Monthly EM&A Report (January 2023)

0120/20/ED/0570 02

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

MOTT MACDONALD

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

Attn: Mr. Simon H.M. YEUNG – CRE(C)

Your Reference

Our Reference
AFK/EC/TC/BW/bw/
T601100019/02/02/L024

Mott MacDonald
3/F Manulife Tower
348 Kwun Tong Road
Kwun Tong
Kowloon
Hong Kong

T +852 2828 5757
F +852 2827 1823
mottmac.hk

Contract No. SPW 03/2022

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

Environmental Permit No. EP-565/2019

EP Condition 3.4 – Monthly EM&A Report for January 2023

14 February 2023

By Hand and By Email

Dear Sir,

I refer to the captioned Monthly EM&A Report for January 2023 (Document No. 0120/20/ED/0570, Issue No. 02) which was certified by the Environmental Team Leader and received via e-mail on 14 February 2023.

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

Brandon WONG
Independent Environmental Checker
T +852 2828 5875
Brandon.Wong@mottmac.com

c.c. DSD — Mr. Wallace CHENG – E/SP 16 — By Email
Fugro Technical Services Limited — Mr. YU Lap Bong – ETL — By Email

Document Control

Document Information

Project Title	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1
Document Title	Monthly EM&A Report (January 2023)
Fugro Project No.	0120/20
Fugro Document No.	0120/20/ED/0570
Issue Number	02

Client Information

Client	Drainage Services Department
Client Address	45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Client Contact	Mr. Wallace Cheng

Environmental Team

Initials	Name	Role	Signature
LB	**Alvin L.B. Yu**	**Environmental Team Leader**	
CY	**Cyrus C.Y. Lai**	**Senior Environmental Consultant**	
KH	**Toby K.H. Wan**	**Environmental Consultant**	

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 22nd Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 January 2023 to 31 January 2023. As informed by the Contractor, major activities in the reporting month were:

- 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;
- Ground investigation at SD & STB;
- Installation of steel cover for at Zone 2B chamber:
- Sheet piling installation around Sludge digester no. 1 – 3;
- Demolition of Air Floatation Thickener (remaining Bay 9);
- Installation of sheet pile at TTS;
- Installation of concrete blocks and soil Surcharge at Biogas Holder no. 1;
- Installation of sheet pile at SD;
- Installation of sheet pile at STB; 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. Three exceedances in Action Level and one in Limit Level were recorded for the ecological monitoring of birds on 16 January 2023. These include significant declines in point count method result for species diversity of all avifauna species, and for species diversity of avifauna species with conservation importance; and transect walk method result for species diversity of all avifauna species in the community. Since the significant decline in point count method result for species diversity of avifauna species with conservation importance has been recorded for three consecutive months, it is now considered a limit level exceedance. 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 1st November 2021, 23rd November 2021, 29th April 2022 and 6th July 2022. No contaminated soil and ground water was found within the Main Storeroom & Workshop, Mechanical Workshop, Waste Storage Area and SAS Thickener House-1, and no remedial action is required for both locations.

Complaint Log

ix. No complaints were received in the reporting period.

Notifications of Summons and Successful Prosecutions

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

Reporting Change

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

Future Key Issues

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

- Demolition of Admin. Building and RAS by silent method;
- Ground investigation at UC, SDB, SDT & STB;
- Excavation of temp. trench for laying power cables and cable draw pits near YLSTP's entrance;
- ABWF work and fixing GRC panel at CLP Substation;
- ELS work and RC structure at IW & PST;
- Installation of 813mm pipe pile at North, West and East of AGS;
- Installation of King Post at AGS;
- Erection temp. loading platform at AGS;
- ELS work at AGS;
- Installation of Sheet pile at TTS;
- Installation of King post at TTS;
- ELS work at TTS;
- Installation of sheet pile at STB;
- ELS work at STB;
- ELS work at SD;
- Environmental Drill Holes at AFT;
- Sheet piling work around Sludge digester no. 1 – 3;
- ELS work at Sludge Digester no. 1-3; and
- Installation of concrete blocks and filling soil Surcharge at Biogas Holder no. 1.

Contents

Tables

Figures

Appendices

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^3 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^3 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^3 per day. The proposed works, as Stage 1 of the project, will firstly increase the treatment capacity to 100,000 m^3 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 22nd Monthly EM&A report to document the findings of site inspection activities and EM&A programme for this project from 1 January 2023 to 31 January 2023 (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:

- 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;
- Ground investigation at SD & STB;
- Installation of steel cover for at Zone 2B chamber:
- Sheet piling installation around Sludge digester no. 1 – 3;
- Demolition of Air Floatation Thickener (remaining Bay 9);
- Installation of sheet pile at TTS;
- Installation of concrete blocks and soil Surcharge at Biogas Holder no. 1;
- Installation of sheet pile at SD;
- Installation of sheet pile at STB; 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-RN1111-22	17-Nov-2022	Cancelled from 3-Jan-2023
Construction Noise Permit	GW-RN1265-22	3-Jan-2023	2-Apr-2023
Construction Noise Permit	GW-RN1271-22	6-Jan-2023	5-Apr-2023
Water Pollution Control Ordinance (WPCO) (CAP. 358) Licence pursuant to Section 20 (Variation of Licence Pursuant to Section 28 of WPCO)	WT00038102-2021	4-Aug-2021 (Variation approved on 1-Dec-2022 with immediate effect)	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/23-073	10-Dec-2022	9-Jan-2023
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	155716
2	AM2		Model LD-5R		155717
3		Global Water	GL500-7-2	Wind Station	2012000974

2.3 Monitoring Methodology for Direct Reading Dust Meter

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

Measuring Procedures

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

Equipment Calibration

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

2.4 Maintenance and Calibration for Direct Reading Dust Meter

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

2.5 Monitoring Locations

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

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

Table 2.2 – Air Quality Monitoring Location

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

2.6 Monitoring Results

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

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

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

2.6.4 The weather 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 ($\mu g/m^3$)	Range ($\mu g/ m^3$)	Action Level ($\mu g/ m^3$)	Limit Level ($\mu g/ m^3$)
1-hour TSP				
AM1	83	49-116	291	500
AM2	97	60-126	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 (µg/ m^3)	Maximum 1-hr TSP Monitoring Results in January 2023 (µg/ m^3)
1-hour TSP			
AM1	ASR A09	205-451	116
AM2	ASR A11		126

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	1488306
2	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	1488300
3	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	5230950
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
LAeq (30 min) (L10 and L90 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	52-54	When one documented complaint is received	75
	CM2	62-63		75
	CM3	63-66		75

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

3.7.6 The Action and Limit Levels for Construction Noise have been set and are presented in **Appendix C**.

3.7.7 The Event and Action Plan for Construction Noise is given in **Appendix H**.

3.8 Comparison of Noise Monitoring data with EIA Predictions

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

Table 3.5 – Comparison of Noise monitoring data with EIA predictions

Monitoring Station	EIA ID	Maximum Predicted Mitigated Construction Noise Level L_{eq} (30min) dB(A)	Maximum Construction Noise Level in January 2023 L_{eq} (30min) dB(A)
CM1	NSR1	72	54
CM2	NSR2	74	63
CM3	NSR3	75	66

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 Multiparameter 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: ±0.2°C DO: ±0.1mg/L or 1% for 0-20mg/L; ±5% for 20-50mg/L Sal: ±2% of the reading or 0.2 ppt (whichever greater) pH: ±0.2 units Turb: ±3% or 0.3NTU (FNU) (whichever greater)	19E100634
		Xylem EXO 1			21D101383
Current Velocity and Direction	Current Meter	Valeport Model 106	Speed: 0.03 to 5 m/s Direction: 0 to 360	Speed: ± 1.5% of reading above 0.15m/s, ± 0.004 m/s below 0.15m/s Direction: ± 2.5o	67738
		River Surveyor M9	Water Depth: 0-80m	Water Depth: 1% Current speed: ±0.25% of measured velocity or ±0.2cm/s Current direction: ±2degree 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
In-situ Measurement Turbidity (in NTU), pH, DO (in mg/L and % of saturation), Temperature (in ˚C), Salinity (in ppt) Laboratory Analysis Suspended Solids	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.)

4.5 Monitoring Operation

4.5.1 The position of water monitoring station will be located by the Differential Global Positioning System (DGPS) or equivalent. The water depth of water monitoring station will be determined by the echo sounder affixed to the bottom of the monitoring vessel or a portable echo sounder depth detector.

4.5.2 Once the location and water depth are confirmed, water samples shall be collected at 3 depths (1m below the surface, mid-depth, and 1m above the seabed) of the water column at each location, except where water depth is less than 6m, the mid-depth will be omitted and if the

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

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

4.6 Laboratory Measurement / Analysis

Background

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

Quality Assurance / Quality Control

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

For each batch of 20 samples:

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

4.7 Monitoring Locations

4.7.1 In accordance with the EM&A Manual, water quality monitoring should be carried out at 3 designated monitoring locations.

4.7.2 The coordinates of the monitoring location stated in the EM&A Manual is summarised in **Table 4.3** and the locations of the water quality monitoring stations shown in **Figure 4**.

Table 4.3 – Coordinates of Water Quality Monitoring Locations

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

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

4.8 Monitoring Results

4.8.1 The schedule of water quality monitoring in reporting month is provided in **Appendix E**.

4.8.2 Impact water quality monitoring was conducted at all designated monitoring stations in the reporting month. Impact water quality monitoring results and graphical presentations are provided in **Appendix F**.

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

4.8.4 Number of Action/ Limit exceedance recorded in the reporting month at each impact stations is summarized in **Table 4.4**.

Table 4.4 – Summary of Water Quality Exceedance

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

4.8.5 During the reporting period, no Action and Limit Level exceedance was recorded for water quality monitoring.

4.8.6 The Event and Action Plan for water quality is given in **Appendix H**.

4.9 WetSeps

4.9.1 Three WetSeps 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 (Variation of WPCO Discharge Licence was approved by EPD on 1 December 2022 with immediate effect).

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 17 January 2023.

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 17:50, 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 17 January 2023 and started around 17:01 (one hour before sunset) on a high tide condition. During the pre-roost period (PRP), the period when avian individuals gather first before flying into a night roost, there was no observed pre-roost aggregate (PRA) in both the east side (ANR1) and northeast side of the Project boundary as both mudflat areas were submerged due to high tide during the period (**Table 5.2**).

For the final night roost at around 17:50, individuals of Chinese Pond Heron *Ardeola bacchus* (9), and Grey Heron *Ardea cinerea* (1) were observed at the roosting area ANR1 utilizing the understory to canopy layer of the roosting substrate *Sonneratia apetala* and *S. caseolaris*; while, other individuals of similar species Chinese Pond Heron (11), and Grey Heron (1) were also noted at ANR2 that utilized the understory to canopy layer of the aforementioned roosting substrate in addition to Little Egret *Egretta garzetta* (8) and Great Egret *Ardea alba* (3) in this area.

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: 17 January 2023			Sunset Time: 18:01 Tidal Condition: High Tide		
Pre-roost Period			**Final roost Period**		
Time of Return:	-		**Time of Return:**	Chinese Pond Heron *Ardeola bacchus,* Little Egret *Egretta garzetta*, Great Egret *Ardea alba*, and Grey Heron *Ardea cinerea* (17:50)	
Parameters	**Location**		**Parameters**	**Location**	
	ANR1	**ANR2**		**ANR1**	**ANR2**
Pre-roost Aggregation (Y/N):	Y	Y	**Substrate Species:**	*Sonneratia apetala* and *S. caseolaris*	*Sonneratia apetala* and *S. caseolaris*
Substrate Species:	*Sonneratia apetala* and *S. caseolaris*	*Sonneratia apetala* and *S. caseolaris*	**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
-	-	-	Chinese Pond Heron *Ardeola bacchus*	9	11
			Little Egret *Egretta garzetta*	-	8
			Great Egret *Ardea alba*	-	3
			Grey Heron *Ardea cinerea*	1	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 17 January 2023 in concurrence with the construction phase monthly monitoring of the pre-identified active night roosts. Noise monitoring started at 17:50 and lasted for 30 minutes, until 18:20.

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	17:50	38.8	65.5 dB(A)[1]	72.2 dB(A)[2]
	NMS2	17:50	40.8		

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 January 2023 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 *Ardeola bacchus*, Little Egret *Egretta garzetta*, Great Egret *Ardea alba*, and Grey Heron *Ardea cinerea*.

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 16 January 2023 (daytime) which started around 07:46. Additionally, the survey overlooking the mudflats and mangroves in the Shan Pui River was concurrently conducted on the same date with the daytime survey during the low tide (generally 1.5m or below) period, and also started at around 07:46. The methodology for the monitoring activity followed **Sections 8.3.3.6** and **8.3.3.7** of the **EIA Report (AEIAR-220/2019)** and as detailed below.

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

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

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

Table 5.4 - Noise Monitoring Parameters

Parameter	Frequency and Location
LAeq (30 min) (L10 and L90 will be recorded for reference)	Monthly in concurrence with the monthly ecological bird monitoring at the different point count locations

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

5.2.2.3 Data Analysis

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

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

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

To check the presence of variation in bird abundance between baseline and impact monitoring, t-test was applied (α = 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 16 January 2023 (daytime) which started around 07:46 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 07:46 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 1,379 avifauna individuals was recorded in the monitoring area during the January 2023 monitoring period, of which 1,251 individuals were recorded from the point count method and 128 individuals from the transect walk method. Relative to the January 2017 baseline data (point count method = 708; and transect walk = 347), increase in point count

method was noted; while decrease in total abundance for the transect walk method (t-value = -0.08; p-value = 0.94; α = 0.05) was observed.

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

Table 5.5 – Abundance of all Avifauna Species

Abundance of all Avifauna Species				
Point Count Method				
EIA Report ID	**EM&A Manual ID**	**January-17**	**January-23**	**Remarks**
P1	FLW1	9	7	-
P2	FLW2	27	5	-
P3	FLW3	37	6	-
P4	FLW4	0	908	+
P5	FLW5	0	20	+
P6	FLW6	105	43	-
P7	FLW7	45	22	-
P9	SP/NSW3	148	102	-
P10	SP/NSW2	142	24	-
P11	NSW1	117	65	-
P12	SP/NSW1	78	49	-
	Total	**708**	**1251**	+
	Mean	**64**	**114**	+
Transect Walk Method				
EIA Report ID	**EM&A Manual ID**	**January-17**	**January-23**	**Remarks**
Fung Lok Wai	FLW	292	74	-
Nam Sang Wai	NSW	52	41	-
YLIE-CW	YLIE-CW	3	13	+
	Total	**347**	**128**	-
	Mean	**116**	**43**	-

Notes:

+ increased abundance; - decreased abundance

5.2.3.1.2 Avifauna Species of Conservation Importance

Of the 1,379 avifauna individuals recorded in the monitoring area during the January 2023 monitoring period, 1,136 individuals (point count method = 1,100 individuals; transect walk method = 26 individuals) were of conservation importance. With reference to January 2017 data, current results showed increase in total abundance for the point count method; while a decrease for the transect walk method (t-value = 1.28; p-value = 0.21; α = 0.05). Details of these findings are summarized in **Table 5.6;** and **Appendix F.6.2**.

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**	**January-17**	**January-23**	**Remarks**
P1	FLW1	8	0	-
P2	FLW2	12	0	-
P3	FLW3	34	2	-
P4	FLW4	0	908	+
P5	FLW5	0	17	+
P6	FLW6	66	11	-
P7	FLW7	33	22	-
P9	SP/NSW3	146	42	-
P10	SP/NSW2	76	13	-
P11	NSW1	86	60	-
P12	SP/NSW1	67	35	-
	Total	**528**	**1110**	+
	Mean	**48**	**101**	+
Transect Walk Method				
EIA Report ID	**EM&A Manual ID**	**January-17**	**January-23**	**Remarks**
Fung Lok Wai	FLW	82	8	-
Nam Sang Wai	NSW	1	11	+
YLIE-CW	YLIE-CW	0	7	+
	Total	**83**	**26**	-
	Mean	**28**	**7**	-

Notes:
+ increased abundance; - decreased abundance

5.2.3.2 Diversity (Species Richness[1] and Shannon Diversity Index[2])

5.2.3.2.1 All Avifauna Species

A total of 35 avifauna species (species richness) were recorded during the January 2023 monitoring period, of which, 27 species were recorded by the point count method while 26 species were noted by the transect walk method. Relative to the baseline data (point count method = 47 species; transect walk method = 50 species), decreases in total species richness for the point count method and transect walk method were noted. In terms of Shannon diversity index (H') values, current result in point count method significantly decreased (t-value

[1] actual number of species
[2] use to account the proportion (in terms of relative abundance) of each species

= 25.50; t-crit = 1.96; p-value =0.00; α = 0.05) relative to the baseline reference value. Similarly, current results in the transect walk method showed also a significant decrease (t-value = 6.32; t-crit = 1.97; p-value =2.07E-09; α = 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, Appendix F.7.1, and Appendix F.7.2.**

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**	**January-17**	**January-23**	**Remarks**
P1	FLW1	1.15	1.28	-
P2	FLW2	1.48	1.33	-
P3	FLW3	0.58	0.64	+
P4	FLW4	**	0.05	+
P5	FLW5	**	1.53	+
P6	FLW6	1.13	1.05	-
P7	FLW7	1.92	1.27	-
P9	SP/NSW3	2.35	1.35	-
P10	SP/NSW2	2.68	1.97	-
P11	NSW1	1.31	0.64	-
P12	SP/NSW1	2.36	2.20	-
	Overall H'	**2.82**	**1.04**	-
	Species Richness	**47**	**27**	-
Transect Walk Method				
EIA Report ID	**EM&A Manual ID**	**January-17**	**January-23**	**Remarks**
Fung Lok Wai	FLW	3.20	1.37	-
Nam Sang Wai	NSW	2.12	2.43	+
YLIE-CW	YLIE-CW	0.64	1.71	+
	Overall H'	**3.31**	**2.45**	-
	Species Richness	**50**	**26**	-

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

5.2.3.2.2 Avifauna Species of Conservation Importance

Of the 35 avifauna species identified during the January 2023 monitoring period, 14 species were of conservation importance (point count method = 13 species; transect walk method = 10 species). Meanwhile, relative to the baseline values in January 2017 (point count method = 22 species; transect walk method = 11 species), decreases in the number of species with conservation importance were recorded from both the point count method and transect walk method were noted. In terms of Shannon diversity index (H'), a significant decrease in point count method (t-value = 25.26; t-crit = 1.96; p-value =0.000; α = 0.05) was noted while an increase in transect walk method was observed relative to the baseline reference values. Details of these findings are summarized in **Table 5.8**, and **Appendix F.7.3.**

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**	**January-17**	**January-23**	**Remarks**
P1	FLW1	0.90	**	-
P2	FLW2	0.98	**	-
P3	FLW3	0.22	0	-
P4	FLW4	**	0.05	+
P5	FLW5	**	1.30	+
P6	FLW6	0.35	1.47	+
P7	FLW7	1.56	1.27	-
P9	SP/NSW3	2.30	1.31	-
P10	SP/NSW2	2.24	1.41	-
P11	NSW1	0.35	0.31	-
P12	SP/NSW1	2.07	1.75	-
	Overall H'	**2.24**	**0.55**	-
	Species Richness	**22**	**13**	-
Transect Walk Method				
EIA Report ID	**EM&A Manual ID**	**January-17**	**January-23**	**Remarks**
Fung Lok Wai	FLW	1.74	1.26	-
Nam Sang Wai	NSW	0	1.17	+
YLIE-CW	YLIE-CW	**	1.35	+
	Overall H'	**1.79**	**2.14**	+
	Species Richness	**11**	**10**	-

Notes:
** result when no species recorded; 0 computation result from only one recorded species;
+ increased Shannon diversity index (H'); - decreased Shannon diversity index (H'); = similar Shannon diversity index (H')

5.2.3.3 Wetland Habitat Utilization

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

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, different wetland habitats were generally observed with very low (VL); and very low to low (VL-L) number of species (**Table 5.9**).

Table 5.9 – Wetland habitat utilization of all avifauna species

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

Notes:

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

-: no recorded individuals

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

5.2.3.3.2 Avifauna Species of Conservation Importance

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

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

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

Notes:

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

-: no recorded individuals

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

5.2.3.4 Noise Levels

Noise levels L_{Aeq} (30 min) recorded on 16 January 2023 (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 (16/01/2023)	
		Start Time	L_{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1/ P1	11:01	55.2
	FLW2/ P2	10:22	61.2
	FLW3/ P3	10:20	56.8
	FLW4/ P4	09:10	54.2
	FLW5/ P5	09:15	53.7
	FLW6/ P6	09:42	53.4
	FLW7/ P7	09:48	47.4
	SP/NSW3/ P9	08:20	55.4
	SP/NSW2/ P10	08:17	53.6
	NSW1/ P11	07:47	56.7
	SP/NSW1/ P12	07:45	47.8

6. LANDSCAPE AND VISUAL

6.1 Audit Requirements

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

6.2 Results and Observations

6.2.1 To monitor and audit the implementation of landscape and visual mitigation measures, four weekly landscape and visual site audits were carried out on 4, 10, 18 and 26 January 2023.

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

7. LAND CONTAMINATION

7.1 Contamination Assessment Report

7.1.1 Risk-Based Remediation Goals (RBRGs) for Industrial have been adopted for the "Main Storeroom & Workshops" and the laboratory results for the sampling works (conducted between 30 June 2021 to 16 July 2021) show that there are no exceedances of the adopted RBRGs for the "Main Storeroom & Workshops". As no contaminated soil and groundwater was found within the "Main Storeroom & Workshops", no remediation actions are required for contaminated soil and groundwater for the scheduled land use of the "Main Storeroom & Workshops". Their findings are summarized in Contamination Assessment Report (CAR) and submitted to EPD on 1 November 2021.

7.1.2 Risk-Based Remediation Goals (RBRGs) for Industrial have been adopted for the "Mechanical Workshop" and the laboratory results for the sampling works (conducted between 23 July 2021 to 4 August 2021) show that there are no exceedances of the adopted RBRGs for the "Mechanical Workshop". As no contaminated soil and groundwater was found within the "Mechanical Workshop", no remediation actions are required for contaminated soil and groundwater for the scheduled land use of the "Mechanical Workshop". Their findings are summarized in Contamination Assessment Report (CAR) and submitted to EPD on 23 November 2021.

7.1.3 Risk-Based Remediation Goals (RBRGs) for Industrial have been adopted for the "Waste Storage Area" and the laboratory results for the sampling works (conducted between 24 November 2021 to 6 January 2022) show that there are no exceedances of the adopted RBRGs for the "Waste Storage Area". As no contaminated soil and groundwater was found within the "Waste Storage Area", no remediation actions are required for contaminated soil and groundwater for the scheduled land use of the "Waste Storage Area". Their findings are summarized in Contamination Assessment Report (CAR) and submitted to EPD on 29 April 2022.

7.1.4 Risk-Based Remediation Goals (RBRGs) for Industrial have been adopted for the "SAS Thickener House-1" and the laboratory results for the sampling works (conducted between 13 April 2022 to 16 May 2022) show that there are no exceedances of the adopted RBRGs for the "SAS Thickener House-1". As no contaminated soil and groundwater was found within the "SAS Thickener House-1", no remediation actions are required for contaminated soil and groundwater for the scheduled land use of the "SAS Thickener House-1". Their findings are summarized in Contamination Assessment Report (CAR) and submitted to EPD on 6 July 2022.

8. SITE INSPECTION AND AUDIT

8.1 Site Inspection

8.1.1 Site audits were carried out by ET on weekly basis at least once per week to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.

8.1.2 In the reporting month, four site inspections were carried out on 4, 10, 18 and 26 January 2023.

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 Three exceedances in Action Level were recorded for the ecological monitoring of birds on 16 January 2023. These include significant declines in point count method result for species diversity of all avifauna species, and for species diversity of avifauna species with conservation importance; and transect walk method result for species diversity of all avifauna species in the community. However, the exceedances were not project-related.

9.1.6 One exceedance in Limit Level was recorded for the ecological monitoring of birds on 16 January 2023. Which is significant decline in point count method result for species diversity of avifauna species with conservation importance. However, the exceedance was not project-related.

9.1.7 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 December 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 December 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 December 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 and RAS by silent method;
- Ground investigation at UC, SDB, SDT & STB;
- Excavation of temp. trench for laying power cables and cable draw pits near YLSTP's entrance;
- ABWF work and fixing GRC panel at CLP Substation;
- ELS work and RC structure at IW & PST;
- Installation of 813mm pipe pile at North, West and East of AGS;
- Installation of King Post at AGS;
- Erection temp. loading platform at AGS;
- ELS work at AGS;
- Installation of Sheet pile at TTS;
- Installation of King post at TTS;
- ELS work at TTS;
- Installation of sheet pile at STB;
- ELS work at STB;
- ELS work at SD;
- Environmental Drill Holes at AFT;
- Sheet piling work around Sludge digester no. 1 – 3;
- ELS work at Sludge Digester no. 1-3; and
- Installation of concrete blocks and filling soil Surcharge at Biogas Holder no. 1.

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. Three exceedances in Action Level and one in Limit Level were recorded for the ecological monitoring of birds on 16 January 2023. These include significant declines in point count method result for species diversity of all avifauna species, and for species diversity of avifauna species with conservation importance; and transect walk method result for species diversity of all avifauna species in the community. Since the significant decline in point count method result for species diversity of avifauna species with conservation importance has been recorded for three consecutive months, it is now considered a limit level exceedance. However, the exceedances were not project-related.

12.1.6 Four environmental site inspections were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.

12.1.7 Four landscape and visual site audits were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.

12.1.8 No environmental complaint, notification of summons and successful prosecution was recorded in the reporting month.

12.2 Comment and Recommendations

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

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

Air Quality Impact

- The Contractor is recommended to increase watering for dust suppression at haul roads.

Construction Noise Impact

- The Contractor is reminded to maintain and reinstate the silentup at the northern site boundary.

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 the oil drum to prevent spillage.

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

- Remove stockpile (uPVC pipes) inside Tree Protection Zone of T188.
- The Contractor is reminded to erect a proper Tree Protection Zone for preserved trees T183 – T187.

Hazard to Life

- No specific observation was identified in the reporting month.

Permit/ Licenses

- No specific observation was identified in the reporting month.

Figure 1

Location of Proposed Yuen Long Effluent Polishing Plant

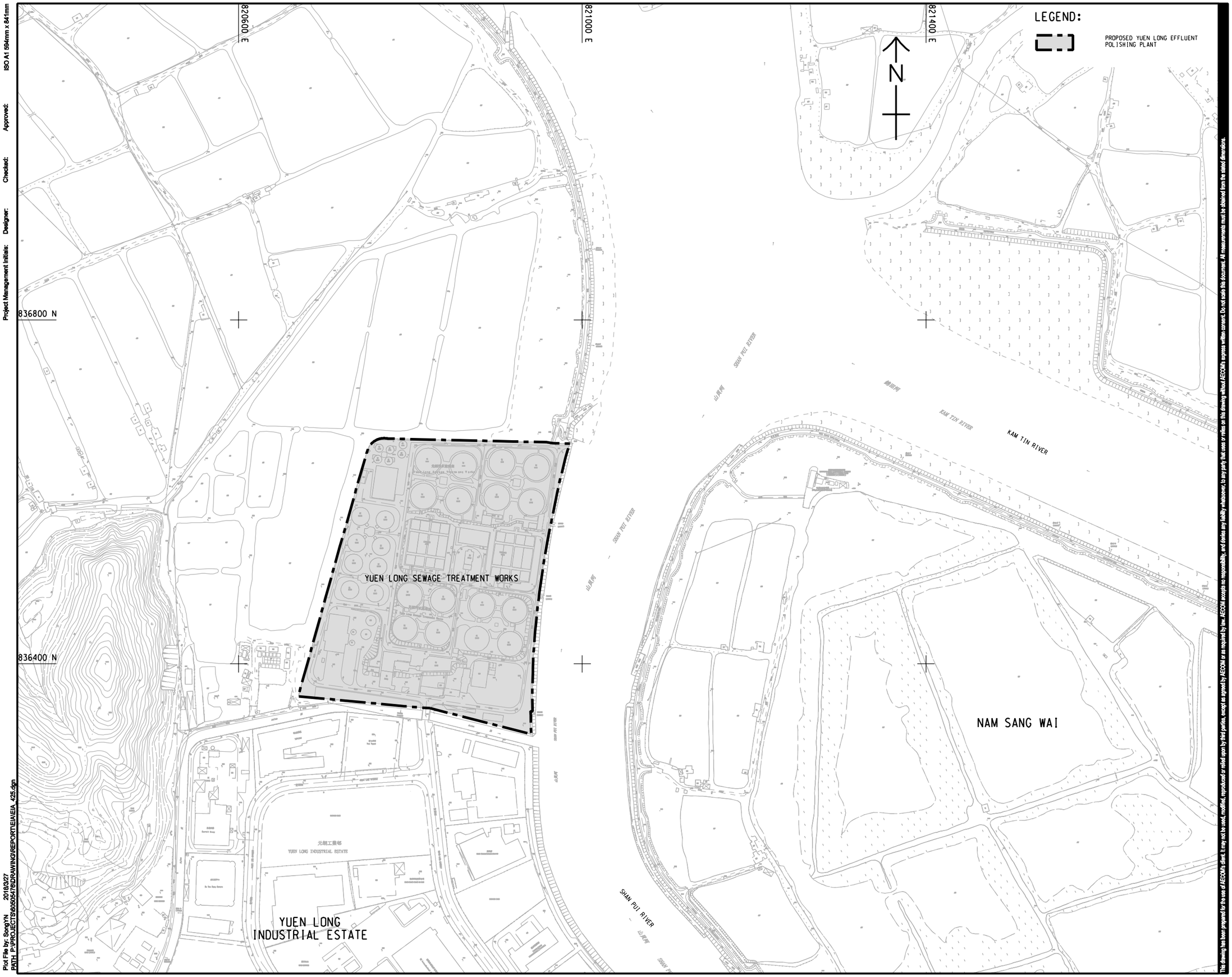
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



Plot File by: SongYN 2016/3/27
PATH: P:\PROJECTS\60505476\DRAWING\REPORT\EIA\EIA_425.dgn

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 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核

STATUS
階段

SCALE 比例
A1 1 : 2000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60505476

CONTRACT NO. 合約編號
CE 3/2015 (DS)

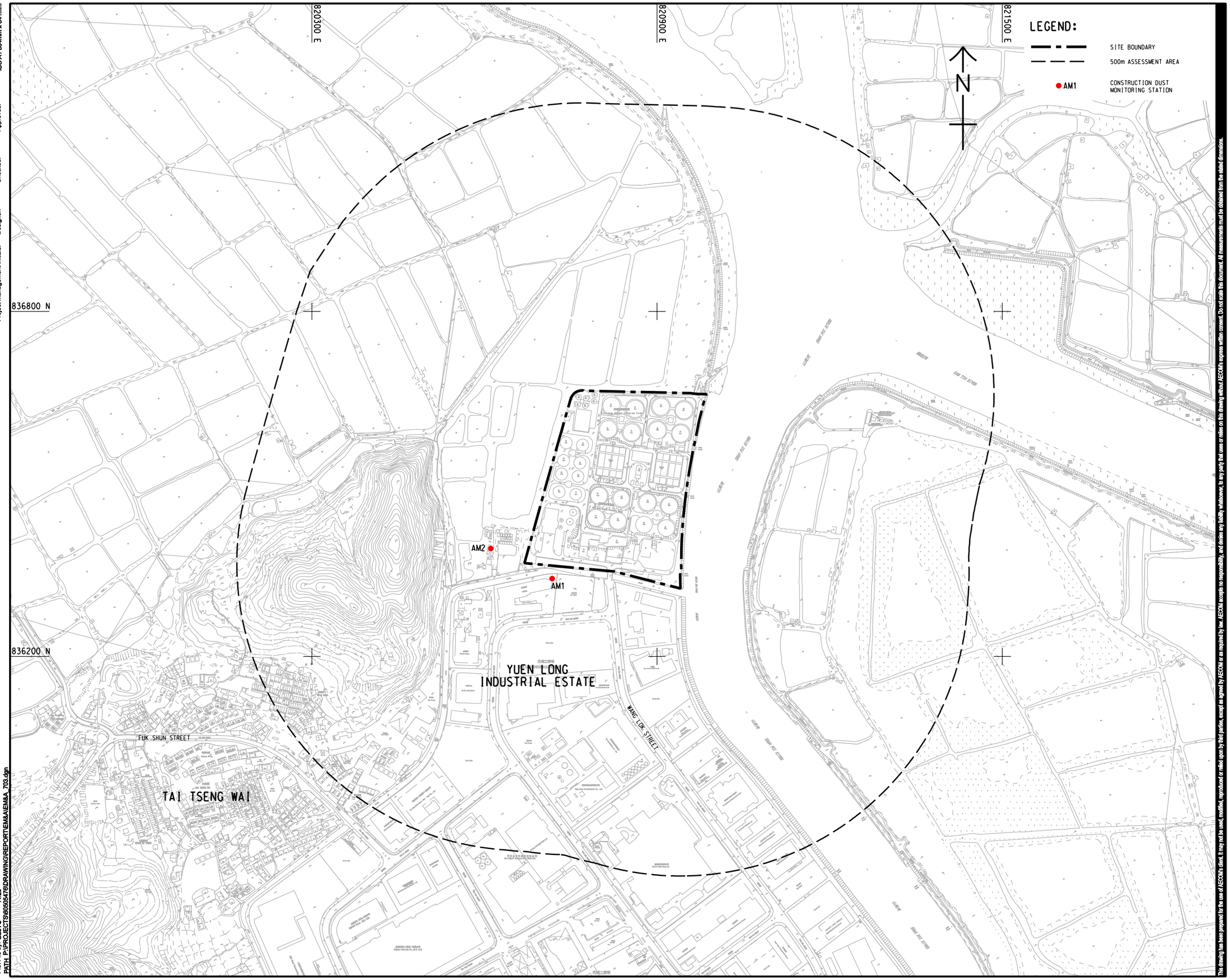
SHEET TITLE
圖紙名稱

LOCATION OF PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

SHEET NUMBER
圖紙編號

Figure 2

Location of Construction Dust Monitoring Stations



ISO A1 594mm x 841mm

Project Management Initials: Designer: Checked: Approved:

Plot File by: GaoYU 11/29
PATH: P:\PROJECTS\60505476\DRAWING\REPORT\EM&A\EM&A_703.dgn

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 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核

STATUS 用途

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 MONITOING STATIONS

SHEET NUMBER 圖紙編號

Figure 3

Noise Monitoring Locations

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

820500 E

820900 E

821300 E

836700 N

836300 N

CM1

CM2

CM3

LEGEND:

SITE BOUNDARY

300m ASSESSMENT AREA

NOISE MONITORING POINT

N

SHAN PUI RIVER

山貝河

KAM TIN RIVER

錦田河

元朗污水處理廠
Yuen Long Sewage Treatment Works

元朗工業邨
YUEN LONG INDUSTRIAL ESTATE

YUEN LONG
INDUSTRIAL ESTATE

WANG LOK STREET

WANG LEE STREET

Plot File by: ZENGFX 2019/2/26
PATH: P:\Projects\60505476\DRAWINGS\KETCH\SK7003.dgn

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
發行

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

STATUS
狀況

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

Figure 4

Water Quality Monitoring Locations

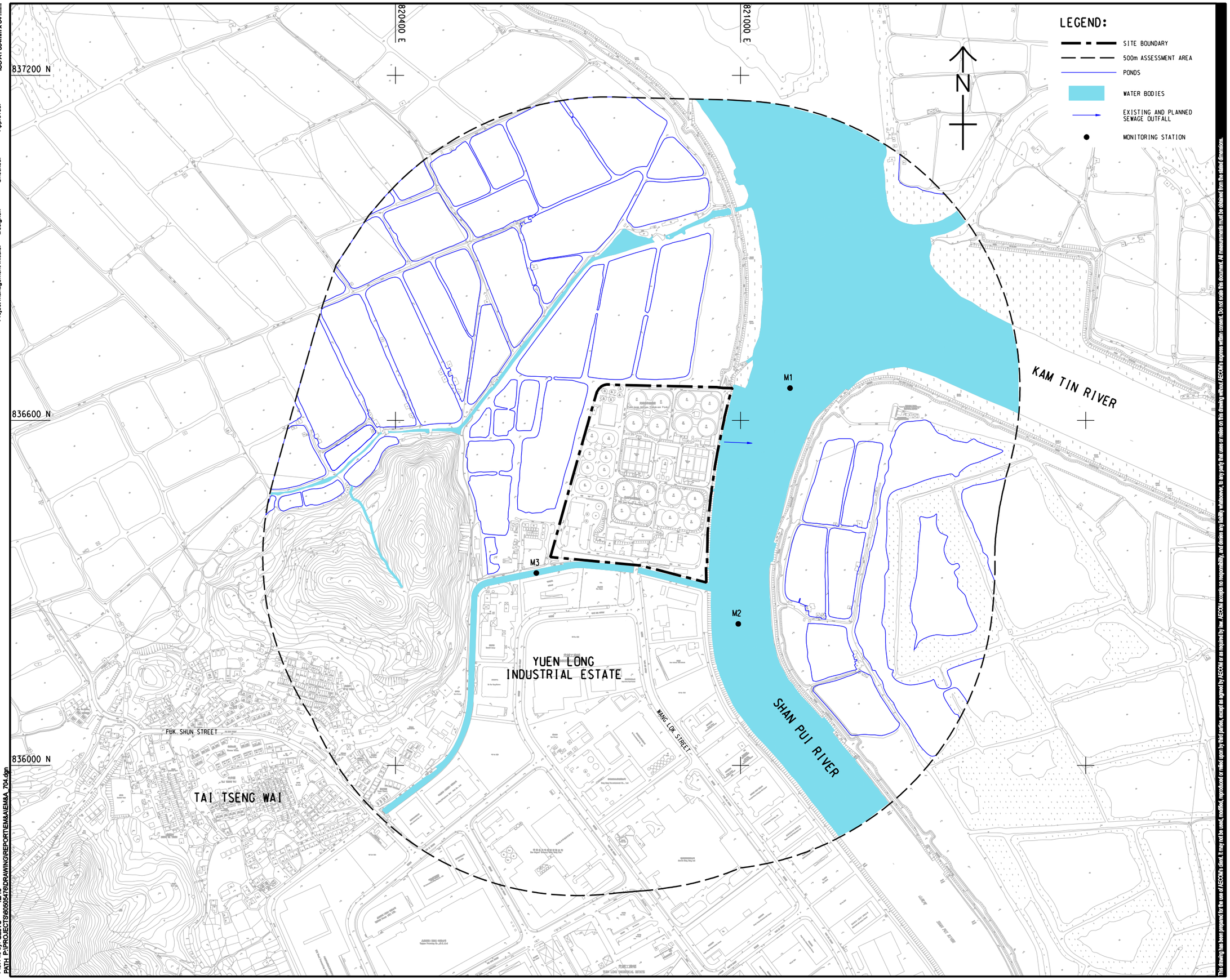
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



Plot File by: GaoYU 12/18
PATH: F:\PROJECTS\60505476\DRAWING\REPORT\EIA\EIA\A_704.dgn

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

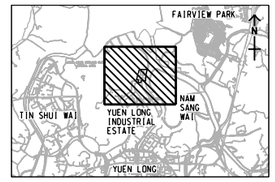
I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核

STATUS
狀況

SCALE 比例
A3 1 : 6000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN 索引圖 A3 1 : 180000



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 WATER QUALITY MONITORING STATIONS FOR CONSTRUCTION PHASE

SHEET NUMBER
圖紙編號

Figure 5

Ecology Monitoring Locations

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

820300 E

820900 E

821500 E

836800 N

836200 N

LEGEND:

SITE BOUNDARY

500m ASSESSMENT AREA

SURVEY TRANSECTS

POINT COUNT LOCATIONS FOR AVIFAUNA SURVEY

N

FLW1

FLW2

FLW3

FLW4

FLW5

FLW6

FLW7

SP/NSW1

SP/NSW2

SP/NSW3

NSW1

FUNG LOK WAI

TAI SANG WAI

NAM SANG WAI

YUEN LONG SEWAGE TREATMENT WORKS

YUEN LONG INDUSTRIAL ESTATE

NG UK TSUEN

LEON COURT

TAI TSENG WAI

FUK SHUN STREET

WANG LOK STREET

SHAN PUI RIVER

KAM TIN RIVER

Plot File by: ZENGFX 2018/8/30
PATH: P:\PROJECTS\60505476\DRAWING\REPORT\EIA&AIE\M&A_702.dgn

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 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核查

STATUS 狀況

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

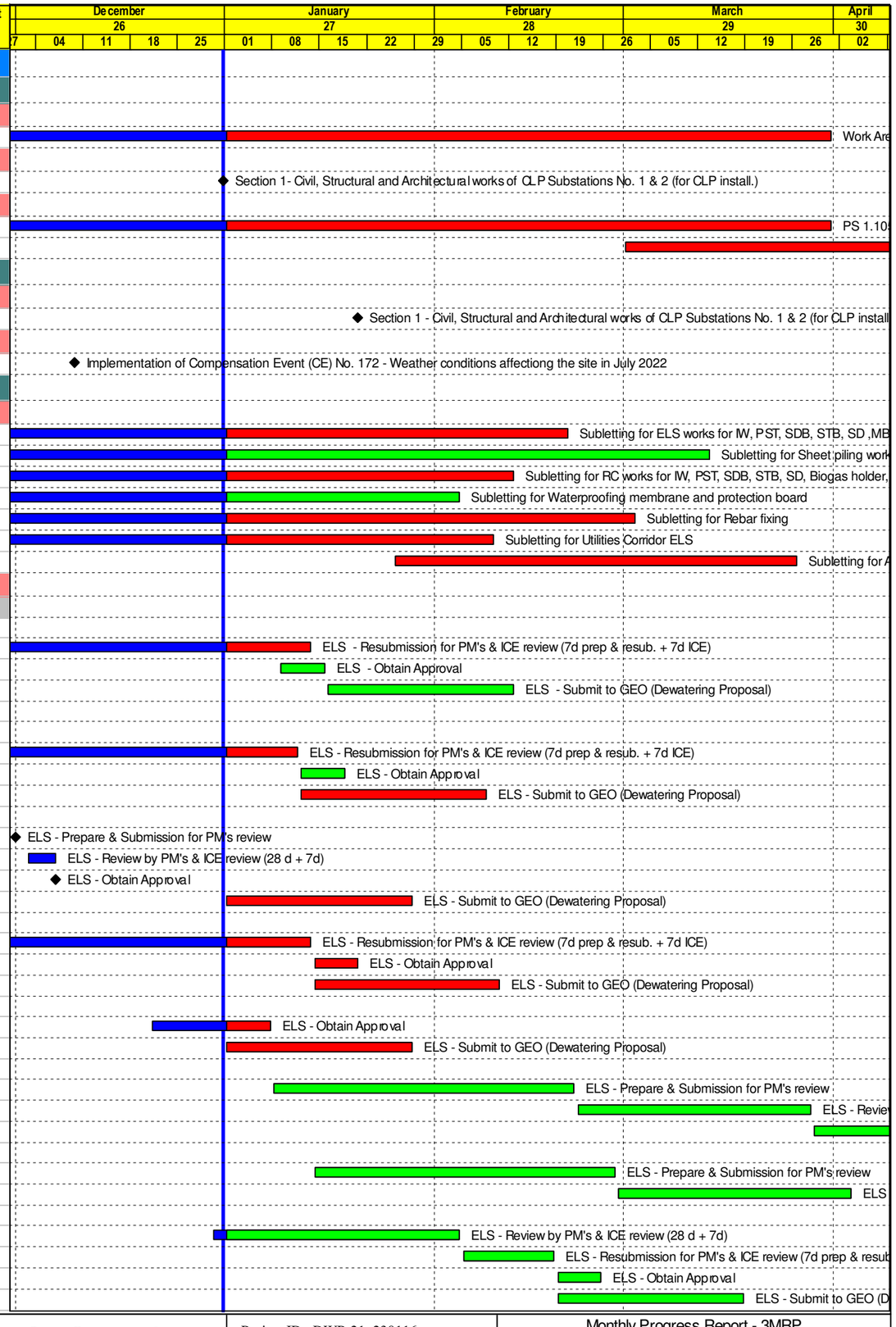
ECOLOGICAL MONITORING LOCATIONS

SHEET NUMBER 圖紙編號

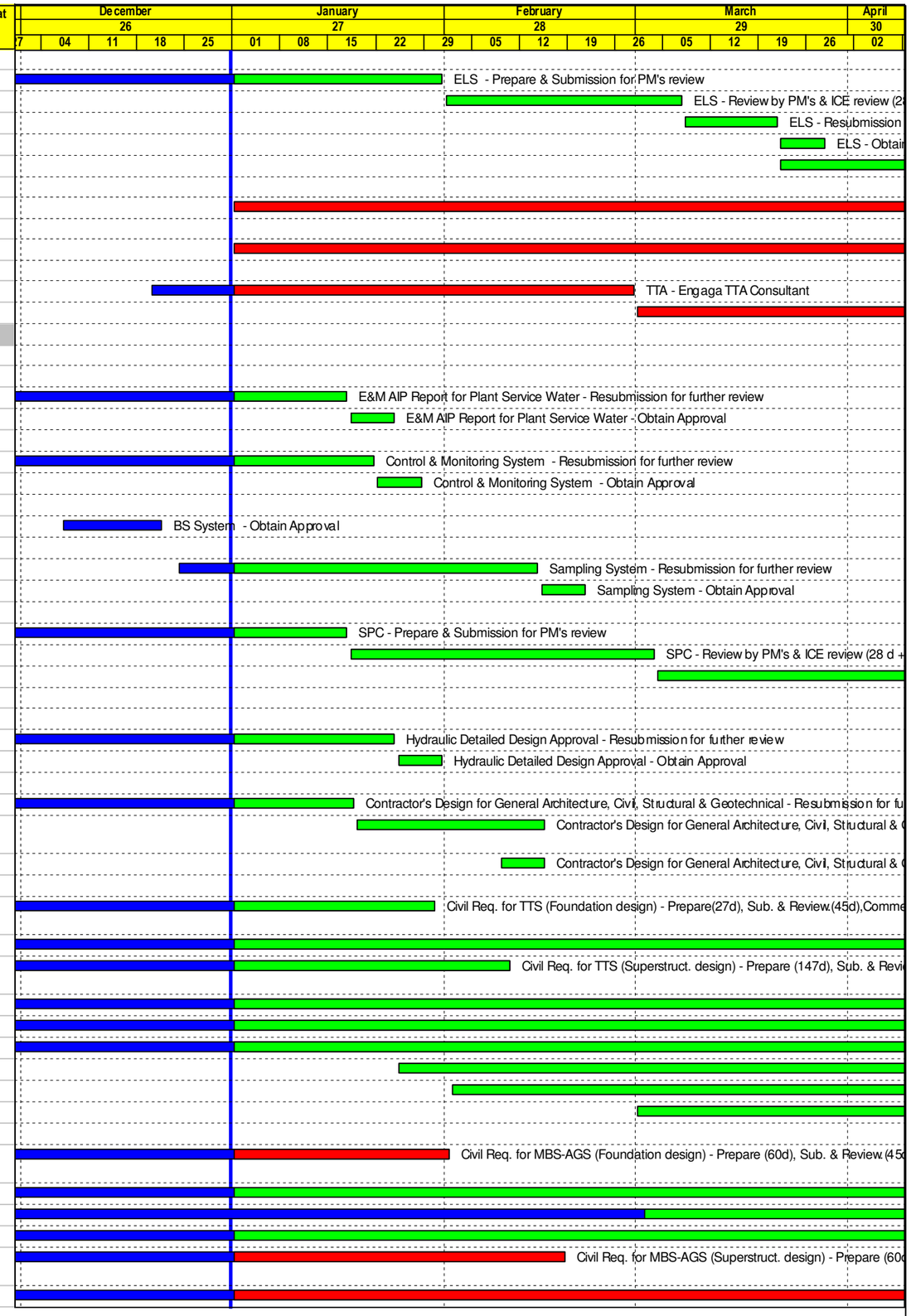
Appendix A

Construction Programme

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
YL Effluent Polishing Plant - Main Works Stage 1 - Detailed Works Programme DPv21 draft					
Contract Data Part 1					
Access Dates					
ADWA2	Work Area WA2 (sd) (new site possession) validity for 12 months and subject to renewal	757	05-Mar-21 A	31-Mar-23*	0
Contract Section Completion					
CSC1	Section 1- Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.)	0		31-Dec-22*	-65
Environmental Constraints					
NMM-2155	PS 1.105A Noise Mitigation Measures 2022-2023	151	01-Nov-22 A	31-Mar-23	0
EBS-2165	Egrets Breeding Season 2023	184	01-Mar-23*	31-Aug-23	0
Planned Completion					
Planned Section Completion					
PSC1	Section 1 - Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.)	0		20-Jan-23*	-85
Compensation Events					
CE172	Implementation of Compensation Event (CE) No. 172 - Weather conditions affectiong the site in July 2022	0		09-Dec-22 A	
Preliminary and Preparation Works					
Subletting					
SUB-270	Subletting for ELS works for IW, PST, SDB, STB, SD ,MBB, TTB, underpass and open cut for admin. bldg	312	12-Oct-21 A	20-Feb-23	-153
SUB-380	Subletting for Sheet piling works for remaining areas	333	12-Oct-21 A	13-Mar-23	494
SUB-280	Subletting for RC works for IW, PST, SDB, STB, SD, Biogas holder, underpass and admin. bldg	256	29-Nov-21 A	12-Feb-23	-244
SUB-350	Subletting for Waterproofing membrane and protection board	300	29-Nov-21 A	04-Feb-23	54
SUB-360	Subletting for Rebar fixing	86	29-Nov-21 A	02-Mar-23	-239
SUB-310	Subletting for Utilities Corridor ELS	60	08-Aug-22 A	09-Feb-23	-97
SUB-290	Subletting for ABWF works for IW, PST, SDB, STB, MBR, TTB and admin. bldg	60	26-Jan-23	26-Mar-23	-244
Design Submission					
Temporary Works Design					
Mainstream Bio-Reactor System					
TWD-240	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	20-Jun-22 A	13-Jan-23	-119
TWD-250	ELS - Obtain Approval	7	09-Jan-23	15-Jan-23	1920
TWD-520	ELS - Submit to GEO (Dewatering Proposal)	28	16-Jan-23	12-Feb-23	1920
Sludge Thickening Building					
One-stage design					
TWD-200	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	26-May-22 A	11-Jan-23	-73
TWD-210	ELS - Obtain Approval	7	12-Jan-23	18-Jan-23	105
TWD-540	ELS - Submit to GEO (Dewatering Proposal)	28	12-Jan-23	08-Feb-23	-73
Two-stages design					
TWD-840	ELS - Prepare & Submission for PM's review	0		01-Dec-22 A	
TWD-850	ELS - Review by PM's & ICE review (28 d + 7d)	35	03-Dec-22 A	07-Dec-22 A	
TWD-870	ELS - Obtain Approval	0		07-Dec-22 A	
TWD-880	ELS - Submit to GEO (Dewatering Proposal)	28	01-Jan-23	28-Jan-23	-119
Tertiary Treatment System					
TWD-160	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	16-Nov-22 A	13-Jan-23	-50
TWD-170	ELS - Obtain Approval	7	14-Jan-23	20-Jan-23	-29
TWD-550	ELS - Submit to GEO (Dewatering Proposal)	28	14-Jan-23	10-Feb-23	-50
Sludge Digester 1-3 & Utilities Corridor					
TWD-370	ELS - Obtain Approval	7	21-Dec-22 A	07-Jan-23	-178
TWD-560	ELS - Submit to GEO (Dewatering Proposal)	28	01-Jan-23	28-Jan-23	-150
Sludge Digester 4-6					
TWD-460	ELS - Prepare & Submission for PM's review	45	08-Jan-23	21-Feb-23	544
TWD-470	ELS - Review by PM's & ICE review (28 d + 7d)	35	22-Feb-23	28-Mar-23	544
TWD-480	ELS -Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	29-Mar-23	11-Apr-23	544
Sludge Dewatering and Underpass					
TWD-260	ELS - Prepare & Submission for PM's review	45	14-Jan-23	27-Feb-23	452
TWD-270	ELS - Review by PM's & ICE review (28 d + 7d)	35	28-Feb-23	03-Apr-23	452
Modification of Existing Emergency Bypass Chamber					
TWD-660	ELS - Review by PM's & ICE review (28 d + 7d)	35	30-Dec-22 A	04-Feb-23	123
TWD-670	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	05-Feb-23	18-Feb-23	123
TWD-680	ELS - Obtain Approval	7	19-Feb-23	25-Feb-23	123
TWD-690	ELS - Submit to GEO (Dewatering Proposal)	28	19-Feb-23	18-Mar-23	128

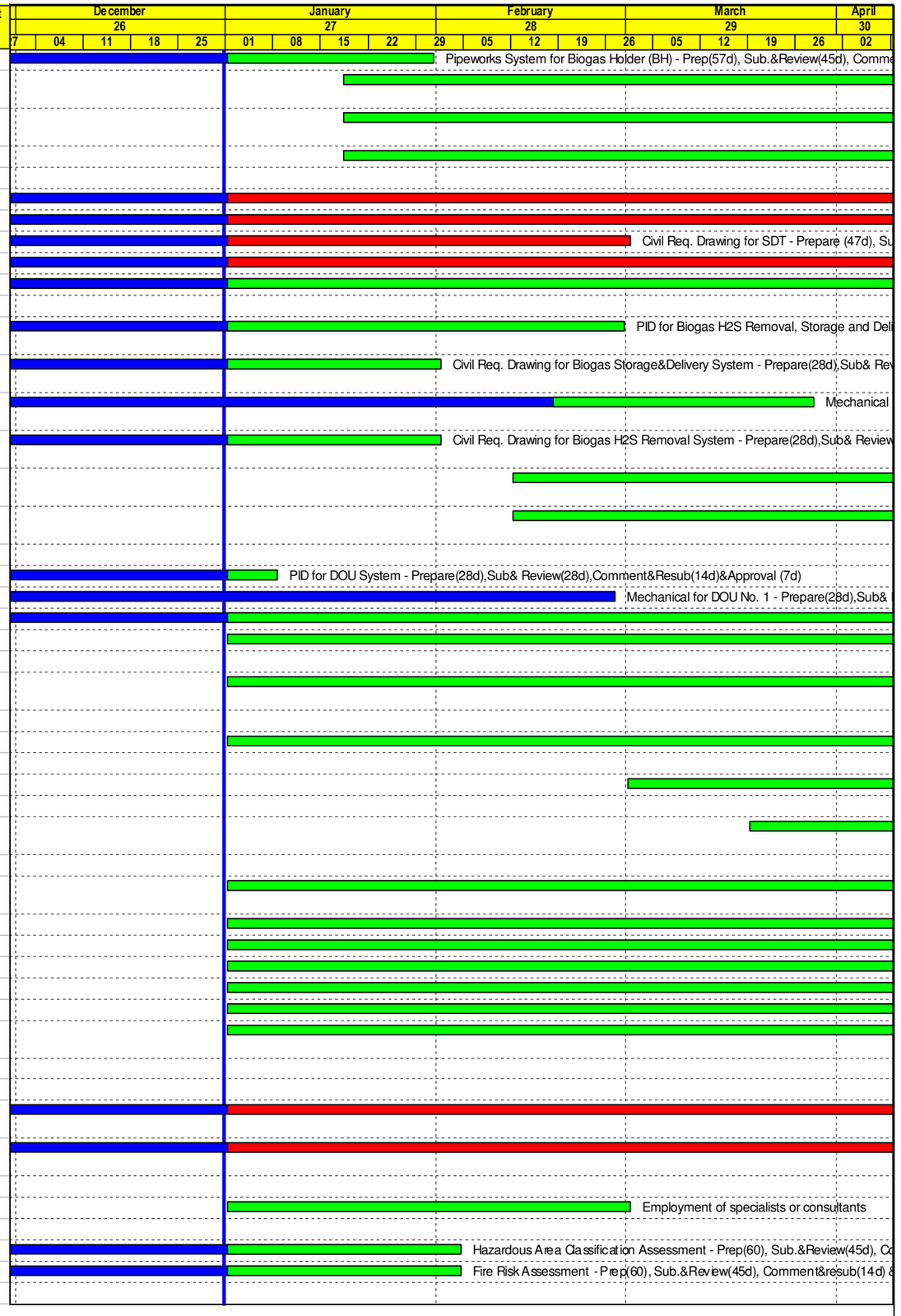


Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
	Modification of Existing Inspection Chamber & Inlet Effluent Pipes from NSWSPS				
TWD-700	ELS - Prepare & Submission for PM's review	45	26-Oct-22 A	31-Jan-23	55
TWD-710	ELS - Review by PM's & ICE review (28 d + 7d)	35	01-Feb-23	07-Mar-23	55
TWD-720	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	08-Mar-23	21-Mar-23	55
TWD-730	ELS - Obtain Approval	7	22-Mar-23	28-Mar-23	55
TWD-740	ELS - Submit to GEO (Dewatering Proposal)	28	22-Mar-23	18-Apr-23	59
	Temporary pipework between PST Stage 1 and A-Tank Inlet [Delink proposal]				
TWD-750	Hydraulic design - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	01-Jan-23	06-May-23	-73
	Temporary pumping and pipeworks between exsiting Detroitor and PST Stage 1 [Delink proposal]				
TWD-780	Hydraulic design - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	01-Jan-23	06-May-23	-164
	Temporary Traffic Arrangement at Wang Lok Street				
TWD-810	TTA - Engaga TTA Consultant	60	20-Dec-22 A	28-Feb-23	-30
TWD-820	TTA - Prepare/submit/review/approve TTA design and drawings to PM and TMLG	120	01-Mar-23	28-Jun-23	-30
	Contractor 's Permanent Works Design (include ATAL)				
	AIP				
	Package 3A - Plant Service Water				
AIP-520	E&M AIP Report for Plant Service Water - Resubmission for further review	45	20-Dec-21 A	17-Jan-23	350
AIP-530	E&M AIP Report for Plant Service Water - Obtain Approval	7	18-Jan-23	24-Jan-23	350
	Package 6A - Control & Monitoring System				
AIP-200	Control & Monitoring System - Resubmission for further review	14	24-Jan-22 A	21-Jan-23	498
AIP-620	Control & Monitoring System - Obtain Approval	7	22-Jan-23	28-Jan-23	498
	Package 7A - Building Services System				
AIP-250	BS System - Obtain Approval	7	07-Dec-22 A	21-Dec-22 A	
	Package 22A - Sampling System of YLEPP				
AIP-930	Sampling System - Resubmission for further review	45	24-Dec-22 A	14-Feb-23	303
AIP-940	Sampling System - Obtain Approval	7	15-Feb-23	21-Feb-23	303
	Package 23A - Security, Public Address and Communication System				
AIP-950	SPC - Prepare & Submission for PM's review	45	01-Jun-22 A	17-Jan-23	272
AIP-960	SPC - Review by PM's & ICE review (28 d + 7d)	45	18-Jan-23	03-Mar-23	272
AIP-970	SPC - Resubmission for further review	45	04-Mar-23	17-Apr-23	272
	DDA				
	Package 1A - Hydraulic Detailed Design Approval (DDA) Report				
DDA-1480	Hydraulic Detailed Design Approval - Resubmission for further review	45	25-Mar-22 A	24-Jan-23	161
DDA-1490	Hydraulic Detailed Design Approval - Obtain Approval	7	25-Jan-23	31-Jan-23	161
	Package 1B - General Notes and Typical Details Drawings for Civil, Structural and Geotechnical				
DDA-120	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Resubmission for further review	45	25-Mar-22 A	18-Jan-23	7
DDA-1080	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Submit to GEO for comment and approval	28	19-Jan-23	15-Feb-23	7
DDA-130	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Obtain Approval	7	09-Feb-23	15-Feb-23	7
	Package 2 - Tertiary Treatment System				
DDA-170	Civil Req. for TTS (Foundation design) - Prepare(27d), Sub. & Review.(45d),Comment & Resub.(14d), GEO(28d)&Approval (7d)	121	13-Jun-21 A	30-Jan-23	196
DDA-150	Foundation for TTS - Prepare (90d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d), GEO (28d)	213	08-Oct-21 A	29-May-23	17
DDA-180	Civil Req. for TTS (Superstruct. design) - Prepare (147d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	213	11-Oct-21 A	10-Feb-23	409
DDA-190	P&ID for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	213	31-Dec-21 A	24-Nov-23	409
DDA-200	Mechanical for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	213	31-Dec-21 A	24-Nov-23	411
DDA-210	Electrical& Control for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	213	31-Dec-21 A	24-Nov-23	411
DDA-140	Architectural for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	25-Jan-23	30-May-23	7
DDA-160	Civil & Structural for TTS - Prepare (120d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	177	02-Feb-23	28-Jul-23	17
DDA-220	Building Services (BS) for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	330	01-Mar-23*	24-Jan-24	350
	Package 3 - Mainstream Bio-Reactor System				
DDA-260	Civil Req. for MBS-AGS (Foundation design) - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	09-Jun-21 A	01-Feb-23	-117
DDA-280	P&ID for MBS (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	08-Oct-21 A	18-Sep-23	111
DDA-290	Mechanical for MBS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	08-Oct-21 A	18-Sep-23	111
DDA-300	Electrical& Control for MBS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	405	08-Oct-21 A	18-Sep-23	111
DDA-270	Civil Req. for MBS-AGS (Superstruct. design) - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	01-Mar-22 A	18-Feb-23	-62
DDA-240	Foundation for MBS - Prepare (97d), Sub. & Review.(45d) ,Comment & Resub.(14d),GEO (28d)& Approval (7d)	230	18-Mar-22 A	08-Jul-23	-32



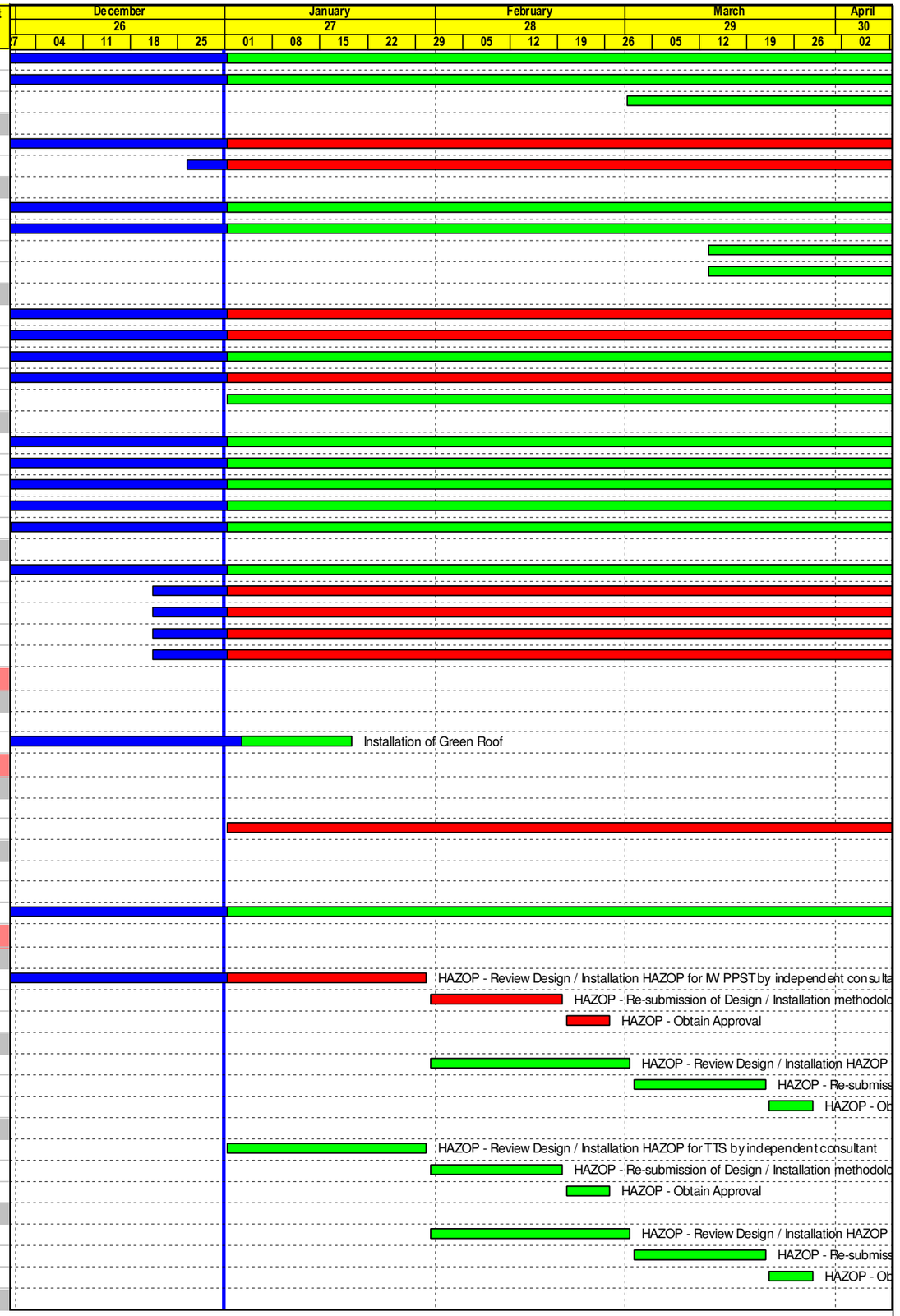
Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
DDA-310	Building Services (BS) for MBS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	263	02-Feb-23*	22-Oct-23	77
DDA-1530	VCAB for AGS&TTS - Prepare (30d), Sub. & Review (30d)	263	02-Feb-23	22-Oct-23	9
DDA-250	Civil & Structural for MBS - Prepare (60d), Sub. & Review.(45d) , Comment & Resub. (14d) & Approval (7d)	170	19-Feb-23	07-Aug-23	-62
Package 5A - Master Water Meter Room					
DDA-360	Foundation for Master WM Room- Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d),GEO(28d) & Approval (7d)	154	15-Feb-22 A	02-Mar-23	1
DDA-370	Civil & Struct. for WM Room- Prepare (90d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	156	15-Apr-22 A	21-Jun-23	1
DDA-390	P&ID for MWMC - MBS (60d), Sub. & Review.(45d) , Comment & Resub.(14d) & Approval (7d)	126	19-Jan-23*	24-May-23	-31
DDA-380	General Arrangement & Civil Req. for MWMC - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	03-Mar-23	06-Jul-23	22
Package 5B - Plant Service Water (PSW)					
DDA-1050	Civil Requirement Drawings - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	12-Jun-21 A	01-Mar-23	97
DDA-1040	Piping & Instrumentation Diagram (P&ID) - Prep(30d), Sub.&Review(28d), Comment&Resub (14d) & Approval (7d)	202	01-Mar-23	18-Sep-23	350
DDA-1060	Electrical & Control for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	01-Mar-23	04-Jul-23	478
DDA-1070	Mechanical for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	202	01-Mar-23	18-Sep-23	478
Package 6 - Sludge Thickening Chemical and Dosing System					
DDA-1120	P&ID for STCDS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	335	14-Aug-21 A	15-Jul-23	483
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-May-23	1
DDA-440B	Civil Req. for STCDS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	300	15-Nov-21 A	22-Feb-23	626
DDA-1130	Mechanical for STCDS - Prepare (60d), Sub. & Review.(45d) , Comment & Resub. (14d) & Approval (7d)	340	15-Nov-21 A	15-Jul-23	483
DDA-1140	Electrical & Control for STCDS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	315	30-Nov-21 A	15-Jul-23	483
DDA-1520	Mechanical Ventilation and Air conditional System Design for Sludge Thickening Building (STB)	320	16-Jun-22 A	15-Jul-23	483
DDA-1510	Plumbing and Drainage System Design for Sludge Thickening Building (STB)	320	07-Jul-22 A	15-Jul-23	483
DDA-1500	Fire Services Design for Sludge Thickening Building (STB)	320	08-Jul-22 A	15-Jul-23	483
DDA-430	Found.for STCS,WasteGasBurner &Guard Hse- Prepare(60d),Sub.&Review.(45d),Comment & Resub.(14d),GEO(28d) & Approval (7d)	126	12-Mar-23	15-Jul-23	928
DDA-1150	Building Services for STCDS - Prepare (60d), Sub. & Review.(45d) , Comment & Resub.(14d) & Approval (7d)	126	12-Mar-23	15-Jul-23	483
Package 7 - CLP Substation and 11kV Switchgear House					
DDA-470	Electrical System for all facilities - Prepare (28d), Sub. & Review.(28d) , Comment & Resub. (14d) & Approval (7d)	78	01-Jun-21 A	16-Jan-23	-83
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-Jan-23	-81
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-Jan-23	-82
DDA-1160	Earthing & Lighting System Design Report - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	78	02-Jul-21 A	10-Jan-23	-83
DDA-1450	VCAB, FSD & WSD Design Report - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	78	02-Jul-21 A	24-Jan-23	-83
Package 9 - Inlet Work (IW)					
DDA-1180	PID for Inlet Work - Prepare (30d), Sub. & Review.(30d) ,Comment & Resub.(14d) & Approval (7d)	120	10-Jul-21 A	29-Mar-23	96
DDA-1170	Civil Req. Drawing for Inlet Work - Prepare (30d), Sub. & Review.(30d) ,Comment & Resub.(14d) & Approval (7d)	82	04-Aug-21 A	17-Jan-23	-215
DDA-1190	Mechanical for Inlet Work - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	120	09-Aug-21 A	29-Mar-23	96
DDA-1200	Electrical & Control for Inlet Work - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	120	30-Oct-21 A	07-Feb-23	146
DDA-1210	Building Services for Inlet Work - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	76	30-Mar-22 A	07-Feb-23	180
Package 10 - Primary Sedimentation Tank (PST)					
DDA-1230	PID for PST - Prepare (46d), Sub. & Review.(30d) ,Comment & Resub.(14d) & Approval (7d)	120	01-Jun-21 A	16-Feb-23	-195
DDA-1240	Mechanical for PST - Prepare (46d), Sub. & Review.(30d) ,Comment & Resub.(14d) & Approval (7d)	120	01-Jun-21 A	16-Feb-23	-176
DDA-1250	Electrical & Control for PST - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	48	31-Aug-21 A	16-Feb-23	-176
DDA-1260	Building Services for PST - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	90	01-Oct-21 A	20-Jan-23	-179
Package 11 - Control and Monitoring System					
DDA-580	Power Quality & Energy Management System (PQEMS) - Prep(28d), Sub.&Review(28d), Comment&Resub (14d) & Approval (7d)	130	02-Oct-21 A	30-Jun-23	36
DDA-1270	Gas Detection System - Prep(28d), Sub.&Review(28d), Comment&Resub (14d) & Approval (7d)	90	01-Feb-23	01-May-23	251
DDA-550	Supervisory Control&Data Application (SCADA) System - Prep(28d), Sub.&Review(28d), Comment&Resub (14d) & Approval (7d)	269	01-Mar-23	24-Nov-23	383
DDA-1280	Data Collection, Management, Analysis,& Model System - Prep(28d), Sub.&Review(28d), Comment&Resub (14d) & Approval (7d)	269	01-Mar-23	24-Nov-23	383
Package 12 - Chemical System for STB					
DDA-650	Chemical System for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	12-Mar-23	15-Jul-23	508
Package 13 - Pipework System					
DDA-670	Pipeworks System for Primary Sedimentation Tanks (PST) - Prep(57d), Sub.&Review(45d), Comment&Resub(14d) & Approval (7d)	123	18-Sep-21 A	31-Jan-23	103

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
DDA-680	Pipeworks System for Biogas Holder (BH) - Prep(57d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d	123	18-Sep-21 A	31-Jan-23	197
DDA-690	Pipeworks System for Sludge Dewatering Building (SDB) - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &Approval(7d)	126	18-Jan-23	23-May-23	103
DDA-700	Pipeworks System for Utility Corridor&Pipe Portal (UC/PP) - Prep(103d),Sub.&Review(45d),Comment&Resub(14d)&Approval(7d)	126	18-Jan-23	23-May-23	1106
DDA-1030	Pipeworks System for Sludge Digesters - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &Approval (7d)	126	18-Jan-23	23-May-23	103
Package 14 - Sludge Anaerobic Digestion System (SDT)					
DDA-1300	PID for SDT - Prepare (47d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	460	01-Jul-21 A	10-Nov-23	-68
DDA-1320	Electrical & Control for SDT & UC/PP - Prepare (55d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7	460	02-Jul-21 A	10-Nov-23	-68
DDA-1290	Civil Req. Drawing for SDT - Prepare (47d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	200	10-Jul-21 A	01-Mar-23	-68
DDA-1310	Mechanical for SDT & UC/PP - Prepare (47d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	460	10-Jul-21 A	10-Nov-23	-68
DDA-1340	Civil Req. Drawing for UC/PP - Prepare (47d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	580	10-Jul-21 A	01-Mar-24	545
Package 15 - Biogas H2S Removal, Storage and Delivery System					
DDA-1360	PID for Biogas H2S Removal, Storage and Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	75	13-Jul-21 A	28-Feb-23	171
DDA-1350	Civil Req. Drawing for Biogas Storage&Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	31-Aug-21 A	01-Feb-23	148
DDA-1370	Mechanical for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	05-Oct-21 A	28-Mar-23	141
DDA-1400	Civil Req. Drawing for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	07-Dec-21 A	01-Feb-23	161
DDA-1380	Electrical & Control for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	139	12-Feb-23	30-Jun-23	161
DDA-1390	Building Services for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	139	12-Feb-23	30-Jun-23	186
Package 16 - Deodorization Unit System					
DDA-1410	PID for DOU System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	03-Sep-21 A	08-Jan-23	443
DDA-1420	Mechanical for DOU No. 1 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	04-Mar-22 A	27-Feb-23	386
DDA-1440	Mechanical for DOU No. 3 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	300	17-Jul-22 A	15-Jul-23	585
DDA-1430	Mechanical for DOU No. 2A and 2B - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	328	01-Jan-23*	24-Nov-23	383
Package 19 - Elevated Walkways					
DDA-710	Civil & Structural for Elevated Walkways - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), GEO(28d)	124	01-Jan-23*	04-May-23	802
Package 22 - Sampling System of YLEPP					
DDA-740	Civil & Structural for Sampling System - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	128	01-Jan-23	08-May-23	301
Package 23 - Security, Public Address and Communication System					
DDA-750	Civil & Structural for SPC - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	128	01-Mar-23	06-Jul-23	272
Package 24 - Administration Building (ADB)					
DDA-0960	Architectural for Administration Building (ADB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	19-Mar-23	22-Jul-23	228
Design out of ATAL's Scope					
DDA-1540	Drainage systems at base slab / foundation levels - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Jan-23	06-May-23	167
DDA-1550	Rainwater drainage systems - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Jan-23	06-May-23	922
DDA-1560	Street fire hydrant system - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Jan-23	06-May-23	167
DDA-1570	BS at Education Corridor - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Jan-23	06-May-23	1255
DDA-1580	Lift Installation at TTS&ADB - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Jan-23	06-May-23	1112
DDA-1590	Motor-driven Entrance Gate - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Jan-23	06-May-23	103
DDA-1600	BS for modification for existing Blower house - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	01-Jan-23	06-May-23	1150
Technical Submission					
Sludge Digesters (SD)					
TS-750	(CSD) Civil & Structural for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	25-Sep-21 A	24-Aug-23	-147
TS-740	(CSD) Found. for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d)& Approval (7d)	126	30-Sep-21 A	20-May-23	-147
Environmental Submission (PS 34.12(4)(xx))					
SUBM-1150	Employment of specialists or consultants	60	01-Jan-23	01-Mar-23	1753
Hazardous Area Classification and Fire Risk Assessment					
TS-1810	Hazardous Area Classification Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	20-Sep-21 A	04-Feb-23	84
TS-1820	Fire Risk Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	20-Sep-21 A	04-Feb-23	84
Factory Acceptance Test Plans					



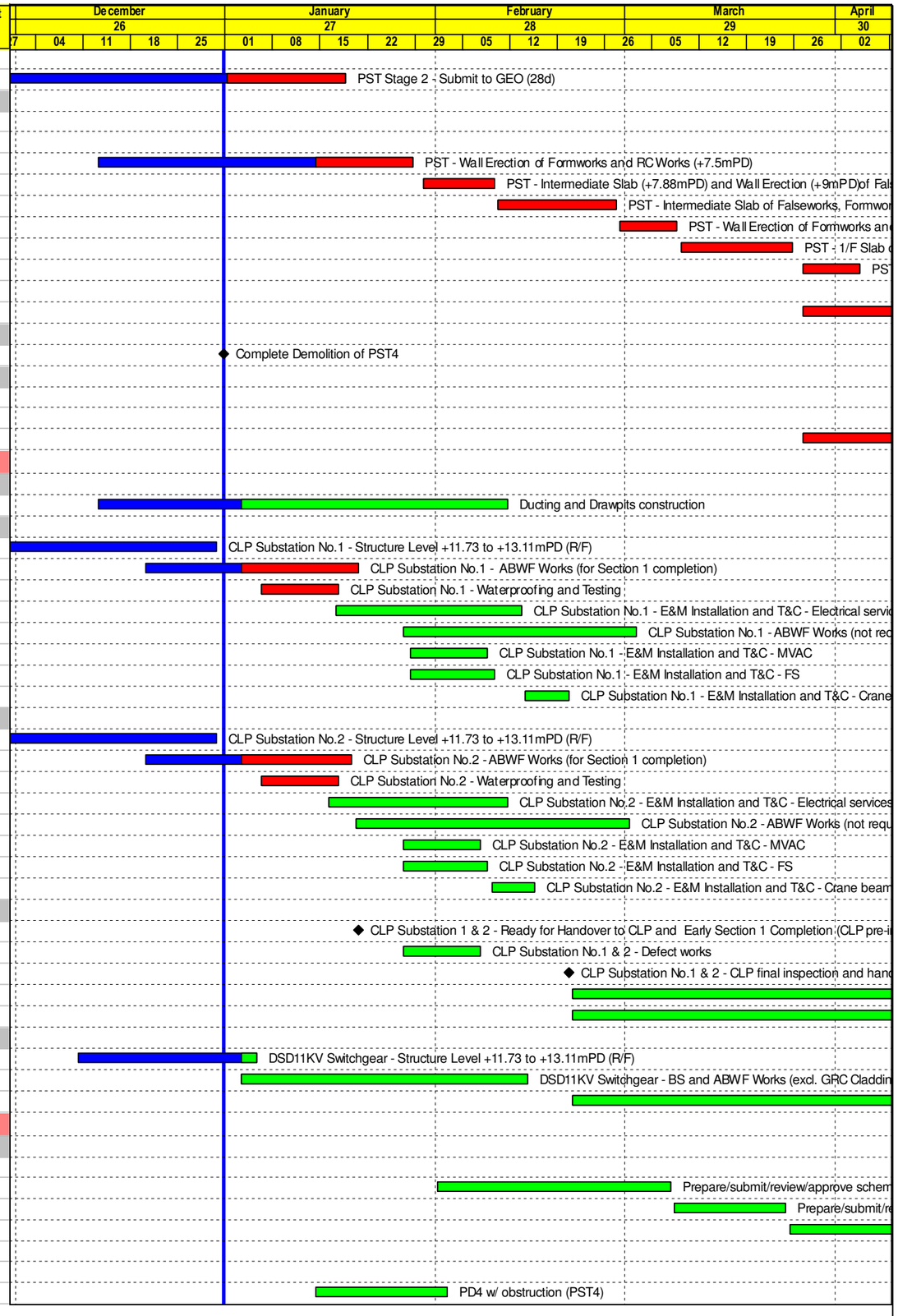
Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
SUBM-1090	Submit/review/approval Factory Acceptance Test Plans - Inlet pumps	120	01-Jan-23	30-Apr-23	40
SUBM-1100	Submit/review/approval Factory Acceptance Test Plans - Thickening centrifuges	120	01-Jan-23	30-Apr-23	263
SUBM-1110	Submit/review/approval Factory Acceptance Test Plans - Disc filter system	120	01-Jan-23	30-Apr-23	264
SUBM-1120	Submit/review/approval Factory Acceptance Test Plans - 11kV switchboards	120	01-Jan-23	30-Apr-23	-76
SUBM-1130	Submit/review/approval Factory Acceptance Test Plans - SCADA system	120	01-Jan-23	30-Apr-23	36
SUBM-1140	Employment of third-party independent surveyor for Factory Acceptance Tests	60	01-Jan-23	01-Mar-23	-76
Operation and Maintenance (O&M) Manuals and Installation Manuals (PS 34.20(11)(12)(13))					
Inlet Works and Primary Sedimentation Tank					
SUBM-1070	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - 1st draft	60	01-Jan-23	01-Mar-23	-198
SUBM-1200	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - revised draft	60	02-Mar-23	30-Apr-23	-8
AGS and TTS system					
SUBM-1220	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - 1st draft	60	01-Jan-23	01-Mar-23	312
SUBM-1230	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - revised draft	60	02-Mar-23	30-Apr-23	912
Sludge Thickening System					
SUBM-1250	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - 1st draft	60	01-Jan-23	01-Mar-23	917
SUBM-1260	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - revised draft	60	02-Mar-23	30-Apr-23	917
Sludge Disgestion System					
SUBM-1310	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - 1st draft	60	01-Jan-23	01-Mar-23	401
SUBM-1320	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - revised draft	60	02-Mar-23	30-Apr-23	401
Biogas H2S Removal System					
SUBM-1280	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - 1st draft	60	01-Jan-23	01-Mar-23	1177
SUBM-1290	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - revised draft	60	02-Mar-23	30-Apr-23	1177
Deodourization System					
SUBM-1340	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - 1st draft	60	01-Jan-23	01-Mar-23	249
SUBM-1350	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - revised draft	60	02-Mar-23	30-Apr-23	249
Plant Service Water System					
SUBM-1370	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - 1st draft	60	01-Jan-23	01-Mar-23	1177
SUBM-1380	Submit/review/approval Operation and Maintenance (O&M) Manuals and Installation Manuals - revised draft	60	02-Mar-23	30-Apr-23	1177
Commissioning Plan and Procedures (PS34.20(10))					
SUBM-1080	Employment of HOKLAS laboratory for commissiong test	60	01-Jan-23	01-Mar-23	-38
SUBM-1000	Submit/review/approval Commissioning Plan and Procedures - Early commissioning of IW	120	02-Mar-23	29-Jun-23	189
SUBM-1010	Submit/review/approval Commissioning Plan and Procedures - Early commissioning of PST	120	02-Mar-23	29-Jun-23	-38
SUBM-1020	Submit/review/approval Commissioning Plan and Procedures - AGS	120	02-Mar-23	29-Jun-23	192
SUBM-1030	Submit/review/approval Commissioning Plan and Procedures - TTS	120	02-Mar-23	29-Jun-23	773
SUBM-1040	Submit/review/approval Commissioning Plan and Procedures - STB	120	02-Mar-23	29-Jun-23	857
SUBM-1050	Submit/review/approval Commissioning Plan and Procedures - SDT	120	02-Mar-23	29-Jun-23	341
SUBM-1060	Submit/review/approval Commissioning Plan and Procedures - Biogas system	120	02-Mar-23	29-Jun-23	343
Material Submission, Procurement, Manufacturing and Delivery					
Inlet Works					
PRE-210	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Screening system (fixed bar,coarse,fine)	300	16-Mar-21 A	04-Aug-23	-16
PRE-700	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Inlet pumps (HF,LF,Drainage)	330	05-Jan-22 A	04-Aug-23	40
PRE-290	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Grit Trap and classifier	270	18-Feb-22 A	23-Aug-23	-43
PRE-280	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Converyeor and compactor	270	12-Apr-22 A	23-Aug-23	64
PRE-330	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - DOU-01	330	26-May-22 A	23-Aug-23	12
PRE-300	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - LALG	270	28-Jul-22 A	04-Aug-23	-33
PRE-310	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - Penstocks and stoplogs	270	13-Sep-22 A	04-Aug-23	-32
PRE-320	Submit/Procure/Manufacture/Deliver New Inlet Works Equip. - MVAC-Ventilation Fan	211	06-Jan-23*	04-Aug-23	73
Primary Sedimentation Tanks					
PRE-220	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Inclined plate settler	225	08-Dec-21 A	13-May-23	-172
PRE-380	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - LALG	180	25-Jul-22 A	29-Apr-23	-208
PRE-390	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Penstocks and stoplogs	270	13-Aug-22 A	29-Jun-23	-245
PRE-340	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Bottom scrapper	255	08-Sep-22 A	29-Jun-23	-57
PRE-350	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - IPS air scouring blower	255	27-Sep-22 A	29-Jun-23	-87
PRE-360	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Scum pump and skimmer	255	29-Sep-22 A	29-May-23	174
PRE-370	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Primary sludge pump and grinder	255	29-Sep-22 A	28-Jun-23	78
PRE-340a	Submit/Appoint manufacturer's representative for sludge bottom scraper (PS Cl. 35.26(7))	194	12-Oct-22 A	29-Jun-23	-57
PRE-400	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip. - Pipeworks and valves	194	15-Oct-22 A	16-Apr-23	-244
Biogas Holder					
PRE-270	Submit/Procure/Manufacture/Deliver Biogas Holding Tanks (membrane, steel tank and parts, intrumentation)	660	09-Jun-21 A	11-May-23	228

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
PRE-410	Submit/Procure/Manufacture/Deliver Waster Gas Burner	300	19-Aug-21 A	21-Aug-23	228
PRE-420	Submit/Procure/Manufacture/Deliver H2S Removal System	510	25-Feb-22 A	13-Jun-24	343
PRE-430	Submit/Procure/Manufacture/Deliver Biogas booster and transfer pumps	288	01-Mar-23*	13-Dec-23	175
Sludge Digestor Tank					
PRE-450	Submit/Procure/Manufacture/Deliver Sludge Digester Tank - Sludge Digester System	330	31-Aug-22 A	25-Jan-24	-144
PRE-460	Submit/Procure/Manufacture/Deliver Sludge Digester Tank - Draft tube mixer	396	26-Dec-22 A	25-Jan-24	-145
Sludge Thickening Building					
PRE-250	Submit/Procure/Manufacture/Deliver Sludge Thickening System - Thickening Centrifuges	360	12-Nov-21 A	16-Mar-24	263
PRE-500	Submit/Procure/Manufacture/Deliver Sludge Thickening System - Pump and jet mixer	300	07-Jan-22 A	16-Mar-24	297
PRE-490	Submit/Procure/Manufacture/Deliver Sludge Thickening System - DOU-03	391	13-Mar-23	06-Apr-24	273
PRE-510	Submit/Procure/Manufacture/Deliver Sludge Thickening System - LALG	391	13-Mar-23*	06-Apr-24	273
Mainstream Bio-Reactor					
PRE-230	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - AGS system	480	09-Sep-22 A	16-May-24	-130
PRE-530	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - Penstocks and stoplogs	345	31-Oct-22 A	13-Nov-24	-153
PRE-550	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - Sludge pre-thickening system	510	31-Oct-22 A	16-May-24	140
PRE-540	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - Chemical storage and dosing system	270	18-Nov-22 A	16-May-24	-130
PRE-570	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip. - Instrumentation	502	01-Jan-23*	16-May-24	97
Tertiary Treatment System					
PRE-610	Submit/Procure/Manufacture/Deliver TTS Equip. - Pumping system	495	19-Jul-22 A	19-Apr-24	264
PRE-600	Submit/Procure/Manufacture/Deliver TTS Equip. - UV disinfection system	510	08-Sep-22 A	19-Apr-24	264
PRE-240	Submit/Procure/Manufacture/Deliver TTS Equip. - Disc Filter	600	27-Sep-22 A	19-Apr-24	264
PRE-590	Submit/Procure/Manufacture/Deliver TTS Equip. - Chemical cleaning system	480	18-Nov-22 A	19-Apr-24	264
PRE-630	Submit/Procure/Manufacture/Deliver TTS Equip. - Penstocks and stoplogs	435	30-Nov-22 A	19-Apr-24	264
Electrical and Control System					
PRE-680	Submit/Procure/Manufacture/Deliver Electrial and Control System - SCADA and instrumentation	420	30-Apr-22 A	21-Oct-23	36
PRE-640	Submit/Procure/Manufacture/Deliver Electrial and Control System - HVSB and Tx	283	21-Dec-22 A	28-Sep-23	-76
PRE-650	Submit/Procure/Manufacture/Deliver Electrial and Control System - LVSB	300	21-Dec-22 A	28-Sep-23	-76
PRE-660	Submit/Procure/Manufacture/Deliver Electrial and Control System - UPS	300	21-Dec-22 A	11-Dec-23	-92
PRE-670	Submit/Procure/Manufacture/Deliver Electrial and Control System - Armoured Cable	203	21-Dec-22 A	10-Jul-23	-193
PM and Contractor Accomodation					
Project Manager's & Contractor Site Accommodation					
MiC Section					
PMCA-190	Installation of Green Roof	16	09-Nov-21 A	19-Jan-23	1039
Statutory Submission & Approval					
FSI, FSD and OP Requirements					
FSI Submission & Approval					
FSD-1040	Submission/Review/Approval by PM and FSD - Full GBP+GBP for TOP1 with DG - RtC & 2nd submission	120	01-Jan-23	30-Apr-23	-71
EMSD Submission & Approval					
Biogas System (ATAL)					
Phase 1					
ATAL-FS-0020	Form 105 for Biogas Holder Tank 1(Submission and Approval Period)	184	08-Nov-22 A	15-Jun-23	393
HAZOP Study					
IW and PST					
HAZOP-Z1-010	HAZOP - Review Design / Installation HAZOP for IW PPST by independent consultant	30	15-Oct-22 A	30-Jan-23	-195
HAZOP-Z1-020	HAZOP - Re-submission of Design / Installation methodology	20	31-Jan-23	19-Feb-23	-195
HAZOP-Z1-030	HAZOP - Obtain Approval	7	20-Feb-23	26-Feb-23	-195
AGS System					
HAZOP-Z2-010	HAZOP - Review Design / Installation HAZOP for AGS by independent consultant	30	31-Jan-23	01-Mar-23	285
HAZOP-Z2-020	HAZOP - Re-submission of Design / Installation methodology	20	02-Mar-23	21-Mar-23	285
HAZOP-Z2-030	HAZOP - Obtain Approval	7	22-Mar-23	28-Mar-23	285
TTS System					
HAZOP-Z2-30	HAZOP - Review Design / Installation HAZOP for TTS by independent consultant	30	01-Jan-23	30-Jan-23	682
HAZOP-Z2-40	HAZOP - Re-submission of Design / Installation methodology	20	31-Jan-23	19-Feb-23	682
HAZOP-Z2-50	HAZOP - Obtain Approval	7	20-Feb-23	26-Feb-23	682
Biogas H2S Removal System					
HAZOP-Z3-010	HAZOP - Review Design / Installation HAZOP for Biogas H2S Removal System by independent consultant	30	31-Jan-23	01-Mar-23	141
HAZOP-Z3-020	HAZOP - Re-submission of Design / Installation methodology	20	02-Mar-23	21-Mar-23	141
HAZOP-Z3-030	HAZOP - Obtain Approval	7	22-Mar-23	28-Mar-23	141
Sludge Thickening and Chemical System					



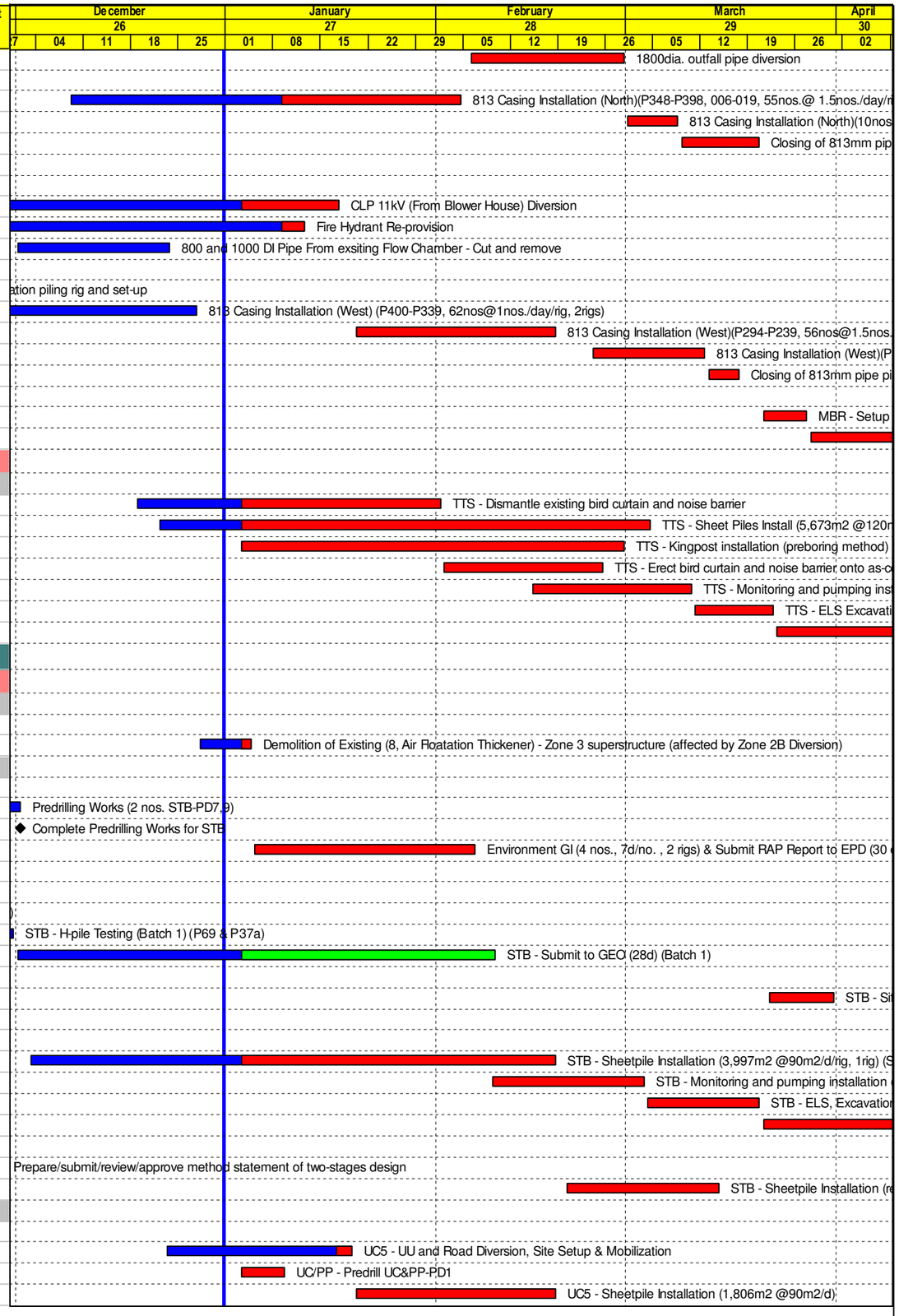
Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
HAZOP-Z3-30	HAZOP - Review Design / Installation HAZOP for STB by independent consultant	30	01-Jan-23	30-Jan-23	622
HAZOP-Z3-40	HAZOP - Re-submission of Design / Installation methodology	20	31-Jan-23	19-Feb-23	622
HAZOP-Z3-50	HAZOP - Obtain Approval	7	20-Feb-23	26-Feb-23	622
Sludge Digestion System					
HAZOP-Z3-60	HAZOP - Review Design / Installation HAZOP for SDT by independent consultant	30	01-Jan-23	30-Jan-23	189
HAZOP-Z3-70	HAZOP - Re-submission of Design / Installation methodology	20	31-Jan-23	19-Feb-23	189
HAZOP-Z3-80	HAZOP - Obtain Approval	7	20-Feb-23	26-Feb-23	189
DOU and PSW System					
HAZOP-Z3-90	HAZOP - Review Design / Installation HAZOP for DOU and PSW by independent consultant	30	01-Jan-23	30-Jan-23	386
HAZOP-Z3-100	HAZOP - Re-submission of Design / Installation methodology	20	31-Jan-23	19-Feb-23	386
HAZOP-Z3-110	HAZOP - Obtain Approval	7	20-Feb-23	26-Feb-23	386
General Advance Works					
NSWSPS Sensors					
ATALGA-1160	CGS - Method Statement for Installation	101	03-Aug-21 A	21-Jan-23	409
ATALGA-1170	Procurement & Delivery of Sensor	101	03-Aug-21 A	21-Jan-23	409
ATALGA-1260	Installation of pressure sensors at NSWSPS	22	27-Jan-23	21-Feb-23	326
Disc Filter (DF) Pilot Plant					
ATALGA-1190	T&C	22	22-Sep-22 A	16-Jan-23	352
Dissolved Air Flotation (DAF) Pilot Plant					
ATALGA-1200	T&C	11	21-Jul-22 A	14-Jan-23	209
ATALGA-1220	Post-commissioning	144	16-Jan-23	17-Jul-23	209
Aerobic Granular Sludge (AGS) Pilot Plant					
ATALGA-1210	Seeding, process start-up and T&C	52	16-Jun-22 A	14-Jan-23	214
ATALGA-1270	Post-commissioning	139	16-Jan-23	11-Jul-23	214
Zone 1 Construction					
Inlet Works (IW)					
IW Foundation & ELS Works					
IW Basement					
Z1-IW-6380	Stage 2 pumping test	12	24-Feb-23	09-Mar-23	-189
IW Excavation Works & ELS					
IW Zone A/D- ELS					
Z1-IW-5780	IW- Excavation: 2nd Layer +3.5 ~ 1.0mPD (4,160m3) (3-4 excavators @ 500m3/d)	5	03-Jan-23	07-Jan-23	-189
Z1-IW-5790	IW- Strutting: 2nd Layer @+1.5mPD with preload (10 welders @ 23ton/d)	10	09-Jan-23	19-Jan-23	-189
Z1-IW-5800	IW- Excavation: 3rd Layer +1.0 ~ - 1.625mPD (4,776m3) (3-4 excavators @ 500m3/d)	8	20-Jan-23	03-Feb-23	-170
Z1-IW-5810	IW- Strutting: 3rd Layer @-1.125mPD with preload (10 welders @ 23ton/d)	10	04-Feb-23	15-Feb-23	-170
Z1-IW-5820	IW- Excavation: 4th Layer -1.625 ~ -3.38mPD (3,105m3) (3-4 excavators @ 500m3/d)	7	10-Mar-23	17-Mar-23	-189
IW Zone C - ELS					
Z1-IW-5685	IW- Concrete Backing & Preload (2nd Layer)	4	16-Jan-23	19-Jan-23	-189
Z1-IW-5690	IW- Excavation: 3rd Layer +1.0~-1.625mPD (5,704m3) (3-4 excavators @ 500m3/d)	10	20-Jan-23	06-Feb-23	-189
Z1-IW-5700	IW- Backprop installation with preload (10 welders @ 23ton/d)	7	02-Mar-23	09-Mar-23	-189
Z1-IW-5710	IW- Excavation to Formation -1.625~-3.125mPD (587m3) (2 excavators @ 120m3/d)	5	10-Mar-23	15-Mar-23	-42
IW Base Slab					
Z1-IW-6070	IW- Zone C - Pile Cap @-1.625mpD (incl. earth mat installation)	20	07-Feb-23	01-Mar-23	-189
Z1-IW-6080	IW- Zone C - Pile Cap @-3.05mpD	21	16-Mar-23	13-Apr-23	-42
Z1-IW-6060	IW- Zone D - Pile Cap @-3.225mPD	21	18-Mar-23	15-Apr-23	-189
Primary Sedimentation Tank (PST)					
PST Stage 1					
Basement RC Works (Stage 1 - Southern Portion)					
Southern Trench (Zone B)					
Z1-PST-3630	PST(S1) - Install Reprops R1	3	24-Nov-22 A	14-Dec-22 A	
Northern Trench (Zone E1)					
Z1-PST-4260	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level)	10	24-Dec-22 A	13-Jan-23	-198
Excavation Works (North Portion), (Excavation Volume: 3,840m3)					
Z1-PST-4180	PST(S1) - Excavation F.E.L. Level (+1.875 mPD) (3,840m3, 1000m3/day) after stage 2 piling	8	11-Nov-22 A	23-Dec-22 A	
Basement RC Works (North Portion)					
Z1-PST-4190	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (+3.00 mPD) after stage 2 piling	20	24-Dec-22 A	13-Jan-23	-198
Z1-PST-4200	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level) after stage 2 piling	6	14-Jan-23	20-Jan-23	-196
PST Stage 2 of Works					

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
	PST Foundation - Stage 2 (At Remaining 2 Tanks, PST 5-6 Footprint)				
Z1-PST-4230	PST Stage 2 - Submit to GEO (28d)	28	05-Nov-22 A	18-Jan-23	-7
	PST Superstructure				
	Stage 1				
	RC Works				
Z1-PST-3660	PST - Wall Erection of Formworks and RC Works (+7.5mPD)	8	13-Dec-22 A	28-Jan-23	-198
Z1-PST-3670	PST - Intermediate Slab (+7.88mPD) and Wall Erection (+9mPD)of Falseworks, Formworks and RC Works	10	30-Jan-23	09-Feb-23	-198
Z1-PST-3680	PST - Intermediate Slab of Falseworks, Formworks and RC Works (+9mPD)	15	10-Feb-23	27-Feb-23	-198
Z1-PST-3700	PST - Wall Erection of Formworks and RC Works (+11.8mPD)	8	28-Feb-23	08-Mar-23	-198
Z1-PST-3710	PST - 1/F Slab of Falseworks, Formworks and RC Works (+11.8mPD)	15	09-Mar-23	25-Mar-23	-198
Z1-PST-3750	PST - Wall Erection of Formworks and RC Works (+18.2mPD)	8	27-Mar-23	04-Apr-23	-168
	Water Tightness Test for PST				
Z1-PST-3770	PST - Water Tightness Test 1	18	27-Mar-23	20-Apr-23	-198
	PST Stage 1 - Early T&C (Delink PST Stage 1 Commissioning from IW)				
Z2D-2160	Complete Demolition of PST4	0		31-Dec-22	40
	PST ABWF, E&M & T&C				
	PST Stage 1				
	PST Stage 1 - ABWF & BS Works				
PST-1370	PST Stage 1 - BS and ABWF Works at 3 Tanks, Pump Room Level (+0.0/+3.0mPD)	90	27-Mar-23	18-Jul-23	-198
	CLP Substations No. 1 & 2				
	Civil Provision for CLP (drawpits & ductings)				
CLP-1270	Ducting and Drawpits construction	30	13-Dec-22 A	11-Feb-23	52
	CLP Substation No. 1				
CLP-1290	CLP Substation No.1 - Structure Level +11.73 to +13.11mPD (R/F)	12	23-Nov-22 A	30-Dec-22 A	
CLP-1040	CLP Substation No.1 - ABWF Works (for Section 1 completion)	27	20-Dec-22 A	20-Jan-23	-70
CLP-1440	CLP Substation No.1 - Waterproofing and Testing	10	06-Jan-23	17-Jan-23	-67
CLP-1340	CLP Substation No.1 - E&M Installation and T&C - Electrical services	19	17-Jan-23	13-Feb-23	45
CLP-1560	CLP Substation No.1 - ABWF Works (not required for Section 1 completion)	30	27-Jan-23	02-Mar-23	1093
CLP-1460	CLP Substation No.1 - E&M Installation and T&C - MVAC	10	28-Jan-23	08-Feb-23	48
CLP-1470	CLP Substation No.1 - E&M Installation and T&C - FS	11	28-Jan-23	09-Feb-23	48
CLP-1490	CLP Substation No.1 - E&M Installation and T&C - Crane beam	6	14-Feb-23	20-Feb-23	45
	CLP Substation No. 2				
CLP-1310	CLP Substation No.2 - Structure Level +11.73 to +13.11mPD (R/F)	12	23-Nov-22 A	30-Dec-22 A	
CLP-1050	CLP Substation No.2 - ABWF Works (for Section 1 completion)	27	20-Dec-22 A	19-Jan-23	-69
CLP-1450	CLP Substation No.2 - Waterproofing and Testing	10	06-Jan-23	17-Jan-23	-67
CLP-1350	CLP Substation No.2 - E&M Installation and T&C - Electrical services	19	16-Jan-23	11-Feb-23	49
CLP-1550	CLP Substation No.2 - ABWF Works (not required for Section 1 completion)	30	20-Jan-23	01-Mar-23	1094
CLP-1520	CLP Substation No.2 - E&M Installation and T&C - MVAC	10	27-Jan-23	07-Feb-23	49
CLP-1530	CLP Substation No.2 - E&M Installation and T&C - FS	11	27-Jan-23	08-Feb-23	49
CLP-1540	CLP Substation No.2 - E&M Installation and T&C - Crane beam	6	09-Feb-23	15-Feb-23	49
	CLP Substation No. 1 & 2 Handover Inspection and Installation				
CLP-1140	CLP Substation 1 & 2 - Ready for Handover to CLP and Early Section 1 Completion (CLP pre-inspection)	0		20-Jan-23	-70
CLP-1500	CLP Substation No.1 & 2 - Defect works	10	27-Jan-23	07-Feb-23	56
CLP-1510	CLP Substation No.1 & 2 - CLP final inspection and handover	0		20-Feb-23	45
CLP-1070	CLP Substation No.1 - CLP Installation	90	21-Feb-23	12-Jun-23	45
CLP-1080	CLP Substation No.2 - CLP Installation	90	21-Feb-23	12-Jun-23	45
	DSD 11kV Switchgear				
CLP-1330	DSD11KV Switchgear - Structure Level +11.73 to +13.11mPD (R/F)	13	10-Dec-22 A	05-Jan-23	108
CLP-1060	DSD11KV Switchgear - BS and ABWF Works (excl. GRC Cladding Installation)	32	03-Jan-23	14-Feb-23	97
CLP-1110	DSD11KV Switchgear - Installation	78	21-Feb-23	29-May-23	92
	Sludge Dewatering Building (SDB)				
	SDB Foundation & ELS - Stage 1				
	SDB Preliminaries for Foundation Works				
SDB-1710	Prepare/submit/review/approve scheme with PM for early access for piling - 1st submission	30	01-Feb-23*	07-Mar-23	230
SDB-1750	Prepare/submit/review/approve scheme with PM for early access for piling - resubmission	15	08-Mar-23	24-Mar-23	230
SDB-1760	Prepare/submit/review/approve scheme with DSD/ST1 for early access for piling - 1st submission	30	25-Mar-23	04-May-23	230
	SDB GI - Pre-drilling Works				
	SDB At PST4 and Existing Road				
SDB-1350	PD4 w/ obstruction (PST4)	12	14-Jan-23	02-Feb-23	92

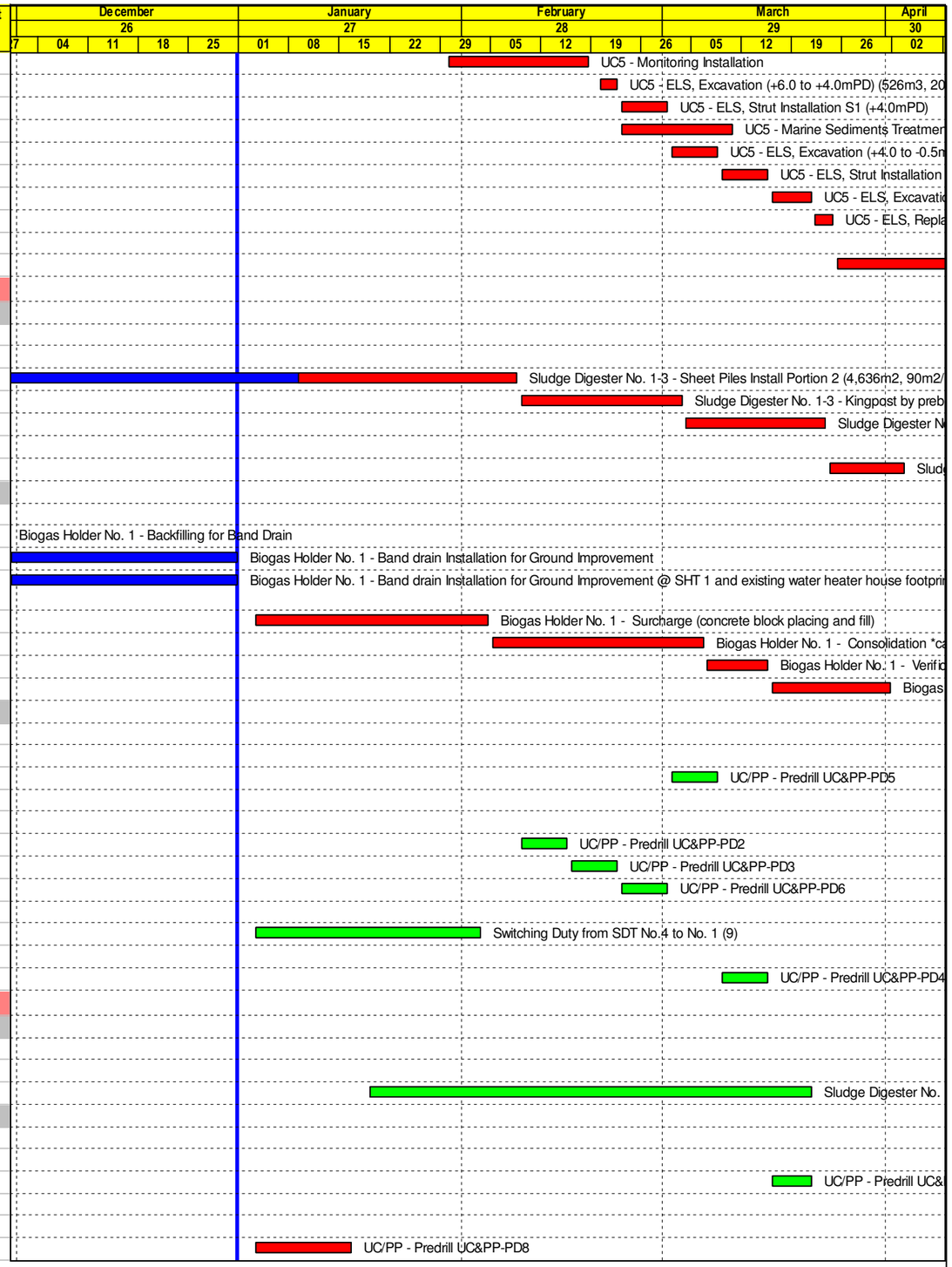


Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
SDB-1360	PD5 w/ obstruction (PST4)	12	14-Jan-23	02-Feb-23	92
SDB-1240	PD3	12	03-Feb-23	16-Feb-23	92
SDB-1260	PD8	12	03-Feb-23	16-Feb-23	92
SDB-1300	PD9	12	17-Feb-23	02-Mar-23	92
SDB-1020	PD19	12	17-Feb-23	02-Mar-23	92
SDB-1040	PD20	12	03-Mar-23	16-Mar-23	92
SDB-1080	PD21	12	03-Mar-23	16-Mar-23	92
SDB-1030	PD22	12	17-Mar-23	30-Mar-23	92
SDB-1060	PD23	12	17-Mar-23	30-Mar-23	92
Administration Building (ADB)					
Temporary Admin Office and Control Room					
ADB-1040	Handover of Temp. Admin Office and Control Room	20	04-Jan-23	01-Feb-23	78
Temp Admin Office - MiC Section					
ADB-1020A30	E&M Installation and T&C	24	15-Aug-22 A	03-Jan-23	78
ADB-1020A40	Relocation of Admin Office (MiC)	18	04-Jan-23	30-Jan-23	80
ADB-1020A90	Completion of Admin Office (MiC)	0		30-Jan-23	101
ADB Demolition					
ADB-1060	Relocation of Central Control Room	30	02-Feb-23	08-Mar-23	406
ADB-1250	Relocation of Existing SCADA System of Admin Bldg (23) and Document Centre (24)	21	02-Feb-23	25-Feb-23	78
ADB-1050	Demolition of Admin Bldg (23) and Document Centre (24)	20	27-Feb-23	21-Mar-23	78
ADB-1080	Demolition of Central Control Room (14)	30	22-Mar-23	29-Apr-23	395
Zone 2 Construction					
Temporary Diversion					
Zone 2B : FST, Temporary RAS to Aeration Tanks					
Temporary RAS					
Z2B-1210	T&C *Calendar Day	7	03-Nov-22 A	09-Nov-22 A	
Z2B-1180	Complete Zone 2B Temporary Diversion	0		09-Nov-22 A	
Z2B-1190	Break Wall for connection to temporary RAS & Swtich over	4	10-Nov-22 A	14-Nov-22 A	
Z2B-1220	Plug-off abandoned pipes	1	15-Nov-22 A	16-Nov-22 A	
Demolition Works					
Advance Works					
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	18-Jan-23	652
Other Existing Pumping Stations					
Z2T-152	Demolition of Return Activated Sludge Screw Pumps PS (16) & Chamber (33)	40	03-Jan-23*	23-Feb-23	-136
Z2T-154	Demolition of Flow Measurement Chamber (34) & SSD Chamber (32)	40	03-Jan-23	23-Feb-23	-136
Final Sedimentation Tanks					
Z2T-200	Demolition of Mixed Liquor Distribution and Sludge Draw-off Chamber (37)	20	03-Jan-23	31-Jan-23	-38
Mainstream Bio-Reactor & Auxiliary Facility (MBR and AF)					
MBR and AF Structure					
MBR - ELS Excavation & Demolition stage 1					
MBRAF-1540	MBR - Backfilling, advance coring for king post installation & wells installation	25	15-Jun-22 A	18-Jan-23	-121
MBRAF-2090	MBR - Installation of king post by preboring (affected by existing A-tank)	30	19-Jan-23	28-Feb-23	-121
MBRAF-2270	MBR - Installation of king post by preboring (affected by existing RAS)	13	24-Feb-23	10-Mar-23	-130
MBRAF-1460	MBR - Monitoring and pumping installation (Stage 1) (pumping test)	18	06-Mar-23	25-Mar-23	-113
Southern Side					
Installation of 813mm casing					
MBRAF-2080	813 Casing Installation (South) (P195-P242, 48nos.@1.5 nos./day/rig, 1 rig) (after PST4 demolished)	27	23-Nov-22 A	28-Dec-22 A	
Eastern Side					
UU Diversion					
MBRAF-2120	375 Storm Drain Diversion	30	15-Nov-22 A	07-Jan-23	-116
Installation of 813mm casing					
MBRAF-2160	813 Casing Installation (East)(P068-P100, 33nos@ 1.5nos./day/rig, 1 rig) (affected by UU diversion)	20	09-Jan-23	06-Feb-23	-112
Bird Curtain Modification Works					
MBRAF-2380	MBR - Dismantle existing bird curtain	24	13-Jan-23*	15-Feb-23	1
MBRAF-2390	MBR - Erect bird curtain and noise barrier onto as-constructed pipe pile	24	31-Jan-23	27-Feb-23*	1
Northern Side					
UU Diversion					
MBRAF-2190	450 Foul pipe - Cut and remove	30	20-Sep-22 A	07-Jan-23	-141
MBRAF-2320	Remove the existing wall and penstock x 10nos (to be reserved)	12	11-Nov-22 A	28-Nov-22 A	

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
MBRAF-2400	1800dia. outfall pipe diversion	20	06-Feb-23	28-Feb-23	-137
Installation of 813mm casing					
MBRAF-2210	813 Casing Installation (North)(P348-P398, 006-019, 55nos.@ 1.5nos./day/rig, 1 rig)	31	09-Dec-22 A	04-Feb-23	-137
MBRAF-2410	813 Casing Installation (North)(10nos.@ 1.5nos./day/rig, 1 rig) (after 1800dia. outfall pipe diversion)	7	01-Mar-23	08-Mar-23	-138
MBRAF-2100	Closing of 813mm pipe pile (South, East and North Sides)	10	09-Mar-23	20-Mar-23	-138
Western Side					
UU Diversion / Roadworks					
MBRAF-2220	CLP 11kV (From Blower House) Diversion	13	28-Sep-22 A	17-Jan-23	-109
MBRAF-2230	Fire Hydrant Re-provision	19	24-Oct-22 A	12-Jan-23	-126
MBRAF-2240	800 and 1000 DI Pipe From exsiting Flow Chamber - Cut and remove	30	01-Dec-22 A	23-Dec-22 A	
Installation of 813mm casing					
MBRAF-2330	Mobilisation piling rig and set-up	16	05-Nov-22 A	22-Nov-22 A	
MBRAF-2300	813 Casing Installation (West) (P400-P339, 62nos@1nos./day/rig, 2rigs)	32	23-Nov-22 A	27-Dec-22 A	
MBRAF-2260	813 Casing Installation (West)(P294-P239, 56nos@1.5nos./day/rig, 2rigs)	21	20-Jan-23	18-Feb-23	-132
MBRAF-2290	813 Casing Installation (West)(P338-P293, 45nos@1.5nos./day/rig, 2rigs)	14	24-Feb-23	12-Mar-23	-136
MBRAF-2280	Closing of 813mm pipe pile (West)	5	13-Mar-23	17-Mar-23	-136
MBR - ELS Excavation & Demolition stage 2					
MBRAF-1440	MBR - Setup and Mobilization for ELS works	6	21-Mar-23	27-Mar-23	-138
MBRAF-1610	MBR - ELS Excavation & Demolition (+5.8 to +4.7mPD) (7,904m3) (3-4 excavators/WF, 3 WFs, 500m3/d/WF)	12	28-Mar-23	14-Apr-23	-138
Tertriary Treatment System (TTS)					
TTS Foundation and ELS					
TTS-1830	TTS - Dismantle existing bird curtain and noise barrier	21	19-Dec-22 A	01-Feb-23	-27
TTS-1010	TTS - Sheet Piles Install (5,673m2 @120m2/d)	48	22-Dec-22 A	04-Mar-23	-38
TTS-1530	TTS - Kingpost installation (preboring method) (11 nos.,4d/pile/rig,1rig)	44	03-Jan-23	28-Feb-23	-29
TTS-1840	TTS - Erect bird curtain and noise barrier onto as-constructed sheetpile	21	02-Feb-23	25-Feb-23	-27
TTS-1230	TTS - Monitoring and pumping installation (pumping test)	21	15-Feb-23	10-Mar-23	-38
TTS-1020	TTS - ELS Excavation (+5.0 to +3.65mPD) (7,645m3)(3-4 excavators/WF, 2 WFs, 400m3/d/WF)	10	11-Mar-23	22-Mar-23	-38
TTS-1030	TTS - Strut Installation S1 (+4.15mPD)(2 cranes, 10welders per WF, 2 WFs, 30ton/d)	14	23-Mar-23	12-Apr-23	-38
Zone 3 Construction					
Zone 3 North Portion (Z3N)					
Demolition					
Existing Sludge Thickening House (8, Air Floatation Thickener)					
Z3S2-2030a	Demolition of Existing (8, Air Roatation Thickener) - Zone 3 superstructure (affected by Zone 2B Diversion)	11	28-Dec-22 A	04-Jan-23	-83
New Sudge Thickening Building (STB)					
STB : Predrilling Works					
Z3S3-3480	Predrilling Works (2 nos. STB-PD7,9)	20	05-Nov-22 A	01-Dec-22 A	
Z3S1a.7-70	Complete Predrilling Works for STB	0		01-Dec-22 A	
Z3S3-3490	Environment GI (4 nos., 7d/no. , 2 rigs) & Submit RAP Report to EPD (30 days)	23	05-Jan-23	06-Feb-23	-83
STB : Driven H-pile					
Batch 1					
Z3S3-3590	STB - Driven H-pile Finish (Batch 1)	0		31-Oct-22 A	
Z3S3-2091	STB - H-pile Testing (Batch 1) (P69 & P37a)	21	01-Nov-22 A	30-Nov-22 A	
Z3S3-3370	STB - Submit to GEO (28d) (Batch 1)	28	01-Dec-22 A	09-Feb-23	66
Batch 2					
Z3S3-3950	STB - Site Setup & Mobilization (Batch 2)	9	22-Mar-23	31-Mar-23	-137
STB : Foundation and ELS					
STB Stage 1 ELS					
Z3S3-2180	STB - Sheetpile Installation (3,997m2 @90m2/d/rig, 1rig) (Stage 1)	46	03-Dec-22 A	18-Feb-23	-60
Z3S3-3340	STB - Monitoring and pumping installation (pumping test for Stage 1)	20	09-Feb-23	03-Mar-23	-55
Z3S3-2250	STB - ELS, Excavation (+6.0 to +3.5mPD, 2,345m3 @ 180m3/d)	14	04-Mar-23	20-Mar-23	-55
Z3S3-2290	STB - ELS, Strut Installation S1 (@ +4.0mPD)	24	21-Mar-23	21-Apr-23	-55
STB Stage 2 ELS					
Z3S3-5060	Prepare/submit/review/approve method statement of two-stages design	14	10-Nov-22 A	29-Nov-22 A	
Z3S3-3800	STB - Sheetpile Installation (remaining for Stage 2)	20	20-Feb-23	14-Mar-23	-60
Utility Corridor (UC5) (Connect to STB)					
UC5 : Foundation and ELS Works					
Z3S2-3070	UC5 - UU and Road Diversion, Site Setup & Mobilization	12	23-Dec-22 A	19-Jan-23	-95
Z3S2-3390	UC/PP - Predrill UC&PP-PD1	6	03-Jan-23	09-Jan-23	-89
Z3S2-3080	UC5 - Sheetpile Installation (1,806m2 @90m2/d)	21	20-Jan-23	18-Feb-23	-95



Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
Z3S2-3090	UC5 - Monitoring Installation	20	30-Jan-23	18-Feb-23	-120
Z3S2-3100	UC5 - ELS, Excavation (+6.0 to +4.0mPD) (526m3, 200m3/d)	3	20-Feb-23	22-Feb-23	-95
Z3S2-3110	UC5 - ELS, Strut Installation S1 (+4.0mPD)	6	23-Feb-23	01-Mar-23	-95
Z3S2-3120	UC5 - Marine Sediments Treatment and Disposal	14	23-Feb-23	10-Mar-23	-86
Z3S2-3130	UC5 - ELS, Excavation (+4.0 to -0.5mPD) (1184m3. 200m3/d)	6	02-Mar-23	08-Mar-23	-95
Z3S2-3140	UC5 - ELS, Strut Installation S2 (0mPD)	6	09-Mar-23	15-Mar-23	-95
Z3S2-3170	UC5 - ELS, Excavation (-0.5 to -4.125mPD) (953m3. 200m3/d)	5	16-Mar-23	21-Mar-23	-95
Z3S2-3440	UC5 - ELS, Replace 300mm thk rockfill at founding level	3	22-Mar-23	24-Mar-23	-95
UC5 : Civil and Structural Works					
Z3S2-3180	UC5 - Structure (-3.75 to -2.20mPD, Base Slab)	12	25-Mar-23	12-Apr-23	-95
Zone 3 South Portion (Z3S)					
Sludge Digestor No. 1-3 (SD1-3)					
SD1-3 : Foundation and ELS					
SD1-3 : Sheetpiling					
Z3S3-2060	Sludge Digester No. 1-3 - Sheet Piles Install Portion 2 (4,636m2, 90m2/d/rig, 1rig)	54	19-Sep-22 A	08-Feb-23	-147
Z3S3-4810	Sludge Digester No. 1-3 - Kingpost by preboring (5nos. 325m @ 4d/pile)	20	09-Feb-23	03-Mar-23	-147
Z3S3-3350	Sludge Digester No. 1-3 - Monitoring and pumping installation (pumping test)	20	04-Mar-23	23-Mar-23	-184
SD1-3 : Excavation and Strut Installation					
Z3S3-2110	Sludge Digester No. 1-3 - ELS Excavation (+5.0 to +4.3mPD, 4168m3 @ 500m3/d)	9	24-Mar-23	03-Apr-23	-148
Biogas Holder No. 1 (BH1)					
BH1 : Foundation					
Z3BH-1170	Biogas Holder No. 1 - Backfilling for Band Drain	30	01-Nov-22 A	29-Nov-22 A	
Z3BH-1000	Biogas Holder No. 1 - Band drain Installation for Ground Improvement	6	30-Nov-22 A	31-Dec-22 A	
Z3BH-1060	Biogas Holder No. 1 - Band drain Installation for Ground Improvement @ SHT 1 and existing water heater house footprint	6	30-Nov-22 A	31-Dec-22 A	
Z3BH-1040	Biogas Holder No. 1 - Surcharge (concrete block placing and fill)	24	03-Jan-23	04-Feb-23	-139
Z3BH-1050	Biogas Holder No. 1 - Consolidation *calendar day	30	05-Feb-23	06-Mar-23	-174
Z3BH-1140	Biogas Holder No. 1 - Verification drillhole (2nos., BH-VD4, BH-VD5)	8	07-Mar-23	15-Mar-23	-139
Z3BH-1150	Biogas Holder No. 1 - Remove surcharge	15	16-Mar-23	01-Apr-23	-139
Utility Corridor and Pipe Portal (UC/PP)					
Pipe Portal No. 1 (PP1) (Construct with SD1-3)					
PP1 : Predrilling Works					
Z3S5UC1-2220	UC/PP - Predrill UC&PP-PD5	6	02-Mar-23	08-Mar-23	135
Utility Corridor No. 1 (UC1)					
UC1 : Predrilling Works					
Z3S5UC1-2180	UC/PP - Predrill UC&PP-PD2	6	09-Feb-23	15-Feb-23	135
Z3S5UC1-2190	UC/PP - Predrill UC&PP-PD3	6	16-Feb-23	22-Feb-23	135
Z3S5UC1-2200	UC/PP - Predrill UC&PP-PD6	6	23-Feb-23	01-Mar-23	135
Utility Corridor No. 2 (UC2)					
ATALZ3S1-2230	Switching Duty from SDT No.4 to No. 1 (9)	23	03-Jan-23	03-Feb-23	693
UC2 : Foundation and ELS					
Z3S2-2240	UC/PP - Predrill UC&PP-PD4	6	09-Mar-23	15-Mar-23	722
Zone 3 Middle Portion (Z3M)					
Sludge Digestor No. 4-6 (SD4-6)					
SD4-6 : Foundation and ELS					
Pre-drilling Works					
Z3S8SD-1010	Sludge Digester No. 5-6 - Pre-drill (3 nos. SD-BH1,SD-BH3,SD-BH4)	48	19-Jan-23	21-Mar-23	652
Utility Corridor and Pipe Portal (UC/PP)					
Pipe Portal No. 2 (PP2)					
PP2 : Foundation and ELS					
Z3S2-3410	UC/PP - Predrill UC&PP-PD7	6	16-Mar-23	21-Mar-23	1097
Pipe Portal No. 3 (PP3) (Construct with SD4-6)					
PP3 : Civil and Structural Works					
Z3S8PP3-2080	UC/PP - Predrill UC&PP-PD8	12	03-Jan-23	16-Jan-23	-95

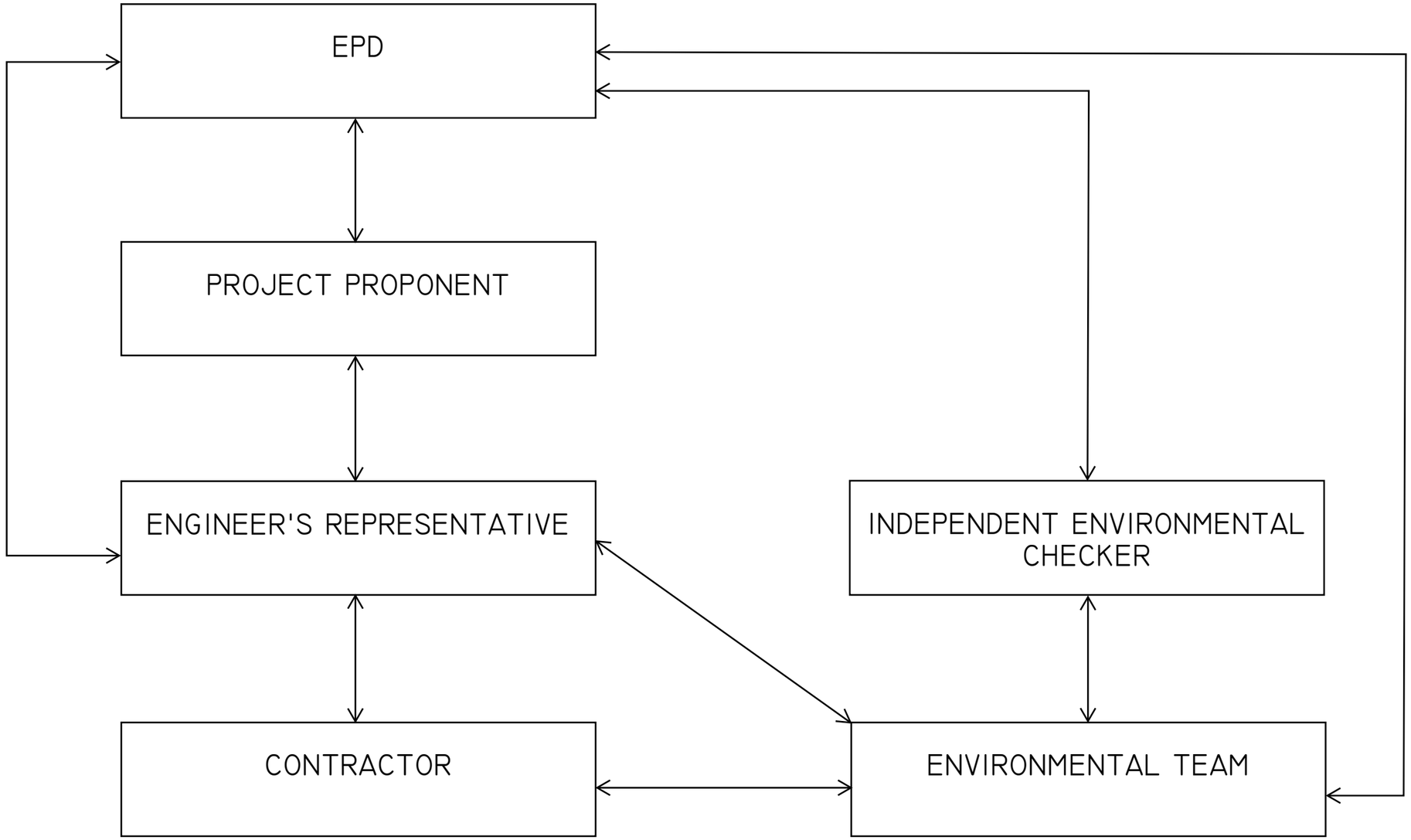


Appendix B

Project Organization Chart

LEGEND:

LINE OF COMMUNICATION



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

Plot File by: Chanwa 5/28/2018
PATH: p:\projects\60505476\drawing\report\EM&A\EM&A_702.dgn

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 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核對

STATUS
狀況

SCALE 比例: A3 1 : 40000

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60505476

CONTRACT NO. 合約編號: CE 3/2015 (DS)

SHEET TITLE
圖紙名稱

PROJECT ORGANISATION

SHEET NUMBER
圖紙編號

Appendix C

Action and Limit Levels

Action and Limit Levels for Air Quality

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

Notes:

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

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

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

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:

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

Notes:

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

Action and Limit Levels for Ecology

Active Ardeid Night Roost Survey

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

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

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

Ecological Monitoring of Birds

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

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

Appendix D

Calibration Certificates/ reports of Monitoring Equipments

Air Quality Monitoring Equipments

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no. : 940891CA222379(7)

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	: Laser Dust Monitor
Manufacturer	: SIBATA
Model No.	: LD-5R
Serial No.	: 155716
Specification Limit	: NA

Next Calibration Date : 25-Aug-2023

Laboratory Information

Details of Reference Equipment -

Description	: 1.Reference balance	2. TSP high Volume air sampler
Equipment ID / Serial no.	: 1.C-065-5	2. 4350
Date of Calibration	: 26-Aug-2022	Ambient Temperature : 33 °C

Calibration Location : Calibration Lab. of FTS

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

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.0501	1588	26.47
0.0366	1012	16.87
0.0443	1312	21.87

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x UUT reading (CPM) where K = 0.001991
3. Correlation coefficient (r) : 0.9984

Checked by : _____ Date : 18-10-2022 Certified by : _____ Date : 19-10-2022

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

T +852 2450 8233 | F +852 2450 6138 | E matlab@fugro.com | W fugro.com

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no. : 940891CA222379(8)

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. : 155717

Specification Limit : NA

Next Calibration Date : 25-Aug-2023

Laboratory Information

Details of Reference Equipment -

Description : 1.Reference balance 2. TSP high Volume air sampler

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

Date of Calibration : 26-Aug-2022 Ambient Temperature : 33 °C

Calibration Location : Calibration Lab. of FTS

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

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.0501	1656	27.60
0.0366	1084	18.07
0.0443	1384	23.07

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x UUT reading (CPM) where K = 0.001893
3. Correlation coefficient (r) : 0.9986

Checked by : _____ Date : 18-10-2022 Certified by : _____ Date : 19-10-2022

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
19/F, Fugro House – KCC2,
1 Kwai On Rd, Kwai Chung,
NT, Hong Kong

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : MaWTF, Ma Wan	Date of Calibration: 22-Jul-22
Location ID: A1 Site Boundary	Next Calibration Date: 23-Oct-22
Serial No.: 4350	Technician: Eve Ma

CONDITIONS

Sea Level Pressure (hPa):	1010.8	Corrected Pressure (mm Hg):	758
Temperature (℃):	35.6	Temperature (K):	309

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.11005
Model:	TE-5025A	Qstd Intercept:	-0.01868
Calibration Date:	24-Apr-22	Expiry Date:	24-Apr-23

CALIBRATIONS

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	-4.70	-14.10	9.400	1.435	49.00	48.09	Slope = 28.6235
13	-5.30	-12.40	7.100	1.248	45.00	44.17	Intercept = 7.3938
10	-6.80	-11.60	4.800	1.028	36.00	35.33	Corr. coeff.= 0.9911
7	-7.60	-11.00	3.400	0.867	34.00	33.37	
5	-8.10	-10.40	2.300	0.714	28.00	27.48	

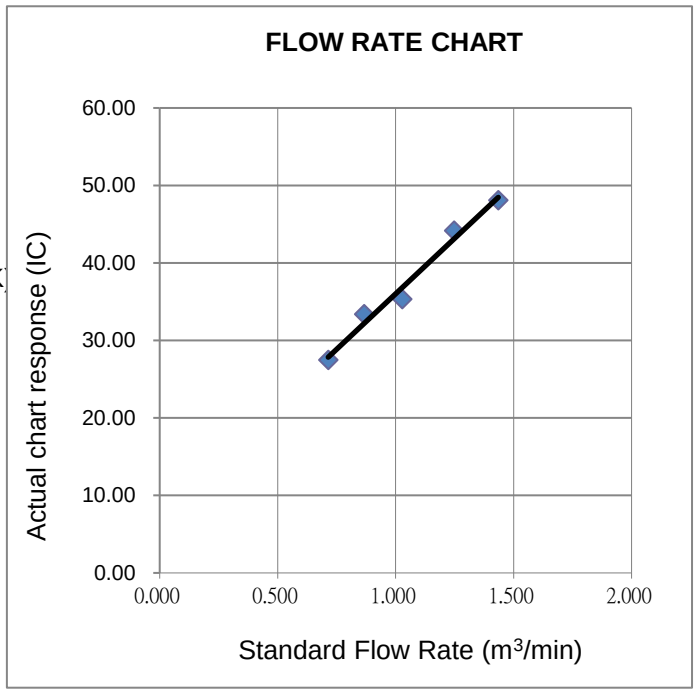
Calculations:

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

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

For subsequent calculation of sampler flow:
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



FUGRO TECHNICAL SERVICES LIMITED

13/F, Fugro House - KCC2,
1 Kwai On Rd, Kwai Chung,
NT, Hong Kong.

CALIBRATION REPORT OF WIND METER

Project: Contract No. SPW 07/2020 | **Date of Calibration: 24-Sep-2022**
Location: Yuen Long Sewage Treatment Works | **Next Calibration Date: 23-Mar-2023**
Technician: Sam Fong

Brand: Global Water
Model: GL500-7-2 **Serial No: 2012000974**

Anemometer

Brand: Benetech
Model: GM816 **Equipment ID: 08**

Procedures:

1. **Wind Still Test:** **The wind speed sensor was held by hand until stabilized.**
2. **Wind Speed Test:** **The wind meter was calibrated in-situ and compared with the Anemometer.**
3. **Wind Direction Test:** **The wind meter was calibrated in-situ and compared with a marine compass from four directions.**

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

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

Wind Direction Test:

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

Report Date: 26/9/2022

Wan Ka Ho
Project Consultant

Noise Monitoring Equipments

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no.: 212769CA220999

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 & 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
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-weigthing 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 tranportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : _____ Date : 13-5-2022 Certified by : _____ Date : 13-5-2022

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no.: 212769CA222278

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.
Project : Calibration Services

Details of Unit Under Test, UUT -

Description : Sound Level Meter
Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No. :	CEL-63X	CE-251	CEL-495
Serial No. :	1488306	03876	002752

Equipment ID : N/A
Next Calibration Date : 26-Sep-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 Receipt UUT : 23-Sep-2022
Date of Calibration : 27-Sep-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-weigthing frequency response	4000Hz	1.7	2.6 to -0.6
	2000Hz	1.4	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.3	-1.8 to -4.6
	250Hz	-8.8	-7.2 to -10.0
	125Hz	-16.2	-14.6 to -17.6
	63Hz	-26.3	-24.7 to -27.7
Differential level linearity	94dB-104dB	0.1	± 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 unit under test and the values measured at the time of the test. Any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during tranportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.
6. The decision rule is based on binary statement for simple acceptance rule (w = 0).

Checked by : _____ Date : 29-9-2022 Certified by : _____ Date : 29-9-2022

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no.: 212769CA221230

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

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

Next Calibration Date : 08-Jun-2023

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

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

Date of Calibration : 09-Jun-2022

Calibration Location : Calibration Laboratory of FTS

Ambient Temperature : 20 ± 2 °C

Method Used : By direct comparison

Relative Humidity : < 80 %RH

Calibration Results :

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

Remarks :

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

Checked by : Date : 24-6-2022 Certified by : Date : 25-6-2022

Leung Kwok Tai (Assistant Manager)

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

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no.: 212769CA222278(3)

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.	:	5230950
Equipment ID	:	N/A

Next Calibration Date : 26-Sep-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 Receipt UUT : 23-Sep-2022

Date of Calibration : 27-Sep-2022

Calibration Location : Calibration Laboratory of FTS

Ambient Temperature : 20±2 °C

Method Used : By direct comparison

Relative Humidity : <80% R.H.

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.3 dB	±0.4dB
114dB	-0.4 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 under test does comply 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.
5. The decision rule is based on binary statement for simple acceptance rule (w = 0).

Checked by : _____ Date : 29-9-2022 Certified by : K.T. Leung Date : 29-9-2022

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 212769CA220614

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 ºC

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 : Date : 31-3-2022 Certified by : Date : 1-4-2022

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Water Quality Monitoring Equipments

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA222380

Report on Calibration of YSI EXO-1 Multi-parameter Water Quality Meter

Information Supplied by Client

Client	:	Fugro Technical Services Limited (MCL)
Client's address	:	13/F, Fugro House – KCC2, No. 1 Kwai On Road, Kwai Chung, N.T., H.K.
Sample description	:	One YSI EXO-1 Multi-parameter Water Quality Meter
Client sample ID	:	Serial No. 21D101383
Test required	:	Calibration of the YSI EXO-1 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID	:	WA222380/1
Date sample received	:	07/11/2022
Date of calibration	:	08/11/2022
Next calibration date	:	07/02/2023
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.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA222380

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	9.09	-0.09
6.86	6.88	+0.02

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.01	+0.01	± 0.1
10	9.98	-0.02	± 0.5
20	19.80	-0.20	± 1.0
30	30.02	+0.02	± 1.5
40	39.79	-0.21	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.21	8.30
2	8.31	8.33
3	8.21	8.26
Average	8.24	8.30

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

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

Date : 18/12/2019

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

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA222380

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
23.0	22.65

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.21	+0.21	± 0.6
8	8.10	+0.10	± 0.8
40	40.58	+0.58	± 3.0
80	80.54	+0.54	± 4.0

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

Date : 12-12-2017

** End of Report **

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

T +852 2450 8233 | **F** +852 2450 6138 | **E** matlab@fugro.com | **W** fugro.com

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA222629

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. 19E100634
Test required	:	Calibration of the YSI EXO-3 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID	:	WA222629/1
Date sample received	:	05/12/2022
Date of calibration	:	30/12/2022
Next calibration date	:	29/03/2023
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.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA222629

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	9.12	-0.06
6.86	6.94	+0.08

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	0.97	-0.03	± 0.1
10	9.93	-0.07	± 0.5
20	19.99	-0.01	± 1.0
30	29.97	-0.03	± 1.5
40	40.02	+0.02	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.81	8.71
2	8.44	8.63
3	8.56	8.63
Average	8.60	8.66

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 : 19/1/2023

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

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA222629

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
20.0	19.8

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.13	+0.13	± 0.6
8	8.37	+0.37	± 0.8
40	39.84	-0.16	± 3.0
80	79.50	-0.05	± 4.0

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

Date : 19/11/2013

** End of Report **

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

CALIBRATION CERTIFICATE

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

Calibration Certificate Number:	**61134**
Instrument Type:	MODEL 106
Instrument Serial Number:	67738
Calibrated By:	N.PADDON
Date:	11TH NOVEMBER 2019
Signed:	

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

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

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

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

ISO 9001 ISO 14001 OHSAS 18001

SonTek
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 ™	Enabled
Stationary	Disabled
GPS Compass Integration	Disabled
RiverSurveyor	Enabled
HydroSurveyor	Disabled

Verified by: **ainthasane**

This report was generated on 5/24/2017.

Appendix E

Environmental Monitoring Schedule

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

Environmental Monitoring Schedule (January 2023)

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

Remarks

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

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

Environmental Monitoring Schedule (February 2023)

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

Remarks

1. Actual monitoring may be subjected to change due to any safety concern or adverse weather condition.
2. Air Quality Monitoring (**AQM**): 3 x 1-hour TSP Monitoring per 6 days.
3. Noise Monitoring (**NM**): L_{eq} (30 min) during between 0700 - 1900.
4. Water Quality Monitoring (**WQM**): Once per day for 3 days per week.
5. Ecological Monitoring of Birds (**EMB**): Once per month.
6. Ardeid Night Roost Monitoring (**ANRM**): Once per month.
7. Air Quality Location: AM1 and AM2
8. Noise Monitoring Location: CM1, CM2 and CM3
9. 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 (March 2023)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
			1	2 **WQM** Mid Flood(10:32) Mid Ebb(23:01)	3 **AQM, NM**	4 **WQM** Mid Flood(17:23) Mid Ebb(12:34)
5	6	7 **WQM** Mid Flood(8:34) Mid Ebb(14:03)	8	9 **AQM, NM** **WQM** Mid Flood(9:15) Mid Ebb(15:02)	10	11 **WQM** Mid Flood(9:54) Mid Ebb(16:01)
12	13	14 **WQM** Mid Flood(11:05) Mid Ebb(18:03)	15 **AQM, NM**	16 **WQM** Mid Flood(8:00) Mid Ebb(20:51)	17	18 **WQM** Mid Flood(16:36) Mid Ebb(12:01)
19	20	21 **AQM, NM** **WQM** Mid Flood(8:13) Mid Ebb(14:00)	22	23 **WQM** Mid Flood(9:02) Mid Ebb(15:03)	24	25 **WQM** Mid Flood(9:40) Mid Ebb(16:04)
26	27 **AQM, NM**	28 **WQM** Mid Flood(10:28) Mid Ebb(18:03)	29	30 **WQM** Mid Flood(7:58) Mid Ebb(20:40)	31	

Remarks

1. Actual monitoring may be subjected to change due to any safety concern or adverse weather condition.
2. Air Quality Monitoring (**AQM**): 3 x 1-hour TSP Monitoring per 6 days.
3. Noise Monitoring (**NM**): L_{eq} (30 min) during between 0700 - 1900.
4. Water Quality Monitoring (**WQM**): Once per day for 3 days per week.
5. Ecological Monitoring of Birds (**EMB**): Once per month.
6. Ardeid Night Roost Monitoring (**ANRM**): Once per month.
7. Air Quality Location: AM1 and AM2
8. Noise Monitoring Location: CM1, CM2 and CM3
9. 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 (April 2023)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1 **AQM** **WQM** Mid Flood(16:25) Mid Ebb(11:48)
2	3	4 **WQM** Mid Flood(7:18) Mid Ebb(13:06)	5	6 **AQM, NM** **WQM** Mid Flood(8:02) Mid Ebb(14:03)	7	8 **WQM** Mid Flood(8:45) Mid Ebb(15:03)
9	10	11 **WQM** Mid Flood(9:54) Mid Ebb(16:57)	12 **AQM, NM**	13 **WQM** Mid Flood(6:25) Mid Ebb(19:04)	14	15 **WQM** Mid Flood(15:18) Mid Ebb(10:51)
16	17	18 **AQM, NM** **WQM** Mid Flood(6:57) Mid Ebb(12:56)	19	20 **WQM** Mid Flood(7:45) Mid Ebb(13:57)	21	22 **WQM** Mid Flood(8:26) Mid Ebb(15:02)
23 30	24 **AQM, NM**	25 **WQM** Mid Flood(9:21) Mid Ebb(16:49)	26	27 **WQM** Mid Flood(10:03) Mid Ebb(18:25)	28	29 **AQM** **WQM** Mid Flood(8:52) Mid Ebb(21:20)

Remarks

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

Appendix F

Environmental Monitoring Results

Air Quality Monitoring Results

Air Quality Monitoring Results for

Contract No. SPW 07/2020

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

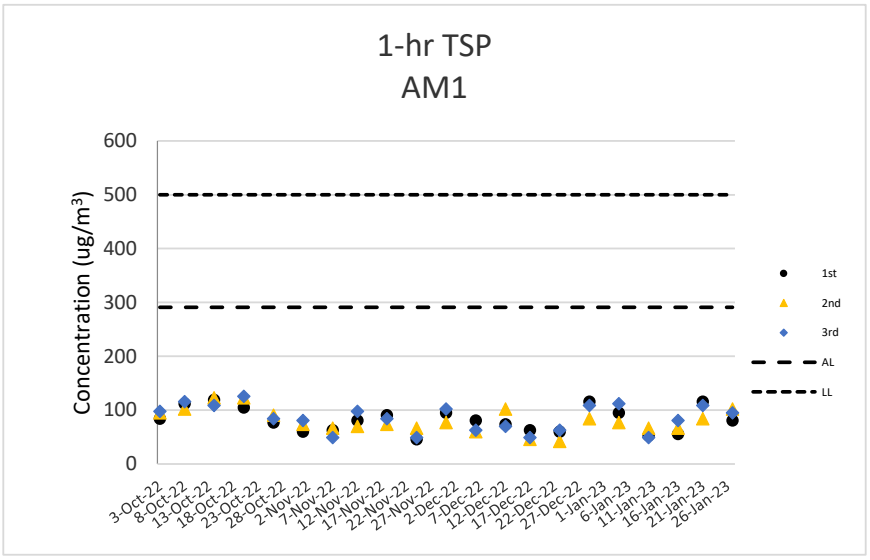
AM1 - Topfine Machinery (China) Co. Ltd.

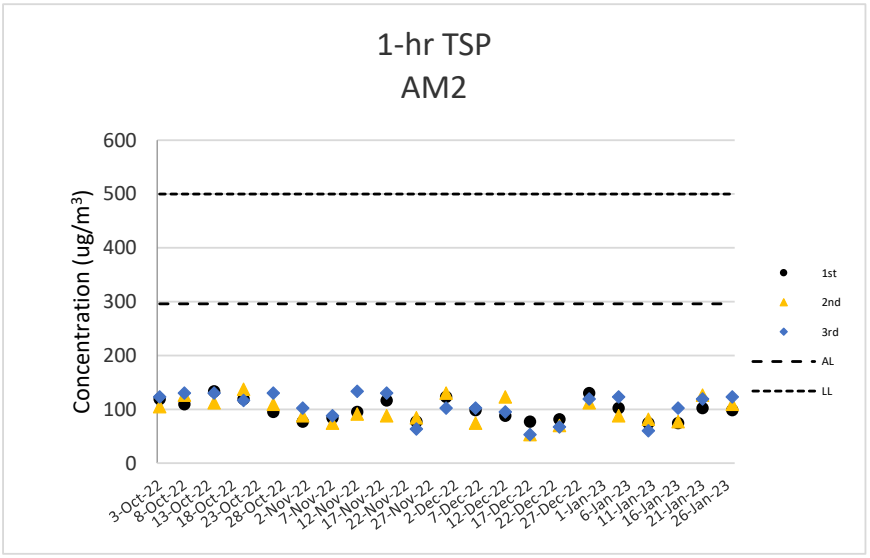
Date	Weather Condition	Start Time	1-hour TSP (µg/m³) 1st Measurement	2nd Measurement	3rd Measurement	Action Level (ug/m^3)	Limit Level (ug/m^3)
4-Jan-23	Cloudy	8:35	95	77	112	291	500
10-Jan-23	Cloudy	8:42	53	67	49		
16-Jan-23	Cloudy	8:40	56	67	81		
21-Jan-23	Cloudy	8:31	116	84	109		
27-Jan-23	Cloudy	8:30	81	102	95		
		Min	49				
		Max	116				
		Average	83				

AM2 - Squatter house at the west of Yuen Long STW

Date	Weather Condition	Start Time	1-hour TSP (µg/m³) 1st Measurement	2nd Measurement	3rd Measurement	Action Level (ug/m^3)	Limit Level (ug/m^3)
4-Jan-23	Cloudy	8:44	102	88	123	296	500
10-Jan-23	Cloudy	8:33	74	81	60		
16-Jan-23	Cloudy	8:49	74	77	102		
21-Jan-23	Cloudy	8:42	102	126	119		
27-Jan-23	Cloudy	8:41	98	109	123		
		Min	60				
		Max	126				
		Average	97				

Note:
Underline: Exceedance of Action Level
Underline and Bold: Exceedance of Limit Level





Air Quality Monitoring Results

Noise Monitoring Results

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

CM1 - Squatter house to the north of YLSTW

Date	Start Time	L_{eq} 30min dB(A)	L_{10} dB(A)	L_{90} dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
4-Jan-23	10:09	52	54	50	0.2	Cloudy	75
10-Jan-23	13:02	53	55	51	0.3	Cloudy	75
16-Jan-23	10:21	54	56	51	0.1	Cloudy	75
27-Jan-23	10:04	52	54	51	0.2	Cloudy	75
	Max	54					
	Min	52					

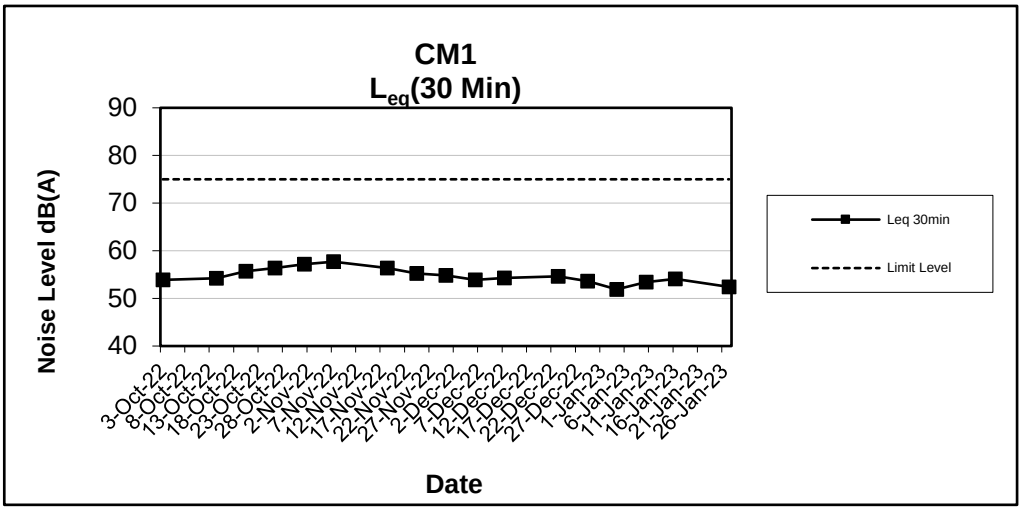
CM2 - Squatter house to the west of YLSTW

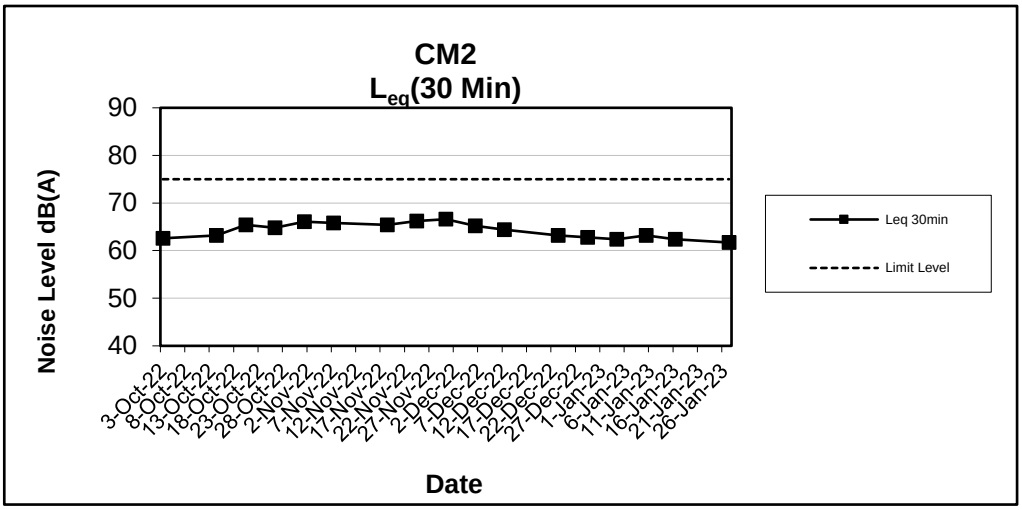
Date	Start Time	L_{eq} 30min dB(A)	L_{10} dB(A)	L_{90} dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
4-Jan-23	8:48	62	65	56	0.3	Cloudy	75
10-Jan-23	11:14	63	66	57	0.3	Cloudy	75
16-Jan-23	8:56	62	65	56	0.2	Cloudy	75
27-Jan-23	8:45	62	64	56	0.2	Cloudy	75
	Max	63					
	Min	62					

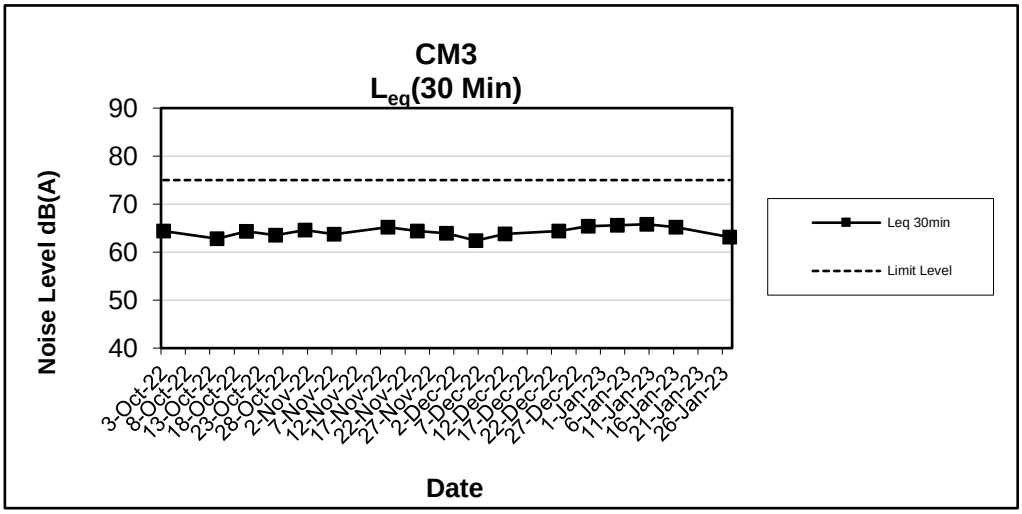
CM3 - Squatter house to the east of YLSTW

Date	Start Time	L_{eq} 30min dB(A)	L_{10} dB(A)	L_{90} dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
4-Jan-23	11:29	66	69	57	0.4	Cloudy	75
10-Jan-23	9:37	66	69	58	0.4	Cloudy	75
16-Jan-23	13:04	65	68	57	0.3	Cloudy	75
27-Jan-23	11:26	63	66	56	0.3	Cloudy	75
	Max	66					
	Min	63					

Note:
CM1, CM2 and CM3: Free-field measurement (+3dB(A) correction has been applied).
No raining or wind with speed over 5 m/s was observed during noise monitoring according to the onsite observation.







Noise Monitoring Results

Water Quality Monitoring Results

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	3/1/2023	Mid-Flood	Cloudy	Moderate	6:31	2	M	1	1	0.302	282	7.74	7.74	9.51	9.52	15.67	15.68	54.2	54.6	4.86	4.89	15.8	16.1	10	10
M1	3/1/2023	Mid-Flood	Cloudy	Moderate	6:31	2	M	1	2			7.73		9.52		15.68		54.9		4.91		16.5		10	
M2	3/1/2023	Mid-Flood	Cloudy	Moderate	6:45	1	M	0.5	1	0.276	318	7.69	7.70	9.44	9.45	15.93	15.93	52.5	52.9	4.71	4.74	14.3	14.1	12	12
M2	3/1/2023	Mid-Flood	Cloudy	Moderate	6:45	1	M	0.5	2			7.71		9.46		15.92		53.3		4.76		13.9		11	
M3	3/1/2023	Mid-Flood	Cloudy	Moderate	6:23	0.2	M	0.1	1	0.278	80	7.66	7.65	9.04	9.04	16.16	16.16	58.7	59.1	5.22	5.25	21.4	21.5	24	25
M3	3/1/2023	Mid-Flood	Cloudy	Moderate	6:23	0.2	M	0.1	2			7.64		9.03		16.15		59.5		5.27		21.6		26	
M1	3/1/2023	Mid-Ebb	Cloudy	Moderate	11:47	2.2	M	1.1	1	0.28	205	7.46	7.47	8.21	8.22	18.98	18.99	72.1	72.4	6.42	6.44	18.9	18.6	18	18
M1	3/1/2023	Mid-Ebb	Cloudy	Moderate	11:47	2.2	M	1.1	2			7.48		8.22		18.99		72.7		6.46		18.4		17	
M2	3/1/2023	Mid-Ebb	Cloudy	Moderate	11:29	1	M	0.5	1	0.261	260	7.49	7.50	7.78	7.78	18.79	18.80	70.2	70.5	6.29	6.31	16.2	16.4	16	16
M2	3/1/2023	Mid-Ebb	Cloudy	Moderate	11:29	1	M	0.5	2			7.51		7.77		18.81		70.7		6.32		16.7		16	
M3	3/1/2023	Mid-Ebb	Cloudy	Moderate	11:35	0.4	M	0.2	1	0.235	250	7.39	7.40	7.49	7.49	18.35	18.36	63.5	63.9	5.69	5.71	17.2	17.5	19	20
M3	3/1/2023	Mid-Ebb	Cloudy	Moderate	11:35	0.4	M	0.2	2			7.41		7.48		18.36		64.2		5.73		17.8		20	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	5/1/2023	Mid-Flood	Cloudy	Smooth	8:11	2.2	M	1.1	1	0.322	272	7.87	7.88	11.77	11.77	16.25	16.25	70.1	70.0	6.11	6.10	18.1	18.3	15	16
M1	5/1/2023	Mid-Flood	Cloudy	Smooth	8:11	2.2	M	1.1	2			7.88		11.76		16.24		69.8		6.09		18.5		16	
M2	5/1/2023	Mid-Flood	Cloudy	Smooth	8:30	1.2	M	0.6	1	0.302	325	7.92	7.92	11.47	11.48	16.91	16.92	71.9	71.6	6.21	6.19	15.6	15.6	14	13
M2	5/1/2023	Mid-Flood	Cloudy	Smooth	8:30	1.2	M	0.6	2			7.91		11.48		16.92		71.2		6.17		15.6		12	
M3	5/1/2023	Mid-Flood	Cloudy	Smooth	8:09	0.2	M	0.1	1	0.282	86	7.83	7.83	10.19	10.18	16.63	16.64	74.1	73.7	6.41	6.38	19.2	18.9	20	19
M3	5/1/2023	Mid-Flood	Cloudy	Smooth	8:09	0.2	M	0.1	2			7.83		10.17		16.64		73.2		6.35		18.6		18	
M1	5/1/2023	Mid-Ebb	Cloudy	Smooth	13:05	2	M	1	1	0.299	216	7.43	7.42	8.67	8.67	21.21	21.22	78.1	78.3	6.78	6.80	17.4	17.2	11	11
M1	5/1/2023	Mid-Ebb	Cloudy	Smooth	13:05	2	M	1	2			7.41		8.66		21.22		78.5		6.81		17.1		10	
M2	5/1/2023	Mid-Ebb	Cloudy	Smooth	12:47	1	M	0.5	1	0.271	267	7.32	7.33	8.02	8.03	20.64	20.65	79.7	80.0	6.98	7.00	18.5	18.4	16	17
M2	5/1/2023	Mid-Ebb	Cloudy	Smooth	12:47	1	M	0.5	2			7.33		8.04		20.65		80.2		7.01		18.3		18	
M3	5/1/2023	Mid-Ebb	Cloudy	Smooth	12:49	0.4	M	0.2	1	0.248	262	7.37	7.36	7.14	7.13	20.89	20.90	81.8	82.1	7.07	7.09	29.1	29.3	13	14
M3	5/1/2023	Mid-Ebb	Cloudy	Smooth	12:49	0.4	M	0.2	2			7.35		7.12		20.91		82.4		7.11		29.4		14	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	7/1/2023	Mid-Flood	Fine	Moderate	9:20	1.2	M	0.6	1	0.064	93	8.41	8.42	9.22	9.23	19.17	19.18	72.4	72.4	6.34	6.33	20.2	20.2	23	24
M1	7/1/2023	Mid-Flood	Fine	Moderate	9:20	1.2	M	0.6	2			8.42		9.24		19.18		72.3		6.31		20.2		24	
M2	7/1/2023	Mid-Flood	Fine	Moderate	9:39	1	M	0.5	1	0.049	261	8.17	8.17	9.31	9.32	19.24	19.23	70.4	70.5	6.10	6.11	21.4	21.4	12	12
M2	7/1/2023	Mid-Flood	Fine	Moderate	9:39	1	M	0.5	2			8.16		9.32		19.22		70.5		6.12		21.4		12	
M3	7/1/2023	Mid-Flood	Fine	Smooth	9:17	0.2	M	0.1	1	0.32	95	7.66	7.65	9.25	9.25	18.29	18.29	68.8	68.4	6.05	6.02	23.8	23.5	10	12
M3	7/1/2023	Mid-Flood	Fine	Smooth	9:17	0.2	M	0.1	2			7.64		9.24		18.29		67.9		5.99		23.1		13	
M1	7/1/2023	Mid-Ebb	Fine	Moderate	14:12	1	M	0.5	1	0.103	166	8.06	8.07	8.11	8.13	19.24	19.27	80.2	80.3	7.02	7.03	20.1	20.1	26	27
M1	7/1/2023	Mid-Ebb	Fine	Moderate	14:12	1	M	0.5	2			8.07		8.14		19.30		80.4		7.04		20.1		28	
M2	7/1/2023	Mid-Ebb	Fine	Moderate	13:53	0.9	M	0.45	1	0.093	88	8.14	8.14	9.29	9.27	19.01	19.01	76.1	76.3	6.68	6.74	21.3	21.3	27	27
M2	7/1/2023	Mid-Ebb	Fine	Moderate	13:53	0.9	M	0.45	2			8.13		9.24		19.01		76.4		6.79		21.3		27	
M3	7/1/2023	Mid-Ebb	Fine	Smooth	13:55	0.4	M	0.2	1	0.281	272	7.38	7.39	7.86	7.86	22.76	22.76	71.9	72.3	6.33	6.36	33.3	33.2	36	36
M3	7/1/2023	Mid-Ebb	Fine	Smooth	13:55	0.4	M	0.2	2			7.39		7.85		22.75		72.7		6.38		33.0		36	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	10/1/2023	Mid-Flood	Fine	Moderate	10:54	1.2	M	0.6	1	0.068	264	7.30	7.31	8.44	8.46	19.89	19.90	85.2	85.2	7.39	7.38	22.2	22.7	35	35
M1	10/1/2023	Mid-Flood	Fine	Moderate	10:54	1.2	M	0.6	2			7.31		8.47		19.90		85.1		7.37		23.1		34	
M2	10/1/2023	Mid-Flood	Fine	Moderate	11:12	0.9	M	0.45	1	0.046	134	7.03	7.04	7.23	7.24	19.14	19.14	89.2	89.3	7.46	7.48	24.3	24.3	31	32
M2	10/1/2023	Mid-Flood	Fine	Moderate	11:12	0.9	M	0.45	2			7.04		7.25		19.13		89.4		7.49		24.3		32	
M3	10/1/2023	Mid-Flood	Cloudy	Smooth	10:52	0.2	M	0.1	1	0.283	88	7.72	7.72	7.91	7.92	18.16	18.17	87.9	87.6	7.62	7.60	23.0	23.5	33	33
M3	10/1/2023	Mid-Flood	Cloudy	Smooth	10:52	0.2	M	0.1	2			7.71		7.93		18.17		87.2		7.58		24.0		32	
M1	10/1/2023	Mid-Ebb	Fine	Moderate	15:58	1	M	0.5	1	0.045	262	7.43	7.42	6.23	6.24	19.24	19.27	90.4	90.5	7.68	7.69	22.0	21.8	37	36
M1	10/1/2023	Mid-Ebb	Fine	Moderate	15:58	1	M	0.5	2			7.41		6.25		19.30		90.5		7.69		21.7		35	
M2	10/1/2023	Mid-Ebb	Fine	Moderate	15:40	0.8	M	0.4	1	0.085	75	7.62	7.63	8.54	8.54	20.14	20.14	87.5	87.6	7.58	7.59	20.2	20.3	34	35
M2	10/1/2023	Mid-Ebb	Fine	Moderate	15:40	0.8	M	0.4	2			7.63		8.53		20.13		87.6		7.59		20.5		36	
M3	10/1/2023	Mid-Ebb	Cloudy	Smooth	15:38	0.4	M	0.2	1	0.246	265	7.45	7.46	6.54	6.54	18.97	18.98	77.2	77.0	6.69	6.68	33.6	33.4	49	48
M3	10/1/2023	Mid-Ebb	Cloudy	Smooth	15:38	0.4	M	0.2	2			7.46		6.54		18.99		76.8		6.66		33.1		46	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	12/1/2023	Mid-Flood	Cloudy	Smooth	11:49	2	M	1	1	0.354	252	7.67	7.68	8.24	8.25	20.31	20.31	65.4	65.7	5.75	5.77	15.4	15.7	16	16
M1	12/1/2023	Mid-Flood	Cloudy	Smooth	11:49	2	M	1	2			7.68		8.26		20.31		65.9		5.78		16.1		15	
M2	12/1/2023	Mid-Flood	Cloudy	Smooth	12:06	1.2	M	0.6	1	0.319	295	7.59	7.60	8.13	8.13	20.54	20.54	59.2	59.5	5.21	5.23	17.2	17.6	21	21
M2	12/1/2023	Mid-Flood	Cloudy	Smooth	12:06	1.2	M	0.6	2			7.61		8.12		20.53		59.8		5.25		18.0		20	
M3	12/1/2023	Mid-Flood	Cloudy	Smooth	11:54	1.3	M	0.65	1	0.072	134	8.24	8.23	6.30	6.31	19.96	19.95	43.6	43.8	3.61	3.63	22.6	22.6	30	30
M3	12/1/2023	Mid-Flood	Cloudy	Smooth	11:54	1.3	M	0.65	2			8.22		6.32		19.94		43.9		3.64		22.6		30	
M1	12/1/2023	Mid-Ebb	Cloudy	Smooth	17:15	2.2	M	1.1	1	0.337	205	7.29	7.28	6.91	6.92	21.62	21.62	52.1	51.9	4.57	4.56	21.2	21.6	22	22
M1	12/1/2023	Mid-Ebb	Cloudy	Smooth	17:15	2.2	M	1.1	2			7.27		6.92		21.61		51.6		4.54		21.9		22	
M2	12/1/2023	Mid-Ebb	Cloudy	Smooth	16:56	1.2	M	0.6	1	0.308	245	7.24	7.23	6.73	6.73	21.87	21.88	47.8	47.5	4.19	4.18	20.3	20.4	23	22
M2	12/1/2023	Mid-Ebb	Cloudy	Smooth	16:56	1.2	M	0.6	2			7.22		6.72		21.88		47.2		4.16		20.5		21	
M3	12/1/2023	Mid-Ebb	Cloudy	Smooth	16:59	1.1	M	0.55	1	0.083	97	8.37	8.37	5.11	5.13	19.47	19.47	50.3	50.4	4.10	4.11	19.3	19.3	17	17
M3	12/1/2023	Mid-Ebb	Cloudy	Smooth	16:59	1.1	M	0.55	2			8.36		5.14		19.46		50.4		4.11		19.3		17	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	14/1/2023	Mid-Flood	Fine	Moderate	12:57	1.1	M	0.55	1	0.065	92	7.08	7.08	8.50	8.50	21.00	21.01	59.5	59.5	5.05	5.05	20.3	20.2	27	27
M1	14/1/2023	Mid-Flood	Fine	Moderate	12:57	1.1	M	0.55	2			7.07		8.49		21.02		59.4		5.04		20.2		26	
M2	14/1/2023	Mid-Flood	Fine	Moderate	13:15	0.9	M	0.45	1	0.123	176	6.94	6.94	8.27	8.26	20.56	20.57	54.8	54.7	4.82	4.82	19.2	19.2	27	28
M2	14/1/2023	Mid-Flood	Fine	Moderate	13:15	0.9	M	0.45	2			6.93		8.24		20.57		54.6		4.81		19.2		29	
M3	14/1/2023	Mid-Flood	Fine	Calm	12:46	0.4	M	0.2	1	0.298	87	7.62	7.62	7.86	7.87	21.96	21.97	59.9	60.1	5.09	5.10	28.2	28.4	38	39
M3	14/1/2023	Mid-Flood	Fine	Calm	12:46	0.4	M	0.2	2			7.61		7.87		21.98		60.3		5.11		28.7		39	
M1	14/1/2023	Mid-Ebb	Fine	Moderate	18:59	0.9	M	0.45	1	0.063	265	7.42	7.43	8.51	8.55	20.56	20.57	70.8	70.8	5.87	5.86	22.7	22.7	45	44
M1	14/1/2023	Mid-Ebb	Fine	Moderate	18:59	0.9	M	0.45	2			7.43		8.59		20.57		70.7		5.84		22.7		43	
M2	14/1/2023	Mid-Ebb	Fine	Moderate	18:42	0.8	M	0.4	1	0.057	98	7.55	7.54	8.60	8.62	20.92	20.95	65.7	65.8	5.58	5.59	24.4	24.4	38	37
M2	14/1/2023	Mid-Ebb	Fine	Moderate	18:42	0.8	M	0.4	2			7.52		8.64		20.97		65.8		5.59		24.4		36	
M3	14/1/2023	Mid-Ebb	Fine	Calm	18:38	0.6	M	0.3	1	0.287	255	7.43	7.43	6.55	6.56	23.31	23.32	54.2	54.0	4.62	4.61	21.4	21.9	30	30
M3	14/1/2023	Mid-Ebb	Fine	Calm	18:38	0.6	M	0.3	2			7.42		6.57		23.32		53.7		4.59		22.3		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.	Value	Ave.
M1	17/1/2023	Mid-Flood	Cloudy	Smooth	15:16	2.2	M	1.1	1	0.325	266	7.55	7.55	8.36	8.37	16.54	16.54	59.4	59.7	5.49	5.51	17.3	17.5	24	25
M1	17/1/2023	Mid-Flood	Cloudy	Smooth	15:16	2.2	M	1.1	2			7.54		8.38		16.53		59.9		5.52		17.8		26	
M2	17/1/2023	Mid-Flood	Cloudy	Smooth	14:58	1.2	M	0.6	1	0.303	315	7.41	7.40	8.24	8.24	16.17	16.17	57.6	57.5	5.31	5.30	15.9	15.6	21	21
M2	17/1/2023	Mid-Flood	Cloudy	Smooth	14:58	1.2	M	0.6	2			7.39		8.23		16.16		57.3		5.29		15.3		21	
M3	17/1/2023	Mid-Flood	Cloudy	Smooth	15:02	0.6	M	0.3	1	0.292	79	7.32	7.32	8.02	8.02	16.80	16.81	52.2	52.6	4.82	4.84	18.8	19.1	21	22
M3	17/1/2023	Mid-Flood	Cloudy	Smooth	15:02	0.6	M	0.3	2			7.31		8.01		16.81		52.9		4.86		19.4		22	
M1	17/1/2023	Mid-Ebb	Cloudy	Smooth	9:46	2	M	1	1	0.28	196	7.21	7.20	7.16	7.17	14.35	14.36	48.7	48.5	4.31	4.30	20.6	20.4	22	22
M1	17/1/2023	Mid-Ebb	Cloudy	Smooth	9:46	2	M	1	2			7.19		7.17		14.37		48.3		4.29		20.1		21	
M2	17/1/2023	Mid-Ebb	Cloudy	Smooth	10:02	1	M	0.5	1	0.259	236	7.24	7.25	7.25	7.26	14.89	14.89	46.6	46.4	4.17	4.16	18.5	18.6	29	29
M2	17/1/2023	Mid-Ebb	Cloudy	Smooth	10:02	1	M	0.5	2			7.25		7.26		14.89		46.1		4.14		18.7		29	
M3	17/1/2023	Mid-Ebb	Cloudy	Smooth	9:42	0.4	M	0.2	1	0.233	253	7.18	7.18	6.81	6.82	14.03	14.03	44.6	45.0	4.02	4.04	22.5	22.7	27	26
M3	17/1/2023	Mid-Ebb	Cloudy	Smooth	9:42	0.4	M	0.2	2			7.17		6.83		14.02		45.3		4.06		22.9		25	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	19/1/2023	Mid-Flood	Fine	Smooth	7:09	2	M	1	1	0.309	260	7.89	7.89	8.36	8.37	13.69	13.70	52.3	52.5	4.77	4.78	21.7	21.9	18	19
M1	19/1/2023	Mid-Flood	Fine	Smooth	7:09	2	M	1	2			7.88		8.38		13.71		52.7		4.79		22.2		19	
M2	19/1/2023	Mid-Flood	Fine	Smooth	7:26	1	M	0.5	1	0.282	305	7.69	7.70	8.23	8.23	14.02	14.03	44.6	44.9	4.06	4.08	19.7	19.4	20	20
M2	19/1/2023	Mid-Flood	Fine	Smooth	7:26	1	M	0.5	2			7.71		8.22		14.03		45.1		4.09		19.1		19	
M3	19/1/2023	Mid-Flood	Fine	Smooth	7:08	0.2	M	0.1	1	0.249	87	7.86	7.86	7.97	7.97	14.17	14.18	49.2	49.4	4.59	4.60	26.8	26.3	19	20
M3	19/1/2023	Mid-Flood	Fine	Smooth	7:08	0.2	M	0.1	2			7.85		7.96		14.18		49.5		4.61		25.8		20	
M1	19/1/2023	Mid-Ebb	Fine	Smooth	12:29	2.2	M	1.1	1	0.271	192	7.46	7.47	7.35	7.34	18.98	18.99	63.3	63.6	5.39	5.41	24.3	24.6	31	31
M1	19/1/2023	Mid-Ebb	Fine	Smooth	12:29	2.2	M	1.1	2			7.48		7.33		18.99		63.9		5.43		24.8		30	
M2	19/1/2023	Mid-Ebb	Fine	Smooth	12:12	1.2	M	0.6	1	0.239	248	7.61	7.61	7.16	7.15	18.76	18.76	61.7	62.0	5.29	5.31	17.3	17.8	27	26
M2	19/1/2023	Mid-Ebb	Fine	Smooth	12:12	1.2	M	0.6	2			7.61		7.14		18.75		62.2		5.32		18.2		25	
M3	19/1/2023	Mid-Ebb	Fine	Smooth	12:09	0.6	M	0.3	1	0.215	273	7.52	7.53	6.44	6.45	19.26	19.26	60.4	60.7	5.22	5.24	32.7	32.4	41	41
M3	19/1/2023	Mid-Ebb	Fine	Smooth	12:09	0.6	M	0.3	2			7.53		6.45		19.25		60.9		5.25		32.1		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.	Value	Ave.
M1	21/1/2023	Mid-Flood	Cloudy	Smooth	8:44	2	M	1	1	0.363	244	7.76	7.76	8.94	8.94	16.03	16.04	62.6	62.8	5.86	5.87	27.0	26.8	29	28
M1	21/1/2023	Mid-Flood	Cloudy	Smooth	8:44	2	M	1	2			7.75		8.93		16.05		62.9		5.88		26.6		26	
M2	21/1/2023	Mid-Flood	Cloudy	Smooth	9:02	1.2	M	0.6	1	0.336	288	7.81	7.82	8.17	8.18	16.29	16.30	65.3	64.9	5.91	5.88	25.8	25.5	30	31
M2	21/1/2023	Mid-Flood	Cloudy	Smooth	9:02	1.2	M	0.6	2			7.82		8.18		16.31		64.4		5.85		25.2		31	
M3	21/1/2023	Mid-Flood	Cloudy	Smooth	8:49	0.2	M	0.1	1	0.291	79	7.62	7.63	8.03	8.03	16.54	16.54	68.4	68.0	6.09	6.06	38.0	37.5	47	46
M3	21/1/2023	Mid-Flood	Cloudy	Smooth	8:49	0.2	M	0.1	2			7.63		8.02		16.53		67.5		6.03		37.1		44	
M1	21/1/2023	Mid-Ebb	Cloudy	Smooth	13:54	2.2	M	1.1	1	0.322	217	7.55	7.55	7.23	7.23	21.37	21.38	82.1	82.3	7.45	7.47	27.9	27.6	42	42
M1	21/1/2023	Mid-Ebb	Cloudy	Smooth	13:54	2.2	M	1.1	2			7.54		7.23		21.38		82.5		7.48		27.3		42	
M2	21/1/2023	Mid-Ebb	Cloudy	Smooth	13:38	1.2	M	0.6	1	0.298	257	7.61	7.61	7.09	7.10	20.41	20.42	77.5	77.3	7.06	7.05	23.2	23.1	34	34
M2	21/1/2023	Mid-Ebb	Cloudy	Smooth	13:38	1.2	M	0.6	2			7.61		7.10		20.43		77.1		7.03		23.0		34	
M3	21/1/2023	Mid-Ebb	Cloudy	Smooth	13:43	0.4	M	0.2	1	0.247	265	7.49	7.48	6.62	6.63	20.69	20.69	78.4	78.6	7.11	7.12	30.9	30.7	11	11
M3	21/1/2023	Mid-Ebb	Cloudy	Smooth	13:43	0.4	M	0.2	2			7.47		6.63		20.69		78.7		7.13		30.4		11	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	24/1/2023	Mid-Flood	Fine	Smooth	10:51	2	M	1	1	0.361	248	7.78	7.78	8.27	8.28	16.25	16.26	67.5	67.7	6.02	6.03	25.7	25.5	28	30
M1	24/1/2023	Mid-Flood	Fine	Smooth	10:51	2	M	1	2			7.77		8.28		16.26		67.9		6.04		25.4		31	
M2	24/1/2023	Mid-Flood	Fine	Smooth	11:09	1	M	0.5	1	0.314	302	7.84	7.84	7.95	7.94	16.73	16.73	61.4	61.0	5.67	5.65	20.9	20.5	27	27
M2	24/1/2023	Mid-Flood	Fine	Smooth	11:09	1	M	0.5	2			7.84		7.93		16.72		60.6		5.62		20.1		27	
M3	24/1/2023	Mid-Flood	Fine	Smooth	10:46	0.2	M	0.1	1	0.317	87	7.81	7.82	7.17	7.17	16.96	16.97	64.3	63.9	5.87	5.85	27.6	27.8	41	40
M3	24/1/2023	Mid-Flood	Fine	Smooth	10:46	0.2	M	0.1	2			7.82		7.16		16.97		63.5		5.82		27.9		39	
M1	24/1/2023	Mid-Ebb	Fine	Smooth	16:22	2.2	M	1.1	1	0.326	232	7.69	7.69	6.49	6.48	19.21	19.22	76.3	76.5	6.92	6.93	18.7	18.4	28	29
M1	24/1/2023	Mid-Ebb	Fine	Smooth	16:22	2.2	M	1.1	2			7.69		6.47		19.22		76.6		6.94		18.2		29	
M2	24/1/2023	Mid-Ebb	Fine	Smooth	16:06	1.2	M	0.6	1	0.294	282	7.76	7.76	6.26	6.26	19.07	19.07	78.9	78.6	7.19	7.18	17.3	17.2	22	22
M2	24/1/2023	Mid-Ebb	Fine	Smooth	16:06	1.2	M	0.6	2			7.75		6.25		19.06		78.3		7.16		17.1		22	
M3	24/1/2023	Mid-Ebb	Fine	Smooth	16:02	0.4	M	0.2	1	0.275	255	7.64	7.63	5.35	5.35	19.63	19.64	81.2	80.8	7.25	7.22	23.6	23.3	30	32
M3	24/1/2023	Mid-Ebb	Fine	Smooth	16:02	0.4	M	0.2	2			7.62		5.35		19.65		80.4		7.19		23.1		33	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	26/1/2023	Mid-Flood	Fine	Moderate	11:57	1.1	M	0.55	1	0.063	95	7.31	7.32	11.30	11.29	16.48	16.49	72.0	72.1	6.58	6.59	24.4	24.4	40	38
M1	26/1/2023	Mid-Flood	Fine	Moderate	11:57	1.1	M	0.55	2			7.32		11.27		16.49		72.1		6.59		24.4		36	
M2	26/1/2023	Mid-Flood	Fine	Moderate	12:15	0.9	M	0.45	1	0.099	267	7.24	7.24	10.04	10.05	16.31	16.32	71.2	71.2	6.49	6.49	25.0	25.0	36	36
M2	26/1/2023	Mid-Flood	Fine	Moderate	12:15	0.9	M	0.45	2			7.23		10.05		16.32		71.1		6.48		25.0		36	
M3	26/1/2023	Mid-Flood	Cloudy	Smooth	12:05	0.4	M	0.2	1	0.321	90	7.78	7.77	8.37	8.38	16.89	16.89	66.4	66.0	6.08	6.06	27.4	27.0	42	43
M3	26/1/2023	Mid-Flood	Cloudy	Smooth	12:05	0.4	M	0.2	2			7.76		8.38		16.88		65.5		6.03		26.6		43	
M1	26/1/2023	Mid-Ebb	Fine	Moderate	18:11	1	M	0.5	1	0.056	27	7.54	7.55	12.92	12.91	16.57	16.58	80.4	80.5	7.31	7.33	21.5	21.4	33	34
M1	26/1/2023	Mid-Ebb	Fine	Moderate	18:11	1	M	0.5	2			7.56		12.89		16.58		80.6		7.34		21.4		34	
M2	26/1/2023	Mid-Ebb	Fine	Moderate	17:49	0.7	M	0.35	1	0.093	135	7.70	7.75	12.70	12.76	16.42	16.43	79.4	79.5	7.23	7.24	21.0	21.0	37	37
M2	26/1/2023	Mid-Ebb	Fine	Moderate	17:49	0.7	M	0.35	2			7.79		12.81		16.44		79.6		7.25		21.0		36	
M3	26/1/2023	Mid-Ebb	Cloudy	Smooth	17:45	0.4	M	0.2	1	0.286	271	7.52	7.52	6.89	6.90	18.81	18.82	70.8	70.6	6.41	6.40	30.5	30.6	51	51
M3	26/1/2023	Mid-Ebb	Cloudy	Smooth	17:45	0.4	M	0.2	2			7.51		6.91		18.82		70.3		6.38		30.8		51	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	28/1/2023	Mid-Flood	Cloudy	Moderate	13:12	2	M	1	1	0.35	245	7.71	7.72	7.83	7.84	16.09	16.09	52.4	52.1	5.07	5.05	23.1	23.0	30	31
M1	28/1/2023	Mid-Flood	Cloudy	Moderate	13:12	2	M	1	2			7.72		7.85		16.09		51.7		5.03		23.0		32	
M2	28/1/2023	Mid-Flood	Cloudy	Moderate	13:27	1.2	M	0.6	1	0.342	315	7.64	7.64	7.61	7.62	16.24	16.24	49.2	48.8	4.81	4.79	20.7	20.9	20	21
M2	28/1/2023	Mid-Flood	Cloudy	Moderate	13:27	1.2	M	0.6	2			7.64		7.62		16.23		48.4		4.77		21.2		21	
M3	28/1/2023	Mid-Flood	Cloudy	Moderate	13:07	0.4	M	0.2	1	0.333	81	7.67	7.68	7.33	7.33	15.87	15.88	41.9	42.2	4.01	4.03	26.3	26.8	32	31
M3	28/1/2023	Mid-Flood	Cloudy	Moderate	13:07	0.4	M	0.2	2			7.68		7.32		15.89		42.4		4.04		27.2		29	
M1	28/1/2023	Mid-Ebb	Cloudy	Moderate	19:41	2	M	1	1	0.327	217	7.47	7.46	6.35	6.35	17.36	17.37	57.6	57.3	5.42	5.40	28.9	29.4	30	32
M1	28/1/2023	Mid-Ebb	Cloudy	Moderate	19:41	2	M	1	2			7.45		6.34		17.38		56.9		5.38		29.9		34	
M2	28/1/2023	Mid-Ebb	Cloudy	Moderate	19:21	1.2	M	0.6	1	0.32	276	7.53	7.53	6.17	6.18	17.23	17.24	54.5	54.3	5.19	5.18	23.2	22.9	27	28
M2	28/1/2023	Mid-Ebb	Cloudy	Moderate	19:21	1.2	M	0.6	2			7.52		6.18		17.24		54.1		5.17		22.6		29	
M3	28/1/2023	Mid-Ebb	Cloudy	Moderate	19:22	0.4	M	0.2	1	0.316	275	7.48	7.49	5.91	5.91	17.07	17.07	46.2	46.5	4.54	4.56	35.1	34.7	44	45
M3	28/1/2023	Mid-Ebb	Cloudy	Moderate	19:22	0.4	M	0.2	2			7.49		5.91		17.06		46.8		4.58		34.2		46	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	31/1/2023	Mid-Flood	Fine	Moderate	9:55	1.1	M	0.55	1	0.086	76	7.47	7.46	8.68	8.66	15.46	15.45	55.2	55.3	5.23	5.24	12.3	12.3	26	26
M1	31/1/2023	Mid-Flood	Fine	Moderate	9:55	1.1	M	0.55	2			7.44		8.64		15.44		55.4		5.24		12.3		26	
M2	31/1/2023	Mid-Flood	Fine	Moderate	10:10	1.3	M	0.65	1	0.125	204	7.51	7.52	8.23	8.23	15.91	15.93	58.3	58.2	5.37	5.36	12.0	12.0	26	27
M2	31/1/2023	Mid-Flood	Fine	Moderate	10:10	1.3	M	0.65	2			7.52		8.22		15.94		58.1		5.34		12.0		28	
M3	31/1/2023	Mid-Flood	Fine	Smooth	9:57	0.2	M	0.1	1	0.197	87	7.70	7.71	6.21	6.20	14.91	14.92	64.2	64.4	6.05	6.06	18.0	17.8	32	33
M3	31/1/2023	Mid-Flood	Fine	Smooth	9:57	0.2	M	0.1	2			7.71		6.19		14.93		64.6		6.07		17.6		33	
M1	31/1/2023	Mid-Ebb	Fine	Moderate	22:58	1	M	0.5	1	0.056	124	7.51	7.52	8.06	8.07	16.87	16.88	48.4	48.4	3.92	3.92	19.7	19.7	23	24
M1	31/1/2023	Mid-Ebb	Fine	Moderate	22:58	1	M	0.5	2			7.52		8.08		16.89		48.3		3.91		19.7		24	
M2	31/1/2023	Mid-Ebb	Fine	Moderate	22:39	0.9	M	0.45	1	0.05	105	7.43	7.43	8.11	8.12	16.48	16.46	47.3	47.4	3.88	3.89	19.4	19.4	18	19
M2	31/1/2023	Mid-Ebb	Fine	Moderate	22:39	0.9	M	0.45	2			7.42		8.13		16.44		47.4		3.89		19.5		20	
M3	31/1/2023	Mid-Ebb	Fine	Smooth	22:33	0.6	M	0.3	1	0.294	264	7.49	7.50	4.11	4.12	17.09	17.09	55.7	55.3	5.64	5.62	12.6	12.4	10	10
M3	31/1/2023	Mid-Ebb	Fine	Smooth	22:33	0.6	M	0.3	2			7.51		4.13		17.08		54.9		5.59		12.2		10	

Remark

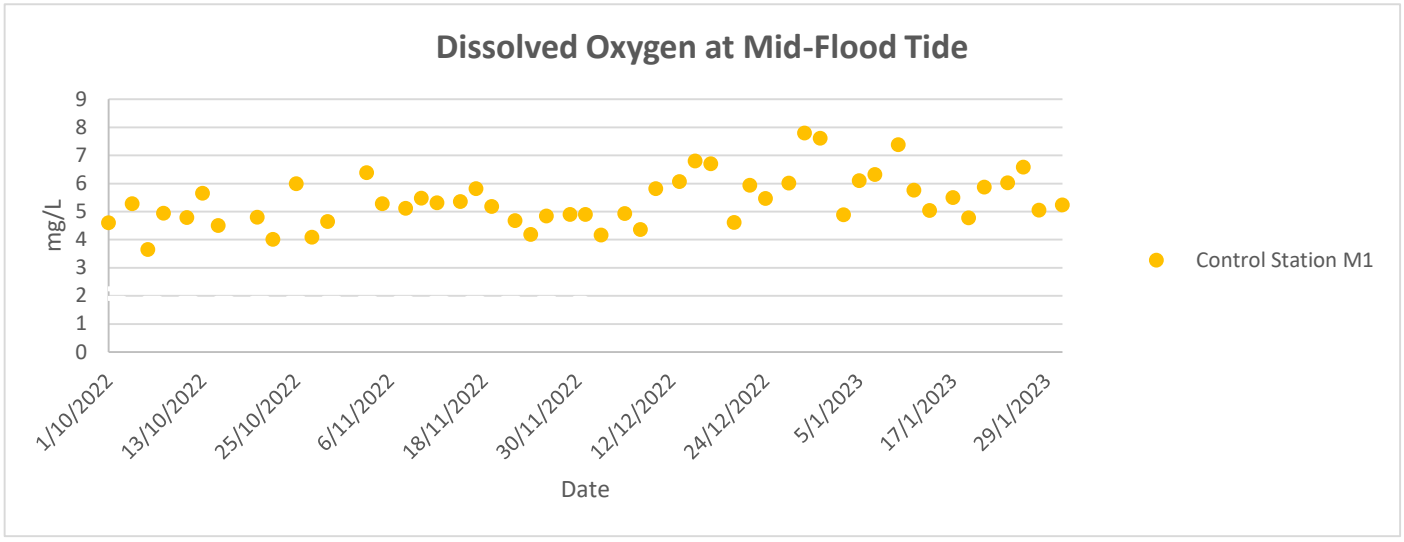
1. Orange and Bold: Action Level Exceedance (For Impact Station Only)
2. Red and Bold: Limit Level Exceedance (For Impact Station Only)
3. Action Level for Turbidity: 95%-ile of baseline data or 120% of upstream control station's turbidity recorded on the same day.
4. Limit Level for Turbidity: 99%-ile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

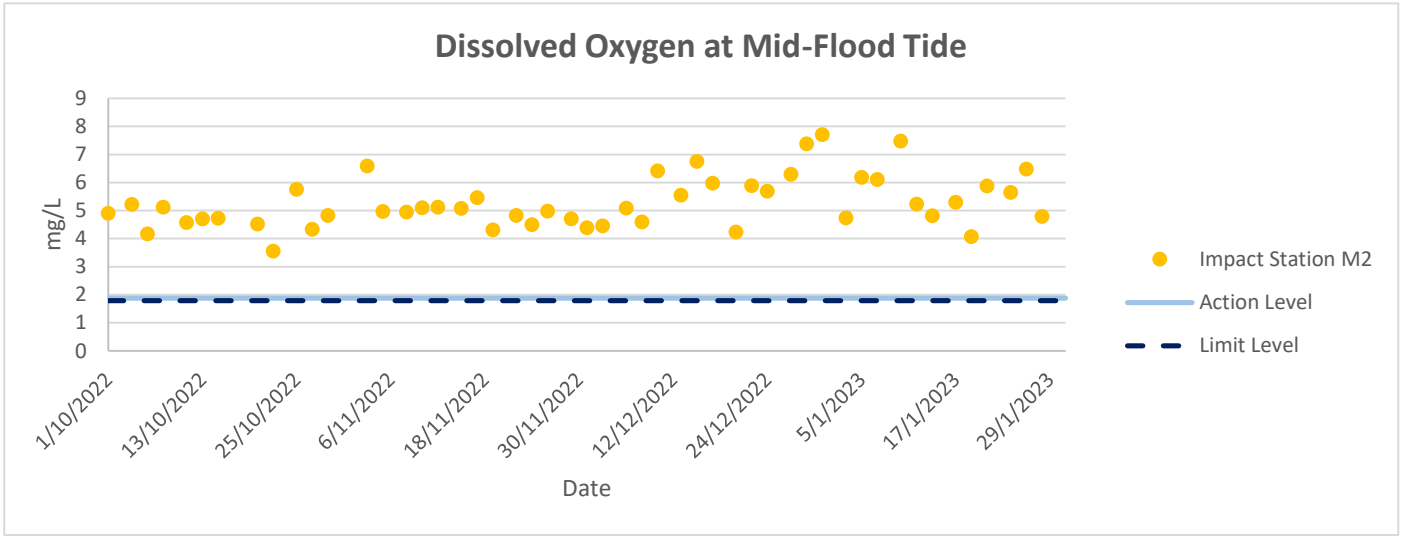
For Flood Tide

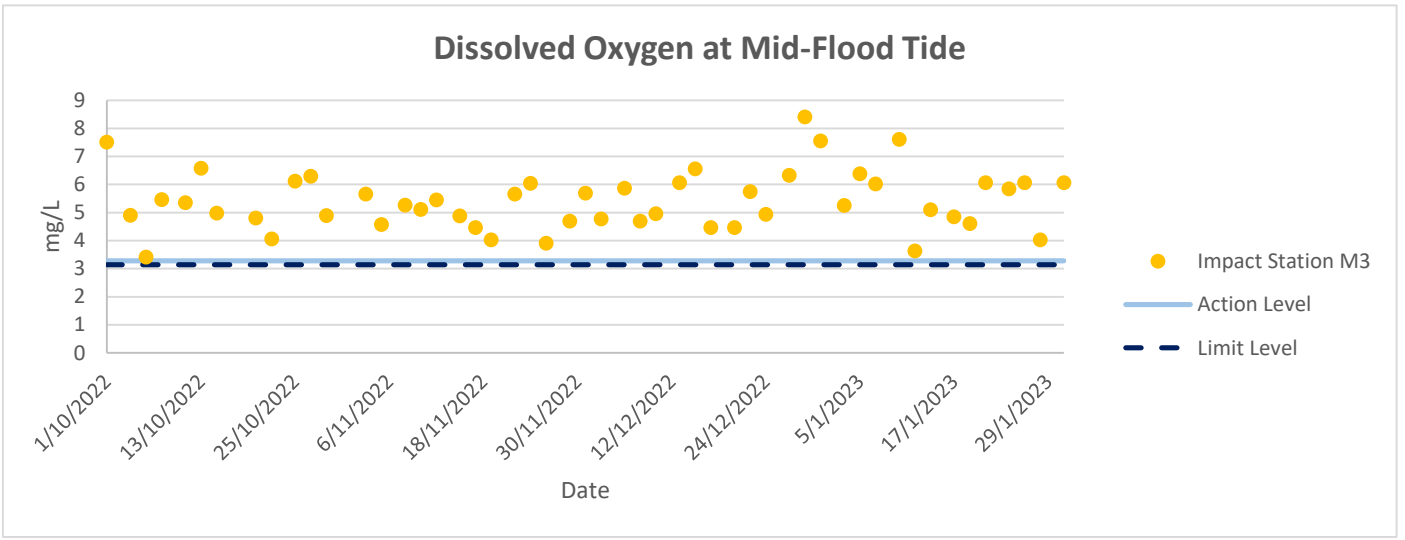
Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	43.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

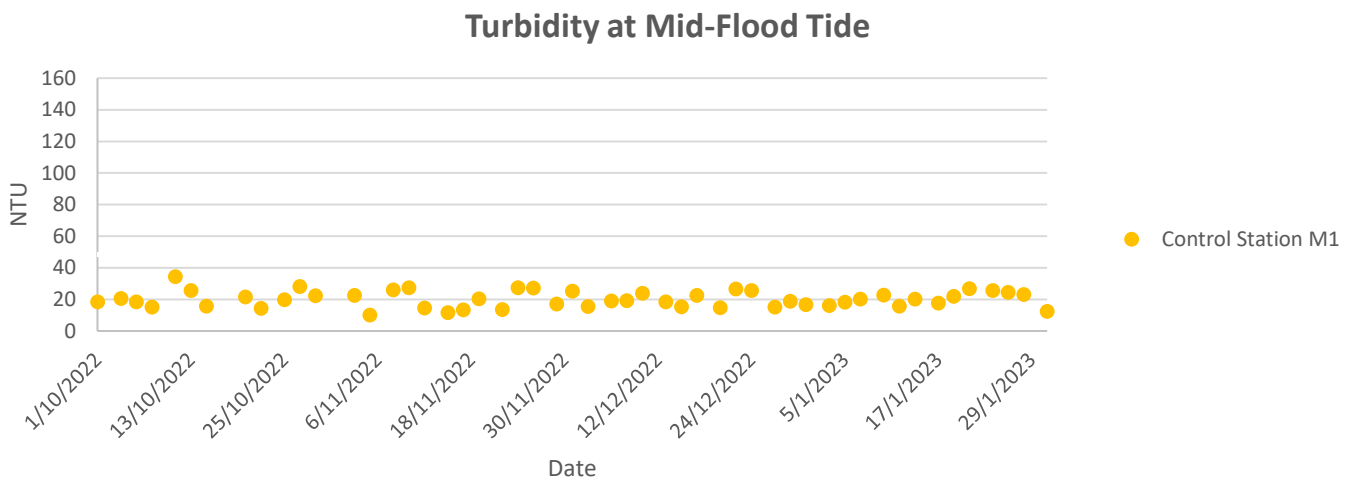
Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

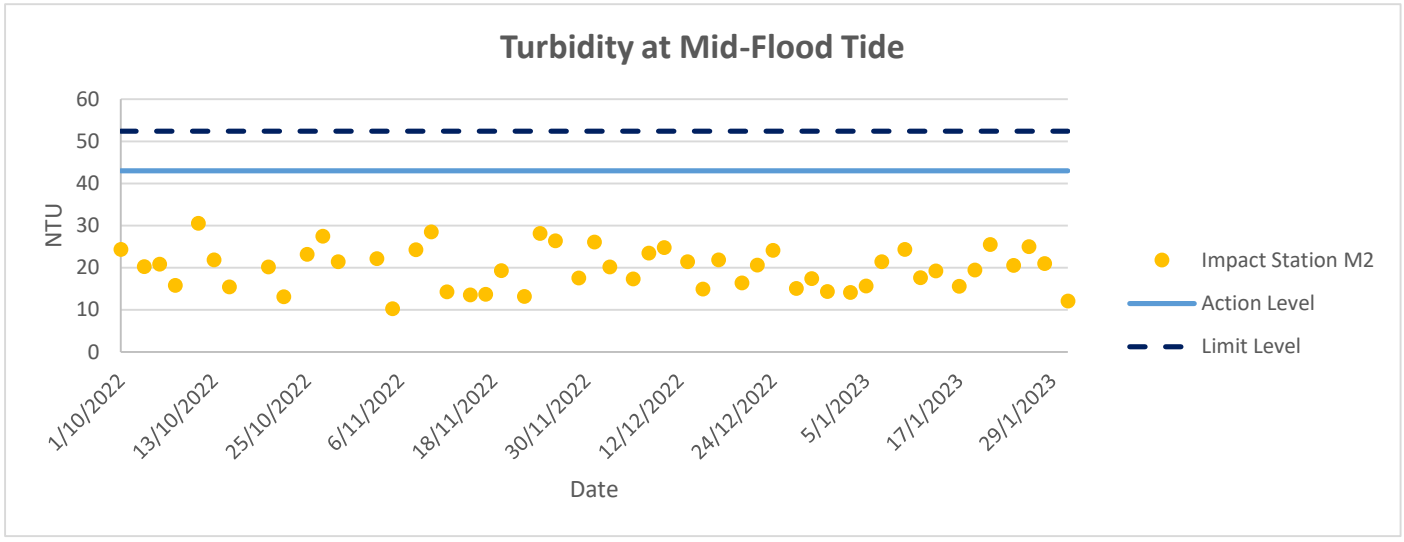


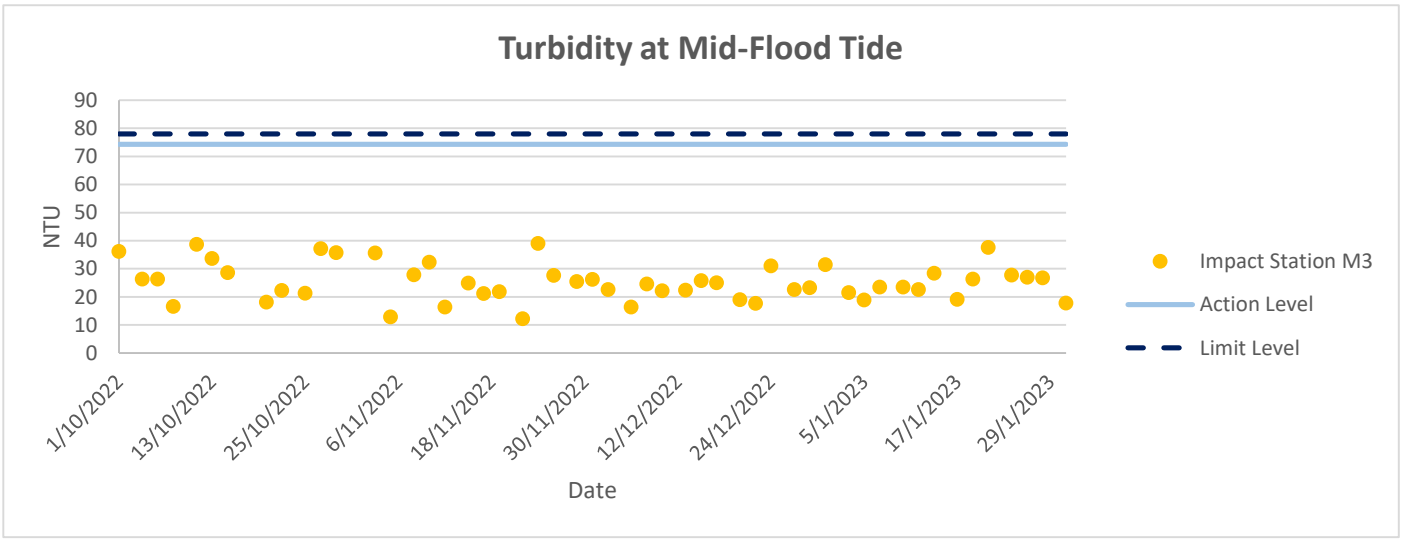




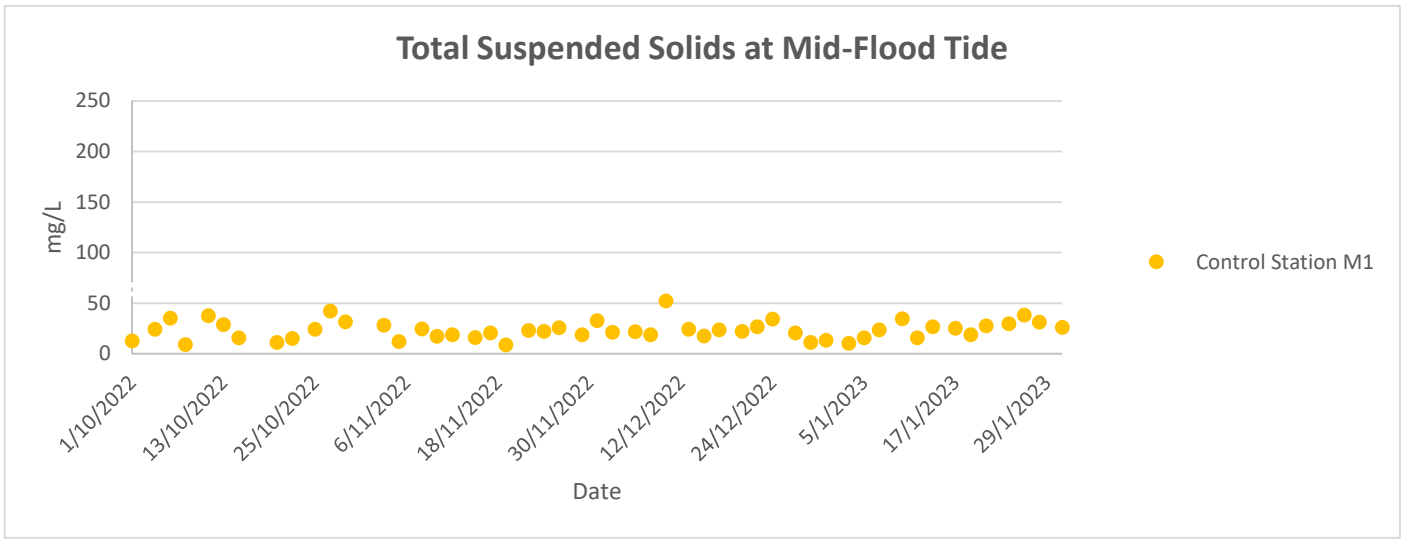
Water Quality Monitoring Results

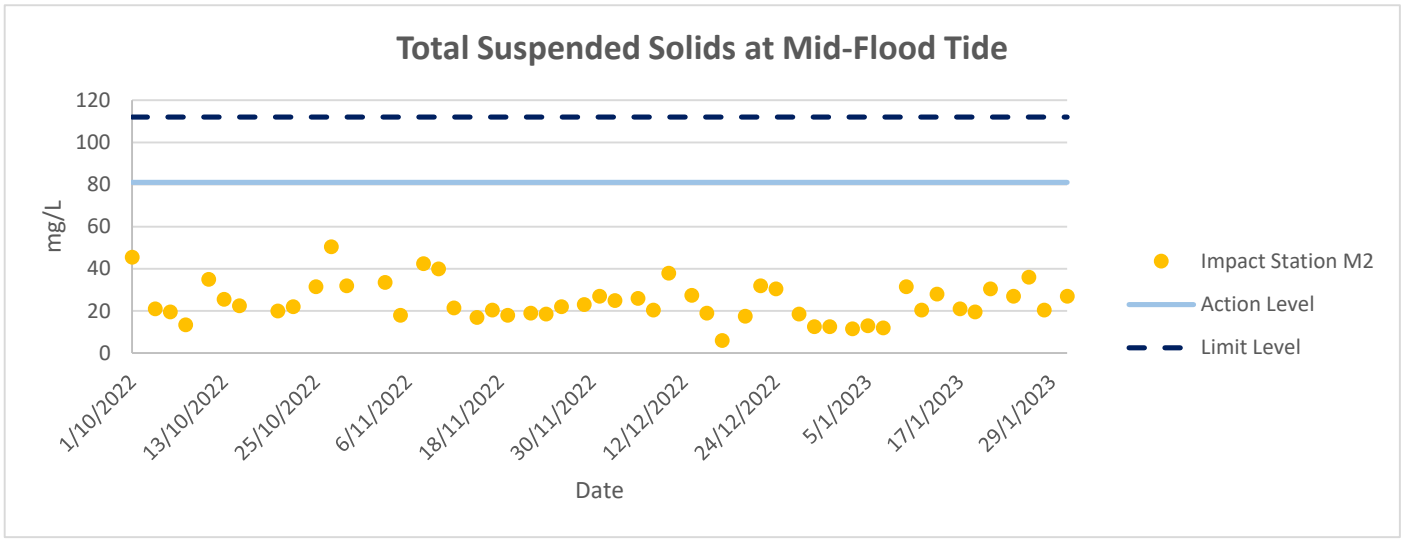


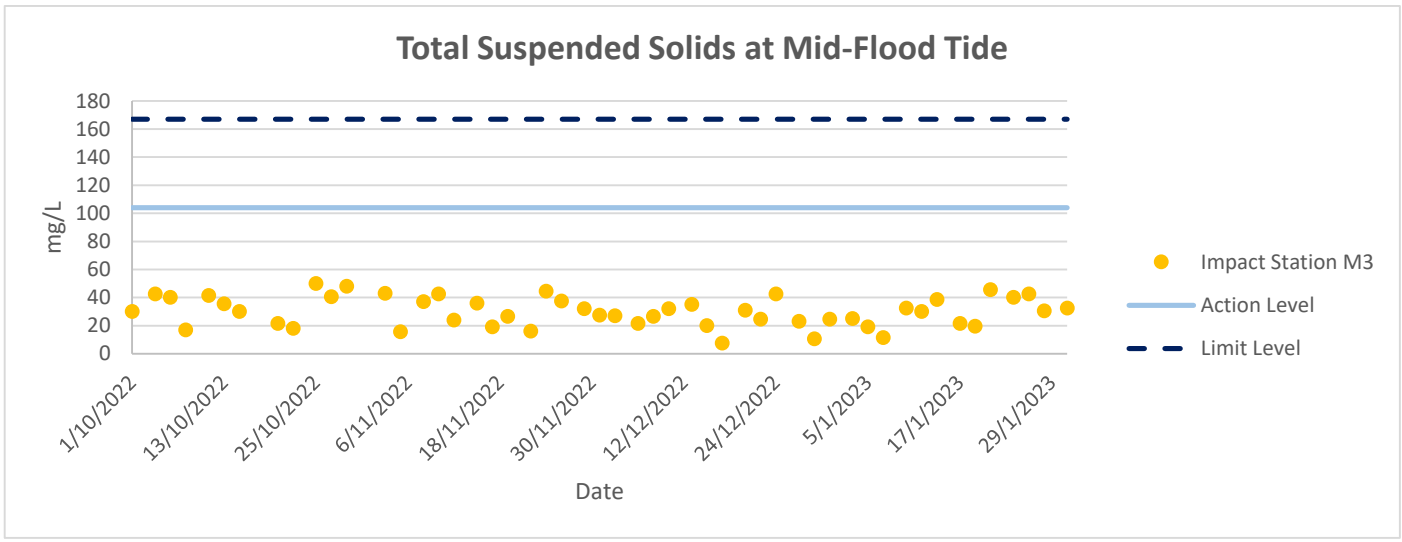




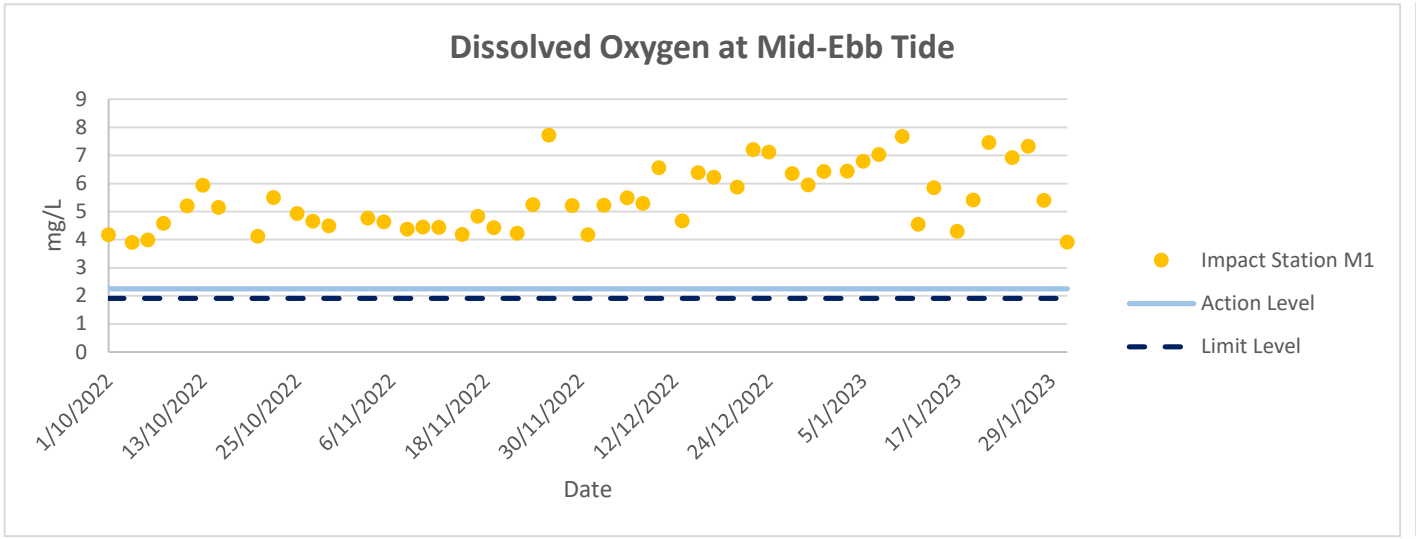
Water Quality Monitoring Results

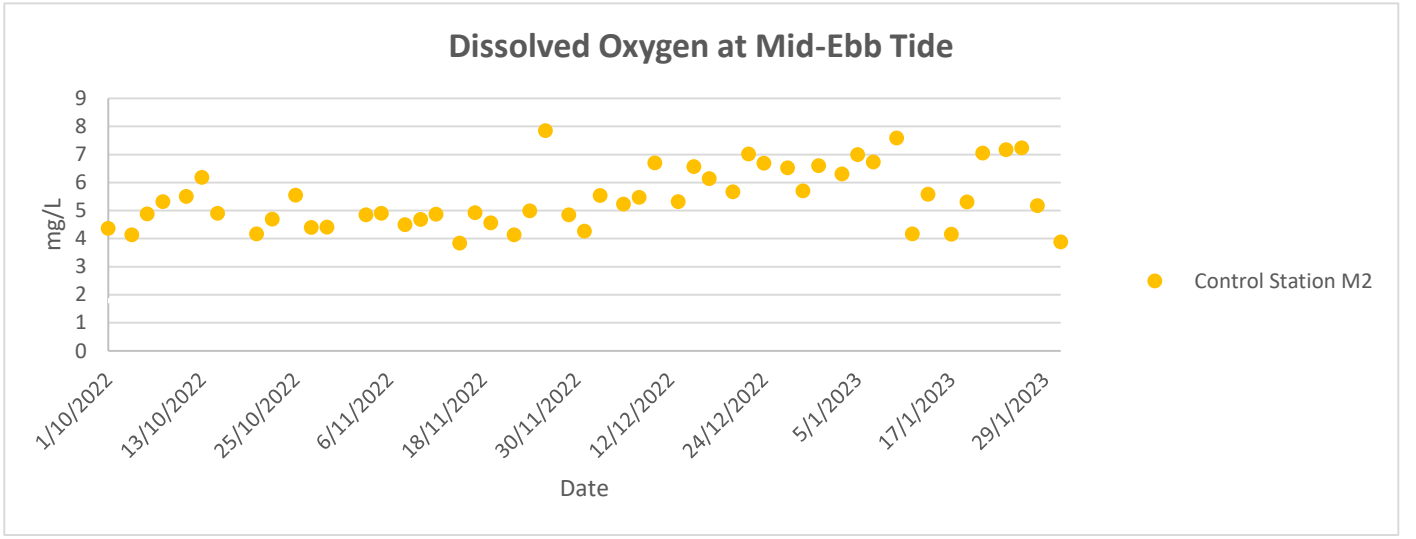


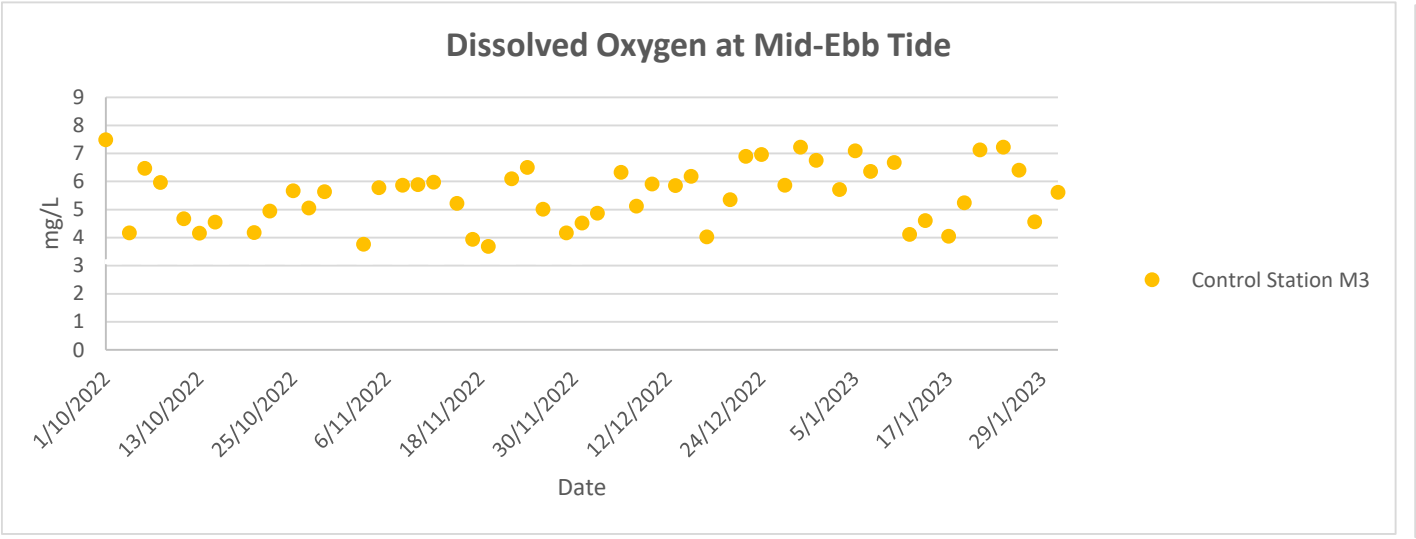




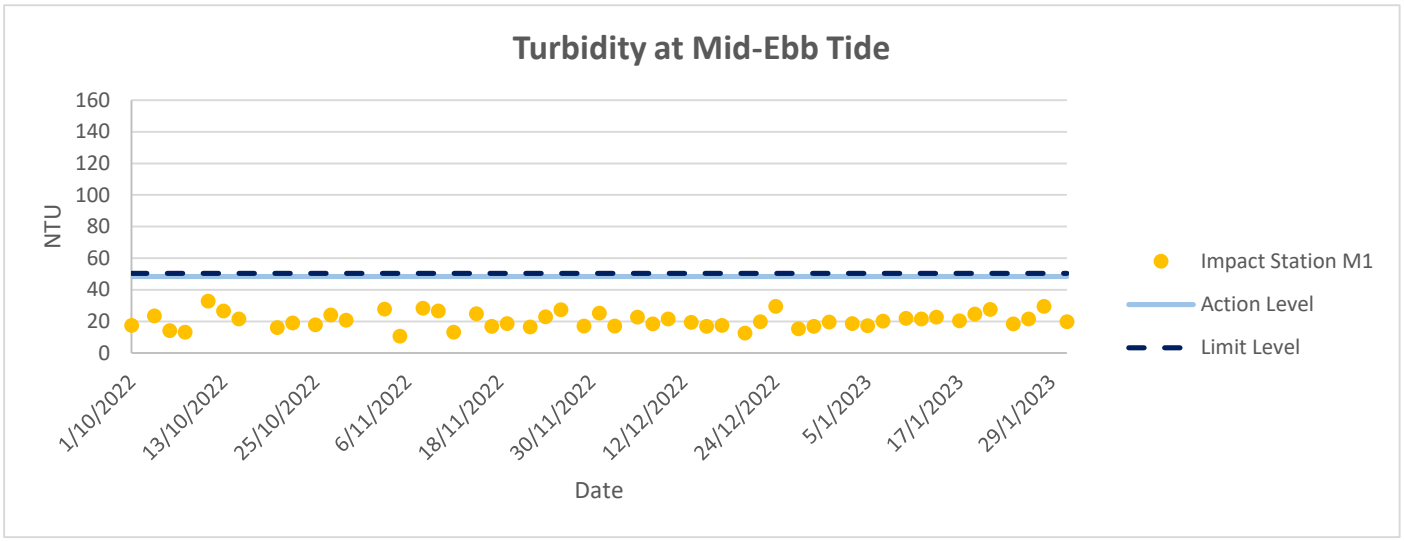
Water Quality Monitoring Results

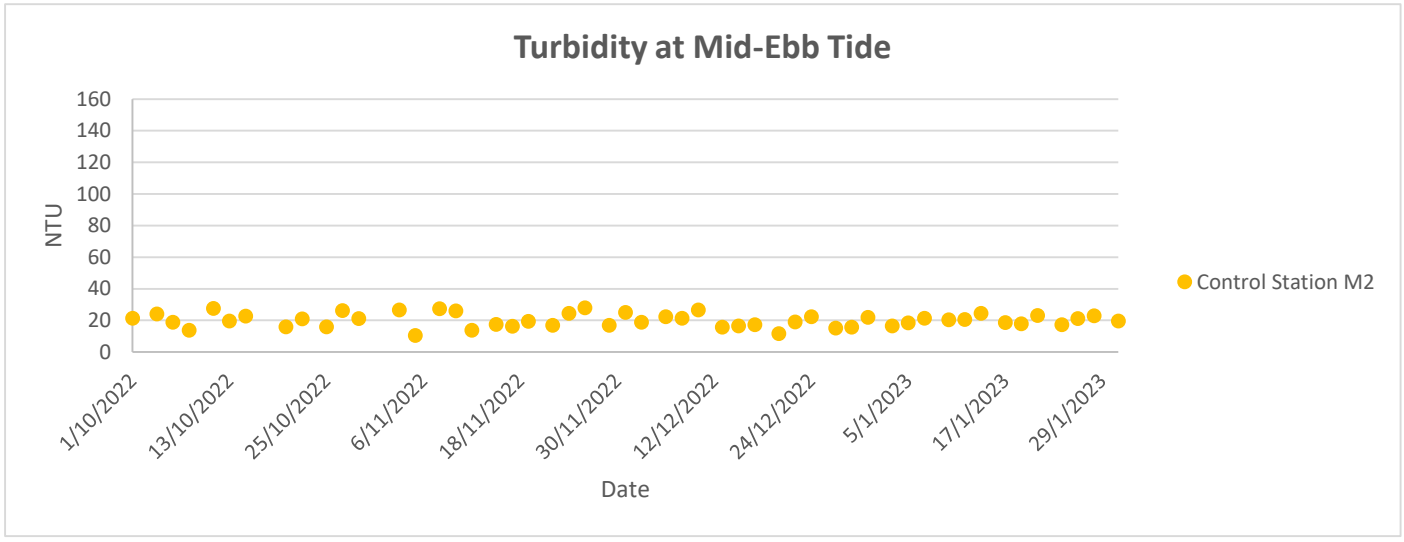


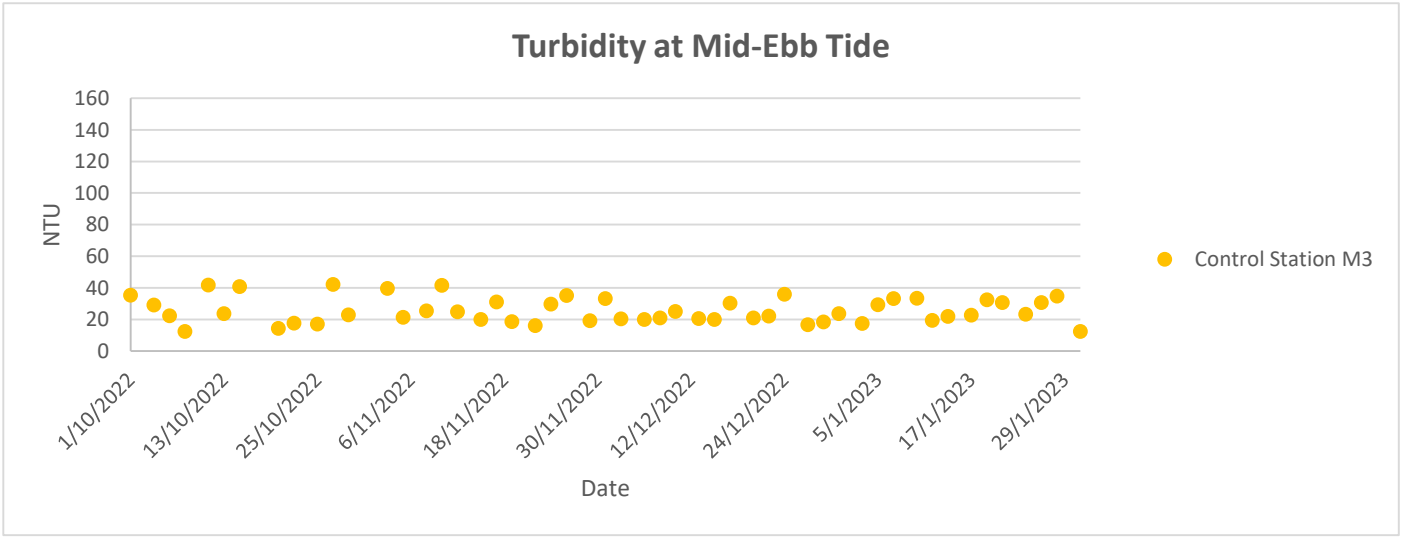




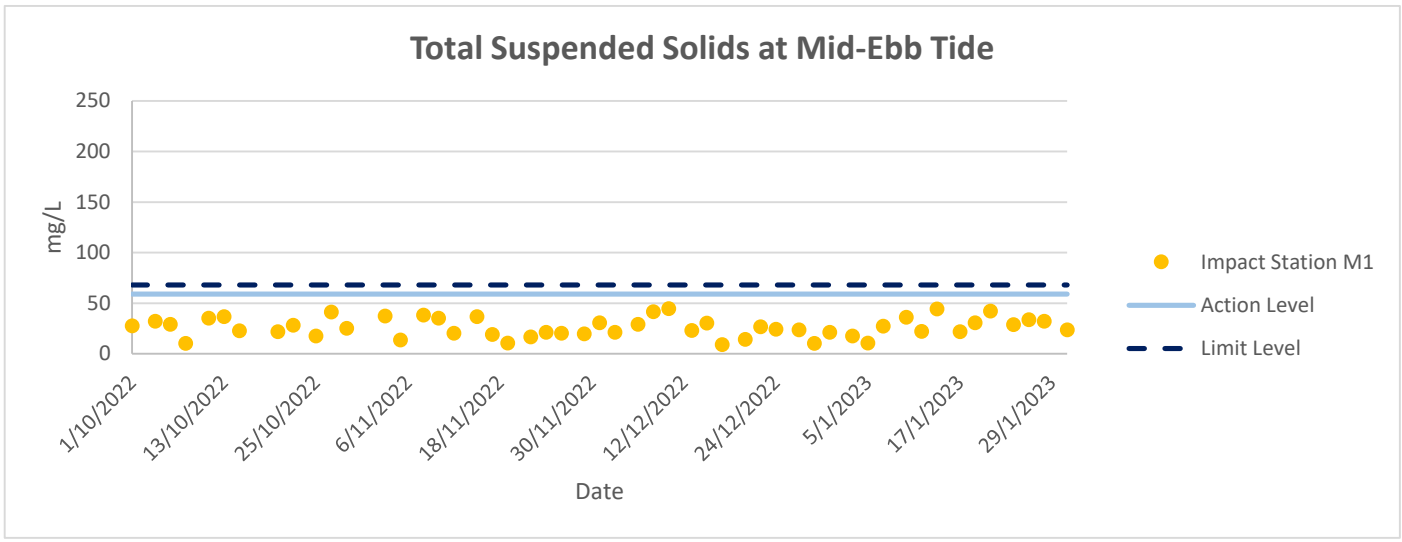
Water Quality Monitoring Results

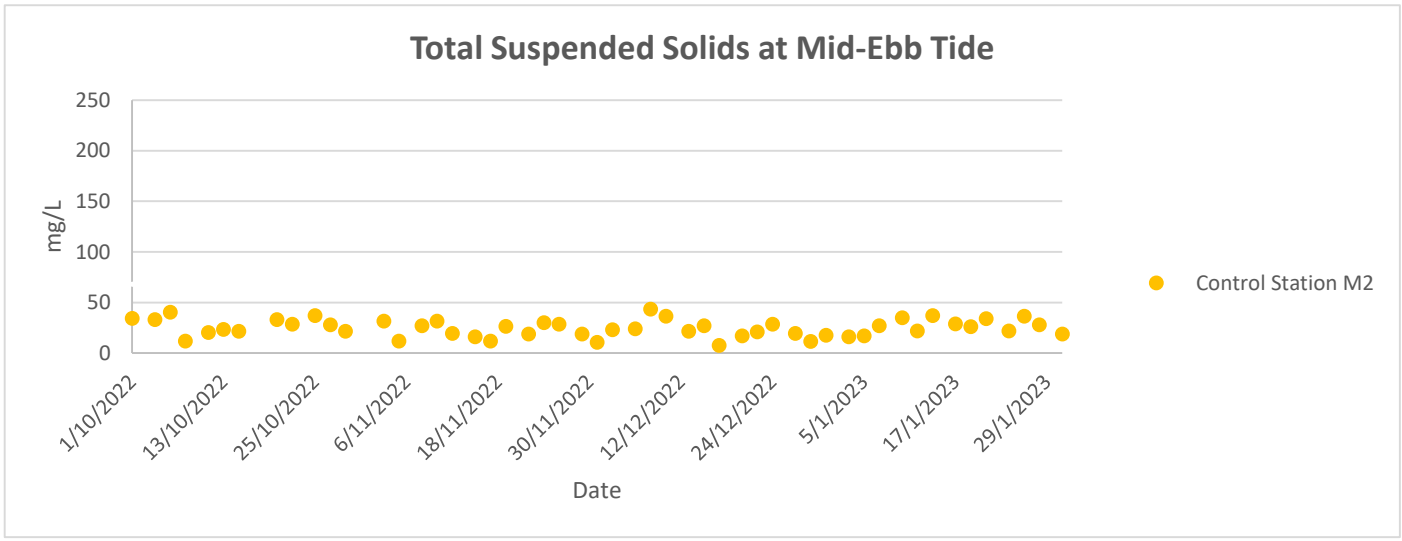


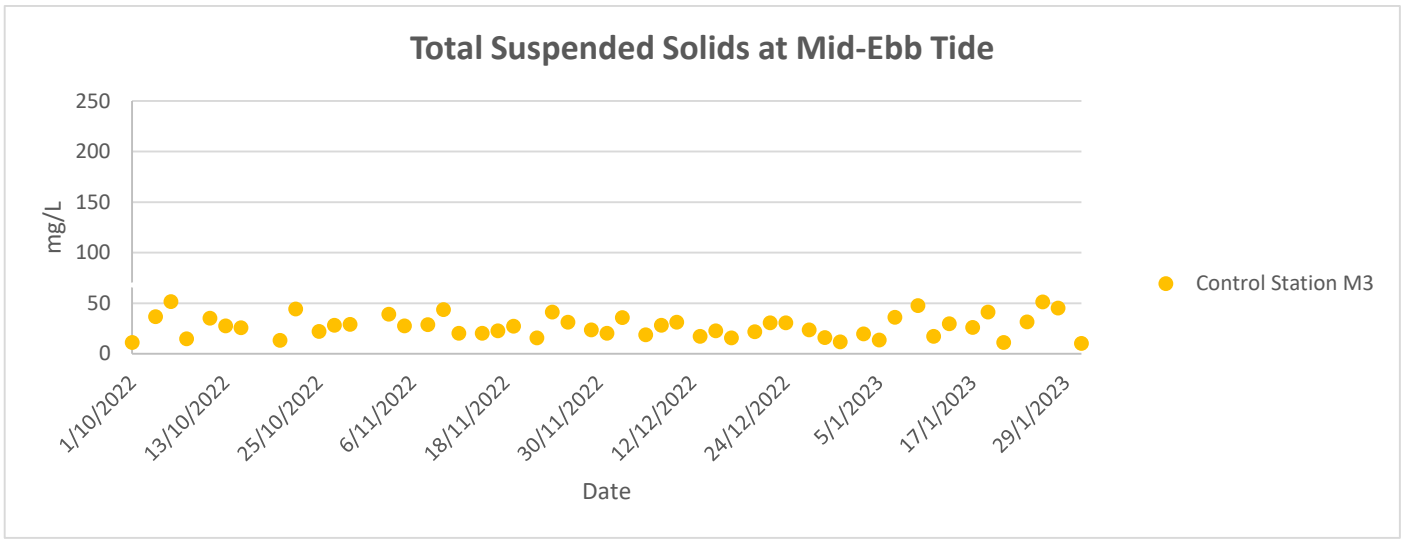




Water Quality Monitoring Results







Water Quality Monitoring Results

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 (16 January 2023)

Date (dd/mm/yyyy)	Daytime/Night time	Season	Area	Transect/Point Count	Point Count (Location)/Transect Impact	Habitat	Common Name	Scientific Name	Abundance	Distribution in Hong Kong[2]	Principal Status[3]	Level of Concern[4]	Protection Status in China[5]	China Red Data Book [6]	Red List of China's Vertebrates [10]	IUCN Red List [7] (v.2020-3)	Species of Conservation Importance	Wetland Dependent
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	In flight	Azure-winged Magpie	*Cyanopica cyanus*	3	Introduced	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	50	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	3	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	House Swift	*Apus nipalensis*	3	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Oriental Magpie Robin	*Copsychus saularis*	2	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Yellow-bellied Prinia	*Prinia flaviventris*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	2	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Plain Prinia	*Prinia inornata*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Yellow-bellied Prinia	*Prinia flaviventris*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Black Kite	*Milvus migrans*	2	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	4	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW4	In flight	Great Cormorant	*Phalacrocorax carbo*	900	Common	WV	PRC	-	-	LC	LC	Y	Y

16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Little Egret	*Egretta garzetta*	7	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	5	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Egret	*Ardea alba*	8	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Grey Heron	*Ardea cinerea*	2	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	House Swift	*Apus nipalensis*	3	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Egret	*Egretta garzetta*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Grebe	*Tachybaptus ruficollis*	1	Common	R	LC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	2	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	*Ardea alba*	4	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	House Swift	*Apus nipalensis*	31	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	12	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Egret	*Ardea alba*	4	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Chinese Bulbul	*Pycnonotus sinensis*	8	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Mangrove	Collared Crow	*Corvus torquatus*	2	Uncommon	R	LC	-	-	NT	VU	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Common Tailorbird	*Orthotomus sutorius*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Pond-FLW	Eastern Yellow Wagtail	*Motacilla tschutschensis*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Pond-FLW	Eurasian Collared Dove	*Streptopelia decaocto*	1	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Eurasian Tree Sparrow	*Passer montanus*	5	Abundant	R	-	-	-	LC	LC	N	N

16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Great Cormorant	*Phalacrocorax carbo*	2	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Pond-FLW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Heuglin's Gull	*Larus fuscus*	6	Common	PM,WV	LC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Reedbed	Olive-backed Pipit	*Anthus hodgsoni*	2	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Reedbed	Plain Prinia	*Prinia inornata*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Red Turtle Dove	*Streptopelia tranquebarica*	3	Uncommon	PM	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Spotted Dove	*Spilopelia chinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Black-faced Spoonbill	*Platalea minor*	2	Common	WV	PGC	Class II	EN	EN	EN	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Daurian Redstart	*Phoenicurus auroreus*	1	Common	WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Eurasian Tree Sparrow	*Passer montanus*	2	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Cormorant	*Phalacrocorax carbo*	56	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Little Egret	*Egretta garzetta*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	*Spilopelia chinensis*	2	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-faced Spoonbill	*Platalea minor*	9	Common	WV	PGC	Class II	EN	EN	EN	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	7	Common	PM	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Moorhen	*Gallinula chloropus*	6	Common	R	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Sandpiper	*Actitis hypoleucos*	4	Common	PM,WV	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Northern Pintail	*Anas acuta*	5	Abundant	WV	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Northern Shoveler	*Anas clypeata*	7	Abundant	WV	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Pied Avocet	*Recurvirostra avosetta*	5	Abundant	WV	RC	-	-	LC	LC	Y	Y

16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	White-breasted Waterhen	*Amaurornis phoenicurus*	1	Common	R	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Yellow-bellied Prinia	*Prinia flaviventris*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Plantation-NSW	Azure-winged Magpie	*Cyanopica cyanus*	1	Introduced	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-faced Spoonbill	*Platalea minor*	1	Common	WV	PGC	Class II	EN	EN	EN	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Plantation-NSW	Chinese Bulbul	*Pycnonotus sinensis*	6	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Collared Crow	*Corvus torquatus*	1	Uncommon	R	LC	-	-	NT	VU	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Sandpiper	*Actitis hypoleucos*	3	Common	PM,WV	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Cormorant	*Phalacrocorax carbo*	5	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Egret	*Ardea alba*	4	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Plantation-NSW	Azure-winged Magpie	*Cyanopica cyanus*	57	Introduced	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	8	Common	PM	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Chinese Pond Heron	*Ardeola bacchus*	12	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Collared Crow	*Corvus torquatus*	1	Uncommon	R	LC	-	-	NT	VU	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Sandpiper	*Actitis hypoleucos*	2	Common	PM,WV	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Dusky Warbler	*Phylloscopus fuscatus*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Cormorant	*Phalacrocorax carbo*	18	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Egret	*Ardea alba*	3	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	2	Common	PM	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Plantation-NSW	Chinese Bulbul	*Pycnonotus sinensis*	4	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N

16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Egret	*Egretta garzetta*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Northern Pintail	*Anas acuta*	2	Abundant	WV	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Northern Shoveler	*Anas clypeata*	2	Abundant	WV	RC	-	-	LC	LC	Y	Y

Notes:

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

Appendix F.2.1 Ecological Bird Monitoring Diversity (All avifauna species in Point Count Method) in All Habitats (16 January 2023)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Acridotheres cristatellus	6	0.004796	-5.33994	-0.02561	0.136762
Actitis hypoleucos	9	0.007194	-4.93447	-0.0355	0.175173
Amaurornis phoenicurus	1	0.000799	-7.1317	-0.0057	0.040656
Anas acuta	5	0.003997	-5.52226	-0.02207	0.121884
Anas clypeata	7	0.005596	-5.18579	-0.02902	0.150477
Apus nipalensis	34	0.027178	-3.60534	-0.09799	0.353276
Ardea alba	26	0.020783	-3.8736	-0.08051	0.31185
Ardea cinerea	5	0.003997	-5.52226	-0.02207	0.121884
Ardeola bacchus	15	0.01199	-4.42365	-0.05304	0.234636
Corvus torquatus	2	0.001599	-6.43855	-0.01029	0.066275
Cyanopica cyanus	58	0.046363	-3.07126	-0.14239	0.437323
Egretta garzetta	17	0.013589	-4.29849	-0.05841	0.251086
Gallinula chloropus	6	0.004796	-5.33994	-0.02561	0.136762
Himantopus himantopus	15	0.01199	-4.42365	-0.05304	0.234636
Milvus migrans	2	0.001599	-6.43855	-0.01029	0.066275
Motacilla alba	2	0.001599	-6.43855	-0.01029	0.066275
Passer montanus	2	0.001599	-6.43855	-0.01029	0.066275
Phalacrocorax carbo	998	0.797762	-0.22595	-0.18025	0.040727
Phoenicurus auroreus	1	0.000799	-7.1317	-0.0057	0.040656
Phylloscopus fuscatus	1	0.000799	-7.1317	-0.0057	0.040656
Platalea minor	12	0.009592	-4.64679	-0.04457	0.207124
Prinia flaviventris	4	0.003197	-5.7454	-0.01837	0.105547
Prinia inornata	1	0.000799	-7.1317	-0.0057	0.040656
Pycnonotus sinensis	12	0.009592	-4.64679	-0.04457	0.207124
Recurvirostra avosetta	5	0.003997	-5.52226	-0.02207	0.121884
Spilopelia chinensis	4	0.003197	-5.7454	-0.01837	0.105547
Tachybaptus ruficollis	1	0.000799	-7.1317	-0.0057	0.040656
Total	**1251**	**1**	**-143.486**	**-1.04315**	**3.922083**
Richness	**27**				
SS	**3.92**				
SQ	**1.09**				
H	**1.04**				
S^2_H	**0**				

Appendix F.2.2 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Point Count Method) in All Habitats (16 January 2023)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Anas acuta	5	0.004505	-5.40268	-0.02434	0.131482
Anas clypeata	7	0.006306	-5.06621	-0.03195	0.16186
Ardea alba	26	0.023423	-3.75402	-0.08793	0.330098
Ardea cinerea	5	0.004505	-5.40268	-0.02434	0.131482
Ardeola bacchus	15	0.013514	-4.30407	-0.05816	0.250338
Corvus torquatus	2	0.001802	-6.31897	-0.01139	0.071945
Egretta garzetta	17	0.015315	-4.1789	-0.064	0.267455

Himantopus himantopus	15	0.013514	-4.30407	-0.05816	0.250338
Milvus migrans	2	0.001802	-6.31897	-0.01139	0.071945
Phalacrocorax carbo	998	0.899099	-0.10636	-0.09563	0.010171
Platalea minor	12	0.010811	-4.52721	-0.04894	0.221574
Recurvirostra avosetta	5	0.004505	-5.40268	-0.02434	0.131482
Tachybaptus ruficollis	1	0.000901	-7.01212	-0.00632	0.044297
Total	**1110**	**1**	**-62.0989**	**-0.54688**	**2.074466**
Richness	**13**				
SS	**2.07**				
SQ	**0.3**				
H	**0.55**				
S^2_H	**0**				

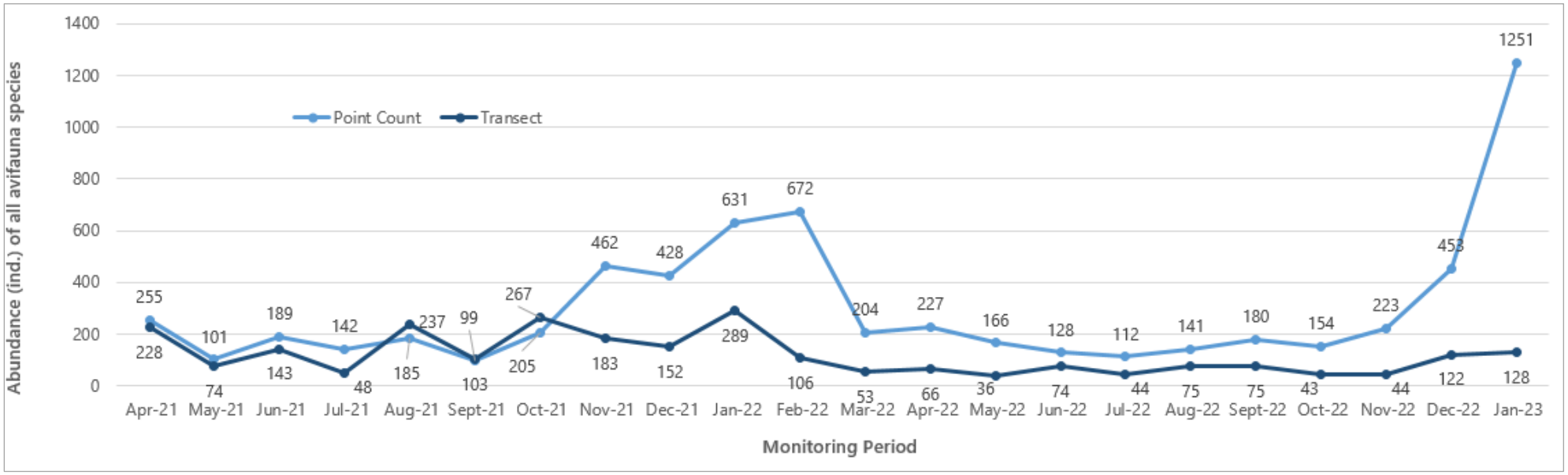
Appendix F.2.3 Ecological Bird Monitoring Diversity (All avifauna species in Transect Walk Method) in All Habitats (16 January 2023)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Acridotheres cristatellus	52	0.40625	-0.90079	-0.36594	0.329638
Anas acuta	2	0.015625	-4.15888	-0.06498	0.270255
Anas clypeata	2	0.015625	-4.15888	-0.06498	0.270255
Anthus hodgsoni	2	0.015625	-4.15888	-0.06498	0.270255
Apus nipalensis	3	0.023438	-3.75342	-0.08797	0.330191
Ardea alba	1	0.007813	-4.85203	-0.03791	0.183923
Ardea cinerea	2	0.015625	-4.15888	-0.06498	0.270255
Ardeola bacchus	3	0.023438	-3.75342	-0.08797	0.330191
Copsychus saularis	2	0.015625	-4.15888	-0.06498	0.270255
Corvus torquatus	2	0.015625	-4.15888	-0.06498	0.270255
Cyanopica cyanus	3	0.023438	-3.75342	-0.08797	0.330191
Egretta garzetta	1	0.007813	-4.85203	-0.03791	0.183923
Gracupica nigricollis	4	0.03125	-3.46574	-0.1083	0.375354
Himantopus himantopus	2	0.015625	-4.15888	-0.06498	0.270255
Larus fuscus	6	0.046875	-3.06027	-0.14345	0.438996
Motacilla alba	1	0.007813	-4.85203	-0.03791	0.183923
Motacilla tschutschensis	1	0.007813	-4.85203	-0.03791	0.183923
Orthotomus sutorius	3	0.023438	-3.75342	-0.08797	0.330191
Passer montanus	5	0.039063	-3.24259	-0.12666	0.410719
Phalacrocorax carbo	5	0.039063	-3.24259	-0.12666	0.410719
Prinia flaviventris	1	0.007813	-4.85203	-0.03791	0.183923
Prinia inornata	3	0.023438	-3.75342	-0.08797	0.330191
Pycnonotus sinensis	12	0.09375	-2.36712	-0.22192	0.525307
Spilopelia chinensis	6	0.046875	-3.06027	-0.14345	0.438996
Streptopelia decaocto	1	0.007813	-4.85203	-0.03791	0.183923
Streptopelia tranquebarica	3	0.023438	-3.75342	-0.08797	0.330191
Total	**128**	**1**	**-100.084**	**-2.44654**	**7.906199**
Richness	**26**				
SS	**7.906199**				
SQ	**5.985537**				
H	**2.446536**				
S^2_H	**0.015768**				

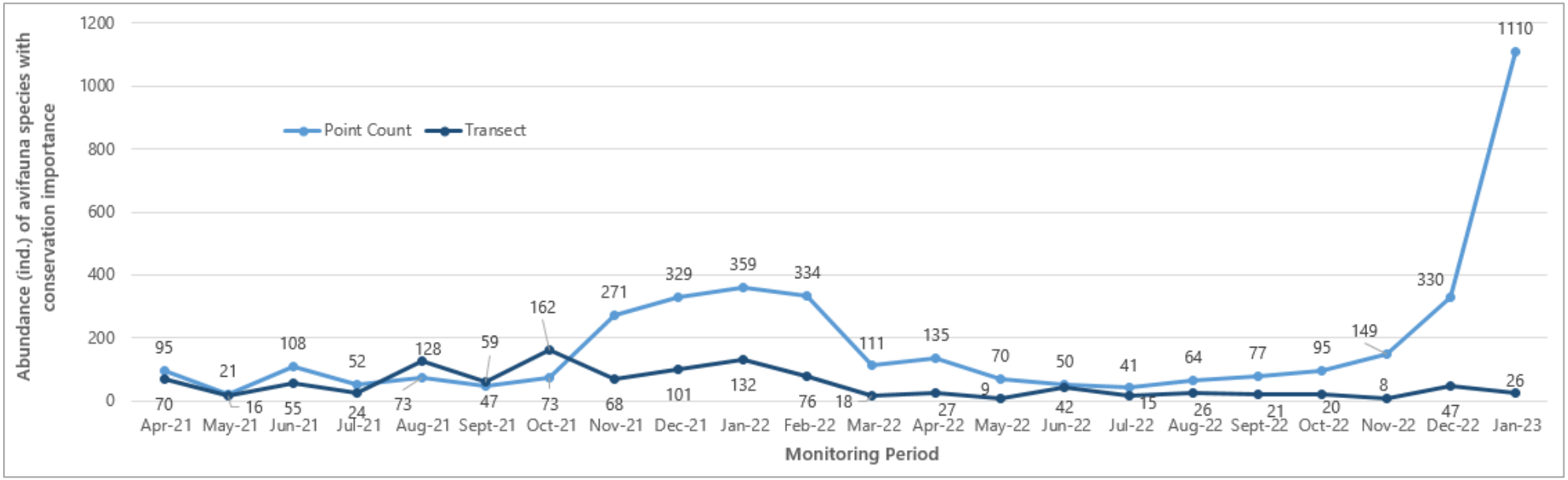
Appendix F.2.4 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Transect Walk Method) in All Habitats (16 January 2023)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Anas acuta	2	0.076923	-2.56495	-0.1973	0.506074
Anas clypeata	2	0.076923	-2.56495	-0.1973	0.506074
Ardea alba	1	0.038462	-3.2581	-0.12531	0.408277
Ardea cinerea	2	0.076923	-2.56495	-0.1973	0.506074
Ardeola bacchus	3	0.115385	-2.15948	-0.24917	0.538081
Corvus torquatus	2	0.076923	-2.56495	-0.1973	0.506074
Egretta garzetta	1	0.038462	-3.2581	-0.12531	0.408277
Himantopus himantopus	2	0.076923	-2.56495	-0.1973	0.506074
Larus fuscus	6	0.230769	-1.46634	-0.33839	0.496187
Phalacrocorax carbo	5	0.192308	-1.64866	-0.31705	0.522707
Total	**26**	**1**	**-24.6154**	**-2.14175**	**4.9039**
Richness	**10**				
SS	**4.9039**				
SQ	**4.587086**				
H	**2.141748**				
S^2_H	**0.018842**				

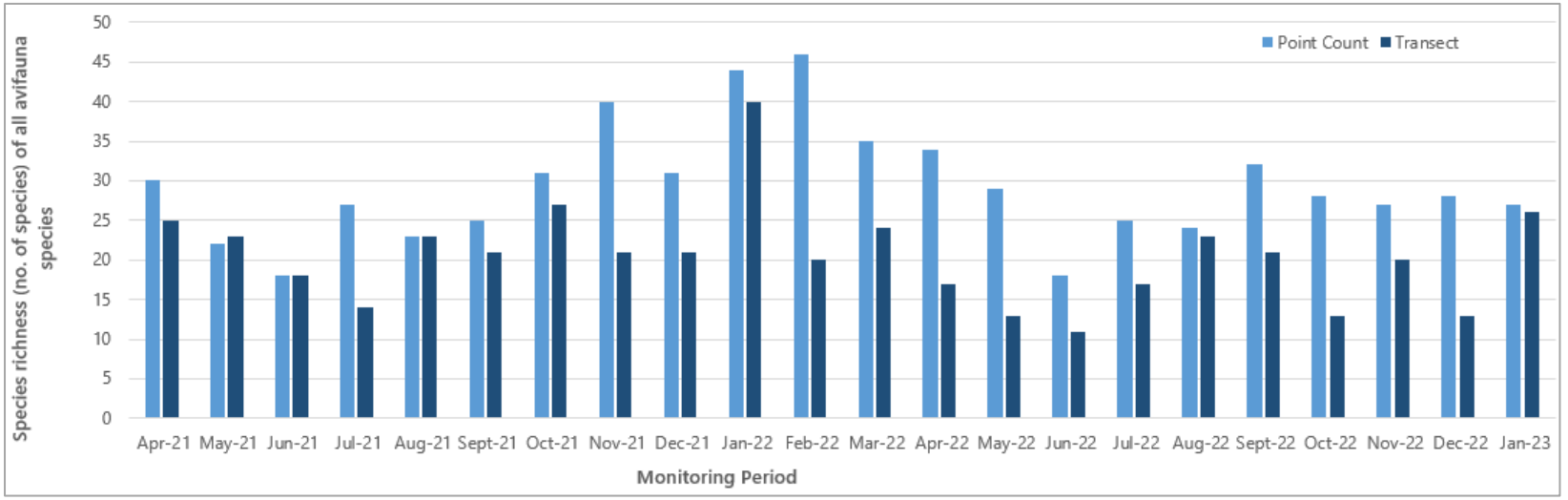
Appendix F.3.1 Abundance of all avifauna species throughout the monitoring period



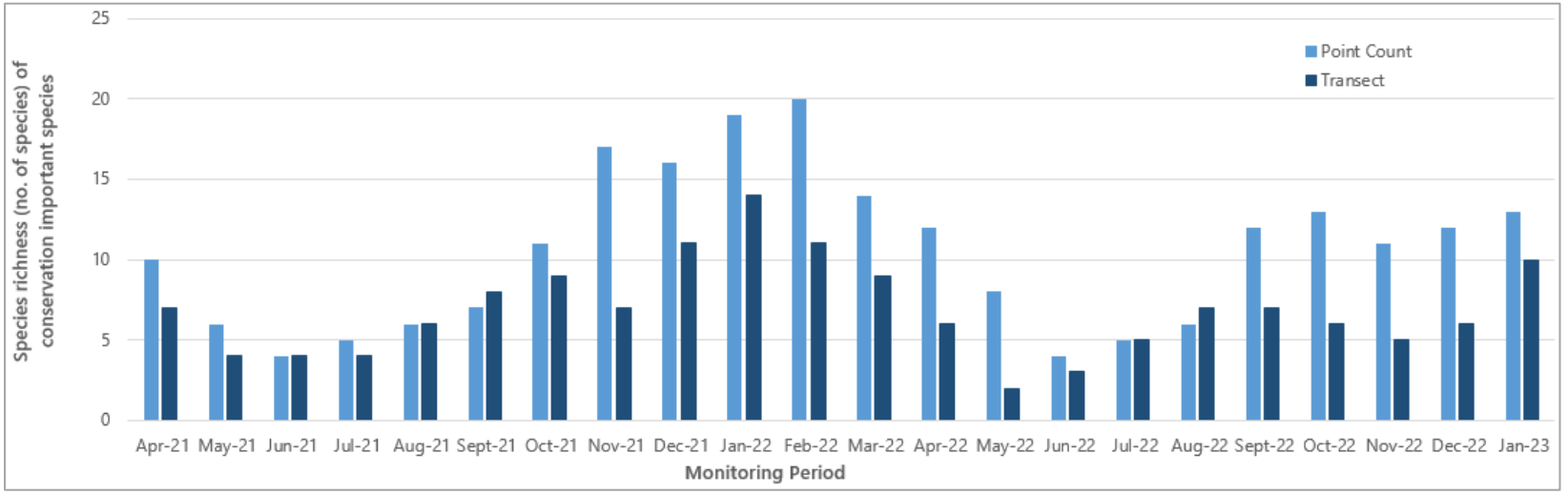
Appendix F.3.2 Abundance of avifauna species with conservation importance throughout the monitoring period



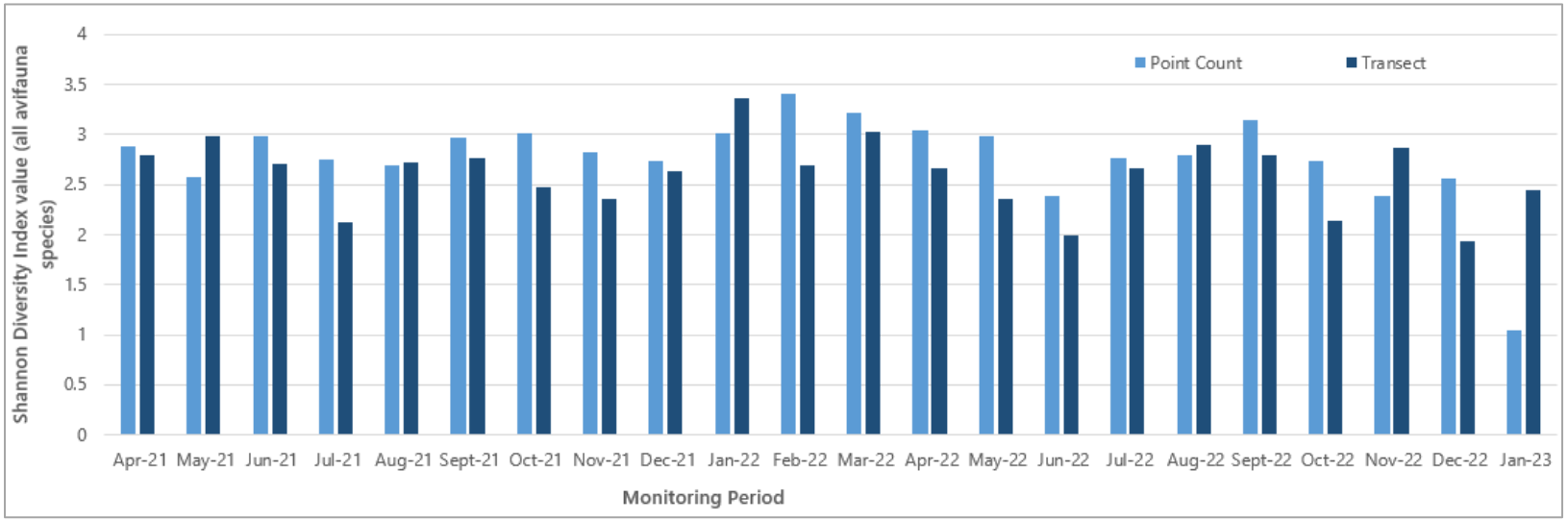
Appendix F.4.1 Species richness of all avifauna species throughout the monitoring period



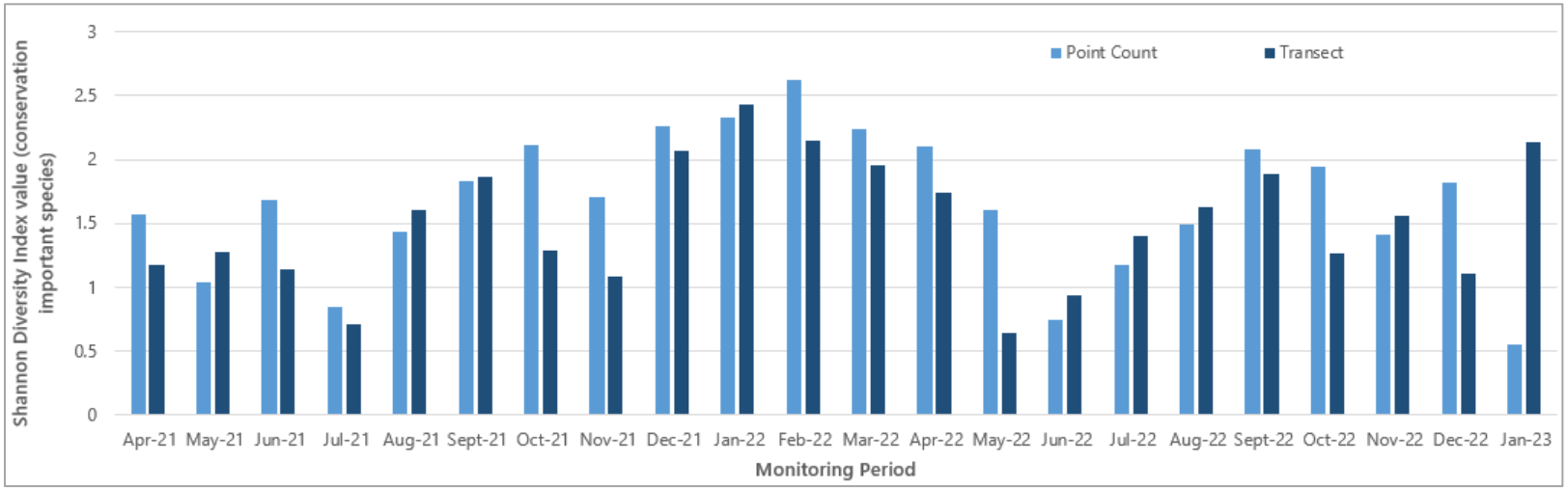
Appendix F.4.2 Species richness of avifauna species with conservation importance throughout the monitoring period



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:

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

Appendix F.6.1 Abundance of all avifauna species – Transect Walk Method

Months	January 2017	January 2023
N	89	32
df	88	31
M	3.9	4
SS	2714.09	2260
S^2	30.84	72.9
t-value	-0.08	
p-value	0.94	

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

Appendix F.6.2 Abundance of avifauna species with conservation importance – Transect Walk Method

Months	January 2017	January 2023
N	16	12
df	15	11
M	5.19	2.17
SS	964.44	21.67
S^2	64.3	1.97
t-value	1.28	
p-value	0.21	

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

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

Formula:

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

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

Months	January 2017	January 2023
Total	708	1251
Richness	47	27
H	2.82	1.04
S^2_H	0.003	0.002
t	25.496	
df	1735.81	
Crit	1.96	
p	000	
CI		0.102

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

Months	January 2017	January 2023
Total	347	128
Richness	50	26
H	3.31	2.45
S^2_H	0.003	0.016
t	6.32	
df	176	
Crit	1.97	
p	2.07E-09	
CI	0.11	0.25

Appendix F.7.3 Species diversity of avifauna species with conservation importance – Point Count Method

Months	January 2017	January 2023
Total	528	1110
Richness	22	13
H	2.24	0.55
S^2_H	0.003	0.002
t	25.26	
df	1112.90	
Crit	1.96	
p	000	
CI	0.108	0.080

Appendix F.7.4 Species diversity of avifauna species with conservation importance – Transect Walk Method

Months	January 2017	January 2023
Total	83	26
Richness	11	10
H	1.79	2.14
S^2_H	0.011	0.019
t	2.04	
df	60	
Crit	2.001	
p	0.046	
CI	0.212	0.275

Appendix G

Wind Data

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

Date	Wind Speed (m/s)	Wind Direction
01/01/2023 00:00	2.2	SE
01/01/2023 01:00	0.4	N
01/01/2023 02:00	0.9	N
01/01/2023 03:00	1.2	E
01/01/2023 04:00	0.9	N
01/01/2023 05:00	0.4	NE
01/01/2023 06:00	0.7	SE
01/01/2023 07:00	0.2	NEE
01/01/2023 08:00	0.5	NE
01/01/2023 09:00	0.9	NEE
01/01/2023 10:00	0.9	NE
01/01/2023 11:00	0.1	N
01/01/2023 12:00	0.4	E
01/01/2023 13:00	0.5	NEE
01/01/2023 14:00	0.4	N
01/01/2023 15:00	0.9	NEE
01/01/2023 16:00	0.6	SE
01/01/2023 17:00	0.3	E
01/01/2023 18:00	0.3	SEE
01/01/2023 19:00	0.4	SEE
01/01/2023 20:00	0.4	NEE
01/01/2023 21:00	0.4	SEE
01/01/2023 22:00	0.4	SEE
01/01/2023 23:00	0.4	NE
02/01/2023 00:00	0.4	NNE
02/01/2023 01:00	0.4	NNE
02/01/2023 02:00	0.4	SEE
02/01/2023 03:00	0.2	SEE
02/01/2023 04:00	0.7	NEE
02/01/2023 05:00	0.4	E
02/01/2023 06:00	1.1	NNE
02/01/2023 07:00	0.6	E
02/01/2023 08:00	1.4	E
02/01/2023 09:00	2.2	E
02/01/2023 10:00	2.0	E
02/01/2023 11:00	2.3	NNE
02/01/2023 12:00	0.7	SE
02/01/2023 13:00	0.3	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
02/01/2023 14:00	1.1	SEE
02/01/2023 15:00	0.6	NEE
02/01/2023 16:00	2.8	NE
02/01/2023 17:00	0.4	NNE
02/01/2023 18:00	0.3	NE
02/01/2023 19:00	0.3	NE
02/01/2023 20:00	0.3	NEE
02/01/2023 21:00	0.1	NNE
02/01/2023 22:00	0.3	E
02/01/2023 23:00	0.1	NE
03/01/2023 00:00	0.4	NNE
03/01/2023 01:00	0.5	N
03/01/2023 02:00	0.3	NNE
03/01/2023 03:00	0.4	NNE
03/01/2023 04:00	0.1	SEE
03/01/2023 05:00	0.3	NEE
03/01/2023 06:00	2.3	NE
03/01/2023 07:00	2.1	NEE
03/01/2023 08:00	1.9	SEE
03/01/2023 09:00	5.9	SE
03/01/2023 10:00	2.5	SE
03/01/2023 11:00	0.1	NNE
03/01/2023 12:00	0.1	NNE
03/01/2023 13:00	0.3	NNE
03/01/2023 14:00	0.4	NE
03/01/2023 15:00	0.3	SEE
03/01/2023 16:00	0.1	E
03/01/2023 17:00	0.6	NNE
03/01/2023 18:00	0.3	SEE
03/01/2023 19:00	0.2	N
03/01/2023 20:00	1.0	SEE
03/01/2023 21:00	0.2	NNE
03/01/2023 22:00	0.5	E
03/01/2023 23:00	0.2	NE
04/01/2023 00:00	0.3	NE
04/01/2023 01:00	1.6	E
04/01/2023 02:00	1.3	N
04/01/2023 03:00	0.2	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
04/01/2023 04:00	0.3	NNE
04/01/2023 05:00	0.4	SE
04/01/2023 06:00	0.4	SEE
04/01/2023 07:00	0.2	E
04/01/2023 08:00	0.9	N
04/01/2023 09:00	0.1	E
04/01/2023 10:00	0.5	NEE
04/01/2023 11:00	2.1	SEE
04/01/2023 12:00	0.4	E
04/01/2023 13:00	0.8	NNE
04/01/2023 14:00	0.1	NE
04/01/2023 15:00	0.3	NEE
04/01/2023 16:00	0.4	NEE
04/01/2023 17:00	0.4	NE
04/01/2023 18:00	0.4	SE
04/01/2023 19:00	0.4	E
04/01/2023 20:00	0.4	N
04/01/2023 21:00	0.4	N
04/01/2023 22:00	0.4	SE
04/01/2023 23:00	0.4	SE
05/01/2023 00:00	0.2	SE
05/01/2023 01:00	0.4	NNE
05/01/2023 02:00	0.4	E
05/01/2023 03:00	0.2	SE
05/01/2023 04:00	0.2	SE
05/01/2023 05:00	0.4	NEE
05/01/2023 06:00	0.4	E
05/01/2023 07:00	0.4	E
05/01/2023 08:00	0.3	N
05/01/2023 09:00	0.5	NE
05/01/2023 10:00	0.5	SEE
05/01/2023 11:00	0.9	E
05/01/2023 12:00	2.1	SEE
05/01/2023 13:00	0.7	NE
05/01/2023 14:00	0.4	NNE
05/01/2023 15:00	0.6	NEE
05/01/2023 16:00	0.4	NNE
05/01/2023 17:00	0.4	NE

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

Date	Wind Speed (m/s)	Wind Direction
05/01/2023 18:00	0.4	SEE
05/01/2023 19:00	0.4	SEE
05/01/2023 20:00	0.4	NE
05/01/2023 21:00	0.4	NEE
05/01/2023 22:00	0.4	NEE
05/01/2023 23:00	0.4	E
06/01/2023 00:00	0.4	E
06/01/2023 01:00	0.4	NNE
06/01/2023 02:00	0.4	NE
06/01/2023 03:00	0.4	NE
06/01/2023 04:00	0.4	NNE
06/01/2023 05:00	0.4	E
06/01/2023 06:00	0.4	N
06/01/2023 07:00	1.3	SE
06/01/2023 08:00	0.6	NNE
06/01/2023 09:00	5.0	E
06/01/2023 10:00	1.4	NNE
06/01/2023 11:00	2.5	SE
06/01/2023 12:00	1.6	N
06/01/2023 13:00	2.9	SE
06/01/2023 14:00	2.5	SE
06/01/2023 15:00	2.3	NE
06/01/2023 16:00	2.0	NEE
06/01/2023 17:00	1.1	N
06/01/2023 18:00	0.7	NE
06/01/2023 19:00	0.4	E
06/01/2023 20:00	0.4	E
06/01/2023 21:00	0.1	SE
06/01/2023 22:00	0.3	NE
06/01/2023 23:00	0.3	NEE
07/01/2023 00:00	0.4	SEE
07/01/2023 01:00	0.4	SE
07/01/2023 02:00	0.4	NNE
07/01/2023 03:00	0.4	SEE
07/01/2023 04:00	0.4	N
07/01/2023 05:00	0.4	NNE
07/01/2023 06:00	0.3	NE
07/01/2023 07:00	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
07/01/2023 08:00	0.2	E
07/01/2023 09:00	1.4	NNE
07/01/2023 10:00	0.1	NE
07/01/2023 11:00	0.8	SE
07/01/2023 12:00	1.5	N
07/01/2023 13:00	0.6	E
07/01/2023 14:00	0.4	NEE
07/01/2023 15:00	0.3	E
07/01/2023 16:00	0.4	SEE
07/01/2023 17:00	0.4	N
07/01/2023 18:00	0.4	NNE
07/01/2023 19:00	0.3	NNE
07/01/2023 20:00	0.3	SEE
07/01/2023 21:00	0.4	E
07/01/2023 22:00	0.3	NE
07/01/2023 23:00	0.1	E
08/01/2023 00:00	0.5	NNE
08/01/2023 01:00	2.4	NNE
08/01/2023 02:00	0.4	E
08/01/2023 03:00	1.4	NE
08/01/2023 04:00	0.4	NEE
08/01/2023 05:00	0.3	N
08/01/2023 06:00	0.4	NEE
08/01/2023 07:00	0.4	SEE
08/01/2023 08:00	0.3	SE
08/01/2023 09:00	0.2	NNE
08/01/2023 10:00	0.4	NEE
08/01/2023 11:00	0.7	NNE
08/01/2023 12:00	1.7	NEE
08/01/2023 13:00	0.2	NEE
08/01/2023 14:00	0.4	NE
08/01/2023 15:00	0.8	NEE
08/01/2023 16:00	0.3	SE
08/01/2023 17:00	0.6	E
08/01/2023 18:00	4.1	SE
08/01/2023 19:00	0.6	N
08/01/2023 20:00	1.3	E
08/01/2023 21:00	1.2	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
08/01/2023 22:00	1.1	N
08/01/2023 23:00	0.3	NEE
09/01/2023 00:00	0.4	SE
09/01/2023 01:00	0.4	E
09/01/2023 02:00	0.4	N
09/01/2023 03:00	0.2	E
09/01/2023 04:00	0.5	SEE
09/01/2023 05:00	0.0	NEE
09/01/2023 06:00	0.3	NEE
09/01/2023 07:00	0.3	NEE
09/01/2023 08:00	0.2	E
09/01/2023 09:00	0.9	NE
09/01/2023 10:00	0.3	NNE
09/01/2023 11:00	0.1	NNE
09/01/2023 12:00	0.1	NE
09/01/2023 13:00	0.6	NNE
09/01/2023 14:00	0.3	NEE
09/01/2023 15:00	0.1	SE
09/01/2023 16:00	1.5	NNE
09/01/2023 17:00	0.5	SEE
09/01/2023 18:00	0.6	E
09/01/2023 19:00	0.3	NE
09/01/2023 20:00	0.8	SEE
09/01/2023 21:00	0.4	NEE
09/01/2023 22:00	0.3	NNE
09/01/2023 23:00	0.4	E
10/01/2023 00:00	0.3	NE
10/01/2023 01:00	0.2	NEE
10/01/2023 02:00	0.5	N
10/01/2023 03:00	0.5	NEE
10/01/2023 04:00	0.3	SEE
10/01/2023 05:00	0.4	N
10/01/2023 06:00	0.3	E
10/01/2023 07:00	0.3	SE
10/01/2023 08:00	0.3	NEE
10/01/2023 09:00	0.1	SE
10/01/2023 10:00	0.2	NNE
10/01/2023 11:00	0.4	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
10/01/2023 12:00	0.2	E
10/01/2023 13:00	0.3	NNE
10/01/2023 14:00	0.1	NEE
10/01/2023 15:00	0.2	NE
10/01/2023 16:00	0.3	NEE
10/01/2023 17:00	0.3	E
10/01/2023 18:00	0.4	NNE
10/01/2023 19:00	0.2	NEE
10/01/2023 20:00	0.3	SEE
10/01/2023 21:00	0.4	SEE
10/01/2023 22:00	0.3	NEE
10/01/2023 23:00	0.4	E
11/01/2023 00:00	0.2	NNE
11/01/2023 01:00	0.4	E
11/01/2023 02:00	0.5	N
11/01/2023 03:00	0.4	E
11/01/2023 04:00	0.4	NE
11/01/2023 05:00	0.3	E
11/01/2023 06:00	0.3	NE
11/01/2023 07:00	0.4	NEE
11/01/2023 08:00	0.0	E
11/01/2023 09:00	0.6	N
11/01/2023 10:00	0.2	E
11/01/2023 11:00	0.9	NEE
11/01/2023 12:00	0.7	N
11/01/2023 13:00	2.1	NEE
11/01/2023 14:00	1.9	NEE
11/01/2023 15:00	0.6	SEE
11/01/2023 16:00	0.3	E
11/01/2023 17:00	1.4	NE
11/01/2023 18:00	0.1	NNE
11/01/2023 19:00	0.3	E
11/01/2023 20:00	0.7	N
11/01/2023 21:00	0.3	NE
11/01/2023 22:00	0.4	NE
11/01/2023 23:00	0.2	E
12/01/2023 00:00	0.3	E
12/01/2023 01:00	0.2	N

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

Date	Wind Speed (m/s)	Wind Direction
12/01/2023 02:00	0.7	SE
12/01/2023 03:00	0.3	NEE
12/01/2023 04:00	0.4	E
12/01/2023 05:00	0.2	E
12/01/2023 06:00	0.1	N
12/01/2023 07:00	0.5	NEE
12/01/2023 08:00	0.2	SE
12/01/2023 09:00	0.3	NNE
12/01/2023 10:00	0.4	SEE
12/01/2023 11:00	0.4	NE
12/01/2023 12:00	0.8	E
12/01/2023 13:00	0.8	NEE
12/01/2023 14:00	0.7	NNE
12/01/2023 15:00	0.6	NE
12/01/2023 16:00	0.3	SE
12/01/2023 17:00	1.3	SEE
12/01/2023 18:00	0.4	NEE
12/01/2023 19:00	0.3	E
12/01/2023 20:00	0.4	E
12/01/2023 21:00	0.4	SE
12/01/2023 22:00	0.4	E
12/01/2023 23:00	0.4	SE
13/01/2023 00:00	0.4	NEE
13/01/2023 01:00	0.4	N
13/01/2023 02:00	0.4	E
13/01/2023 03:00	0.4	SEE
13/01/2023 04:00	0.4	NEE
13/01/2023 05:00	0.4	E
13/01/2023 06:00	0.4	NNE
13/01/2023 07:00	0.4	NEE
13/01/2023 08:00	0.4	NEE
13/01/2023 09:00	0.4	NEE
13/01/2023 10:00	0.2	N
13/01/2023 11:00	0.3	NE
13/01/2023 12:00	0.4	SEE
13/01/2023 13:00	0.4	N
13/01/2023 14:00	0.9	E
13/01/2023 15:00	0.4	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
13/01/2023 16:00	0.4	SE
13/01/2023 17:00	0.3	SEE
13/01/2023 18:00	0.4	NNE
13/01/2023 19:00	0.4	NEE
13/01/2023 20:00	0.4	NE
13/01/2023 21:00	0.3	NE
13/01/2023 22:00	0.4	NEE
13/01/2023 23:00	0.4	NEE
14/01/2023 00:00	0.4	SEE
14/01/2023 01:00	0.4	E
14/01/2023 02:00	0.4	NNE
14/01/2023 03:00	0.4	NNE
14/01/2023 04:00	0.4	NNE
14/01/2023 05:00	0.4	NE
14/01/2023 06:00	0.4	E
14/01/2023 07:00	0.4	E
14/01/2023 08:00	0.4	SEE
14/01/2023 09:00	0.4	SE
14/01/2023 10:00	0.1	N
14/01/2023 11:00	0.4	E
14/01/2023 12:00	0.2	E
14/01/2023 13:00	2.9	SE
14/01/2023 14:00	2.2	E
14/01/2023 15:00	1.2	NE
14/01/2023 16:00	0.2	SE
14/01/2023 17:00	0.4	NNE
14/01/2023 18:00	0.4	N
14/01/2023 19:00	0.4	NEE
14/01/2023 20:00	0.4	E
14/01/2023 21:00	0.4	E
14/01/2023 22:00	0.4	NEE
14/01/2023 23:00	0.4	NEE
15/01/2023 00:00	0.4	N
15/01/2023 01:00	0.4	E
15/01/2023 02:00	0.4	NE
15/01/2023 03:00	0.4	NE
15/01/2023 04:00	0.4	NNE
15/01/2023 05:00	0.4	NNE

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

Date	Wind Speed (m/s)	Wind Direction
15/01/2023 06:00	0.3	NEE
15/01/2023 07:00	0.3	SEE
15/01/2023 08:00	1.6	NEE
15/01/2023 09:00	2.0	N
15/01/2023 10:00	2.2	E
15/01/2023 11:00	1.1	E
15/01/2023 12:00	1.6	N
15/01/2023 13:00	3.2	NE
15/01/2023 14:00	1.6	NE
15/01/2023 15:00	3.8	NE
15/01/2023 16:00	1.6	SEE
15/01/2023 17:00	0.4	NNE
15/01/2023 18:00	2.2	NE
15/01/2023 19:00	3.4	NE
15/01/2023 20:00	3.3	SE
15/01/2023 21:00	3.1	E
15/01/2023 22:00	3.4	SEE
15/01/2023 23:00	2.4	SEE
16/01/2023 00:00	6.3	E
16/01/2023 01:00	1.7	NEE
16/01/2023 02:00	2.8	E
16/01/2023 03:00	1.6	SEE
16/01/2023 04:00	0.4	NEE
16/01/2023 05:00	4.5	E
16/01/2023 06:00	4.5	SEE
16/01/2023 07:00	2.4	NEE
16/01/2023 08:00	2.2	SE
16/01/2023 09:00	0.6	NNE
16/01/2023 10:00	3.1	N
16/01/2023 11:00	1.0	NE
16/01/2023 12:00	0.7	NNE
16/01/2023 13:00	0.3	SEE
16/01/2023 14:00	0.1	SE
16/01/2023 15:00	1.6	NNE
16/01/2023 16:00	0.4	NNE
16/01/2023 17:00	0.7	NE
16/01/2023 18:00	0.9	NNE
16/01/2023 19:00	0.3	NNE

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

Date	Wind Speed (m/s)	Wind Direction
16/01/2023 20:00	0.7	SEE
16/01/2023 21:00	1.9	E
16/01/2023 22:00	0.3	SEE
16/01/2023 23:00	0.1	NE
17/01/2023 00:00	1.5	E
17/01/2023 01:00	0.2	E
17/01/2023 02:00	0.8	E
17/01/2023 03:00	0.4	N
17/01/2023 04:00	0.6	N
17/01/2023 05:00	0.5	NNE
17/01/2023 06:00	1.0	N
17/01/2023 07:00	0.8	N
17/01/2023 08:00	1.6	NNE
17/01/2023 09:00	0.3	SEE
17/01/2023 10:00	0.1	SEE
17/01/2023 11:00	0.3	SEE
17/01/2023 12:00	0.3	SE
17/01/2023 13:00	0.5	SE
17/01/2023 14:00	0.6	E
17/01/2023 15:00	0.3	NE
17/01/2023 16:00	0.3	NNE
17/01/2023 17:00	0.7	SEE
17/01/2023 18:00	1.0	SEE
17/01/2023 19:00	0.3	E
17/01/2023 20:00	0.3	E
17/01/2023 21:00	0.3	NEE
17/01/2023 22:00	0.5	SEE
17/01/2023 23:00	0.3	SEE
18/01/2023 00:00	0.3	NNE
18/01/2023 01:00	1.2	NNE
18/01/2023 02:00	1.1	N
18/01/2023 03:00	1.9	NE
18/01/2023 04:00	0.2	E
18/01/2023 05:00	0.4	E
18/01/2023 06:00	2.3	E
18/01/2023 07:00	2.3	NNE
18/01/2023 08:00	0.9	E
18/01/2023 09:00	2.0	NE

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

Date	Wind Speed (m/s)	Wind Direction
18/01/2023 10:00	1.8	SEE
18/01/2023 11:00	1.6	NEE
18/01/2023 12:00	0.4	NEE
18/01/2023 13:00	0.3	NEE
18/01/2023 14:00	0.5	E
18/01/2023 15:00	0.1	SEE
18/01/2023 16:00	0.4	N
18/01/2023 17:00	0.2	NNE
18/01/2023 18:00	0.4	SE
18/01/2023 19:00	0.4	NNE
18/01/2023 20:00	0.3	NE
18/01/2023 21:00	0.4	E
18/01/2023 22:00	0.4	SE
18/01/2023 23:00	0.4	NEE
19/01/2023 00:00	0.4	NNE
19/01/2023 01:00	0.4	NNE
19/01/2023 02:00	0.4	SEE
19/01/2023 03:00	0.4	E
19/01/2023 04:00	0.4	NE
19/01/2023 05:00	0.4	NE
19/01/2023 06:00	0.4	E
19/01/2023 07:00	0.4	SE
19/01/2023 08:00	0.2	NE
19/01/2023 09:00	1.4	SE
19/01/2023 10:00	0.4	NE
19/01/2023 11:00	0.4	NE
19/01/2023 12:00	0.5	NE
19/01/2023 13:00	0.8	E
19/01/2023 14:00	0.9	SEE
19/01/2023 15:00	0.2	E
19/01/2023 16:00	0.2	SEE
19/01/2023 17:00	0.3	SEE
19/01/2023 18:00	0.4	N
19/01/2023 19:00	0.4	NEE
19/01/2023 20:00	0.4	SEE
19/01/2023 21:00	0.4	NNE
19/01/2023 22:00	0.4	NE
19/01/2023 23:00	0.4	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
20/01/2023 00:00	0.4	SEE
20/01/2023 01:00	0.4	NE
20/01/2023 02:00	0.4	NNE
20/01/2023 03:00	0.4	N
20/01/2023 04:00	1.4	NNE
20/01/2023 05:00	0.1	N
20/01/2023 06:00	1.3	E
20/01/2023 07:00	1.0	NEE
20/01/2023 08:00	1.4	NEE
20/01/2023 09:00	0.9	NE
20/01/2023 10:00	0.8	NE
20/01/2023 11:00	0.2	SEE
20/01/2023 12:00	0.2	NNE
20/01/2023 13:00	0.3	E
20/01/2023 14:00	0.9	SE
20/01/2023 15:00	0.7	NE
20/01/2023 16:00	0.2	NNE
20/01/2023 17:00	0.3	E
20/01/2023 18:00	0.4	E
20/01/2023 19:00	0.4	SEE
20/01/2023 20:00	0.4	NE
20/01/2023 21:00	0.4	SE
20/01/2023 22:00	0.4	NEE
20/01/2023 23:00	0.4	E
21/01/2023 00:00	0.3	NNE
21/01/2023 01:00	0.1	NNE
21/01/2023 02:00	0.4	SEE
21/01/2023 03:00	0.4	N
21/01/2023 04:00	0.4	N
21/01/2023 05:00	0.3	NNE
21/01/2023 06:00	0.3	NE
21/01/2023 07:00	0.3	E
21/01/2023 08:00	0.1	E
21/01/2023 09:00	0.7	NE
21/01/2023 10:00	1.1	NEE
21/01/2023 11:00	1.8	NEE
21/01/2023 12:00	2.5	NEE
21/01/2023 13:00	0.1	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
21/01/2023 14:00	1.1	E
21/01/2023 15:00	0.6	E
21/01/2023 16:00	0.9	E
21/01/2023 17:00	0.5	NEE
21/01/2023 18:00	0.3	SE
21/01/2023 19:00	0.4	E
21/01/2023 20:00	0.4	SE
21/01/2023 21:00	0.4	SEE
21/01/2023 22:00	0.4	SEE
21/01/2023 23:00	0.4	SE
22/01/2023 00:00	0.4	NEE
22/01/2023 01:00	0.4	SEE
22/01/2023 02:00	0.3	SEE
22/01/2023 03:00	0.4	E
22/01/2023 04:00	0.3	NE
22/01/2023 05:00	0.3	E
22/01/2023 06:00	0.4	SEE
22/01/2023 07:00	0.4	NNE
22/01/2023 08:00	0.4	E
22/01/2023 09:00	0.3	SEE
22/01/2023 10:00	0.6	SEE
22/01/2023 11:00	0.1	NEE
22/01/2023 12:00	1.0	NEE
22/01/2023 13:00	0.4	E
22/01/2023 14:00	0.1	E
22/01/2023 15:00	0.7	E
22/01/2023 16:00	0.3	SE
22/01/2023 17:00	0.4	SE
22/01/2023 18:00	0.3	E
22/01/2023 19:00	0.4	SEE
22/01/2023 20:00	0.4	SEE
22/01/2023 21:00	0.4	SEE
22/01/2023 22:00	0.4	SE
22/01/2023 23:00	0.4	NNE
23/01/2023 00:00	0.4	NNE
23/01/2023 01:00	0.4	N
23/01/2023 02:00	0.4	NE
23/01/2023 03:00	0.4	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
23/01/2023 04:00	0.4	NEE
23/01/2023 05:00	0.4	E
23/01/2023 06:00	0.4	NEE
23/01/2023 07:00	0.4	NE
23/01/2023 08:00	0.4	SEE
23/01/2023 09:00	0.2	NE
23/01/2023 10:00	0.8	NE
23/01/2023 11:00	0.2	NE
23/01/2023 12:00	0.3	NE
23/01/2023 13:00	0.4	NE
23/01/2023 14:00	1.0	NE
23/01/2023 15:00	1.6	E
23/01/2023 16:00	0.4	E
23/01/2023 17:00	0.4	SE
23/01/2023 18:00	0.4	NEE
23/01/2023 19:00	0.4	NNE
23/01/2023 20:00	0.4	N
23/01/2023 21:00	0.4	SEE
23/01/2023 22:00	0.3	E
23/01/2023 23:00	0.4	NNE
24/01/2023 00:00	0.8	NEE
24/01/2023 01:00	1.6	E
24/01/2023 02:00	4.7	SEE
24/01/2023 03:00	5.4	NEE
24/01/2023 04:00	3.7	NEE
24/01/2023 05:00	8.4	NNE
24/01/2023 06:00	3.1	NNE
24/01/2023 07:00	6.1	NNE
24/01/2023 08:00	2.0	SEE
24/01/2023 09:00	1.1	NE
24/01/2023 10:00	3.0	SE
24/01/2023 11:00	2.7	NNE
24/01/2023 12:00	4.8	NE
24/01/2023 13:00	2.7	NNE
24/01/2023 14:00	3.6	NE
24/01/2023 15:00	6.0	NE
24/01/2023 16:00	4.0	NEE
24/01/2023 17:00	3.1	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
24/01/2023 18:00	1.3	NE
24/01/2023 19:00	0.9	SE
24/01/2023 20:00	4.5	NE
24/01/2023 21:00	1.9	NEE
24/01/2023 22:00	1.5	NEE
24/01/2023 23:00	4.9	SE
25/01/2023 00:00	4.2	NNE
25/01/2023 01:00	4.1	E
25/01/2023 02:00	5.7	NE
25/01/2023 03:00	2.2	NE
25/01/2023 04:00	1.4	E
25/01/2023 05:00	2.5	NEE
25/01/2023 06:00	0.2	NNE
25/01/2023 07:00	2.3	E
25/01/2023 08:00	0.7	NEE
25/01/2023 09:00	0.5	SEE
25/01/2023 10:00	0.3	E
25/01/2023 11:00	1.4	E
25/01/2023 12:00	1.0	NNE
25/01/2023 13:00	0.3	SEE
25/01/2023 14:00	0.3	NNE
25/01/2023 15:00	0.3	N
25/01/2023 16:00	0.3	SE
25/01/2023 17:00	1.0	E
25/01/2023 18:00	0.4	NE
25/01/2023 19:00	0.3	SE
25/01/2023 20:00	0.4	NE
25/01/2023 21:00	0.1	NNE
25/01/2023 22:00	0.4	NEE
25/01/2023 23:00	0.4	NEE
26/01/2023 00:00	0.4	NEE
26/01/2023 01:00	0.3	N
26/01/2023 02:00	0.3	SE
26/01/2023 03:00	0.4	NNE
26/01/2023 04:00	0.4	SE
26/01/2023 05:00	0.4	NNE
26/01/2023 06:00	0.4	NEE
26/01/2023 07:00	0.4	NE

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

Date	Wind Speed (m/s)	Wind Direction
26/01/2023 08:00	0.4	E
26/01/2023 09:00	0.4	SE
26/01/2023 10:00	0.2	NE
26/01/2023 11:00	1.6	NNE
26/01/2023 12:00	1.9	E
26/01/2023 13:00	1.1	SEE
26/01/2023 14:00	0.8	E
26/01/2023 15:00	0.8	SEE
26/01/2023 16:00	0.4	E
26/01/2023 17:00	0.4	E
26/01/2023 18:00	0.4	NEE
26/01/2023 19:00	0.4	NNE
26/01/2023 20:00	0.3	SEE
26/01/2023 21:00	0.3	N
26/01/2023 22:00	0.4	NEE
26/01/2023 23:00	0.4	E
27/01/2023 00:00	0.4	NE
27/01/2023 01:00	0.3	E
27/01/2023 02:00	0.4	NE
27/01/2023 03:00	0.2	E
27/01/2023 04:00	2.4	E
27/01/2023 05:00	2.8	SEE
27/01/2023 06:00	1.9	NNE
27/01/2023 07:00	2.3	E
27/01/2023 08:00	3.3	E
27/01/2023 09:00	3.0	E
27/01/2023 10:00	2.3	E
27/01/2023 11:00	4.2	SEE
27/01/2023 12:00	2.3	NE
27/01/2023 13:00	2.1	NEE
27/01/2023 14:00	2.6	SE
27/01/2023 15:00	4.3	SE
27/01/2023 16:00	4.4	NNE
27/01/2023 17:00	0.8	NE
27/01/2023 18:00	8.6	N
27/01/2023 19:00	4.0	NNE
27/01/2023 20:00	5.4	E
27/01/2023 21:00	2.1	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
27/01/2023 22:00	2.3	NNE
27/01/2023 23:00	3.1	SEE
28/01/2023 00:00	1.8	SEE
28/01/2023 01:00	3.4	NEE
28/01/2023 02:00	2.1	SEE
28/01/2023 03:00	0.2	E
28/01/2023 04:00	1.8	SEE
28/01/2023 05:00	3.6	E
28/01/2023 06:00	1.7	NEE
28/01/2023 07:00	0.7	E
28/01/2023 08:00	1.9	NEE
28/01/2023 09:00	5.2	E
28/01/2023 10:00	2.4	SE
28/01/2023 11:00	7.1	SEE
28/01/2023 12:00	2.0	NEE
28/01/2023 13:00	0.5	NEE
28/01/2023 14:00	1.8	E
28/01/2023 15:00	0.3	NEE
28/01/2023 16:00	1.4	NEE
28/01/2023 17:00	0.3	SEE
28/01/2023 18:00	0.4	N
28/01/2023 19:00	0.4	N
28/01/2023 20:00	0.4	E
28/01/2023 21:00	0.4	NE
28/01/2023 22:00	0.4	E
28/01/2023 23:00	1.4	NEE
29/01/2023 00:00	0.9	SEE
29/01/2023 01:00	0.3	E
29/01/2023 02:00	0.3	NEE
29/01/2023 03:00	0.4	E
29/01/2023 04:00	0.2	N
29/01/2023 05:00	0.4	NNE
29/01/2023 06:00	0.3	SE
29/01/2023 07:00	0.3	N
29/01/2023 08:00	4.1	E
29/01/2023 09:00	1.5	E
29/01/2023 10:00	0.4	E
29/01/2023 11:00	1.3	NE

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

Date	Wind Speed (m/s)	Wind Direction
29/01/2023 12:00	0.2	SEE
29/01/2023 13:00	0.4	SEE
29/01/2023 14:00	1.1	E
29/01/2023 15:00	0.3	SEE
29/01/2023 16:00	0.3	E
29/01/2023 17:00	0.3	E
29/01/2023 18:00	0.4	NE
29/01/2023 19:00	0.4	SEE
29/01/2023 20:00	0.4	NE
29/01/2023 21:00	0.4	NE
29/01/2023 22:00	0.4	NNE
29/01/2023 23:00	0.4	NNE
30/01/2023 00:00	0.4	SEE
30/01/2023 01:00	0.4	N
30/01/2023 02:00	0.4	NEE
30/01/2023 03:00	0.4	SEE
30/01/2023 04:00	0.4	NE
30/01/2023 05:00	0.4	NEE
30/01/2023 06:00	0.4	SEE
30/01/2023 07:00	0.4	NEE
30/01/2023 08:00	0.5	SEE
30/01/2023 09:00	0.7	NEE
30/01/2023 10:00	0.5	NNE
30/01/2023 11:00	0.9	SEE
30/01/2023 12:00	0.3	SEE
30/01/2023 13:00	2.4	SEE
30/01/2023 14:00	0.2	E
30/01/2023 15:00	0.8	N
30/01/2023 16:00	0.3	NE
30/01/2023 17:00	0.4	NNE
30/01/2023 18:00	0.2	NEE
30/01/2023 19:00	0.4	NE
30/01/2023 20:00	0.4	E
30/01/2023 21:00	0.4	E
30/01/2023 22:00	0.4	E
30/01/2023 23:00	0.4	SE
31/01/2023 00:00	0.4	SE
31/01/2023 01:00	0.4	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
31/01/2023 02:00	0.4	NE
31/01/2023 03:00	0.2	NNE
31/01/2023 04:00	0.5	E
31/01/2023 05:00	0.3	SEE
31/01/2023 06:00	0.4	NNE
31/01/2023 07:00	0.8	SEE
31/01/2023 08:00	0.7	NNE
31/01/2023 09:00	2.0	SE
31/01/2023 10:00	1.1	NNE
31/01/2023 11:00	1.4	SEE
31/01/2023 12:00	0.4	NNE
31/01/2023 13:00	0.2	E
31/01/2023 14:00	1.8	NNE
31/01/2023 15:00	0.4	E
31/01/2023 16:00	0.2	NNE
31/01/2023 17:00	1.3	N
31/01/2023 18:00	0.2	NNE
31/01/2023 19:00	0.2	NEE
31/01/2023 20:00	0.3	N
31/01/2023 21:00	0.4	SEE
31/01/2023 22:00	0.4	NEE
31/01/2023 23:00	0.3	NNE
01/02/2023 00:00	0.4	E

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

Appendix H

Event and Action Plan

Event and Action Plan for Air Quality (Construction Dust)

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action level being exceeded by one sampling	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform Contractor, IEC and ER; 3. Repeat measurement to confirm finding; and 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; and 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Notify Contractor.	1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; and 3. Amend working methods agreed with the ER as appropriate.
Action level being exceeded by two or more consecutive sampling	1. Identify source; 2. Inform Contractor, IEC and ER; 3. Advise the Contractor and ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with Contractor, IEC and ER; and 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Advise the ET and ER on the effectiveness of the proposed remedial measures; and 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal as appropriate.
Limit level being exceeded by one sampling	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; and 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; and 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; 4. Implement the agreed proposals; and 5. Amend proposal if appropriate.
Limit level being exceeded by two or more consecutive sampling	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 4. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; and 4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Noise (Construction)

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action Level	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; and 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analyzed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; and 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; and 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; and 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; 4. Ensure remedial measures properly implemented; and 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; and 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Water Quality Monitoring

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

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

Event and Action Plan for Ecology Monitoring

Event	Action			
	ET	IEC	ER	Contractor
Action Level	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; and 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analyzed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; and 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; and 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; and 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented; and 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; and 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Appendix I

Waste Flow Table

Waste Flow Table for Year 2023

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)
2023 Jan	2873.28	Nil	Nil	Nil	2831.62	Nil	28.90	0.18	Nil	Nil	12.58
2023 Feb											
2023 Mar											
2023 Apr											
2023 May											
2023 Jun											
2023 Jul											
2023 Aug											
2023 Sep											
2023 Oct											
2023 Nov											
2023 Dec											
Total	2873.28	0	0	0	2831.62	0	28.90	0.18	0	0	12.58

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

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

Appendix J

Implementation Status of

Environmental Mitigation Measures

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

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	• Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.		Implemented
Noise Impact			
Construction Phase			
4.8.1	Movable noise barriers are recommended for hydraulic breakers mounted on excavators to be adopted during construction.	Construction Sites	N/A
	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.		Implemented
	• 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.		Implemented
	• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme.		Implemented
	• Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction programme.		Implemented
	• Mobile plant, if any, should be sited as far away from noise sensitive receivers (NSRs) as possible.		N/A
	• 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.		Implemented
	• 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		N/A
	• Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.		N/A
Water Quality Impact			
Construction Phase			
5.8.1.2	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	Construction Sites / Construction Phase	Implemented

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

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

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	
	• Nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility;		Implemented
	• Training of site personnel in proper waste management and chemical waste handling procedures;		Implemented
	• Provision of sufficient waste reception/ disposal points, of a suitable vermin-proof design that minimises windblown litter;		N/A
	• Arrangement for regular collection of waste for transport off-site and final disposal;		Implemented
	• Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;		Implemented
	• Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;		Implemented

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed; and		Implemented
	• A WMP should be prepared and should be submitted to the Engineer for approval. One may make reference to ETWB TCW No. 19/2005 for details.		Implemented
6.6.1.5	Waste Reduction Measures Recommendations to achieve waste reduction include:	Construction Sites	
	• Segregate and store different types of construction related waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;		Implemented
	• Provide separate labelled bins to segregate recyclable waste such as aluminium cans from other general refuse generated by the work force, and to encourage collection by individual collectors;		Implemented
	• Any unused chemicals or those with remaining functional capacity shall be recycled;		N/A
	• Maximising the use of reusable steel formwork to reduce the amount of C&D material;		Implemented
	• Prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;		Implemented
	• Adopt proper storage and site practices to minimise the potential for damage to, or contamination of, construction materials;		Implemented
	• Plan the delivery and stock of construction materials carefully to minimise the amount of surplus waste generated;		N/A
	• Adopt pre-cast construction method instead of cast-in-situ method for construction of concrete structures as much as possible; and		N/A
	• Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering.		N/A
6.6.1.7	<u>Storage of Waste</u> Recommendations to minimise the impacts include:	Construction Sites	
	• Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution;		Implemented
	• Maintain and clean storage areas routinely;		Implemented

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	• Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and		Implemented
	• Different locations should be designated to stockpile each material to enhance reuse.		Implemented
6.6.1.8	Collection of WasteLicensed 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:	Construction Sites	
	• Remove waste in timely manner;		Implemented
	• Waste collectors should only collect wastes prescribed by their permits;		Implemented
	• Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers;		Implemented
	• 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);		Implemented
	• Waste should be disposed of at licensed waste disposal facilities; and		Implemented
	• Maintain records of quantities of waste generated, recycled and disposed.		Implemented
6.6.1.10	Transportation of Waste In order to monitor the disposal of C&D materials at PFRFs and landfills and to control fly-tipping, a trip-ticket system should be established in accordance with DEVB TCW No. 6/2010. A recording system for the amount of waste generated, recycled and disposed, including the disposal sites, should also be set up. Warning signs should be put up to remind the designated disposal sites. CCTV should be installed at the vehicular entrance and exit of the site as additional measures to prevent fly-tipping.	Transportation Route of Waste / Construction Phase	Implemented

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.12	<u>Construction and Demolition Material</u> Careful design, planning together with good site management can reduce over-ordering and generation of C&D materials such as concrete, mortar and cement grouts. Formwork should be designed to maximize the use of standard wooden panels, so that high reuse levels can be achieved. Alternatives such as steel formwork or plastic facing should be considered to increase the potential for reuse	Construction Sites	N/A
6.6.1.13	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:	Construction Sites	
	• A WMP, which becomes part of the EMP, should be prepared in accordance with ETWB TCW No.19/2005;		Implemented
	• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be adopted for easy tracking; and		Implemented
	• In order to monitor the disposal of C&D materials at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be adopted (refer to DEVB TCW 06/2010).		Implemented
6.6.1.14	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:	Construction Sites	
	• Surface of stockpiled soil should be regularly wetted with water especially during dry season;		Implemented
	• Disturbance of stockpile soil should be minimised;		Implemented
	• Stockpiled soil should be properly covered with tarpaulin especially when heavy storms are predicted; and		Implemented
	• Stockpiling areas should be enclosed where space is available.		Implemented

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

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 OperationPhases	Implemented
6.6.1.28	It is recommended to place clearly labelled recycling bins at designated locations with convenient access. Other general refuse should be separated from chemical and industrial waste by providing separated bins or skips for storage to maximise the recyclable volume. A reputable licensed waste collector should be employed to remove general refuse on a daily basis to minimise odour, pest and litter impacts.	Construction and Operation Phases	Implemented
6.6.1.29	Should buildings are found with potential ACM, sufficient and reasonable lead time shall be allowed for preparation, vetting and implementation of Asbestos Investigation Report and Asbestos Abatement Plan in accordance with Air Pollution Control Ordinance before commencement of any demolition or site clearance work.	Demolition	N/A
Land Contamination			

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	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).	Existing YLSTW /Construction Phase (afterdecommissioning of theconcerned facilities / areasbut prior to the constructionworks at the concernedfacilities / areas)	Implemented
7.8.3.1	The mitigation measures will be recommended in the RAP and would typically include the following:	Project Site / Construction Phase	
	• Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety;		Implemented
	• 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;		N/A
	• 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.		Implemented
	• 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;		Implemented
	• Speed control for the trucks carrying contaminated materials shall be enforced;		Implemented

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	• Vehicle wheel and body washing facilities at the site's exist points shall be established and used; and		Implemented
	• Pollution control measures for air emissions (e.g. from biopile blower and handling of cement), noise emissions (e.g. from blower or earthmoving equipment), and water discharges (e.g. runoff control from treatment facility) shall be implemented and complied with relevant regulations and guidelines.		Implemented
Ecological Impact (Terrestrial and Aquatic)			
Construction Phase			
8.10.2.1	Avoidance of Recognised Site of Conservation Importance 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	Avoidance of Demolition Works Using Breakers Mounted on Excavators and Percussive Piling during Dry Season 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	Restriction of Construction Hours 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	Minimising Construction Noise Disturbance Impacts through Consideration of Alternative Construction Methods 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

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
8.10.3.4 – 8.10.3.5	<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. 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.	Project site / Construction Phase	Implemented
8.10.3.6 – 8.10.3.8	<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. 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. The contractor should provide enclosure for construction equipment, especially static plants, as appropriate to minimise the noise disturbance as far as practicable.	Construction sites / Construction Phase	Implemented

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

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
Table 10.11	Compensatory Tree Planting (CM3) 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	Control of Night-time Lighting Glare (CM4) 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	Erection of Decorative Screen Hoarding (CM5) Site hoardings, if any, shall be painted in dull green colour	Project site / Construction Phase	Implemented
Table 10.11	Management of Construction Activities and Facilities (CM6) Construction activities shall be well scheduled and avoid powered mechanical equipment's operating simultaneously. All stockpiling areas and idled area shall be covered by tarpaulin sheet or hydroseeded as far as possible.	Project site / Construction Phase	Implemented
Hazard to Life			
Construction Phase			
11.5.6.9-11.5.6.12	• 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;	Project site / Construction Phase	N/A
	• 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;		N/A
	• 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		N/A

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	• Physical barriers such as concrete blocks shall be set up at the 15m zone in order to avoid those construction plants or vehicles from colliding to the digester / gas holder units in use.		N/A
11.5.8	• Method statements and risk assessments shall be prepared and safety control measures shall be in place before commencement of work	Project site / Construction Phase	Implemented
	• All work procedures shall be complied with the operating plant procedures or guidelines and regulatory requirements;		Implemented
	• Work permit system, on-site pre-work risk assessment and emergency response procedure shall be in place before commencement of work;		Implemented
	• All construction workers shall equip with appropriate personal protective equipment (PPE) when working at the Project Site;		Implemented
	• Safety training and briefings shall be provided to all construction workers;		Implemented
	• Regular site safety inspections shall be conducted during the construction phase of the Project;		Implemented
11.9.1.2	• Ensure speed limit enforcement is specified in the contractor's method statement to limit the speed of construction vehicles onsite;	Project site / ConstructionPhase	Implemented
	• Conduct speed checks to ensure enforcement of speed limits and to ensure adequate site access control;		N/A
	• A lifting plan, with detailed risk assessment, should be prepared and endorsed for heavy lifting of large equipment;		Implemented
	• Vehicle crash barriers should be provided between the construction site and the operating biogas facilities;		N/A
	• Ensure that a hazardous are classification study is conducted and hazardous area maps are updated before the start of the construction activities to ensure ignition sources are controlled during both construction and operation phases;		Implemented
	• Ensure work permit system for hot work activities within the Project Site is specified in the contractor's method statement to minimize and control the ignition sources during the construction phase;		Implemented
	• Ensure effective communication system / protocol is in place between the contractors and the operation staff;		Implemented
	• Ensure the Project Construction Emergency Response Plan is integrated with the Emergency Response Plan for the YLEPP during construction phase. The plan should address stop work instructions to be promptly communicated to all construction workers performing hot works in case a confirmed biogas detection at the Project Site;		Implemented

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
	• Ensure that the construction activities do not impede the functions of fire and gas detection system, fire protection system, muster areas, fire-fighting vehicle access and escape routes;		Implemented
	• Ensure a Job Safety Analysis is conducted for construction activities of the Project during the construction phase, to identify and analyze hazards associated with the construction activities (e.g. lifting operations by cranes) onto the operating biogas facilities.		Implemented
	Potential risks of the construction activities shall be assessed, and risk precautionary measures shall be implemented in Contractor's works procedures.		Implemented

Note:

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

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

Appendix K

Weather and Meteorological Conditions

December 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)		
December 2022						
1	1021.5	16.8	14.7	13.0	76	0.0
2	1020.3	20.0	14.9	11.3	73	0.0
3	1017.6	21.7	17.9	14.6	77	0.0
4	1018.5	25.0	20.0	17.9	80	0.0
5	1020.9	21.2	16.8	14.0	72	0.0
6	1020.4	20.9	15.6	13.5	72	0.0
7	1019.2	23.4#	17.3	12.4#	76	0.0
8	1018.0	25.6	18.1	13.9	81	0.0
9	1016.1	25.0	18.1	14.0	81	0.0
10	1015.9	24.9	18.1	13.6	66	0.0
11	1016.9	20.8	16.1	12.0	66	0.0
12	1018.8	20.5	16.3	14.4	64	0.0
13	1020.1	16.4#	13.9	11.6#	74	3.0
14	1022.1	12.4	11.6	10.8	97	9.0
15	1018.3	14.8	13.1	11.0	98	4.0
16	1018.0	17.8	15.5	14.0	100	15.0
17	1025.8	14.2	12.7	10.9	72	9.5
18	1026.3	17.2	12.0	8.8	35	0.0
19	1021.9	19.7	11.7	5.8	58	0.0
20	1018.2	23.4	16.0	9.2	75	0.0
21	1016.4	22.7	15.5	10.1	72	0.0
22	1016.7	23.1	14.7	9.0	52	0.0
23	1019.1	23.8	15.5	9.9	50	0.0
24	1021.3	22.7	14.4	8.5	59	0.0
25	1022.2	22.4	13.9	8.6	69	0.0
26	1022.7	22.9	15.1	10.2	76	0.0
27	1022.5	23.3	15.5	10.4	81	0.0
28	1022.6	22.9	16.8	12.2	73	0.0
29	1024.7	20.9	15.4	12.3	64	0.0
30	1025.6	19.9	13.9	9.8	68	0.0
31	1025.1	21.9	14.1	9.0	71	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

January 2023 Weather

Station: Hong Kong Observatory

Date	Mean Pressure (hPa)	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
January 2023						
1	1023.3	19.3	16.9	14.5	65	0.1
2	1023.1	21.6	18.7	17.2	65	Trace
3	1023.7	19.2	17.3	16.1	69	Trace
4	1023.4	19.9	17.4	15.8	74	Trace
5	1023.4	21.4	18.5	16.8	77	0.0
6	1022.6	23.4	19.8	17.0	62	0.0
7	1020.5	21.3	19.1	17.9	59	0.0
8	1020.0	20.0	18.6	17.0	57	Trace
9	1019.5	21.4	19.7	18.2	72	0.1
10	1018.8	19.0	18.2	17.6	91	5.5
11	1017.6	19.1	18.1	17.0	87	3.2
12	1014.5	19.6	18.8	17.5	88	0.5
13	1011.0	23.9	21.7	18.9	93	4.5
14	1009.4	24.7	22.7	20.0	90	3.4
15	1014.4	21.6	18.4	13.0	80	Trace
16	1021.6	13.2	12.3	11.3	66	0.0
17	1023.6	15.2	13.2	11.0	71	0.0
18	1024.1	17.1	14.3	11.5	58	0.0
19	1022.3	18.7	16.1	13.3	63	0.0
20	1021.4	20.9	17.6	15.9	62	Trace
21	1019.5	18.8	16.9	16.0	79	Trace
22	1016.5	22.4	18.8	16.6	83	0.6
23	1016.2	21.1	18.8	16.9	86	0.0
24	1024.5	18.7	14.7	12.0	51	0.3
25	1023.1	14.4	12.5	10.6	54	0.0
26	1019.3	18.6	15.7	13.0	66	0.0
27	1022.5	17.3	15.4	12.4	46	0.0
28	1024.1	15.7	12.9	10.6	28	0.0
29	1023.7	16.0	12.8	9.8	35	0.0
30	1022.2	18.8	15.0	11.7	48	0.0
31	1017.9	20.1	16.9	13.8	61	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

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

Environmental Complaints Log

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

Cumulative Statistics on Complaints

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

Cumulative Statistics on Notification of Summons and Successful Prosecutions

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

Appendix M

ET Leader's Site Environmental Audit

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

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality	4 Jan 2023	Recommendation 1: The Contractor is recommended to increase watering for dust suppression at haul roads (Portion 1 - YLSTW).	4 Jan 2023
Noise	10 Jan 2023	Reminder 1: The Contractor is reminded to maintain and reinstate the silentup at the northern site boundary (Portion 1 - YLSTW).	11 Jan 2023
Water Quality	NA		
Chemical and Waste Management	18 Jan 2023	Reminder 1: The Contractor is reminded to provide drip tray for the oil drum to prevent spillage (Portion 1 - YLSTW).	20 Jan 2023
Land Contamination	NA		
Ecological Impact	NA		
Landscape and Visual Impact	10 Jan 2023	Reminder 1: Remove stockpile (uPVC pipes) inside Tree Protection Zone of T188 (Portion 1 - YLSTW).	11 Jan 2023
	26 Jan 2023	Reminder 1: The Contractor is reminded to erect a proper Tree Protection Zone for preserved trees T183 – T187 (Portion 1 - YLSTW).	31 Jan 2023
Permit / Licenses	NA		
Others	NA		

Appendix N

Outstanding Issues and Deficiencies

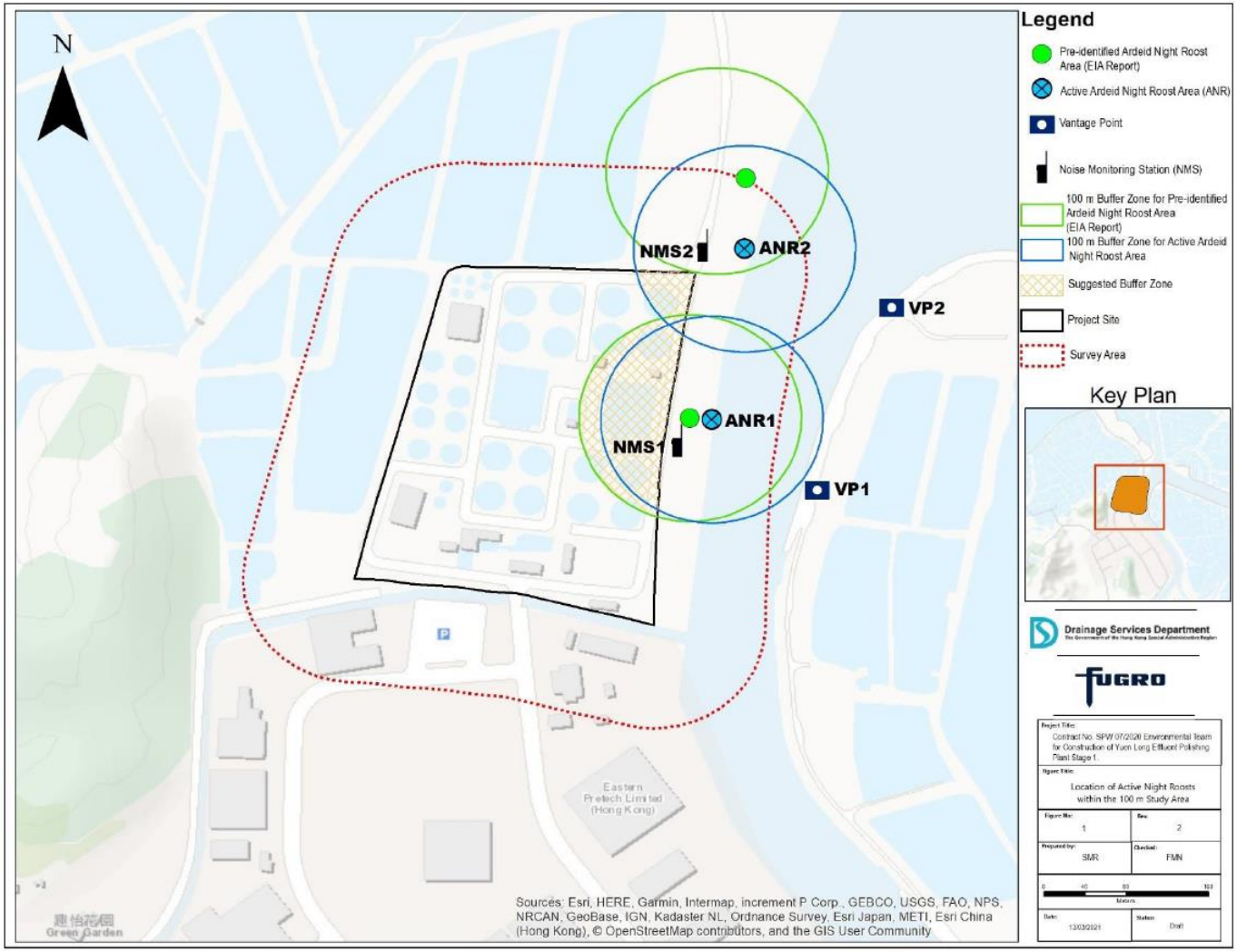
Summary of Outstanding Issues and Deficiencies in the Reporting Month

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

Appendix O

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

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



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

O.2 Survey Photos

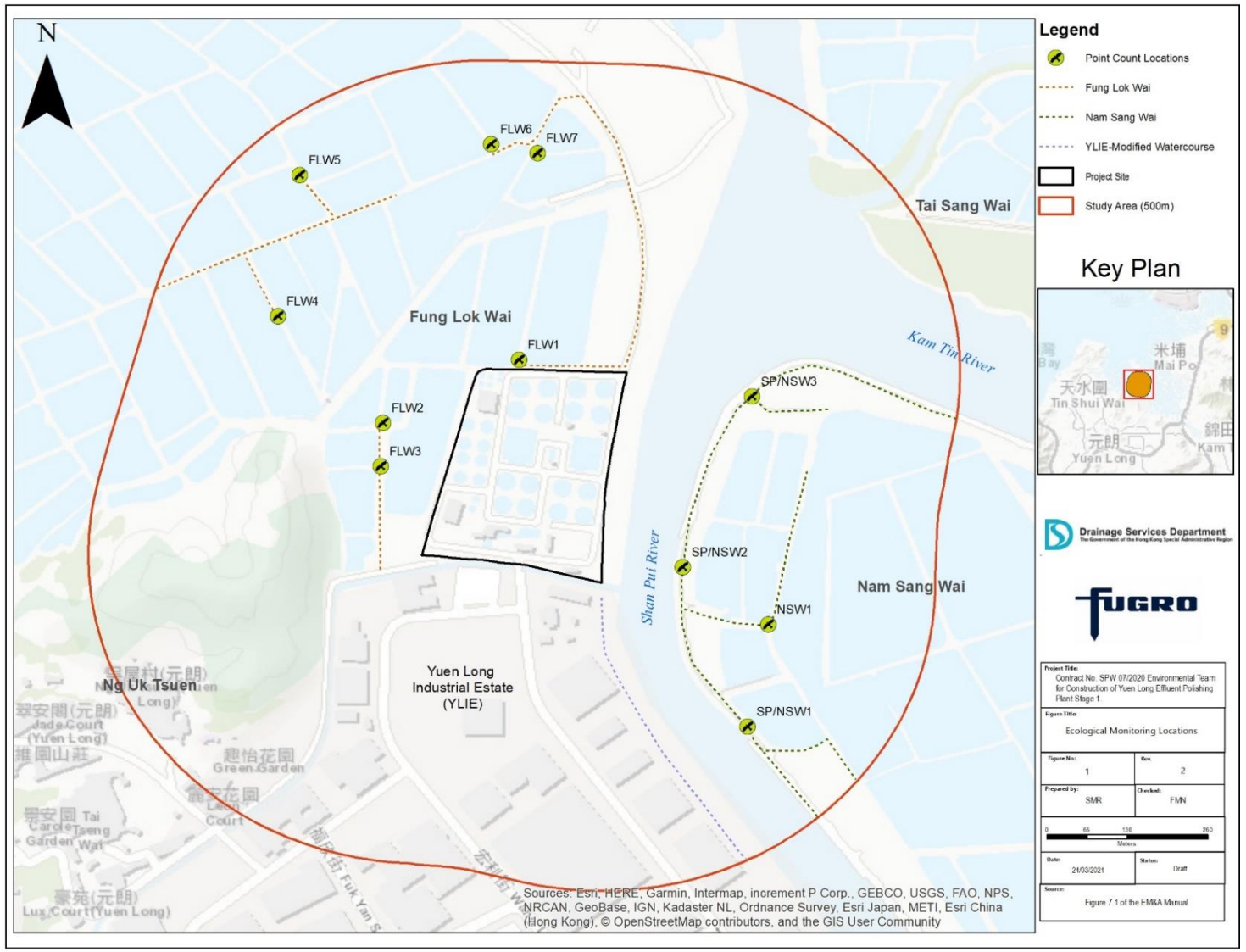
O.2.1 Active Night Roosting Site and Roosting Substrates

Appendix O.2.1a: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located east of the Project boundary observed on 17 January 2023 around 17:50

Appendix O.2.1b: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located northeast of the Project boundary observed on 17 January 2023 around 17:50

Appendix P

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



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

Appendix Q

Notification of Exceedance

Notification of Ecological Monitoring of Birds Exceedance

Incident Report on Action/ Limit Level Exceedance

<table>
<tr><td>Reference No.:</td><td colspan="4">IR20230116_Species Diversity</td></tr>
<tr><td>Project:</td><td colspan="4">Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1</td></tr>
<tr><td>Survey Dates:</td><td colspan="4">2023/01/16 (daytime)</td></tr>
<tr><td rowspan="10">Action level / Limit level: (For Avifauna Communities)</td><td>Method</td><td>Parameters</td><td>Action Level</td><td>Limit Level</td></tr>
<tr><td rowspan="4">Transect</td><td>Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td rowspan="9">Significant decline[1,2] in any of these parameters during the current monitoring month relative to the corresponding month during the baseline survey</td><td rowspan="9">Significant decline in any of these parameters for three consecutive months</td></tr>
<tr><td>Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community</td></tr>
<tr><td>Abundance of species with conservation importance only</td></tr>
<tr><td>Species diversity of species with conservation importance only</td></tr>
<tr><td rowspan="4">Point Count</td><td>Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community</td></tr>
<tr><td>Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community</td></tr>
<tr><td>Abundance of species with conservation importance only</td></tr>
<tr><td>Species diversity of species with conservation importance only</td></tr>
<tr><td rowspan="8">Measured significant decline in abundance and/or species diversity (fill in as appropriate)</td><td rowspan="4">Transect</td><td>Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td>☐</td><td>☐</td></tr>
<tr><td>Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td>☑</td><td>☐</td></tr>
<tr><td>Abundance of species with conservation importance only</td><td>☐</td><td>☐</td></tr>
<tr><td>Species diversity of species with conservation importance only</td><td>☐</td><td>☐</td></tr>
<tr><td rowspan="4">Point Count</td><td>Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td>☐</td><td>☐</td></tr>
<tr><td>Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td>☑</td><td>☐</td></tr>
<tr><td>Abundance of species with conservation importance only</td><td>☐</td><td>☐</td></tr>
<tr><td>Species diversity of species with conservation importance only</td><td>☑</td><td>☑</td></tr>
<tr><td>Action taken / to be taken[3]: (tick / circle / fill in as appropriate)</td><td colspan="4">Responses:
☑ Informed IEC, ER, and Contractor.
☑ Reviewed monitoring data.
☑ Investigated possible causes of decline and identified possible source (s) of impact. Recorded in notification.
☑ Check plant, equipment, and Contractor’s working methods.</td></tr>
</table>

	☐ Other
Possible reason/s[4] for action or limit level Non-compliance: (tick / fill in as appropriate)	**Findings / Evidence** ☐ Construction noise disturbance ☐ Vibration disturbance from potential percussive piling works ☐ Construction lighting/glare disturbance ☐ Increased human activities ☐ Construction dust disturbance ☑ 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)[5] 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) [6]. Species diversity of species with conservation importance only for point count method has reached the limit level. However, as the exceedances were not project related, not all additional actions need to be taken.
Observations	☑ Noise levels during the daytime survey (47.4 to 61.2 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)[6]. ☑ Environmental site audits indicated that the recommended environmental protection measures/mitigation measures to mitigate ecological impacts have been implemented. ☑ Significant decrease in species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community was observed for Transect/Point Count survey. ☑ Significant decrease in species diversity of species with conservation importance only was observed for ~~Transect~~/Point Count survey. ☑ Significant increase in species diversity of species with conservation importance only was observed for Transect/~~Point Count~~ survey.
Conclusion	☑ Due to influences of external factors/ other threats, not Project related ☐ Due to influences of construction activities under this project in the vicinity, considered to be Project related
Mitigation measures	☑ Avoidance of recognized site of conservation importance ☑ Restriction of construction hours ☑ Minimizing construction noise disturbance impacts through the use of noise barriers ☑ 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 (January 2023) Annex C – Shannon Diversity Index Values in the Different Transect Routes and Point Count Locations (January 2023) Annex D – Summary of Hutcheson T-test Analyses (January 2023) Annex E – Abundance Data per Point Count Location Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds (January 2023) Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds (January 2023)

Notes:

1. Significant decline in abundance determined using two-tailed t-test, $\alpha = 0.05$
2. Significant decline in species diversity determined using the Hutcheson t-test, two-tailed
3. In accordance with Table 4.2 "Responses to Alert and Action Level for Avifauna Communities" of the Baseline Bird Survey Report
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
5. Wright, M.D., Goodman, P. and Cameron, T. 2010. Exploring behavioural responses of shorebirds to impulsive noise. Wildfowl. 60:150-167

6. Shaukat, S.S., Khairi, M.A. and Khan, M.A., 1978. The relationship amongst dominance, diversity and community maturity in a desert vegetation. Pakistan Journal of Botany, 10(2), pp.183-196.

7. Gilbert, S.F. and Epel, D., 2009. Ecological developmental biology: integrating epigenetics, medicine, and evolution.

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

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

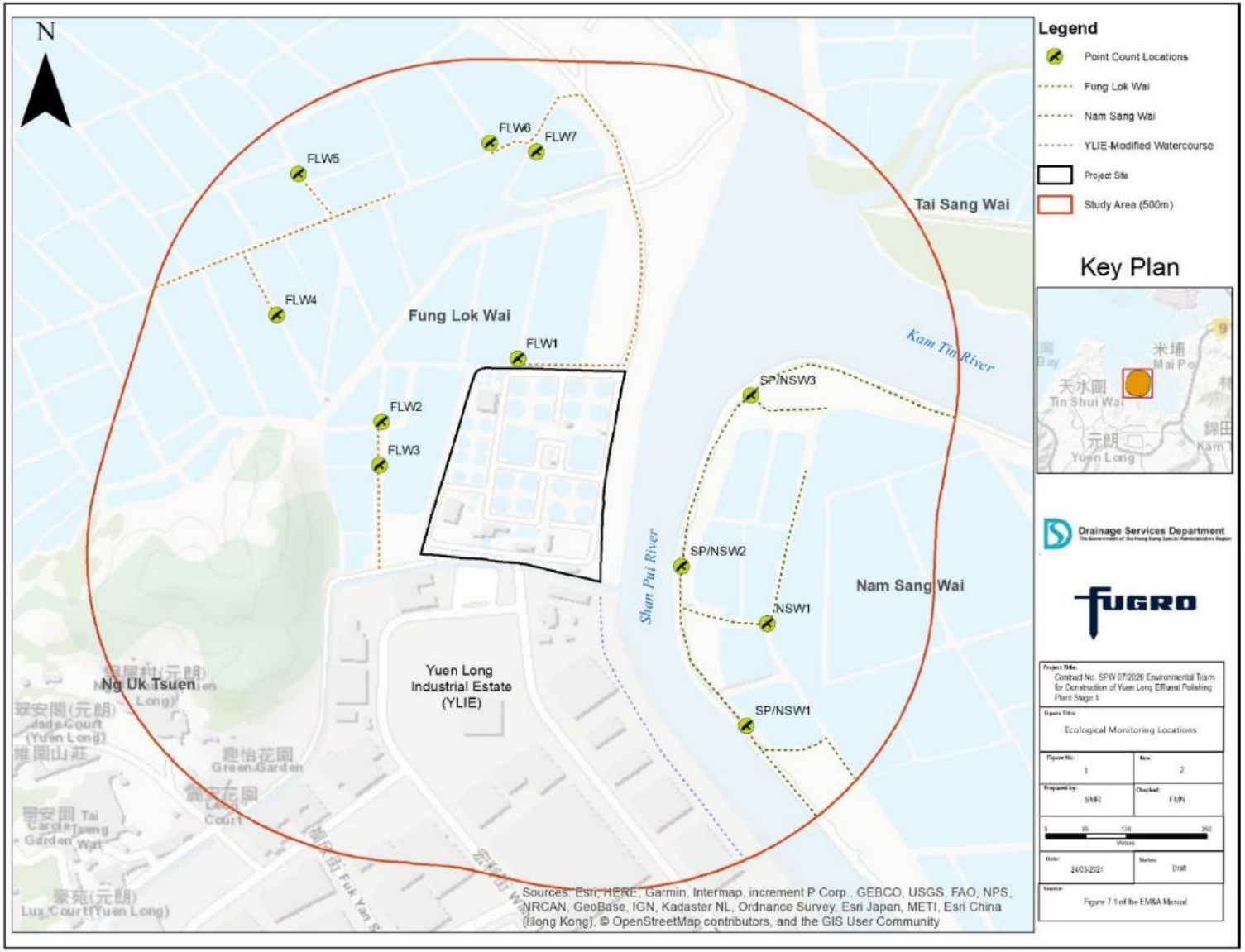
Prepared by: Fenelyn Nabuab
Designation: Ecologist

Signature:
Date (dd/mm/yyyy): 30/1/2023

Certified by: Alvin L.B. Yu
Designation: Environmental Team Leader

Signature:
Date (dd/mm/yyyy): 30/1/2023

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


N
Legend
Point Count Locations
Fung Lok Wai
Nam Sang Wai
YLIE-Modified Watercourse
Project Site
Study Area (500m)
Key Plan
FLW1
FLW2
FLW3
FLW4
FLW5
FLW6
FLW7
SP/NSW1
SP/NSW2
SP/NSW3
NSW1
Fung Lok Wai
Tai Sang Wai
Nam Sang Wai
Ng Uk Tsuen
Yuen Long Industrial Estate (YLIE)
Kam Tin River
Shan Pui River
Drainage Services Department
FUGRO
Ecological Monitoring Locations
Figure 7.1 of the EM&A Manual
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), © OpenStreetMap contributors, and the GIS User Community

FUGRO

Annex B – Ecological Monitoring of Birds Results the Different Transect Routes and Point Count Locations (January 2023)

Date (dd/mm/yyyy)	Daytime/ Night time	Season	Area	Transect/ Point Count	Point Count (Location)/ Transect Impact	Habitat	Common Name	Scientific Name	Abundance	Distribution in Hong Kong[2]	Principal Status[3]	Level of Concern[4]	Protection Status in China[5]	China Red Data Book [6]	Red List of China's Vertebrates [10]	IUCN Red List [7] (v.2020 -3)	Species of Conservation Importance	Wetland Dependent
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	In flight	Azure-winged Magpie	*Cyanopica cyanus*	3	Introduced	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	50	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	3	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	House Swift	*Apus nipalensis*	3	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Oriental Magpie Robin	*Copsychus saularis*	2	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Yellow-bellied Prinia	*Prinia flaviventris*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	2	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Plain Prinia	*Prinia inornata*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Yellow-bellied Prinia	*Prinia flaviventris*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Black Kite	*Milvus migrans*	2	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	4	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW4	In flight	Great Cormorant	*Phalacrocorax carbo*	900	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Little Egret	*Egretta garzetta*	7	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	5	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[2]	Principal Status[3]	Level of Concern[4]	Protection Status in China[5]	China Red Data Book [6]	Red List of China's Vertebrates [10]	IUCN Red List [7] (v.2020 -3)	Species of Conservation Importance	Wetland Dependent
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Egret	*Ardea alba*	8	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Grey Heron	*Ardea cinerea*	2	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	House Swift	*Apus nipalensis*	3	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Egret	*Egretta garzetta*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Grebe	*Tachybaptus ruficollis*	1	Common	R	LC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	2	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	*Ardea alba*	4	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	House Swift	*Apus nipalensis*	31	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	12	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Egret	*Ardea alba*	4	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Chinese Bulbul	*Pycnonotus sinensis*	8	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Mangrove	Collared Crow	*Corvus torquatus*	2	Uncommon	R	LC	-	-	NT	VU	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Common Tailorbird	*Orthotomus sutorius*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Pond-FLW	Eastern Yellow Wagtail	*Motacilla tschutschensis*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Pond-FLW	Eurasian Collared Dove	*Streptopelia decaocto*	1	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Eurasian Tree Sparrow	*Passer montanus*	5	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Great Cormorant	*Phalacrocorax carbo*	2	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[2]	Principal Status[3]	Level of Concern[4]	Protection Status in China[5]	China Red Data Book [6]	Red List of China's Vertebrates [10]	IUCN Red List [7] (v.2020 -3)	Species of Conservation Importance	Wetland Dependent
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Pond-FLW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Heuglin's Gull	*Larus fuscus*	6	Common	PM,WV	LC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Reedbed	Olive-backed Pipit	*Anthus hodgsoni*	2	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Reedbed	Plain Prinia	*Prinia inornata*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Red Turtle Dove	*Streptopelia tranquebarica*	3	Uncommon	PM	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Spotted Dove	*Spilopelia chinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Black-faced Spoonbill	*Platalea minor*	2	Common	WV	PGC	Class II	EN	EN	EN	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Daurian Redstart	*Phoenicurus auroreus*	1	Common	WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Eurasian Tree Sparrow	*Passer montanus*	2	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Cormorant	*Phalacrocorax carbo*	56	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Little Egret	*Egretta garzetta*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	*Spilopelia chinensis*	2	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Modified Watercourse	Spotted Dove	*Spilopelia chinensis*	2	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-faced Spoonbill	*Platalea minor*	9	Common	WV	PGC	Class II	EN	EN	EN	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	7	Common	PM	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Moorhen	*Gallinula chloropus*	6	Common	R	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Sandpiper	*Actitis hypoleucos*	4	Common	PM,WV	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Northern Pintail	*Anas acuta*	5	Abundant	WV	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Northern Shoveler	*Anas clypeata*	7	Abundant	WV	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Pied Avocet	*Recurvirostra avosetta*	5	Abundant	WV	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	White-breasted Waterhen	*Amaurornis phoenicurus*	1	Common	R	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Yellow-bellied Prinia	*Prinia flaviventris*	3	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Plantation-NSW	Azure-winged Magpie	*Cyanopica cyanus*	1	Introduced	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-faced Spoonbill	*Platalea minor*	1	Common	WV	PGC	Class II	EN	EN	EN	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[2]	Principal Status[3]	Level of Concern[4]	Protection Status in China[5]	China Red Data Book [6]	Red List of China's Vertebrates [10]	IUCN Red List [7] (v.2020 -3)	Species of Conservation Importance	Wetland Dependent
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Plantation-NSW	Chinese Bulbul	*Pycnonotus sinensis*	6	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Collared Crow	*Corvus torquatus*	1	Uncommon	R	LC	-	-	NT	VU	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Sandpiper	*Actitis hypoleucos*	3	Common	PM,WV	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	1	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Cormorant	*Phalacrocorax carbo*	5	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Egret	*Ardea alba*	4	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Plantation-NSW	Azure-winged Magpie	*Cyanopica cyanus*	57	Introduced	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	8	Common	PM	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Chinese Pond Heron	*Ardeola bacchus*	12	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Collared Crow	*Corvus torquatus*	1	Uncommon	R	LC	-	-	NT	VU	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Sandpiper	*Actitis hypoleucos*	2	Common	PM,WV	-	-	-	LC	LC	N	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Dusky Warbler	*Phylloscopus fuscatus*	1	Common	PM,WV	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Cormorant	*Phalacrocorax carbo*	18	Common	WV	PRC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Egret	*Ardea alba*	3	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	2	Common	PM	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Plantation-NSW	Chinese Bulbul	*Pycnonotus sinensis*	4	Abundant	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Egret	*Egretta garzetta*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Northern Pintail	*Anas acuta*	2	Abundant	WV	RC	-	-	LC	LC	Y	Y
16/01/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Northern Shoveler	*Anas clypeata*	2	Abundant	WV	RC	-	-	LC	LC	Y	Y

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

Annex C – Shannon Diversity Index Values in the Different Transect Routes and Point Count Locations (January 2023)

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	Jan-17	Jan-23	Remarks
P1	FLW1	1.15	1.28	+
P2	FLW2	1.48	1.33	-
P3	FLW3	0.58	0.64	+
P4	FLW4	**	0.05	+
P5	FLW5	**	1.53	+
P6	FLW6	1.13	1.05	-
P7	FLW7	1.92	1.27	-
P9	SP/NSW3	2.35	1.35	-
P10	SP/NSW2	2.68	1.97	-
P11	NSW1	1.31	0.64	-
P12	SP/NSW1	2.36	2.20	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Jan-17	Jan-23	Remarks
Fung Lok Wai	FLW	3.20	1.37	-
Nam Sang Wai	NSW	2.12	2.43	+
YLIE-CW	YLIE-CW	0.64	1.71	+

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	Jan-17	Jan-23	Remarks
P1	FLW1	0.90	**	-
P2	FLW2	0.98	**	-
P3	FLW3	0.22	0	-
P4	FLW4	**	0.05	+
P5	FLW5	**	1.30	+
P6	FLW6	0.35	1.47	+
P7	FLW7	1.56	1.27	-

Shannon Diversity Index Value of Species with Conservation Importance				
P9	SP/NSW3	2.30	1.31	-
P10	SP/NSW2	2.24	1.41	-
P11	NSW1	0.35	0.31	-
P12	SP/NSW1	2.07	1.75	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Jan-17	Jan-23	Remarks
Fung Lok Wai	FLW	1.74	1.26	-
Nam Sang Wai	NSW	0	1.17	+
YLIE-CW	YLIE-CW	**	1.35	+

Notes:

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

Annex D – Summary of Hutcheson T-test Analyses (January 2023)

Hutcheson T-test formula:

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

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

Months	January 2017	January 2023
Total	708	1251
Richness	47	27
H	2.82	1.04
S^2_H	0.003	0.002
t	25.496	
df	1735.809	
Crit	1.961	
p	0.000	
CI	0.102	0.095

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

Months	January 2017	January 2023
Total	528	1110
Richness	22	13
H	2.24	0.55
S^2_H	0.003	0.002
t	25.262	
df	1112.901	
Crit	1.962	
p	0.000	
CI	0.108	0.080

Annex E – Abundance Data per Point Count Location

Annex E.1. Baseline (January 2017) abundance data (all avifauna species) per point count location

Point Count Location	Common Name	Abundance
FLW1/ P1	*Ardea cinerea*	2
	Egretta garzetta	1
	Orthotomus sutorius	1
	Phalacrocorax carbo	5
FLW2/ P2	*Ardea cinerea*	1
	Ardeola bacchus	8
	Copsychus saularis	2
	Motacilla alba	1
	Phalacrocorax carbo	1
	Prinia inornata	2
	Spilopelia chinensis	10
	Tachybaptus ruficollis	2
FLW3/ P3	*Alcedo atthis*	1
	Corvus torquatus	2
	Dicrurus macrocercus	1
	Phalacrocorax carbo	32
	Prinia flaviventris	1
FLW6/ P6	*Acridotheres cristatellus*	32
	Alcedo atthis	1
	Ardea alba	2
	Ardea cinerea	1
	Lanius cristatus	1
	Motacilla alba	4
	Phalacrocorax carbo	61
	Saxicola stejnegeri	1
	Tachybaptus ruficollis	2
FLW7/ P7	*Ardea alba*	1
	Ardea cinerea	3
	Egretta garzetta	1
	Gracupica nigricollis	2
	Himantopus himantopus	2
	Lanius schach	1

Point Count Location	Common Name	Abundance
	Phalacrocorax carbo	14
	Spodiopsar sericeus	8
	Streptopelia decaocto	9
	Tachybaptus ruficollis	4
SP/NSW3/ P9	*Anas acuta*	1
	Anas clypeata	5
	Anas crecca	5
	Ardea alba	5
	Ardea cinerea	7
	Ardeola bacchus	17
	Calidris temminckii	1
	Chroicocephalus ridibundus	50
	Copsychus saularis	1
	Egretta garzetta	4
	Egretta intermedia	1
	Himantopus himantopus	3
	Larus fuscus	2
	Numenius arquata	1
	Phalacrocorax carbo	13
	Prinia flaviventris	1
	Recurvirostra avosetta	16
	Tringa erythropus	7
	Tringa nebularia	5
	Tringa stagnatilis	2
	Tringa totanus	1
SP/NSW2/ P10	*Acridotheres cristatellus*	30
	Amaurornis phoenicurus	1
	Anas clypeata	20
	Anas crecca	10
	Ardea alba	3
	Ardea cinerea	3
	Ardeola bacchus	4
	Cyanopica cyanus	8
	Egretta garzetta	3

Point Count Location	Common Name	Abundance
	Ficedula albicilla	1
	Himantopus himantopus	11
	Larus fuscus	1
	Orthotomus sutorius	1
	Phalacrocorax carbo	2
	Phylloscopus inornatus	2
	Prinia flaviventris	2
	Pycnonotus jocosus	15
	Pycnonotus sinensis	2
	Recurvirostra avosetta	10
	Saxicola stejnegeri	1
	Spodiopsar sericeus	5
	Streptopelia orientalis	1
	Tringa nebularia	1
	Tringa stagnatilis	1
	Tringa totanus	2
	Zosterops japonicus	2
NSW1/ P11	*Acridotheres cristatellus*	9
	Acrocephalus bistrigiceps	1
	Ardea alba	1
	Ardea cinerea	2
	Ardeola bacchus	1
	Charadrius dubius	2
	Copsychus saularis	2
	Corvus torquatus	2
	Cyanopica cyanus	8
	Motacilla alba	2
	Phalacrocorax carbo	80
	Pycnonotus jocosus	5
	Spilopelia chinensis	2
SP/NSW1/ P12	*Alcedo atthis*	1
	Anas acuta	1
	Anas clypeata	5
	Anas crecca	15

Point Count Location	Common Name	Abundance
	Ardea alba	3
	Ardea cinerea	2
	Ardeola bacchus	2
	Calidris temminckii	1
	Charadrius dubius	2
	Egretta garzetta	1
	Egretta intermedia	1
	Halcyon smyrnensis	1
	Himantopus himantopus	19
	Motacilla alba	1
	Phalacrocorax carbo	2
	Recurvirostra avosetta	12
	Tringa erythropus	2
	Tringa nebularia	1
	Zosterops japonicus	6
Total		**708**

Annex E.2. Impact monitoring (January 2023) abundance data (all avifauna species) per point count location

Location	Common Name	Abundance
FLW1/ P1	*Acridotheres cristatellus*	3
	Prinia inornata	1
	Pycnonotus sinensis	2
	Spilopelia chinensis	1
FLW2/ P2	*Acridotheres cristatellus*	2
	Motacilla alba	1
	Prinia flaviventris	1
	Spilopelia chinensis	1
FLW3/ P3	*Milvus migrans*	2
	Pycnonotus sinensis	4
FLW4/ P4	*Ardea alba*	1
	Egretta garzetta	7
	Phalacrocorax carbo	900
FLW5/ P5	*Apus nipalensis*	3
	Ardea alba	8

Location	Common Name	Abundance
	Ardea cinerea	2
	Egretta garzetta	1
	Phalacrocorax carbo	5
	Tachybaptus ruficollis	1
FLW6/ P6	*Apus nipalensis*	31
	Ardea alba	4
	Ardea cinerea	1
	Ardeola bacchus	1
	Egretta garzetta	3
	Motacilla alba	1
	Phalacrocorax carbo	2
FLW7/ P7	*Ardea alba*	4
	Ardea cinerea	1
	Ardeola bacchus	2
	Egretta garzetta	3
	Phalacrocorax carbo	12
SP/NSW3/ P9	*Actitis hypoleucos*	2
	Ardea alba	3
	Ardeola bacchus	12
	Corvus torquatus	1
	Cyanopica cyanus	57
	Himantopus himantopus	8
	Phalacrocorax carbo	18
	Phylloscopus fuscatus	1
SP/NSW2/ P10	*Acridotheres cristatellus*	1
	Actitis hypoleucos	3
	Ardea alba	4
	Corvus torquatus	1
	Cyanopica cyanus	1
	Egretta garzetta	2
	Phalacrocorax carbo	5
	Platalea minor	1
	Pycnonotus sinensis	6
NSW1/ P11	*Ardea alba*	1
	Egretta garzetta	1
	Passer montanus	2

Location	Common Name	Abundance
	Phalacrocorax carbo	56
	Phoenicurus auroreus	1
	Platalea minor	2
	Spilopelia chinensis	2
SP/NSW1/ P12	*Actitis hypoleucos*	4
	Amaurornis phoenicurus	1
	Anas acuta	5
	Anas clypeata	7
	Ardea alba	1
	Ardea cinerea	1
	Gallinula chloropus	6
	Himantopus himantopus	7
	Platalea minor	9
	Prinia flaviventris	3
	Recurvirostra avosetta	5
Total		**1251**

Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds (January 2023)

Frequency and Period	Location	Day time (16/1/2023)	
		Start Time	L_{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1/ P1	10:50	55.3
	FLW2/ P2	10:10	61.2
	FLW3/ P3	10:14	56.3
	FLW4/ P4	09:13	54.2
	FLW5/ P5	09:15	53.7
	FLW6/ P6	09:43	53.4
	FLW7/ P7	09:36	47.4
	SP/NSW3/ P9	08:28	55.4
	SP/NSW2/ P10	08:18	53.6
	NSW1/ P11	07:54	56.7
	SP/NSW1/ P12	07:50	47.8

Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds (January 2023)

Annex G.1. Flock of Great Cormorants in Fung Lok Wai, far north of the Project Site.

Annex G.2. Flock of Great Cormorants in Fung Lok Wai, far north of the Project Site.