460	01-Jul-21 A	09-Dec-23	-94																						
DDA-1310	Mechanical for SDT & UC/PP - Prepare (47d), Sub. & Review(45d) ,Comment & Resub.(14d) & Approval (7d)	460	10-Jul-21 A	09-Dec-23	-94																						
DDA-1320	Electrical & Control for SDT & UC/PP - Prepare (55d), Sub. & Review(45d) ,Comment & Resub.(14d) & Approval (7d)	460	02-Jul-21 A	09-Dec-23	-94																						
DDA-1340	Civil Req. Drawing for UC/PP - Prepare (47d), Sub. & Review(45d) ,Comment & Resub.(14d) & Approval (7d)	580	10-Jul-21 A	30-Mar-24	512																						
<b>Package 15 - Biogas H2S Removal, Storage and Delivery System</b>																											
DDA-1350	Civil Req. Drawing for Biogas Storage&Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&	78	31-Aug-21 A	19-Nov-22	15	Civil Req. Drawing for Biogas Storage&Delivery System - Prepare(28d),Sub& Review(28d),Comme																					
DDA-1360	PID for Biogas H2S Removal, Storage and Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&	75	13-Jul-21 A	08-Jan-23	117	PID for Biogas H2S Removal, Storag																					
DDA-1370	Mechanical for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval	78	05-Oct-21 A	15-Feb-23	67																						
DDA-1380	Electrical & Control for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Ap	243	01-Dec-22	31-Jul-23	15																						
DDA-1390	Building Services for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&App	243	01-Dec-22	31-Jul-23	144																						
DDA-1400	Civil Req. Drawing for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Ap	78	07-Dec-21 A	16-Nov-22	15	Civil Req. Drawing for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Re																					
<b>Package 16 - Deodorization Unit System</b>																											
DDA-1410	PID for DOU System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	03-Sep-21 A	08-Nov-22	354	PID for DOU System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)																					
DDA-1420	Mechanical for DOU No. 1 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	04-Mar-22 A	16-Jan-23	346	Mechanical for DOU No. 1																					
DDA-1430	Mechanical for DOU No. 2A and 2B - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	330	17-Jan-23*	12-Dec-23	346																						
DDA-1440	Mechanical for DOU No. 3 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	300	17-Jul-22 A	14-Aug-23	531																						
<b>Package 19 - Elevated Walkways</b>																											
DDA-710	Civil & Structural for Elevated Walkways - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), C	124	30-Nov-22*	02-Apr-23	880																						
<b>Design out of ATAL's Scope</b>																											
DDA-1540	Drainage systems at base slab / foundation levels - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Appr	126	01-Nov-22	06-Mar-23	210																						
DDA-1550	Rainwater drainage systems - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Nov-22	06-Mar-23	1860																						
DDA-1560	Street fire hydrant system - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Nov-22	06-Mar-23	210																						
DDA-1570	BS at Education Corridor - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Nov-22	06-Mar-23	1306																						
DDA-1580	Lift Installation at TTS - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Nov-22	06-Mar-23	289																						
DDA-1590	Motor-driven Entrance Gate - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Nov-22	06-Mar-23	212																						
DDA-1600	BS for modification for existing Blower house - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(	126	01-Nov-22	06-Mar-23	1269																						
<b>Technical Submission</b>																											
<b>Sludge Digesters (SD)</b>																											
TS-740	(CSD) Found. for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d)& Appr	126	30-Sep-21 A	06-Mar-23	118																						
TS-750	(CSD) Civil & Structural for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Appr	126	25-Sep-21 A	01-Dec-22	118	(CSD) Civil & Structural for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), C																					
<b>Environmental Submission (PS 34.12(4)(xx))</b>																											
SUBM-1150	Employment of specialists or consultants	60	01-Nov-22	30-Dec-22	1776	Employment of specialists or consultants																					
<b>Hazardous Area Classification and Fire Risk Assessment</b>																											



- Remaining Level of Ef...
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## Contract DC/2019/10 - YLEPP - Main Works for Stage 1

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October					November				December				January				February	
						24					25				26				27				28	
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05
TS-1800	Hazardous Area Classification and Fire Risk Assessment Specialist - Submission & Approval	20	31-Aug-21 A	01-Nov-22	143	Hazardous Area Classification and Fire Risk Assessment Specialist - Submission & Approval																		
TS-1810	Hazardous Area Classification Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	20-Sep-21 A	06-Dec-22	143	Hazardous Area Classification Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																		
TS-1820	Fire Risk Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	20-Sep-21 A	06-Dec-22	143	Fire Risk Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)																		
<b>Factory Acceptance Test Plans</b>																								
SUBM-1090	Submit/review/approval Factory Acceptance Test Plans - Inlet pumps	120	01-Nov-22	28-Feb-23	275	Submit/review/approval Factory Acceptance Test Plans - Inlet pumps																		
SUBM-1100	Submit/review/approval Factory Acceptance Test Plans - Thickening centrifuges	120	01-Nov-22	28-Feb-23	368	Submit/review/approval Factory Acceptance Test Plans - Thickening centrifuges																		
SUBM-1110	Submit/review/approval Factory Acceptance Test Plans - Disc filter system	120	01-Nov-22	28-Feb-23	-125	Submit/review/approval Factory Acceptance Test Plans - Disc filter system																		
SUBM-1120	Submit/review/approval Factory Acceptance Test Plans - 11kV switchboards	120	01-Nov-22	28-Feb-23	-79	Submit/review/approval Factory Acceptance Test Plans - 11kV switchboards																		
SUBM-1130	Submit/review/approval Factory Acceptance Test Plans - SCADA system	120	01-Nov-22	28-Feb-23	-52	Submit/review/approval Factory Acceptance Test Plans - SCADA system																		
SUBM-1140	Employment of third-party independent surveyor for Factory Acceptance Tests	60	01-Nov-22	30-Dec-22	-125	Employment of third-party independent surveyor for Factory Acceptance Tests																		
<b>Operation and Maintenance (O&amp;M) Manuals and Installation Manuals (PS 34.20(11)(12)(13))</b>																								
SUBM-1070	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - 1st draft	60	01-Nov-22	30-Dec-22	-92	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - 1st draft																		
SUBM-1200	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - revised draft	60	31-Dec-22	28-Feb-23	83	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - revised draft																		
<b>Commissioning Plan and Procedures (PS34.20(10))</b>																								
SUBM-1000	Submit/review/approval Commissioning Plan and Procedures - Early commissioning of IW	120	31-Dec-22	29-Apr-23	228	Submit/review/approval Commissioning Plan and Procedures - Early commissioning of IW																		
SUBM-1010	Submit/review/approval Commissioning Plan and Procedures - Early commissioning of PST	120	31-Dec-22	29-Apr-23	53	Submit/review/approval Commissioning Plan and Procedures - Early commissioning of PST																		
SUBM-1020	Submit/review/approval Commissioning Plan and Procedures - AGS	120	31-Dec-22	29-Apr-23	881	Submit/review/approval Commissioning Plan and Procedures - AGS																		
SUBM-1030	Submit/review/approval Commissioning Plan and Procedures - TTS	120	31-Dec-22	29-Apr-23	835	Submit/review/approval Commissioning Plan and Procedures - TTS																		
SUBM-1040	Submit/review/approval Commissioning Plan and Procedures - STB	120	31-Dec-22	29-Apr-23	840	Submit/review/approval Commissioning Plan and Procedures - STB																		
SUBM-1050	Submit/review/approval Commissioning Plan and Procedures - SDT	120	31-Dec-22	29-Apr-23	375	Submit/review/approval Commissioning Plan and Procedures - SDT																		
SUBM-1060	Submit/review/approval Commissioning Plan and Procedures - Biogas system	120	31-Dec-22	29-Apr-23	386	Submit/review/approval Commissioning Plan and Procedures - Biogas system																		
SUBM-1080	Employment of HOKLAS laboratory for commissioning test	60	01-Nov-22	30-Dec-22	53	Employment of HOKLAS laboratory for commissioning test																		
<b>Material Submission, Procurement, Manufacturing and Delivery</b>																								
<b>Inlet Works</b>																								
PRE-210	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Screening system (fixed bar,coarse,fine)	300	16-Mar-21 A	01-Nov-22	135	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Screening system (fixed bar,coarse,fine)																		
PRE-280	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Conveyer and compactor	270	12-Apr-22 A	28-Jul-23	70	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Conveyer and compactor																		
PRE-290	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Grit Trap and classifier	270	18-Feb-22 A	28-Jul-23	-75	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Grit Trap and classifier																		
PRE-300	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - LALG	270	28-Jul-22 A	28-Jul-23	-32	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - LALG																		
PRE-310	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Penstocks and stoplogs	270	13-Sep-22 A	28-Jul-23	-137	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Penstocks and stoplogs																		
PRE-320	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - MVAC-Ventilation Fan	210	01-Nov-22	29-May-23	122	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - MVAC-Ventilation Fan																		
PRE-330	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - DOU-01	330	26-May-22 A	26-Sep-23	-44	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - DOU-01																		
PRE-700	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Inlet pumps (HF,LF,Drainage)	330	05-Jan-22 A	01-Nov-22	275	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Inlet pumps (HF,LF,Drainage)																		
<b>Primary Sedimentation Tanks</b>																								
PRE-220	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Inclined plate settler	225	08-Dec-21 A	01-Nov-22	78	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Inclined plate settler																		
PRE-340	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Bottom scraper	255	08-Sep-22 A	18-Jun-23	14	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Bottom scraper																		
PRE-340a	Submit/Appoint manufacturer's representative for sludge bottom scraper (PS Cl. 35.26(7))	90	01-Nov-22	29-Jan-23	154	Submit/Appoint manufacturer's representative for sludge bottom scraper (PS Cl. 35.26(7))																		
PRE-350	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - IPS air scouring blower	255	27-Sep-22 A	18-Jun-23	-18	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - IPS air scouring blower																		
PRE-360	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Scum pump and skimmer	255	29-Sep-22 A	18-Jun-23	128	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Scum pump and skimmer																		
PRE-370	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Primary sludge pump and grinder	255	29-Sep-22 A	18-Jun-23	63	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Primary sludge pump and grinder																		
PRE-380	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - LALG	180	25-Jul-22 A	11-Apr-23	-134	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - LALG																		
PRE-390	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Penstocks and stoplogs	270	13-Aug-22 A	20-Mar-23	-84	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Penstocks and stoplogs																		
PRE-400	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Pipeworks and valves	150	01-Nov-22	30-Mar-23	-182	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Pipeworks and valves																		
<b>Biogas Holder</b>																								
PRE-270	Submit/Procure/Manufacture/Deliver Biogas Holding Tanks (membrane, steel tank and parts, instrumentation)	660	09-Jun-21 A	27-Aug-23	94	Submit/Procure/Manufacture/Deliver Biogas Holding Tanks (membrane, steel tank and parts, instrumentation)																		
PRE-410	Submit/Procure/Manufacture/Deliver Waster Gas Burner	300	19-Aug-21 A	27-Aug-23	962	Submit/Procure/Manufacture/Deliver Waster Gas Burner																		
PRE-420	Submit/Procure/Manufacture/Deliver H2S Removal System	510	25-Feb-22 A	27-Aug-23	460	Submit/Procure/Manufacture/Deliver H2S Removal System																		
PRE-430	Submit/Procure/Manufacture/Deliver Biogas booster and transfer pumps	360	01-Nov-22	26-Oct-23	34	Submit/Procure/Manufacture/Deliver Biogas booster and transfer pumps																		
<b>Sludge Digester Tank</b>																								



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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October				November				December				January				February	
						24				25				26				27				28	
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29
PRE-440	Submit/Procure/Manufacture/Deliver Sludge Digester Tank - LALG for Pipe Portal	180	01-Nov-22	29-Apr-23	179																		
PRE-450	Submit/Procure/Manufacture/Deliver Sludge Digester Tank - Sludge Digester System	330	31-Aug-22 A	26-Sep-23	-20																		
PRE-460	Submit/Procure/Manufacture/Deliver Sludge Digester Tank - Draft tube mixer	390	01-Nov-22	25-Nov-23	-91																		
PRE-470	Submit/Procure/Manufacture/Deliver Sludge Digester Tank - MVAC-Jet fan	210	01-Nov-22	29-May-23	100																		
<b>Sludge Thickening Building</b>																							
PRE-250	Submit/Procure/Manufacture/Deliver Sludge Thickening System - Thickening Centrifuges	360	12-Nov-21 A	13-Jul-23	368																		
PRE-480	Submit/Procure/Manufacture/Deliver Sludge Thickening System - Polymer preparation system	240	01-Nov-22	28-Jun-23	383																		
PRE-490	Submit/Procure/Manufacture/Deliver Sludge Thickening System - DOU-03	330	01-Nov-22	26-Sep-23	542																		
PRE-500	Submit/Procure/Manufacture/Deliver Sludge Thickening System - Pump and jet mixer	300	01-Nov-22	27-Aug-23	323																		
PRE-510	Submit/Procure/Manufacture/Deliver Sludge Thickening System - LALG	210	01-Nov-22	29-May-23	413																		
PRE-520	Submit/Procure/Manufacture/Deliver Sludge Thickening System - MVAC	300	01-Nov-22	27-Aug-23	323																		
<b>Mainstream Bio-Reactor</b>																							
PRE-230	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - AGS system	480	09-Sep-22 A	15-Jul-23	179																		
PRE-530	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - Penstocks and stoplogs	345	01-Nov-22	11-Oct-23	282																		
PRE-540	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - Chemical storage and dosing system	270	01-Nov-22	28-Jul-23	166																		
PRE-550	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - Sludge pre-thickening system	510	10-Oct-22 A	15-Jul-23	179																		
PRE-560	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - LALG	480	01-Nov-22	23-Feb-24	-44																		
PRE-570	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - Instrumentation	450	01-Nov-22	24-Jan-24	268																		
PRE-580	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - MVAC	210	01-Nov-22	29-May-23	226																		
<b>Tertiary Treatment System</b>																							
PRE-240	Submit/Procure/Manufacture/Deliver TTS Equip. - Disc Filter	600	27-Sep-22 A	23-Apr-24	-125																		
PRE-590	Submit/Procure/Manufacture/Deliver TTS Equip. - Chemical cleaning system	480	01-Nov-22	23-Feb-24	-65																		
PRE-600	Submit/Procure/Manufacture/Deliver TTS Equip. - UV disinfection system	510	08-Sep-22 A	01-Jul-23	172																		
PRE-610	Submit/Procure/Manufacture/Deliver TTS Equip. - Pumping system	495	19-Jul-22 A	01-Jul-23	172																		
PRE-620	Submit/Procure/Manufacture/Deliver TTS Equip. - LALG	180	01-Nov-22	29-Apr-23	235																		
PRE-630	Submit/Procure/Manufacture/Deliver TTS Equip. - Penstocks and stoplogs	435	01-Nov-22	09-Jan-24	-20																		
PRE-690	Submit/Procure/Manufacture/Deliver TTS Equip. - DOU-02	330	01-Nov-22	26-Sep-23	85																		
<b>Electrical and Control System</b>																							
PRE-640	Submit/Procure/Manufacture/Deliver Electrical and Control System - HVSB and Tx	270	27-Oct-21 A	28-Jul-23	-79																		
PRE-650	Submit/Procure/Manufacture/Deliver Electrical and Control System - LVSB	277	21-Oct-22 A	28-Jul-23	-79																		
PRE-660	Submit/Procure/Manufacture/Deliver Electrical and Control System - UPS	150	16-Mar-22 A	30-Mar-23	137																		
PRE-670	Submit/Procure/Manufacture/Deliver Electrical and Control System - Armoured Cable	270	01-Nov-22	28-Jul-23	-154																		
PRE-680	Submit/Procure/Manufacture/Deliver Electrical and Control System - SCADA and instrumentation	420	04-May-22 A	25-Dec-23	-52																		
<b>PM and Contractor Accommodation</b>																							
<b>Project Manager's &amp; Contractor Site Accommodation</b>																							
<b>MIC Section</b>																							
PMCA-190	Installation of Green Roof	16	09-Nov-21 A	17-Nov-22	1608																		
<b>Caving System</b>																							
PMCA-270	Completion of Caving system	0		19-Oct-22 A																			
<b>Statutory Submission &amp; Approval</b>																							
<b>FSI, FSD and OP Requirements</b>																							
<b>FSI Submission &amp; Approval</b>																							
FSD-1030	PM Review	31	12-Nov-21 A	28-Nov-22	61																		
FSD-1040	Submission Period for FSD Review (Assumed 12 Months) - Full GBP+GBP for TOP1	367	29-Nov-22	30-Nov-23	61																		
<b>Application Form Schedule EMSD (ATAL)</b>																							
<b>Phase 1</b>																							
ATAL-FS-0010	Form 104 for Biogas Holder Tank 1 (Submission and Approval Period)	184	02-May-22 A	01-May-23	1317																		
<b>HAZOP Study</b>																							



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						24				25				26				27				28	
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29
HAZOP-010	Engage Independent Consultant	20	01-Nov-22	20-Nov-22	-138	Engage Independent Consultant																	
<b>IW and PST</b>																							
HAZOP-Z1-010	HAZOP - Review Design / Installation HAZOP for IW PPST by independent consultant	30	21-Nov-22	20-Dec-22	-138	HAZOP - Review Design / Installation HAZOP for IW PPST by independent consultant																	
HAZOP-Z1-020	HAZOP - Re-submission of Design / Installation methodology	20	21-Dec-22	09-Jan-23	-138	HAZOP - Re-submission of Design / Installation methodology																	
HAZOP-Z1-030	HAZOP - Obtain Approval	7	10-Jan-23	16-Jan-23	-138	HAZOP - Obtain Approval																	
<b>AGS System</b>																							
HAZOP-Z2-010	HAZOP - Review Design / Installation HAZOP for AGS by independent consultant	30	21-Dec-22	19-Jan-23	329	HAZOP - Review Design / Installation HAZOP for AGS by independent consultant																	
HAZOP-Z2-020	HAZOP - Re-submission of Design / Installation methodology	20	20-Jan-23	08-Feb-23	329	HAZOP - Re-submission of Design / Installation methodology																	
<b>TTS System</b>																							
HAZOP-Z2-30	HAZOP - Review Design / Installation HAZOP for TTS by independent consultant	30	21-Nov-22	20-Dec-22	338	HAZOP - Review Design / Installation HAZOP for TTS by independent consultant																	
HAZOP-Z2-40	HAZOP - Re-submission of Design / Installation methodology	20	21-Dec-22	09-Jan-23	338	HAZOP - Re-submission of Design / Installation methodology																	
HAZOP-Z2-50	HAZOP - Obtain Approval	7	10-Jan-23	16-Jan-23	338	HAZOP - Obtain Approval																	
<b>Biogas H2S Removal System</b>																							
HAZOP-Z3-010	HAZOP - Review Design / Installation HAZOP for Biogas H2S Removal System by independent consultant	30	21-Dec-22	19-Jan-23	67	HAZOP - Review Design / Installation HAZOP for Biogas H2S Removal System by independent consultant																	
HAZOP-Z3-020	HAZOP - Re-submission of Design / Installation methodology	20	20-Jan-23	08-Feb-23	67	HAZOP - Re-submission of Design / Installation methodology																	
<b>Sludge Thickening and Chemical System</b>																							
HAZOP-Z3-30	HAZOP - Review Design / Installation HAZOP for STB by independent consultant	30	21-Nov-22	20-Dec-22	546	HAZOP - Review Design / Installation HAZOP for STB by independent consultant																	
HAZOP-Z3-40	HAZOP - Re-submission of Design / Installation methodology	20	21-Dec-22	09-Jan-23	546	HAZOP - Re-submission of Design / Installation methodology																	
HAZOP-Z3-50	HAZOP - Obtain Approval	7	10-Jan-23	16-Jan-23	546	HAZOP - Obtain Approval																	
<b>Sludge Digestion System</b>																							
HAZOP-Z3-60	HAZOP - Review Design / Installation HAZOP for SDT by independent consultant	30	21-Nov-22	20-Dec-22	233	HAZOP - Review Design / Installation HAZOP for SDT by independent consultant																	
HAZOP-Z3-70	HAZOP - Re-submission of Design / Installation methodology	20	21-Dec-22	09-Jan-23	233	HAZOP - Re-submission of Design / Installation methodology																	
HAZOP-Z3-80	HAZOP - Obtain Approval	7	10-Jan-23	16-Jan-23	233	HAZOP - Obtain Approval																	
<b>DOU and PSW System</b>																							
HAZOP-Z3-100	HAZOP - Re-submission of Design / Installation methodology	20	21-Dec-22	09-Jan-23	110	HAZOP - Re-submission of Design / Installation methodology																	
HAZOP-Z3-110	HAZOP - Obtain Approval	7	10-Jan-23	16-Jan-23	110	HAZOP - Obtain Approval																	
HAZOP-Z3-90	HAZOP - Review Design / Installation HAZOP for DOU and PSW by independent consultant	30	21-Nov-22	20-Dec-22	110	HAZOP - Review Design / Installation HAZOP for DOU and PSW by independent consultant																	
<b>General Advance Works</b>																							
<b>NSWSPS Sensors</b>																							
ATALGA-1160	CGS - Method Statement for Installation	101	03-Aug-21 A	21-Nov-22	451	CGS - Method Statement for Installation																	
ATALGA-1170	Procurement & Delivery of Sensor	101	03-Aug-21 A	21-Nov-22	451	Procurement & Delivery of Sensor																	
ATALGA-1260	Installation of pressure sensors at NSWSPS	22	22-Nov-22	16-Dec-22	358	Installation of pressure sensors at NSWSPS																	
<b>Disc Filter (DF) Pilot Plant</b>																							
ATALGA-1190	T&C	22	22-Sep-22 A	15-Nov-22	385	T&C																	
<b>Dissolved Air Flotation (DAF) Pilot Plant</b>																							
ATALGA-1200	T&C	11	21-Jul-22 A	12-Nov-22	243	T&C																	
ATALGA-1220	Post-commissioning	144	14-Nov-22	16-May-23	243	Post-commissioning																	
<b>Aerobic Granular Sludge (AGS) Pilot Plant</b>																							
ATALGA-1210	Seeding, process start-up and T&C	52	16-Jun-22 A	12-Nov-22	248	Seeding, process start-up and T&C																	
ATALGA-1270	Post-commissioning	139	14-Nov-22	10-May-23	248	Post-commissioning																	
<b>Zone 1 Construction</b>																							
<b>Inlet Works (IW)</b>																							
<b>IW Foundation &amp; ELS Works</b>																							
<b>IW Basement</b>																							
<b>IW Excavation Works &amp; ELS</b>																							
<b>IW Zone A/D- ELS</b>																							
Z1-IW-5770	IW- Strutting: 1st Layer @+4.0mPD	10	15-Aug-22 A	19-Nov-22	-115	IW- Strutting: 1st Layer @+4.0mPD																	
Z1-IW-5780	IW- Excavation: 2nd Layer +3.5 ~ 1.0mPD	5	21-Nov-22	25-Nov-22	-115	IW- Excavation: 2nd Layer +3.5 ~ 1.0mPD																	



- Remaining Level of Ef...
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## Contract DC/2019/10 - YLEPP - Main Works for Stage 1

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October				November				December				January				February
						24				25				26				27				28
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22
Z1-IW-5790	IW- Strutting: 2nd Layer @+1.5mPD	10	26-Nov-22	07-Dec-22	-115																	
Z1-IW-5800	IW- Excavation: 3rd Layer +1.0 ~ - 1.625mPD	8	08-Dec-22	16-Dec-22	-115																	
Z1-IW-5810	IW- Strutting: 3rd Layer @-1.125mPD	10	17-Dec-22	30-Dec-22	-115																	
Z1-IW-5820	IW- Excavation: 4th Layer -1.625 ~ -3.38mPD	7	31-Dec-22	09-Jan-23	-115																	
<b>IW Zone C - ELS</b>																						
Z1-IW-5670	IW- Excavation: 2nd layer +3.5~+1.0mPD	9	26-Sep-22 A	22-Oct-22 A																		
Z1-IW-5680	IW- Strutting: 2nd Layer @+2.50mPD	10	24-Oct-22 A	16-Nov-22	-107																	
Z1-IW-5690	IW- Excavation: 3rd Layer +1.0~-1.625mPD	10	17-Nov-22	28-Nov-22	-107																	
Z1-IW-5700	IW- Backprop installation	7	22-Dec-22	31-Dec-22	-107																	
Z1-IW-5710	IW- Excavation to Formation -1.625~-3.125mPD	5	03-Jan-23	07-Jan-23	-107																	
<b>IW Base Slab</b>																						
Z1-IW-6060	IW- Zone D - Pile Cap @-3.225mPD	27	10-Jan-23	16-Feb-23	-115																	
Z1-IW-6070	IW- Zone C - Pile Cap @-1.625mPD	20	29-Nov-22	21-Dec-22	-107																	
Z1-IW-6080	IW- Zone C - Pile Cap @-3.05mPD	27	09-Jan-23	15-Feb-23	-107																	
<b>Primary Sedimentation Tank (PST)</b>																						
<b>PST Stage 1</b>																						
<b>Basement RC Works (Stage 1 - Southern Portion)</b>																						
<b>Southern Trench (Zone B)</b>																						
Z1-PST-3630	PST(S1) - Install Reprops R1	3	17-Nov-22	19-Nov-22	-115																	
Z1-PST-3640	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level)	10	24-Oct-22 A	08-Nov-22	-112																	
Z1-PST-3800	PST(S1) - Removal of S1	2	28-Sep-22 A	22-Oct-22 A																		
<b>Northern Trench (Zone E1)</b>																						
Z1-PST-3620	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (-1.125 mPD)	9	12-Sep-22 A	18-Oct-22 A																		
Z1-PST-4240	PST(S1) - Removal of S1	2	01-Nov-22	02-Nov-22	-141																	
Z1-PST-4260	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level)	9	03-Nov-22	12-Nov-22	-141																	
<b>Base Slab between Zone B and E1 (Zone B2)</b>																						
Z1-PST-4572	PST(S1) - Excavation F.E.L. Level	9	08-Oct-22 A	28-Oct-22 A																		
Z1-PST-4582	PST(S1) - Base Slab	20	29-Oct-22 A	16-Nov-22	-139																	
<b>Excavation Works (North Portion), (Excavation Volume: 3,840m3)</b>																						
Z1-PST-4180	PST(S1) - Excavation F.E.L. Level (+1.875 mPD) (3,840m3, 1000m3/day) after stage 2 piling	8	10-Nov-22	18-Nov-22	-141																	
<b>Basement RC Works (North Portion)</b>																						
Z1-PST-4190	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (+3.00 mPD) after stage 2 piling	14	19-Nov-22	05-Dec-22	-141																	
Z1-PST-4200	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level) after stage 2 piling	6	06-Dec-22	12-Dec-22	-141																	
<b>PST Stage 2 of Works</b>																						
<b>PST Foundation - Stage 2 (At Remaining 2 Tanks, PST 5-6 Footprint)</b>																						
Z1-PST-3980	PST Stage 2 - Pile Loading Test (Batch 2 PST: 75nos.+8 nos. of piles at TX1+Additional Piles)	13	26-Oct-22 A	04-Nov-22	-137																	
Z1-PST-4230	PST Stage 2 - Submit to GEO (28d)	28	01-Nov-22	28-Nov-22	72																	
<b>PST Stage 2a Basement Construction Works</b>																						
<b>Excavation Works</b>																						
Z1-PST-4302	PST Stage 2a - Excavation Level (+1.875 mPD) (4,656m3, 800m3/day)	6	05-Nov-22	11-Nov-22	94																	
Z1-PST-4312	PST Stage 2a - Excavation FEL Level (-1.125 mPD & -1.625mPD) (2,086m3, 500m3/day)	4	12-Nov-22	16-Nov-22	94																	
<b>Basement RC Works</b>																						
Z1-PST-4322	PST Stage 2a - Base Slab & Wall Erection of Formworks and RC Works (+3.00 mPD)	10	15-Dec-22	28-Dec-22	94																	
Z1-PST-4332	PST Stage 2a - Wall Erection of Formworks and RC Works (+3.85 mPD)	7	29-Dec-22	06-Jan-23	94																	
Z1-PST-4352	PST Stage 2a - Wall Erection of Formworks and RC Works (Ground Level)	11	07-Jan-23	19-Jan-23	94																	
Z1-PST-4372	PST Stage 2a - Base Slab & Wall Erection of Formworks and RC Works (+0.15 mPD)	14	17-Nov-22	02-Dec-22	94																	
Z1-PST-4382	PST Stage 2a - Wall Erection of Formworks and RC Works (+1.875 mPD)	10	03-Dec-22	14-Dec-22	94																	
<b>PST Superstructure</b>																						



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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October					November					December					January					February	
						24					25					26					27					28	
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
<b>Stage 1</b>																											
<b>RC Works</b>																											
Z1-PST-3660	PST - Wall Erection of Formworks and RC Works (+7.5mPD)	8	13-Dec-22	21-Dec-22	-141																						
Z1-PST-3670	PST - Intermediate Slab (+7.88mPD) and Wall Erection (+9mPD) of Falseworks, Formworks and RC Works	10	22-Dec-22	05-Jan-23	-141																						
Z1-PST-3680	PST - Intermediate Slab of Falseworks, Formworks and RC Works (+9mPD)	15	06-Jan-23	30-Jan-23	-141																						
<b>Stage 2a</b>																											
<b>RC Works</b>																											
Z1-PST-4432	PST - Wall Erection of Formworks and RC Works (+7.5mPD)	6	27-Jan-23	02-Feb-23	94																						
<b>PST Stage 1 - Early T&amp;C (Delink PST Stage 1 Commissioning from IW)</b>																											
Z2D-2160	Complete Demolition of PST4	0		05-Nov-22	133																						
<b>CLP Substations No. 1 &amp; 2</b>																											
<b>Civil Provision for CLP (drawpits &amp; ductings)</b>																											
CLP-1270	Ducting and Drawpits construction	45	01-Nov-22	22-Dec-22	-4																						
<b>CLP Substation No. 1</b>																											
CLP-1040	CLP Substation No.1 - BS and ABWF Works	30	10-Nov-22	14-Dec-22	-58																						
CLP-1070	CLP Substation No.1 - CLP Installation	90	23-Dec-22	21-Apr-23	-4																						
CLP-1280	CLP Substation No.1 - Structure Level +6 to +11.73mPD (1/F) incl. Waterproofing and Testing	14	08-Oct-22 A	09-Nov-22	-58																						
CLP-1290	CLP Substation No.1 - Structure Level +11.73 to +13.11mPD (R/F)	12	08-Nov-22	21-Nov-22	-38																						
CLP-1340	CLP Substation No.1 - E&M Installation	26	15-Nov-22	14-Dec-22	-58																						
<b>CLP Substation No. 2</b>																											
CLP-1050	CLP Substation No.2 - BS and ABWF Works	30	10-Nov-22	14-Dec-22	-58																						
CLP-1080	CLP Substation No.2 - CLP Installation	90	23-Dec-22	21-Apr-23	-4																						
CLP-1140	CLP Substation 1 & 2 - Ready for Handover to CLP and Early Section 1 Completion	0		14-Dec-22	-58																						
CLP-1300	CLP Substation No.2 - Structure Level +6 to +11.73mPD (1/F) incl. Waterproofing and Testing	14	08-Oct-22 A	09-Nov-22	-58																						
CLP-1310	CLP Substation No.2 - Structure Level +11.73 to +13.11mPD (R/F)	12	08-Nov-22	21-Nov-22	-38																						
CLP-1350	CLP Substation No.2 - E&M Installation	26	15-Nov-22	14-Dec-22	-58																						
<b>DSD 11kV Switchgear</b>																											
CLP-1060	DSD11KV Switchgear - BS and ABWF Works (excl. GRC Cladding Installation)	32	17-Nov-22	23-Dec-22	65																						
CLP-1110	DSD11KV Switchgear - Installation	78	24-Dec-22	04-Apr-23	65																						
CLP-1320	DSD11KV Switchgear - Structure Level +6 to +11.73mPD (1/F)	20	26-Oct-22 A	12-Nov-22	68																						
CLP-1330	DSD11KV Switchgear - Structure Level +11.73 to +13.11mPD (R/F)	12	14-Nov-22	26-Nov-22	70																						
<b>Sludge Dewatering Building (SDB)</b>																											
<b>SDB Foundation &amp; ELS - Stage 1</b>																											
<b>SDB GI - Pre-drilling Works</b>																											
<b>SDB At PST 2,4 Footprint</b>																											
SDB-1350	PD4 w/ obstruction (PST4)	12	07-Nov-22	19-Nov-22	267																						
SDB-1360	PD5 w/ obstruction (PST4)	12	07-Nov-22	19-Nov-22	267																						
<b>Administration Building (ADB)</b>																											
<b>Temporary Admin Office and Control Room</b>																											
ADB-1040	Handover of Temp. Admin Office and Control Room	20	16-Nov-22	08-Dec-22	167																						
<b>Temp Admin Office - MiC Section</b>																											
ADB-1020A20	Construction/Installation	41	22-Jul-22 A	03-Nov-22	177																						
ADB-1020A30	E&M Installation and T&C	24	15-Aug-22 A	15-Nov-22	167																						
ADB-1020A40	Relocation of Admin Office (MiC)	18	16-Nov-22	06-Dec-22	169																						
ADB-1020A90	Completion of Admin Office (MiC)	0		06-Dec-22	170																						
<b>ADB Demolition</b>																											
ADB-1050	Demolition of Admin Bldg (23) and Document Centre (24)	20	10-Dec-22	05-Jan-23	167																						
ADB-1250	Relocation of Existing SCADA System of Admin Bldg (23) and Document Centre (24)	21	16-Nov-22	09-Dec-22	167																						



- Remaining Level of Effort
- Actual Work
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## Contract DC/2019/10 - YLEPP - Main Works for Stage 1

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October					November					December					January					February	
						24					25					26					27					28	
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
<b>Zone 2 Construction</b>																											
<b>Temporary Diversion</b>																											
<b>Zone 2B : FST, Temporary RAS to Aeration Tanks</b>																											
<b>Temporary RAS</b>																											
Z2B-1040	Temp RAS E&M installation *Calendar Day	18	15-Sep-22 A	01-Nov-22	-102	Temp RAS E&M installation *Calendar Day																					
Z2B-1180	Complete Zone 2B Temporary Diversion	0		09-Nov-22	-85	◆ Complete Zone 2B Temporary Diversion																					
Z2B-1190	Break Wall for connection to temporary RAS & Switch over	4	10-Nov-22	14-Nov-22	-85	■ Break Wall for connection to temporary RAS & Switch over																					
Z2B-1200	Laying of pipes from temp. RAS to Consolidation tanks & Aeration tanks	25	19-Aug-22 A	02-Nov-22	-85	■ Laying of pipes from temp. RAS to Consolidation tanks & Aeration tanks																					
Z2B-1210	T&C *Calendar Day	7	03-Nov-22	09-Nov-22	-103	■ T&C *Calendar Day																					
Z2B-1220	Plug-off abandoned pipes	1	15-Nov-22	15-Nov-22	-85	■ Plug-off abandoned pipes																					
Z2B-1230	Watertightness test to temp. RAS pumping station	7	30-Sep-22 A	27-Oct-22 A		■ Watertightness test to temp. RAS pumping station																					
<b>Demolition Works</b>																											
<b>Advance Works</b>																											
MBR-1540	MBR- G.I. Works batch 2 (4 nos., 1rig, nos. of G.I. subject to GEO Further Comment)	60	08-Jul-22 A	17-Nov-22	-38	■ MBR- G.I. Works batch 2 (4 nos., 1rig, nos. of G.I. subject to GEO Further Comment)																					
<b>Other Existing Pumping Stations</b>																											
Z2T-152	Demolition of Return Activated Sludge Screw Pumps PS (16) & Chamber (33)	40	15-Nov-22	03-Jan-23	-80	■ Demolition of Return Activated Sludge Screw Pumps PS (16) & Chamber (33)																					
Z2T-154	Demolition of Flow Measurement Chamber (34) & SSD Chamber (32)	40	15-Nov-22	03-Jan-23	-80	■ Demolition of Flow Measurement Chamber (34) & SSD Chamber (32)																					
<b>Final Sedimentation Tanks</b>																											
Z2T-200	Demolition of Mixed Liquor Distribution and Sludge Draw-off Chamber (37)	20	01-Nov-22	23-Nov-22	-72	■ Demolition of Mixed Liquor Distribution and Sludge Draw-off Chamber (37)																					
<b>Mainstream Bio-Reactor &amp; Auxiliary Facility (MBR and AF)</b>																											
<b>MBR and AF Structure</b>																											
<b>MBR - ELS Excavation &amp; Demolition stage 1</b>																											
MBRAF-1460	MBR - Monitoring Installation	18	17-Nov-22	07-Dec-22	-55	■ MBR - Monitoring Installation																					
MBRAF-1540	MBR - Backfilling, advance coring for king post installation & wells installation	25	15-Jun-22 A	16-Nov-22	-59	■ MBR - Backfilling, advance coring for king post installation & wells installation																					
MBRAF-2090	Installation of king post by preboring (affected by existing A-tank)	30	17-Nov-22	21-Dec-22	-59	■ Installation of king post by preboring (affected by existing A-tank)																					
MBRAF-2270	Installation of king post by preboring (affected by existing RAS)	13	04-Jan-23	18-Jan-23	-80	■ Installation of king post by preboring (affected by existing RAS)																					
<b>Southern Side</b>																											
<b>Demolishing of PST 4</b>																											
MBRAF-2030	Demolishing 3/4 area of PST 4	20	30-Sep-22 A	01-Nov-22	-88	■ Demolishing 3/4 area of PST 4																					
MBRAF-2040	Backfilling of PST 4	12	21-Oct-22 A	05-Nov-22	-72	■ Backfilling of PST 4																					
<b>Installation of 813mm casing</b>																											
MBRAF-2080	813 Casing Installation (South) (P195-P242, 48nos.@1.5 nos./day/rig, 1 rig) (after PST4 demolished)	32	07-Dec-22	16-Jan-23	-96	■ 813 Casing Installation (South) (P195-P242, 48nos.@1.5 nos./day/rig, 1 rig) (after PST4 demolished)																					
MBRAF-2340	813 Casing Installation (South) (P167-194, 28nos.@1.5 nos./day/rig, 1 rig)	19	29-Oct-22 A	06-Dec-22	-98	■ 813 Casing Installation (South) (P167-194, 28nos.@1.5 nos./day/rig, 1 rig)																					
<b>Eastern Side</b>																											
<b>Demolition of A-Tank</b>																											
MBRAF-2140	Demolishing of Existing Structure (above)	7	20-Sep-22 A	31-Oct-22 A		■ Demolishing of Existing Structure (above)																					
<b>UU Diversion</b>																											
MBRAF-2120	375 Storm Drain Diversion	30	01-Nov-22	05-Dec-22	-87	■ 375 Storm Drain Diversion																					
<b>Installation of 813mm casing</b>																											
MBRAF-2150	813 Casing Installation (East)(P067-P020, 48nos@ 1.5nos./day/rig, 1 rig) (affected by A-Tank)	32	24-Sep-22 A	12-Nov-22	-44	■ 813 Casing Installation (East)(P067-P020, 48nos@ 1.5nos./day/rig, 1 rig) (affected by A-Tank)																					
MBRAF-2160	813 Casing Installation (East)(P068-P100, 33nos@ 1.5nos./day/rig, 1 rig) (affected by UU diversion)	22	06-Dec-22	03-Jan-23	-85	■ 813 Casing Installation (East)(P068-P100, 33nos@ 1.5nos./day/rig, 1 rig) (affected by UU diversion)																					
<b>Northern Side</b>																											
<b>UU Diversion</b>																											
MBRAF-2170	Air duct - Cut and remove	18	22-Aug-22 A	03-Nov-22	-79	■ Air duct - Cut and remove																					
MBRAF-2190	450 Foul pipe - Cut and remove	30	20-Sep-22 A	26-Nov-22	-88	■ 450 Foul pipe - Cut and remove																					
MBRAF-2200	Conc. Blk. Installation and Backfilling Working Platform (NW and NE Corners)	20	08-Sep-22 A	21-Nov-22	-88	■ Conc. Blk. Installation and Backfilling Working Platform (NW and NE Corners)																					
MBRAF-2320	Remove the existing wall and penstock x 10nos (to be reserved)	12	01-Nov-22	14-Nov-22	-88	■ Remove the existing wall and penstock x 10nos (to be reserved)																					
<b>Installation of 813mm casing</b>																											



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

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

### Monthly Progress Report No. 24 - 3MRP (Oct 2022)

Project ID : DWPr19\_221114-5  
 Layout : DC201910 MPR24-3MRP  
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#### Monthly Progress Report - 3MRP

Date	Revision	Checked	Approved
31-Oct-22	Rev. 0		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October					November				December				January			February
						24					25				26				27			28
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22
MBRAF-2100	Closing of 813mm pipe pile (South, East and North Sides)	10	17-Jan-23	03-Feb-23	-96																	
MBRAF-2210	813 Casing Installation (North)(P398-P348, 006-019, 55nos.@ 1.5nos./day/rig, 1 rig)	36	22-Nov-22	06-Jan-23	-87																	
<b>Western Side</b>																						
<b>UU Diversion / Roadworks</b>																						
MBRAF-2110	225 Foul (From Blower House) Diversion	35	27-Sep-22 A	29-Oct-22 A																		
MBRAF-2180	Expose fibre/power cable (NW corner) for slew	16	22-Aug-22 A	03-Nov-22	-91																	
MBRAF-2220	CLP 11kV (From Blower House) Diversion	24	01-Nov-22	28-Nov-22	-65																	
MBRAF-2230	Fire Hydrant Re-provision	25	02-Nov-22	30-Nov-22	-88																	
MBRAF-2240	800 and 1000 DI Pipe From exsiting Flow Chamber - Cut and remove	30	02-Nov-22	06-Dec-22	-88																	
<b>Installation of 813mm casing</b>																						
MBRAF-2260	813 Casing Installation (West)(P294-P239, 56nos@2nos./day/rig, 2rigs)	14	12-Dec-22	29-Dec-22	-90																	
MBRAF-2280	Closing of 813mm pipe pile (West)	5	16-Jan-23	27-Jan-23	-90																	
MBRAF-2290	813 Casing Installation (West)(P338-P293, 45nos@2nos./day/rig, 2rigs)	13	30-Dec-22	15-Jan-23	-90																	
MBRAF-2300	813 Casing Installation (West) (P400-P339, 62nos@2nos./day/rig, 2rigs)	18	21-Nov-22	11-Dec-22	-92																	
MBRAF-2330	Mobilisation piling rig and set-up	15	03-Nov-22	21-Nov-22	-91																	
<b>Tertiary Treatment System (TTS)</b>																						
<b>TTS Foundation and ELS</b>																						
TTS-1000	TTS - Site Clearance	15	11-May-22 A	22-Nov-22	-85																	
TTS-1010	TTS - Sheet Piles Install (4,639m2 @120m2/d)	45	16-Nov-22	10-Jan-23	-85																	
TTS-1020	TTS - ELS Excavation (+5.0 to +3.65mPD) (7,645m3)	10	30-Jan-23	09-Feb-23	-90																	
TTS-1230	TTS - Monitoring Installation and Pumping Test	21	28-Dec-22	28-Jan-23	-90																	
TTS-1530	TTS - Kingpost installation (preboring method) (11 nos.,4d/pile/rig,1rig)	44	23-Nov-22	16-Jan-23	-85																	
<b>Zone 3 Construction</b>																						
<b>Stage 1 Advance Works</b>																						
<b>Stage 1 - Advance Works</b>																						
<b>Zone 3A (at SHT)</b>																						
<b>Pipe Connection</b>																						
Z3A-000400	Temp. Water Heater House Completion (Location C)	0		17-Oct-22 A																		
Z3A-000410	Completion of Zone 3A Dversion	0		17-Oct-22 A																		
<b>Zone 3B (at STB)</b>																						
<b>Temporary Primary Sludge Pumping Station (Location D)</b>																						
Z3A-310	T&C Works (ATAL)	14	31-Aug-22 A	17-Sep-22 A																		
Z3A-430	Temp. Primary Sludge Pumping Station (Location D) Completion	0		17-Sep-22 A																		
<b>Temporary Thickened Sludge / Supernatant Pumping Station (Location E1)</b>																						
Z3B-000270	Temp. Thickening Sludge/Supematant Pumping Station (Location E1) Completion	0		26-Sep-22 A																		
<b>Relocation of Ferrie Chloride (FeCl3) Dosing System &amp; LV Switchboard (Location E2)</b>																						
Z3B-000280	FeCl3 Relocation (Location E2) Completion	0		10-Sep-22 A																		
<b>Pipe Connection</b>																						
Z3B-000380	Connection at Temp. Thickened Sludge/ Supernatant Pumping Station (Location E1)	1	26-Sep-22 A	26-Sep-22 A																		
Z3B-000400	Temp. Primary Sludge Pumping Station (Location D) Completion	0		17-Sep-22 A																		
Z3B-000410	Connection at Temp. Primary Sludge Pumping Station (Location D)	1	10-Sep-22 A	10-Sep-22 A																		
Z3B-000420	FeCl3 System (Location E) Relocation Completion	0		10-Sep-22 A																		
Z3B-000430	Temp. Thickened Sludge/ Supernatant Pumping Station (Location E1) Completion	0		26-Sep-22 A																		
Z3B-000440	Completion of Zone 3B Diversion	0		26-Sep-22 A																		
<b>Advance Works</b>																						
Z3S1A-3010	Completion of Stage 1 (Construction & E&M for Temporary facilities)	0		17-Oct-22 A																		
<b>Stage 1 Demolition Works</b>																						
<b>UC Decommission Works</b>																						



- Remaining Level of Ef...
- Actual Work
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## Contract DC/2019/10 - YLEPP - Main Works for Stage 1

### Monthly Progress Report No. 24 - 3MRP (Oct 2022)

Project ID : DWPr19\_221114-5  
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#### Monthly Progress Report - 3MRP

Date	Revision	Checked	Approved
31-Oct-22	Rev. 0		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October				November				December				January				February	
						24				25				26				27				28	
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29
Z3A-000110	Decommission Works for Existing Utilities Gallery	10	01-Nov-22	11-Nov-22	-118																		
<b>Zone 3 North Portion (Z3N)</b>																							
<b>Demolition</b>																							
<b>Existing Sludge Thickening House (8, Air Floatation Thickener)</b>																							
Z3S2-2030	Demolition of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 1	12	26-Sep-22 A	04-Oct-22 A																			
Z3S2-2030a	Demolition of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 3 (affected by Zone 2B Diversi	15	15-Nov-22	01-Dec-22	-56																		
Z3S2-2030c	Backfilling of Existing Sludge Thickening House (8, Air Floatation Thickener) - Zone 2	3	05-Oct-22 A	08-Oct-22 A																			
Z3S2-2040	Demolition of Consolidation Tank (7) C1 & C2	7	01-Nov-22	08-Nov-22	-7																		
<b>New Sludge Thickening Building (STB)</b>																							
<b>STB : Predrilling Works</b>																							
Z3S1a.7-70	Complete Predrilling Works for STB	0		23-Nov-22	9																		
Z3S3-3480	Predrilling Works (2 nos. STB-PD7,9)	20	01-Nov-22	23-Nov-22	-65																		
Z3S3-3490	Environment GI (4 nos., 7d/no., 2 rigs) & Submit RAP Report to EPD (30 days)	20	15-Nov-22	07-Dec-22	-39																		
<b>STB : Driven H-pile</b>																							
<b>Batch 1</b>																							
Z3S3-2091	STB - H-pile Testing (Batch 1)	21	01-Nov-22	24-Nov-22	-50																		
Z3S3-3370	STB - Submit to GEO (28d) (Batch 1)	28	25-Nov-22	29-Dec-22	81																		
Z3S3-3520	STB - Driven H-pile Zone P2 (33 nos., 1400m) @70m/day, 2rigs	24	11-Oct-22 A	29-Oct-22 A																			
Z3S3-3530	STB - Driven H-pile Zone P2A (5 nos., 265m) @40m/day, 1rig	7	12-Oct-22 A	29-Oct-22 A																			
Z3S3-3540	STB - Driven H-pile Zone P3 (12 nos., 636m) @30m/day, 1rig	21	17-Sep-22 A	31-Oct-22 A																			
Z3S3-3560	STB - Driven H-pile Zone P5 (1no) @40m/day, 1rig	9	26-Oct-22 A	29-Oct-22 A																			
Z3S3-3590	STB - Driven H-pile Finish (Batch 1)	0		31-Oct-22 A																			
Z3S3-3680	STB - Driven H-pile Zone P2B (5nos.) @40m/day, 1rig	7	20-Oct-22 A	31-Oct-22 A																			
<b>STB : Foundation and ELS</b>																							
<b>STB Stage 1 ELS</b>																							
Z3S3-2180	STB - Sheetpile Installation (3,997m2 @90m2/d/rig, 1rig) (Stage 1)	38	13-Dec-22	04-Feb-23	-65																		
<b>Utility Corridor (UC5) (Connect to STB)</b>																							
<b>UC5 : Foundation and ELS Works</b>																							
Z3S2-3070	UC5 - Site Setup & Mobilization	6	12-Nov-22	18-Nov-22	-65																		
Z3S2-3080	UC5 - Sheetpile Installation (1,806m2 @90m2/d)	20	19-Nov-22	12-Dec-22	-65																		
Z3S2-3090	UC5 - Monitoring Installation and Pumping Test	21	08-Dec-22	28-Dec-22	-61																		
Z3S2-3100	UC5 - ELS, Excavation (+6.0 to +4.0mPD) (526m3, 300m3/d)	2	29-Dec-22	30-Dec-22	-50																		
Z3S2-3110	UC5 - ELS, Strut Installation S1 (+4.0mPD)	5	31-Dec-22	06-Jan-23	-50																		
Z3S2-3120	UC5 - Marine Sediments Treatment and Disposal	14	31-Dec-22	17-Jan-23	-43																		
Z3S2-3130	UC5 - ELS, Excavation (+4.0 to -0.5mPD) (1184m3, 200m3/d)	6	07-Jan-23	13-Jan-23	-50																		
Z3S2-3140	UC5 - ELS, Strut Installation S2 (0mPD)	5	14-Jan-23	19-Jan-23	-50																		
Z3S2-3170	UC5 - ELS, Excavation (-0.5 to -4.125mPD) (953m3, 200m3/d)	5	27-Jan-23	01-Feb-23	-50																		
<b>Zone 3 South Portion (Z3S)</b>																							
<b>Demolition</b>																							
<b>Existing Sludge Holding Tank SHT 1 (10)</b>																							
Z3S1a.7-60	Completion Connection to Temporary SHT & Dewatering House	0		17-Oct-22 A																			
Z3S2-2010	Demolition of SHT 2 (10) (partial demolished, remaining demolish during ELS stage)	20	24-Oct-22 A	31-Oct-22 A																			
Z3S2.5-10	Demolition of Existing Water Heater House	25	18-Oct-22 A	31-Oct-22 A																			
<b>Sludge Digester No. 1-3 (SD1-3)</b>																							
<b>SD1-3 : Foundation and ELS</b>																							
<b>SD1-3 : Sheetpiling</b>																							
Z3S3-2060	Sludge Digester No. 1-3 - Sheet Piles Install Portion 2 (4,636m2, 120m2/d/rig, 1rig)	36	19-Sep-22 A	28-Dec-22	-75																		
Z3S3-3350	Sludge Digester No. 1-3 - Monitoring Installation and Pumping Test	28	06-Dec-22	02-Jan-23	-97																		



- Remaining Level of Eff...
- Actual Work
- Remaining Work
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- ◆ Milestone

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

### Monthly Progress Report No. 24 - 3MRP (Oct 2022)

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Monthly Progress Report - 3MRP			
Date	Revision	Checked	Approved
31-Oct-22	Rev. 0		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	October					November				December				January			February	
						24					25				26				27			28	
						02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29
<b>SD1-3 : Excavation and Strut Installation</b>																							
Z3S3-2110	Sludge Digester No. 1-3 - ELS Excavation (+5.0 to +4.3mPD, 4168m3 @ 500m3/d)	9	03-Jan-23	12-Jan-23	-78																		
Z3S3-2130	Sludge Digester No. 1-3 - Marine Sediments Treatment and Disposal	21	13-Jan-23	13-Feb-23	38																		
Z3S3-2140	Sludge Digester No. 1-3 - Strut Installation S1 (+4.8mPD)	8	13-Jan-23	28-Jan-23	-78																		
<b>Biogas Holder No. 1 (BH1)</b>																							
<b>BH1 : Foundation</b>																							
Z3BH-1000	Biogas Holder No. 1 - Band drain Installation for Ground Improvement	6	22-Nov-22	28-Nov-22	-118																		
Z3BH-1040	Biogas Holder No. 1 - Surcharge (concrete block placing and backfill)	30	06-Dec-22	12-Jan-23	-118																		
Z3BH-1050	Biogas Holder No. 1 - Consolidation	30	13-Jan-23	11-Feb-23	-145																		
Z3BH-1060	Biogas Holder No. 1 - Band drain Installation for Ground Improvement @ SHT 1 and existing water heater house f	6	29-Nov-22	05-Dec-22	-118																		
<b>Zone 3 Middle Portion (Z3M)</b>																							
<b>Sludge Digester No. 4-6 (SD4-6)</b>																							
<b>SD4-6 : Foundation and ELS</b>																							
<b>Pre-drilling Works</b>																							
Z3S8SD-1010	Sludge Digester No. 5-6 - Pre-drill (3 nos. SD-BH1,SD-BH3,SD-BH4)	48	18-Nov-22	16-Jan-23	703																		



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

**Contract DC/2019/10 - YLEPP - Main Works for Stage 1**  
**Monthly Progress Report No. 24 - 3MRP (Oct 2022)**

Project ID : DWPr19\_221114-5  
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Monthly Progress Report - 3MRP			
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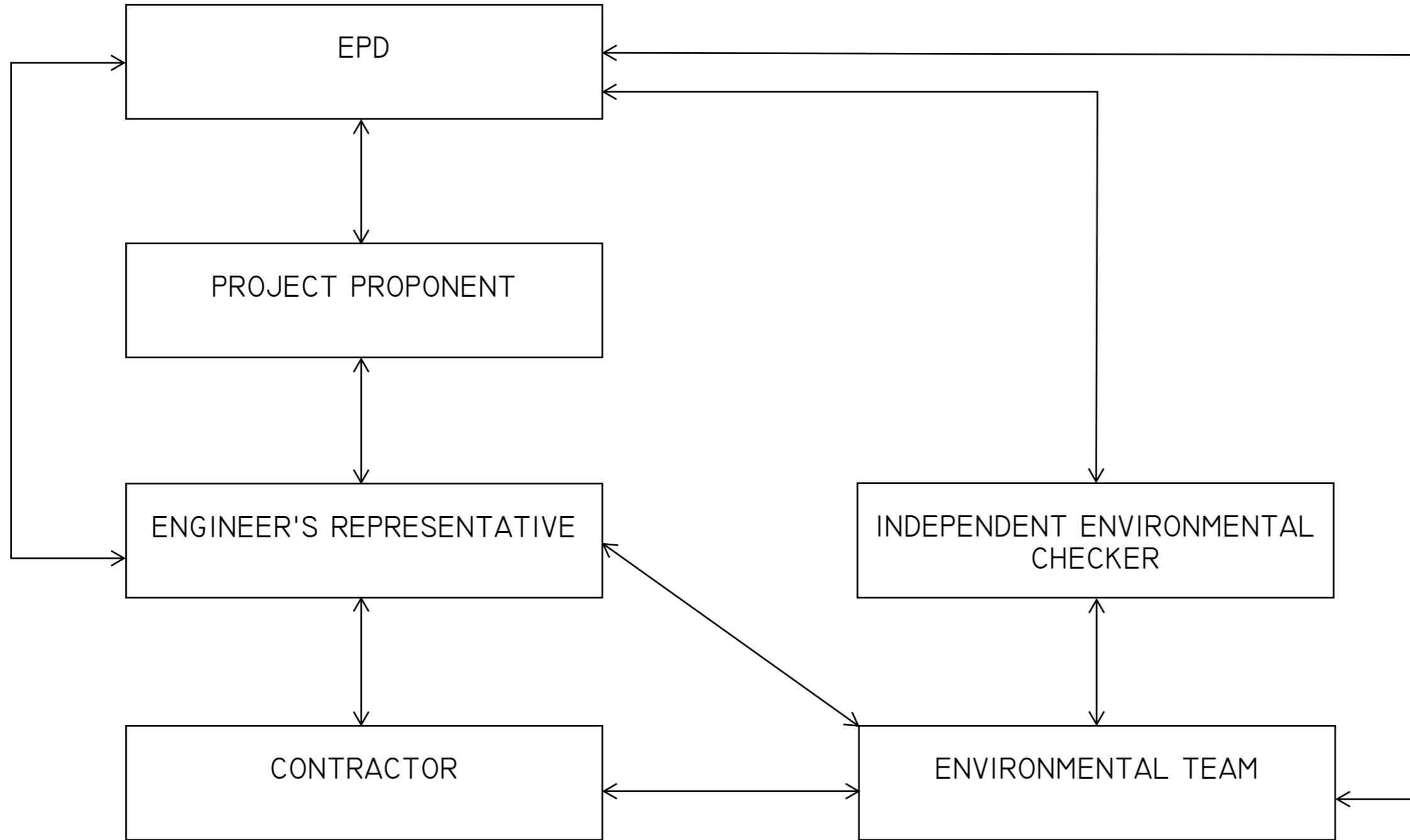
# Appendix B

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## Project Organization Chart

### LEGEND:

↔ LINE OF COMMUNICATION



#### PROJECT

YUEN LONG EFFLUENT  
POLISHING PLANT -  
INVESTIGATION, DESIGN  
AND CONSTRUCTION

#### CLIENT

渠務署  
Drainage Services Department

#### CONSULTANT

AECOM Asia Company Ltd.  
www.aecom.com

#### SUB-CONSULTANTS

#### ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.

#### STATUS

#### SCALE

A3 1 : 40000

#### DIMENSION UNIT

METRES

#### KEY PLAN

#### PROJECT NO.

60505476

#### CONTRACT NO.

CE 3/2015 (DS)

#### SHEET TITLE

PROJECT ORGANISATION

#### SHEET NUMBER

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# Appendix C

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## Action and Limit Levels

## Action and Limit Levels for Air Quality

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

**Notes:**

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

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

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

## Action and Limit Levels for Construction Noise

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

**Notes:**

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

## Action and Limit Levels for Water Quality

Parameters	Action Levels	Limit Levels
<i>Construction Phase Water Quality Monitoring</i>		
DO in mg/L (Surface, Middle & Bottom) <sup>2</sup>	<p><b>Surface &amp; Middle</b> 5%-ile of baseline data for surface and middle layer.</p> <p><b>Bottom</b> 5%-ile of baseline data for bottom layer.</p>	<p><b>Surface &amp; Middle</b> 4 mg/L or 1%-ile of baseline data for surface and middle layer.</p> <p><b>Bottom</b> 2 mg/L or 1%-ile of baseline data for bottom layer.</p>
SS in mg/L (depth-averaged <sup>1</sup> ) <sup>3</sup>	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 <sup>1</sup> ) <sup>3</sup>	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) <sup>1</sup>	72.2 dB(A) <sup>2</sup>

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 <sup>3</sup>	Limit Level <sup>3</sup>
Transect	Abundance of all avifauna species (including but not only limited to overwintering waterbirds) in the community	Significant decline <sup>1,2</sup> 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

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Calibration Certificates/ reports of  
Monitoring Equipments

# Air Quality Monitoring Equipments

Report no. : 940891CA220067

Page 1 of 1

**CALIBRATION CERTIFICATE OF DUST METER**

Client : Fugro Technical Services Limited

Project : Calibration Services

**Client Supplied Information**

Details of Unit Under Test, UUT

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

**Laboratory Information**

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

**Calibration Results :**

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

**Remarks:**

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

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

**\*\* End of Report \*\***

Report no. : 940891CA220067(1)

Page 1 of 1

## CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

### Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser dust monitor

Manufacturer : SIBATA

Model No. : LD-5R

Serial No. : 761105

Specification Limit : NA

Next Calibration Date : 07-Dec-2022

### Laboratory Information

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

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

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

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

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

### Calibration Results :

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

### Remarks:

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

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

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

Leung Kwok Tai (Assistant Manager)

**\*\* End of Report \*\***



**TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET**

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

**CONDITIONS**

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

**CALIBRATION ORIFICE**

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

**CALIBRATIONS**

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

**Calculations:**

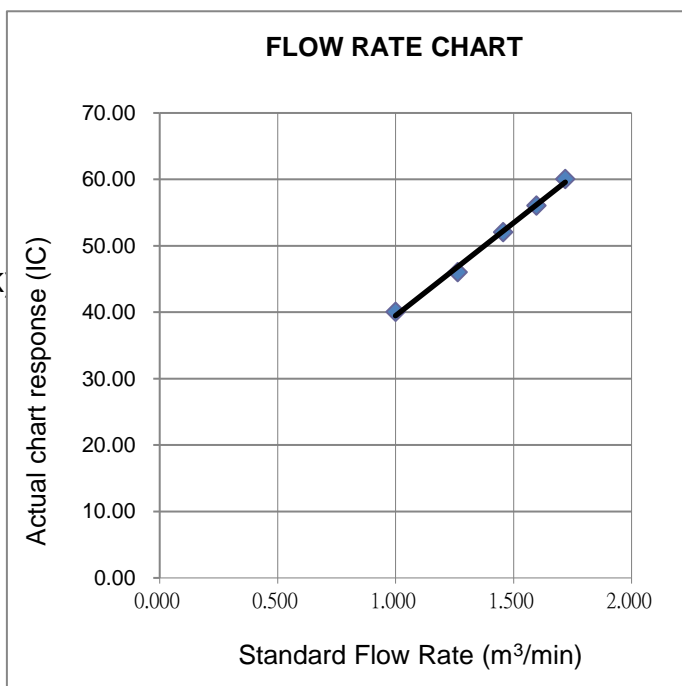
$Qstd = 1/m[\text{sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$   
 $IC = I[\text{sqrt}(Pa/Pstd)(Tstd/Ta)]$

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

**For subsequent calculation of sampler flow:**

$1/m((I)[\text{sqrt}(298/Tav)(Pav/760)]-b)$

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





## CALIBRATION REPORT OF WIND METER

<b>Project:</b> Contract No. SPW 07/2020 <b>Location:</b> Yuen Long Sewage Treatment Works	<b>Date of Calibration:</b> 24-Sep-2022 <b>Next Calibration Date:</b> 23-Mar-2023 <b>Technician:</b> Sam Fong
<b>Brand:</b> Global Water <b>Model:</b> GL500-7-2	<b>Serial No:</b> 2012000974
<b>Anemometer</b>	
<b>Brand:</b> Benetech <b>Model:</b> GM816	<b>Equipment ID:</b> 08
<b>Procedures:</b>	
<ol style="list-style-type: none"> <li>1. <b>Wind Still Test:</b> The wind speed sensor was held by hand until stabilized.</li> <li>2. <b>Wind Speed Test:</b> The wind meter was calibrated in-situ and compared with the Anemometer.</li> <li>3. <b>Wind Direction Test:</b> The wind meter was calibrated in-situ and compared with a marine compass from four directions.</li> </ol>	

**Wind Still Test:**

Wind Speed (m/s)
0.00

**Wind Speed Test:**

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

**Wind Direction Test:**

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



**Wan Ka Ho**  
 Project Consultant

**Report Date:** 26/9/2022

# Noise Monitoring Equipments

Report no.: 212769CA220043

Page 1 of 1

## CALIBRATION CERTIFICATE OF SOUND LEVEL METER

### Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

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

### Laboratory Information

Details of Reference Equipment -

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

### Calibration Results :

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

### Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast.
4. The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
5. The values given in this Calibration Certificate only relate to the values at the time of the test and any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

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

\*\* End of Report \*\*

Report no.: 212769CA220999

Page 1 of 1

## CALIBRATION CERTIFICATE OF SOUND LEVEL METER

### Client Supplied Information

Client : Fugro Technical Services Limited

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.	1488300	05011	002110

Equipment ID : N/A

Next Calibration Date : 06-May-2023

Specification Limit : EN 61672-1: 2003 Class 1

### Laboratory Information

Details of Reference Equipment -

Description : B &amp; K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)

Equipment ID. : R-108-1

Date of Calibration : 07-May-2022

Calibration Location : Calibration Laboratory of FTS      Ambient Temperature : 20±2 °C

Method Used : By direct comparison      Relative Humidity : &lt;80% R.H.

### Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	-0.2	2.6 to -0.6
	2000Hz	0.9	2.8 to -0.4
	1000Hz	0.1	1.1 to -1.1
	500Hz	-3.1	-1.8 to -4.6
	250Hz	-8.5	-7.2 to -10.0
	125Hz	-16.0	-14.6 to -17.6
	63Hz	-26.1	-24.7 to -27.7
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

### Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast.
4. The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
5. The values given in this Calibration Certificate only relate to the values at the time of the test and any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

 Checked by : Cuny      Date : 13-5-2022      Certified by : K.T. Leung      Date : 13-5-2022

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

Leung Kwok Tai (Assistant Manager)

**\*\* End of Report \*\***

Report no.: 212769CA220043(1)

Page 1 of 1

## CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

### Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

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

### Laboratory Information


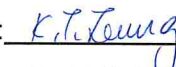
Description : Reference Sound level meter  
 Equipment ID. : R-119-1  
 Date of Calibration : 06-Jan-2022 Ambient Temperature : 22 °C  
 Calibration Location : Calibration Laboratory of FTS Relative Humidity : <80% R.H.  
 Method Used : By direct comparison

### Calibration Results :

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

### Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment does comply with the specification limit.
4. The values given in this Calibration Certificate only relate to the values at the time of the test and any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

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

**\*\* End of Report \*\***

Report no.: 212769CA221230

**CALIBRATION CERTIFICATE OF SOUND CALIBRATOR**

Client : Fugro Technical Services Ltd.

Project : Calibration Services

**Client Supplied Information**

Details of Unit Under Test, UUT

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

Next Calibration Date : 08-Jun-2023

Specification Limit : EN 60942: 2003 Class 1

**Laboratory Information**

Details of Calibration Equipment

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

Date of Calibration : 09-Jun-2022

Calibration Location : Calibration Laboratory of FTS Ambient Temperature :  $20 \pm 2$  °C

Method Used : By direct comparison Relative Humidity : &lt; 80 %RH

**Calibration Results :**

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

**Remarks :**

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

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

**\*\* End of Report \*\***

Report No. : 212769CA220614

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 : Smart Sensor

Model No. : AR816

Serial No. : N/A

Equipment ID. : AM-001

Next Calibration Date : 28-Mar-2023

**Laboratory Information**

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID. : R-101-4

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

Calibration Location : Calibration Laboratory of FTS

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

**Calibration Results :**

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

**Remarks :**

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

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

# Water Quality Monitoring Equipments



Report No. : 142626WA222183



Page 1 of 3

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

Client : Fugro Technical Services Limited (MCL)

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

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

Client sample ID : Serial No. 19A105807

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

**Laboratory Information**

Lab. sample ID : WA222183/1

Date sample received : 10/10/2022

Date of calibration : 21/10/2022

Next calibration date : 20/01/2023

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. : 142626WA222183

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	9.13	-0.05
6.86	6.58	-0.28

**B. Salinity calibration**

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.01	+0.01	± 0.1
10	9.96	-0.04	± 0.5
20	19.95	-0.05	± 1.0
30	29.80	-0.20	± 1.5
40	39.80	-0.20	± 2.0

**C. Dissolved Oxygen calibration**

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	7.77	7.85
2	8.03	8.10
3	8.05	8.10
Average	7.95	8.02

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

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

Date : 11/11/2022

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

Report No. : 142626WA222183

Page 3 of 3

**Results :**

**D. Temperature calibration**

Thermometer reading, °C	Meter reading, °C
22.7	22.826

**E. Turbidity calibration**

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.3	+0.3	± 0.6
8	8.2	+0.2	± 0.8
40	39.8	-0.2	± 3.0
80	80.4	+0.4	± 4.0

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

Date : 14/11/2022  
 \*\* End of Report \*\*

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

Report No. : 142626WA221988



Page 1 of 3

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

Client : Fugro Technical Services Limited (MCL)

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

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

Client sample ID : Serial No. 19A105808

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

**Laboratory Information**

Lab. sample ID : WA221988/1

Date sample received : 19/09/2022

Date of calibration : 26/09/2022

Next calibration date : 25/12/2022

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. : 142626WA221988

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	9.08	-0.10
6.86	6.86	0

**B. Salinity calibration**

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.01	+0.01	± 0.1
10	9.95	-0.05	± 0.5
20	19.80	-0.20	± 1.0
30	30.03	+0.03	± 1.5
40	40.03	+0.03	± 2.0

**C. Dissolved Oxygen calibration**

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.62	8.50
2	8.46	8.48
3	8.46	8.48
Average	8.51	8.49

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

 Certified by : 

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

 Date : 4/11/2022

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

Report No. : 142626WA221988

Page 3 of 3


**Results :**

**D. Temperature calibration**

Thermometer reading, °C	Meter reading, °C
19.890	19.8

**E. Turbidity calibration**

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.15	+0.15	± 0.6
8	7.80	-0.20	± 0.8
40	39.20	-0.80	± 3.0
80	80.30	+0.30	± 4.0

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

Date : 11/11/2022

\*\* End of Report \*\*

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

# CALIBRATION CERTIFICATE

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

**Calibration Certificate Number:**

**61134**

**Instrument Type:**

**MODEL 106**

**Instrument Serial Number:**

**67738**

**Calibrated By:**

**N.PADDON**

**Date:**

**11<sup>TH</sup> 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.

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

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

+44 (0) 1803 869292  
sales@valeport.co.uk  
[www.valeport.co.uk](http://www.valeport.co.uk)

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





a xylem brand

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

### Certificate of Calibration

#### TEST REPORT

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

#### POWER TEST

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

#### NOISE TEST

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



## VERIFICATION

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

## OPTIONS

Bottom Track	Installed
SmartPulse HD <sup>TM</sup>	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

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## Environmental Monitoring Schedule

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

**Environmental Monitoring Schedule (November 2022)**

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

**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
9. \*Typhoon Signal No. 3 was hoisted on 1 November 2022. Due to safety concerns, the water quality monitoring on 1 November 2022 has been cancelled.

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

**Environmental Monitoring Schedule (December 2022)**

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

**Remarks**

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

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

**Environmental Monitoring Schedule (January 2023)**

Sun	Mon	Tue	Wed	Thur	Fri	Sat
1	2	3 <b>WQM</b> Mid Flood(6:13) Mid Ebb(11:29)	4 <b>AQM, NM</b>	5 <b>WQM</b> Mid Flood(7:58) Mid Ebb(12:46)	6	7 <b>WQM</b> Mid Flood(9:16) Mid Ebb(13:52)
8	9	10 <b>AQM, NM</b> <b>WQM</b> Mid Flood(10:51) Mid Ebb(15:35)	11	12 <b>WQM</b> Mid Flood(11:46) Mid Ebb(16:56)	13	14 <b>WQM</b> Mid Flood(12:44) Mid Ebb(18:37)
15	16 <b>AQM, NM</b>	17 <b>WQM</b> Mid Flood(14:57) Mid Ebb(9:36)	18	19 <b>WQM</b> Mid Flood(6:54) Mid Ebb(12:07)	20	21 <b>AQM</b> <b>WQM</b> Mid Flood(8:42) Mid Ebb(13:38)
22	23	24 <b>WQM</b> Mid Flood(10:43) Mid Ebb(16:02)	25	26 <b>WQM</b> Mid Flood(11:57) Mid Ebb(17:41)	27 <b>AQM, NM</b>	28 <b>WQM</b> Mid Flood(13:03) Mid Ebb(19:21)
29	30	31 <b>WQM</b> Mid Flood(9:51) Mid Ebb(22:32)				

**Remarks**

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

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

**Environmental Monitoring Schedule (February 2023)**

Sun	Mon	Tue	Wed	Thur	Fri	Sat
			1	2 <b>AQM, NM</b> <b>WQM</b> Mid Flood(16:31) Mid Ebb(12:03)	3	4 <b>WQM</b> Mid Flood(8:26) Mid Ebb(13:09)
5	6	7 <b>WQM</b> Mid Flood(9:44) Mid Ebb(14:47)	8 <b>AQM, NM</b>	9 <b>WQM</b> Mid Flood(10:27) Mid Ebb(15:57)	10	11 <b>WQM</b> Mid Flood(11:08) Mid Ebb(17:05)
12	13	14 <b>AQM, NM</b> <b>WQM</b> Mid Flood(12:46) Mid Ebb(6:26)	15	16 <b>WQM</b> Mid Flood(5:48) Mid Ebb(11:11)	17	18 <b>WQM</b> Mid Flood(7:44) Mid Ebb(12:52)
19	20 <b>AQM, NM</b>	21 <b>WQM</b> Mid Flood(9:29) Mid Ebb(15:03)	22	23 <b>WQM</b> Mid Flood(10:21) Mid Ebb(16:13)	24	25 <b>AQM</b> <b>WQM</b> Mid Flood(10:58) Mid Ebb(17:16)
26	27	28 <b>WQM</b> Mid Flood(7:15) Mid Ebb(20:14)				

**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

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## Environmental Monitoring Results

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## Air Quality Monitoring Results



**Air Quality Monitoring Results for**

**Contract No. SPW 07/2020**

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

**AM1 - Topfine Machinery (China) Co. Ltd.**

Date	Weather Condition	Start Time	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )			Action Level ( $\text{ug}/\text{m}^3$ )	Limit Level ( $\text{ug}/\text{m}^3$ )
			1st Measurement	2nd Measurement	3rd Measurement		
1-Nov-22	Cloudy	8:32	60	74	81	291	500
7-Nov-22	Cloudy	8:30	63	67	49		
12-Nov-22	Cloudy	8:39	81	70	98		
18-Nov-22	Fine	8:32	91	74	84		
24-Nov-22	Cloudy	8:31	46	67	49		
30-Nov-22	Cloudy	8:33	95	77	102		
		Min	46				
		Max	102				
		Average	74				

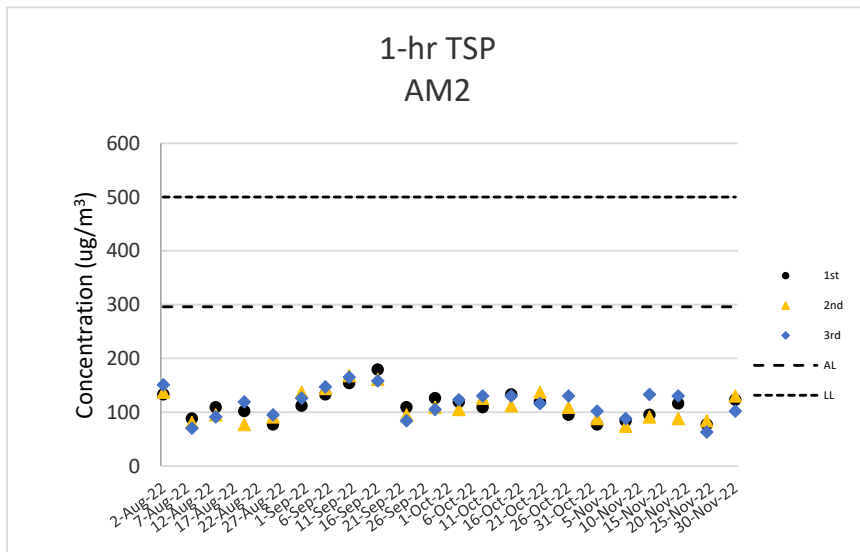
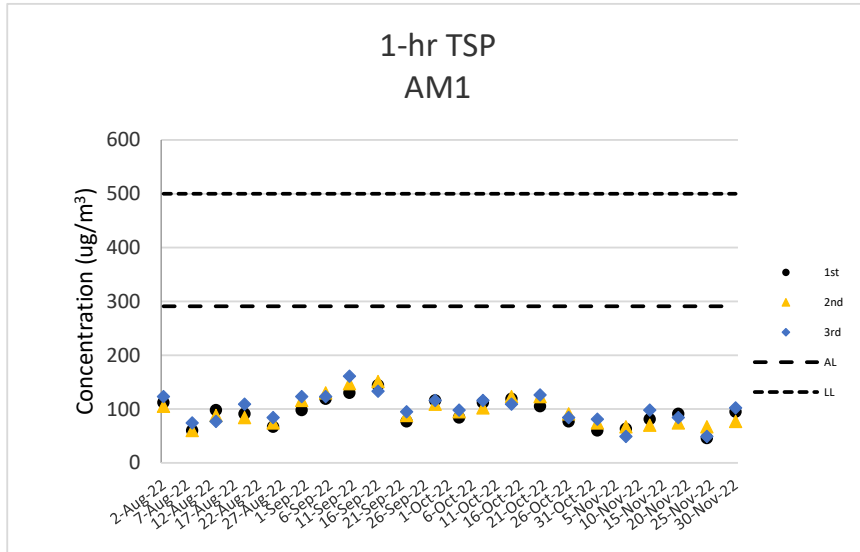
**AM2 - Squatter house at the west of Yuen Long STW**

Date	Weather Condition	Start Time	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )			Action Level ( $\text{ug}/\text{m}^3$ )	Limit Level ( $\text{ug}/\text{m}^3$ )
			1st Measurement	2nd Measurement	3rd Measurement		
1-Nov-22	Cloudy	8:43	77	88	102	296	500
7-Nov-22	Cloudy	8:42	84	74	88		
12-Nov-22	Cloudy	8:53	95	91	133		
18-Nov-22	Fine	8:41	116	88	130		
24-Nov-22	Cloudy	9:00	77	84	63		
30-Nov-22	Cloudy	8:44	123	130	102		
		Min	63				
		Max	133				
		Average	97				

Note:

Underline: Exceedance of Action Level

**Underline and Bold**: Exceedance of Limit Level



**Air Quality Monitoring Results**

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Noise Monitoring Results

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

**CM1 - Squatter house to the north of YLSTW**

Date	Start Time	L <sub>eq</sub> 30min dB(A)	L <sub>10</sub> dB(A)	L <sub>90</sub> dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
1-Nov-22	10:07	57	61	52	0.3	Cloudy	75
7-Nov-22	10:03	58	62	51	0.1	Cloudy	75
18-Nov-22	10:03	56	59	51	0.2	Fine	75
24-Nov-22	10:28	55	58	51	0.1	Cloudy	75
30-Nov-22	10:07	55	57	50	0.2	Cloudy	75
	<b>Max</b>	58					
	<b>Min</b>	55					

**CM2 - Squatter house to the west of YLSTW**

Date	Start Time	L <sub>eq</sub> 30min dB(A)	L <sub>10</sub> dB(A)	L <sub>90</sub> dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
1-Nov-22	8:49	66	69	58	0.4	Cloudy	75
7-Nov-22	8:47	66	69	58	0.3	Cloudy	75
18-Nov-22	8:46	65	69	57	0.3	Fine	75
24-Nov-22	9:06	66	70	58	0.3	Cloudy	75
30-Nov-22	8:50	67	70	58	0.3	Cloudy	75
	<b>Max</b>	67					
	<b>Min</b>	65					

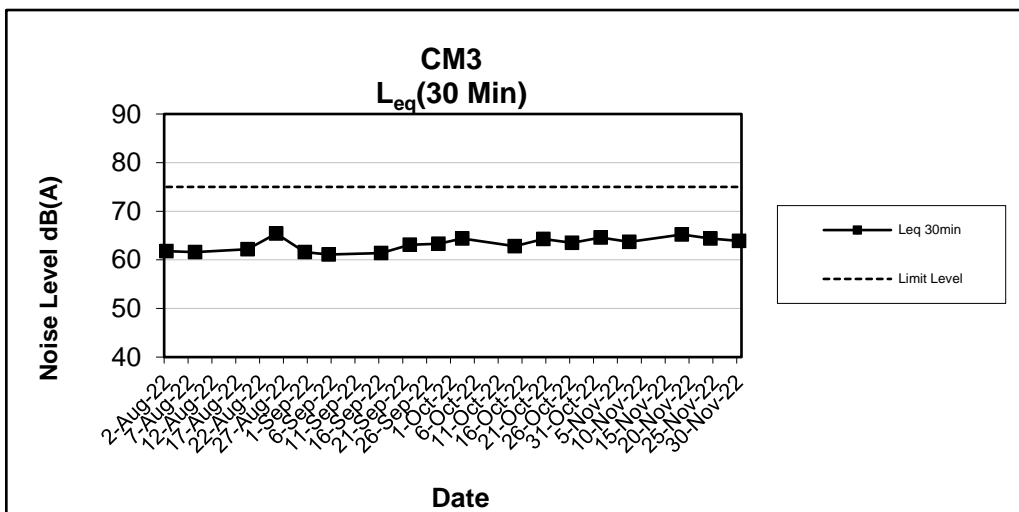
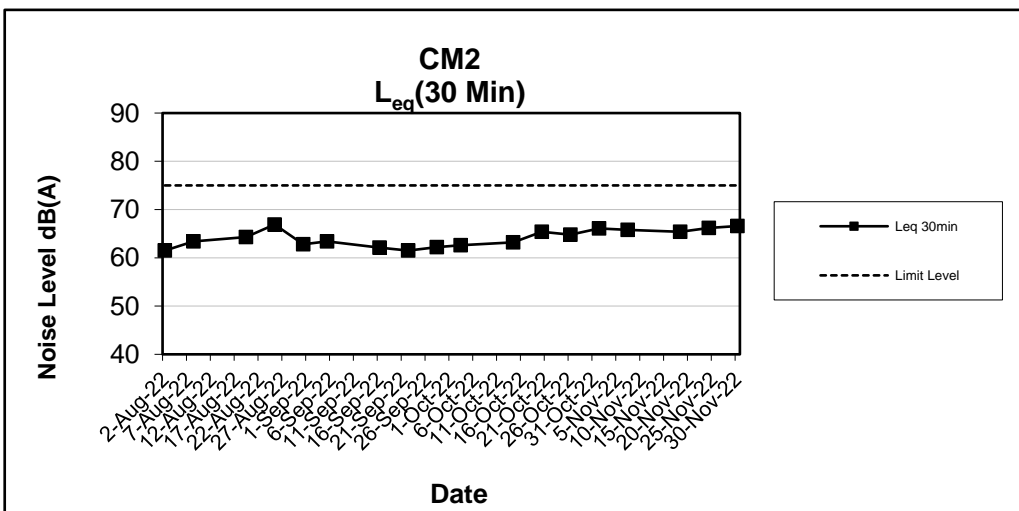
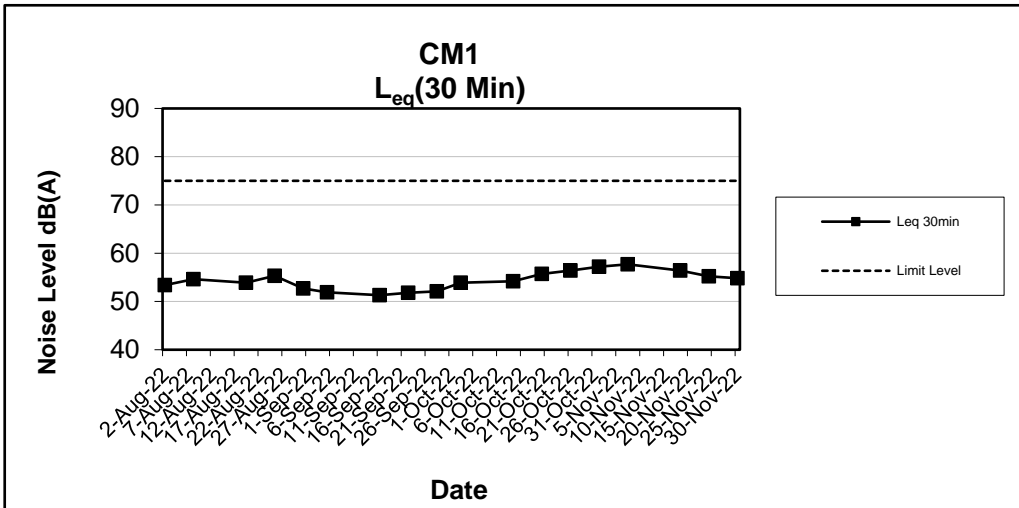
**CM3 - Squatter house to the east of YLSTW**

Date	Start Time	L <sub>eq</sub> 30min dB(A)	L <sub>10</sub> dB(A)	L <sub>90</sub> dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
1-Nov-22	11:28	65	68	58	0.4	Cloudy	75
7-Nov-22	11:22	64	67	57	0.2	Cloudy	75
18-Nov-22	11:22	65	69	58	0.2	Fine	75
24-Nov-22	13:01	64	68	57	0.2	Cloudy	75
30-Nov-22	11:27	64	67	57	0.3	Cloudy	75
	<b>Max</b>	65					
	<b>Min</b>	64					

Note:

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

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



**Noise Monitoring Results**

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## Water Quality Monitoring Results

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	3/11/2022	Mid-Flood	Fine	Moderate	17:23	1	M	0.5	1	0.123	344	7.84	7.84	4.27	4.27	22.37	22.38	74.1	74.0	6.40	6.39	22.5	22.5	26	28
M1	3/11/2022	Mid-Flood	Fine	Moderate	17:23	1	M	0.5	2			7.83		4.26		22.38		73.9		6.38		22.5		30	
M2	3/11/2022	Mid-Flood	Fine	Moderate	17:08	0.9	M	0.45	1	0.105	309	7.92	7.93	3.59	3.59	21.82	21.83	76.6	76.5	6.59	6.59	22.0	22.1	32	34
M2	3/11/2022	Mid-Flood	Fine	Moderate	17:08	0.9	M	0.45	2			7.93		3.58		21.83		76.4		6.58		22.1		35	
M3	3/11/2022	Mid-Flood	Cloudy	Smooth	17:01	0.6	M	0.3	1	0.325	78	7.73	7.72	7.84	7.85	23.27	23.27	67.1	66.7	5.69	5.66	35.2	35.7	42	43
M3	3/11/2022	Mid-Flood	Cloudy	Smooth	17:01	0.6	M	0.3	2			7.71		7.85		23.26		66.3		5.63		36.1		44	
M1	3/11/2022	Mid-Ebb	Fine	Moderate	9:12	0.9	M	0.45	1	0.046	92	7.80	7.81	7.34	7.35	22.22	22.23	54.6	54.9	4.72	4.77	27.7	27.7	37	37
M1	3/11/2022	Mid-Ebb	Fine	Moderate	9:12	0.9	M	0.45	2			7.81		7.35		22.24		55.2		4.81		27.7		37	
M2	3/11/2022	Mid-Ebb	Fine	Moderate	9:36	0.8	M	0.4	1	0.084	114	7.90	7.91	7.64	7.65	22.37	22.38	55.8	56.0	4.83	4.85	26.4	26.5	32	32
M2	3/11/2022	Mid-Ebb	Fine	Moderate	9:36	0.8	M	0.4	2			7.91		7.65		22.39		56.1		4.87		26.5		31	
M3	3/11/2022	Mid-Ebb	Cloudy	Smooth	9:13	0.8	M	0.4	1	0.317	260	7.42	7.43	5.37	5.37	20.17	20.18	45.1	45.5	3.73	3.76	40.0	39.6	37	39
M3	3/11/2022	Mid-Ebb	Cloudy	Smooth	9:13	0.8	M	0.4	2			7.44		5.36		20.18		45.8		3.78		39.2		41	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	5/11/2022	Mid-Flood	Fine	Moderate	18:31	1.3	M	0.65	1	0.077	247	7.82	7.83	5.44	5.46	22.07	22.06	63.4	63.6	5.28	5.29	10.1	10.1	12	12
M1	5/11/2022	Mid-Flood	Fine	Moderate	18:31	1.3	M	0.65	2			7.83		5.47		22.04		63.8		5.29		10.1		12	
M2	5/11/2022	Mid-Flood	Fine	Moderate	18:13	1.1	M	0.55	1	0.084	209	7.64	7.64	5.39	5.37	22.19	22.24	59.1	59.4	4.93	4.97	10.2	10.2	19	18
M2	5/11/2022	Mid-Flood	Fine	Moderate	18:13	1.1	M	0.55	2			7.63		5.34		22.28		59.7		5.01		10.2		17	
M3	5/11/2022	Mid-Flood	Cloudy	Smooth	18:13	0.8	M	0.4	1	0.351	84	7.76	7.75	8.01	8.02	22.83	22.83	54.1	54.5	4.54	4.57	12.6	12.8	15	16
M3	5/11/2022	Mid-Flood	Cloudy	Smooth	18:13	0.8	M	0.4	2			7.74		8.02		22.82		54.8		4.59		13.0		16	
M1	5/11/2022	Mid-Ebb	Fine	Moderate	11:28	1.1	M	0.55	1	0.081	20	7.66	7.65	6.67	6.68	22.39	22.27	45.7	46.0	4.62	4.64	10.7	10.7	13	14
M1	5/11/2022	Mid-Ebb	Fine	Moderate	11:28	1.1	M	0.55	2			7.64		6.69		22.14		46.2		4.65		10.7		14	
M2	5/11/2022	Mid-Ebb	Fine	Moderate	11:42	0.9	M	0.45	1	0.063	88	7.59	7.59	6.92	6.93	21.94	21.97	50.3	50.2	4.92	4.91	10.4	10.4	13	12
M2	5/11/2022	Mid-Ebb	Fine	Moderate	11:42	0.9	M	0.45	2			7.58		6.94		21.99		50.1		4.89		10.4		11	
M3	5/11/2022	Mid-Ebb	Cloudy	Smooth	11:22	0.6	M	0.3	1	0.332	274	7.48	7.49	3.94	3.95	20.43	20.44	67.8	67.5	5.79	5.77	21.6	21.2	28	28
M3	5/11/2022	Mid-Ebb	Cloudy	Smooth	11:22	0.6	M	0.3	2			7.49		3.96		20.44		67.1		5.75		20.9		27	

Remark

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

For Flood Tide

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

For Ebb Tide

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



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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	8/11/2022	Mid-Flood	Fine	Moderate	19:37	1	M	0.5	1	0.049	198	7.82	7.83	4.06	4.07	21.94	21.93	58.7	58.7	5.13	5.12	26.1	26.1	25	25
M1	8/11/2022	Mid-Flood	Fine	Moderate	19:37	1	M	0.5	2			7.83		4.07		21.92		58.6		5.11		26.0		24	
M2	8/11/2022	Mid-Flood	Fine	Moderate	19:19	1.2	M	0.6	1	0.084	142	7.77	7.73	3.73	3.74	22.06	22.08	56.1	56.4	4.93	4.95	24.3	24.2	43	43
M2	8/11/2022	Mid-Flood	Fine	Moderate	19:19	1.2	M	0.6	2			7.69		3.74		22.09		56.7		4.97		24.2		42	
M3	8/11/2022	Mid-Flood	Cloudy	Calm	19:13	0.8	M	0.4	1	0.319	83	7.91	7.92	5.16	5.17	22.17	22.16	61.8	62.4	5.22	5.27	27.5	27.9	37	37
M3	8/11/2022	Mid-Flood	Cloudy	Calm	19:13	0.8	M	0.4	2			7.92		5.17		22.15		62.9		5.31		28.3		37	
M1	8/11/2022	Mid-Ebb	Fine	Moderate	13:25	1	M	0.5	1	0.073	93	7.65	7.66	4.12	4.13	22.81	22.83	49.2	49.3	4.37	4.38	28.2	28.2	37	38
M1	8/11/2022	Mid-Ebb	Fine	Moderate	13:25	1	M	0.5	2			7.66		4.14		22.84		49.4		4.39		28.2		39	
M2	8/11/2022	Mid-Ebb	Fine	Moderate	13:43	0.9	M	0.45	1	0.129	313	7.61	7.62	4.92	4.93	22.94	22.95	53.7	53.6	4.51	4.50	27.3	27.3	27	27
M2	8/11/2022	Mid-Ebb	Fine	Moderate	13:43	0.9	M	0.45	2			7.62		4.93		22.96		53.4		4.48		27.3		27	
M3	8/11/2022	Mid-Ebb	Cloudy	Calm	13:28	0.6	M	0.3	1	0.303	266	7.65	7.65	3.29	3.28	22.91	22.92	69.1	68.7	5.89	5.86	25.9	25.5	28	29
M3	8/11/2022	Mid-Ebb	Cloudy	Calm	13:28	0.6	M	0.3	2			7.64		3.27		22.92		68.2		5.83		25.1		29	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	10/11/2022	Mid-Flood	Fine	Moderate	20:03	1.3	M	0.65	1	0.086	96	7.82	7.83	5.37	5.37	25.12	25.13	63.4	63.7	5.48	5.49	27.4	27.4	17	17
M1	10/11/2022	Mid-Flood	Fine	Moderate	20:03	1.3	M	0.65	2			7.83		5.36		25.14		63.9		5.49		27.4		17	
M2	10/11/2022	Mid-Flood	Fine	Moderate	19:45	1	M	0.5	1	0.106	75	7.78	7.79	5.29	5.29	24.11	24.14	58.7	58.7	5.11	5.11	28.5	28.5	39	40
M2	10/11/2022	Mid-Flood	Fine	Moderate	19:45	1	M	0.5	2			7.79		5.28		24.17		58.6		5.10		28.4		41	
M3	10/11/2022	Mid-Flood	Fine	Calm	19:46	0.8	M	0.4	1	0.341	95	7.90	7.89	5.35	5.36	26.04	26.05	63.8	64.1	5.09	5.11	33.0	32.3	41	43
M3	10/11/2022	Mid-Flood	Fine	Calm	19:46	0.8	M	0.4	2			7.88		5.37		26.05		64.4		5.13		31.7		44	
M1	10/11/2022	Mid-Ebb	Fine	Moderate	14:35	0.9	M	0.45	1	0.063	175	7.92	7.93	4.49	4.49	23.94	23.93	50.8	50.8	4.46	4.46	26.6	26.6	34	35
M1	10/11/2022	Mid-Ebb	Fine	Moderate	14:35	0.9	M	0.45	2			7.93		4.48		23.92		50.7		4.45		26.6		36	
M2	10/11/2022	Mid-Ebb	Fine	Moderate	14:51	0.8	M	0.4	1	0.086	98	7.84	7.85	4.81	4.82	24.56	24.57	54.2	54.5	4.67	4.68	25.9	25.9	33	32
M2	10/11/2022	Mid-Ebb	Fine	Moderate	14:51	0.8	M	0.4	2			7.86		4.82		24.57		54.8		4.69		25.9		30	
M3	10/11/2022	Mid-Ebb	Fine	Calm	14:37	0.6	M	0.3	1	0.302	262	7.56	7.57	2.89	2.89	27.54	27.55	73.2	72.8	5.91	5.88	41.8	41.5	43	44
M3	10/11/2022	Mid-Ebb	Fine	Calm	14:37	0.6	M	0.3	2			7.57		2.88		27.56		72.4		5.85		41.3		44	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	12/11/2022	Mid-Flood	Fine	Moderate	20:54	1.3	M	0.65	1	0.056	99	7.23	7.24	4.34	4.33	24.11	24.14	68.4	68.7	5.30	5.32	14.6	14.6	18	19
M1	12/11/2022	Mid-Flood	Fine	Moderate	20:54	1.3	M	0.65	2			7.24		4.31		24.16		68.9		5.34		14.6		19	
M2	12/11/2022	Mid-Flood	Fine	Moderate	20:37	1	M	0.5	1	0.07	73	7.46	7.45	4.11	4.13	24.73	24.79	67.2	67.3	5.11	5.13	14.2	14.2	21	22
M2	12/11/2022	Mid-Flood	Fine	Moderate	20:37	1	M	0.5	2			7.44		4.14		24.85		67.4		5.14		14.3		22	
M3	12/11/2022	Mid-Flood	Cloudy	Calm	20:28	1	M	0.5	1	0.347	92	7.94	7.94	5.27	5.27	25.31	25.31	67.8	67.6	5.46	5.45	16.6	16.3	24	24
M3	12/11/2022	Mid-Flood	Cloudy	Calm	20:28	1	M	0.5	2			7.93		5.26		25.31		67.3		5.43		16.1		24	
M1	12/11/2022	Mid-Ebb	Fine	Moderate	15:51	1.2	M	0.6	1	0.092	164	7.83	7.84	4.53	4.55	25.24	25.24	56.7	56.8	4.43	4.45	13.2	13.2	21	20
M1	12/11/2022	Mid-Ebb	Fine	Moderate	15:51	1.2	M	0.6	2			7.84		4.57		25.23		56.8		4.46		13.2		19	
M2	12/11/2022	Mid-Ebb	Fine	Moderate	16:20	0.9	M	0.45	1	0.123	98	7.74	7.75	5.11	5.12	25.97	25.98	60.1	60.2	4.86	4.88	13.6	13.6	19	20
M2	12/11/2022	Mid-Ebb	Fine	Moderate	16:20	0.9	M	0.45	2			7.76		5.13		25.99		60.3		4.89		13.6		20	
M3	12/11/2022	Mid-Ebb	Cloudy	Calm	15:42	0.6	M	0.3	1	0.321	276	7.63	7.63	2.94	2.93	26.86	26.87	73.6	73.4	5.99	5.98	25.3	24.8	19	20
M3	12/11/2022	Mid-Ebb	Cloudy	Calm	15:42	0.6	M	0.3	2			7.62		2.92		26.87		73.2		5.96		24.4		21	

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	15/11/2022	Mid-Flood	Cloudy	Smooth	13:37	2	M	1	1	0.324	274	7.75	7.76	8.22	8.23	27.31	27.32	67.1	67.5	5.33	5.36	11.2	11.5	16	16
M1	15/11/2022	Mid-Flood	Cloudy	Smooth	13:37	2	M	1	2			7.77		8.23		27.33		67.8		5.38		11.8		16	
M2	15/11/2022	Mid-Flood	Cloudy	Smooth	14:03	1	M	0.5	1	0.297	315	7.86	7.86	7.29	7.29	27.93	27.94	64.3	63.9	5.11	5.08	13.1	13.5	18	17
M2	15/11/2022	Mid-Flood	Cloudy	Smooth	14:03	1	M	0.5	2			7.85		7.28		27.94		63.4		5.05		13.9		16	
M3	15/11/2022	Mid-Flood	Fine	Moderate	13:30	1.2	M	0.6	1	0.063	78	7.57	7.56	6.70	6.71	26.29	26.29	56.1	56.0	4.92	4.88	24.9	24.9	36	36
M3	15/11/2022	Mid-Flood	Fine	Moderate	13:30	1.2	M	0.6	2			7.54		6.71		26.28		55.8		4.84		24.9		36	
M1	15/11/2022	Mid-Ebb	Cloudy	Smooth	18:18	2.2	M	1.1	1	0.21	193	7.57	7.57	6.94	6.94	26.37	26.36	52.9	52.6	4.21	4.19	25.2	24.7	35	37
M1	15/11/2022	Mid-Ebb	Cloudy	Smooth	18:18	2.2	M	1.1	2			7.57		6.93		26.35		52.2		4.17		24.3		38	
M2	15/11/2022	Mid-Ebb	Cloudy	Smooth	17:49	1.2	M	0.6	1	0.183	226	7.68	7.69	6.76	6.75	26.84	26.83	48.1	48.4	3.83	3.85	17.5	17.3	15	16
M2	15/11/2022	Mid-Ebb	Cloudy	Smooth	17:49	1.2	M	0.6	2			7.69		6.74		26.82		48.6		3.86		17.1		17	
M3	15/11/2022	Mid-Ebb	Fine	Moderate	17:40	0.9	M	0.45	1	0.054	99	7.62	7.63	6.21	6.22	26.15	26.15	60.2	60.3	5.21	5.22	19.9	19.9	20	20
M3	15/11/2022	Mid-Ebb	Fine	Moderate	17:40	0.9	M	0.45	2			7.64		6.22		26.14		60.4		5.23		19.8		20	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	17/11/2022	Mid-Flood	Fine	Moderate	16:14	1	M	0.5	1	0.08	324	7.54	7.53	8.01	8.02	26.13	26.14	69.3	69.3	5.83	5.82	13.3	13.3	19	21
M1	17/11/2022	Mid-Flood	Fine	Moderate	16:14	1	M	0.5	2			7.52		8.03		26.14		69.2		5.81		13.3		22	
M2	17/11/2022	Mid-Flood	Fine	Moderate	15:55	0.8	M	0.4	1	0.046	72	7.74	7.74	8.09	8.09	26.92	26.93	64.2	64.4	5.43	5.46	13.6	13.7	21	21
M2	17/11/2022	Mid-Flood	Fine	Moderate	15:55	0.8	M	0.4	2			7.73		8.08		26.94		64.6		5.49		13.7		20	
M3	17/11/2022	Mid-Flood	Fine	Calm	15:48	0.4	M	0.2	1	0.299	85	7.94	7.95	8.04	8.05	27.05	27.06	57.5	58.0	4.43	4.46	21.6	21.1	19	19
M3	17/11/2022	Mid-Flood	Fine	Calm	15:48	0.4	M	0.2	2			7.95		8.06		27.06		58.4		4.49		20.7		19	
M1	17/11/2022	Mid-Ebb	Fine	Moderate	7:10	1.1	M	0.55	1	0.086	92	7.71	7.72	8.90	8.91	26.56	26.55	58.7	58.8	4.81	4.84	16.7	16.8	20	19
M1	17/11/2022	Mid-Ebb	Fine	Moderate	7:10	1.1	M	0.55	2			7.73		8.92		26.54		58.9		4.86		16.8		18	
M2	17/11/2022	Mid-Ebb	Fine	Moderate	7:33	0.9	M	0.45	1	0.075	186	7.74	7.75	8.74	8.74	26.32	26.32	60.8	60.8	4.92	4.93	16.1	16.2	12	12
M2	17/11/2022	Mid-Ebb	Fine	Moderate	7:33	0.9	M	0.45	2			7.75		8.73		26.31		60.7		4.93		16.3		12	
M3	17/11/2022	Mid-Ebb	Fine	Calm	7:09	0.6	M	0.3	1	0.33	274	7.69	7.68	6.26	6.26	23.19	23.18	51.7	51.4	3.95	3.93	30.5	31.0	21	23
M3	17/11/2022	Mid-Ebb	Fine	Calm	7:09	0.6	M	0.3	2			7.67		6.25		23.17		51.1		3.91		31.6		24	

Remark

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For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	19/11/2022	Mid-Flood	Fine	Moderate	17:08	1	M	0.5	1	0.058	333	7.83	7.84	8.59	8.58	26.23	26.26	68.3	68.4	5.17	5.19	20.4	20.3	8	9
M1	19/11/2022	Mid-Flood	Fine	Moderate	17:08	1	M	0.5	2			7.84		8.56		26.28		68.4		5.20		20.3		9	
M2	19/11/2022	Mid-Flood	Fine	Moderate	16:49	0.9	M	0.45	1	0.033	304	7.93	7.94	8.41	8.42	27.13	27.14	50.2	50.5	4.29	4.32	19.2	19.3	17	18
M2	19/11/2022	Mid-Flood	Fine	Moderate	16:49	0.9	M	0.45	2			7.94		8.43		27.14		50.8		4.34		19.3		19	
M3	19/11/2022	Mid-Flood	Cloudy	Calm	16:54	0.6	M	0.3	1	0.353	77	7.94	7.94	8.94	8.95	28.83	28.84	53.5	53.7	4.01	4.03	21.3	21.8	28	27
M3	19/11/2022	Mid-Flood	Cloudy	Calm	16:54	0.6	M	0.3	2			7.93		8.96		28.84		53.9		4.04		22.3		25	
M1	19/11/2022	Mid-Ebb	Fine	Moderate	10:04	0.8	M	0.4	1	0.046	91	7.81	7.85	8.88	8.89	26.45	26.47	57.8	57.8	4.42	4.43	18.5	18.5	11	11
M1	19/11/2022	Mid-Ebb	Fine	Moderate	10:04	0.8	M	0.4	2			7.88		8.89		26.48		57.7		4.44		18.5		10	
M2	19/11/2022	Mid-Ebb	Fine	Moderate	10:20	0.7	M	0.35	1	0.077	143	7.74	7.74	8.71	8.72	26.97	26.96	62.8	62.6	4.59	4.57	19.2	19.2	25	27
M2	19/11/2022	Mid-Ebb	Fine	Moderate	10:20	0.7	M	0.35	2			7.73		8.73		26.94		62.4		4.54		19.2		28	
M3	19/11/2022	Mid-Ebb	Cloudy	Calm	9:58	0.4	M	0.2	1	0.333	267	7.68	7.69	6.88	6.88	25.97	25.98	48.4	48.8	3.65	3.68	18.4	18.6	28	27
M3	19/11/2022	Mid-Ebb	Cloudy	Calm	9:58	0.4	M	0.2	2			7.69		6.87		25.98		49.2		3.71		18.8		26	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	22/11/2022	Mid-Flood	Fine	Moderate	6:43	1.2	M	0.6	1	0.083	93	7.13	7.13	10.64	10.65	25.44	25.38	60.1	60.2	4.67	4.68	13.6	13.6	23	23
M1	22/11/2022	Mid-Flood	Fine	Moderate	6:43	1.2	M	0.6	2			7.12		10.66		25.32		60.3		4.69		13.6		23	
M2	22/11/2022	Mid-Flood	Fine	Moderate	7:03	1	M	0.5	1	0.054	264	7.27	7.27	10.84	10.86	25.11	25.14	63.2	63.2	4.82	4.83	13.1	13.1	20	19
M2	22/11/2022	Mid-Flood	Fine	Moderate	7:03	1	M	0.5	2			7.26		10.88		25.17		63.1		4.83		13.1		18	
M3	22/11/2022	Mid-Flood	Cloudy	Calm	6:47	0.6	M	0.3	1	0.285	79	7.51	7.52	10.15	10.14	21.68	21.69	73.1	73.4	5.63	5.65	12.0	12.2	16	16
M3	22/11/2022	Mid-Flood	Cloudy	Calm	6:47	0.6	M	0.3	2			7.52		10.13		21.69		73.7		5.67		12.4		16	
M1	22/11/2022	Mid-Ebb	Fine	Moderate	12:52	0.9	M	0.45	1	0.07	54	7.29	7.29	9.54	9.56	25.39	25.38	50.1	50.4	4.23	4.24	16.4	16.4	15	17
M1	22/11/2022	Mid-Ebb	Fine	Moderate	12:52	0.9	M	0.45	2			7.28		9.58		25.37		50.6		4.24		16.4		18	
M2	22/11/2022	Mid-Ebb	Fine	Moderate	12:34	0.8	M	0.4	1	0.074	77	7.34	7.33	9.79	9.78	25.07	25.06	49.2	49.3	4.11	4.14	16.8	16.9	18	19
M2	22/11/2022	Mid-Ebb	Fine	Moderate	12:34	0.8	M	0.4	2			7.32		9.77		25.05		49.3		4.16		16.9		20	
M3	22/11/2022	Mid-Ebb	Cloudy	Calm	12:31	0.6	M	0.3	1	0.261	263	7.34	7.35	8.91	8.91	25.26	25.27	78.5	78.1	6.13	6.09	15.6	16.1	16	16
M3	22/11/2022	Mid-Ebb	Cloudy	Calm	12:31	0.6	M	0.3	2			7.36		8.91		25.27		77.6		6.05		16.5		15	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	24/11/2022	Mid-Flood	Fine	Moderate	8:47	1.1	M	0.55	1	0.085	13	7.14	7.16	8.62	8.64	24.33	24.31	52.6	52.4	4.20	4.19	27.4	27.4	24	22
M1	24/11/2022	Mid-Flood	Fine	Moderate	8:47	1.1	M	0.55	2			7.17		8.66		24.29		52.1		4.18		27.4		20	
M2	24/11/2022	Mid-Flood	Fine	Moderate	9:03	0.9	M	0.45	1	0.049	83	7.34	7.33	8.44	8.43	24.01	24.02	60.8	60.7	4.51	4.50	28.1	28.1	18	19
M2	24/11/2022	Mid-Flood	Fine	Moderate	9:03	0.9	M	0.45	2			7.32		8.41		24.03		60.6		4.48		28.1		19	
M3	24/11/2022	Mid-Flood	Cloudy	Smooth	8:42	0.6	M	0.3	1	0.344	85	7.53	7.54	8.39	8.40	22.04	22.05	75.7	75.5	6.05	6.04	38.6	39.0	44	45
M3	24/11/2022	Mid-Flood	Cloudy	Smooth	8:42	0.6	M	0.3	2			7.54		8.41		22.05		75.2		6.03		39.3		45	
M1	24/11/2022	Mid-Ebb	Fine	Moderate	14:21	0.9	M	0.45	1	0.104	99	7.51	7.52	7.09	7.07	25.09	25.10	70.1	70.3	5.23	5.26	22.9	23.0	20	21
M1	24/11/2022	Mid-Ebb	Fine	Moderate	14:21	0.9	M	0.45	2			7.52		7.04		25.11		70.4		5.28		23.0		22	
M2	24/11/2022	Mid-Ebb	Fine	Moderate	14:03	0.7	M	0.35	1	0.068	73	7.55	7.57	7.06	7.05	24.08	24.09	67.2	67.3	4.98	5.00	24.2	24.3	31	30
M2	24/11/2022	Mid-Ebb	Fine	Moderate	14:03	0.7	M	0.35	2			7.58		7.04		24.09		67.4		5.01		24.3		29	
M3	24/11/2022	Mid-Ebb	Cloudy	Smooth	14:05	0.6	M	0.3	1	0.304	256	7.37	7.36	5.91	5.92	23.12	23.12	80.9	80.6	6.52	6.50	30.1	29.8	43	41
M3	24/11/2022	Mid-Ebb	Cloudy	Smooth	14:05	0.6	M	0.3	2			7.35		5.92		23.11		80.3		6.48		29.4		39	

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	26/11/2022	Mid-Flood	Fine	Moderate	10:27	1.2	M	0.6	1	0.063	92	7.57	7.56	7.86	7.85	23.49	23.45	51.1	50.9	4.86	4.85	27.1	27.2	25	26
M1	26/11/2022	Mid-Flood	Fine	Moderate	10:27	1.2	M	0.6	2			7.54		7.84		23.41		50.7		4.84		27.2		26	
M2	26/11/2022	Mid-Flood	Fine	Moderate	10:42	0.9	M	0.45	1	0.075	34	7.44	7.43	7.92	7.93	24.11	24.12	53.8	53.9	4.97	4.98	26.4	26.4	21	22
M2	26/11/2022	Mid-Flood	Fine	Moderate	10:42	0.9	M	0.45	2			7.41		7.93		24.12		53.9		4.98		26.4		23	
M3	26/11/2022	Mid-Flood	Cloudy	Calm	10:25	0.4	M	0.2	1	0.324	92	7.43	7.44	7.91	7.92	23.71	23.72	48.1	48.5	3.87	3.90	27.7	27.6	36	38
M3	26/11/2022	Mid-Flood	Cloudy	Calm	10:25	0.4	M	0.2	2			7.44		7.92		23.73		48.9		3.93		27.5		39	
M1	26/11/2022	Mid-Ebb	Fine	Moderate	15:49	1	M	0.5	1	0.056	87	8.22	8.23	4.63	4.62	24.11	24.15	91.3	91.4	7.72	7.73	27.3	27.3	19	20
M1	26/11/2022	Mid-Ebb	Fine	Moderate	15:49	1	M	0.5	2			8.23		4.61		24.18		91.4		7.73		27.2		21	
M2	26/11/2022	Mid-Ebb	Fine	Moderate	15:25	0.8	M	0.4	1	0.045	265	8.32	8.36	4.78	4.78	23.66	23.65	96.1	96.3	7.83	7.85	27.9	27.9	28	29
M2	26/11/2022	Mid-Ebb	Fine	Moderate	15:25	0.8	M	0.4	2			8.39		4.77		23.64		96.4		7.86		27.9		29	
M3	26/11/2022	Mid-Ebb	Cloudy	Calm	15:27	0.6	M	0.3	1	0.283	259	7.21	7.22	4.12	4.13	25.01	25.02	59.5	59.7	4.99	5.01	35.7	35.1	34	31
M3	26/11/2022	Mid-Ebb	Cloudy	Calm	15:27	0.6	M	0.3	2			7.23		4.14		25.02		59.8		5.02		34.5		28	

Remark

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For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	29/11/2022	Mid-Flood	Fine	Moderate	13:28	1.3	M	0.65	1	0.063	98	7.70	7.76	7.36	7.35	26.22	26.22	64.5	64.5	4.91	4.91	17.1	17.1	20	19
M1	29/11/2022	Mid-Flood	Fine	Moderate	13:28	1.3	M	0.65	2			7.81		7.33		26.21		64.4		4.90		17.1		17	
M2	29/11/2022	Mid-Flood	Fine	Moderate	13:48	1.1	M	0.55	1	0.039	134	7.82	7.83	7.44	7.47	26.01	26.02	58.4	58.4	4.72	4.71	17.5	17.5	22	23
M2	29/11/2022	Mid-Flood	Fine	Moderate	13:48	1.1	M	0.55	2			7.83		7.49		26.03		58.3		4.70		17.5		24	
M3	29/11/2022	Mid-Flood	Fine	Calm	13:26	0.4	M	0.2	1	0.352	79	7.59	7.60	8.36	8.37	28.88	28.89	58.3	57.9	4.72	4.70	25.9	25.4	31	32
M3	29/11/2022	Mid-Flood	Fine	Calm	13:26	0.4	M	0.2	2			7.61		8.38		28.89		57.5		4.67		24.9		33	
M1	29/11/2022	Mid-Ebb	Fine	Moderate	18:30	1.1	M	0.55	1	0.053	265	7.84	7.84	6.74	6.73	26.58	26.58	68.4	68.4	5.23	5.22	17.0	17.0	20	20
M1	29/11/2022	Mid-Ebb	Fine	Moderate	18:30	1.1	M	0.55	2			7.83		6.72		26.57		68.3		5.21		17.0		19	
M2	29/11/2022	Mid-Ebb	Fine	Moderate	18:11	0.9	M	0.45	1	0.038	91	7.91	7.92	6.85	6.86	26.44	26.44	59.2	59.3	4.84	4.85	16.7	16.7	18	19
M2	29/11/2022	Mid-Ebb	Fine	Moderate	18:11	0.9	M	0.45	2			7.92		6.87		26.44		59.3		4.85		16.7		20	
M3	29/11/2022	Mid-Ebb	Fine	Calm	18:13	0.8	M	0.4	1	0.284	272	7.31	7.32	6.65	6.65	28.31	28.32	53.8	54.2	4.14	4.17	19.7	19.2	24	24
M3	29/11/2022	Mid-Ebb	Fine	Calm	18:13	0.8	M	0.4	2			7.32		6.64		28.32		54.5		4.19		18.7		23	

Remark

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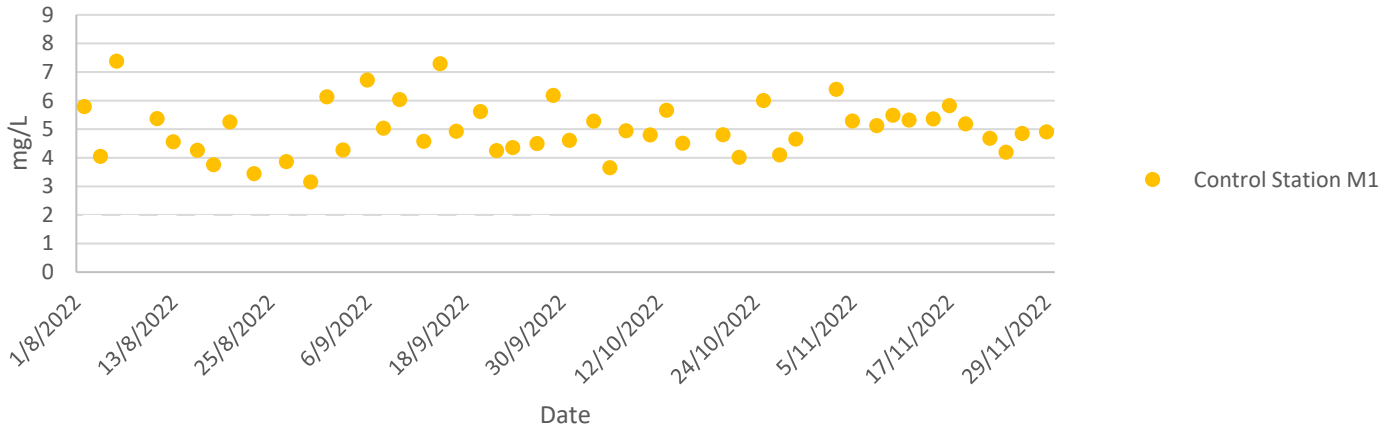
For Flood Tide

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

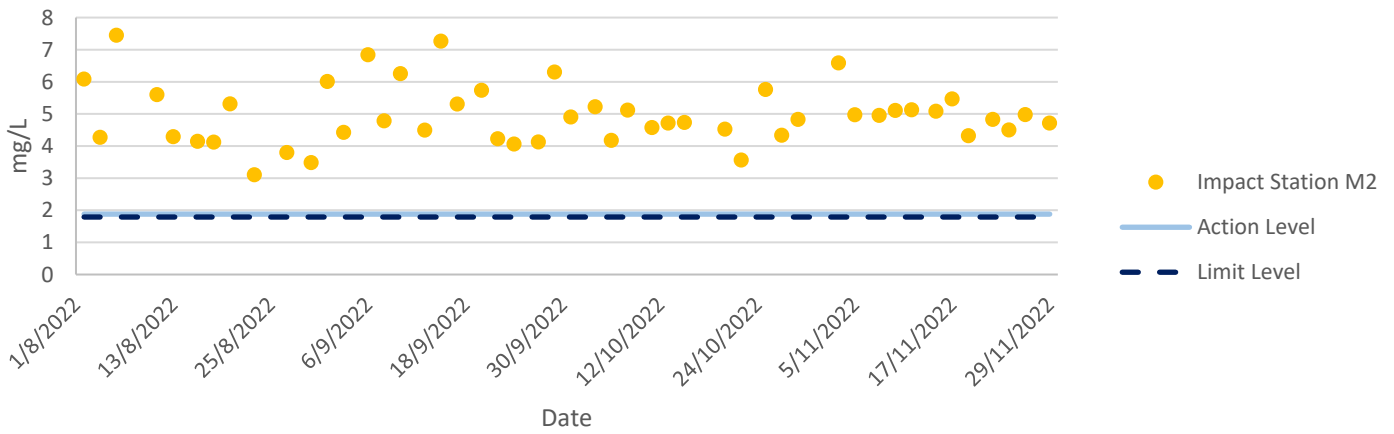
For Ebb Tide

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

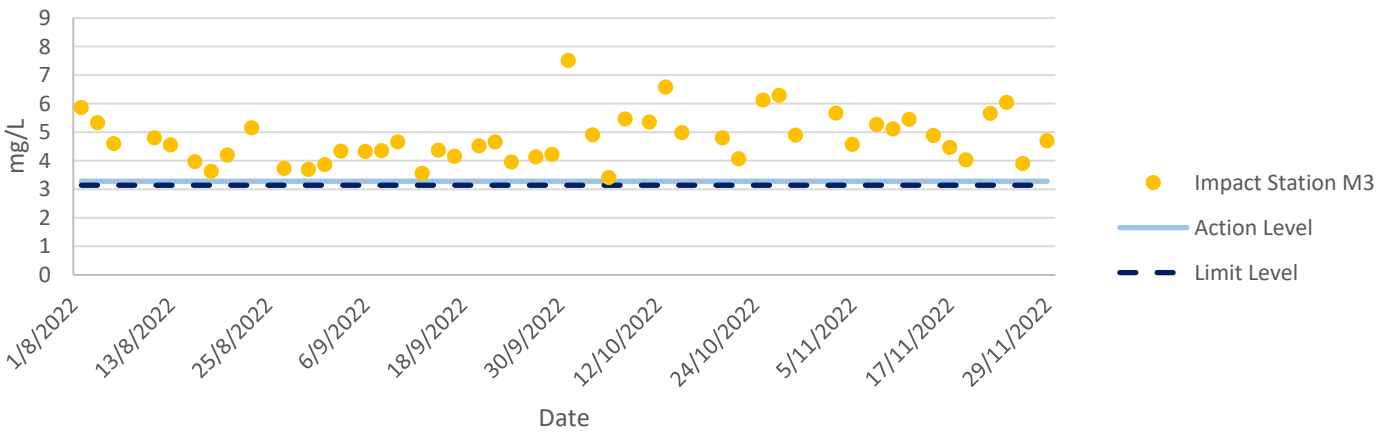
### Dissolved Oxygen at Mid-Flood Tide



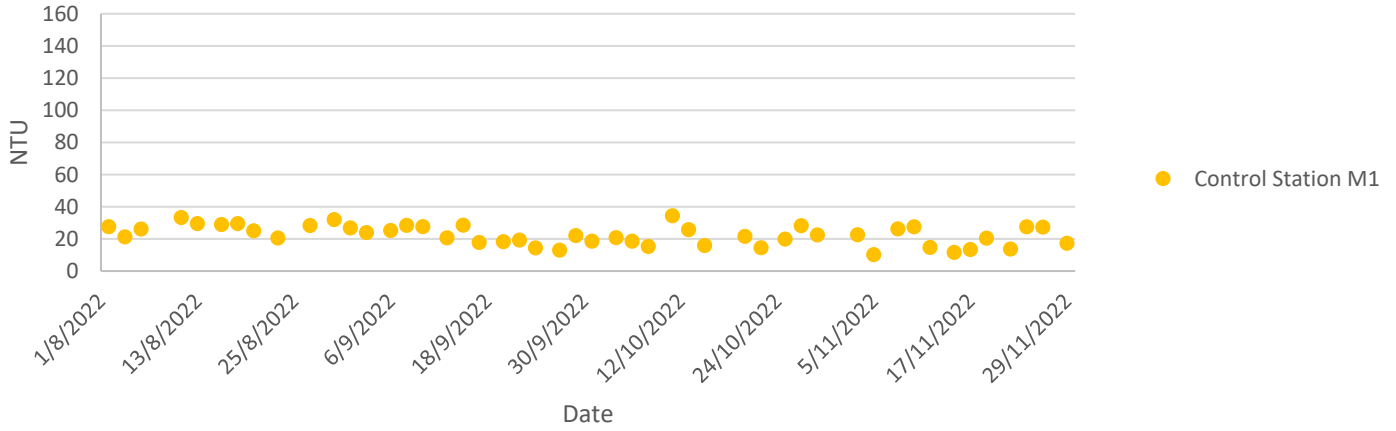
### Dissolved Oxygen at Mid-Flood Tide



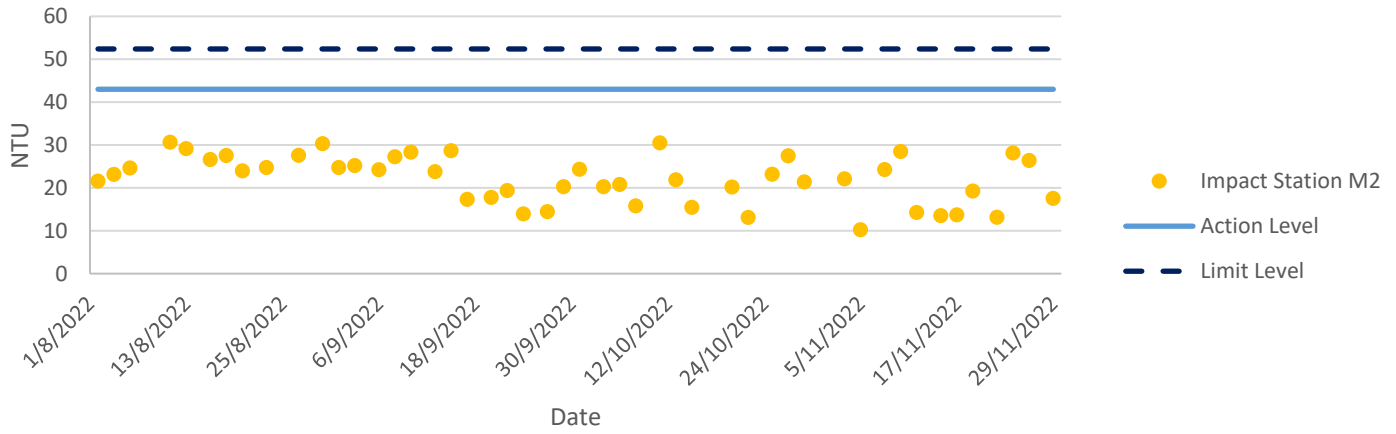
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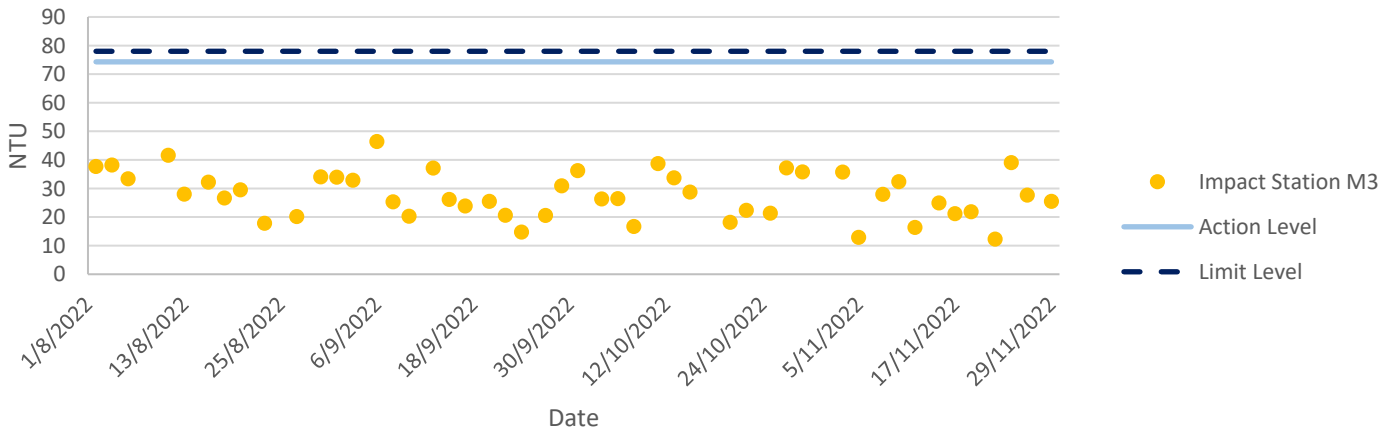
### Turbidity at Mid-Flood Tide



### Turbidity at Mid-Flood Tide

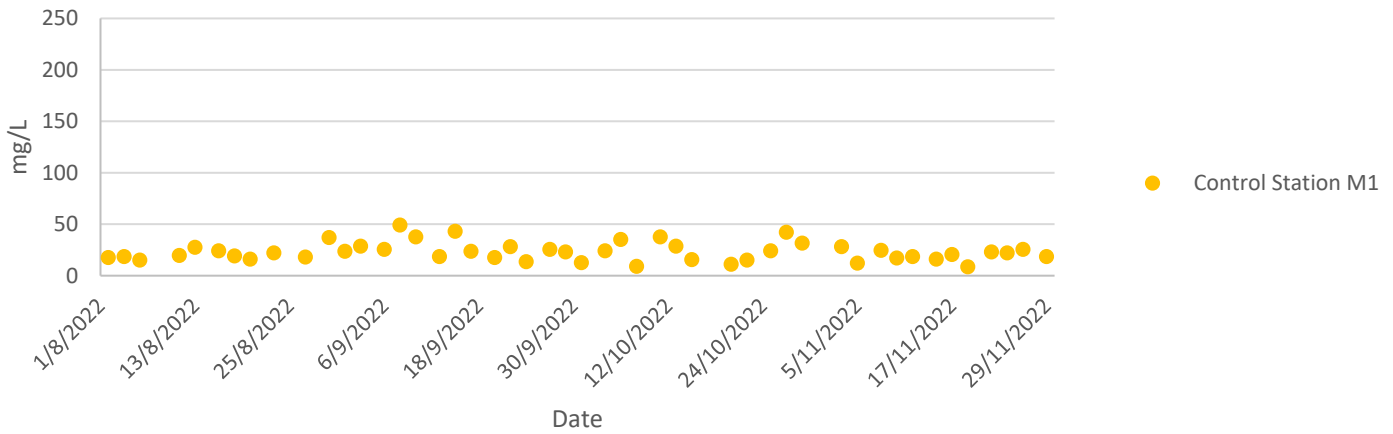


### Turbidity at Mid-Flood Tide

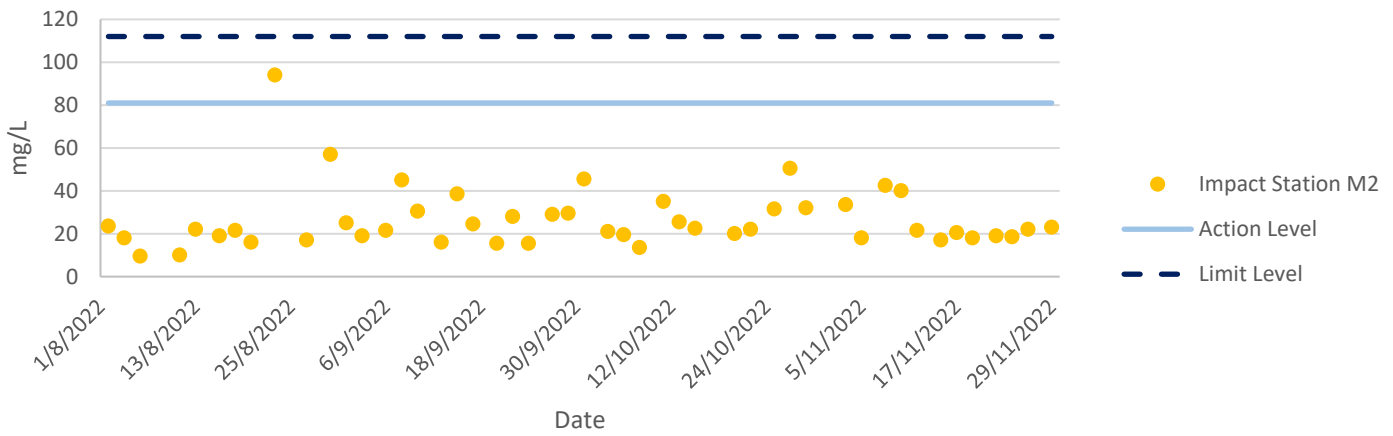


## Water Quality Monitoring Results

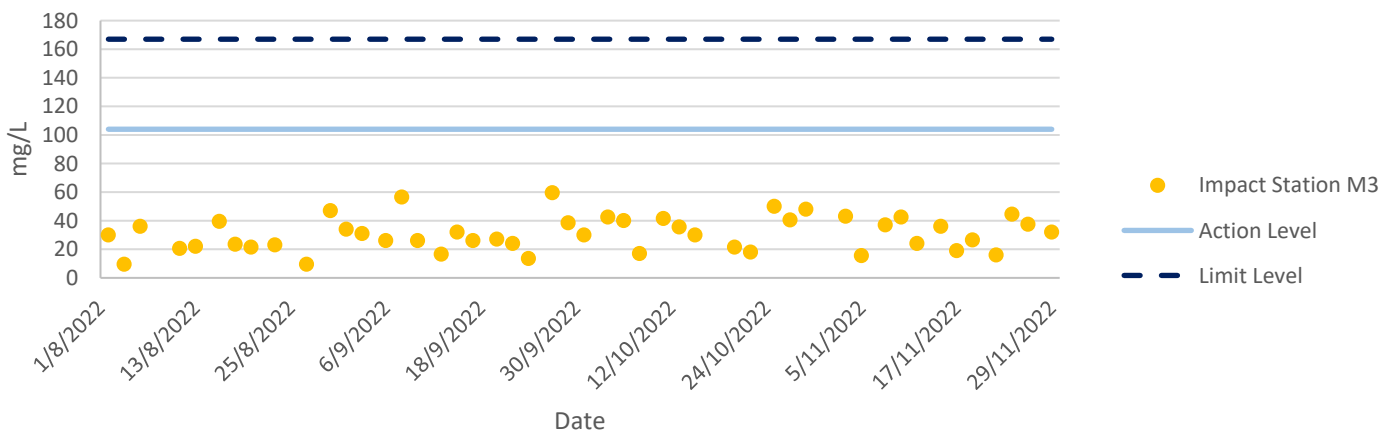
### Total Suspended Solids at Mid-Flood Tide



### Total Suspended Solids at Mid-Flood Tide

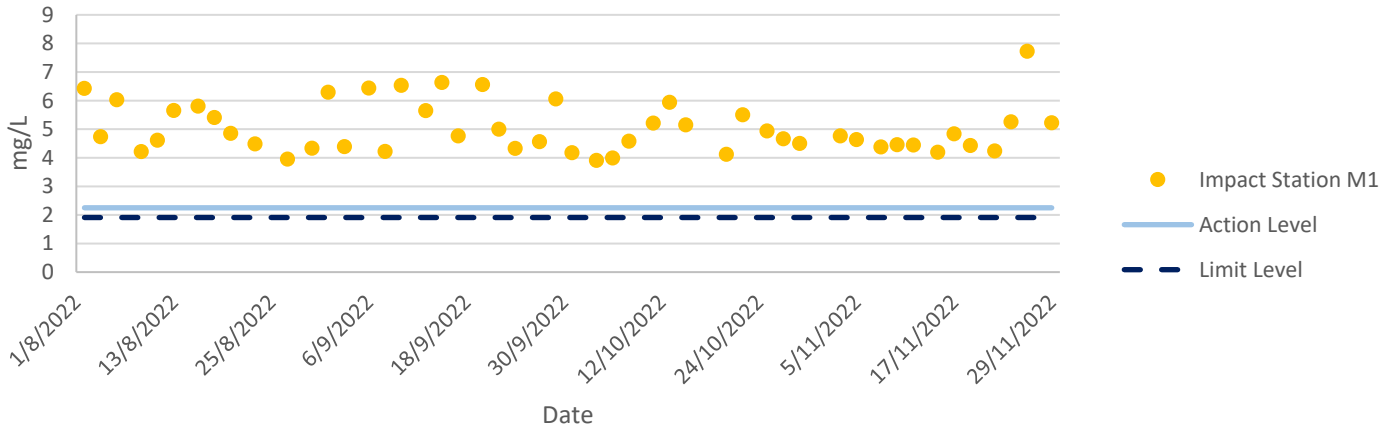


### Total Suspended Solids at Mid-Flood Tide

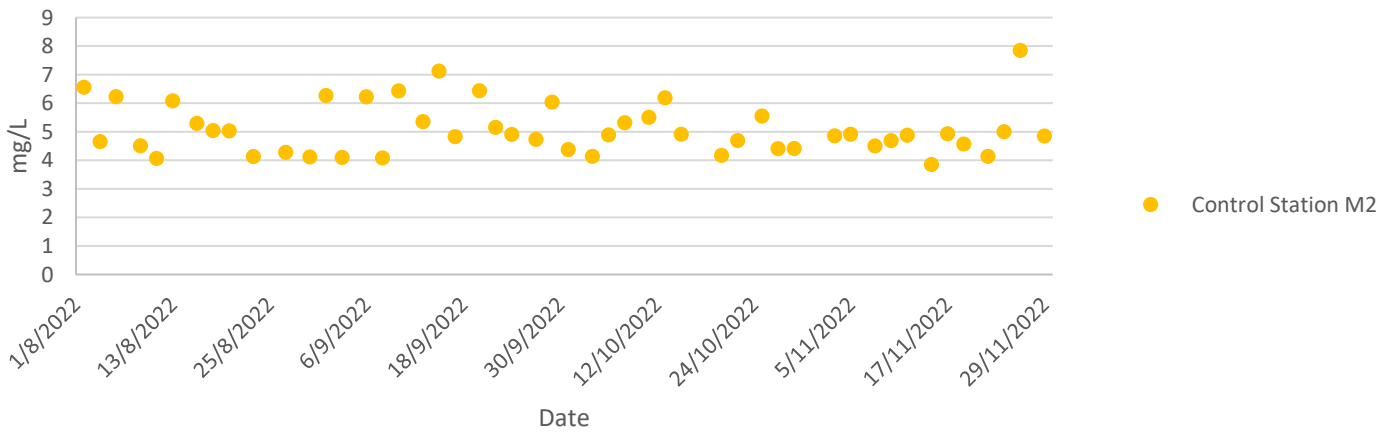


## Water Quality Monitoring Results

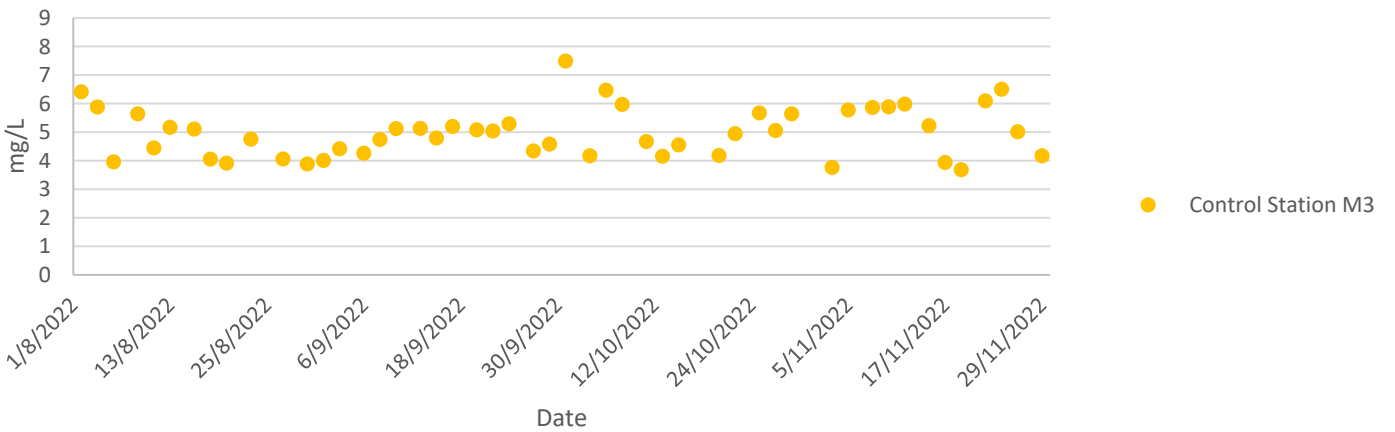
### Dissolved Oxygen at Mid-Ebb Tide



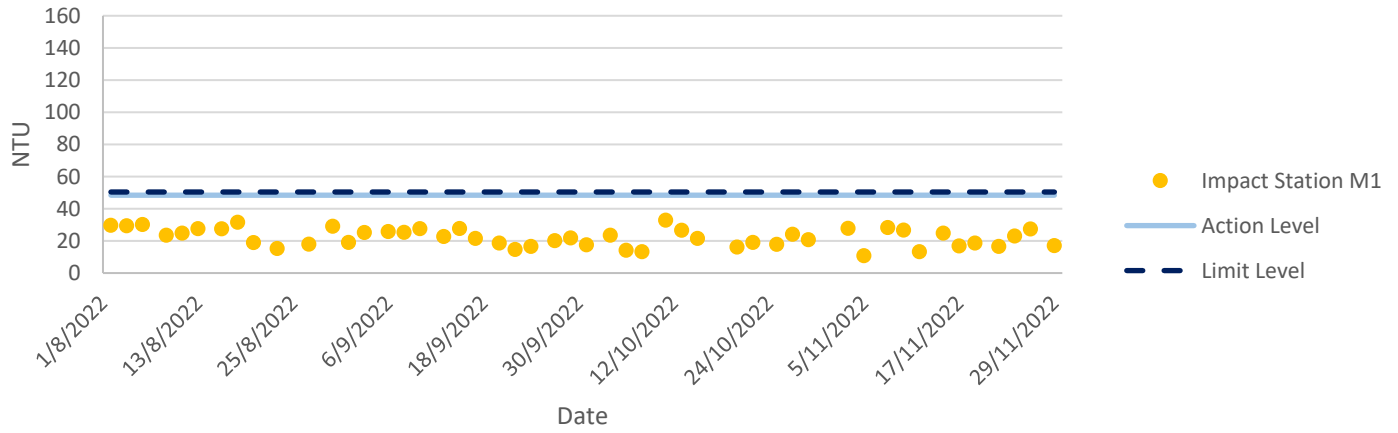
### Dissolved Oxygen at Mid-Ebb Tide



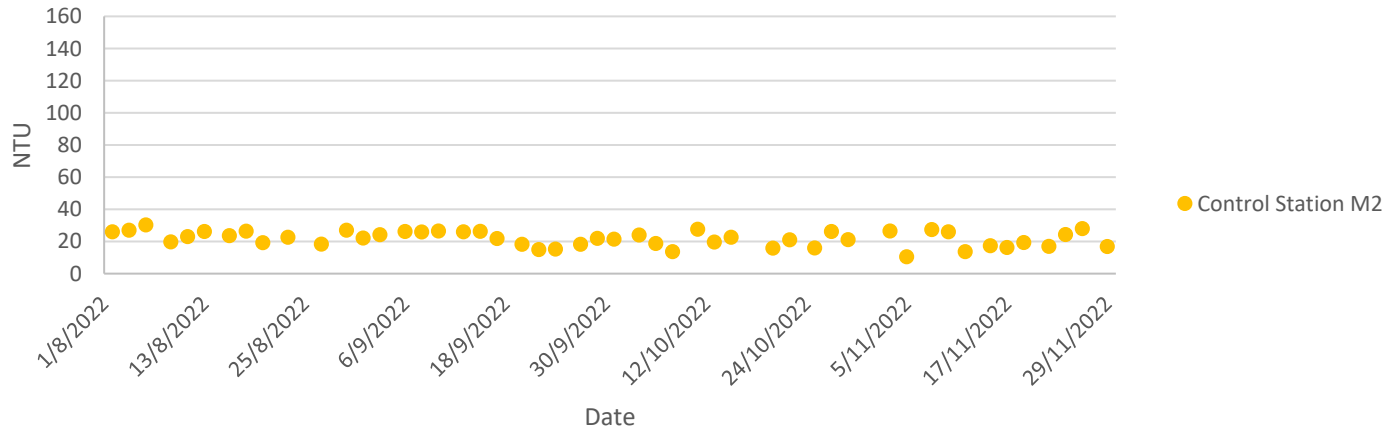
### Dissolved Oxygen at Mid-Ebb Tide



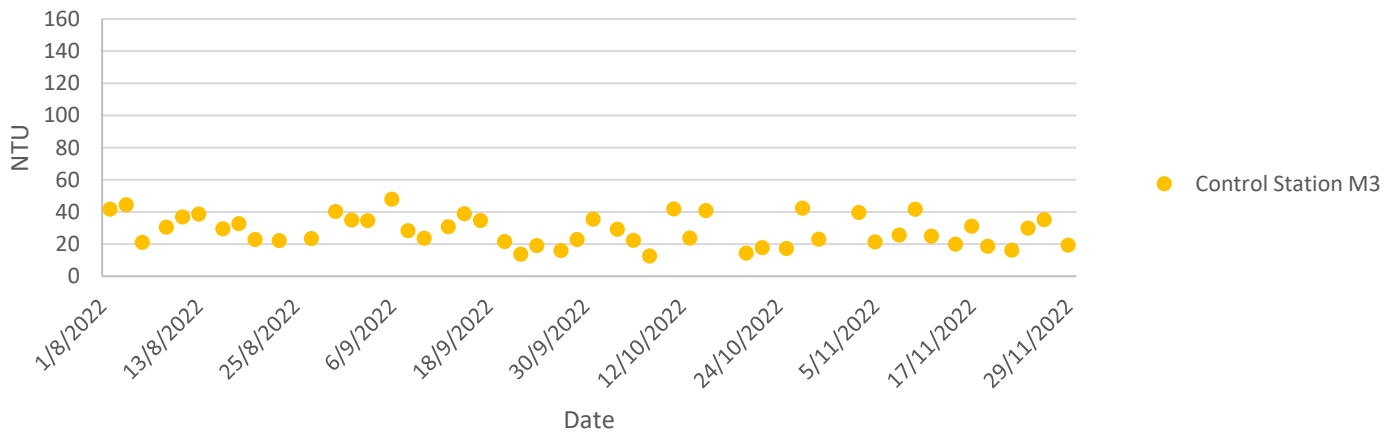
### Turbidity at Mid-Ebb Tide



### Turbidity at Mid-Ebb Tide

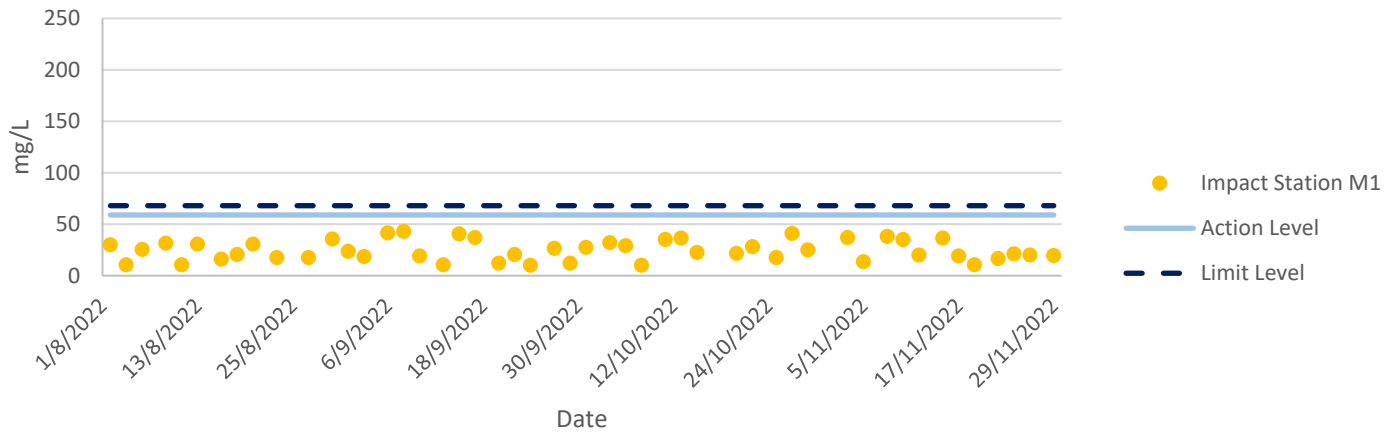


### Turbidity at Mid-Ebb Tide

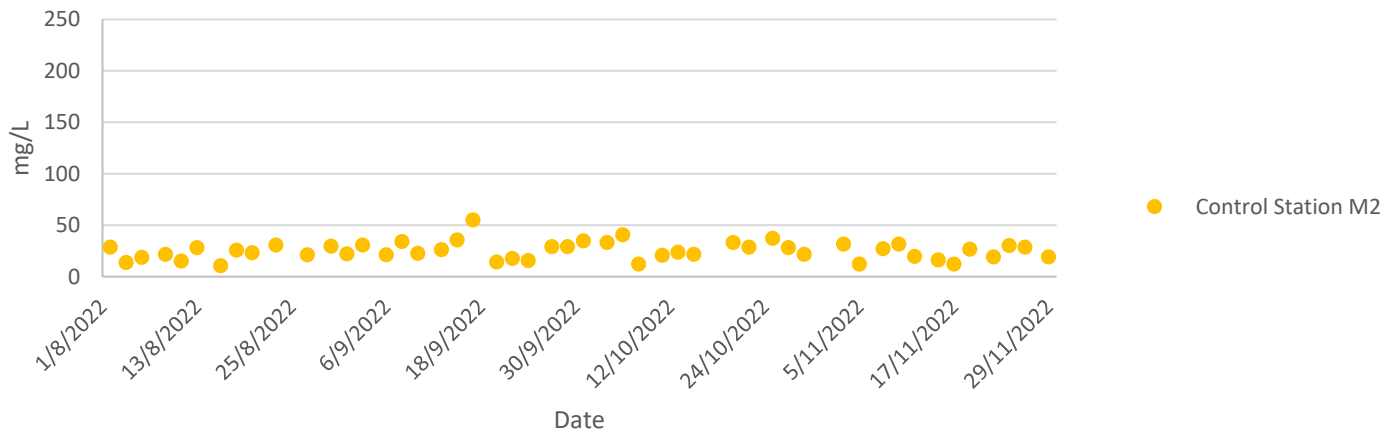


## Water Quality Monitoring Results

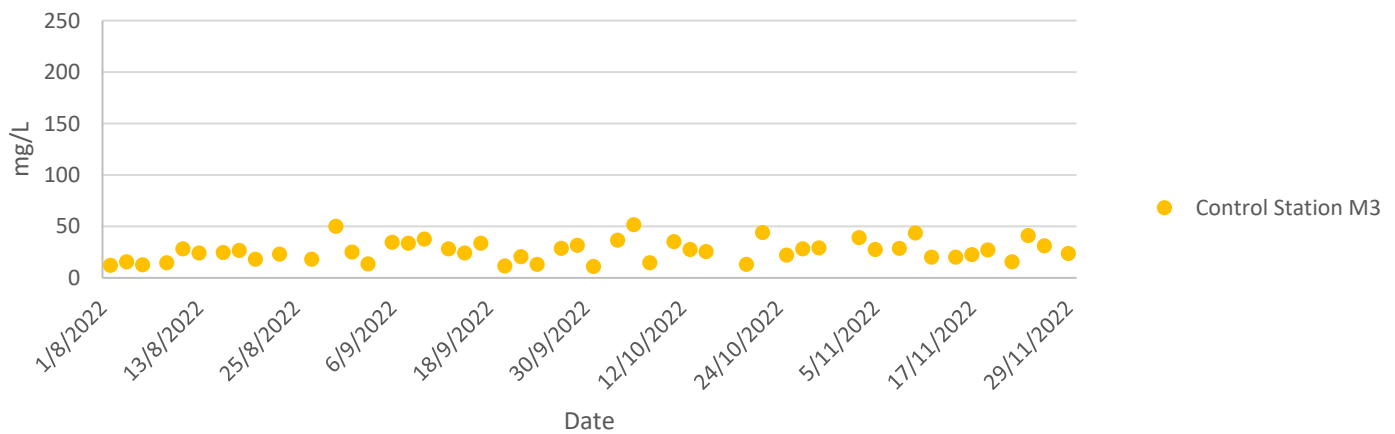
### Total Suspended Solids at Mid-Ebb Tide



### Total Suspended Solids at Mid-Ebb Tide



### Total Suspended Solids at Mid-Ebb Tide



## Water Quality Monitoring Results



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Ecology Monitoring Results

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

Appendix F.1 Ecological Bird Monitoring Result (10 November 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 <sup>2</sup>	Principal Status <sup>3</sup>	Level of Concern <sup>4</sup>	Protection Status in China <sup>5</sup>	China Red Data Book <sup>6</sup>	Red List of China's Vertebrates <sup>10</sup>	IUCN Red List <sup>7</sup> (v.2020-3)	Species of Conservation Importance	Wetland Dependent
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Black-faced Bunting	<i>Emberiza spodocephala</i>	3	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Common Tailorbird	<i>Orthotomus sutorius</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	3	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	FLW1	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	3	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	1	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Common Tailorbird	<i>Orthotomus sutorius</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Daurian Redstart	<i>Phoenicurus aureus</i>	1	Common	WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	2	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	2	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Oriental Magpie Robin	<i>Copsychus saularis</i>	2	Abundant	R	-	-	-	LC	LC	N	N

10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Eurasian Wigeon	<i>Anas penelope</i>	1	Common	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	10	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Cinereous Tit	<i>Parus cinereus</i>	1	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Daurian Redstart	<i>Phoenicurus aureoreus</i>	1	Common	WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Dusky Warbler	<i>Phylloscopus fuscatus</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Eurasian Tree Sparrow	<i>Passer montanus</i>	3	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	3	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	4	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Daurian Redstart	<i>Phoenicurus aureoreus</i>	1	Common	WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Cormorant	<i>Phalacrocorax carbo</i>	62	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Greater Coucal	<i>Centropus sinensis</i>	1	Common	R	-	Class II	Vulnerable	LC	LC	Y	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Plain Prinia	<i>Prinia inornata</i>	7	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	2	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Eurasian Wigeon	<i>Anas penelope</i>	3	Common	WV	RC	-	-	LC	LC	Y	Y

10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	2	Abundant	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	3	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Sandpiper	<i>Actitis hypoleucos</i>	2	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	1	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eurasian Wigeon	<i>Anas penelope</i>	1	Common	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	12	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	1	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	5	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	3	Common	R	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Sandpiper	<i>Actitis hypoleucos</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	4	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Marsh Sandpiper	<i>Tringa stagnatilis</i>	2	Common	PM,WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	2	Abundant	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	White-breasted Waterhen	<i>Amauornis phoenicurus</i>	1	Common	R	-	-	-	LC	LC	N	Y

10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	2	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	2	Common	R	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	2	Common	R,PM	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	2	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N

Notes:

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

**Appendix F.2.1 Ecological Bird Monitoring Diversity (All avifauna species in Point Count Method) in All Habitats (10 November 2022)**

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) <sup>2</sup>
<i>Acridotheres cristatellus</i>	10	0.044843	-3.10459	-0.13922	0.432218
<i>Actitis hypoleucos</i>	3	0.013453	-4.30856	-0.05796	0.249736
<i>Alcedo atthis</i>	1	0.004484	-5.40717	-0.02425	0.13111
<i>Amaurornis phoenicurus</i>	1	0.004484	-5.40717	-0.02425	0.13111
<i>Anas clypeata</i>	4	0.017937	-4.02088	-0.07212	0.289999
<i>Anas penelope</i>	5	0.008969	-4.71402	-0.04228	0.199301
<i>Ardea alba</i>	2	0.026906	-3.61541	-0.09728	0.351692
<i>Ardea cinerea</i>	6	0.022422	-3.79773	-0.08515	0.323381
<i>Ardeola bacchus</i>	5	0.004484	-5.40717	-0.02425	0.13111
<i>Centropus sinensis</i>	1	0.008969	-4.71402	-0.04228	0.199301
<i>Copsychus saularis</i>	2	0.044843	-3.10459	-0.13922	0.432218
<i>Egretta garzetta</i>	10	0.013453	-4.30856	-0.05796	0.249736
<i>Gallinula chloropus</i>	3	0.004484	-5.40717	-0.02425	0.13111
<i>Garrulax perspicillatus</i>	1	0.008969	-4.71402	-0.04228	0.199301
<i>Gracupica nigricollis</i>	2	0.044843	-3.10459	-0.13922	0.432218
<i>Himantopus himantopus</i>	10	0.017937	-4.02088	-0.07212	0.289999
<i>Motacilla alba</i>	4	0.004484	-5.40717	-0.02425	0.13111
<i>Motacilla cinerea</i>	1	0.013453	-4.30856	-0.05796	0.249736
<i>Orthotomus sutorius</i>	3	0.430493	-0.84282	-0.36283	0.305802
<i>Phalacrocorax carbo</i>	96	0.008969	-4.71402	-0.04228	0.199301
<i>Phoenicurus aureus</i>	2	0.09417	-2.36265	-0.22249	0.52567
<i>Prinia inornata</i>	21	0.03139	-3.46126	-0.10865	0.376064
<i>Pycnonotus jocosus</i>	7	0.026906	-3.61541	-0.09728	0.351692
<i>Spilopelia chinensis</i>	6	0.03139	-3.46126	-0.10865	0.376064
<i>Streptopelia decaocto</i>	7	0.035874	-3.32773	-0.11938	0.397266
<i>Tachybaptus ruficollis</i>	8	0.035874	-3.32773	-0.11938	0.397266
<i>Tringa stagnatilis</i>	2	0.008969	-4.71402	-0.04228	0.199301
<b>Total</b>	<b>223</b>	<b>1.013453</b>	<b>-108.699</b>	<b>-2.3895</b>	<b>7.682808</b>
<b>Richness</b>	<b>27</b>				
<b>SS</b>	<b>7.682808</b>				
<b>SQ</b>	<b>5.70973</b>				
<b>H</b>	<b>2.3895</b>				
<b>S<sup>2</sup><sub>H</sub></b>	<b>0.009109</b>				

**Appendix F.2.2 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Point Count Method) in All Habitats (10 November 2022)**

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) <sup>2</sup>
<i>Anas clypeata</i>	5	0.012690	-4.366913	-0.055418	0.242004
<i>Anas penelope</i>	8	0.020305	-3.896909	-0.079125	0.308343
<i>Ardea alba</i>	14	0.035533	-3.337294	-0.118584	0.395750
<i>Ardea cinerea</i>	27	0.068528	-2.680514	-0.183690	0.492384
<i>Ardeola bacchus</i>	38	0.096447	-2.338765	-0.225566	0.527546
<i>Centropus sinensis</i>	2	0.005076	-5.283204	-0.026818	0.141687
<i>Egretta garzetta</i>	1	0.002538	-5.976351	-0.015168	0.090652

<i>Himantopus himantopus</i>	2	0.005076	-5.283204	-0.026818	0.141687
<i>Phalacrocorax carbo</i>	21	0.053299	-2.931828	-0.156265	0.458142
<i>Tachybaptus ruficollis</i>	1	0.002538	-5.976351	-0.015168	0.090652
<i>Tringa stagnatilis</i>	1	0.002538	-5.976351	-0.015168	0.090652
<b>Total</b>	<b>149</b>	<b>1</b>	<b>-36.011225</b>	<b>-1.406447</b>	<b>3.770318</b>
<b>Richness</b>	<b>11</b>				
<b>SS</b>	<b>3.770318</b>				
<b>SQ</b>	<b>1.978094</b>				
<b>H</b>	<b>1.406447</b>				
<b>S<sup>2</sup><sub>H</sub></b>	<b>0.012254</b>				

**Appendix F.2.3 Ecological Bird Monitoring Diversity (All avifauna species in Transect Walk Method) in All Habitats (10 November 2022)**

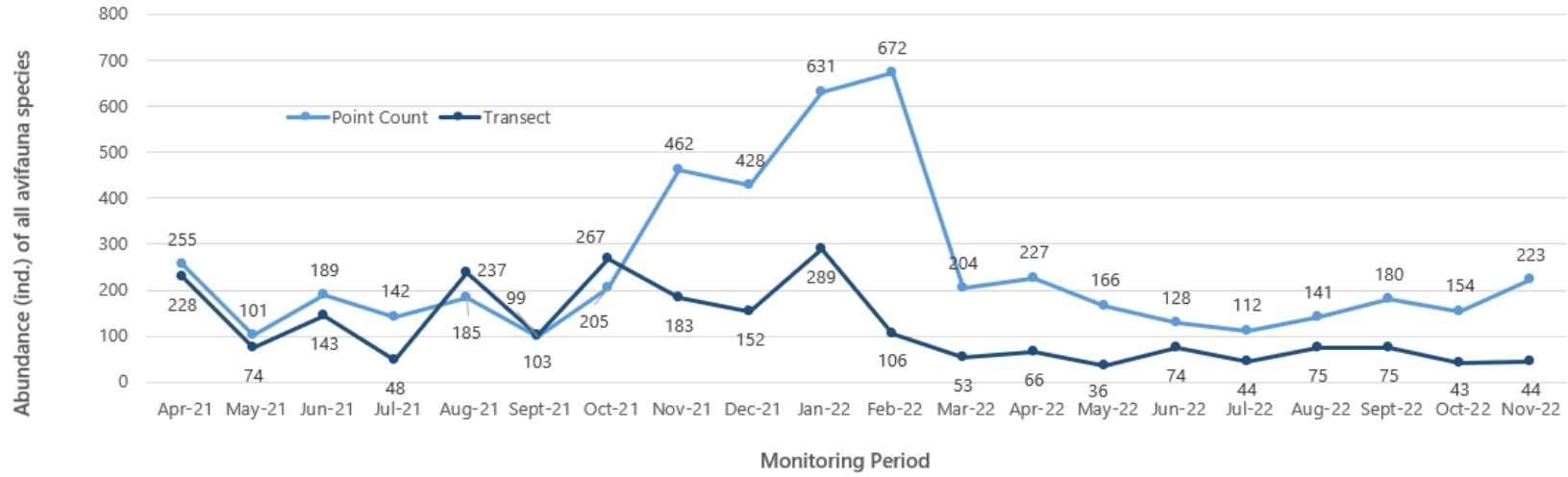
Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) <sup>2</sup>
<i>Alcedo atthis</i>	1	0.021277	-3.850148	-0.081918	0.315397
<i>Ardea alba</i>	1	0.021277	-3.850148	-0.081918	0.315397
<i>Ardea cinerea</i>	1	0.021277	-3.850148	-0.081918	0.315397
<i>Bubulcus coromandus</i>	2	0.042553	-3.157000	-0.134340	0.424113
<i>Egretta garzetta</i>	2	0.042553	-3.157000	-0.134340	0.424113
<i>Emberiza spodocephala</i>	3	0.063830	-2.751535	-0.175630	0.483252
<i>Gallinula chloropus</i>	2	0.042553	-3.157000	-0.134340	0.424113
<i>Garrulax perspicillatus</i>	5	0.106383	-2.240710	-0.238373	0.534126
<i>Gracupica nigricollis</i>	2	0.042553	-3.157000	-0.134340	0.424113
<i>Himantopus himantopus</i>	2	0.042553	-3.157000	-0.134340	0.424113
<i>Motacilla alba</i>	1	0.021277	-3.850148	-0.081918	0.315397
<i>Motacilla tschutschensis</i>	3	0.063830	-2.751535	-0.175630	0.483252
<i>Orthotomus sutorius</i>	2	0.042553	-3.157000	-0.134340	0.424113
<i>Parus cinereus</i>	1	0.021277	-3.850148	-0.081918	0.315397
<i>Passer montanus</i>	3	0.063830	-2.751535	-0.175630	0.483252
<i>Phoenicurus auroreus</i>	1	0.021277	-3.850148	-0.081918	0.315397
<i>Phylloscopus fuscatus</i>	2	0.042553	-3.157000	-0.134340	0.424113
<i>Pycnonotus jocosus</i>	4	0.085106	-2.463853	-0.209690	0.516644
<i>Spilopelia chinensis</i>	4	0.085106	-2.463853	-0.209690	0.516644
<i>Tachybaptus ruficollis</i>	2	0.042553	-3.157000	-0.134340	0.424113
<b>Total</b>	<b>44</b>	<b>1</b>	<b>-62.460752</b>	<b>-2.872476</b>	<b>8.485253</b>
<b>Richness</b>	<b>20</b>				
<b>SS</b>	<b>8.485253</b>				
<b>SQ</b>	<b>8.251117</b>				
<b>H</b>	<b>2.87248</b>				
<b>S<sup>2</sup><sub>H</sub></b>	<b>0.010228</b>				

**Appendix F.2.4 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Transect Walk Method) in All Habitats (10 November 2022)**

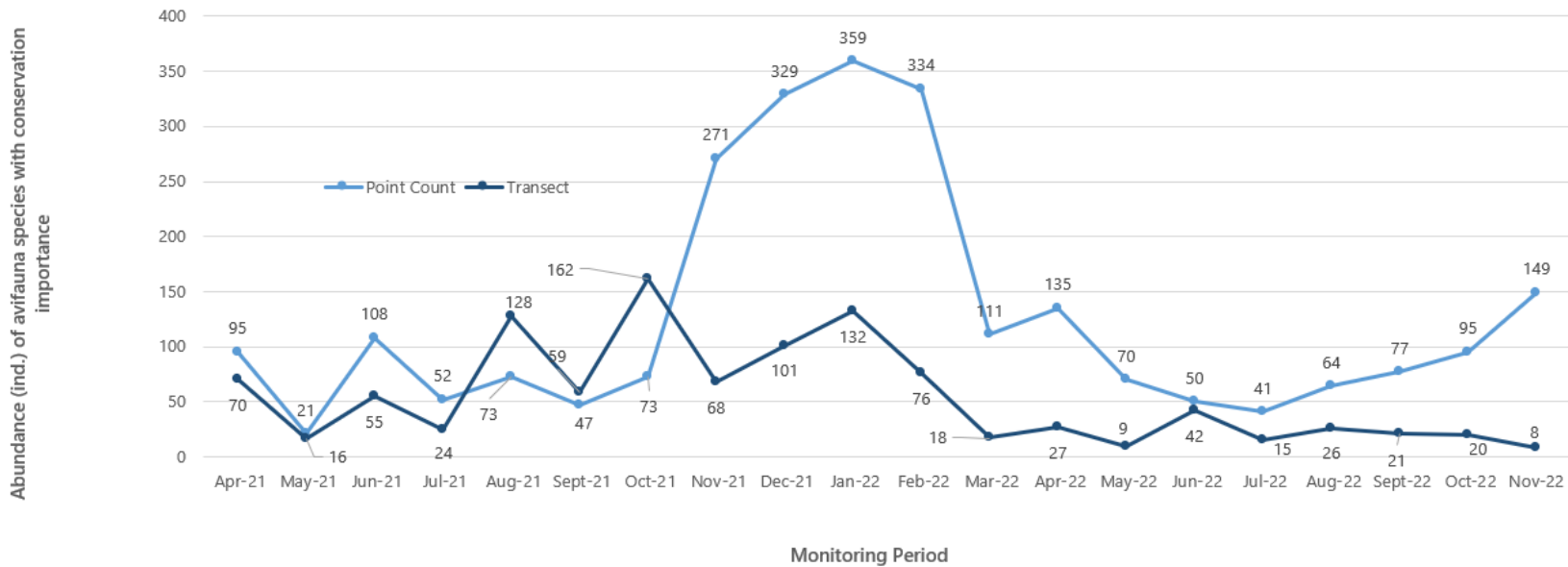


Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) <sup>2</sup>
<i>Ardea alba</i>	1	0.125	-2.079442	-0.259930	0.540510
<i>Ardea cinerea</i>	1	0.125	-2.079442	-0.259930	0.540510
<i>Egretta garzetta</i>	2	0.25	-1.386294	-0.346574	0.480453
<i>Himantopus himantopus</i>	2	0.25	-1.386294	-0.346574	0.480453
<i>Tachybaptus ruficollis</i>	2	0.25	-1.386294	-0.346574	0.480453
<b>Total</b>	<b>8</b>	<b>1</b>	<b>-8.317766</b>	<b>-1.559581</b>	<b>2.522378</b>
<b>Richness</b>	<b>5</b>				
<b>SS</b>	<b>2.522378</b>				
<b>SQ</b>	<b>2.432293</b>				
<b>H</b>	<b>1.559581</b>				
<b>S<sup>2</sup><sub>H</sub></b>	<b>0.042511</b>				

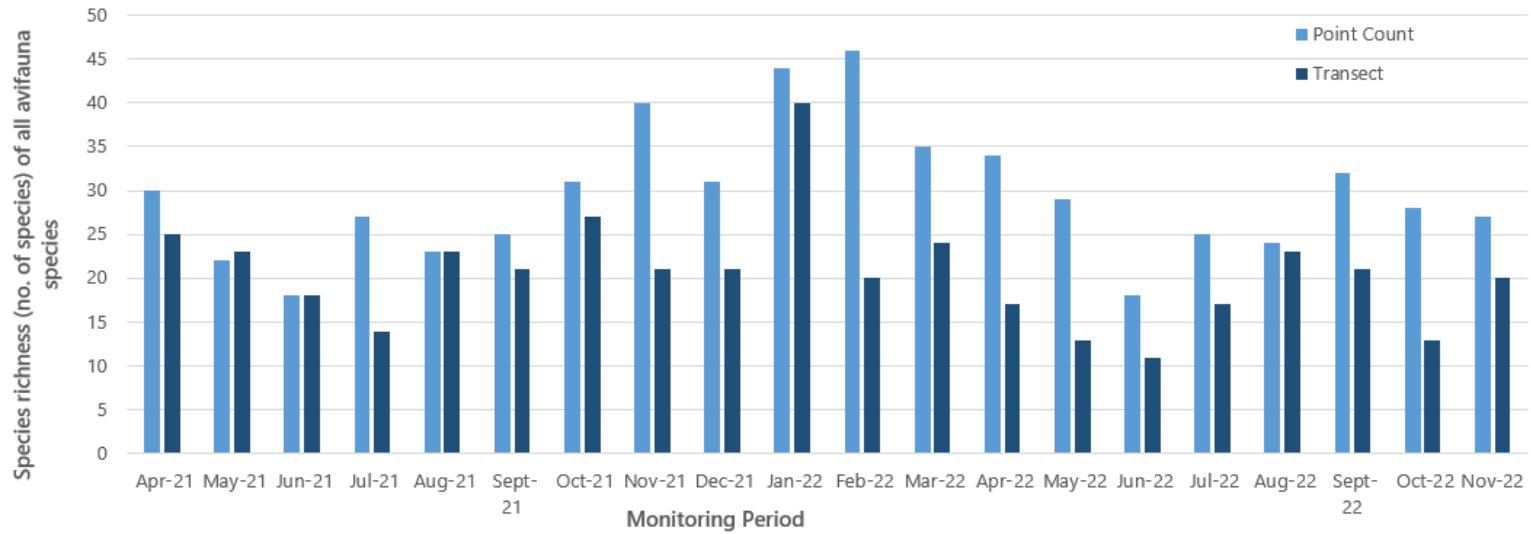
### Appendix F.3.1 Abundance of all avifauna species throughout the monitoring period



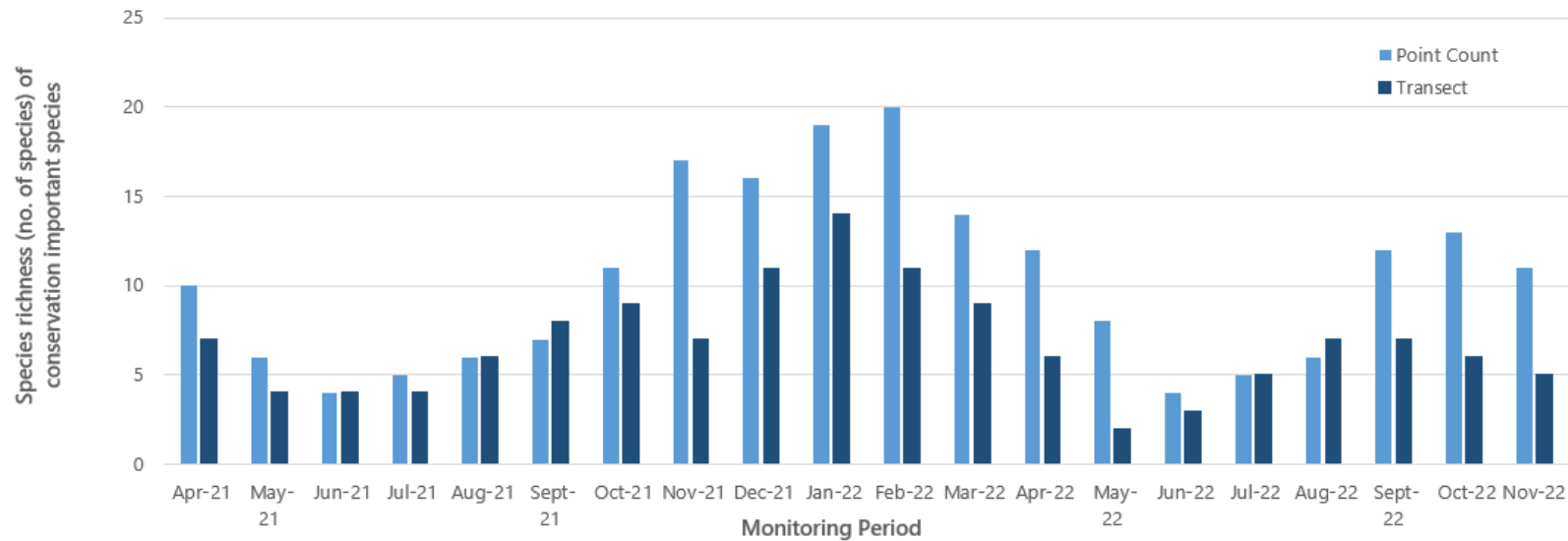
### Appendix F.3.2 Abundance of avifauna species with conservation importance throughout the monitoring period



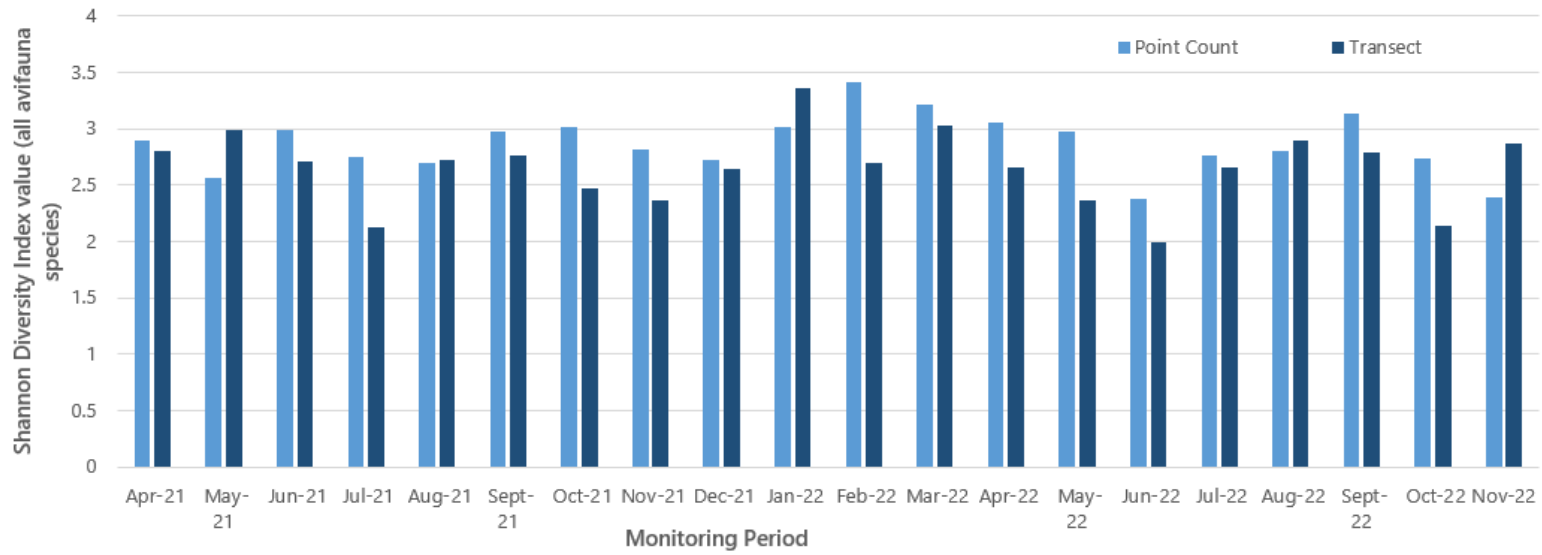
### Appendix F.4.1 Species richness of all avifauna species throughout the monitoring period



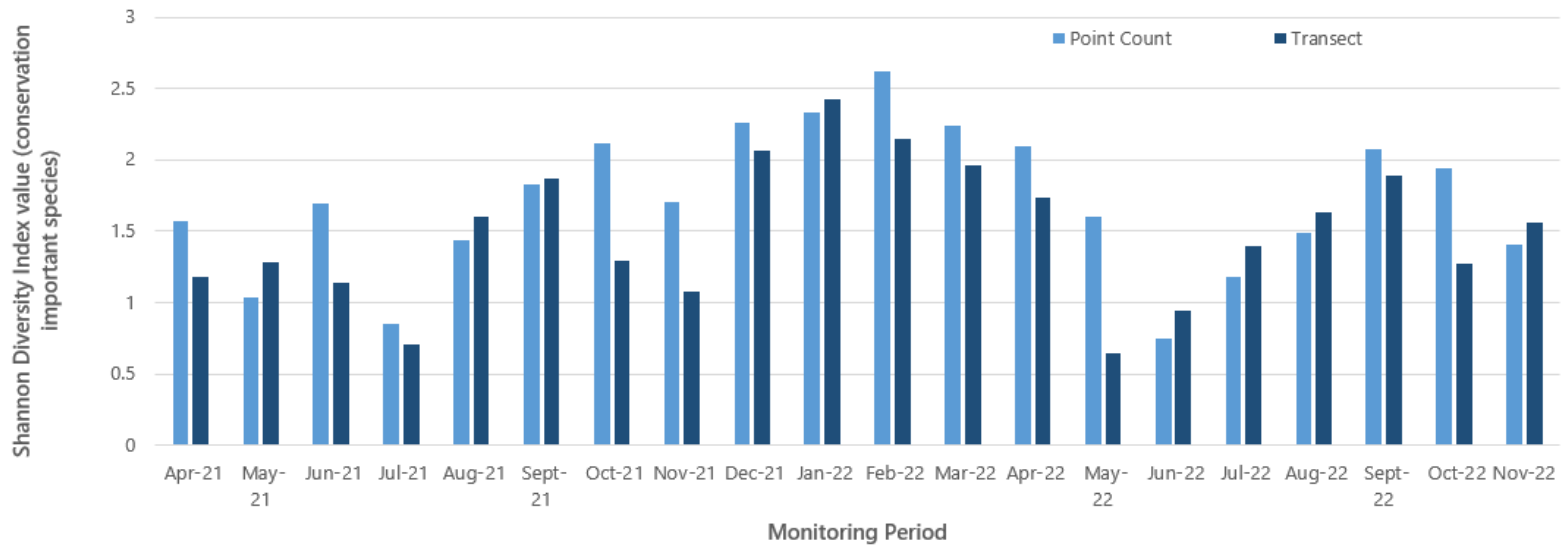
### Appendix F.4.2 Species richness of avifauna species with conservation importance throughout the monitoring period



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



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



## Appendix F.6 Two-tailed Unpaired T-test

Formula:

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

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

Months	November 2016	November 2022
N	48	27
df	47	26
M	12.67	8.26
SS	41178.67	8483.19
S <sup>2</sup>	876.14	326.28
t-value	0.702	
p-value	0.48	
Notes: N: Number of samples/observations df: Degrees of freedom M: Mean SS: Sum of Squares S <sup>2</sup> : Measure on a random sample that is used to estimate the variance of the population		

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

Months	November 2016	November 2022
N	20	20
df	19	19
M	6.25	2.2
SS	1559.75	25.2
S <sup>2</sup>	82.09	1.33
t-value	1.98	
p-value	0.055	
Notes: N: Number of samples/observations df: Degrees of freedom M: Mean SS: Sum of Squares S <sup>2</sup> : Measure on a random sample that is used to estimate the variance of the population		

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

Months	November 2016	November 2022
N	20	11
df	19	10
M	19.7	13.55
SS	35942.2	7572.73
S <sup>2</sup>	1891.69	757.27
t-value	0.42	
p-value	0.68	
Notes: N: Number of samples/observations df: Degrees of freedom M: Mean SS: Sum of Squares S <sup>2</sup> : Measure on a random sample that is used to estimate the variance of the population		

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

Months	November 2016	November 2022
N	7	5
df	6	4
M	8.43	1.6
SS	1191.71	1.2
S <sup>2</sup>	198.62	0.3
t-value	1.07	
p-value	0.31	
Notes: N: Number of samples/observations df: Degrees of freedom M: Mean SS: Sum of Squares S <sup>2</sup> : Measure on a random sample that is used to estimate the variance of the population		

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

Formula:

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

### Appendix F.7.1 Species diversity of all avifauna species – Point Count Method

Months	November 2016	November 2022
Total	608	223
Richness	48	27
H	2.81	2.39
S <sup>2</sup> <sub>H</sub>	0.003	0.009
t	3.793	
df	401.582	
Crit	1.966	
p	0.000	
CI	0.117	0.191

### Appendix F.7.2 Species diversity of avifauna species with conservation importance – Point Count Method

Months	November 2016	November 2022
Total	394	149
Richness	20	11
H	1,91	1.41
S <sup>2</sup> <sub>H</sub>	0.005	0.012
t	3.857	
df	273.053	
Crit	1.969	
p	0.000	
CI	0.139	0.221

# Appendix G

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Wind Data



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

Date	Wind Speed (m/s)	Wind Direction
01/11/2022 00:00	6.5	N
01/11/2022 01:00	2.1	NE
01/11/2022 02:00	1.0	SEE
01/11/2022 03:00	1.0	SWW
01/11/2022 04:00	0.9	SSE
01/11/2022 05:00	0.9	NW
01/11/2022 06:00	2.4	NW
01/11/2022 07:00	0.3	E
01/11/2022 08:00	1.0	NW
01/11/2022 09:00	0.5	SSE
01/11/2022 10:00	0.3	SW
01/11/2022 11:00	0.3	SEE
01/11/2022 12:00	3.5	SEE
01/11/2022 13:00	0.3	SSE
01/11/2022 14:00	0.9	NWW
01/11/2022 15:00	0.6	SEE
01/11/2022 16:00	0.3	SE
01/11/2022 17:00	0.3	NNE
01/11/2022 18:00	0.1	E
01/11/2022 19:00	0.5	E
01/11/2022 20:00	0.3	SEE
01/11/2022 21:00	0.2	SE
01/11/2022 22:00	4.9	SSE
01/11/2022 23:00	0.5	SE
02/11/2022 00:00	4.3	SSE
02/11/2022 01:00	1.8	SSW
02/11/2022 02:00	0.9	E
02/11/2022 03:00	0.3	S
02/11/2022 04:00	4.6	SEE
02/11/2022 05:00	0.3	SEE
02/11/2022 06:00	2.8	SEE
02/11/2022 07:00	0.3	E
02/11/2022 08:00	2.5	E
02/11/2022 09:00	0.1	NNW
02/11/2022 10:00	0.2	N
02/11/2022 11:00	0.3	SEE
02/11/2022 12:00	0.3	NE
02/11/2022 13:00	0.3	NEE

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

Date	Wind Speed (m/s)	Wind Direction
02/11/2022 14:00	4.0	SE
02/11/2022 15:00	0.3	NE
02/11/2022 16:00	0.5	SE
02/11/2022 17:00	4.9	W
02/11/2022 18:00	0.3	SSW
02/11/2022 19:00	1.6	SE
02/11/2022 20:00	2.3	SWW
02/11/2022 21:00	4.0	NW
02/11/2022 22:00	0.2	NNW
02/11/2022 23:00	5.3	SE
03/11/2022 00:00	0.9	SE
03/11/2022 01:00	2.8	SE
03/11/2022 02:00	4.8	SWW
03/11/2022 03:00	1.2	W
03/11/2022 04:00	4.1	SE
03/11/2022 05:00	2.3	SSE
03/11/2022 06:00	4.9	SEE
03/11/2022 07:00	3.9	NNW
03/11/2022 08:00	3.6	NW
03/11/2022 09:00	0.3	NEE
03/11/2022 10:00	0.3	NWW
03/11/2022 11:00	0.3	S
03/11/2022 12:00	0.4	S
03/11/2022 13:00	1.4	SE
03/11/2022 14:00	1.8	W
03/11/2022 15:00	2.8	SW
03/11/2022 16:00	1.2	SE
03/11/2022 17:00	2.3	N
03/11/2022 18:00	1.5	W
03/11/2022 19:00	3.4	NW
03/11/2022 20:00	3.6	SSE
03/11/2022 21:00	0.5	W
03/11/2022 22:00	0.3	E
03/11/2022 23:00	4.3	SEE
04/11/2022 00:00	0.3	NW
04/11/2022 01:00	0.2	SWW
04/11/2022 02:00	0.1	SW
04/11/2022 03:00	0.3	NEE

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

Date	Wind Speed (m/s)	Wind Direction
04/11/2022 04:00	0.3	SSE
04/11/2022 05:00	0.5	SSW
04/11/2022 06:00	1.4	E
04/11/2022 07:00	0.8	NW
04/11/2022 08:00	1.5	NW
04/11/2022 09:00	0.3	SE
04/11/2022 10:00	0.2	S
04/11/2022 11:00	1.0	SSE
04/11/2022 12:00	0.9	SE
04/11/2022 13:00	0.1	SWW
04/11/2022 14:00	0.2	E
04/11/2022 15:00	0.2	NW
04/11/2022 16:00	0.2	NNW
04/11/2022 17:00	1.3	NNW
04/11/2022 18:00	0.2	SW
04/11/2022 19:00	0.2	W
04/11/2022 20:00	1.2	NNE
04/11/2022 21:00	0.2	SEE
04/11/2022 22:00	1.6	E
04/11/2022 23:00	0.2	SSE
05/11/2022 00:00	2.5	W
05/11/2022 01:00	0.8	SE
05/11/2022 02:00	1.1	S
05/11/2022 03:00	0.2	SEE
05/11/2022 04:00	1.3	SEE
05/11/2022 05:00	4.4	E
05/11/2022 06:00	3.1	E
05/11/2022 07:00	0.3	SE
05/11/2022 08:00	1.4	SW
05/11/2022 09:00	2.7	NNW
05/11/2022 10:00	2.9	E
05/11/2022 11:00	0.3	SW
05/11/2022 12:00	4.8	NWW
05/11/2022 13:00	1.5	SE
05/11/2022 14:00	1.9	SEE
05/11/2022 15:00	3.9	SEE
05/11/2022 16:00	4.3	NWW
05/11/2022 17:00	1.5	SEE

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

Date	Wind Speed (m/s)	Wind Direction
05/11/2022 18:00	4.8	SWW
05/11/2022 19:00	2.8	SW
05/11/2022 20:00	0.3	SSE
05/11/2022 21:00	4.8	NNW
05/11/2022 22:00	4.6	SEE
05/11/2022 23:00	2.6	SW
06/11/2022 00:00	5.0	E
06/11/2022 01:00	0.3	SEE
06/11/2022 02:00	3.1	SEE
06/11/2022 03:00	2.6	S
06/11/2022 04:00	2.3	SWW
06/11/2022 05:00	4.0	SEE
06/11/2022 06:00	0.3	SEE
06/11/2022 07:00	4.6	E
06/11/2022 08:00	3.7	E
06/11/2022 09:00	4.6	E
06/11/2022 10:00	0.5	SSW
06/11/2022 11:00	2.4	SSE
06/11/2022 12:00	0.6	SE
06/11/2022 13:00	4.5	SSE
06/11/2022 14:00	5.3	NE
06/11/2022 15:00	4.9	SEE
06/11/2022 16:00	1.8	SEE
06/11/2022 17:00	2.4	NE
06/11/2022 18:00	3.1	SW
06/11/2022 19:00	2.4	NW
06/11/2022 20:00	4.1	NW
06/11/2022 21:00	4.2	NNW
06/11/2022 22:00	2.2	NNW
06/11/2022 23:00	4.5	NNW
07/11/2022 00:00	3.9	SSW
07/11/2022 01:00	1.5	SW
07/11/2022 02:00	0.3	SW
07/11/2022 03:00	0.3	E
07/11/2022 04:00	3.6	S
07/11/2022 05:00	0.3	SE
07/11/2022 06:00	4.7	SSE
07/11/2022 07:00	2.7	SE

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

Date	Wind Speed (m/s)	Wind Direction
07/11/2022 08:00	1.4	SSE
07/11/2022 09:00	0.3	SSW
07/11/2022 10:00	4.7	NNW
07/11/2022 11:00	3.9	SEE
07/11/2022 12:00	0.3	S
07/11/2022 13:00	1.4	SE
07/11/2022 14:00	1.3	SW
07/11/2022 15:00	1.3	SWW
07/11/2022 16:00	0.3	NEE
07/11/2022 17:00	0.6	NE
07/11/2022 18:00	1.2	SE
07/11/2022 19:00	0.9	E
07/11/2022 20:00	0.9	SEE
07/11/2022 21:00	0.3	NEE
07/11/2022 22:00	0.3	SEE
07/11/2022 23:00	0.8	E
08/11/2022 00:00	0.1	E
08/11/2022 01:00	0.1	SW
08/11/2022 02:00	0.2	SEE
08/11/2022 03:00	0.3	NEE
08/11/2022 04:00	4.6	E
08/11/2022 05:00	0.3	SSE
08/11/2022 06:00	4.3	SE
08/11/2022 07:00	0.3	S
08/11/2022 08:00	0.3	NNE
08/11/2022 09:00	2.2	SEE
08/11/2022 10:00	0.3	E
08/11/2022 11:00	2.0	NNE
08/11/2022 12:00	0.3	SEE
08/11/2022 13:00	1.3	SEE
08/11/2022 14:00	0.3	NEE
08/11/2022 15:00	0.3	E
08/11/2022 16:00	0.5	SE
08/11/2022 17:00	3.1	SEE
08/11/2022 18:00	2.2	SE
08/11/2022 19:00	2.9	SWW
08/11/2022 20:00	0.3	W
08/11/2022 21:00	5.3	E

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

Date	Wind Speed (m/s)	Wind Direction
08/11/2022 22:00	2.9	SW
08/11/2022 23:00	0.6	SE
09/11/2022 00:00	1.4	SEE
09/11/2022 01:00	3.2	SSE
09/11/2022 02:00	5.3	SSE
09/11/2022 03:00	0.3	W
09/11/2022 04:00	2.1	SWW
09/11/2022 05:00	3.4	SWW
09/11/2022 06:00	4.7	S
09/11/2022 07:00	3.0	SEE
09/11/2022 08:00	1.5	SW
09/11/2022 09:00	0.9	SSE
09/11/2022 10:00	0.3	SW
09/11/2022 11:00	0.2	SWW
09/11/2022 12:00	2.7	SWW
09/11/2022 13:00	3.2	SWW
09/11/2022 14:00	2.3	SSW
09/11/2022 15:00	3.8	SSW
09/11/2022 16:00	2.1	E
09/11/2022 17:00	3.1	E
09/11/2022 18:00	4.0	E
09/11/2022 19:00	2.3	E
09/11/2022 20:00	3.0	E
09/11/2022 21:00	1.2	SSW
09/11/2022 22:00	2.5	SEE
09/11/2022 23:00	2.2	SE
10/11/2022 00:00	3.6	SEE
10/11/2022 01:00	0.3	E
10/11/2022 02:00	5.1	E
10/11/2022 03:00	0.2	NE
10/11/2022 04:00	0.2	SSE
10/11/2022 05:00	4.2	W
10/11/2022 06:00	0.2	NWW
10/11/2022 07:00	2.4	SWW
10/11/2022 08:00	4.0	SSW
10/11/2022 09:00	4.0	SSE
10/11/2022 10:00	2.8	NWW
10/11/2022 11:00	2.8	NNW

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

Date	Wind Speed (m/s)	Wind Direction
10/11/2022 12:00	0.2	SWW
10/11/2022 13:00	1.4	SWW
10/11/2022 14:00	4.7	SE
10/11/2022 15:00	0.3	SE
10/11/2022 16:00	2.6	S
10/11/2022 17:00	0.3	SSE
10/11/2022 18:00	0.2	W
10/11/2022 19:00	1.0	NWW
10/11/2022 20:00	0.3	SE
10/11/2022 21:00	0.2	NWW
10/11/2022 22:00	1.1	NEE
10/11/2022 23:00	0.2	N
11/11/2022 00:00	2.3	SEE
11/11/2022 01:00	0.3	SE
11/11/2022 02:00	0.2	E
11/11/2022 03:00	3.3	SEE
11/11/2022 04:00	0.3	NNE
11/11/2022 05:00	0.3	E
11/11/2022 06:00	0.2	SW
11/11/2022 07:00	0.3	SE
11/11/2022 08:00	5.1	SE
11/11/2022 09:00	1.7	SE
11/11/2022 10:00	2.6	SE
11/11/2022 11:00	2.4	SEE
11/11/2022 12:00	4.1	W
11/11/2022 13:00	4.2	SE
11/11/2022 14:00	3.6	SE
11/11/2022 15:00	2.8	SE
11/11/2022 16:00	2.6	SE
11/11/2022 17:00	2.9	SE
11/11/2022 18:00	1.0	SE
11/11/2022 19:00	4.7	SE
11/11/2022 20:00	0.5	W
11/11/2022 21:00	2.4	SSE
11/11/2022 22:00	4.6	SSE
11/11/2022 23:00	2.4	SWW
12/11/2022 00:00	4.7	SEE
12/11/2022 01:00	4.7	S

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

Date	Wind Speed (m/s)	Wind Direction
12/11/2022 02:00	3.7	S
12/11/2022 03:00	2.3	W
12/11/2022 04:00	0.8	W
12/11/2022 05:00	3.4	W
12/11/2022 06:00	4.5	W
12/11/2022 07:00	4.9	W
12/11/2022 08:00	4.9	W
12/11/2022 09:00	3.3	SW
12/11/2022 10:00	1.2	SW
12/11/2022 11:00	2.2	SW
12/11/2022 12:00	4.2	SW
12/11/2022 13:00	2.8	SW
12/11/2022 14:00	2.7	SW
12/11/2022 15:00	3.1	SW
12/11/2022 16:00	3.7	SW
12/11/2022 17:00	3.0	SW
12/11/2022 18:00	2.3	SWW
12/11/2022 19:00	1.8	SW
12/11/2022 20:00	2.2	S
12/11/2022 21:00	0.3	NWW
12/11/2022 22:00	0.9	SEE
12/11/2022 23:00	0.2	NE
13/11/2022 00:00	0.5	S
13/11/2022 01:00	0.9	NW
13/11/2022 02:00	0.2	SSW
13/11/2022 03:00	0.3	S
13/11/2022 04:00	0.6	SSE
13/11/2022 05:00	0.1	SW
13/11/2022 06:00	4.8	SW
13/11/2022 07:00	0.8	NNW
13/11/2022 08:00	0.9	SSW
13/11/2022 09:00	1.3	SSW
13/11/2022 10:00	0.3	E
13/11/2022 11:00	0.2	NNE
13/11/2022 12:00	0.8	SWW
13/11/2022 13:00	2.7	S
13/11/2022 14:00	0.7	SWW
13/11/2022 15:00	0.3	SW

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

Date	Wind Speed (m/s)	Wind Direction
13/11/2022 16:00	0.3	SWW
13/11/2022 17:00	4.9	SWW
13/11/2022 18:00	1.0	SWW
13/11/2022 19:00	0.1	SE
13/11/2022 20:00	0.3	SSW
13/11/2022 21:00	0.3	SW
13/11/2022 22:00	3.4	SWW
13/11/2022 23:00	4.3	SW
14/11/2022 00:00	3.3	SWW
14/11/2022 01:00	3.9	SWW
14/11/2022 02:00	2.9	SWW
14/11/2022 03:00	2.5	SWW
14/11/2022 04:00	3.9	SWW
14/11/2022 05:00	4.9	SWW
14/11/2022 06:00	1.2	SWW
14/11/2022 07:00	5.1	SWW
14/11/2022 08:00	1.8	SWW
14/11/2022 09:00	3.6	SWW
14/11/2022 10:00	1.5	SWW
14/11/2022 11:00	3.9	SWW
14/11/2022 12:00	1.2	SWW
14/11/2022 13:00	3.3	SWW
14/11/2022 14:00	0.7	SWW
14/11/2022 15:00	0.8	SWW
14/11/2022 16:00	1.2	SWW
14/11/2022 17:00	4.9	SWW
14/11/2022 18:00	4.8	SWW
14/11/2022 19:00	2.1	SWW
14/11/2022 20:00	1.6	SWW
14/11/2022 21:00	2.5	SWW
14/11/2022 22:00	4.4	SWW
14/11/2022 23:00	3.4	SWW
15/11/2022 00:00	2.4	NWW
15/11/2022 01:00	3.4	SSW
15/11/2022 02:00	0.6	SSW
15/11/2022 03:00	4.5	SSW
15/11/2022 04:00	0.5	SW
15/11/2022 05:00	1.4	SW

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

Date	Wind Speed (m/s)	Wind Direction
15/11/2022 06:00	0.4	SW
15/11/2022 07:00	4.6	SSW
15/11/2022 08:00	3.1	SW
15/11/2022 09:00	3.6	SEE
15/11/2022 10:00	1.0	SEE
15/11/2022 11:00	1.8	SEE
15/11/2022 12:00	3.7	SEE
15/11/2022 13:00	1.2	SEE
15/11/2022 14:00	0.8	SEE
15/11/2022 15:00	1.5	SEE
15/11/2022 16:00	4.3	SEE
15/11/2022 17:00	1.4	SEE
15/11/2022 18:00	3.5	SEE
15/11/2022 19:00	5.1	SSW
15/11/2022 20:00	2.2	SEE
15/11/2022 21:00	4.6	SSW
15/11/2022 22:00	2.6	NNW
15/11/2022 23:00	0.3	W
16/11/2022 00:00	0.3	NNW
16/11/2022 01:00	0.3	SWW
16/11/2022 02:00	2.4	SWW
16/11/2022 03:00	4.8	SW
16/11/2022 04:00	0.3	SW
16/11/2022 05:00	2.4	SWW
16/11/2022 06:00	0.3	SW
16/11/2022 07:00	0.1	SWW
16/11/2022 08:00	0.3	SWW
16/11/2022 09:00	0.5	SWW
16/11/2022 10:00	2.7	SWW
16/11/2022 11:00	4.2	SWW
16/11/2022 12:00	0.3	SW
16/11/2022 13:00	0.8	SWW
16/11/2022 14:00	0.3	SWW
16/11/2022 15:00	0.3	SWW
16/11/2022 16:00	0.8	SWW
16/11/2022 17:00	0.2	SWW
16/11/2022 18:00	0.2	S
16/11/2022 19:00	0.2	SW

Wind Data for  
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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
16/11/2022 20:00	0.2	S
16/11/2022 21:00	2.7	SWW
16/11/2022 22:00	0.2	S
16/11/2022 23:00	0.3	SW
17/11/2022 00:00	0.3	SSW
17/11/2022 01:00	3.8	SSE
17/11/2022 02:00	3.3	SSE
17/11/2022 03:00	2.3	SSE
17/11/2022 04:00	4.8	SSE
17/11/2022 05:00	1.1	SSE
17/11/2022 06:00	2.9	SSE
17/11/2022 07:00	2.2	SSE
17/11/2022 08:00	4.6	SSE
17/11/2022 09:00	4.7	SSE
17/11/2022 10:00	3.8	W
17/11/2022 11:00	5.2	W
17/11/2022 12:00	5.3	W
17/11/2022 13:00	3.9	W
17/11/2022 14:00	1.9	W
17/11/2022 15:00	1.1	W
17/11/2022 16:00	3.1	W
17/11/2022 17:00	3.8	W
17/11/2022 18:00	1.9	W
17/11/2022 19:00	5.2	W
17/11/2022 20:00	3.1	W
17/11/2022 21:00	3.3	SE
17/11/2022 22:00	4.1	SE
17/11/2022 23:00	0.8	SEE
18/11/2022 00:00	0.9	S
18/11/2022 01:00	0.6	SSW
18/11/2022 02:00	0.2	SW
18/11/2022 03:00	0.2	SEE
18/11/2022 04:00	1.4	SWW
18/11/2022 05:00	1.5	N
18/11/2022 06:00	1.1	SSE
18/11/2022 07:00	3.2	SSE
18/11/2022 08:00	1.4	SW
18/11/2022 09:00	0.3	S

Wind Data for  
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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
18/11/2022 10:00	0.3	NNE
18/11/2022 11:00	0.7	S
18/11/2022 12:00	0.3	SWW
18/11/2022 13:00	0.6	SE
18/11/2022 14:00	2.6	SEE
18/11/2022 15:00	3.9	NNW
18/11/2022 16:00	0.2	SEE
18/11/2022 17:00	0.8	SSW
18/11/2022 18:00	3.7	SWW
18/11/2022 19:00	3.2	SSE
18/11/2022 20:00	1.8	SSW
18/11/2022 21:00	0.2	SWW
18/11/2022 22:00	0.7	SEE
18/11/2022 23:00	0.5	NNW
19/11/2022 00:00	0.1	W
19/11/2022 01:00	1.2	SSE
19/11/2022 02:00	3.4	SWW
19/11/2022 03:00	0.5	NNW
19/11/2022 04:00	0.3	S
19/11/2022 05:00	0.3	SEE
19/11/2022 06:00	0.9	SE
19/11/2022 07:00	0.6	E
19/11/2022 08:00	0.2	SE
19/11/2022 09:00	3.8	SEE
19/11/2022 10:00	1.6	SSE
19/11/2022 11:00	5.2	NEE
19/11/2022 12:00	3.6	SEE
19/11/2022 13:00	0.2	SWW
19/11/2022 14:00	0.9	SW
19/11/2022 15:00	0.5	SW
19/11/2022 16:00	4.6	SWW
19/11/2022 17:00	0.3	SW
19/11/2022 18:00	2.2	N
19/11/2022 19:00	3.0	SWW
19/11/2022 20:00	0.7	SSW
19/11/2022 21:00	3.7	SW
19/11/2022 22:00	0.9	SW
19/11/2022 23:00	0.2	SW

Wind Data for  
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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
20/11/2022 00:00	0.1	SSW
20/11/2022 01:00	4.5	SSW
20/11/2022 02:00	4.7	SSW
20/11/2022 03:00	1.7	SSW
20/11/2022 04:00	3.2	S
20/11/2022 05:00	0.9	S
20/11/2022 06:00	0.7	S
20/11/2022 07:00	0.4	S
20/11/2022 08:00	4.1	S
20/11/2022 09:00	3.5	S
20/11/2022 10:00	5.0	S
20/11/2022 11:00	5.1	S
20/11/2022 12:00	4.4	S
20/11/2022 13:00	5.4	S
20/11/2022 14:00	4.6	S
20/11/2022 15:00	0.8	S
20/11/2022 16:00	4.6	S
20/11/2022 17:00	4.5	NNW
20/11/2022 18:00	3.7	NNW
20/11/2022 19:00	4.5	NNW
20/11/2022 20:00	0.8	NNW
20/11/2022 21:00	1.3	NNW
20/11/2022 22:00	2.7	NNW
20/11/2022 23:00	2.4	NNW
21/11/2022 00:00	1.1	NNW
21/11/2022 01:00	4.6	NNW
21/11/2022 02:00	2.5	NNW
21/11/2022 03:00	3.8	NW
21/11/2022 04:00	0.6	NW
21/11/2022 05:00	3.6	NNE
21/11/2022 06:00	4.3	SSE
21/11/2022 07:00	4.8	NNE
21/11/2022 08:00	0.2	SEE
21/11/2022 09:00	0.3	SE
21/11/2022 10:00	0.5	SEE
21/11/2022 11:00	5.2	SE
21/11/2022 12:00	4.5	SEE
21/11/2022 13:00	4.2	SE

Wind Data for  
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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
21/11/2022 14:00	1.9	SEE
21/11/2022 15:00	2.7	SE
21/11/2022 16:00	2.7	SE
21/11/2022 17:00	4.5	SEE
21/11/2022 18:00	2.0	SEE
21/11/2022 19:00	3.4	SEE
21/11/2022 20:00	2.5	SEE
21/11/2022 21:00	0.5	SEE
21/11/2022 22:00	0.3	NNW
21/11/2022 23:00	0.2	SSW
22/11/2022 00:00	3.3	SWW
22/11/2022 01:00	3.0	N
22/11/2022 02:00	0.3	E
22/11/2022 03:00	2.1	SE
22/11/2022 04:00	4.5	SE
22/11/2022 05:00	1.7	W
22/11/2022 06:00	5.2	SSE
22/11/2022 07:00	1.5	SEE
22/11/2022 08:00	1.7	W
22/11/2022 09:00	0.6	E
22/11/2022 10:00	3.4	SSE
22/11/2022 11:00	3.2	N
22/11/2022 12:00	4.3	SSE
22/11/2022 13:00	0.3	NWW
22/11/2022 14:00	0.9	SSW
22/11/2022 15:00	0.3	SWW
22/11/2022 16:00	0.2	W
22/11/2022 17:00	0.2	SSW
22/11/2022 18:00	0.5	SSE
22/11/2022 19:00	2.6	SE
22/11/2022 20:00	3.8	SE
22/11/2022 21:00	4.2	SE
22/11/2022 22:00	0.9	SE
22/11/2022 23:00	3.8	SE
23/11/2022 00:00	2.9	SE
23/11/2022 01:00	0.7	SE
23/11/2022 02:00	3.9	SE
23/11/2022 03:00	3.0	SE

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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed (m/s)	Wind Direction
23/11/2022 04:00	0.7	SE
23/11/2022 05:00	3.3	SE
23/11/2022 06:00	0.4	SE
23/11/2022 07:00	4.9	SE
23/11/2022 08:00	2.2	SE
23/11/2022 09:00	2.3	SE
23/11/2022 10:00	4.4	SE
23/11/2022 11:00	2.8	SE
23/11/2022 12:00	3.1	SE
23/11/2022 13:00	4.5	SE
23/11/2022 14:00	3.0	SE
23/11/2022 15:00	1.1	SE
23/11/2022 16:00	2.1	SSE
23/11/2022 17:00	5.1	SE
23/11/2022 18:00	1.7	SSE
23/11/2022 19:00	4.6	SSE
23/11/2022 20:00	4.1	SSE
23/11/2022 21:00	1.0	SE
23/11/2022 22:00	2.2	SE
23/11/2022 23:00	5.0	SE
24/11/2022 00:00	2.6	SE
24/11/2022 01:00	4.2	SSE
24/11/2022 02:00	4.2	SSE
24/11/2022 03:00	1.5	SE
24/11/2022 04:00	3.6	SSE
24/11/2022 05:00	2.4	SE
24/11/2022 06:00	2.6	SSE
24/11/2022 07:00	1.8	SE
24/11/2022 08:00	3.4	SE
24/11/2022 09:00	2.0	SE
24/11/2022 10:00	1.4	SSE
24/11/2022 11:00	4.4	SSE
24/11/2022 12:00	3.4	SE
24/11/2022 13:00	0.7	SSE
24/11/2022 14:00	5.3	SE
24/11/2022 15:00	2.5	SE
24/11/2022 16:00	2.1	SE
24/11/2022 17:00	1.0	SE

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

Date	Wind Speed (m/s)	Wind Direction
24/11/2022 18:00	2.0	SE
24/11/2022 19:00	1.0	SE
24/11/2022 20:00	2.3	SE
24/11/2022 21:00	2.3	SE
24/11/2022 22:00	4.0	SSE
24/11/2022 23:00	0.2	W
25/11/2022 00:00	0.5	SSW
25/11/2022 01:00	2.8	NW
25/11/2022 02:00	0.8	NW
25/11/2022 03:00	1.4	NW
25/11/2022 04:00	0.8	SSW
25/11/2022 05:00	1.4	NNW
25/11/2022 06:00	1.8	S
25/11/2022 07:00	0.6	E
25/11/2022 08:00	0.6	SSE
25/11/2022 09:00	0.2	SEE
25/11/2022 10:00	0.7	NWW
25/11/2022 11:00	0.6	SSW
25/11/2022 12:00	1.4	NW
25/11/2022 13:00	1.7	NWW
25/11/2022 14:00	0.3	NWW
25/11/2022 15:00	1.0	E
25/11/2022 16:00	2.0	S
25/11/2022 17:00	1.2	SE
25/11/2022 18:00	1.2	NEE
25/11/2022 19:00	3.0	SEE
25/11/2022 20:00	0.9	SSW
25/11/2022 21:00	1.3	NNE
25/11/2022 22:00	0.2	SE
25/11/2022 23:00	0.9	SE
26/11/2022 00:00	1.5	NWW
26/11/2022 01:00	0.3	SSW
26/11/2022 02:00	0.3	E
26/11/2022 03:00	4.1	SE
26/11/2022 04:00	3.2	SE
26/11/2022 05:00	2.9	SE
26/11/2022 06:00	5.0	SE
26/11/2022 07:00	1.9	SSE



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Date	Wind Speed (m/s)	Wind Direction
26/11/2022 08:00	4.1	SSE
26/11/2022 09:00	4.7	NNE
26/11/2022 10:00	0.3	E
26/11/2022 11:00	1.9	SEE
26/11/2022 12:00	2.0	NEE
26/11/2022 13:00	1.8	NNW
26/11/2022 14:00	0.6	SSW
26/11/2022 15:00	0.3	E
26/11/2022 16:00	0.2	NE
26/11/2022 17:00	0.3	E
26/11/2022 18:00	0.2	SEE
26/11/2022 19:00	0.3	N
26/11/2022 20:00	4.3	NE
26/11/2022 21:00	1.8	SEE
26/11/2022 22:00	4.1	NE
26/11/2022 23:00	0.2	SSE
27/11/2022 00:00	1.1	NEE
27/11/2022 01:00	1.5	SSE
27/11/2022 02:00	2.5	W
27/11/2022 03:00	0.1	SSE
27/11/2022 04:00	0.2	SEE
27/11/2022 05:00	4.8	SEE
27/11/2022 06:00	0.3	E
27/11/2022 07:00	0.9	NE
27/11/2022 08:00	0.8	NEE
27/11/2022 09:00	0.2	SWW
27/11/2022 10:00	0.8	E
27/11/2022 11:00	1.7	SE
27/11/2022 12:00	0.9	SEE
27/11/2022 13:00	0.2	SEE
27/11/2022 14:00	0.3	SSW
27/11/2022 15:00	2.7	SEE
27/11/2022 16:00	1.6	SSW
27/11/2022 17:00	1.2	E
27/11/2022 18:00	1.9	E
27/11/2022 19:00	1.1	NW
27/11/2022 20:00	2.7	SSE
27/11/2022 21:00	1.2	SSW

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

Date	Wind Speed (m/s)	Wind Direction
27/11/2022 22:00	2.1	E
27/11/2022 23:00	3.1	SE
28/11/2022 00:00	1.3	SSE
28/11/2022 01:00	3.1	SEE
28/11/2022 02:00	2.3	SSW
28/11/2022 03:00	2.8	SEE
28/11/2022 04:00	0.6	SEE
28/11/2022 05:00	1.6	SEE
28/11/2022 06:00	0.3	SEE
28/11/2022 07:00	0.3	SEE
28/11/2022 08:00	0.6	S
28/11/2022 09:00	1.7	E
28/11/2022 10:00	1.8	SWW
28/11/2022 11:00	3.2	SWW
28/11/2022 12:00	4.4	NE
28/11/2022 13:00	1.2	NE
28/11/2022 14:00	4.8	NE
28/11/2022 15:00	3.7	NE
28/11/2022 16:00	2.3	NE
28/11/2022 17:00	4.7	SE
28/11/2022 18:00	3.1	S
28/11/2022 19:00	1.0	NE
28/11/2022 20:00	0.6	N
28/11/2022 21:00	3.0	E
28/11/2022 22:00	3.8	NW
28/11/2022 23:00	0.2	SE
29/11/2022 00:00	0.3	W
29/11/2022 01:00	2.8	SWW
29/11/2022 02:00	3.3	W
29/11/2022 03:00	1.2	E
29/11/2022 04:00	0.5	SE
29/11/2022 05:00	0.5	SEE
29/11/2022 06:00	1.1	NE
29/11/2022 07:00	4.7	SE
29/11/2022 08:00	0.3	SSW
29/11/2022 09:00	0.2	NNE
29/11/2022 10:00	0.7	NNE
29/11/2022 11:00	0.3	SE

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

Date	Wind Speed (m/s)	Wind Direction
29/11/2022 12:00	0.2	NNW
29/11/2022 13:00	5.0	SEE
29/11/2022 14:00	2.4	SEE
29/11/2022 15:00	4.0	NNE
29/11/2022 16:00	1.6	NNE
29/11/2022 17:00	1.3	N
29/11/2022 18:00	1.1	NNE
29/11/2022 19:00	0.9	NNE
29/11/2022 20:00	1.7	SW
29/11/2022 21:00	2.2	E
29/11/2022 22:00	2.2	SE
29/11/2022 23:00	4.0	NNW
30/11/2022 00:00	0.3	SE
30/11/2022 01:00	4.6	SE
30/11/2022 02:00	2.2	SSE
30/11/2022 03:00	1.6	SSW
30/11/2022 04:00	0.9	SWW
30/11/2022 05:00	3.1	SWW
30/11/2022 06:00	2.3	S
30/11/2022 07:00	2.0	NW
30/11/2022 08:00	0.6	SSE
30/11/2022 09:00	0.5	S
30/11/2022 10:00	0.3	W
30/11/2022 11:00	4.1	E
30/11/2022 12:00	1.9	SEE
30/11/2022 13:00	4.4	NW
30/11/2022 14:00	0.9	S
30/11/2022 15:00	0.3	N
30/11/2022 16:00	4.8	SEE
30/11/2022 17:00	3.5	SEE
30/11/2022 18:00	0.6	SWW
30/11/2022 19:00	3.9	SWW
30/11/2022 20:00	1.4	SSE
30/11/2022 21:00	0.5	E
30/11/2022 22:00	1.1	E
30/11/2022 23:00	3.4	E
01/12/2022 00:00	0.2	SSW

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

# Appendix H

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

## Event and Action Plan for Noise (Construction)

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

## 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"> <li>1. Repeat in situ measurement on the next day of exceedance to confirm findings;</li> <li>2. Check monitoring data, plant, equipment and Contractor(s)'s working methods;</li> <li>3. Identify source(s) of impact and record in notification of exceedance;</li> <li>4. Inform IEC, Contractor(s) and ER</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor(s)'s working methods;</li> <li>2. Inform EPD and AFCD.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Check plant and equipment and rectify unacceptable practice</li> </ol>
Action level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> <li>1. Repeat in situ measurement on the next day of exceedance to confirm findings;</li> <li>2. Check monitoring data, plant, equipment and Contractor(s)'s working methods;</li> <li>3. Identify source(s) of impact and record in notification of exceedance;</li> <li>4. Inform IEC, Contractor(s) and ER;</li> <li>5. Discuss with IEC and Contractor(s) on additional mitigation measures and ensure that they are implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor(s)'s working methods;</li> <li>2. Inform EPD and AFCD;</li> <li>3. Discuss with ET and Contractor(s) on additional mitigation measures and advise ER accordingly;</li> <li>4. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Discuss with the IEC on the proposed additional mitigation measures and agree on the mitigation measures to be implemented.</li> <li>3. Ensure additional mitigation measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Check plant and equipment and rectify unacceptable practice;</li> <li>3. Consider changes of working methods;</li> <li>4. Discuss with ET and IEC on additional mitigation measures and propose them to ER within 3 working days;</li> <li>5. Implement the agreed mitigation measures.</li> </ol>

EVENT	ACTION			
	ET	IEC	ER	Contractor
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> <li>1. Repeat in situ measurement on the next day of exceedance to confirm findings;</li> <li>2. Check monitoring data, plant, equipment and Contractor(s)'s working methods;</li> <li>3. Identify source(s) of impact and record in notification of exceedance;</li> <li>4. Inform IEC, Contractor(s) and ER;</li> <li>5. Discuss with IEC and Contractor(s) on additional mitigation measures and ensure that they are implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor(s)'s working methods;</li> <li>2. Inform EPD and AFCD;</li> <li>3. Discuss with ET and Contractor(s) on additional mitigation measures and advise ER accordingly;</li> <li>4. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Discuss with the IEC on the proposed additional mitigation measures and agree on the mitigation measures to be implemented.</li> <li>3. Ensure additional mitigation measures are properly implemented.</li> <li>4. Request Contractor(s) to critically review the working methods.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Check plant and equipment and rectify unacceptable practice;</li> <li>3. Critically review the need to change working methods;</li> <li>4. Discuss with ET and IEC on additional mitigation measures and propose them to ER within 3 working days;</li> <li>5. Implement the agreed mitigation measures.</li> </ol>
Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> <li>1. Repeat in situ measurement on the next day of exceedance to confirm findings;</li> <li>2. Check monitoring data, plant, equipment and Contractor(s)'s working methods;</li> <li>3. Identify source(s) of impact and record in notification of exceedance;</li> <li>4. Inform IEC, Contractor(s) and ER;</li> <li>5. Discuss with IEC and Contractor(s) on additional mitigation measures and ensure that they are implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor(s)'s working methods;</li> <li>2. Inform EPD and AFCD;</li> <li>3. Discuss with ET and Contractor(s) on additional mitigation measures and advise ER accordingly;</li> <li>4. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Discuss with the IEC on the proposed additional mitigation measures and agree on the mitigation measures to be implemented.</li> <li>3. Ensure additional mitigation measures are properly implemented.</li> <li>4. Request Contractor(s) to critically review the working methods.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Check plant and equipment and rectify unacceptable practice;</li> <li>3. Critically review the need to change working methods;</li> <li>4. Discuss with ET and IEC on additional mitigation measures and propose them to ER within 3 working days;</li> <li>5. Implement the agreed mitigation measures.</li> </ol>

## Event and Action Plan for Ecology Monitoring

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



# Appendix I

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## Waste Flow Table

Waste Flow Table for Year 2022											
Monthly Ending	Total Quantity Generated	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
		Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2022 Jan	243.88	Nil	Nil	Nil	215.24	Nil	17.46	0.04	Nil	Nil	11.14
2022 Feb	92.65	Nil	Nil	Nil	38.73	Nil	43.95	Nil	Nil	Nil	9.97
2022 Mar	398.96	Nil	Nil	Nil	312.08	Nil	76.31	Nil	Nil	Nil	10.57
2022 Apr	3619.84	Nil	Nil	Nil	3552.01	Nil	58.86	0.13	Nil	Nil	8.84
2022 May	2708.03	Nil	Nil	Nil	2692.75	Nil	8.61	Nil	Nil	Nil	6.67
2022 Jun	94.92	Nil	Nil	Nil	Nil	Nil	78.34	Nil	Nil	Nil	16.58
2022 Jul	227.99	Nil	Nil	Nil	Nil	Nil	209.20	0.13	Nil	Nil	18.66
2022 Aug	248.65	Nil	Nil	Nil	187.27	Nil	29.60	0.13	Nil	Nil	31.65
2022 Sep	3253.69	Nil	Nil	Nil	211.65	2880.00	136.88	Nil	Nil	0.15	25.01
2022 Oct	377.50	Nil	Nil	Nil	101.90	Nil	242.71	0.11	Nil	Nil	32.78
2022 Nov	3934.08	Nil	Nil	Nil	661.72	3194.58	40.71	0.16	Nil	Nil	36.91
2022 Dec											
<b>Total</b>	<b>15200.19</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7973.35</b>	<b>6074.58</b>	<b>942.63</b>	<b>0.70</b>	<b>0</b>	<b>0.15</b>	<b>208.78</b>

Note:

- 1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging materials.

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

# Appendix J

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Implementation Status of

Environmental Mitigation Measures

**Construction of Yuen Long Effluent Polishing Plant Stage 1**

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
<b>Air Quality Impact</b>			
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"> <li>• Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.</li> <li>• Use of frequent watering for particularly dusty construction areas and areas close to ASRs.</li> <li>• 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.</li> <li>• Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.</li> <li>• Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.</li> <li>• Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.</li> <li>• 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.</li> <li>• 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.</li> <li>• Imposition of speed controls for vehicles on site haul roads.</li> <li>• Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.</li> </ul>	Construction Sites	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>N/A</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

**Construction of Yuen Long Effluent Polishing Plant Stage 1**

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	<ul style="list-style-type: none"> <li>• 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.</li> </ul>		Implemented
<b>Noise Impact</b>			
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"> <li>• 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.</li> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme.</li> <li>• Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction programme.</li> <li>• Mobile plant, if any, should be sited as far away from noise sensitive receivers (NSRs) as possible.</li> <li>• 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.</li> <li>• 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</li> <li>• Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	Construction Sites	<p>N/A</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>N/A</p> <p>Implemented</p> <p>N/A</p> <p>N/A</p>
<b>Water Quality Impact</b>			
Construction Phase			
5.8.1.2	<p>Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities</p>	Construction Sites / Construction Phase	Implemented

**Construction of Yuen Long Effluent Polishing Plant Stage 1**

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

**Construction of Yuen Long Effluent Polishing Plant Stage 1**

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

**Construction of Yuen Long Effluent Polishing Plant Stage 1**

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

**Waste Management Implication**
**Construction Phase**

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



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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"> <li>• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed; and</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>• 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.</li> </ul>		Implemented
	<p>Waste Reduction Measures Recommendations to achieve waste reduction include:</p>	Construction Sites	
	<ul style="list-style-type: none"> <li>• 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;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>• 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;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>• Any unused chemicals or those with remaining functional capacity shall be recycled;</li> </ul>		N/A
	<ul style="list-style-type: none"> <li>• Maximising the use of reusable steel formwork to reduce the amount of C&amp;D material;</li> </ul>		N/A
	<ul style="list-style-type: none"> <li>• Prior to disposal of C&amp;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;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>• Adopt proper storage and site practices to minimise the potential for damage to, or contamination of, construction materials;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>• Plan the delivery and stock of construction materials carefully to minimise the amount of surplus waste generated;</li> </ul>		N/A
<ul style="list-style-type: none"> <li>• Adopt pre-cast construction method instead of cast-in-situ method for construction of concrete structures as much as possible; and</li> </ul>	N/A		
<ul style="list-style-type: none"> <li>• Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering.</li> </ul>	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"> <li>• Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>• Maintain and clean storage areas routinely;</li> </ul>		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"> <li>• Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>• Different locations should be designated to stockpile each material to enhance reuse.</li> </ul>		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"> <li>• Remove waste in timely manner;</li> <li>• Waste collectors should only collect wastes prescribed by their permits;</li> <li>• Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers;</li> <li>• 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);</li> <li>• Waste should be disposed of at licensed waste disposal facilities; and</li> <li>• Maintain records of quantities of waste generated, recycled and disposed.</li> </ul>	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&amp;D materials at PFRFs and landfills and to control fly-tipping, a trip-ticket system should be established in accordance with DEVB TCW No. 6/2010. A recording system for the amount of waste generated, recycled and disposed, including the disposal sites, should also be set up. Warning signs should be put up to remind the designated disposal sites. CCTV should be installed at the vehicular entrance and exit of the site as additional measures to prevent fly-tipping.</p>	Transportation Route of Waste / Construction Phase	Implemented

**Construction of Yuen Long Effluent Polishing Plant Stage 1**

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.12	<p><u>Construction and Demolition Material</u>                      Careful design, planning together with good site management can reduce over-ordering and generation of C&amp;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"> <li>• A WMP, which becomes part of the EMP, should be prepared in accordance with ETWB TCW No.19/2005;</li> <li>• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be adopted for easy tracking; and</li> <li>• In order to monitor the disposal of C&amp;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).</li> </ul>	Construction Sites	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
6.6.1.14	<p>It is recommended that specific areas should be provided by the Contractors for sorting and to provide temporary storage areas (if required) for the sorted materials. Control measures for temporary stockpiles on-site should be taken in order to minimise the noise, generation of dust and pollution of water. These measures include:</p> <ul style="list-style-type: none"> <li>• Surface of stockpiled soil should be regularly wetted with water especially during dry season;</li> <li>• Disturbance of stockpile soil should be minimised;</li> <li>• Stockpiled soil should be properly covered with tarpaulin especially when heavy storms are predicted; and</li> <li>• Stockpiling areas should be enclosed where space is available.</li> </ul>	Construction Sites	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

**Construction of Yuen Long Effluent Polishing Plant Stage 1**

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

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

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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"> <li>• Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety;</li> <li>• 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;</li> <li>• 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.</li> <li>• 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;</li> <li>• Speed control for the trucks carrying contaminated materials shall be enforced;</li> </ul>	Project Site / Construction Phase	<p>Implemented</p> <p>N/A</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</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"> <li>• Vehicle wheel and body washing facilities at the site's exist points shall be established and used; and</li> <li>• 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.</li> </ul>		Implemented
			Implemented
<b>Ecological Impact (Terrestrial and Aquatic)</b>			
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

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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



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

**Construction of Yuen Long Effluent Polishing Plant Stage 1**

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
Table 10.11	<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
<b>Hazard to Life</b>			
<b>Construction Phase</b>			
11.5.6.9-11.5.6.12	<ul style="list-style-type: none"> <li>• 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;</li> <li>• 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;</li> <li>• 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</li> </ul>	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"> <li>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.</li> </ul>		N/A
11.5.8	<ul style="list-style-type: none"> <li>Method statements and risk assessments shall be prepared and safety control measures shall be in place before commencement of work</li> </ul>	Project site / Construction Phase	Implemented
	<ul style="list-style-type: none"> <li>All work procedures shall be complied with the operating plant procedures or guidelines and regulatory requirements;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>Work permit system, on-site pre-work risk assessment and emergency response procedure shall be in place before commencement of work;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>All construction workers shall equip with appropriate personal protective equipment (PPE) when working at the Project Site;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>Safety training and briefings shall be provided to all construction workers;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>Regular site safety inspections shall be conducted during the construction phase of the Project;</li> </ul>		Implemented
11.9.1.2	<ul style="list-style-type: none"> <li>Ensure speed limit enforcement is specified in the contractor's method statement to limit the speed of construction vehicles onsite;</li> </ul>	Project site / ConstructionPhase	Implemented
	<ul style="list-style-type: none"> <li>Conduct speed checks to ensure enforcement of speed limits and to ensure adequate site access control;</li> </ul>		N/A
	<ul style="list-style-type: none"> <li>A lifting plan, with detailed risk assessment, should be prepared and endorsed for heavy lifting of large equipment;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>Vehicle crash barriers should be provided between the construction site and the operating biogas facilities;</li> </ul>		N/A
	<ul style="list-style-type: none"> <li>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;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>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;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>Ensure effective communication system / protocol is in place between the contractors and the operation staff;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>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;</li> </ul>		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"> <li>• 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;</li> </ul>		Implemented
	<ul style="list-style-type: none"> <li>• 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.</li> </ul>		Implemented
	Potential risks of the construction activities shall be assessed, and risk precautionary measures shall be implemented in Contractor's works procedures.		Implemented

**Note:**

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

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

# Appendix K

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Weather and Meteorological  
Conditions

# October 2022 Weather

Station: Wetland Park

Date	Mean Pressure (hPa)	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
October 2022						
1	1012.6	32.3	27.3	24.6	92	1.5
2	1012.6	33.1	28.5	26.1	87	0.0
3	1013.2	33.6	28.6	25.4	85	0.0
4	1013.3	33.4	28.3	24.3	87	0.0
5	1014.1	33.0	28.1	25.6	85	3.0
6	1014.6	32.8	28.0	25.5	82	0.0
7	1014.5	33.3	27.8	25.2	84	1.0
8	1015.4	31.3	26.5	23.2	78	0.0
9	1016.4	33.0	27.3	22.8	70	0.0
10	1018.4	28.8	23.8	20.4	55	0.0
11	1016.9	29.3	22.7	18.5	51	0.0
12	1015.4	29.8	22.6	17.6	61	0.0
13	1013.4	32.3	24.8	18.6	66	0.0
14	1012.0	33.1	26.3	22.1	72	0.0
15	1011.0	32.6	26.2	21.6	64	0.0
16	1009.4	34.0	27.7	22.9	54	0.0
17	1009.5	31.1	27.2	25.4	48	0.0
18	1013.7	26.9	20.7	16.4	70	11.5
19	1015.9	26.5#	22.4	17.0#	55	0.0
20	1017.3	29.5	24.7	21.5	66	0.0
21	1017.0	33.1	25.1	20.9	73	0.0
22	1015.4	32.8	26.0	19.8	74	0.0
23	1014.5	31.0	26.4	23.8	75	0.0
24	1015.6	30.9	25.4	22.2	74	0.0
25	1017.9	28.0	23.7	20.6	68	0.0
26	1016.9	30.4	24.0	20.1	68	0.0
27	1015.6	31.6	24.3	19.9	76	0.0
28	1015.2	31.5	25.3	20.9	74	0.0
29	1014.1	32.2#	26.0	21.2#	68	0.0
30	1011.6	29.7#	25.5	22.2#	61	0.0
31	1009.2	28.1	25.4	22.0	55	0.0

Note (From Hong Kong Observatory):

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

Source: Hong Kong Observatory

# November 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)		
November 2022						
1	1008.2	25.3	22.0	18.9	64	4.5
2	1007.0	21.5	20.2	18.9	86	23.7
3	1012.0	23.2	22.1	20.9	93	58.1
4	1016.3	24.0	22.6	21.9	87	4.0
5	1019.0	22.2	21.5	20.8	79	Trace
6	1018.6	22.5	20.8	19.3	84	6.6
7	1017.3	23.5	21.5	19.7	85	1.6
8	1017.3	23.7	22.4	20.6	85	7.7
9	1017.3	26.7	23.8	21.6	77	0.0
10	1016.7	27.9	24.8	23.0	78	0.0
11	1016.2	28.1	25.0	23.5	77	0.0
12	1015.3	26.8	24.6	23.3	79	Trace
13	1015.7	28.5	24.8	22.9	81	0.0
14	1016.7	25.7	24.1	23.2	79	0.0
15	1015.5	26.0	24.3	23.4	78	0.0
16	1015.0	25.8	24.1	23.2	80	0.0
17	1014.6	27.2	24.5	22.9	80	0.0
18	1015.6	26.9	24.6	23.1	80	0.0
19	1015.0	27.6	25.1	23.7	77	0.0
20	1014.0	27.5	24.7	23.3	78	0.0
21	1013.6	25.3	23.9	23.1	78	0.5
22	1013.1	24.1	23.4	22.3	86	2.5
23	1013.8	24.8	23.4	22.5	91	3.4
24	1015.2	22.6	21.8	21.4	93	9.6
25	1015.6	23.4	22.3	21.3	92	4.8
26	1014.8	23.6	22.7	21.7	88	0.5
27	1012.6	23.7	23.1	22.1	90	1.9
28	1012.5	28.6	25.6	23.4	88	1.4
29	1013.5	27.8	25.5	24.3	85	0.0
30	1017.3	26.1	22.8	18.3	82	0.0

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

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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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>

### 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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>

# Appendix M

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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	7 Nov 2022	Reminder 1: The Contractor is reminded to increase watering for dust suppression during the demolition of sludge digestion tank (Portion 1 - YLSTW).	7 Nov 2022
Noise		NA	
Water Quality		NA	
Chemical and Waste Management	16 Nov 2022	Reminder 1: The Contractor is reminded to provide drip tray for chemical containers to prevent chemical leakage near Tree T188 (Portion 1 - YLSTW).	16 Nov 2022
Land Contamination		NA	
Ecological Impact		NA	
Landscape and Visual Impact	7 Nov 2022	Reminder 1: T184 – T188: Stockpile shall be removed under dripline areas. Proper fence should be provided to indicate Tree Protection Zone (TPZ) (Portion 1 - YLSTW).	7 Nov 2022
	16 Nov 2022	Reminder 1: Removal of stockpile under T188's dripline and erect Tree Protection Zone (TPZ) (Portion 1 - YLSTW).	16 Nov 2022
Permit / Licenses		NA	
Others		NA	

# Appendix N

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## Outstanding Issues and Deficiencies

**Summary of Outstanding Issues and Deficiencies in the Reporting Month**

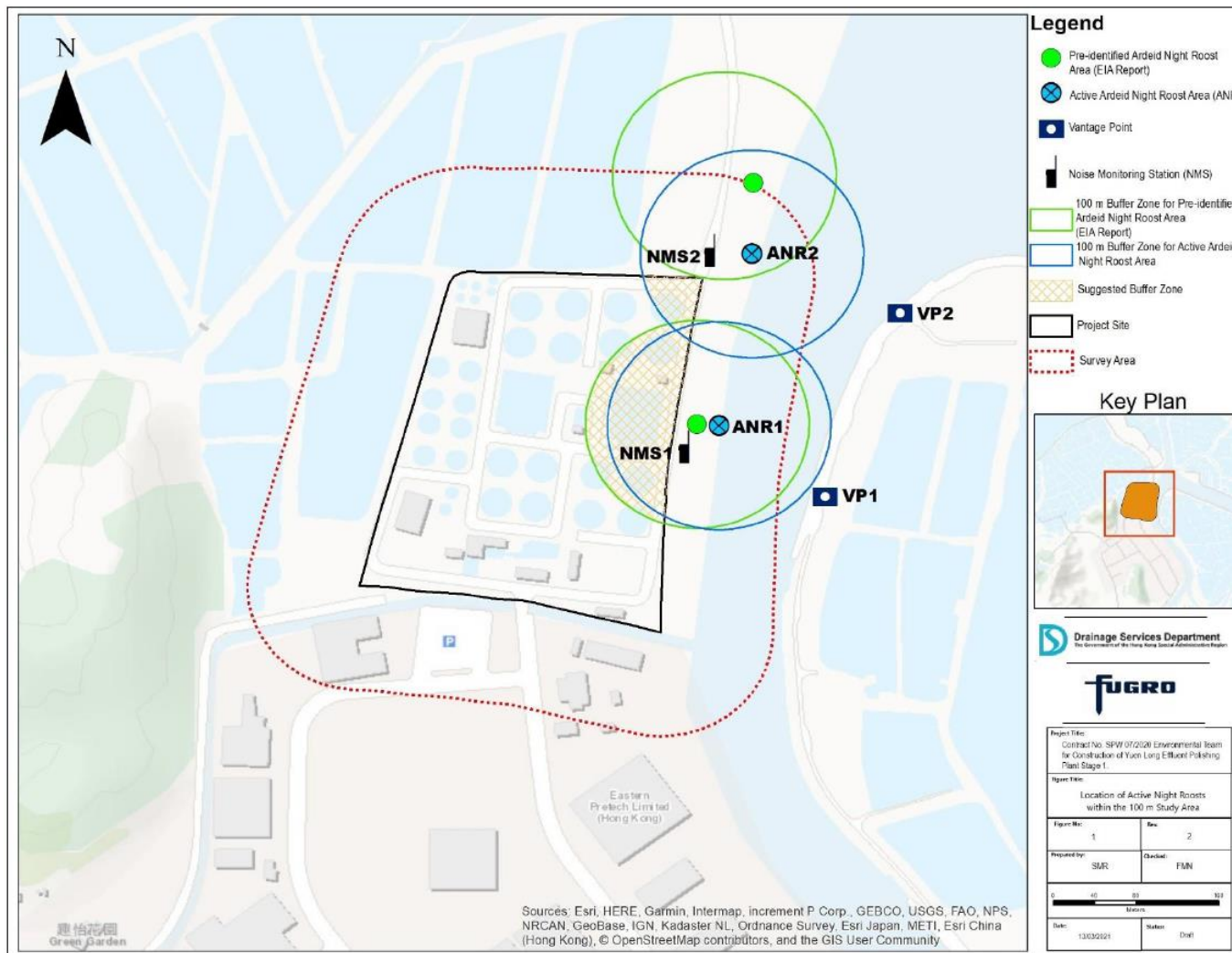
Parameters	Outstanding Issues	Deficiencies
Air Quality	NA	Any items of deficiencies can be referred to <b>Appendix M</b> .
Noise	NA	
Water Quality	NA	
Chemical and Waste Management	NA	
Land Contamination	NA	
Landscape and Visual Impact	NA	
Permit / Licenses	NA	
Others	NA	

# Appendix O

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

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



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



## O.2 Survey Photos

### O.2.1 Pre-roosting Aggregate



Appendix O.2.1a: Pre-roost aggregate of Little Egret *Egretta garzetta* and Great Egret *Ardea alba* in the mudflat area east of the Project boundary observed on 11 November 2022 around 17:20



Appendix O.2.1b: Pre-roost aggregate of Great Egret *Ardea alba*, Little Egret *Egretta garzetta* and Grey Heron *Ardea cinerea* in the mudflat area northeast of the Project boundary observed on 11 November 2022 around 17:20



Appendix O.2.1c: Pre-roost aggregate of Great Egret *Ardea alba*, Little Egret *Egretta garzetta* and Grey Heron *Ardea cinerea* in the mudflat area northeast of the Project boundary observed on 11 November 2022 around 17:20

## O.2.2 Active Night Roosting Site and Roosting Substrates

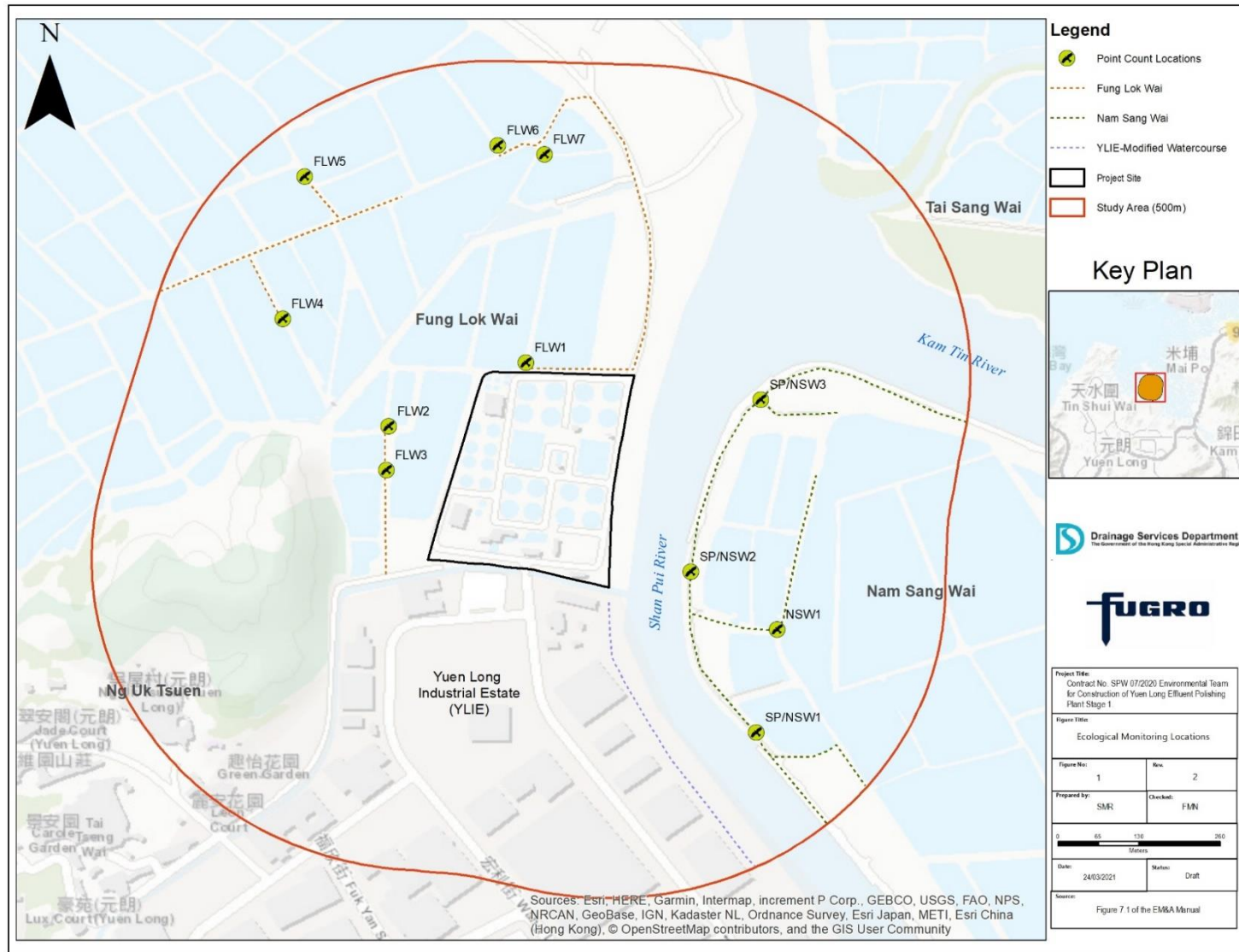


Appendix O.2.2: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located northeast of the Project boundary observed on 11 November 2022 around 17:40

# Appendix P

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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

# Appendix Q

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Notification of Exceedance

# Notification of Ecological Monitoring of Birds Exceedance

## Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20221110_Species Diversity			
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1			
Survey Dates:	2022/11/10 (daytime)			
Action level / Limit level: (For Avifauna Communities)	Method	Parameters	Action Level	Limit Level
	Transect	Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community	Significant decline <sup>1,2</sup> 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 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 limited to overwintering waterbirds) in the community		
		Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community		
		Abundance of species with conservation importance only		
		Species diversity of species with conservation importance only		
	Measured significant decline in abundance and/or species diversity (fill in as appropriate)	Transect	Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community	<input type="checkbox"/>
Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community			<input type="checkbox"/>	<input type="checkbox"/>
Abundance of species with conservation importance only			<input type="checkbox"/>	<input type="checkbox"/>
Species diversity of species with conservation importance only			<input type="checkbox"/>	<input type="checkbox"/>
Point Count		Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community	<input type="checkbox"/>	<input type="checkbox"/>
		Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Abundance of species with conservation importance only	<input type="checkbox"/>	<input type="checkbox"/>
		Species diversity of species with conservation importance only	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Action taken / to be taken <sup>3</sup> : (tick / circle / fill in as appropriate)	Responses: <input checked="" type="checkbox"/> Informed IEC, ER, and Contractor. <input checked="" type="checkbox"/> Reviewed monitoring data. <input checked="" type="checkbox"/> Investigated possible causes of decline and identified possible source (s) of impact. Recorded in notification. <input checked="" type="checkbox"/> Check Contractor's working methods.			

	<input type="checkbox"/> Other
Possible reason/s <sup>4</sup> for action or limit level Non-compliance: (tick / fill in as appropriate)	<b>Findings / Evidence</b> <input type="checkbox"/> Construction noise disturbance <input type="checkbox"/> Vibration disturbance from potential percussive piling works <input type="checkbox"/> Construction lighting/glare disturbance <input type="checkbox"/> Increased human activities <input type="checkbox"/> Construction dust disturbance <input checked="" type="checkbox"/> Others: The lower diversity during this period with respect to the baseline data could be due to the current dominance of the Great Cormorants in the community. The current dominance of this species was due to its concurrent migratory season. This dominant species could have decreased the performance of co-occurring species (Gilbert et al. 2009) <sup>5</sup> and forced them to utilize other areas outside the survey area, thus, made the area less diverse. Furthermore, low diversity index usually results from high dominance in the community as these are inversely related (Shaukat et al., 1978) <sup>6</sup> .
Observations	<input checked="" type="checkbox"/> Noise levels during the daytime survey (45.0 to 56.6 dB(A)) recorded from the different point count locations during the ecological bird monitoring are low. These low noise levels are unlikely to cause significant impact to birds as behavioral response of some kind are more likely to occur at above 65.5 dBA only (Wright et al. 2010) <sup>6</sup> . <input checked="" type="checkbox"/> Environmental site audits indicated that the recommended environmental protection measures/mitigation measures to mitigate ecological impacts have been implemented. <input checked="" type="checkbox"/> Insignificant decrease in abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community was observed for <u>Transect/Point Count</u> survey. <input checked="" type="checkbox"/> Insignificant decrease in abundance of species with conservation importance only was observed for <u>Transect/Point Count</u> survey. <input checked="" type="checkbox"/> Significant increase in species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community was observed for <u>Transect/Point Count</u> survey. <input checked="" type="checkbox"/> Insignificant increase in species diversity of species with conservation importance only was observed for <u>Transect/Point Count</u> survey.
Conclusion	<input checked="" type="checkbox"/> Due to influences of external factors/ other threats, not Project related <input type="checkbox"/> Due to influences of construction activities under this project in the vicinity, considered to be Project related
Mitigation measures	<input checked="" type="checkbox"/> Avoidance of recognized site of conservation importance <input checked="" type="checkbox"/> Restriction of construction hours <input checked="" type="checkbox"/> Minimizing construction noise disturbance impacts through the use of noise barriers <input checked="" type="checkbox"/> Establishment of bird curtain
Attachment	Annex A – Ecological Monitoring of Birds Transect Routes and Point Count Locations Annex B – Ecological Monitoring of Birds Results the Different Transect Routes and Point Count Locations (November 2022) Annex C – Shannon Diversity Index Values in the Different Transect Routes and Point Count Locations (November 2022) Annex D – Summary of Hutcheson T-test Analyses (November 2022) Annex E – Abundance Data per Point Count Location Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds (November 2022) Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds (November 2022)
Notes:	
<ol style="list-style-type: none"> <li>1. Significant decline in abundance determined using two-tailed t-test, <math>\alpha = 0.05</math></li> <li>2. Significant decline in species diversity determined using the Hutcheson t-test, two-tailed</li> <li>3. In accordance with Table 4.2 “Responses to Alert and Action Level for Avifauna Communities” of the Baseline Bird Survey Report</li> <li>4. With reference to Table 8.34 “Summary of Potential Impacts and Mitigation Measures Requirements of the Construction of the Project” of the approved EIA Report</li> <li>5. Sung, Y-H, Chun-chiu Pang, Tom Chung-hoi Li, Paulina Pui Yun Wong and Yat-tung Yu. 2021. Ecological Correlates of 20-Year Population Trends of Wintering Waterbirds in Deep Bay, South China. <i>Front. Ecol. Evol.</i> <a href="https://doi.org/10.3389/fevo.2021.658084">https://doi.org/10.3389/fevo.2021.658084</a></li> </ol>	

6. Wright, M.D., Goodman, P. and Cameron, T. 2010. Exploring behavioural responses of shorebirds to impulsive noise. Wildfowl. 60:150-167

The box is checked  to represent the statement is applicable, and vice versa

Abbreviation: ER – Engineer’s Representative, IEC – Independent Checker

Prepared by: Fenelyn Nabuab  
Designation: Ecologist



Signature:

Date (dd/mm/yyyy): 28/11/2022

Certified by: Alvin L.B. Yu

Designation: Environmental Team Leader

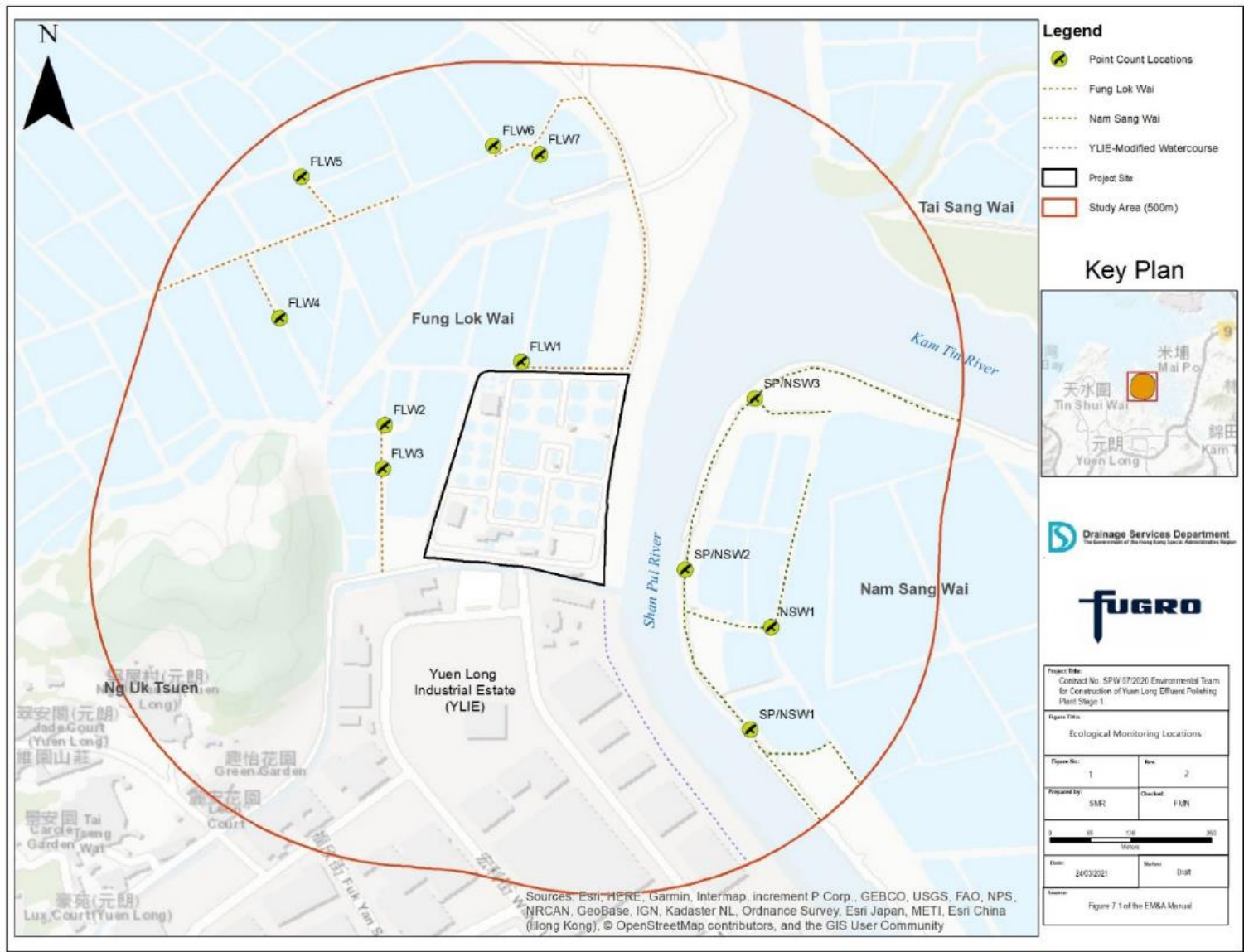


Signature:

Date (dd/mm/yyyy): 28/11/2022



Annex A – Ecological Monitoring of Birds Transect Routes and Point Count Locations



Annex B – Ecological Monitoring of Birds Results the Different Transect Routes and Point Count Locations  
(November 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 <sup>2</sup>	Principal Status <sup>3</sup>	Level of Concern <sup>4</sup>	Protection Status in China <sup>5</sup>	China Red Data Book <sup>6</sup>	Red List of China's Vertebrates <sup>10</sup>	IUCN Red List <sup>7</sup> (v.2020-3)	Species of Conservation Importance	Wetland Dependent
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Black-faced Bunting	<i>Emberiza spodocephala</i>	3	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Common Tailorbird	<i>Orthotomus sutorius</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	3	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	FLW1	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	3	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	1	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Common Tailorbird	<i>Orthotomus sutorius</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Daurian Redstart	<i>Phoenicurus aureus</i>	1	Common	WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	2	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y

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 <sup>2</sup>	Principal Status <sup>3</sup>	Level of Concern <sup>4</sup>	Protection Status in China <sup>5</sup>	China Red Data Book <sup>6</sup>	Red List of China's Vertebrates <sup>10</sup>	IUCN Red List <sup>7</sup> (v.2020-3)	Species of Conservation Importance	Wetland Dependent
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	2	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Oriental Magpie Robin	<i>Copsychus saularis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Eurasian Wigeon	<i>Anas penelope</i>	1	Common	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	10	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Cinereous Tit	<i>Parus cinereus</i>	1	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Daurian Redstart	<i>Phoenicurus aureus</i>	1	Common	WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Dusky Warbler	<i>Phylloscopus fuscatus</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Eurasian Tree Sparrow	<i>Passer montanus</i>	3	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	3	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	4	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Daurian Redstart	<i>Phoenicurus aureus</i>	1	Common	WV	-	-	-	LC	LC	N	N

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 <sup>2</sup>	Principal Status <sup>3</sup>	Level of Concern <sup>4</sup>	Protection Status in China <sup>5</sup>	China Red Data Book <sup>6</sup>	Red List of China's Vertebrates <sup>10</sup>	IUCN Red List <sup>7</sup> (v.2020- 3)	Species of Conservation Importance	Wetland Dependent
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Cormorant	<i>Phalacrocorax carbo</i>	62	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Greater Coucal	<i>Centropus sinensis</i>	1	Common	R	-	Class II	Vulne rable	LC	LC	Y	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Plain Prinia	<i>Prinia inornata</i>	7	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	2	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Eurasian Wigeon	<i>Anas penelope</i>	3	Common	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	2	Abundant	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	3	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Sandpiper	<i>Actitis hypoleucos</i>	2	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	1	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eurasian Wigeon	<i>Anas penelope</i>	1	Common	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	12	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	1	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N

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 <sup>2</sup>	Principal Status <sup>3</sup>	Level of Concern <sup>4</sup>	Protection Status in China <sup>5</sup>	China Red Data Book <sup>6</sup>	Red List of China's Vertebrates <sup>10</sup>	IUCN Red List <sup>7</sup> (v.2020-3)	Species of Conservation Importance	Wetland Dependent
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	5	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	3	Common	R	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Sandpiper	<i>Actitis hypoleucos</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	4	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Marsh Sandpiper	<i>Tringa stagnatilis</i>	2	Common	PM,WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	2	Abundant	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	1	Common	R	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	2	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	2	Common	R	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	2	Common	R,PM	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	2	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N

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

Annex C – Shannon Diversity Index Values in the Different Transect Routes and Point Count Locations  
(November 2022)



Annex C.1. Shannon Diversity Index Values of All Avifauna Species in the Different Transect Routes and Point Count Locations

Shannon Diversity Index Value of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov-22	Remarks
P1	FLW1	1.32	1.55	+
P2	FLW2	1.59	1.01	-
P3	FLW3	1.68	0.56	-
P4	FLW4	0.78	0.95	+
P5	FLW5	1.34	2.11	+
P6	FLW6	1.49	1.99	+
P7	FLW7	1.95	0.99	-
P9	SP/NSW3	2.43	2.32	-
P10	SP/NSW2	2.22	1.88	-
P11	NSW1	1.91	0.64	-
P12	SP/NSW1	2.62	2.22	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov-22	Remarks
Fung Lok Wai	FLW	2.12	1.99	-
Nam Sang Wai	NSW	1.77	1.96	+
YLIE-CW	YLIE-CW	**	1.91	+

Notes:

0 = only one species recorded; \*\* no species recorded; - decreased; + increased; = no change

Annex C.2. Shannon Diversity Index Values of Avifauna Species with Conservation Importance in the Different Transect Routes and Point Count Locations

Shannon Diversity Index Value of Species with Conservation Importance				
Point Count Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov-22	Remarks
P1	FLW1	0.69	0	-
P2	FLW2	0	**	-
P3	FLW3	0.35	**	-
P4	FLW4	0.72	0	-
P5	FLW5	1.01	0.64	-
P6	FLW6	0.92	1.49	+
P7	FLW7	1.33	0.30	-

Shannon Diversity Index Value of Species with Conservation Importance				
P9	SP/NSW3	1.97	1.95	-
P10	SP/NSW2	1.26	1.05	-
P11	NSW1	1.19	0.16	-
P12	SP/NSW1	2.35	2.11	-
<b>Transect Walk Method</b>				
EIA Report ID	EM&A Manual ID	Nov-16	Nov-22	Remarks
Fung Lok Wai	FLW	1.10	0.69	-
Nam Sang Wai	NSW	0	**	-
YLIE-CW	YLIE-CW	**	1.10	+

Notes:

0 = only one species recorded; \*\* no species recorded; - decreased; + increased; = no change

## Annex D – Summary of Hutcheson T-test Analyses (November 2022)

Hutcheson T-test formula:



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

#### Annex D.1 Species Diversity of All Avifauna Species – Point Count Method

Months	November 2016	November 2022
Total	608	223
Richness	48	27
H	2.81	2.39
S <sup>2</sup> <sub>H</sub>	0.003	0.009
t	3.79	
df	401.58	
Crit	1.97	
p	0.00	
CI	0.12	0.19

#### Annex D.2 Species Diversity of Avifauna Species with Conservation Importance – Point Count Method

Months	November 2016	November 2022
Total	394	149
Richness	20	11
H	1.91	1.41
S <sup>2</sup> <sub>H</sub>	0.005	0.012
t	3.86	
df	273.05	
Crit	1.97	
p	0.00	
CI	0.14	0.22

## Annex E – Abundance Data per Point Count Location

Annex E.1. Baseline (November 2016) abundance data (all avifauna species) per point count location



Point Count Location	Common Name	Abundance
FLW1/ P1	<i>Anthus hodgsoni</i>	3
	<i>Phalacrocorax carbo</i>	2
	<i>Prinia inornata</i>	1
	<i>Tachybaptus ruficollis</i>	2
FLW2/ P2	<i>Lanius schach</i>	1
	<i>Phalacrocorax carbo</i>	3
	<i>Prinia inornata</i>	1
	<i>Pycnonotus jocosus</i>	2
	<i>Saxicola stejnegeri</i>	1
	<i>Spilopelia chinensis</i>	5
FLW3/ P3	<i>Actitis hypoleucos</i>	1
	<i>Ardea cinerea</i>	1
	<i>Garrulax perspicillatus</i>	3
	<i>Phalacrocorax carbo</i>	1
	<i>Phylloscopus inornatus</i>	1
	<i>Zosterops japonicus</i>	2
FLW4/ P4	<i>Ardea alba</i>	3
	<i>Ardeola bacchus</i>	2
	<i>Egretta garzetta</i>	1
	<i>Ardea cinerea</i>	2
	<i>Phalacrocorax carbo</i>	54
	<i>Phoenicurus aureoreus</i>	1
	<i>Tachybaptus ruficollis</i>	3
FLW5/ P5	<i>Acridotheres cristatellus</i>	12
	<i>Alcedo atthis</i>	1
	<i>Ardeola bacchus</i>	1
	<i>Gracupica nigricollis</i>	2
	<i>Phalacrocorax carbo</i>	2
	<i>Tachybaptus ruficollis</i>	3
FLW6/ P6	<i>Acridotheres cristatellus</i>	9
	<i>Amaurornis phoenicurus</i>	1
	<i>Ardea alba</i>	1
	<i>Ardeola bacchus</i>	1

Point Count Location	Common Name	Abundance
	<i>Bubulcus coromandus</i>	2
	<i>Ceryle rudis</i>	1
	<i>Corvus torquatus</i>	2
	<i>Egretta garzetta</i>	1
	<i>Ardea cinerea</i>	1
	<i>Milvus migrans</i>	1
	<i>Phalacrocorax carbo</i>	39
	<i>Saxicola stejnegeri</i>	1
	<i>Tachybaptus ruficollis</i>	4
FLW7/ P7	<i>Ardea alba</i>	2
	<i>Buteo japonicus</i>	1
	<i>Cyanopica cyanus</i>	5
	<i>Ardea cinerea</i>	3
	<i>Gracupica nigricollis</i>	5
	<i>Halcyon smyrnensis</i>	1
	<i>Milvus migrans</i>	2
	<i>Phalacrocorax carbo</i>	17
	<i>Spilopelia chinensis</i>	7
	<i>Tachybaptus ruficollis</i>	5
SP/NSW3/ P9	<i>Amaurornis phoenicurus</i>	3
	<i>Anas crecca</i>	5
	<i>Anthus hodgsoni</i>	2
	<i>Ardea alba</i>	5
	<i>Ardeola bacchus</i>	21
	<i>Buteo japonicus</i>	1
	<i>Ceryle rudis</i>	2
	<i>Dicrurus macrocercus</i>	1
	<i>Egretta garzetta</i>	18
	<i>Ficedula albicilla</i>	1
	<i>Gallinula chloropus</i>	1
	<i>Ardea cinerea</i>	15
	<i>Gracupica nigricollis</i>	30
	<i>Halcyon smyrnensis</i>	1
	<i>Himantopus himantopus</i>	10

Point Count Location	Common Name	Abundance
	<i>Lanius schach</i>	1
	<i>Motacilla alba</i>	2
	<i>Phalacrocorax carbo</i>	60
	<i>Phylloscopus fuscatus</i>	4
	<i>Phylloscopus inornatus</i>	3
	<i>Platalea minor</i>	3
	<i>Recurvirostra avosetta</i>	20
	<i>Tringa nebularia</i>	2
	<i>Tringa stagnatilis</i>	3
	SP/NSW2/ P10	<i>Amaurornis phoenicurus</i>
<i>Anthus hodgsoni</i>		2
<i>Ardeola bacchus</i>		4
<i>Cyanopica cyanus</i>		10
<i>Ardea cinerea</i>		2
<i>Halcyon smyrnensis</i>		1
<i>Himantopus himantopus</i>		4
<i>Nycticorax nycticorax</i>		1
<i>Orthotomus sutorius</i>		1
<i>Phylloscopus fuscatus</i>		1
<i>Phylloscopus inornatus</i>		2
<i>Pycnonotus jocosus</i>		15
<i>Tringa stagnatilis</i>		1
<i>Zosterops japonicus</i>		5
NSW1/ P11		<i>Anthus hodgsoni</i>
	<i>Ardea alba</i>	1
	<i>Ardeola bacchus</i>	7
	<i>Centropus sinensis</i>	1
	<i>Egretta garzetta</i>	1
	<i>Ardea cinerea</i>	1
	<i>Gracupica nigricollis</i>	10
	<i>Halcyon smyrnensis</i>	1
	<i>Phalacrocorax carbo</i>	19
	<i>Phoenicurus aureoreus</i>	1
	<i>Phylloscopus fuscatus</i>	1



Point Count Location	Common Name	Abundance
	<i>Prinia inornata</i>	1
	<i>Spilopelia chinensis</i>	2
	<i>Tringa nebularia</i>	1
SP/NSW1/ P12	<i>Acridotheres cristatellus</i>	14
	<i>Actitis hypoleucos</i>	1
	<i>Anas clypeata</i>	5
	<i>Anas crecca</i>	3
	<i>Ardea alba</i>	2
	<i>Ardeola bacchus</i>	2
	<i>Copsychus saularis</i>	1
	<i>Egretta intermedia</i>	1
	<i>Falco amurensis</i>	1
	<i>Gallinago gallinago</i>	10
	<i>Ardea cinerea</i>	2
	<i>Gracupica nigricollis</i>	5
	<i>Himantopus himantopus</i>	5
	<i>Lanius schach</i>	1
	<i>Phalacrocorax carbo</i>	2
	<i>Phylloscopus fuscatus</i>	1
	<i>Platalea minor</i>	1
	<i>Pycnonotus jocosus</i>	3
	<i>Recurvirostra avosetta</i>	2
	<i>Tringa totanus</i>	3
<b>Total</b>		<b>608</b>

Annex E.2. Impact monitoring (November 2022) abundance data (all avifauna species) per point count location

Location	Common Name	Abundance
FLW1/ P1	<i>Acridotheres cristatellus</i>	3
	<i>Motacilla alba</i>	1
	<i>Phalacrocorax carbo</i>	2
	<i>Prinia inornata</i>	3
	<i>Spilopelia chinensis</i>	2
FLW2/ P2	<i>Prinia inornata</i>	2

Location	Common Name	Abundance
	<i>Spilopelia chinensis</i>	1
	<i>Streptopelia decaocto</i>	3
FLW3/ P3	<i>Acridotheres cristatellus</i>	3
	<i>Streptopelia decaocto</i>	1
FLW4/ P4	<i>Phalacrocorax carbo</i>	1
	<i>Prinia inornata</i>	3
	<i>Pycnonotus jocosus</i>	1
FLW5/ P5	<i>Acridotheres cristatellus</i>	2
	<i>Copsychus saularis</i>	2
	<i>Orthotomus sutorius</i>	3
	<i>Phalacrocorax carbo</i>	4
	<i>Phoenicurus aureus</i>	1
	<i>Pycnonotus jocosus</i>	2
	<i>Spilopelia chinensis</i>	1
	<i>Streptopelia decaocto</i>	2
FLW6/ P6	<i>Tachybaptus ruficollis</i>	2
	<i>Acridotheres cristatellus</i>	2
	<i>Anas penelope</i>	1
	<i>Ardea alba</i>	1
	<i>Egretta garzetta</i>	2
	<i>Motacilla alba</i>	1
	<i>Phalacrocorax carbo</i>	3
	<i>Pycnonotus jocosus</i>	2
FLW7/ P7	<i>Tachybaptus ruficollis</i>	1
	<i>Egretta garzetta</i>	1
	<i>Gracupica nigricollis</i>	2
	<i>Motacilla alba</i>	2
SP/NSW3/ P9	<i>Phalacrocorax carbo</i>	10
	<i>Actitis hypoleucos</i>	1
	<i>Alcedo atthis</i>	1
	<i>Amaurornis phoenicurus</i>	1
	<i>Anas clypeata</i>	2
	<i>Ardea cinerea</i>	3
	<i>Ardeola bacchus</i>	1
	<i>Egretta garzetta</i>	3
<i>Gallinula chloropus</i>	3	

Location	Common Name	Abundance
	<i>Himantopus himantopus</i>	5
	<i>Phalacrocorax carbo</i>	1
	<i>Prinia inornata</i>	2
	<i>Tachybaptus ruficollis</i>	4
	<i>Tringa stagnatilis</i>	2
SP/NSW2/ P10	<i>Actitis hypoleucos</i>	2
	<i>Anas penelope</i>	1
	<i>Ardeola bacchus</i>	1
	<i>Egretta garzetta</i>	1
	<i>Garrulax perspicillatus</i>	1
	<i>Himantopus himantopus</i>	3
	<i>Motacilla tschutschensis</i>	1
	<i>Phalacrocorax carbo</i>	12
	<i>Prinia inornata</i>	1
	<i>Pycnonotus jocosus</i>	2
<i>Streptopelia decaocto</i>	1	
NSW1/ P11	<i>Ardea cinerea</i>	1
	<i>Centropus sinensis</i>	1
	<i>Phalacrocorax carbo</i>	62
	<i>Phoenicurus aureoreus</i>	1
	<i>Prinia inornata</i>	7
	<i>Spilopelia chinensis</i>	2
SP/NSW1/ P12	<i>Anas clypeata</i>	2
	<i>Anas penelope</i>	3
	<i>Ardea alba</i>	1
	<i>Ardea cinerea</i>	2
	<i>Ardeola bacchus</i>	3
	<i>Egretta garzetta</i>	3
	<i>Himantopus himantopus</i>	2
	<i>Phalacrocorax carbo</i>	1
	<i>Prinia inornata</i>	3
	<i>Tachybaptus ruficollis</i>	1
<b>Total</b>		<b>220</b>

Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds  
(November 2022)

Frequency and Period	Location	Day time (10/11/2022)	
		Start Time	L <sub>Aeq</sub> (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1/ P1	10:35	56.6
	FLW2/ P2	10:04	45.5
	FLW3/ P3	10:07	50.2
	FLW4/ P4	09:02	45.0
	FLW5/ P5	09:05	45.6
	FLW6/ P6	09:34	46.1
	FLW7/ P7	09:40	46.3
	SP/NSW3/ P9	07:47	56.1
	SP/NSW2/ P10	08:20	51.0
	NSW1/ P11	07:51	47.4
	SP/NSW1/ P12	08:23	53.6

Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds  
(November 2022)



Annex G.1. Flock of Great Cormorants in Nam Sang Wai, far east of the Project Site.



Annex G.2. Flock of Great Cormorants in Nam Sang Wai, far east of the Project Site.