Monthly EM&A Report (April 2022)

0120/20/ED/0469 02

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

RAMBOLL

Ref.: DSDYLSTWEM00_0_0281L.22

16 May 2022

By E-mail and By Hand

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

Attention: Mr YEUNG H. M. Simon

Dear Mr YEUNG,

Re: Contract No. SPW 08/2020
Independent Environmental Checker for
Construction of Yuen Long Effluent Polishing Plant Stage 1

Verification of the Monthly EM&A Report (April 2022)

Reference is made to the Monthly EM&A Report (April 2022) by the ET with Fugro Document No. 0120/20/ED/0469/02 (the Report), which was received via e-mail dated 16 May 2022.

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

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

Yours sincerely,

WONG Fu Nam
Independent Environmental Checker

c.c.

DSD	Mr LAM Yu Wang	By E-mail
Fugro	Mr YU Lap Bong	By E-mail

Document Control

Document Information

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Client Information

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

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**	**Assistant 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 13th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 April 2022 to 30 April 2022. As informed by the Contractor, major activities in the reporting month were:

- Demolition of FST no. 5-6 by excavator mounted crusher;
- Demolition of Auxiliary Pumping Station (above ground);
- Pre-drill work at A. tank by 1 rig;
- Pre-drill work at Air Flotation Thickener and Sludge Digestion Tank by 3 rigs;
- Installation of sheet pile at IW & PST;
- Piling work at PST;
- Drilling and installation of dewatering well and observation well at IW & PST;
- ELS works at IW & PST;
- ELS work at Zone 2B;
- Pipe laying for Zone 3 diversion;
- Zone 3 Diversion works:
  a. Temp. Gravity thickening tank – Pipe laying and E&M installation work;
  b. Temp. Sludge Holding Tank – Pipe laying and E&M installation work;
  c. Temp. Water heater house – Pipe laying and E&M installation work;
  d. Temp. Primary Sludge Pumping Station – Sheet piling work;
  e. Temp. Digested sludge pump – ELS Work;
  f. Digested Sludge Pumping Station house – Pipe laying and E&M installation work;
- Demolition works at Sha Tin Treatment Plant;
- Demolition of Sludge Holding Tank no. 3 & 4;
- Foundation works at CLP substation;
- Foundation works at MIC office;
- Env. Drill holes inside Air Flotation Thickener; and
- Disposal of construction waste as indicated in **Appendix I**.

Breaches of Environmental Quality Performance Limits (AL levels)

iii. No Action and Limit Level exceedance was recorded for air quality monitoring and construction noise monitoring in the reporting month.

iv. No Action and Limit Level exceedance was recorded for water quality monitoring in the reporting month.

v. No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the two active ardeid night roosts (ANR1 and ANR2) observed within the Survey Area during the reporting month.

vi. No Action / Limit exceedance for the ecological monitoring of birds in the reporting month.

vii. No corrective actions were required according to the Event and Action Plans for the Monitoring Parameters.

Land Contamination

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

Complaint Log

ix. No complaints were received in the reporting period.

Notifications of Summons and Successful Prosecutions

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

Reporting Change

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

Future Key Issues

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

- Demolition of Admin. Building, Settled Sewage Overflow Chamber, Sludge Holding Tanks no. 1, 3 & 4 (below ground), Return Activated Sludge Screw Pump Pumping station, Air Floatation Thickener and Auxiliary Pumping Station (below ground);
- Pipe Laying and construction of RC chamber at Zone 2B and subsequence diversion work;
- Sheet pile installation, ELS work and RC structure at IW & PST;
- Piling work at PST & Transformer House;
- Piling work at Sludge Thickening Building;
- Drilling and installation of dewatering well and observation well at IW & PST;
- ELS works at IW & PST;
- Construction of RC structure at 3 zone (Location D -Temp. Primary Sludge Pumping Station);
- Pipe laying for Zone 3 diversion;
- Drilling & installation of pipe pile wall for demolition of Aeration Tank no. 5-8 at AGS;
- Construction of CLP Substation;
- Construction of MiC office;
- Demolition of PST no. 4;
- Ground investigation at SDB, SDT & STB;
- Sheet piling work around Sludge digester no. 1 – 3;
- Installation of brand drain at Biogas Holder no. 1;
- Installation of concrete blocks and soil Surcharge at Biogas Holder no. 1;
- Construction of temp. traffic road at north of SHT no. 3 & 4;
- Construction of PST structure; and

- Zone 3:
    a. E&M work at temp. Gravity thickening tank (Atal);
    b. E&M work at temp. Sludge Holding Tank (Atal);
    c. E&M work at temp. water heater house (Atal);
    d. RC work at temp. Primary sludge pumping station;
    e. ELS, RC construction and E&M work at Temp. digested sludge pump;
    f. E&M work at Digested Sludge Pumping Station.

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1. INTRODUCTION

1.1 Background

1.1.1 The existing Yuen Long Sewage Treatment Works (YLSTW) is a secondary sewage treatment works, located at Yuen Long Industrial Estate serves Yuen Long Town, Yuen Long Industrial Estate and Kam Tin areas with a design capacity of 70,000 m^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 13th Monthly EM&A report to document the findings of site inspection activities and EM&A programme for this project from 1 April 2022 to 30 April 2022 (reporting period) and is submitted to fulfil Condition 3.4 of the EP and Section 12.4.1 of the EM&A Manual. According to Condition 4 of the EP, electronic reporting is provided on the internet website to facilitate public inspection of the report.

1.2 Project Organization

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

Table 1.1 – Contact Information of Key Personnel

Party	Position	Name	Telephone
Project Proponent (Drainage Services Department)	Engineer	Mr. Lam Yu Wang	2594 7473
Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Mr. Simon Yeung	9075 7172
	Senior Resident Engineer	Mr. Patrick Leung	6124 8838
Independent Environmental Checker (Ramboll Hong Kong Limited)	Independent Environmental Checker (IEC)	Mr. F.N. Wong	2531 0247
Contractor (Paul Y. - CREC Joint Venture)	Environmental Officer	Ms. Iris Ho	5490 5271
Environmental Team (Fugro Technical Services Limited)	Environmental Team Leader (ETL)	Mr. Alvin Yu	3565 4373

1.3 Construction Programme and Activities

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

1.4 Works undertaken during the month

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

- Demolition of FST no. 5-6 by excavator mounted crusher;
- Demolition of Auxiliary Pumping Station (above ground);
- Pre-drill work at A. tank by 1 rig;
- Pre-drill work at Air Flotation Thickener and Sludge Digestion Tank by 3 rigs;
- Installation of sheet pile at IW & PST;
- Piling work at PST;
- Drilling and installation of dewatering well and observation well at IW & PST;
- ELS works at IW & PST;
- ELS work at Zone 2B;
- Pipe laying for Zone 3 diversion;
- Zone 3 Diversion works:
  a. Temp. Gravity thickening tank – Pipe laying and E&M installation work;
  b. Temp. Sludge Holding Tank – Pipe laying and E&M installation work;
  c. Temp. Water heater house – Pipe laying and E&M installation work;
  d. Temp. Primary Sludge Pumping Station – Sheet piling work;
  e. Temp. Digested sludge pump – ELS Work;
  f. Digested Sludge Pumping Station house – Pipe laying and E&M installation work;
- Demolition works at Sha Tin Treatment Plant;
- Demolition of Sludge Holding Tank no. 3 & 4;
- Foundation works at CLP substation;
- Foundation works at MIC office;
- Env. Drill holes inside Air Flotation Thickener; 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-RN0720-21	18-Oct-2021	17-Apr-2022 (Superseded by GW-RN0935-21)
Construction Noise Permit	GW-RN0935-21	20-Dec-2021	19-Jun-2022
Construction Noise Permit (Percussive Piling)	PP-RN0015-22	6-Apr-2022	5-Jul-2022
Construction Noise Permit	GW-RN0294-22	13-Apr-2022	4-Oct-2022
Water Pollution Control Ordinance (CAP. 358) Licence pursuant to Section 20	WT00038102-2021	4-Aug-2021	31-Aug-2026
Marine Dumping Permit Type 1 – Open Sea Disposal (Dedicated Site) and Type 2 – Confined Marine Disposal	EP/MD/22-029	10-Mar-2022	09-Apr-2022
Marine Dumping Permit Type 1 – Open Sea Disposal	EP/MD/22-030	10-Mar-2022	09-Sep-2022
Marine Dumping Permit Type 1 – Open Sea Disposal (Dedicated Site) and Type 2 – Confined Marine Disposal	EP/MD/22-031	10-Apr-2022	09-May-2022
Disposal of Special waste at Landfills Admission Ticket (Pond Sediment)	Admission Ticket Number: 16792	1-May-2022	30-May-2022
Disposal of Special waste at Landfills Admission Ticket (Sludge)	Admission Ticket Number: 16811	11-Apr-2022	10-Oct-2022

2. AIR QUALITY

2.1 Monitoring Requirement

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

2.2 Monitoring Equipment

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

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

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

Table 2.1 – Air Quality Monitoring Equipment

Item	Location	Brand	Model	Equipment	Serial No.
1	AM1	Sibata	Model LD-5R	SIBATA LD-5R Digital Dust Indicator	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	89	60-112	291	500
AM2	100	74-123	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 April 2022 (µg/ m^3)
1-hour TSP			
AM1	ASR09	205-451	112
AM2	ASR11		123

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	0873599
2	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	1488272
3	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	4358251
4	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	2383707
5	SENSOR	AR816	Anemometer	2136513

3.3 Monitoring Parameters and Frequency

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

Table 3.2 – Monitoring Parameters and Frequencies of Noise Monitoring

Parameter	Frequency
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	55-57	When one documented complaint is received	75
	CM2	64-65		75
	CM3	64-66		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 April 2022 L_{eq} (30min) dB(A)
CM1	NSR1	72	57
CM2	NSR2	74	65
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
					19E100633
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 Two 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.

5. ECOLOGY MONITORING

5.1 Ardeid Night Roost Monitoring

5.1.1 Monitoring Requirement

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

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

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

5.1.2 Monitoring Methodology

5.1.2.1 Monitoring Area

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

5.1.2.2 Monitoring Activity

5.1.2.2.1 Active Ardeid Night Roost

Current Ardeid Night Roost Monitoring Survey focused on the two active night roosts within the Survey Area (100 m from the Project boundary) that were previously confirmed during the pre-construction Survey. These roosts include one that was approximately 40 m east of the Project boundary and another around 45 m northeast of the mentioned boundary (**Section 3 of the approved Pre-construction Survey Report of Ardeid Night Roost**). Primary data collection with the use of 7x and 10x binoculars; and field guides including the Avifauna of Hong Kong (Carey et al., 2001) and The Birds of Hong Kong and South China (Viney et al., 2005), was from about one hour before sunset time until one hour after sunset with reference to **Section 7.3.10 of the approved EM&A Manual**. Sunset time was according to Hong Kong Observatory (HKO). The survey was conducted on 21 April 2022.

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

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

5.1.2.2.2 Noise Monitoring

Monitoring Locations, Frequency, Time and Parameters

The noise monitoring locations were established at 22°28'4.25"N, 114°1'41.32"E; and 22°28'10.43"N, 114°1'42.17"E for NMS1 and NMS2 stations, respectively. Monitoring frequency was only once a month in concurrence with the construction phase monthly monitoring of the active night roosts for correlation. Monitoring time for both stations started around 18:59, the earliest final night roost period recorded during the survey and lasted for 30 minutes. **Table 5.1** presents the monitoring parameters.

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

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

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

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

Event and Action Plan

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

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

5.1.3 Monitoring Results

5.1.3.1 Active Ardeid Night Roost

The monitoring activity was conducted on 21 April 2022 and started around 17:46 (one hour before sunset) on a low tide condition. During the pre-roost period (PRP), the period when avian individuals gather first before flying into a night roost, Grey Heron *Ardea cinerea* (2 individuals) and Little Egret *Egretta garzetta* (3 individuals) were observed in pre-roost aggregate (PRA) around 18:35 at the mudflat east side (ANR1) of the Project boundary while Little Egret *Egretta garzetta* (2 individuals) were concurrently noted at the mudflat northeast side (ANR2) of the Project boundary during the period (**Table 5.2**).

For the final night roost at around 18:59, Chinese Pond Heron (3 individuals) were observed at the roosting area ANR1 utilizing the inside portions of the understory to canopy layers of the roosting substrate *Sonneratia apetala* and *S. caseolaris*; while individuals of Little Egret (7 individuals) were noted at ANR2 and utilized the canopy layer of the aforementioned roosting substrate.

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

Table 5.2 – Active Ardeid Night Roost Survey Findings

Date: 21 April 2022			Sunset Time: 18:46 Tidal Condition: Low Tide		
Pre-roost Period			**Final roost Period**		
Time of Return:	Grey Heron *Ardea cinerea*, and Little Egret *Egretta garzetta* (18:35)		**Time of Return:**	Chinese Pond Heron *Ardeola bacchus,* and Little Egret *Egretta garzetta* (18:59)	
Parameters	**Location**		**Parameters**	**Location**	
	ANR1	**ANR2**		**ANR1**	**ANR2**
Pre-roost Aggregation (Y/N):	N	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
Grey Heron *Ardea cinerea*	2	-	Chinese Pond Heron *Ardeola bacchus*	3	-
Little Egret *Egretta garzetta*	3	2	Little Egret *Egretta garzetta*	-	7
Breeding Activity (Y/N):	**ANR1**	N			
	ANR2	N			

Notes:
Pre-roost Period: Period when avian individuals gather first before flying into a night roost
ANR1: Active ardeid night roost area east of the Project boundary
ANR2: Active ardeid night roost area northeast of the Project boundary
-: not recorded

5.1.3.2 Noise Monitoring

Noise monitoring activities were conducted on 21 April 2022 in concurrence with the construction phase monthly monitoring of the pre-identified active night roosts. Noise monitoring started at 18:59 and lasted for 30 minutes, until 19:29.

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

Table 5.3 – Noise Monitoring Results

Frequency and Period	Location	Start Time	L_{Aeq} (30 min.)	Action Level	Limit Level
Monthly in concurrence with the construction phase monthly monitoring of the active night roosts	NMS1	18:59	48.4	65.5 dB(A)[1]	72.2 dB(A)[2]
	NMS2	18:59	45.7		

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 April 2022 monitoring period. These roosts were located at the mangrove strips in the east and northeast portions of the Project boundary. These were used by individuals of Chinese Pond Heron, and Little Egret.

5.1.5.2 Noise Monitoring Results

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

5.2 Ecological Monitoring of Birds

5.2.1 Monitoring Requirement

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

5.2.2 Monitoring Methodology

5.2.2.1 Monitoring Area

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

5.2.2.2 Monitoring Activity

Avifauna survey on the different wetland habitats using the transect count and point count methods was conducted on 20 April 2022 (day time) which started around 07:45; and 22 April 2022 (night-time) which started around 18:46. For the survey overlooking the mudflats and mangroves in the Shan Pui River, it was concurrently conducted on the same date with the day time survey during the low tide (generally 1.5m or below) period at also around 07:45. The methodology for the monitoring activity followed **Sections 8.3.3.6** and **8.3.3.7** of the **EIA Report (AEIAR-220/2019)** and as detailed below.

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

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

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

Table 5.4 - Noise Monitoring Parameters

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

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

5.2.2.3 Data Analysis

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

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

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

To check the presence of variation in bird abundance between baseline and impact monitoring, t-test was applied (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 20 April 2022 (daytime) and 22 April 2022 (night-time) are presented in **Sections 5.2.3.1** and **5.2.3.2.** Meanwhile, results for the surveys overlooking the mudflats and mangroves in the Shan Pui River, with monitoring activities conducted on similar date with the daytime survey during the low tide (generally 1.5m or below) period which started around 07:45 had results presented in **Section 5.2.3.3.**

5.2.3.1 Abundance

5.2.3.1.1 All Avifauna Species

An overall total of 293 avifauna individuals was recorded in the monitoring area during the April 2022 monitoring period, of which 227 individuals were recorded from the point count method and 66 individuals from the transect walk method. Relative to the April 2017 baseline data (point count method = 298; and transect walk = 47), current insignificant decrease in total

abundance for the point count method (t-value = 0.24; p-value = 0.81; α = 0.05) was noted. Details of these findings are summarized in **Table 5.5** and **Appendix F.7.**

Table 5.5 – Abundance of all Avifauna Species

Abundance of all Avifauna Species				
Point Count Method				
EIA Report ID	**EM&A Manual ID**	**Apr-17**	**Apr -22**	**Remarks**
P1	FLW1	2	20	+
P2	FLW2	4	9	+
P3	FLW3	3	6	+
P4	FLW4	20	8	-
P5	FLW5	47	15	-
P6	FLW6	8	22	+
P7	FLW7	8	19	+
P9	SP/NSW3	110	28	-
P10	SP/NSW2	27	34	+
P11	NSW1	30	13	-
P12	SP/NSW1	39	53	+
	Total	**298**	**227**	-
	Mean	**27**	**21**	-
Transect Walk Method				
EIA Report ID	**EM&A Manual ID**	**Apr -17**	**Apr -22**	**Remarks**
Fung Lok Wai	FLW	44	25	-
Nam Sang Wai	NSW	3	21	+
YLIE-CW	YLIE-CW	0	20	+
	Total	**47**	**66**	+
	Mean	**16**	**22**	+

5.2.3.1.2 Avifauna Species of Conservation Importance

Of the 293 avifauna individuals recorded in the monitoring area during the April 2022 monitoring period, 162 individuals (point count method = 135 individuals; transect walk method = 27 individuals) were of conservation importance. With reference to April 2017 data, current results showed insignificant decrease in total abundance of point count method (t-value = 1.98; p-value = 0.05; α = 0.05) was noted. Details of these findings are summarized in **Table 5.6** and **Appendix F.7**.

Table 5.6 – Abundance of Species of Conservation Importance

Abundance of Species of Conservation Importance				
Point Count Method				

Abundance of Species of Conservation Importance				
EIA Report ID	**EM&A Manual ID**	**Apr -17**	**Apr -22**	**Remarks**
P1	FLW1	0	9	+
P2	FLW2	0	3	+
P3	FLW3	0	0	=
P4	FLW4	10	3	-
P5	FLW5	34	14	-
P6	FLW6	2	15	+
P7	FLW7	3	11	+
P9	SP/NSW3	103	26	-
P10	SP/NSW2	13	22	+
P11	NSW1	3	3	=
P12	SP/NSW1	32	29	-
	Total	**200**	**135**	-
	Mean	**18**	**12**	-
Transect Walk Method				
EIA Report ID	**EM&A Manual ID**	**Apr -17**	**Apr -22**	**Remarks**
Fung Lok Wai	FLW	1	8	+
Nam Sang Wai	NSW	0	1	+
YLIE-CW	YLIE-CW	0	18	+
	Total	**1**	**27**	+
	Mean	**0.33**	**9**	+

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

5.2.3.2.1 All Avifauna Species

A total of 36 avifauna species (species richness) were recorded during the April 2022 monitoring period, of which, 34 species were recorded by the point count method while 17 species were noted by the transect walk method. Relative to the baseline data (point count method = 41 species; transect walk method = 13 species), decrease in total species richness for the point count method was noted. In terms of Shannon diversity index (H'), an insignificant decrease (t-value = 1.32; t-crit = 1.97; p-value =0.19; α = 0.05) from baseline reference value observed in point count method while an increase of H' value was recorded in transect walk method. Details of these findings are summarized in **Table 5.7.**

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

Table 5.7 – Shannon Diversity Index Value of all Avifauna Species

Shannon Diversity Index Value of all Avifauna Species				
Point Count Method				
EIA Report ID	**EM&A Manual ID**	**Apr -17**	**Apr -22**	**Remarks**
P1	FLW1	0.69	1.82	+
P2	FLW2	1.39	1.31	-
P3	FLW3	0.64	1.10	+
P4	FLW4	2.08	1.49	-
P5	FLW5	2.27	1.49	-
P6	FLW6	1.73	1.84	+
P7	FLW7	1.67	1.66	-
P9	SP/NSW3	2.06	1.92	-
P10	SP/NSW2	2.47	2.59	+
P11	NSW1	2.63	1.84	-
P12	SP/NSW1	2.03	2.59	+
	Overall H'	**3.16**	**3.05**	-
	Species Richness	**41**	**34**	-
Transect Walk Method				
EIA Report ID	**EM&A Manual ID**	**Apr -17**	**Apr -22**	**Remarks**
Fung Lok Wai	FLW	2.03	1.98	-
Nam Sang Wai	NSW	0.64	1.91	+
YLIE-CW	YLIE-CW	**	1.67	+
	Overall H'	**2.10**	**2.66**	**+**
	Species Richness	**13**	**17**	**+**

Note:
** no species recorded

5.2.3.2.2 Avifauna Species of Conservation Importance

Of the 36 species of avifauna identified during the April 2022 monitoring period, 12 species were of conservation importance (point count method = 12 species; transect walk method = 6 species). Relative to the baseline values in April 2017, a decrease in the number of species with conservation importance was recorded from the point count method while an increase in the number of species with conservation importance for the transect walk method was noted. In terms of Shannon diversity index (H'), an insignificant decrease (t-value = 1.67; t-crit = 1.97; p-value =0.08; α = 0.05) from baseline reference values was observed in point count method while an increase was noted in transect walk method. Details of these findings are summarized in **Table 5.8.**

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

Shannon Diversity Index Value of Species with Conservation Importance				
Point Count Method				
EIA Report ID	**EM&A Manual ID**	**Apr -17**	**Apr -22**	**Remarks**
P1	FLW1	**	0.94	+
P2	FLW2	**	0.64	+
P3	FLW3	**	**	=
P4	FLW4	0.80	0	-
P5	FLW5	1.51	1.33	-
P6	FLW6	0	1.33	+
P7	FLW7	1.10	0.91	-
P9	SP/NSW3	1.87	1.80	-
P10	SP/NSW2	1.56	1.90	+
P11	NSW1	1.10	0.64	-
P12	SP/NSW1	1.56	1.73	+
	Overall H'	**2.24**	**2.10**	-
	Species Richness	**13**	**12**	-
Transect Walk Method				
EIA Report ID	**EM&A Manual ID**	**Apr -17**	**Apr -22**	**Remarks**
Fung Lok Wai	FLW	0	0.66	+
Nam Sang Wai	NSW	**	0	+
YLIE-CW	YLIE-CW	**	1.49	+
	Overall H'	**0**	**1.74**	**+**
	Species Richness	**1**	**6**	**+**

Note:
** no species recorded

5.2.3.3 Wetland Habitat Utilization

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

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

5.2.3.3.1 All Avifauna Species

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

Table 5.9 – Wetland habitat utilization of all avifauna species

Wetland Habitats	Area Description	Abundance[1]	Species Richness[2]
Modified Watercourse	Confluence of Shan Pui River and Kam Tin River	VL	L-M
	Shan Pui River adjacent to Project site	VL	L-M
	Upper course of Shan Pui River along YLIE	VL-L	M-H
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai	VL	L-M
	Active Ponds North to Nullah 2 in Fung Lok Wai	VL-L	L-M
	Inactive Ponds in Fung Lok Wai	VL	VL
	Active and Inactive Ponds in Nam Sang Wai	VL	VL-L
Mangrove	Mangrove within Assessment Area	-	-
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 and were generally utilized by very low (VL) number of avifauna species with conservation importance (**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-L
	Upper course of Shan Pui River along YLIE	VL	VL-L
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai	VL	VL
	Active Ponds North to Nullah 2 in Fung Lok Wai	VL	VL
	Inactive Ponds in Fung Lok Wai	VL	VL
	Active and Inactive Ponds in Nam Sang Wai	VL	VL
Mangrove	Mangrove within Assessment Area	-	-
Reedbed	Reedbed in Nam Sang Wai	VL	VL

Notes:

Wetland Habitats	Area Description	Abundance[1]	Species Richness[2]

2. 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 20 April 2022 (day time) and 22 April 2022 (night-time) from each of the point count locations during the ecological bird monitoring are shown in **Table 5.11**.

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

Frequency and Period	Location	Day time (20/04/2022)		Night-time (22/04/2022)	
		Start Time	L_{Aeq} (30 min) dB(A)	Start Time	L_{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1	09:37	46.5	20:30	42.0
	FLW2	09:03	53.4	19:59	43.1
	FLW3	09:05	49.4	19:59	43.4
	FLW4	09:41	47.6	20:32	41.3
	FLW5	10:10	47.5	21:05	42.9
	FLW6	10:15	47.1	21:10	40.6
	FLW7	10:48	48.9	21:40	40.3
	SP/NSW3	08:20	50.2	19:21	52.6
	SP/NSW2	08:16	52.0	19:20	50.5
	NSW1	07:50	45.6	18:48	45.0
	SP/NSW1	07:45	50.8	18:46	44.8

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 6, 12, 20 and 27 April 2022.

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

7. LAND CONTAMINATION

7.1 Contamination Assessment Report

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

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

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

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 6, 12, 20 and 27 April 2022.

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

8.2 Advice on the Solid and Liquid Waste Management Status

8.2.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

8.2.2 The management of waste generated by the construction is presented in **Table 8.1**.

Table 8.1 – Waste Generated by the Construction and Disposal Ground

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

8.2.3 The monthly summary of waste flow table is detailed in **Appendix I**.

8.2.4 If off-site disposal is required, the excavated marine mud from the land-based works shall be disposed of at the designated disposal sites within Hong Kong as allocated by the Marine Fill Committee or other locations as agreed by the Director. The Contractor shall ensure no spilling and overflowing of materials during loading / unloading / transportation is allowed.

8.2.5 The Contractor was reminded that chemical waste should be properly handled temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.

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

9.1 Non-compliance (Exceedances of AL levels)

9.1.1 No Action / Limit Level exceedance was recorded for 1-hr TSP level at AM1 and AM2 in the reporting month.

9.1.2 No Action / Limit Level exceedance was recorded for construction noise at CM1, CM2 and CM3 in the reporting month.

9.1.3 No Action and Limit Level exceedance were recorded for water quality at M1, M2 and M3 in the reporting month.

9.1.4 No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the active ardeid night roosts in the reporting month.

9.1.5 No Action / Limit exceedance was noted for the ecological monitoring of birds in the reporting month.

9.1.6 No corrective actions were required according to the Event and Action Plans for the Monitoring Parameters.

9.2 Complaints, Notification of Summons and Successful Prosecutions

9.2.1 No environmental complaints, notification of summons and successful prosecutions was recorded in the reporting month.

9.2.2 Cumulative complaint log, summaries of complaints, notification of summons and successful prosecutions are presented in **Appendix L**.

9.2.3 No corrective actions were required.

10. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE

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

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

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

Table 10.1 – Status of submissions required under the EP

EP Condition (EP-565/2019)	Submission Title	Submission Status
Condition 2.9	Construction Phase Emergency Response Plan	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.11	Pre-construction Ardeid Night Roost Survey Report	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
EM&A Manual Sec. 7.3.3 & 7.3.4	Baseline Bird Survey Report	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.12	Noise Mitigation Measures Plan	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.13	Proposal for Minimization of Overspill Light to Ecological Sensitive Areas	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.14	Supplementary Contamination Assessment Plan	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.14	Contamination Assessment Report for Main Storeroom & Workshops	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.14	Contamination Assessment Report for Mechanical Workshop	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.14	Contamination Assessment Report for Waste Storage Area	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.15	Landscape and Visual Mitigation Plan	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 3.3	Baseline Monitoring Report	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.

EP Condition (EP-565/2019)	Submission Title	Submission Status
Condition 3.4	Monthly EM&A Report (from April 2021 to March 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 March 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 March 2022	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.

11. FUTURE KEY ISSUES

11.1 Construction Programme for the Next Three Month

- Demolition of Admin. Building, Settled Sewage Overflow Chamber, Sludge Holding Tanks no. 1, 3 & 4 (below ground), Return Activated Sludge Screw Pump Pumping station, Air Floatation Thickener and Auxiliary Pumping Station (below ground);
- Pipe Laying and construction of RC chamber at Zone 2B and subsequence diversion work;
- Sheet pile installation, ELS work and RC structure at IW & PST;
- Piling work at PST & Transformer House;
- Piling work at Sludge Thickening Building;
- Drilling and installation of dewatering well and observation well at IW & PST;
- ELS works at IW & PST;
- Construction of RC structure at 3 zone (Location D -Temp. Primary Sludge Pumping Station);
- Pipe laying for Zone 3 diversion;
- Drilling & installation of pipe pile wall for demolition of Aeration Tank no. 5-8 at AGS;
- Construction of CLP Substation;
- Construction of MiC office;
- Demolition of PST no. 4;
- Ground investigation at SDB, SDT & STB;
- Sheet piling work around Sludge digester no. 1 – 3;
- Installation of brand drain at Biogas Holder no. 1;
- Installation of concrete blocks and soil Surcharge at Biogas Holder no. 1;
- Construction of temp. traffic road at north of SHT no. 3 & 4;
- Construction of PST structure; and
- Zone 3:
  a. E&M work at temp. Gravity thickening tank (Atal);
  b. E&M work at temp. Sludge Holding Tank (Atal);
  c. E&M work at temp. water heater house (Atal);
  d. RC work at temp. Primary sludge pumping station;
  e. ELS, RC construction and E&M work at Temp. digested sludge pump;
  f. E&M work at Digested Sludge Pumping Station.

11.2 Key Issues for the Coming Month

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

11.3 Monitoring Schedules for the next three months

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

12. CONCLUSION AND RECOMMENDATION

12.1 Conclusions

12.1.1 1-hour TSP impact monitoring was carried out in the reporting month. No Action / Limit Level exceedance at AM1 and AM2 was recorded during the period.

12.1.2 Construction noise monitoring was carried out in the reporting month. No Action / Limit Level exceedance at CM1, CM2 and CM3 was recorded during the period.

12.1.3 No Action and Limit Level exceedance was recorded for water quality at M1, M2 and M3 in the reporting month.

12.1.4 Ardeid night roost monitoring was carried out in the reporting month. Two active ardeid night roost areas (ANR1 and ANR2) were observed within the Survey Area. These roosts were located at the mangrove strips in the east and northeast portions of the Project boundary. No Action / Limit Level exceedance at NMS1 and NMS2 was recorded during the period.

12.1.5 Ecological bird monitoring was carried out in the reporting month. No Action / Limit Level exceedance was recorded for the ecological monitoring of birds on this period.

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

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

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

12.2 Comment and Recommendations

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

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

Air Quality Impact

- The Contractor is recommended to provide water spraying to prevent dust emission for access road at FST Area.
- The Contractor is reminded to provide water spraying for dust suppression at haul roads.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- No specific observation was identified in the reporting month.

Chemical Waste and Construction Waste Management

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

Land Contamination

- No specific observation was identified in the reporting month.

Ecological Impact

- No specific observation was identified in the reporting month.

Landscape and Visual Impact

- Please keep adjacent ground of trees free of construction materials.

Hazard to Life

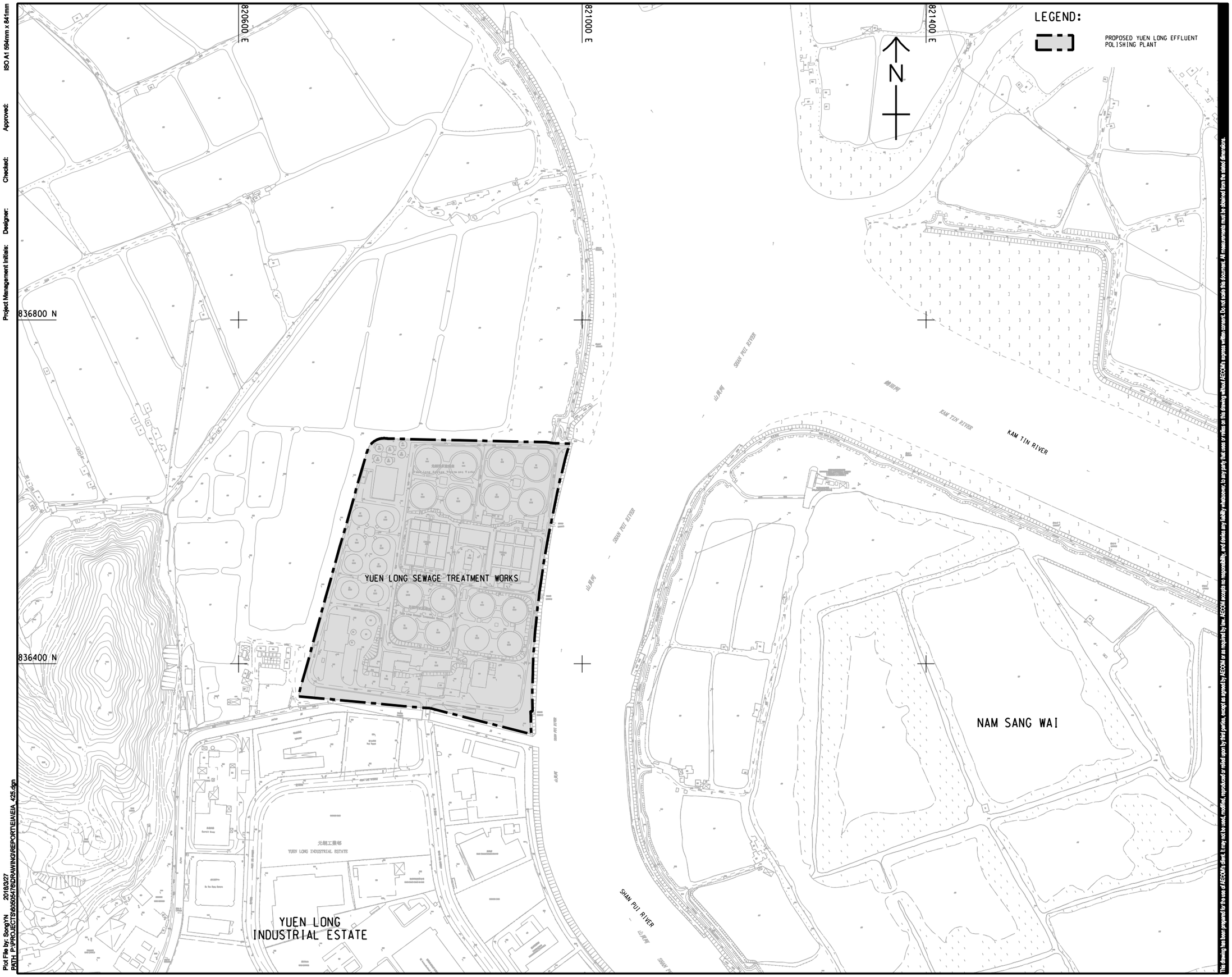
- No specific observation was identified in the reporting month.

Permit/ Licenses

- No specific observation was identified in the reporting month.

Figure 1

Location of Proposed Yuen Long Effluent Polishing Plant



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AECOM

PROJECT 項目

YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

CLIENT 業主

渠務署
Drainage Services Department

CONSULTANT 工程顧問公司

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

ISSUE/REVISION 修訂

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

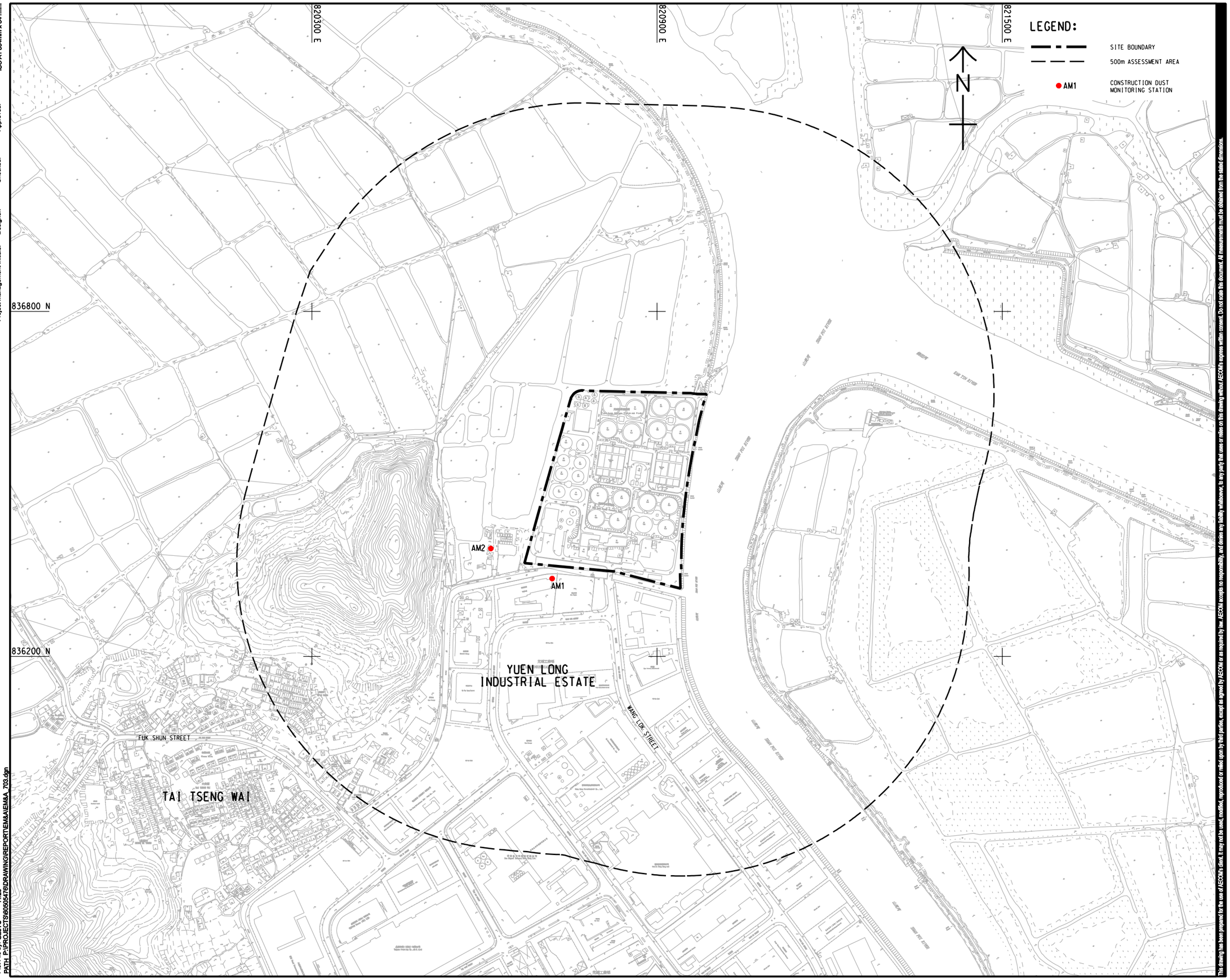
Location of Construction Dust Monitoring Stations

Approved:

Checked:

Designer:

Project Management Initials:



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PROJECT
項目

YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

CLIENT
業主

渠 務 署
Drainage Services Department

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STATUS
階段

SCALE 比例	**DIMENSION UNIT** 尺寸單位
A1 1 : 3000	METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號	**CONTRACT NO.** 合約編號
60505476	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

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YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

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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

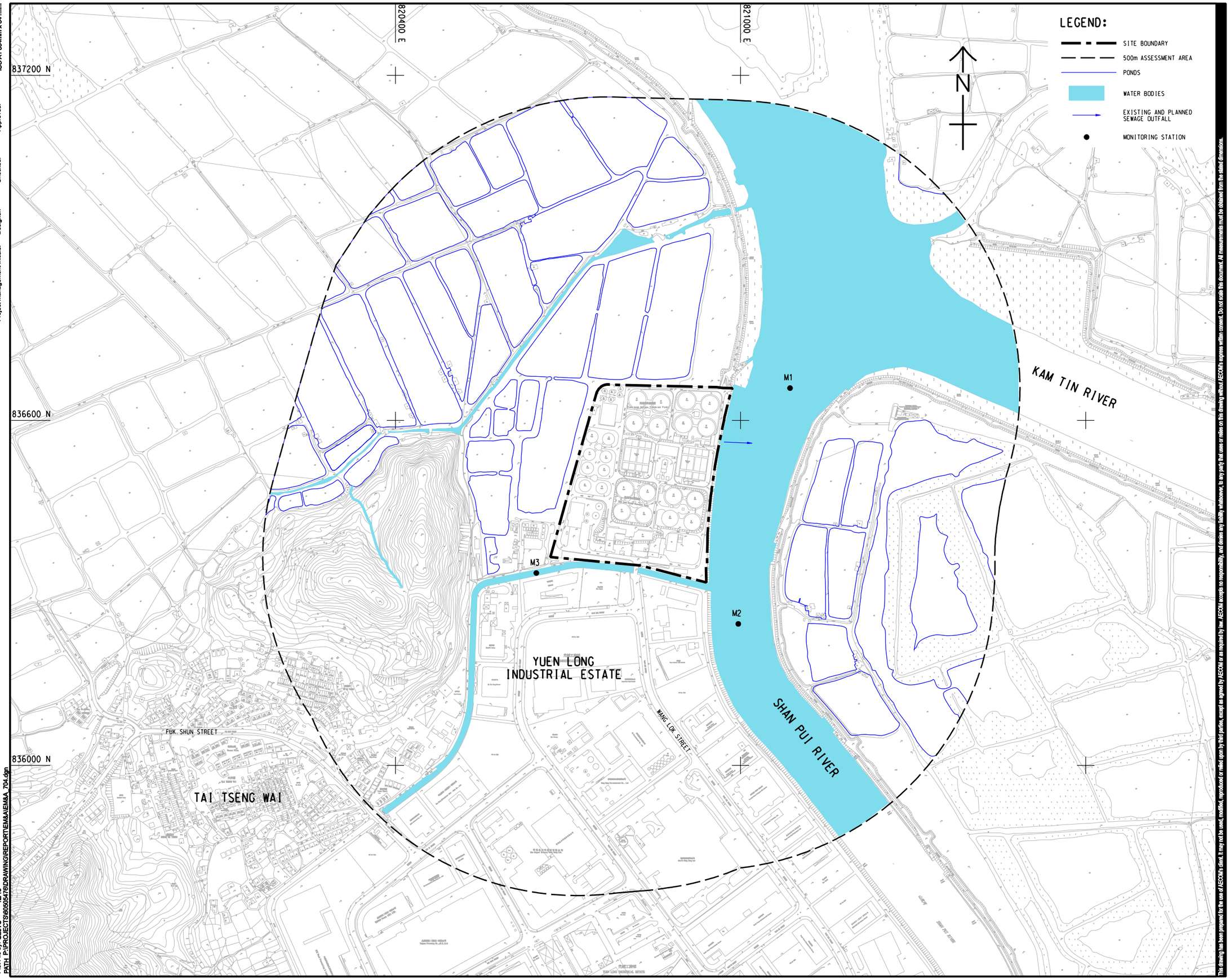
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



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YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

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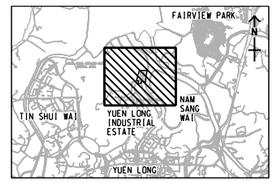
STATUS
狀況

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

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

CLIENT
業主
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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)

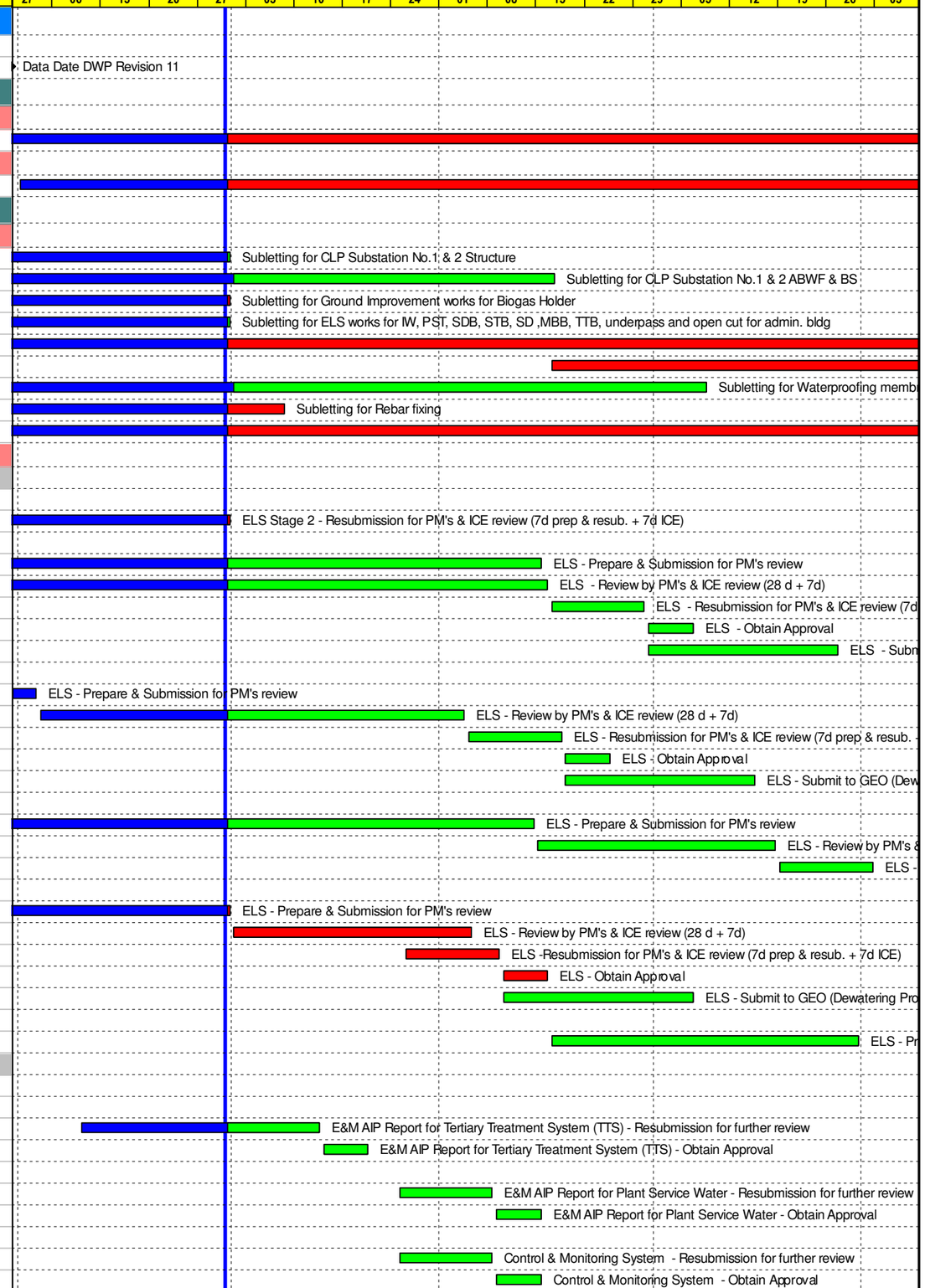
SHEET TITLE
圖紙名稱
ECOLOGICAL MONITORING LOCATIONS

SHEET NUMBER
圖紙編號

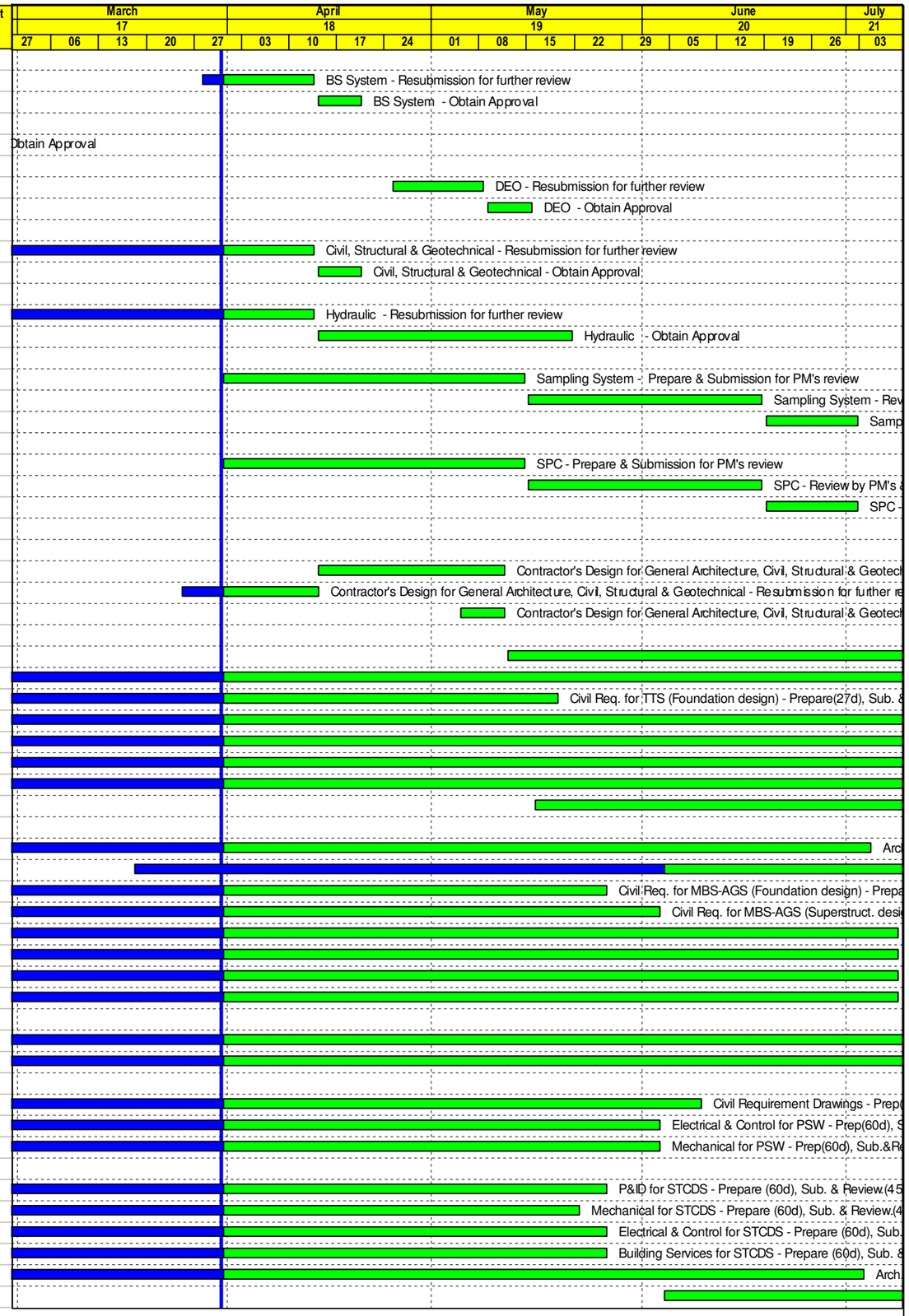
Appendix A

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 DPv12_20220420					
UPDATE-R10	Data Date DWP Revision 10	0		31-Jan-22 A	
UPDATE-R11	Data Date DWP Revision 11	0		28-Feb-22 A	
Contract Data Part 1					
Access Dates					
ADWA2	Work Area WA2 (sd) (new site possession) validity for 12 months and subject to renewal	365	05-Mar-21 A	04-Mar-23*	0
Environmental Constraints					
EBS-2155	Egrets Breeding Season 2022	154	01-Mar-22 A	30-Aug-22*	0
Preliminary and Preparation Works					
Subletting					
SUB-230	Subletting for CLP Substation No.1 & 2 Structure	100	01-Jun-21 A	31-Mar-22	53
SUB-240	Subletting for CLP Substation No.1 & 2 ABWF & BS	100	30-Aug-21 A	17-May-22	83
SUB-250	Subletting for Ground Improvement works for Biogas Holder	86	07-Jul-21 A	31-Mar-22	-144
SUB-270	Subletting for ELS works for IW, PST, SDB, STB, SD ,MBB, TTB, underpass and open cut for admin. bldg	50	12-Oct-21 A	31-Mar-22	111
SUB-280	Subletting for RC works for IW, PST, SDB, STB, SD, Biogas holder, underpass and admin. bldg	105	29-Nov-21 A	12-Jul-22	-26
SUB-310	Subletting for Utilities Corridor ELS	59	17-May-22	14-Jul-22	-31
SUB-350	Subletting for Waterproofing membrane and protection board	86	29-Nov-21 A	08-Jun-22	188
SUB-360	Subletting for Rebar fixing	86	29-Nov-21 A	08-Apr-22	-26
SUB-380	Subletting for Sheet piling works for remaining areas	150	12-Oct-21 A	08-Aug-22	-6
Design Submission					
Temporary Works Design					
Inlet Work and Primary Sedimentation Tank					
TWD-440	ELS Stage 2 - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	15	22-Jul-21 A	31-Mar-22	-11
Mainstream Bio-Reactor System					
TWD-220	ELS - Prepare & Submission for PM's review	45	01-Sep-21 A	15-May-22	22
TWD-230	ELS - Review by PM's & ICE review (28 d + 7d)	35	16-Oct-21 A	16-May-22	21
TWD-240	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	17-May-22	30-May-22	21
TWD-250	ELS - Obtain Approval	7	31-May-22	06-Jun-22	21
TWD-520	ELS - Submit to GEO (Dewatering Proposal)	28	31-May-22	27-Jun-22	101
Sludge Thickening Building					
TWD-180	ELS - Prepare & Submission for PM's review	42	28-Feb-22 A	03-Mar-22 A	
TWD-190	ELS - Review by PM's & ICE review (28 d + 7d)	35	04-Mar-22 A	04-May-22	69
TWD-200	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	05-May-22	18-May-22	69
TWD-210	ELS - Obtain Approval	7	19-May-22	25-May-22	69
TWD-540	ELS - Submit to GEO (Dewatering Proposal)	28	19-May-22	15-Jun-22	96
Tertiary Treatment System					
TWD-140	ELS - Prepare & Submission for PM's review	45	02-Dec-21 A	14-May-22	38
TWD-150	ELS - Review by PM's & ICE review (28 d + 7d)	35	15-May-22	18-Jun-22	38
TWD-160	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	19-Jun-22	02-Jul-22	38
Sludge Digester 1-3 & Utilities Corridor					
TWD-340	ELS - Prepare & Submission for PM's review	45	31-Aug-21 A	31-Mar-22	-31
TWD-350	ELS - Review by PM's & ICE review (28 d + 7d)	35	01-Apr-22	05-May-22	-31
TWD-360	ELS -Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	26-Apr-22	09-May-22	-31
TWD-370	ELS - Obtain Approval	7	10-May-22	16-May-22	-31
TWD-560	ELS - Submit to GEO (Dewatering Proposal)	28	10-May-22	06-Jun-22	10
Sludge Digester 4-6					
TWD-460	ELS - Prepare & Submission for PM's review	45	17-May-22	30-Jun-22	921
Contractor 's Permanent Works Design (include ATAL)					
AIP					
Package 2A - Tertiary Treatment System (TTS)					
AIP-480	E&M AIP Report for Tertiary Treatment System (TTS) - Resubmission for further review	14	10-Mar-22 A	13-Apr-22	263
AIP-490	E&M AIP Report for Tertiary Treatment System (TTS) - Obtain Approval	7	14-Apr-22	20-Apr-22	263
Package 3A - Plant Service Water					
AIP-520	E&M AIP Report for Plant Service Water - Resubmission for further review	14	25-Apr-22*	08-May-22	457
AIP-530	E&M AIP Report for Plant Service Water - Obtain Approval	7	09-May-22	15-May-22	457
Package 6A - Control & Monitoring System					
AIP-200	Control & Monitoring System - Resubmission for further review	14	25-Apr-22*	08-May-22	75
AIP-620	Control & Monitoring System - Obtain Approval	7	09-May-22	15-May-22	75

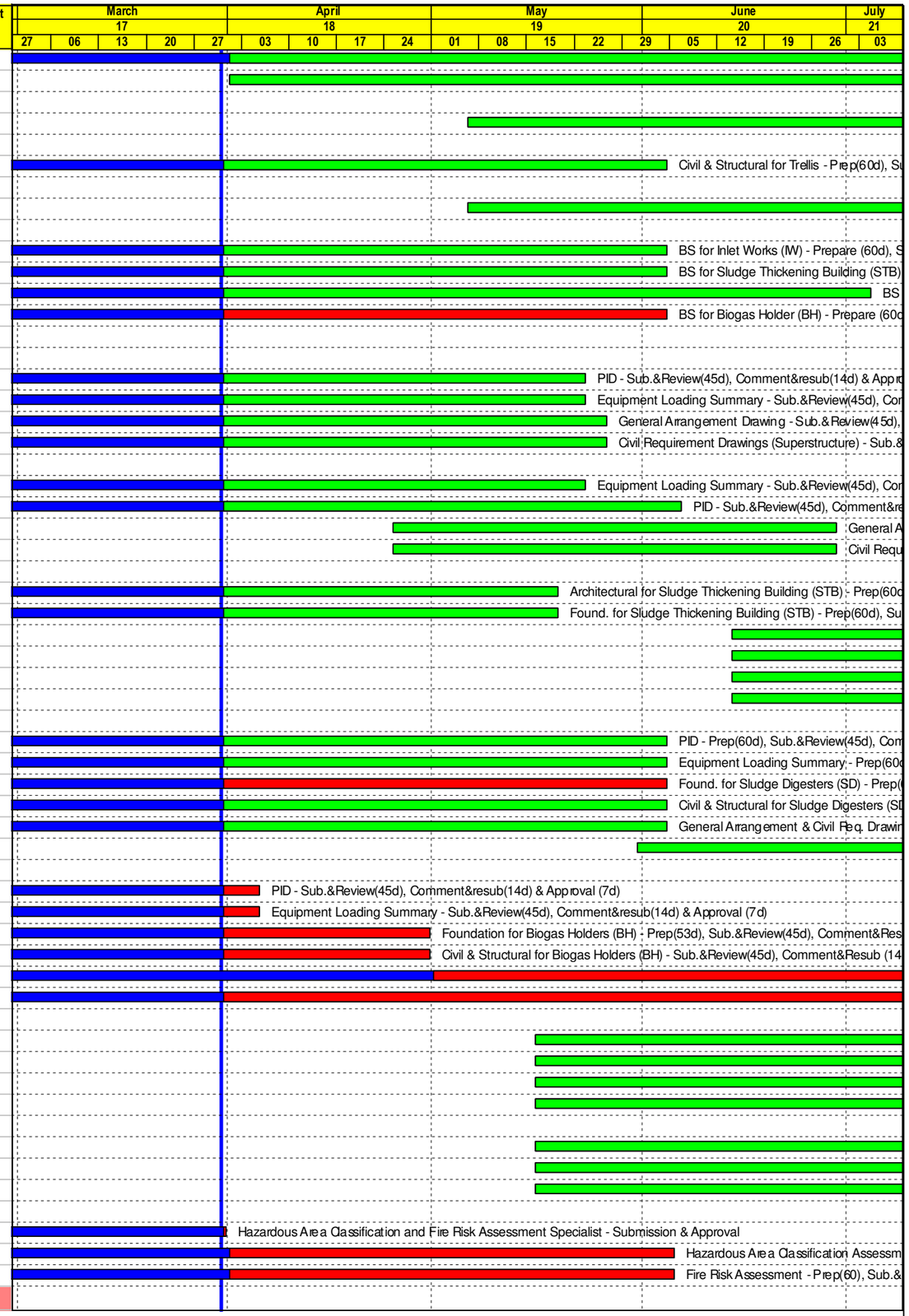


Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
Package 7A - Building Services System					
AIP-240	BS System - Resubmission for further review	14	28-Mar-22 A	13-Apr-22	399
AIP-250	BS System - Obtain Approval	7	14-Apr-22	20-Apr-22	399
Package 10A - E&M AIP Report for Inlet Work (IW)					
AIP-700	IW - Obtain Approval	7	15-Feb-22 A	21-Feb-22 A	
Package 14A - E&M AIP Report for Deodorization Unit System					
AIP-850	DEO - Resubmission for further review	14	25-Apr-22*	08-May-22	2061
AIP-860	DEO - Obtain Approval	7	09-May-22	15-May-22	2061
Package 15A - Civil, Structural & Geotechnical					
AIP-400	Civil, Structural & Geotechnical - Resubmission for further review	14	05-Jan-22 A	13-Apr-22	242
AIP-410	Civil, Structural & Geotechnical - Obtain Approval	7	14-Apr-22	20-Apr-22	242
Package 16A - E&M AIP Report for Hydraulic Design					
AIP-890	Hydraulic - Resubmission for further review	14	05-Jan-22 A	13-Apr-22	1037
AIP-900	Hydraulic - Obtain Approval	38	14-Apr-22	21-May-22	1037
Package 22A - Sampling System of YLEPP					
AIP-910	Sampling System - Prepare & Submission for PM's review	45	31-Mar-22	14-May-22	323
AIP-920	Sampling System - Review by PM's & ICE review (28 d + 7d)	35	15-May-22	18-Jun-22	323
AIP-930	Sampling System - Resubmission for further review	14	19-Jun-22	02-Jul-22	323
Package 23A - Security, Public Address and Communication System					
AIP-950	SPC - Prepare & Submission for PM's review	45	31-Mar-22	14-May-22	452
AIP-960	SPC - Review by PM's & ICE review (28 d + 7d)	35	15-May-22	18-Jun-22	452
AIP-970	SPC - Resubmission for further review	14	19-Jun-22	02-Jul-22	452
DDA					
Package 1 - General Architecture, Civil, Structural & Geotechnical					
DDA-1080	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Submit to GEO for comment and ap	28	14-Apr-22	11-May-22	242
DDA-120	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Resubmission for further review	14	25-Mar-22 A	14-Apr-22	242
DDA-130	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Obtain Approval	7	05-May-22	11-May-22	242
Package 2 - Tertiary Treatment System					
DDA-140	Architectural for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	12-May-22	14-Sep-22	242
DDA-150	Foundation for TTS - Prepare (90d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d), GEO (28d)	184	08-Oct-21 A	31-Aug-22	4
DDA-170	Civil Req. for TTS (Foundation design) - Prepare(27d), Sub. & Review.(45d),Comment & Resub.(14d), GEO(28d)&	121	13-Jun-21 A	19-May-22	298
DDA-180	Civil Req. for TTS (Superstruct. design) - Prepare (147d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approv	213	11-Oct-21 A	28-Sep-22	205
DDA-190	P&ID for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	31-Dec-21 A	03-Aug-22	503
DDA-200	Mechanical for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	31-Dec-21 A	03-Aug-22	503
DDA-210	Electrical& Control for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	31-Dec-21 A	03-Aug-22	503
DDA-220	Building Services (BS) for TTS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	16-May-22	18-Sep-22	457
Package 3 - Mainstream Bio-Reactor System					
DDA-230	Architectural for MBS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	05-Oct-21 A	04-Jul-22	154
DDA-240	Foundation for MBS - Prepare (97d), Sub. & Review.(45d) ,Comment & Resub.(14d),GEO (28d)& Approval (7d)	191	18-Mar-22 A	11-Dec-22	154
DDA-260	Civil Req. for MBS-AGS (Foundation design) - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Ap	126	09-Jun-21 A	26-May-22	158
DDA-270	Civil Req. for MBS-AGS (Superstruct. design) - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Ap	126	15-Sep-21 A	03-Jun-22	208
DDA-280	P&ID for TTS - MBS (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	08-Oct-21 A	08-Jul-22	550
DDA-290	Mechanical for MBS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	08-Oct-21 A	08-Jul-22	550
DDA-300	Electrical& Control for MBS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	08-Oct-21 A	08-Jul-22	550
DDA-310	Building Services (BS) for MBS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	08-Oct-21 A	08-Jul-22	550
Package 5A - Master Water Meter Cabinet					
DDA-360	Foundation for Master WM Carbinet- Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d),GEO(28d) & A	154	15-Feb-22 A	31-Aug-22	200
DDA-370	Civil & Struct. for WM Carbinet- Prepare (90d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	156	14-Jan-22 A	02-Sep-22	102
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	09-Jun-22	339
DDA-1060	Electrical & Control for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	31-Aug-21 A	03-Jun-22	564
DDA-1070	Mechanical for PSW - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	31-Aug-21 A	03-Jun-22	564
Package 6 - Sludge Thickening Chemical and Dosing System					
DDA-1120	P&ID for STCDS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	28-Jun-21 A	26-May-22	271
DDA-1130	Mechanical for STCDS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	28-Jun-21 A	22-May-22	275
DDA-1140	Electrical & Control for STCDS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	28-Jun-21 A	26-May-22	271
DDA-1150	Building Services for STCDS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	28-Jun-21 A	26-May-22	271
DDA-420	Arch. for STCS, Waste Gas Burner &Guard Hse - Prepare (60d), Sub. & Review.(45d) ,Com. & Resub.(14d) & Ap	126	05-Oct-21 A	03-Jul-22	137
DDA-430	Found.for STCS,WasteGasBurner &Guard Hse- Prepare(60d),Sub.&Review.(45d),Comment & Resub.(14d),GEO(	126	04-Jun-22	07-Oct-22	137

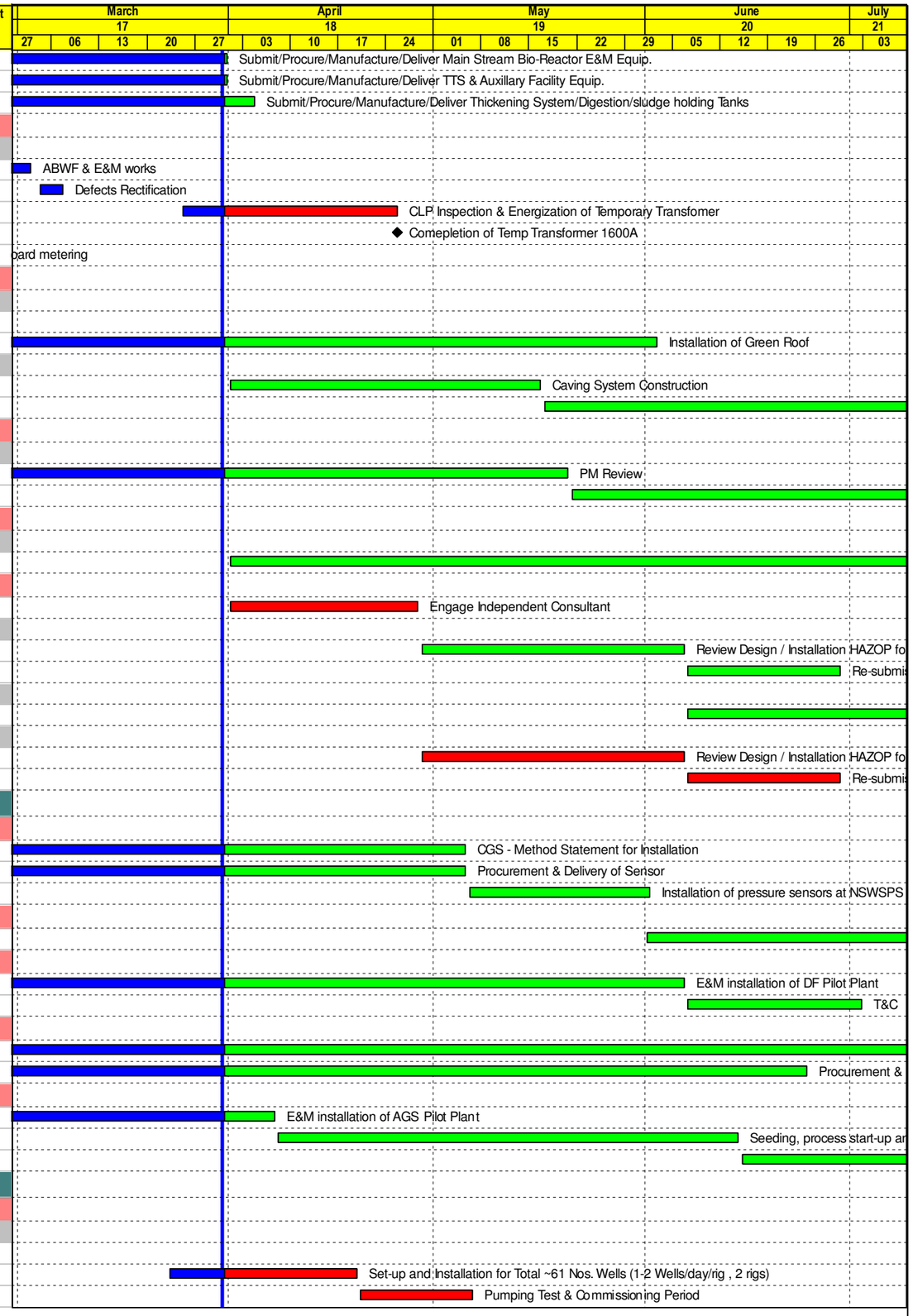


Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
DDA-440	Civil & Struct. for STCS, WGB & Guard Hse - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Apr	126	09-Nov-21 A	08-Jul-22	228
DDA-440B	Civil Req. for STCDS - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	28-Jun-21 A	19-May-22	278
Package 7 - CLP Substation and 11kV Switchgear House					
DDA-1160	Earthing & Lighting System Design Report - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & App	78	02-Jul-21 A	26-May-22	74
DDA-1450	VCAB, FSD & WSD Design Report - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7(	78	02-Jul-21 A	26-May-22	74
DDA-460	Civil&Struct. for CLP Sub. &11kV Switchgear Hse- Prep. (30d), Sub. & Review.(30d) ,Comment & Resub.(14d) & A	82	01-Jun-21 A	12-May-22	74
DDA-470	Electrical System for all facilities - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	78	01-Jun-21 A	26-May-22	74
DDA-480	UPS System for CLPSub.&11kV Switchgear Hse - Prepare (102d), Sub. & Review.(45d),Comment & Resub.(14d)&	168	03-Jun-21 A	26-May-22	131
DDA-490	BS for CLP Sub. &11kV Switchgear Hse - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approv	78	01-Jun-21 A	26-May-22	74
Package 8 - Advance Works and SCADA Relocation					
DDA-500	Mechanical for Advance Works - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	78	22-May-21 A	26-May-22	-201
DDA-510	Electrical & Control for Advance Works - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approva	78	04-Jun-21 A	19-May-22	-194
DDA-520	BS for Advance Works - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	78	04-May-21 A	26-May-22	-201
DDA-530	E&M for Advance Works - SCADA Relocation - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Ap	76	24-Jun-21 A	26-May-22	-201
Package 9 - Inlet Work (IW)					
DDA-1170	Civil Req. Drawing for Inlet Work - Prepare (30d), Sub. & Review.(30d) ,Comment & Resub.(14d) & Approval (7d)	82	10-Jun-21 A	26-May-22	238
DDA-1180	PID for Inlet Work - Prepare (30d), Sub. & Review.(30d) ,Comment & Resub.(14d) & Approval (7d)	82	10-Jun-21 A	26-May-22	238
DDA-1190	Mechanical for Inlet Work - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	78	09-Aug-21 A	26-May-22	238
DDA-1200	Electrical & Control for Inlet Work - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	78	31-Aug-21 A	26-May-22	238
DDA-1210	Building Services for Inlet Work - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	76	15-Oct-21 A	08-Jun-22	268
Package 10 - Primary Sedimentation Tank (PST)					
DDA-1220	Civil Req. Drawing for PST - Prepare (46d), Sub. & Review.(30d) ,Comment & Resub.(14d) & Approval (7d)	98	01-Jun-21 A	26-May-22	167
DDA-1230	PID for PST - Prepare (46d), Sub. & Review.(30d) ,Comment & Resub.(14d) & Approval (7d)	98	01-Jun-21 A	26-May-22	167
DDA-1240	Mechanical for PST - Prepare (46d), Sub. & Review.(30d) ,Comment & Resub.(14d) & Approval (7d)	98	01-Jun-21 A	26-May-22	167
DDA-1250	Electrical & Control for PST - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	48	31-Aug-21 A	26-May-22	167
DDA-1260	Building Services for PST - Prepare (28d), Sub. & Review.(28d) ,Comment & Resub.(14d) & Approval (7d)	78	01-Oct-21 A	02-Jun-22	167
Package 11 - Control and Monitoring System					
DDA-1270	Gas Detection System - Prep(28d), Sub.&Review(28d), Comment&Resub (14d) & Approval (7d)	78	01-Jun-22	17-Aug-22	191
DDA-1280	Data Collection, Management, Analysis, & Model System - Prep(28d), Sub.&Review(28d), Comment&Resub (14d)	78	01-Jun-22	17-Aug-22	191
DDA-550	Supervisory Control&Data Application (SCADA) System - Prep(28d), Sub.&Review(28d), Comment&Resub (14d) &	78	31-Aug-21 A	17-Apr-22	283
DDA-560	Computerised Mainatenance Mangement System (CMMS) - Prep(28d), Sub.&Review(28d), Comment&Resub (14	78	01-Jun-22*	17-Aug-22	191
DDA-570	Information and Document mangement System (IDMS) - Prep(28d), Sub.&Review(28d), Comment&Resub (14d) &	78	01-Jun-22	17-Aug-22	191
DDA-580	Power Quality & Energy Management System (PQEMS) - Prep(28d), Sub.&Review(28d), Comment&Resub (14d)	78	02-Oct-21 A	17-May-22	283
Package 13 - Pipework System					
DDA-1030	Pipeworks System for Sludge Digesters - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &Approval (7d)	126	18-May-22	20-Sep-22	272
DDA-670	Pipeworks System for Primary Sedimentation Tanks (PST) - Prep(57d), Sub.&Review(45d), Comment&Resub(14d	123	18-Sep-21 A	31-May-22	-2
DDA-680	Pipeworks System for Biogas Holder (BH) - Prep(57d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d	123	18-Sep-21 A	31-May-22	-2
DDA-690	Pipeworks System for Sludge Dewatering Building (SDB) - Prep(60d),Sub.&Review(45d),Comment&Resub (14d) &	126	18-May-22	20-Sep-22	272
DDA-700	Pipeworks System for Utility Corridor&Pipe Portal (UC/PP) - Prep(103d),Sub.&Review(45d),Comment&Resub(14d)&	126	18-May-22	20-Sep-22	433
Package 14 - Sludge Anaerobic Digestion System (SDT)					
DDA-1290	Civil Req. Drawing for SDT - Prepare (47d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	113	10-Jul-21 A	22-May-22	-184
DDA-1300	PID for SDT - Prepare (47d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	113	10-Jul-21 A	26-May-22	201
DDA-1310	Mechanical for SDT & UC/PP - Prepare (47d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	113	10-Jul-21 A	26-May-22	201
DDA-1320	Electrical & Control for SDT & UC/PP - Prepare (55d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7	121	02-Jul-21 A	26-May-22	267
DDA-1340	Civil Req. Drawing for UC/PP - Prepare (47d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	113	10-Jul-21 A	26-May-22	85
Package 15 - Biogas H2S Removal, Storage and Delivery System					
DDA-1350	Civil Req. Drawing for Biogas Storage&Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&	78	31-Aug-21 A	10-May-22	-184
DDA-1360	PID for Biogas H2S Removal, Storage and Delivery System - Prepare(28d),Sub& Review(28d),Comment&Resub(1	75	13-Jul-21 A	02-Jun-22	-82
DDA-1370	Mechanical for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval	78	03-Jun-22	19-Aug-22	-82
DDA-1380	Electrical & Control for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&A	78	26-May-22	11-Aug-22	-74
DDA-1390	Building Services for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&App	78	26-May-22	11-Aug-22	-74
DDA-1400	Civil Req. Drawing for Biogas H2S Removal System - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Ap	78	26-May-22	11-Aug-22	-74
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	01-Aug-22	2061
DDA-1420	Mechanical for DOU No. 1 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	15-Mar-22 A	01-Aug-22	2061
DDA-1430	Mechanical for DOU No. 2A and 2B - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	16-May-22	01-Aug-22	2061
DDA-1440	Mechanical for DOU No. 3 - Prepare(28d),Sub& Review(28d),Comment&Resub(14d)&Approval (7d)	78	16-May-22	01-Aug-22	2061
Package 17 - Sludge Dewatering Building (SDB)					
DDA-890	Architectural for Sludge Dewatering Building (SDB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & App	126	07-Jun-21 A	02-Jun-22	1438

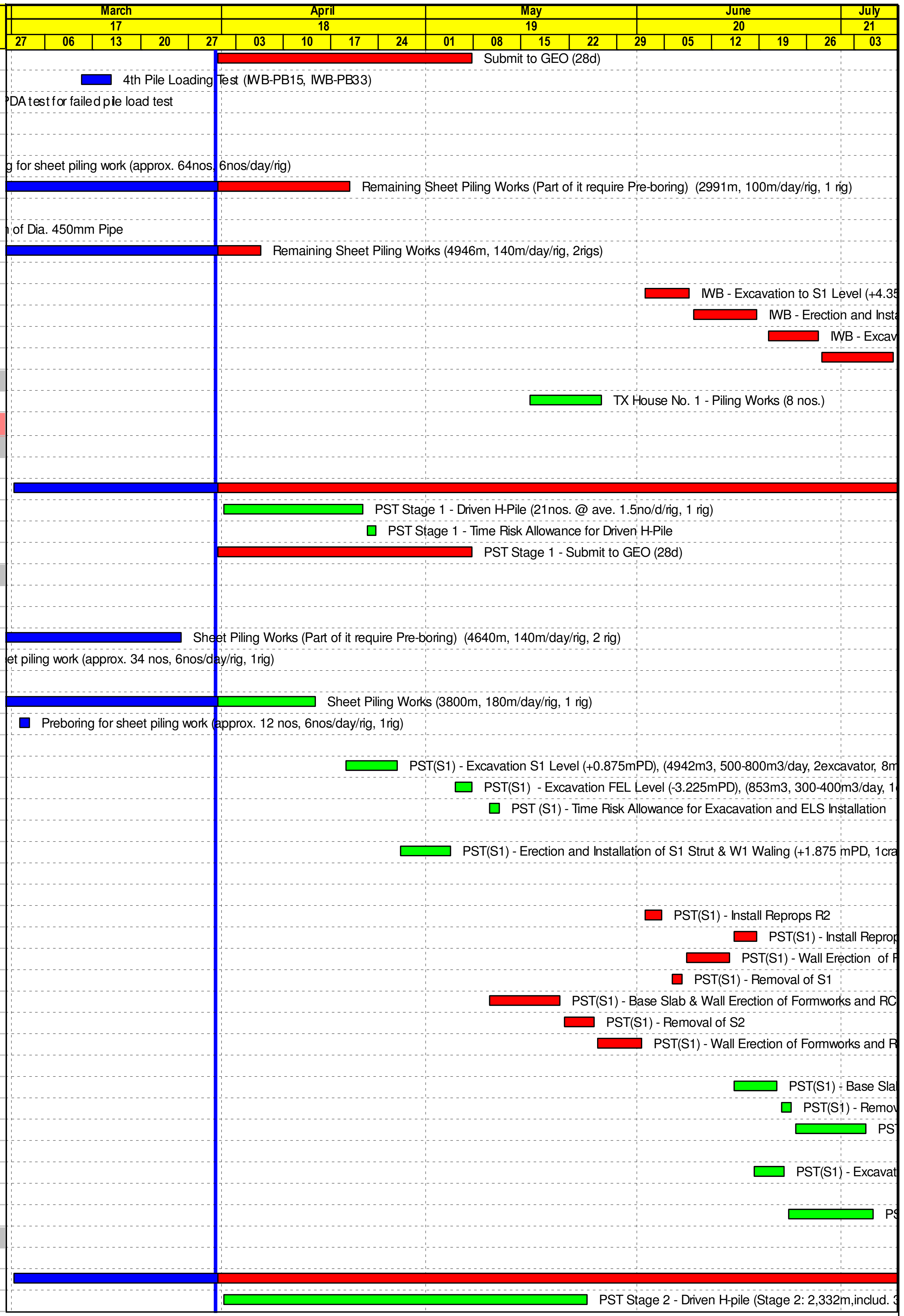
Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
DDA-900	Found. for Sludge Dewatering Building (SDB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d)	154	10-Nov-21 A	10-Aug-22	642
DDA-950	BS for Sludge Dewatering Building (SDB) - Prep(118d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7(	184	01-Apr-22	01-Oct-22	1317
Package 19 - Elevated Walkways					
DDA-710	Civil & Structural for Elevated Walkways - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d), (	154	06-May-22	06-Oct-22	884
Package 20 - Trellis					
DDA-720	Civil & Structural for Trellis - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	31-Aug-21 A	04-Jun-22	884
Package 21 - Steel Working Platform					
DDA-730	Civil & Structural for Steel Working Platform - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7(	126	06-May-22	08-Sep-22	884
Building Services					
DDA-590	BS for Inlet Works (IW) - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	31-Aug-21 A	04-Jun-22	272
DDA-600	BS for Sludge Thickening Building (STB) - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approv	126	31-Aug-21 A	04-Jun-22	415
DDA-610	BS for Primary Sedimentation Tanks (PST) - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Appr	126	30-Sep-21 A	04-Jul-22	294
DDA-620	BS for Biogas Holder (BH) - Prepare (60d), Sub. & Review.(45d) ,Comment & Resub.(14d) & Approval (7d)	126	31-Aug-21 A	04-Jun-22	-6
Technical Submission					
Inlet Works (IW)					
TS-890	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-21 A	23-May-22	228
TS-900	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-21 A	23-May-22	228
TS-910	General Arrangement Drawing - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	30-May-21 A	26-May-22	238
TS-920	Civil Requirement Drawings (Superstructure) - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	30-May-21 A	26-May-22	238
Primary Sedimentation Tank (PST)					
TS-930	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-21 A	23-May-22	228
TS-940	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	03-Sep-21 A	06-Jun-22	228
TS-950	General Arrangement Drawing - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	25-Apr-22*	29-Jun-22	203
TS-960	Civil Requirement Drawings (Superstructure) - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	25-Apr-22*	29-Jun-22	203
Sludge Thickening Building (STB)					
TS-820	Architectural for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Appr	126	01-Jun-21 A	19-May-22	160
TS-830	Found. for Sludge Thickening Building (STB) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO(28d) (	154	01-Jun-21 A	19-May-22	34
TS-840	Civil & Structural for Sludge Thickening Bldg (STB) - Prep(27d), Sub.&Review(45d), Comment&Resub (14d) & App	93	14-Jun-22	14-Sep-22	160
TS-850	General Arrangement & Civil Req. Drawings for STB - Prep(27d), Sub.&Review(45d), Comment&Resub (14d) & Ap	93	14-Jun-22	14-Sep-22	525
TS-970	PID - Prep(27d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	93	14-Jun-22	14-Sep-22	160
TS-980	Equipment Loading Summary - Prep(27d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	93	14-Jun-22	14-Sep-22	600
Sludge Digesters (SD)					
TS-1030	PID - Prep(60d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	25-Sep-21 A	04-Jun-22	380
TS-1040	Equipment Loading Summary - Prep(60d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	25-Sep-21 A	04-Jun-22	380
TS-740	Found. for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d)& Approval (	126	25-Sep-21 A	04-Jun-22	-62
TS-750	Civil & Structural for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d	126	25-Sep-21 A	04-Jun-22	192
TS-760	General Arrangement & Civil Req. Drawings for SD - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Appr	126	25-Sep-21 A	04-Jun-22	259
TS-770	Mechanical for Sludge Digesters (SD) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	126	31-May-22	03-Oct-22	259
Biogas Holders (BH)					
TS-1050	PID - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	31-Aug-21 A	05-Apr-22	-41
TS-1060	Equipment Loading Summary - Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	66	31-Aug-21 A	05-Apr-22	-41
TS-780	Foundation for Biogas Holders (BH) - Prep(53d), Sub.&Review(45d), Comment&Resub (14d), GEO (28d) & Approv	147	12-Jun-21 A	30-Apr-22	-174
TS-790	Civil & Structural for Biogas Holders (BH) - Sub.&Review(45d), Comment&Resub (14d) & Approval(7d)	66	12-Jun-21 A	30-Apr-22	-104
TS-800	General Arrangement & Civil Req.Drawings for BH - Prep(127d), Sub.&Review(45d), Comment&Resub (14d) & Ap	193	16-Sep-21 A	10-Sep-22	-104
TS-810	Mechanical for Biogas Holders (BH) - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	05-Nov-21 A	09-Jul-22	-41
SCADA					
TS-1070	Layout and Wiring Diagram for YLEPP PLC Panel - Prep(144d), Sub.&Review(45d), Comment&Resub (14d)&App	210	16-May-22	11-Dec-22	75
TS-1080	System Architecture for Exsting YLSTW Temporary SCADA System - Prep(144d),Sub&Rev(45d),Comments&Resu	210	16-May-22	11-Dec-22	75
TS-1090	Layout and Wiring Diagram for Existing YLSTW Temp PLC Panel - Prep(144d),Sub&Rev(45d),Comments&Resub(	210	16-May-22	11-Dec-22	75
TS-1100	System Architecture for YLEPP SCADA System - Prep(144d), Sub.&Review(45d), Comment&Resub (14d)&Approv	210	16-May-22	11-Dec-22	75
Utility Corridor and Pipe Portal					
TS-1110	General Arrangement Drawing - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	210	16-May-22	11-Dec-22	483
TS-1120	Civil Requirement Drawings (Superstructure) - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7	210	16-May-22	11-Dec-22	483
TS-1140	Equipment Loading Summary - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	210	16-May-22	11-Dec-22	483
Hazardous Area Classification and Fire Risk Assessment					
TS-1800	Hazardous Area Classification and Fire Risk Assessment Specialist - Submission & Approval	20	31-Aug-21 A	31-Mar-22	-7
TS-1810	Hazardous Area Classification Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	20-Sep-21 A	05-Jun-22	-7
TS-1820	Fire Risk Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	126	20-Sep-21 A	05-Jun-22	-7
Material Submission, Procurement, Manufacturing and Delivery					



Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
PRE-230	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip.	270	09-Nov-20 A	31-Mar-22	649
PRE-240	Submit/Procure/Manufacture/Deliver TTS & Auxillary Facility Equip.	270	09-Nov-20 A	31-Mar-22	628
PRE-250	Submit/Procure/Manufacture/Deliver Thickening System/Digestion/sludge holding Tanks	300	09-Nov-20 A	04-Apr-22	940
Site Establishment Works					
Temporary Transformer 1600A					
1600A-0080	ABWF & E&M works	17	16-Feb-22 A	03-Mar-22 A	
1600A-0090	Defects Rectification	3	04-Mar-22 A	07-Mar-22 A	
P5-140	CLP Inspection & Energization of Temporary Transfomer	18	25-Mar-22 A	25-Apr-22	-20
P5-150	Comepletion of Temp Transformer 1600A	0		25-Apr-22*	-20
P5-160	LV switchboard metering	2	16-Feb-22 A	17-Feb-22 A	
PM and Contractor Accomodation					
Project Manager's & Contractor Site Accommodation					
MiC Section					
PMCA-190	Installation of Green Roof	16	09-Nov-21 A	02-Jun-22	1733
Caving System					
PMCA-240	Caving System Construction	33	01-Apr-22*	16-May-22	2
PMCA-250	Caving System Installation (Set-Up & T&C)	60	17-May-22	27-Jul-22	2
FSI, FSD and OP Requirements					
FSI Submission & Approval					
FSD-1030	PM Review	31	12-Nov-21 A	20-May-22	238
FSD-1040	Submission Period for FSD Review (Assumed 12 Months) - Full GBP+GBP for TOP1	367	21-May-22	22-May-23	238
Application Form Schedule EMSD (ATAL)					
Phase 1					
ATAL-FS-0010	Form 104 for Biogas Holder Tank 1(Submission and Approval Period)	184	01-Apr-22*	01-Oct-22	1513
HAZOP Study					
HAZOP-010	Engage Independent Consultant	20	01-Apr-22*	28-Apr-22	-33
Zone 1 (for PST(Stage1), others provide later)					
HAZOP-Z1-010	Review Design / Installation HAZOP for PST (Stage 1) by independent consultant	30	29-Apr-22	06-Jun-22	160
HAZOP-Z1-020	Re-submission of Design / Installation methodology	20	07-Jun-22	29-Jun-22	160
Zone 2 (for MBR, others provide later)					
HAZOP-Z2-010	Review Design / Installation HAZOP for MBR by independent consultant	30	07-Jun-22	12-Jul-22	415
Zone 3 (for BH No.1 , others provide later)					
HAZOP-Z3-010	Review Design / Installation HAZOP for Biogas Holder No. 1 by independent consultant	30	29-Apr-22	06-Jun-22	-33
HAZOP-Z3-020	Re-submission of Design / Installation methodology	20	07-Jun-22	29-Jun-22	-33
General Advance Works					
NSWSPS Sensors					
ATALGA-1160	CGS - Method Statement for Installation	101	03-Aug-21 A	05-May-22	522
ATALGA-1170	Procurement & Delivery of Sensor	101	03-Aug-21 A	05-May-22	522
ATALGA-1260	Installation of pressure sensors at NSWSPS	22	06-May-22	01-Jun-22	522
Air Blower House					
ATALGA-1280	CMS - Air Blower System	128	01-Jun-22*	02-Nov-22	175
Disc Filter (DF) Pilot Plant					
ATALGA-1140	E&M installation of DF Pilot Plant	51	10-Feb-22 A	06-Jun-22	497
ATALGA-1190	T&C	22	07-Jun-22	02-Jul-22	497
Dissolved Air Flotation (DAF) Pilot Plant					
ATALGA-1070	Civil Structural Construction of DAF Pilot Plant from STSTW	97	17-Jan-22 A	30-Jul-22	267
ATALGA-1110	Procurement & Delivery of Materials	97	28-Oct-21 A	24-Jun-22	297
Aerobic Granular Sludge (AGS) Pilot Plant					
ATALGA-1180	E&M installation of AGS Pilot Plant	6	10-Feb-22 A	07-Apr-22	373
ATALGA-1210	Seeding, process start-up and T&C	52	08-Apr-22	14-Jun-22	373
ATALGA-1270	Post-commissioning	139	15-Jun-22	28-Nov-22	373
Zone 1 Construction					
Inlet Works (IW)					
IW Foundation & ELS Works					
IW Basement					
Z1-IW-3940	Set-up and Installation for Total ~61 Nos. Wells (1-2 Wells/day/rig , 2 rigs)	44	23-Mar-22 A	19-Apr-22	-22
Z1-IW-3950	Pumping Test & Commissioning Period	14	20-Apr-22	06-May-22	-22



Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
Z1-IW-4300	Submit to GEO (28d)	28	31-Mar-22	07-May-22	-23
Z1-IW-4710	4th Pile Loading Test (IWB-PB15, IWB-PB33)	4	11-Mar-22 A	15-Mar-22 A	
Z1-IW-4720	PDA test for failed pile load test	4	22-Feb-22 A	25-Feb-22 A	
Sheet Piling(Total Length: 12104m)					
Zone A/D (4964m)					
Z1-IW-4680	Preboring for sheet piling work (approx. 64nos, 6nos/day/rig)	12	07-Feb-22 A	19-Feb-22 A	
Z1-IW-4681	Remaining Sheet Piling Works (Part of it require Pre-boring) (2991m, 100m/day/rig, 1 rig)	36	07-Feb-22 A	19-Apr-22	-22
Zone C (7140m)					
Z1-IW-4682	Diversion of Dia. 450mm Pipe	12	07-Feb-22 A	19-Feb-22 A	
Z1-IW-4683	Remaining Sheet Piling Works (4946m, 140m/day/rig, 2rigs)	24	21-Feb-22 A	06-Apr-22	-14
Excavation Works & ELS (Excavation Volume: 32,857m3)					
Z1-IW-4450	IWB - Excavation to S1 Level (+4.35 mPD), (4,422m3, 1000m3/day, 4excavators,8m3/truck, 15trucks/hr, 4mock o	5	02-Jun-22	08-Jun-22	-43
Z1-IW-4460	IWB - Erection and Installation of S1 Strut & W1 Waling (+4.35 mPD, 3-4crane, 3-4workfronts, 10welders)	9	09-Jun-22	18-Jun-22	-43
Z1-IW-4470	IWB - Excavation to S2 Level (+2.50 mPD), (7,114m3, 1000m3/day, 4excavators,8m3/truck, 15trucks/hr, 4mock o	7	20-Jun-22	27-Jun-22	-43
Z1-IW-4480	IWB - Erection and Installation of S2 Strut & W2 Waling (+2.50 mPD, 3-4crane, 3-4workfronts, 10welders)	9	28-Jun-22	08-Jul-22	-43
IW Transformer House No. 1					
IW-2785	TX House No. 1 - Piling Works (8 nos.)	10	16-May-22	26-May-22	92
Primary Sedimentation Tank (PST)					
PST Stage 1 of Works					
PST Stage 1 - Foundation (At First 3 Tanks, PST 7-8 Footprint)					
EBS-2022	Egrets Breeding Season 2022	184	01-Mar-22 A	31-Aug-22*	0
PST-1220	PST Stage 1 - Driven H-Pile (21nos. @ ave. 1.5no/d/rig, 1 rig)	14	01-Apr-22	21-Apr-22	83
PST-1230	PST Stage 1 - Time Risk Allowance for Driven H-Pile	2	22-Apr-22	23-Apr-22	83
PST-3020	PST Stage 1 - Submit to GEO (28d)	28	31-Mar-22	07-May-22	-43
PST Stage 1					
Sheet Piling (Total Length: 8440m)					
Zone B (4640m)					
Z1-PST-4270	Sheet Piling Works (Part of it require Pre-boring) (4640m, 140m/day/rig, 2 rig)	17	07-Feb-22 A	26-Mar-22 A	
Z1-PST-4271	Preboring for sheet piling work (approx. 34 nos, 6nos/day/rig, 1rig)	6	07-Feb-22 A	12-Feb-22 A	
Zone E (3800m)					
Z1-PST-4272	Sheet Piling Works (3800m, 180m/day/rig, 1 rig)	21	26-Jan-22 A	14-Apr-22	88
Z1-PST-4282	Preboring for sheet piling work (approx. 12 nos, 6nos/day/rig, 1rig)	2	02-Mar-22 A	03-Mar-22 A	
Excavation Works (South Portion), (Excavation Volume: 5,795m3)					
Z1-PST-3580	PST(S1) - Excavation S1 Level (+0.875mPD), (4942m3, 500-800m3/day, 2excavator, 8m3/truck,10-12trks/hr, 2mc	7	19-Apr-22	26-Apr-22	88
Z1-PST-3600	PST(S1) - Excavation FEL Level (-3.225mPD), (853m3, 300-400m3/day, 1excavator 8m3/truck, 5 trucks/hr, 1moc	3	05-May-22	07-May-22	88
Z1-PST-3810	PST (S1) - Time Risk Allowance for Exacavation and ELS Installation	2	10-May-22	11-May-22	88
ELS Erection Works					
Z1-PST-3590	PST(S1) - Erection and Installation of S1 Strut & W1 Waling (+1.875 mPD, 1crane, 4welders, 2work fronts)	6	27-Apr-22	04-May-22	88
Basement RC Works (Stage 1 - Southern Portion)					
Excavation for Southern Trench (Lower Portion)					
Z1-PST-3610	PST(S1) - Install Reprops R2	2	02-Jun-22	04-Jun-22	-43
Z1-PST-3630	PST(S1) - Install Reprops R1	4	15-Jun-22	18-Jun-22	-43
Z1-PST-3640	PST(S1) - Wall Erection of Formworks and RC Works (Ground Level)	6	08-Jun-22	14-Jun-22	-43
Z1-PST-3800	PST(S1) - Removal of S1	2	06-Jun-22	07-Jun-22	-43
Z1-PST-3860	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (+0.325 mPD)	10	10-May-22	20-May-22	-43
Z1-PST-3870	PST(S1) - Removal of S2	4	21-May-22	25-May-22	-43
Z1-PST-3880	PST(S1) - Wall Erection of Formworks and RC Works (+1.875 mPD & +3.875mPD)	6	26-May-22	01-Jun-22	-43
Excavation for Northern Trench (Lower Portion)					
Z1-PST-3620	PST(S1) - Base Slab & Wall Erection of Formworks and RC Works (+0.325 mPD)	6	15-Jun-22	21-Jun-22	60
Z1-PST-4240	PST(S1) - Removal of S2	2	22-Jun-22	23-Jun-22	60
Z1-PST-4250	PST(S1) - Base Slab Erection of Formworks and RC Works (+3.00 mPD)	8	24-Jun-22	04-Jul-22	60
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	4	18-Jun-22	22-Jun-22	59
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	10	23-Jun-22	05-Jul-22	59
PST Stage 2 of Works					
PST Foundation - Stage 2 (At Remaining 2 Tanks, PST 5-6 Footprint)					
EBS-2115	Egrets Breeding Season 2022	184	01-Mar-22 A	31-Aug-22*	0
Z1-PST-3890	PST Stage 2 - Driven H-pile (Stage 2: 2,332m,includ. 30% increment)(60m/day, 1 rig) (54nos.)	40	01-Apr-22	24-May-22	59



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

Paul Y. REC
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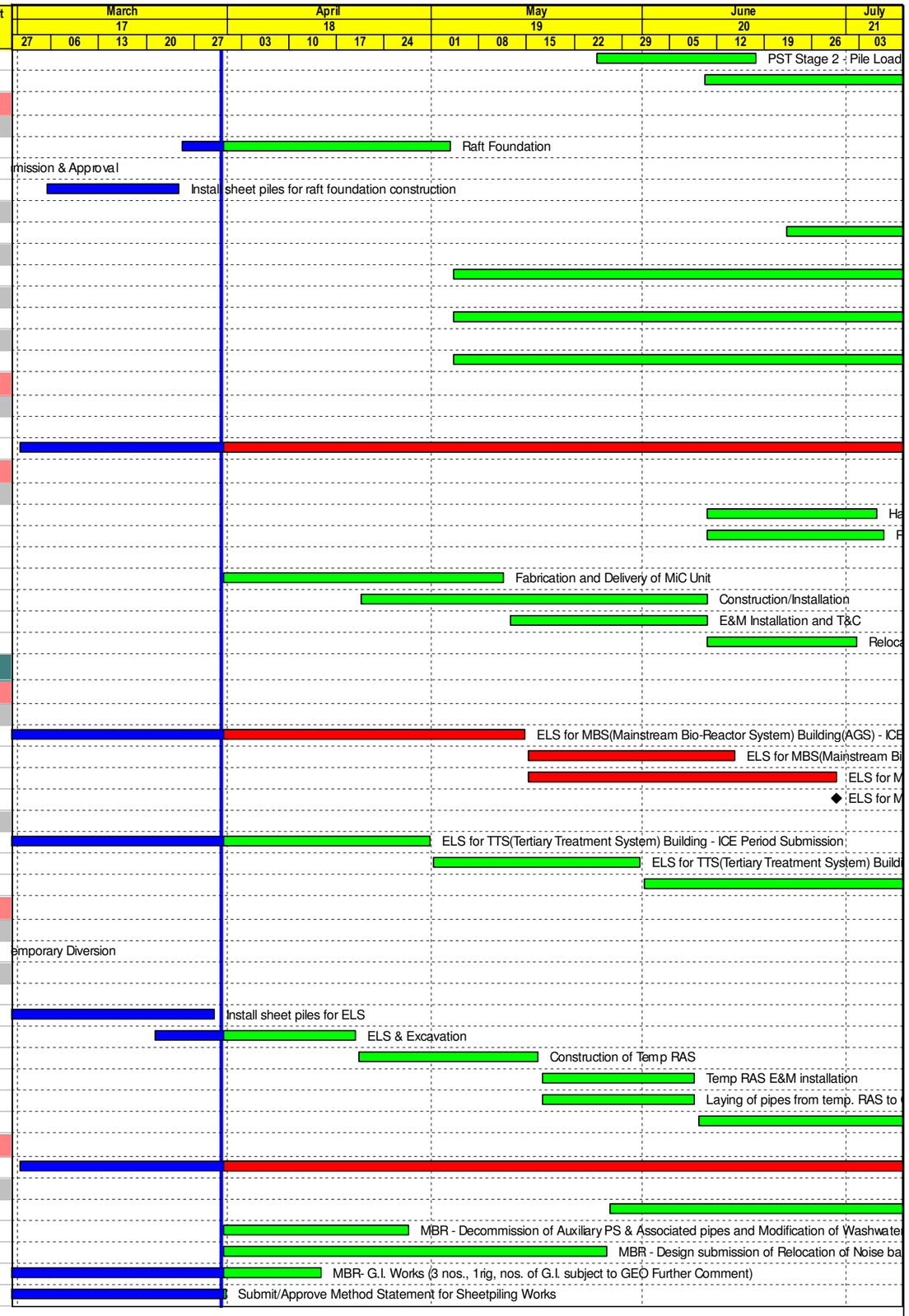
PAUL Y.-CREC JOINT VENTURE

Contract DC/2019/10 - YLEPP - Main Works for Stage 1
Monthly Progress Report No. 17 - 3MRP (March 2022)

Project ID : DWP.DPr12_220420
Layout : DC201910 2 3MRP
Date : 21-Apr-22 / Page 6 of 10

Monthly Progress Report No. 17 - 3MRP			
Date	Revision	Checked	Approved
31-Mar-21	Rev. 0		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
Z1-PST-3980	PST Stage 2 - Pile Loading Test (Batch 2 Completion at PST: 75nos.)	20	25-May-22	17-Jun-22	59
Z1-PST-4230	PST Stage 2 - Submit to GEO (28d)	28	10-Jun-22	13-Jul-22	311
CLP Substations No. 1 & 2					
Foundation					
CLP-1200	Raft Foundation	24	25-Mar-22 A	03-May-22	16
CLP-1250	Method Statement Submission & Approval	0		07-Feb-22 A	
CLP-1260	Install sheet piles for raft foundation construction	17	05-Mar-22 A	24-Mar-22 A	
Civil Provision for CLP (drawpits & ductings)					
CLP-1270	Ducting and Drawpits construction	45	22-Jun-22	13-Aug-22	63
CLP Substation No. 1					
CLP-1010	CLP Substation No.1 - Structure	76	04-May-22	03-Aug-22	16
CLP Substation No. 2					
CLP-1020	CLP Substation No.2 - Structure	76	04-May-22	03-Aug-22	16
DSD 11kV Switchgear					
CLP-1030	DSD11KV Switchgear - Structure	78	04-May-22	05-Aug-22	16
Sludge Dewatering Building (SDB)					
SDB Foundation & ELS - Stage 1					
SDB Foundation - PST 1-4 Footprint					
EBS-2105	Egrets Breeding Season 2022	184	01-Mar-22 A	31-Aug-22*	0
Administration Building (ADB)					
Temporary Admin Office and Control Room					
ADB-1040	Handover of Temp. Admin Office and Control Room	20	10-Jun-22	05-Jul-22	519
ADB-1250	Relocation of Existing SCADA System of Admin Bldg (23) and Document Centre (24)	21	10-Jun-22	06-Jul-22	519
Temp Admin Office - MiC Section					
ADB-1020A100	Fabrication and Delivery of MiC Unit	36	31-Mar-22	11-May-22	549
ADB-1020A20	Construction/Installation	41	20-Apr-22	10-Jun-22	519
ADB-1020A30	E&M Installation and T&C	24	12-May-22	10-Jun-22	519
ADB-1020A40	Relocation of Admin Office (MiC)	18	10-Jun-22	02-Jul-22	521
Zone 2 Construction					
Temporary Works Design					
MBS Building (AGS)					
TWD-1190	ELS for MBS(Mainstream Bio-Reactor System) Building(AGS) - ICE Period Submission	45	02-Dec-21 A	14-May-22	-2
TWD-1200	ELS for MBS(Mainstream Bio-Reactor System) Building(AGS) - ICE Review Period	31	15-May-22	14-Jun-22	-2
TWD-1210	ELS for MBS(Mainstream Bio-Reactor System) Building(AGS) - PM Review Period	46	15-May-22	29-Jun-22	-2
TWD-1220	ELS for MBS(Mainstream Bio-Reactor System) Building(AGS) - Consent Date	0		29-Jun-22	-2
TTS Building					
TWD-1150	ELS for TTS(Tertiary Treatment System) Building - ICE Period Submission	31	16-Dec-21 A	30-Apr-22	6
TWD-1160	ELS for TTS(Tertiary Treatment System) Building - ICE Review Period	31	01-May-22	31-May-22	6
TWD-1170	ELS for TTS(Tertiary Treatment System) Building - PM Review Period	46	01-Jun-22	16-Jul-22	6
Temporary Diversion					
Zone 2A : PST To Aeration Tanks					
Z2A-1170	Complete Zone 2A Temporary Diversion	0		09-Feb-22 A	
Zone 2B : FST, Temporary RAS to Aeration Tanks					
Temporary RAS					
Z2B-1010	Install sheet piles for ELS	7	07-Feb-22 A	30-Mar-22 A	
Z2B-1020	ELS & Excavation	26	21-Mar-22 A	19-Apr-22	8
Z2B-1030	Construction of Temp RAS	21	20-Apr-22	16-May-22	8
Z2B-1040	Temp RAS E&M installation	19	17-May-22	08-Jun-22	8
Z2B-1200	Laying of pipes from temp. RAS to Consolidation tanks & Aeration tanks	19	17-May-22	08-Jun-22	8
Z2B-1210	T&C	40	09-Jun-22	26-Jul-22	8
Demolition Works					
EBS-2125	Egrets Breeding Season 2022	184	01-Mar-22 A	30-Aug-22*	0
Advance Works					
MBR-1480	MBR - Relocation of Noise barrier/ bird curtain	58	27-May-22	04-Aug-22	26
MBR-1490	MBR - Decommission of Auxiliary PS & Associated pipes and Modification of Washwater PS	20	31-Mar-22*	27-Apr-22	49
MBR-1520	MBR - Design submission of Relocation of Noise barrier/ bird curtain	43	31-Mar-22	26-May-22	26
MBR-1530	MBR- G.I. Works (3 nos., 1rig, nos. of G.I. subject to GEO Further Comment)	73	03-Jan-22 A	14-Apr-22	57
Z2D-4280	Submit/Approve Method Statement for Sheetpiling Works	15	11-Sep-21 A	31-Mar-22	75



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

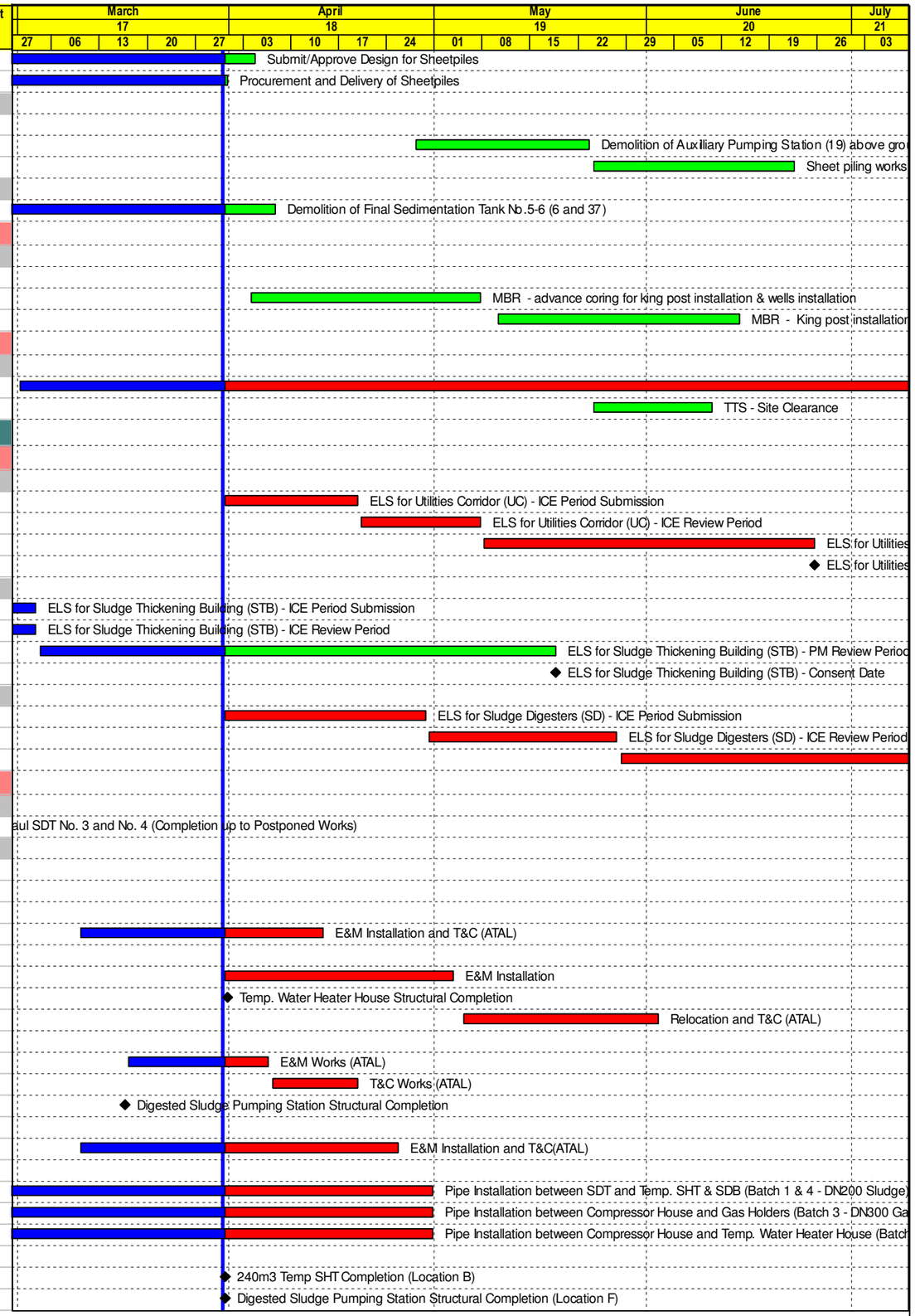
Contract DC/2019/10 - YLEPP - Main Works for Stage 1
Monthly Progress Report No. 17 - 3MRP (March 2022)

Project ID : DWP.DPr12_220420
Layout : DC201910 2 3MRP
Date : 21-Apr-22 / Page 7 of 10

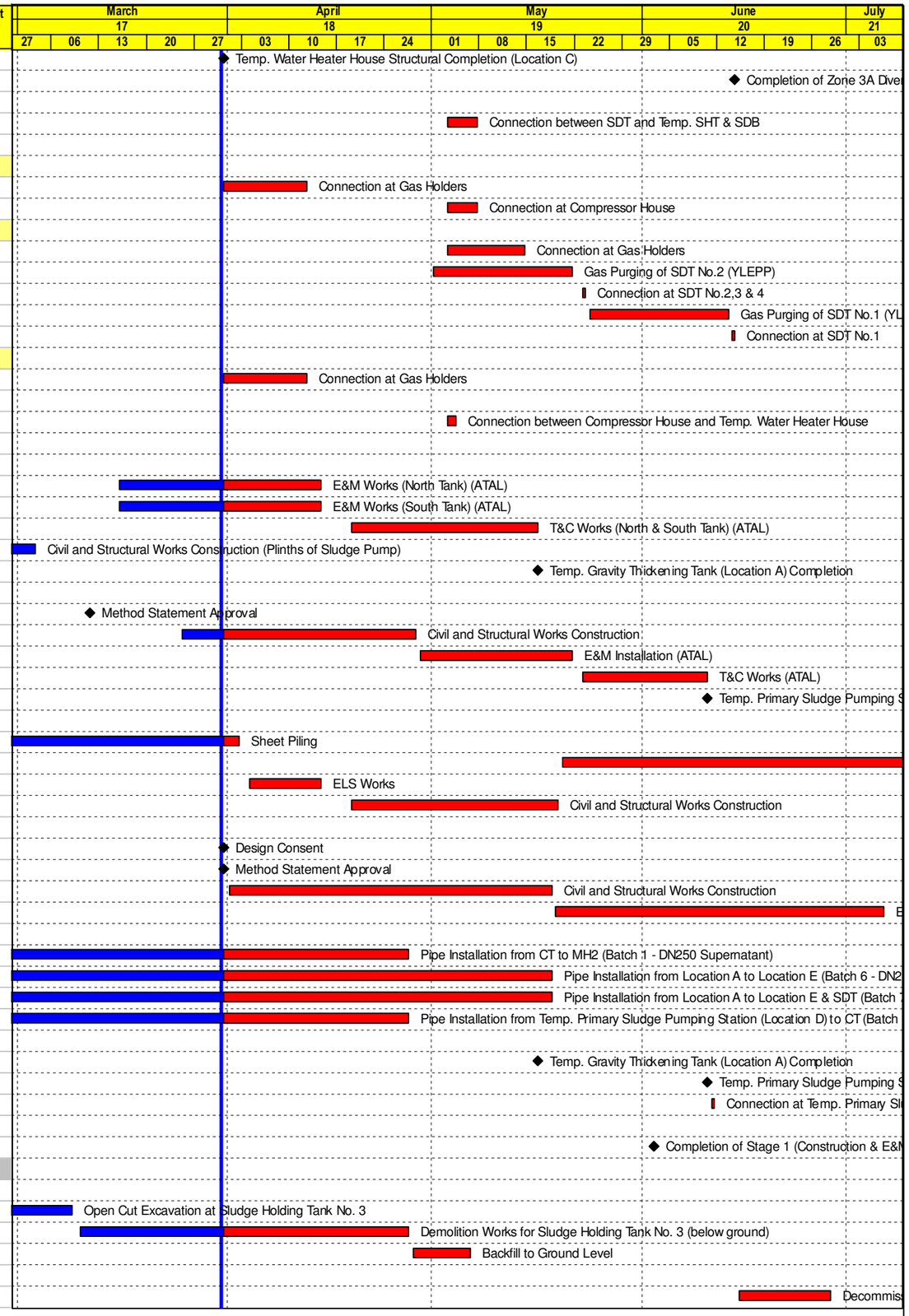
Monthly Progress Report No. 17 - 3MRP

Date	Revision	Checked	Approved
31-Mar-21	Rev. 0		

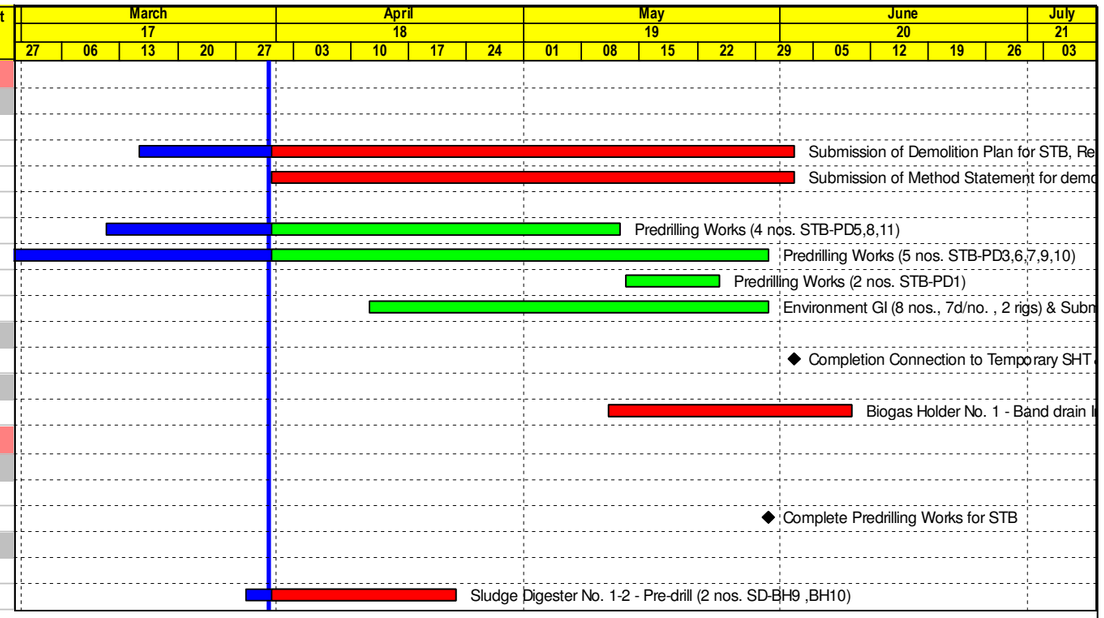
Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
Z2D-4290	Submit/Approve Design for Sheetpiles	55	01-Jun-21 A	04-Apr-22	65
Z2D-4310	Procurement and Delivery of Sheetpiles	21	04-Sep-21 A	31-Mar-22	75
Other Existing Pumping Stations					
Auxilliary Pumping Stations					
Z2T-150B	Demolition of Auxilliary Pumping Station (19) above ground	20	28-Apr-22	23-May-22	56
Z2T-150B10	Sheet piling works for Demolition of Auxilliary Pumping Station (19) belowground	25	24-May-22	22-Jun-22	213
Final Sedimentation Tanks					
Z2T-180	Demolition of Final Sedimentation Tank No.5-6 (6 and 37)	50	24-Jan-22 A	07-Apr-22	90
Mainstream Bio-Reactor & Auxillary Facility (MBR and AF)					
MBR Stage 1 and AF Structure					
A-Tanks Demolition and ELS Works					
MBRAF-1540	MBR - advance coring for king post installation & wells installation	25	04-Apr-22*	07-May-22	94
MBRAF-1550	MBR - King post installation at AT footprint	30	10-May-22	14-Jun-22	94
Tertriary Treatment System (TTS)					
Foundation and ELS					
EBS-2135	Egrets Breeding Season 2022	184	01-Mar-22 A	29-Aug-22*	0
TTS-1000	TTS - Site Clearance	15	24-May-22	10-Jun-22	56
Zone 3 Construction					
Temporary Works Design					
UC (Utilities Corridor)					
TWD-1230	ELS for Utilities Corridor (UC) - ICE Period Submission	20	31-Mar-22*	19-Apr-22	-12
TWD-1240	ELS for Utilities Corridor (UC) - ICE Review Period	18	20-Apr-22	07-May-22	-12
TWD-1250	ELS for Utilities Corridor (UC) - PM Review Period	49	08-May-22	25-Jun-22	-12
TWD-1260	ELS for Utilities Corridor (UC) - Consent Date	0		25-Jun-22	-12
Sludge Thickening Building (STB)					
TWD-1270	ELS for Sludge Thickening Building (STB) - ICE Period Submission	4	28-Feb-22 A	03-Mar-22 A	
TWD-1280	ELS for Sludge Thickening Building (STB) - ICE Review Period	4	28-Feb-22 A	03-Mar-22 A	
TWD-1290	ELS for Sludge Thickening Building (STB) - PM Review Period	49	04-Mar-22 A	18-May-22	76
TWD-1300	ELS for Sludge Thickening Building (STB) - Consent Date	0		18-May-22	76
Sludge Digester (SD)					
TWD-1350	ELS for Sludge Digesters (SD) - ICE Period Submission	30	31-Mar-22*	29-Apr-22	-47
TWD-1360	ELS for Sludge Digesters (SD) - ICE Review Period	28	30-Apr-22	27-May-22	-47
TWD-1370	ELS for Sludge Digesters (SD) - PM Review Period	49	28-May-22	15-Jul-22	-47
Stage 1					
Overhaul Works At Existing SDT Footprint					
Z3S1a.7-80	Completion Overhaul SDT No. 3 and No. 4 (Completion up to Postponed Works)	0		11-Feb-22 A	
Stage 1 - Advance Works					
Zone 3A (at SHT)					
240m3 Temporary Sludge Holding Tank(SHT) (Location B)					
Sludge Forward Pump Station					
Z3A-000070	E&M Installation and T&C (ATAL)	24	10-Mar-22 A	14-Apr-22	-115
Relocation of Heater Room (Location C)					
Z3A-000180	E&M Installation	24	31-Mar-22 A	03-May-22	-162
Z3A-000320	Temp. Water Heater House Structural Completion	0		31-Mar-22 A	
Z3A-000550	Relocation and T&C (ATAL)	24	05-May-22	02-Jun-22	-163
Digested Sludge Pumping Station (Location F)					
Z3B-320	E&M Works (ATAL)	10	17-Mar-22 A	06-Apr-22	-127
Z3B-330	T&C Works (ATAL)	8	07-Apr-22	19-Apr-22	-127
Z3B-340	Digested Sludge Pumping Station Structural Completion	0		16-Mar-22 A	
Micro Turbine Relocation					
Z3A-000540	E&M Installation and T&C(ATAL)	24	10-Mar-22 A	25-Apr-22	-132
Pipe Laying					
Z3A-000210	Pipe Installation between SDT and Temp. SHT & SDB (Batch 1 & 4 - DN200 Sludge)	30	17-Dec-21 A	30-Apr-22	-142
Z3A-000330	Pipe Installation between Compressor House and Gas Holders (Batch 3 - DN300 Gas, SS316L)	34	19-Jan-22 A	30-Apr-22	-173
Z3A-000340	Pipe Installation between Compressor House and Temp. Water Heater House (Batch 4 - DN200 Hotwater)	30	17-Dec-21 A	30-Apr-22	-163
Pipe Connection					
Z3A-000370	240m3 Temp SHT Completion (Location B)	0		31-Mar-22	-119
Z3A-000390	Digested Sludge Pumping Station Structural Completion (Location F)	0		31-Mar-22	-119



Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
Z3A-000400	Temp. Water Heater House Structural Completion (Location C)	0		31-Mar-22	-148
Z3A-000410	Completion of Zone 3A Diversion	0		14-Jun-22	-172
Sludge/Supernatant DI Pipe					
Z3A-000360	Connection between SDT and Temp. SHT & SDB	5	03-May-22	07-May-22	-142
Gas Pipe - SS316L					
DN300 from Gas Holders to Compressor House					
Z3A-000380	Connection at Gas Holders	10	31-Mar-22	12-Apr-22	-124
Z3A-000420	Connection at Compressor House	5	03-May-22	07-May-22	-142
DN300 from SDT, Compressor House to Gas Holders					
Z3A-000450	Connection at Gas Holders	10	03-May-22	14-May-22	-147
Z3A-000460	Gas Purging of SDT No.2 (YLEPP)	21	01-May-22	21-May-22	-219
Z3A-000470	Connection at SDT No.2,3 & 4	1	23-May-22	23-May-22	-173
Z3A-000480	Gas Purging of SDT No.1 (YLEPP)	21	24-May-22	13-Jun-22	-220
Z3A-000490	Connection at SDT No.1	1	14-Jun-22	14-Jun-22	-172
DN200 from Gas Holder to Temp. Water Heater House					
Z3A-000440	Connection at Gas Holders	10	31-Mar-22	12-Apr-22	-148
Hotwater DI Pipe					
Z3A-000500	Connection between Compressor House and Temp. Water Heater House	2	03-May-22	04-May-22	-163
Zone 3B (at STB)					
Gravity Thickening Tank (Location A)					
Z3B-000090	E&M Works (North Tank) (ATAL)	12	16-Mar-22 A	14-Apr-22	-149
Z3B-000100	E&M Works (South Tank) (ATAL)	12	16-Mar-22 A	14-Apr-22	-127
Z3B-000110	T&C Works (North & South Tank) (ATAL)	22	19-Apr-22	16-May-22	-149
Z3B-000250	Civil and Structural Works Construction (Plinths of Sludge Pump)	6	25-Feb-22 A	03-Mar-22 A	
Z3B-000260	Temp. Gravity Thickening Tank (Location A) Completion	0		16-May-22	-149
Temporary Primary Sludge Pumping Station (Location D)					
Z3A-250	Method Statement Approval	0		11-Mar-22 A	
Z3A-290	Civil and Structural Works Construction	27	25-Mar-22 A	28-Apr-22	-170
Z3A-300	E&M Installation (ATAL)	18	29-Apr-22	21-May-22	-170
Z3A-310	T&C Works (ATAL)	16	23-May-22	10-Jun-22	-170
Z3A-430	Temp. Primary Sludge Pumping Station (Location D) Completion	0		10-Jun-22	-170
Temporary Thickened Sludge / Supernatant Pumping Station (Location E)					
Z3B-000140	Sheet Piling	49	29-Jan-22 A	02-Apr-22	-196
Z3B-000150	E&M Works (ATAL) & T&C (ATAL)	44	20-May-22	12-Jul-22	-196
Z3B-000160	ELS Works	9	04-Apr-22	14-Apr-22	-196
Z3B-000450	Civil and Structural Works Construction	25	19-Apr-22	19-May-22	-196
Relocation of Ferrie Chloride (FeCl3) Dosing System & LV Switchboard (Location E)					
Z3B-000170	Design Consent	0		31-Mar-22	-191
Z3B-000180	Method Statement Approval	0		31-Mar-22	-191
Z3B-000190	Civil and Structural Works Construction	35	01-Apr-22	18-May-22	-191
Z3B-000200	E&M Works (ATAL) & T&C Works (ATAL)	40	19-May-22	06-Jul-22	-191
Pipe Laying					
Z3B-000240	Pipe Installation from CT to MH2 (Batch 1 - DN250 Supernatant)	20	18-Dec-21 A	27-Apr-22	-134
Z3B-000350	Pipe Installation from Location A to Location E (Batch 6 - DN250 Supernatant)	36	31-Dec-21 A	18-May-22	-151
Z3B-000360	Pipe Installation from Location A to Location E & SDT (Batch 7 - DN200 Sludge)	36	17-Jan-22 A	18-May-22	-151
Z3B-000370	Pipe Installation from Temp. Primary Sludge Pumping Station (Location D) to CT (Batch 7 - DN200 Sludge)	20	17-Jan-22 A	27-Apr-22	-135
Pipe Connection					
Z3B-000390	Temp. Gravity Thickening Tank (Location A) Completion	0		16-May-22	-149
Z3B-000400	Temp. Primary Sludge Pumping Station (Location D) Completion	0		10-Jun-22	-170
Z3B-000410	Connection at Temp. Primary Sludge Pumping Station (Location D)	1	11-Jun-22	11-Jun-22	-170
Advance Works					
Z3S1A-3010	Completion of Stage 1 (Construction & E&M for Temporary facilities)	0		02-Jun-22	-152
Stage 1 Demolition Works					
SHT 3&4 Demolition Works below ground					
Z3A-000120	Open Cut Excavation at Sludge Holding Tank No. 3	10	16-Feb-22 A	09-Mar-22 A	
Z3A-000130	Demolition Works for Sludge Holding Tank No. 3 (below ground)	20	10-Mar-22 A	27-Apr-22	-141
Z3A-000140	Backfill to Ground Level	7	28-Apr-22	06-May-22	-141
UC Decommission Works					
Z3A-000110	Decommission Works for Existing Utilities Gallery	12	15-Jun-22	28-Jun-22	-35



Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float
Stage 2					
Stage 2 : New Sludge Thickening Building (STB)					
Stage 2 - Demolition Works					
Z3S2-2050	Submission of Demolition Plan for STB, Review by PM(28d), Resubmission(14d), Obtain Approval(7d)	49	15-Mar-22 A	02-Jun-22	-17
Z3S2-2310	Submission of Method Statement for demolition of STB, Review by PM(28d), Resubmission(14d), Obtain Approva	49	31-Mar-22	02-Jun-22	-17
Stage 2 : STB Pre-drilling Works					
Z3S3-2020	Predrilling Works (4 nos. STB-PD5,8,11)	31	11-Mar-22 A	12-May-22	24
Z3S3-2030	Predrilling Works (5 nos. STB-PD3,6,7,9,10)	40	24-Feb-22 A	30-May-22	19
Z3S3-3050	Predrilling Works (2 nos. STB-PD1)	10	13-May-22	24-May-22	24
Z3S3-3400	Environment GI (8 nos., 7d/no. , 2 rigs) & Submit RAP Report to EPD (30 days)	37	12-Apr-22*	30-May-22	23
Stage 2 : Existing Sludge Holding Tanks					
Z3S1a.7-60	Completion Connection to Temporary SHT & Dewatering House	0		02-Jun-22	-152
Stage 2 : Biogas Holder No. 1					
Z3BH-1000	Biogas Holder No. 1 - Band drain Installation for Ground Improvement	25	11-May-22	09-Jun-22	-143
Stage 3					
Stage 3 : New Sludge Thickening Building (STB) (Continued)					
Stage 3 : STB Foundation and ELS					
Z3S1a.7-70	Complete Predrilling Works for STB	0		30-May-22	19
Stage 3 : New Sludge Digester No. 1 and 2 (Continued)					
Stage 3 : SD 1,2 Pre-drilling Works					
Z3S3-2010	Sludge Digester No. 1-2 - Pre-drill (2 nos. SD-BH9 ,BH10)	16	28-Mar-22 A	22-Apr-22	-29

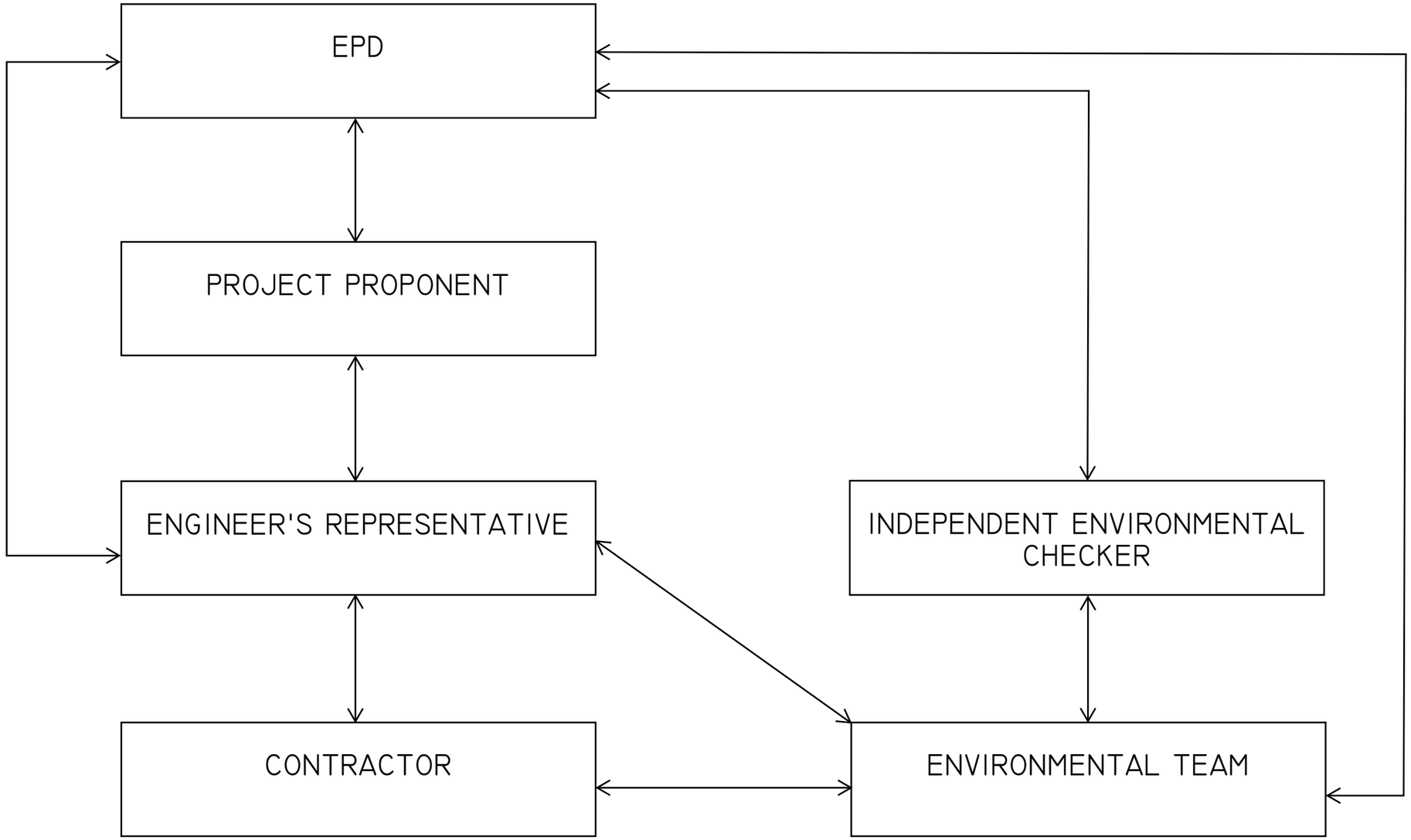


Appendix B

Project Organization Chart

LEGEND:

LINE OF COMMUNICATION



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

Plot File by: Chanws 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
階段

SCALE
比例

A3 1 : 40000

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號

60505476

CONTRACT NO.
合約編號

CE 3/2015 (DS)

SHEET TITLE
圖紙名稱

PROJECT ORGANISATION

SHEET NUMBER
圖紙編號

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

b) AMS 3C = (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. : 940891CA212394(1)

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	: Laser dust monitor
Manufacturer	: SIBATA
Model No.	: LD-5R
Serial No.	: 155716
Specification Limit	: NA
Next Calibration Date	: 02-Sep-2022

Laboratory Information

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

Equipment ID. / Serial no. : 1. C-065-9 2. 4350

Date of Calibration : 03-Sep-2021 Ambient Temperature : 25 ± 10 °C

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

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

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.0416	631	10.52
0.0388	626	10.43
0.0266	598	9.97

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x [UUT reading (CPM)], where K = 0.003460
3. Correlation coefficient (r) : 0.9992

Checked by : _____ Date : 28-9-2021 Certified by : _____ Date : 28.9.2021

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

Chan Chun Wai (Manager)

** End of Report **

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

Report no. : 940891CA212394

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	: 02-Sep-2022

Laboratory Information

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

Equipment ID. / Serial no. : 1. C-065-9 2. 4350

Date of Calibration : 03-Sep-2021 Ambient Temperature : 25 ± 10 °C

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

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

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.0416	672	11.20
0.0388	650	10.83
0.0266	597	9.95

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x [UUT reading (CPM)], where K = 0.003345
3. Correlation coefficient (r) : 0.9940

Checked by : Date : 28-9-2021 Certified by : Date : 28.9.2021

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

Chan Chun Wai (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
Location ID: A1 Site Boundary

Date of Calibration: 26-Jul-21
Next Calibration Date: 30-Oct-21
Technician: Herman Wang

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATIONS

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

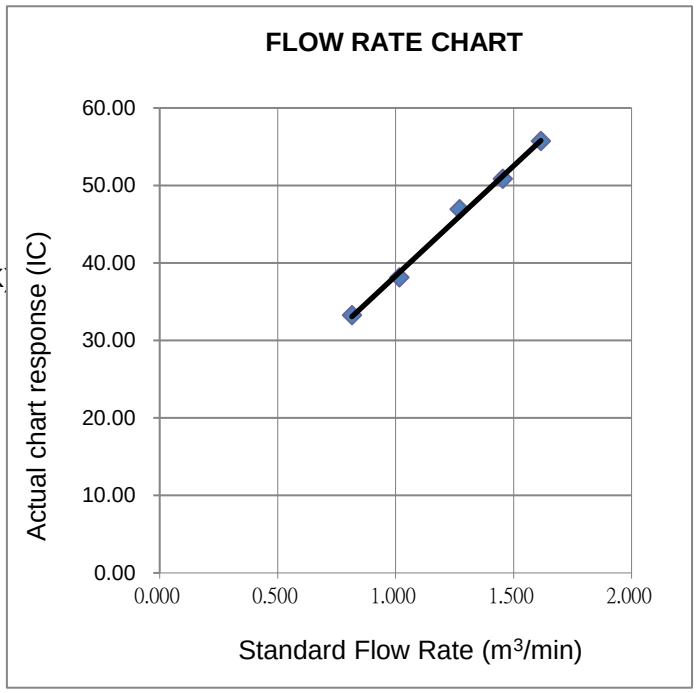
Calculations:

Qstd = 1/m[Sqrt(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: 26-Mar-2022**
Location: Yuen Long Sewage Treatment Works — **Next Calibration Date: 25-Sep-2022**
Technician: Sam Fong

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

Anemometer

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

Procedures:

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

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

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

Wind Direction Test:

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

Report Date: 28/3/2022

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.: 203258CA211142

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.
Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Level Meter
Manufacturer : Casella

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

Equipment ID : N-45
Next Calibration Date : 27-May-2022
Specification Limit : EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -

Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)
Equipment ID. : R-108-1

Date of Calibration : 28-May-2021
Calibration Location : Calibration Laboratory of FTS
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	1.4	2.6 to -0.6
	2000Hz	1.3	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	-26.2	-24.7 to -27.7
	31.5Hz	-39.2	-37.4 to -41.4
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.

Checked by : William Date : 1-6-2021 Certified by : K T Leung Date : 1.6.2021

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

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

Report no.: 212769CA212463(1)

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Level Meter

Manufacturer : Casella

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

Equipment ID : N/A

Next Calibration Date : 27-Oct-2022

Specification Limit : EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -

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

Equipment ID. : R-108-1

Date of Calibration : 28-Oct-2021

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	1.8	2.6 to -0.6
	2000Hz	1.5	2.8 to -0.4
	1000Hz	0.2	1.1 to -1.1
	500Hz	-3.2	-1.8 to -4.6
	250Hz	-8.7	-7.2 to -10.0
	125Hz	-16.1	-14.6 to -17.6
	63Hz	-26.2	-24.7 to -27.7
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

Remarks :

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 ;

Checked by : _____ Date : 3-11-2021 Certified by : K.T. Leung Date : 4.11.2021

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

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

Report no.: 203258CA210891

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	:	Sound Calibrator
Manufacturer	:	Casella (Model CEL-120/1)
Serial No.	:	4358251
Equipment ID	:	N-34

Next Calibration Date : 10-May-2022

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

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

Date of Calibration : 11-May-2021

Calibration Location : Calibration Laboratory of FTS

Ambient Temperature : 20±2 °C

Method Used : By direct comparison

Relative Humidity : <80% R.H.

Calibration Results :

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

Remarks :

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

Checked by : William Date : 12-5-2021 Certified by : K.T. Leung Date : 12-5-2021

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.: 212769CA212069(3)

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	:	Sound Calibrator
Manufacturer	:	Casella (Model CEL-120/1)
Serial No.	:	2383707
Equipment ID	:	N/A
Next Calibration Date	:	25-Aug-2022
Specification Limit	:	EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

Description	:	Reference Sound level meter
Equipment ID.	:	R-119-2
Date of Calibration	:	26-Aug-2021
Calibration Location	:	Calibration Laboratory of FTS
Method Used	:	By direct comparison

Ambient Temperature : 20±2 °C

Relative Humidity : <80% R.H.

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.4 dB	±0.4dB
114dB	-0.3 dB	

Remarks :

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

Checked by : Date : 27-8-2021 Certified by : Date : 27-8-2021

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. : 212769CA211145

CALIBRATION CERTIFICATE OF ANEMOMETER

Client Supplied Information

Client : Fugro Technical Services Limited

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : SENSOR

Model No. : AR816

Serial No. : 2136513

Equipment ID. : NA

Next Calibration Date : 30-May-2022

Laboratory Information

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID. : R-101-4

Date of Calibration : 31-May-2021 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of FTS

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

Calibration Results :

Reference Reading (m/s)	UUT Reading (m/s)	Error (m/s)
1.99	2.0	0.0
4.00	4.3	0.3
6.01	6.3	0.3
7.99	8.2	0.2
10.03	9.9	-0.1

Remark :

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

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

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Water Quality Monitoring Equipments

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

Report No. : 142626WA220342

Report on Calibration of YSI EXO-3 Multi-parameter Water Quality Meter

Information Supplied by Client

Client	:	Fugro Technical Services Limited (MCL)
Client's address	:	13/F, Fugro House – KCC2, No. 1 Kwai On Road, Kwai Chung, N.T., H.K.
Sample description	:	One YSI EXO-3 Multi-parameter Water Quality Meter
Client sample ID	:	Serial No. 19E100633
Test required	:	Calibration of the YSI EXO-3 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID	:	WA220342/1
Date sample received	:	23/02/2022
Date of calibration	:	28/02/2022
Next calibration date	:	27/05/2022
Test method used	:	In-house comparison method

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

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

Report No. : 142626WA220342

Results :

A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.17	-0.01
6.86	6.93	+0.07

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.00	0.00	± 0.1
10	9.95	-0.05	± 0.5
20	20.03	+0.03	± 1.0
30	30.02	+0.02	± 1.5
40	39.93	-0.07	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.44	8.60
2	8.46	8.60
3	8.74	8.61
Average	8.55	8.60

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 : 28/3/2022

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. : 142626WA220342

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
20.2	20.515

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.49	+0.49	± 0.6
8	8.60	+0.60	± 0.8
40	40.78	+0.78	± 3.0
80	79.16	-0.84	± 4.0

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

Date : 28/3/2022

** End of Report **

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

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

Report No. : 142626WA220342(1)

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	:	WA220342(1)/1
Date sample received	:	23/02/2022
Date of calibration	:	28/02/2022
Next calibration date	:	27/05/2022
Test method used	:	In-house comparison method

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

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

Report No. : 142626WA220342(1)

Results :

A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.08	-0.10
6.86	6.86	0.00

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.01	+0.01	± 0.1
10	9.97	-0.03	± 0.5
20	20.02	+0.02	± 1.0
30	29.98	-0.02	± 1.5
40	40.04	+0.04	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.41	8.54
2	8.41	8.46
3	8.36	8.44
Average	8.39	8.48

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 : 29/3/2022

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. : 142626WA220342(1)

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
22.8	22.515

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.38	+0.38	± 0.6
8	8.18	+0.18	± 0.8
40	40.96	+0.96	± 3.0
80	80.72	+0.72	± 4.0

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

Date : 28/3/2022

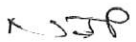
** End of Report **

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

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

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

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.

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

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

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

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

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

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

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

Appendix E

Environmental Monitoring Schedule

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

Environmental Monitoring Schedule (April 2022)

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

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 (May 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
1	2	3 **WQM** Mid Flood(8:12) Mid Ebb(15:04)	4	5 **WQM** Mid Flood(8:53) Mid Ebb(16:11)	6 **AQM, NM**	7 **WQM** Mid Flood(9:43) Mid Ebb(17:34)
8	9	10 **WQM** Mid Flood(14:16) Mid Ebb(9:46)	11	12 **AQM, NM** **WQM** Mid Flood(16:57) Mid Ebb(11:10)	13	14 **WQM** Mid Flood(18:46) Mid Ebb(12:28)
15	16	17 **WQM** Mid Flood(7:41) Mid Ebb(14:28)	18 **AQM, NM**	19 **WQM** Mid Flood(8:42) Mid Ebb(15:59)	20	21 **AQM** **WQM** Mid Flood(10:07) Mid Ebb(5:30)
22	23	24 **AQM, NM** **WQM** Mid Flood(14:54) Mid Ebb(9:55)	25	26 **WQM** Mid Flood(17:09) Mid Ebb(11:33)	27	28 **WQM** Mid Flood(18:57) Mid Ebb(12:32)
29	30 **AQM, NM**	31 **WQM** Mid Flood(7:01) Mid Ebb(14:12)				

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 (June 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
			1	2 **WQM** Mid Flood(7:53) Mid Ebb(15:23)	3	4 **AQM** **WQM** Mid Flood(9:02) Mid Ebb(16:41)
5	6	7 **WQM** Mid Flood(11:43) Mid Ebb(6:58)	8	9 **WQM** Mid Flood(14:58) Mid Ebb(9:40)	10 **AQM, NM**	11 **WQM** Mid Flood(17:35) Mid Ebb(11:08)
12	13	14 **WQM** Mid Flood(6:24) Mid Ebb(13:26)	15	16 **AQM, NM** **WQM** Mid Flood(7:42) Mid Ebb(15:08)	17	18 **WQM** Mid Flood(9:14) Mid Ebb(16:43)
19	20	21 **WQM** Mid Flood(12:46) Mid Ebb(7:56)	22 **AQM, NM**	23 **WQM** Mid Flood(15:43) Mid Ebb(10:05)	24	25 **WQM** Mid Flood(18:06) Mid Ebb(11:25)
26	27	28 **AQM, NM** **WQM** Mid Flood(5:52) Mid Ebb(13:19)	29	30 **WQM** Mid Flood(6:58) Mid Ebb(14:34)		

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 (July 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
					1	2 **WQM** Mid Flood(8:12) Mid Ebb(15:46)
3	4 **AQM, NM**	5 **WQM** Mid Flood(10:33) Mid Ebb(5:26)	6	7 **WQM** Mid Flood(12:43) Mid Ebb(7:22)	8	9 **AQM** **WQM** Mid Flood(16:05) Mid Ebb(9:26)
10	11	12 **WQM** Mid Flood(5:13) Mid Ebb(12:26)	13	14 **WQM** Mid Flood(6:44) Mid Ebb(14:11)	15 **AQM, NM**	16 **WQM** Mid Flood(8:28) Mid Ebb(15:47)
17	18	19 **WQM** Mid Flood(11:17) Mid Ebb(6:08)	20	21 **AQM, NM** **WQM** Mid Flood(13:19) Mid Ebb(8:04)	22	23 **WQM** Mid Flood(17:03) Mid Ebb(9:57)
24 31	25	26 **WQM** Mid Flood(19:48) Mid Ebb(12:21)	27 **AQM, NM**	28 **WQM** Mid Flood(20:58) Mid Ebb(13:43)	29	30 **WQM** Mid Flood(21:57) Mid Ebb(14:57)

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

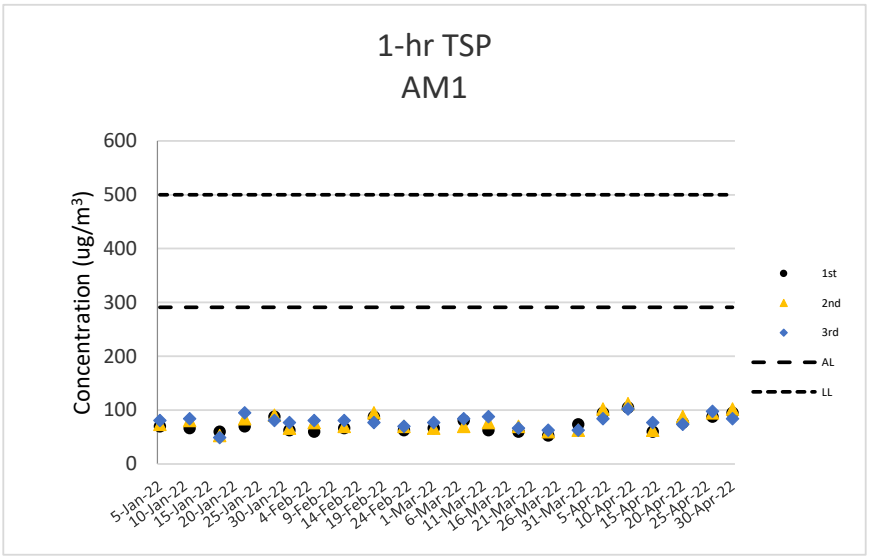
AM1 - Topfine Machinery (China) Co. Ltd.

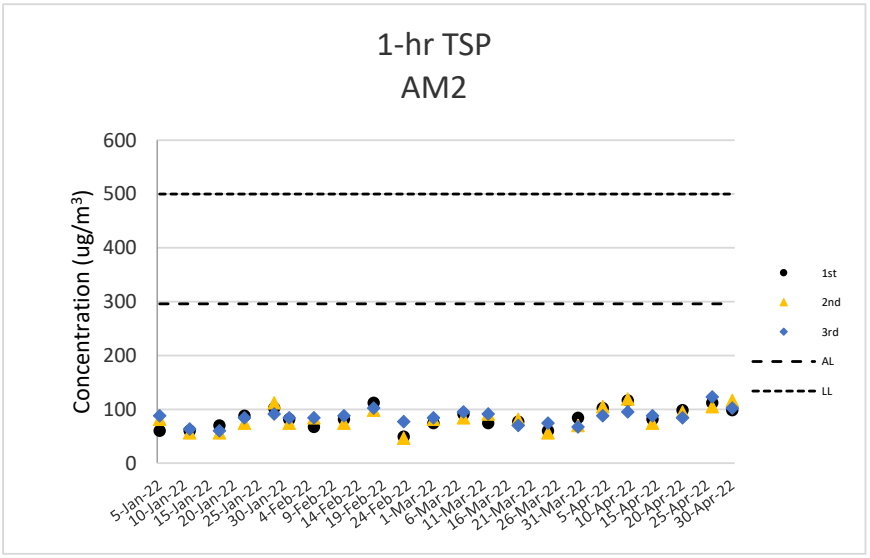
Date	Weather Condition	Start Time	1-hour TSP (µg/m³) 1st Measurement	2nd Measurement	3rd Measurement	Action Level (ug/m^3)	Limit Level (ug/m^3)
4-Apr-22	Cloudy	8:31	95	102	84	291	500
9-Apr-22	Fine	8:46	105	112	102		
14-Apr-22	Fine	8:30	60	63	77		
20-Apr-22	Fine	8:34	77	88	74		
26-Apr-22	Cloudy	8:30	88	95	98		
30-Apr-22	Fine	8:49	95	102	84		
		Min	60				
		Max	112				
		Average	89				

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-Apr-22	Cloudy	8:41	102	105	88	296	500
9-Apr-22	Fine	8:35	116	119	95		
14-Apr-22	Fine	8:39	81	74	88		
20-Apr-22	Fine	8:43	98	95	84		
26-Apr-22	Cloudy	8:39	112	105	123		
30-Apr-22	Fine	8:37	98	116	102		
		Min	74				
		Max	123				
		Average	100				

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-Apr-22	10:05	55	57	52	0.3	Cloudy	75
14-Apr-22	10:01	56	59	52	0.2	Fine	75
20-Apr-22	10:05	55	59	51	0.2	Fine	75
26-Apr-22	10:02	57	60	52	0.1	Cloudy	75
	Max	57					
	Min	55					

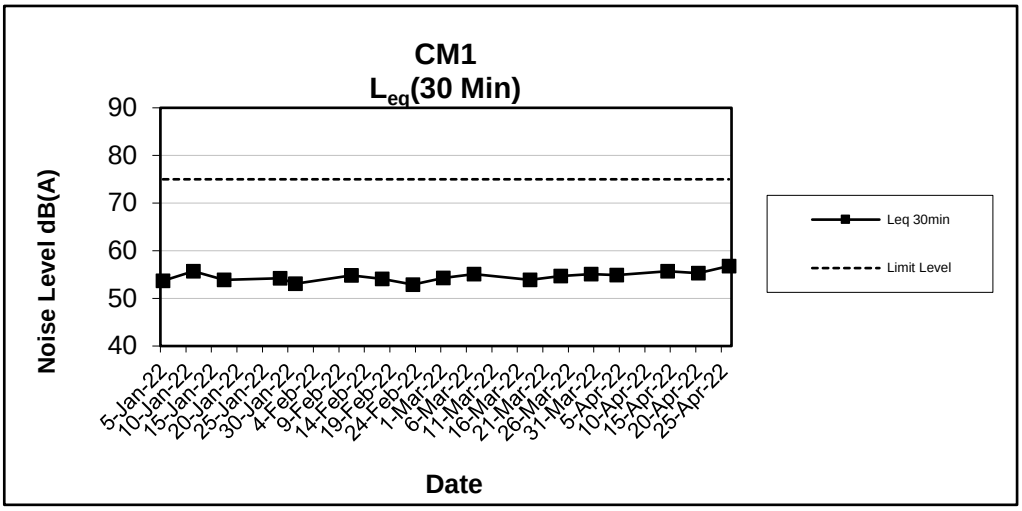
CM2 - Squatter house to the west of YLSTW

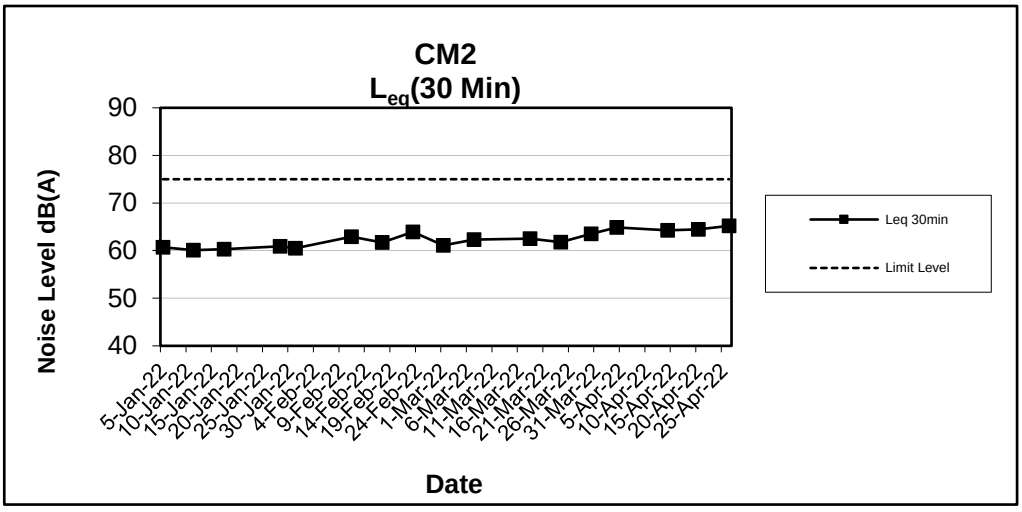
Date	Start Time	L_{eq} 30min dB(A)	L_{10} dB(A)	L_{90} dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
4-Apr-22	8:45	65	68	57	0.4	Cloudy	75
14-Apr-22	8:43	64	67	56	0.3	Fine	75
20-Apr-22	8:49	65	67	56	0.4	Fine	75
26-Apr-22	8:45	65	68	57	0.2	Cloudy	75
	Max	65					
	Min	64					

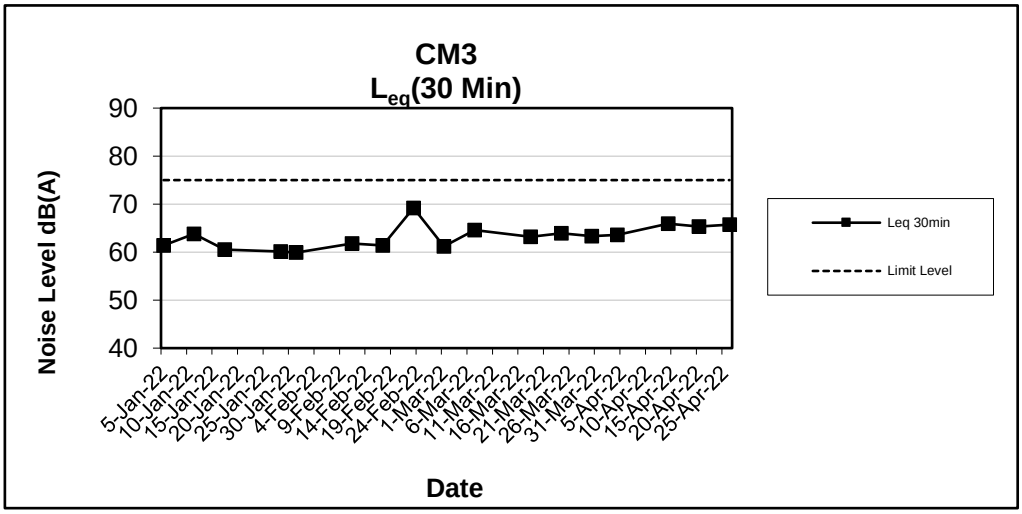
CM3 - Squatter house to the east of YLSTW

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-Apr-22	11:28	64	67	56	0.4	Cloudy	75
14-Apr-22	11:19	66	69	57	0.4	Fine	75
20-Apr-22	11:25	65	69	57	0.4	Fine	75
26-Apr-22	13:03	66	70	56	0.2	Cloudy	75
	Max	66					
	Min	64					

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







Noise Monitoring Results

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	2/4/2022	Mid-Flood	Fine	Moderate	8:55	0.9	M	0.45	1	0.05	123	7.17	7.18	6.63	6.64	20.43	20.43	50.9	50.9	4.40	4.39	36.5	36.5	43	45
M1	2/4/2022	Mid-Flood	Fine	Moderate	8:55	0.9	M	0.45	2			7.19		6.64		20.43		50.8		4.38		36.4		47	
M2	2/4/2022	Mid-Flood	Fine	Moderate	9:10	0.7	M	0.35	1	0.108	46	7.26	7.24	6.97	6.95	20.58	20.58	53.4	53.3	4.43	4.42	32.9	33.0	52	51
M2	2/4/2022	Mid-Flood	Fine	Moderate	9:10	0.7	M	0.35	2			7.22		6.92		20.58		53.2		4.41		33.0		49	
M3	2/4/2022	Mid-Flood	Cloudy	Smooth	8:40	0.6	M	0.3	1	0.245	85	7.21	7.22	4.08	4.08	19.90	19.91	60.2	60.9	5.35	5.42	35.4	35.8	47	49
M3	2/4/2022	Mid-Flood	Cloudy	Smooth	8:40	0.6	M	0.3	2			7.22		4.07		19.91		61.6		5.48		36.2		50	
M1	2/4/2022	Mid-Ebb	Fine	Moderate	14:59	0.8	M	0.4	1	0.085	312	7.64	7.65	6.24	6.23	19.33	19.33	60.8	60.8	4.86	4.85	30.7	30.7	33	32
M1	2/4/2022	Mid-Ebb	Fine	Moderate	14:59	0.8	M	0.4	2			7.66		6.22		19.33		60.7		4.83		30.6		31	
M2	2/4/2022	Mid-Ebb	Fine	Moderate	14:41	0.6	M	0.3	1	0.096	70	7.80	7.81	4.37	4.37	18.71	18.71	64.3	64.2	5.03	5.02	27.6	27.5	18	20
M2	2/4/2022	Mid-Ebb	Fine	Moderate	14:41	0.6	M	0.3	2			7.81		4.36		18.71		64.1		5.01		27.4		21	
M3	2/4/2022	Mid-Ebb	Cloudy	Smooth	14:41	0.6	M	0.3	1	0.256	250	7.10	7.10	5.05	5.06	20.48	20.49	50.6	50.8	4.42	4.44	39.8	40.1	48	48
M3	2/4/2022	Mid-Ebb	Cloudy	Smooth	14:41	0.6	M	0.3	2			7.09		5.06		20.49		50.9		4.45		40.4		48	

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	43.7	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	5/4/2022	Mid-Flood	Fine	Moderate	9:41	1.2	M	0.6	1	0.042	146	7.36	7.37	10.19	10.21	21.20	21.21	62.5	62.4	5.23	5.22	26.8	26.7	32	31
M1	5/4/2022	Mid-Flood	Fine	Moderate	9:41	1.2	M	0.6	2			7.38		10.22		21.21		62.3		5.21		26.7		30	
M2	5/4/2022	Mid-Flood	Fine	Moderate	9:58	0.9	M	0.45	1	0.088	74	7.38	7.38	10.04	10.06	21.30	21.32	61.6	61.4	5.15	5.12	25.4	25.4	24	23
M2	5/4/2022	Mid-Flood	Fine	Moderate	9:58	0.9	M	0.45	2			7.37		10.07		21.34		61.2		5.09		25.5		21	
M3	5/4/2022	Mid-Flood	Fine	Smooth	9:29	0.6	M	0.3	1	0.25	79	7.41	7.42	10.29	10.29	18.11	18.12	59.6	59.8	4.98	5.00	26.2	25.7	23	25
M3	5/4/2022	Mid-Flood	Fine	Smooth	9:29	0.6	M	0.3	2			7.42		10.28		18.12		59.9		5.01		25.3		26	
M1	5/4/2022	Mid-Ebb	Fine	Moderate	16:19	0.9	M	0.45	1	0.072	19	7.52	7.53	12.64	12.65	20.91	20.91	67.7	67.5	5.62	5.61	29.4	29.5	40	38
M1	5/4/2022	Mid-Ebb	Fine	Moderate	16:19	0.9	M	0.45	2			7.53		12.66		20.90		67.3		5.59		29.5		36	
M2	5/4/2022	Mid-Ebb	Fine	Moderate	16:01	0.8	M	0.4	1	0.108	334	7.60	7.66	12.86	12.88	20.82	20.82	74.3	74.0	6.16	6.10	27.1	27.2	16	17
M2	5/4/2022	Mid-Ebb	Fine	Moderate	16:01	0.8	M	0.4	2			7.71		12.89		20.82		73.7		6.04		27.2		18	
M3	5/4/2022	Mid-Ebb	Fine	Smooth	16:03	0.8	M	0.4	1	0.266	266	7.24	7.24	9.78	9.77	24.04	24.04	63.6	63.2	5.29	5.26	32.0	32.3	31	32
M3	5/4/2022	Mid-Ebb	Fine	Smooth	16:03	0.8	M	0.4	2			7.23		9.76		24.04		62.7		5.22		32.7		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	7/4/2022	Mid-Flood	Fine	Smooth	10:15	2.4	M	1.2	1	0.302	231	7.35	7.35	7.82	7.81	23.30	23.31	67.7	67.4	5.46	5.43	32.9	32.5	32	33
M1	7/4/2022	Mid-Flood	Fine	Smooth	10:15	2.4	M	1.2	2			7.34		7.80		23.32		67.0		5.39		32.1		34	
M2	7/4/2022	Mid-Flood	Fine	Smooth	10:33	1.2	M	0.6	1	0.316	203	7.29	7.30	7.77	7.76	23.99	23.99	64.4	64.3	5.19	5.18	29.3	29.4	33	30
M2	7/4/2022	Mid-Flood	Fine	Smooth	10:33	1.2	M	0.6	2			7.30		7.75		23.99		64.1		5.16		29.5		26	
M3	7/4/2022	Mid-Flood	Fine	Moderate	9:58	1.1	M	0.55	1	0.063	123	7.39	7.38	7.53	7.55	23.72	23.73	69.7	69.3	5.65	5.60	33.9	34.0	29	30
M3	7/4/2022	Mid-Flood	Fine	Moderate	9:58	1.1	M	0.55	2			7.37		7.57		23.74		68.8		5.54		34.2		30	
M1	7/4/2022	Mid-Ebb	Fine	Smooth	17:27	2.2	M	1.1	1	0.339	270	7.59	7.58	6.97	6.97	26.67	26.67	72.9	73.1	5.92	5.94	29.7	29.9	28	27
M1	7/4/2022	Mid-Ebb	Fine	Smooth	17:27	2.2	M	1.1	2			7.57		6.96		26.66		73.3		5.96		30.0		26	
M2	7/4/2022	Mid-Ebb	Fine	Smooth	17:12	1.2	M	0.6	1	0.372	297	7.55	7.55	6.43	6.43	26.48	26.49	71.1	71.3	5.77	5.78	28.2	27.8	25	26
M2	7/4/2022	Mid-Ebb	Fine	Smooth	17:12	1.2	M	0.6	2			7.54		6.42		26.49		71.4		5.79		27.5		26	
M3	7/4/2022	Mid-Ebb	Fine	Moderate	17:23	0.9	M	0.45	1	0.087	72	7.43	7.44	8.09	8.09	23.77	23.74	66.5	66.1	5.36	5.37	31.1	31.1	33	34
M3	7/4/2022	Mid-Ebb	Fine	Moderate	17:23	0.9	M	0.45	2			7.44		8.08		23.71		65.7		5.38		31.1		34	

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	9/4/2022	Mid-Flood	Fine	Moderate	6:51	1.3	M	0.65	1	0.081	146	7.51	7.52	6.02	6.03	23.91	23.92	87.6	87.8	7.14	7.16	21.3	21.4	22	22
M1	9/4/2022	Mid-Flood	Fine	Moderate	6:51	1.3	M	0.65	2			7.53		6.04		23.94		87.9		7.18		21.4		21	
M2	9/4/2022	Mid-Flood	Fine	Moderate	7:13	0.9	M	0.45	1	0.106	71	7.58	7.59	6.00	6.01	24.18	24.19	89.2	89.3	7.33	7.34	21.2	21.1	24	22
M2	9/4/2022	Mid-Flood	Fine	Moderate	7:13	0.9	M	0.45	2			7.59		6.01		24.19		89.3		7.35		21.0		20	
M3	9/4/2022	Mid-Flood	Fine	Calm	6:32	0.4	M	0.2	1	0.214	89	7.15	7.16	6.23	6.24	19.54	19.55	80.1	79.7	6.31	6.28	36.0	36.1	45	44
M3	9/4/2022	Mid-Flood	Fine	Calm	6:32	0.4	M	0.2	2			7.17		6.24		19.55		79.3		6.25		36.2		43	
M1	9/4/2022	Mid-Ebb	Fine	Moderate	19:19	0.9	M	0.45	1	0.082	92	7.41	7.42	6.83	6.84	24.81	24.82	73.4	73.4	5.89	5.88	17.1	17.1	21	22
M1	9/4/2022	Mid-Ebb	Fine	Moderate	19:19	0.9	M	0.45	2			7.42		6.84		24.83		73.3		5.87		17.1		23	
M2	9/4/2022	Mid-Ebb	Fine	Moderate	19:00	0.7	M	0.35	1	0.046	70	7.38	7.36	6.91	6.92	24.36	24.36	69.9	69.4	5.64	5.69	17.8	17.8	14	15
M2	9/4/2022	Mid-Ebb	Fine	Moderate	19:00	0.7	M	0.35	2			7.34		6.93		24.37		68.9		5.73		17.8		15	
M3	9/4/2022	Mid-Ebb	Fine	Calm	19:02	0.6	M	0.3	1	0.277	253	7.28	7.29	4.93	4.92	25.71	25.71	85.5	85.7	6.80	6.82	27.5	27.8	27	27
M3	9/4/2022	Mid-Ebb	Fine	Calm	19:02	0.6	M	0.3	2			7.29		4.91		25.70		85.9		6.84		28.2		26	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	12/4/2022	Mid-Flood	Cloudy	Calm	6:08	2	M	1	1	0.283	250	7.59	7.59	7.98	7.98	21.87	21.87	90.2	90.4	7.07	7.09	25.2	25.5	35	34
M1	12/4/2022	Mid-Flood	Cloudy	Calm	6:08	2	M	1	2			7.58		7.97		21.86		90.6		7.11		25.9		33	
M2	12/4/2022	Mid-Flood	Cloudy	Calm	6:23	1	M	0.5	1	0.271	274	7.65	7.65	7.60	7.61	21.99	22.00	88.9	88.5	6.90	6.87	22.5	22.6	27	28
M2	12/4/2022	Mid-Flood	Cloudy	Calm	6:23	1	M	0.5	2			7.64		7.61		22.01		88.1		6.83		22.6		28	
M3	12/4/2022	Mid-Flood	Fine	Moderate	5:58	0.9	M	0.45	1	0.045	310	7.83	7.84	7.71	7.72	25.59	25.65	91.8	91.6	7.19	7.17	27.2	27.6	33	34
M3	12/4/2022	Mid-Flood	Fine	Moderate	5:58	0.9	M	0.45	2			7.84		7.72		25.71		91.4		7.14		27.9		34	
M1	12/4/2022	Mid-Ebb	Cloudy	Calm	11:49	2.2	M	1.1	1	0.209	291	7.53	7.54	7.12	7.13	27.97	27.98	82.8	82.7	6.42	6.41	26.7	26.8	36	36
M1	12/4/2022	Mid-Ebb	Cloudy	Calm	11:49	2.2	M	1.1	2			7.54		7.14		27.98		82.5		6.40		26.9		35	
M2	12/4/2022	Mid-Ebb	Cloudy	Calm	11:30	1.2	M	0.6	1	0.236	328	7.49	7.49	6.99	7.00	27.57	27.58	78.1	78.3	6.08	6.10	29.2	28.7	29	28
M2	12/4/2022	Mid-Ebb	Cloudy	Calm	11:30	1.2	M	0.6	2			7.48		7.00		27.59		78.5		6.12		28.3		27	
M3	12/4/2022	Mid-Ebb	Fine	Moderate	11:57	1.1	M	0.55	1	0.12	71	7.41	7.40	7.19	7.30	25.75	25.57	86.2	84.7	6.83	6.65	31.6	31.4	43	42
M3	12/4/2022	Mid-Ebb	Fine	Moderate	11:57	1.1	M	0.55	2			7.39		7.40		25.39		83.1		6.47		31.2		41	

Remark

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3. Action Level for Turbidity: 95%-ile of baseline data or 120% of upstream control station's turbidity recorded on the same day.
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	14/4/2022	Mid-Flood	Fine	Calm	6:56	2.2	M	1.1	1	0.303	268	7.47	7.47	6.75	6.74	22.17	22.18	68.6	68.9	5.38	5.40	27.9	27.5	40	42
M1	14/4/2022	Mid-Flood	Fine	Calm	6:56	2.2	M	1.1	2			7.46		6.73		22.18		69.1		5.42		27.1		43	
M2	14/4/2022	Mid-Flood	Fine	Calm	7:14	1.2	M	0.6	1	0.323	294	7.54	7.54	6.37	6.38	22.46	22.47	66.1	66.4	5.18	5.21	31.9	31.8	47	45
M2	14/4/2022	Mid-Flood	Fine	Calm	7:14	1.2	M	0.6	2			7.53		6.38		22.48		66.7		5.23		31.6		43	
M3	14/4/2022	Mid-Flood	Fine	Calm	6:58	0.6	M	0.3	1	0.281	96	7.57	7.57	6.49	6.48	21.83	21.84	74.1	74.3	5.78	5.80	26.7	26.1	49	47
M3	14/4/2022	Mid-Flood	Fine	Calm	6:58	0.6	M	0.3	2			7.57		6.47		21.84		74.5		5.81		25.6		45	
M1	14/4/2022	Mid-Ebb	Fine	Calm	12:56	2.2	M	1.1	1	0.278	256	7.64	7.65	5.91	5.91	28.11	28.11	73.0	73.2	5.77	5.79	34.0	33.6	58	55
M1	14/4/2022	Mid-Ebb	Fine	Calm	12:56	2.2	M	1.1	2			7.65		5.91		28.10		73.4		5.81		33.2		52	
M2	14/4/2022	Mid-Ebb	Fine	Calm	12:37	1.2	M	0.6	1	0.289	305	7.59	7.60	5.49	5.50	27.84	27.85	71.1	71.3	5.62	5.64	28.6	28.5	37	36
M2	14/4/2022	Mid-Ebb	Fine	Calm	12:37	1.2	M	0.6	2			7.60		5.50		27.85		71.5		5.65		28.4		35	
M3	14/4/2022	Mid-Ebb	Fine	Calm	12:38	0.6	M	0.3	1	0.256	272	7.69	7.70	6.22	6.23	27.21	27.22	78.6	78.8	6.13	6.14	32.6	32.8	37	38
M3	14/4/2022	Mid-Ebb	Fine	Calm	12:38	0.6	M	0.3	2			7.70		6.23		27.23		78.9		6.15		33.0		38	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	16/4/2022	Mid-Flood	Cloudy	Moderate	7:41	1.2	M	0.6	1	0.072	186	7.77	7.78	11.59	11.62	24.06	24.07	80.7	80.7	6.35	6.35	31.7	31.8	39	41
M1	16/4/2022	Mid-Flood	Cloudy	Moderate	7:41	1.2	M	0.6	2			7.78		11.64		24.09		80.6		6.34		31.8		42	
M2	16/4/2022	Mid-Flood	Cloudy	Moderate	7:58	0.9	M	0.45	1	0.135	71	7.76	7.77	11.61	11.62	24.31	24.35	79.5	79.5	6.25	6.25	30.1	30.1	38	40
M2	16/4/2022	Mid-Flood	Cloudy	Moderate	7:58	0.9	M	0.45	2			7.78		11.63		24.39		79.4		6.24		30.0		41	
M3	16/4/2022	Mid-Flood	Cloudy	Smooth	7:45	0.6	M	0.3	1	0.303	87	7.68	7.68	10.68	10.69	21.26	21.25	77.1	76.9	6.06	6.04	34.0	34.2	65	65
M3	16/4/2022	Mid-Flood	Cloudy	Smooth	7:45	0.6	M	0.3	2			7.67		10.69		21.24		76.7		6.02		34.4		64	
M1	16/4/2022	Mid-Ebb	Cloudy	Moderate	13:56	1	M	0.5	1	0.053	341	7.78	7.79	8.88	8.86	25.08	25.09	85.7	85.7	6.68	6.68	30.4	30.4	31	32
M1	16/4/2022	Mid-Ebb	Cloudy	Moderate	13:56	1	M	0.5	2			7.79		8.84		25.09		85.6		6.67		30.5		33	
M2	16/4/2022	Mid-Ebb	Cloudy	Moderate	13:37	0.7	M	0.35	1	0.046	312	7.75	7.77	10.55	10.57	24.09	24.09	83.2	83.5	6.51	6.55	29.8	29.8	41	42
M2	16/4/2022	Mid-Ebb	Cloudy	Moderate	13:37	0.7	M	0.35	2			7.79		10.58		24.09		83.7		6.58		29.7		42	
M3	16/4/2022	Mid-Ebb	Cloudy	Smooth	13:39	0.6	M	0.3	1	0.285	262	7.47	7.47	8.96	8.97	25.66	25.67	79.9	80.2	6.23	6.26	27.0	26.7	50	51
M3	16/4/2022	Mid-Ebb	Cloudy	Smooth	13:39	0.6	M	0.3	2			7.46		8.98		25.67		80.5		6.28		26.4		51	

Remark

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For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	19/4/2022	Mid-Flood	Cloudy	Smooth	9:04	2.4	M	1.2	1	0.358	279	7.62	7.63	13.07	13.08	20.58	20.58	55.9	56.2	4.72	4.74	32.8	33.0	38	40
M1	19/4/2022	Mid-Flood	Cloudy	Smooth	9:04	2.4	M	1.2	2			7.63		13.08		20.57		56.4		4.76		33.3		41	
M2	19/4/2022	Mid-Flood	Cloudy	Smooth	9:23	1.4	M	0.7	1	0.35	258	7.55	7.55	12.77	12.78	20.81	20.82	57.7	58.0	4.87	4.90	29.4	29.5	46	45
M2	19/4/2022	Mid-Flood	Cloudy	Smooth	9:23	1.4	M	0.7	2			7.54		12.79		20.83		58.3		4.92		29.6		43	
M3	19/4/2022	Mid-Flood	Fine	Moderate	9:00	1.2	M	0.6	1	0.062	172	7.58	7.59	12.20	12.24	20.91	20.91	61.4	61.0	5.10	5.07	31.7	31.8	34	36
M3	19/4/2022	Mid-Flood	Fine	Moderate	9:00	1.2	M	0.6	2			7.59		12.28		20.92		60.6		5.03		31.8		37	
M1	19/4/2022	Mid-Ebb	Cloudy	Smooth	15:47	2.2	M	1.1	1	0.375	235	7.65	7.65	10.37	10.38	22.31	22.32	67.1	67.3	5.63	5.65	25.6	26.0	34	35
M1	19/4/2022	Mid-Ebb	Cloudy	Smooth	15:47	2.2	M	1.1	2			7.64		10.38		22.32		67.5		5.67		26.5		36	
M2	19/4/2022	Mid-Ebb	Cloudy	Smooth	15:24	1.2	M	0.6	1	0.388	320	7.70	7.71	10.67	10.66	22.68	22.68	70.4	70.3	5.90	5.89	29.0	28.6	34	32
M2	19/4/2022	Mid-Ebb	Cloudy	Smooth	15:24	1.2	M	0.6	2			7.71		10.65		22.67		70.1		5.87		28.3		30	
M3	19/4/2022	Mid-Ebb	Fine	Moderate	15:30	1	M	0.5	1	0.085	70	7.57	7.57	11.96	11.94	21.00	20.86	64.6	64.5	5.32	5.34	30.4	30.4	34	33
M3	19/4/2022	Mid-Ebb	Fine	Moderate	15:30	1	M	0.5	2			7.56		11.92		20.73		64.3		5.35		30.3		32	

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For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	21/4/2022	Mid-Flood	Fine	Moderate	9:53	0.9	M	0.45	1	0.066	88	7.85	7.83	13.44	13.46	23.79	23.75	72.4	72.5	5.47	5.48	22.2	22.2	30	31
M1	21/4/2022	Mid-Flood	Fine	Moderate	9:53	0.9	M	0.45	2			7.81		13.47		23.71		72.6		5.49		22.1		31	
M2	21/4/2022	Mid-Flood	Fine	Moderate	10:11	1.1	M	0.55	1	0.073	91	7.89	7.89	13.57	13.57	23.79	23.79	73.6	73.5	5.81	5.82	22.5	22.6	28	29
M2	21/4/2022	Mid-Flood	Fine	Moderate	10:11	1.1	M	0.55	2			7.89		13.56		23.78		73.4		5.82		22.6		30	
M3	21/4/2022	Mid-Flood	Fine	Calm	9:50	0.8	M	0.4	1	0.283	81	7.31	7.32	6.09	6.10	22.13	22.14	56.6	56.5	4.63	4.62	41.1	40.9	50	51
M3	21/4/2022	Mid-Flood	Fine	Calm	9:50	0.8	M	0.4	2			7.32		6.11		22.15		56.3		4.61		40.8		51	
M1	21/4/2022	Mid-Ebb	Fine	Moderate	17:13	0.6	M	0.3	1	0.064	72	7.41	7.42	10.46	10.45	23.56	23.55	58.1	58.2	4.91	4.92	27.1	27.1	15	16
M1	21/4/2022	Mid-Ebb	Fine	Moderate	17:13	0.6	M	0.3	2			7.42		10.44		23.54		58.2		4.93		27.1		16	
M2	21/4/2022	Mid-Ebb	Fine	Moderate	16:54	0.9	M	0.45	1	0.047	178	7.51	7.53	8.07	8.07	23.01	23.01	49.8	49.8	4.08	4.08	26.3	26.3	14	15
M2	21/4/2022	Mid-Ebb	Fine	Moderate	16:54	0.9	M	0.45	2			7.54		8.06		23.01		49.7		4.07		26.3		15	
M3	21/4/2022	Mid-Ebb	Fine	Calm	16:56	0.4	M	0.2	1	0.308	263	7.20	7.20	7.23	7.23	26.97	26.97	61.3	61.5	5.01	5.03	38.2	38.3	46	45
M3	21/4/2022	Mid-Ebb	Fine	Calm	16:56	0.4	M	0.2	2			7.20		7.22		26.96		61.7		5.05		38.4		43	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	23/4/2022	Mid-Flood	Fine	Smooth	11:15	1	M	0.5	1	0.091	207	7.33	7.33	6.06	6.06	25.71	25.72	53.3	53.3	4.20	4.20	28.4	28.4	30	31
M1	23/4/2022	Mid-Flood	Fine	Smooth	11:15	1	M	0.5	2			7.33		6.06		25.72		53.2		4.20		28.4		31	
M2	23/4/2022	Mid-Flood	Fine	Smooth	11:33	1.1	M	0.55	1	0.126	210	7.42	7.43	6.09	6.09	26.19	26.19	71.7	71.6	5.60	5.59	21.6	21.6	27	28
M2	23/4/2022	Mid-Flood	Fine	Smooth	11:33	1.1	M	0.55	2			7.43		6.09		26.19		71.4		5.58		21.7		28	
M3	23/4/2022	Mid-Flood	Fine	Calm	11:10	0.8	M	0.4	1	0.262	87	7.41	7.42	6.64	6.65	26.28	26.29	65.7	65.4	5.14	5.12	27.3	26.9	33	33
M3	23/4/2022	Mid-Flood	Fine	Calm	11:10	0.8	M	0.4	2			7.42		6.66		26.29		65.1		5.09		26.6		33	
M1	23/4/2022	Mid-Ebb	Fine	Smooth	19:13	0.8	M	0.4	1	0.101	206	7.54	7.54	5.50	5.50	26.72	26.73	86.8	86.7	6.76	6.75	31.0	31.1	32	35
M1	23/4/2022	Mid-Ebb	Fine	Smooth	19:13	0.8	M	0.4	2			7.54		5.50		26.74		86.5		6.74		31.1		37	
M2	23/4/2022	Mid-Ebb	Fine	Smooth	18:53	0.9	M	0.45	1	0.138	107	7.52	7.52	5.90	5.90	26.45	26.45	73.2	73.1	5.73	5.72	28.9	29.0	39	39
M2	23/4/2022	Mid-Ebb	Fine	Smooth	18:53	0.9	M	0.45	2			7.52		5.90		26.46		73.0		5.71		29.0		38	
M3	23/4/2022	Mid-Ebb	Fine	Calm	18:55	0.6	M	0.3	1	0.319	254	7.35	7.35	5.86	5.86	27.87	27.87	59.8	59.5	4.69	4.66	33.2	33.7	42	42
M3	23/4/2022	Mid-Ebb	Fine	Calm	18:55	0.6	M	0.3	2			7.34		5.85		27.86		59.2		4.63		34.1		42	

Remark

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For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	26/4/2022	Mid-Flood	Fine	Moderate	5:44	1.2	M	0.6	1	0.063	196	7.53	7.53	5.71	5.71	28.10	28.18	78.0	77.8	5.91	5.88	30.7	30.6	32	33
M1	26/4/2022	Mid-Flood	Fine	Moderate	5:44	1.2	M	0.6	2			7.52		5.70		28.26		77.5		5.85		30.4		33	
M2	26/4/2022	Mid-Flood	Fine	Moderate	6:02	0.9	M	0.45	1	0.106	72	7.54	7.55	5.92	5.93	28.58	28.59	77.2	77.3	5.84	5.86	28.1	28.1	42	41
M2	26/4/2022	Mid-Flood	Fine	Moderate	6:02	0.9	M	0.45	2			7.55		5.93		28.59		77.3		5.87		28.1		39	
M3	26/4/2022	Mid-Flood	Cloudy	Calm	5:36	0.2	M	0.1	1	0.262	77	7.41	7.42	5.34	5.35	24.03	24.03	79.5	79.2	6.03	6.01	36.1	36.4	44	43
M3	26/4/2022	Mid-Flood	Cloudy	Calm	5:36	0.2	M	0.1	2			7.42		5.35		24.03		78.8		5.98		36.6		42	
M1	26/4/2022	Mid-Ebb	Fine	Moderate	11:53	1	M	0.5	1	0.121	54	7.84	7.83	5.30	5.29	28.40	28.40	83.6	83.7	6.31	6.35	27.8	27.8	32	32
M1	26/4/2022	Mid-Ebb	Fine	Moderate	11:53	1	M	0.5	2			7.81		5.27		28.41		83.8		6.38		27.7		32	
M2	26/4/2022	Mid-Ebb	Fine	Moderate	11:33	0.8	M	0.4	1	0.097	78	7.72	7.73	5.41	5.42	27.23	27.29	79.5	79.3	6.02	5.96	26.1	26.2	34	34
M2	26/4/2022	Mid-Ebb	Fine	Moderate	11:33	0.8	M	0.4	2			7.73		5.43		27.34		79.1		5.89		26.2		33	
M3	26/4/2022	Mid-Ebb	Cloudy	Calm	11:27	0.6	M	0.3	1	0.226	248	7.34	7.34	4.73	4.72	28.43	28.44	83.3	83.5	6.28	6.30	38.2	38.4	41	43
M3	26/4/2022	Mid-Ebb	Cloudy	Calm	11:27	0.6	M	0.3	2			7.33		4.71		28.45		83.7		6.31		38.5		44	

Remark

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For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	28/4/2022	Mid-Flood	Fine	Calm	6:56	2.2	M	1.1	1	0.282	255	7.73	7.73	7.22	7.23	25.87	25.87	66.5	66.8	4.95	4.98	25.0	25.2	24	24
M1	28/4/2022	Mid-Flood	Fine	Calm	6:56	2.2	M	1.1	2			7.72		7.24		25.87		67.1		5.01		25.4		24	
M2	28/4/2022	Mid-Flood	Fine	Calm	7:11	1.2	M	0.6	1	0.263	277	7.60	7.60	7.17	7.17	26.14	26.15	61.2	61.4	4.56	4.58	27.0	27.3	27	27
M2	28/4/2022	Mid-Flood	Fine	Calm	7:11	1.2	M	0.6	2			7.59		7.16		26.16		61.6		4.59		27.6		27	
M3	28/4/2022	Mid-Flood	Fine	Moderate	6:48	1.2	M	0.6	1	0.057	112	7.61	7.62	7.14	7.15	28.56	28.59	62.3	62.4	4.65	4.67	27.0	27.0	25	26
M3	28/4/2022	Mid-Flood	Fine	Moderate	6:48	1.2	M	0.6	2			7.62		7.15		28.61		62.5		4.69		27.0		27	
M1	28/4/2022	Mid-Ebb	Fine	Calm	13:01	2	M	1	1	0.237	214	7.48	7.48	6.22	6.23	29.97	29.98	70.6	71.0	5.26	5.29	32.6	32.0	34	35
M1	28/4/2022	Mid-Ebb	Fine	Calm	13:01	2	M	1	2			7.47		6.24		29.99		71.4		5.32		31.4		36	
M2	28/4/2022	Mid-Ebb	Fine	Calm	12:43	1	M	0.5	1	0.251	240	7.32	7.33	6.31	6.31	29.85	29.86	69.3	69.0	5.16	5.14	30.4	29.8	26	27
M2	28/4/2022	Mid-Ebb	Fine	Calm	12:43	1	M	0.5	2			7.33		6.30		29.86		68.7		5.11		29.3		28	
M3	28/4/2022	Mid-Ebb	Fine	Moderate	12:45	1.1	M	0.55	1	0.103	76	7.56	7.57	7.08	7.09	28.85	28.88	60.8	60.6	4.51	4.49	28.4	28.4	37	37
M3	28/4/2022	Mid-Ebb	Fine	Moderate	12:45	1.1	M	0.55	2			7.58		7.09		28.91		60.3		4.47		28.3		37	

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For Flood Tide

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

For Ebb Tide

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

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

Water Quality Monitoring Results

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	30/4/2022	Mid-Flood	Fine	Moderate	7:39	0.9	M	0.45	1	0.092	185	7.40	7.39	7.48	7.46	29.23	29.22	61.7	61.3	4.54	4.53	29.6	29.6	36	36
M1	30/4/2022	Mid-Flood	Fine	Moderate	7:39	0.9	M	0.45	2			7.38		7.44		29.21		60.8		4.51		29.6		35	
M2	30/4/2022	Mid-Flood	Fine	Moderate	7:54	0.8	M	0.4	1	0.053	91	7.50	7.52	6.91	6.93	29.81	29.82	70.1	70.2	5.18	5.19	30.3	30.3	36	37
M2	30/4/2022	Mid-Flood	Fine	Moderate	7:54	0.8	M	0.4	2			7.54		6.94		29.82		70.3		5.19		30.3		37	
M3	30/4/2022	Mid-Flood	Fine	Calm	7:33	0.6	M	0.3	1	0.251	92	7.22	7.23	7.18	7.18	26.03	26.04	62.9	62.6	4.68	4.65	31.9	31.8	45	46
M3	30/4/2022	Mid-Flood	Fine	Calm	7:33	0.6	M	0.3	2			7.24		7.18		26.04		62.2		4.62		31.6		46	
M1	30/4/2022	Mid-Ebb	Fine	Moderate	13:59	0.7	M	0.35	1	0.057	31	8.00	7.96	6.12	6.13	27.44	27.43	72.4	72.5	5.41	5.42	27.4	27.4	32	34
M1	30/4/2022	Mid-Ebb	Fine	Moderate	13:59	0.7	M	0.35	2			7.92		6.14		27.41		72.5		5.43		27.4		36	
M2	30/4/2022	Mid-Ebb	Fine	Moderate	13:41	0.6	M	0.3	1	0.042	54	7.61	7.62	7.15	7.20	28.80	28.80	67.5	67.0	5.01	4.97	29.1	29.0	32	34
M2	30/4/2022	Mid-Ebb	Fine	Moderate	13:41	0.6	M	0.3	2			7.62		7.24		28.79		66.4		4.92		28.9		36	
M3	30/4/2022	Mid-Ebb	Fine	Calm	13:38	0.6	M	0.3	1	0.266	274	7.35	7.36	6.13	6.12	30.62	30.63	67.2	67.0	4.97	4.96	35.1	35.3	35	35
M3	30/4/2022	Mid-Ebb	Fine	Calm	13:38	0.6	M	0.3	2			7.37		6.11		30.63		66.8		4.94		35.5		35	

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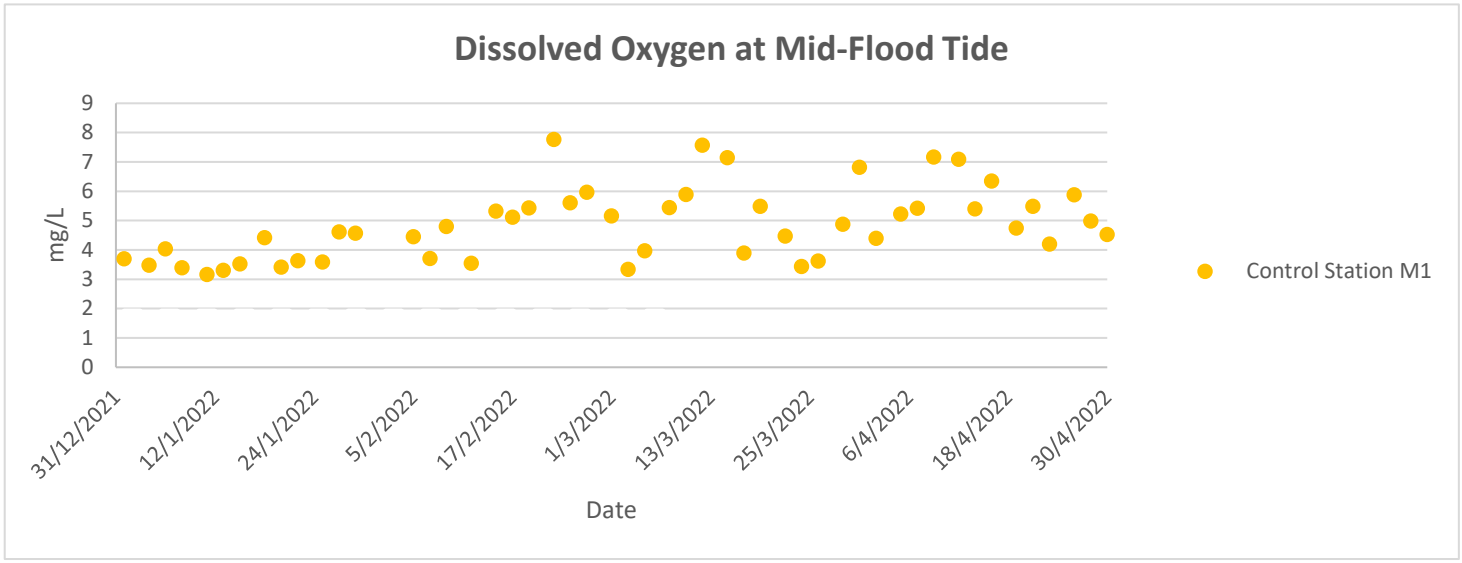
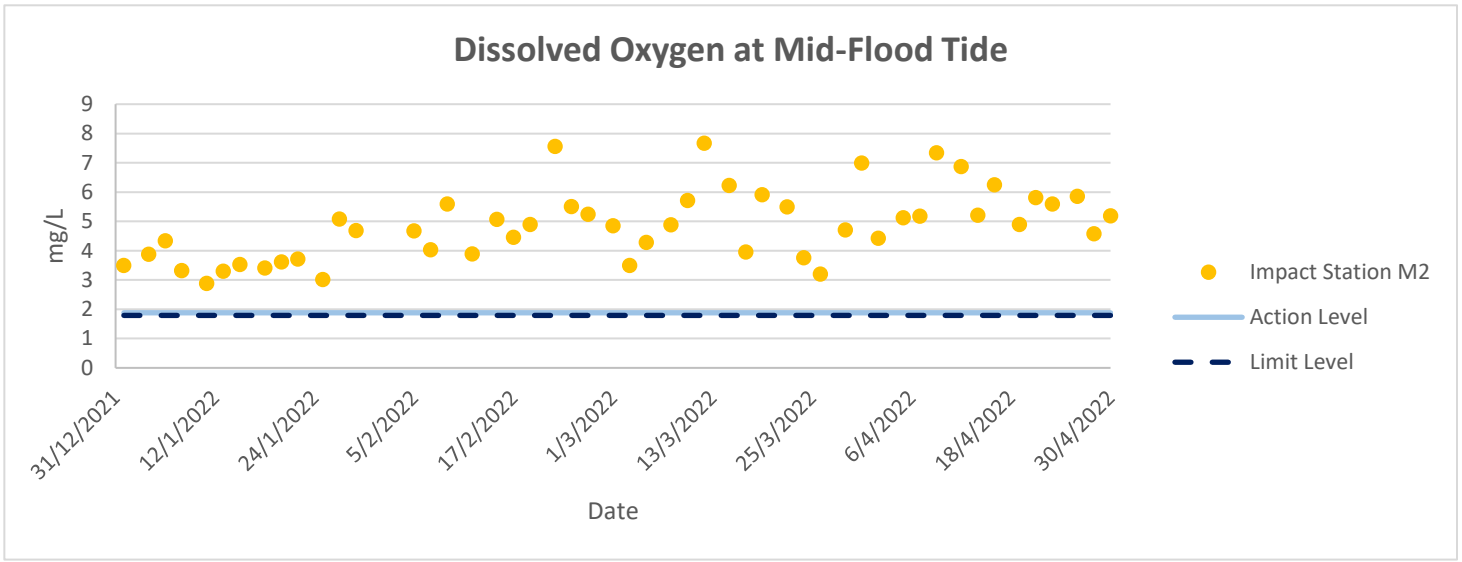
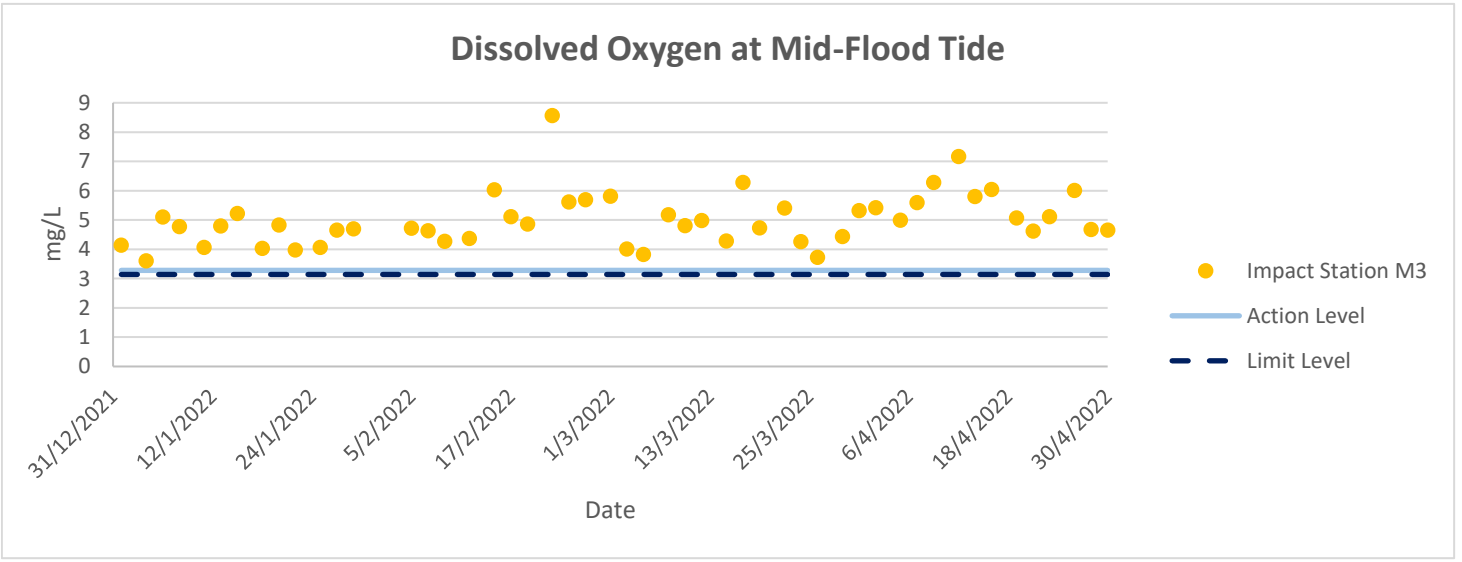
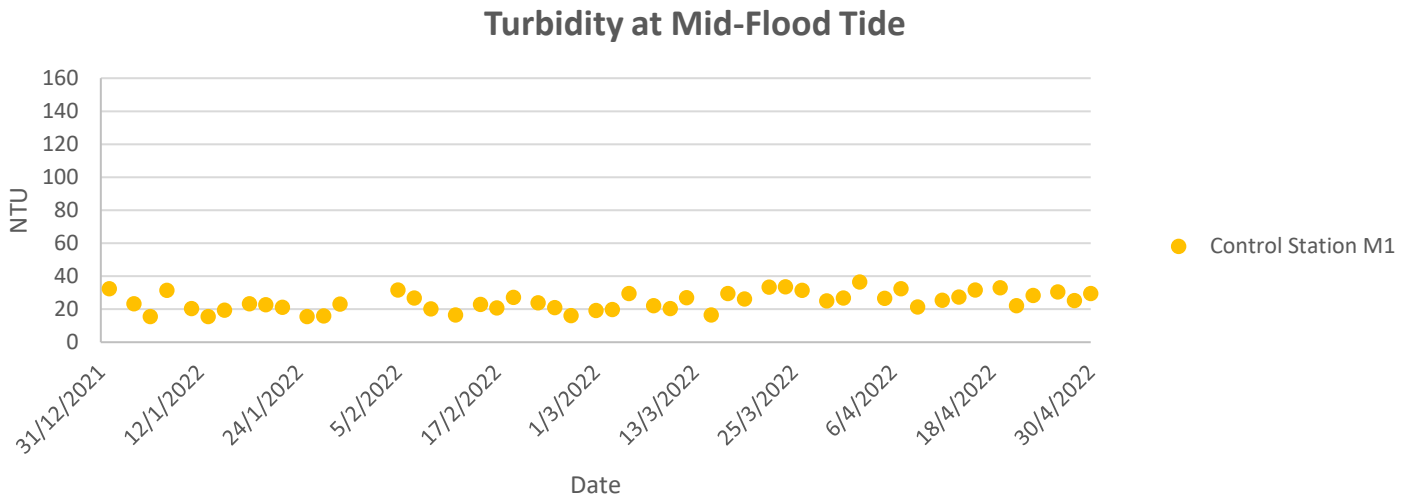
Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	50.4	59	68

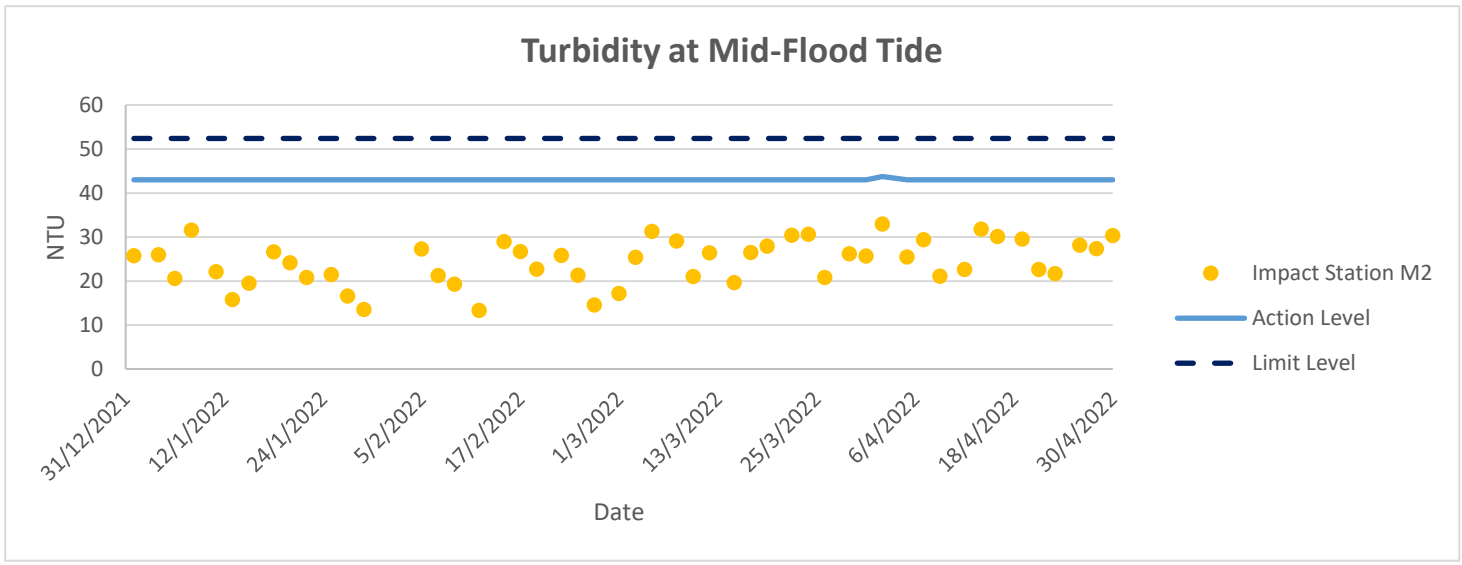


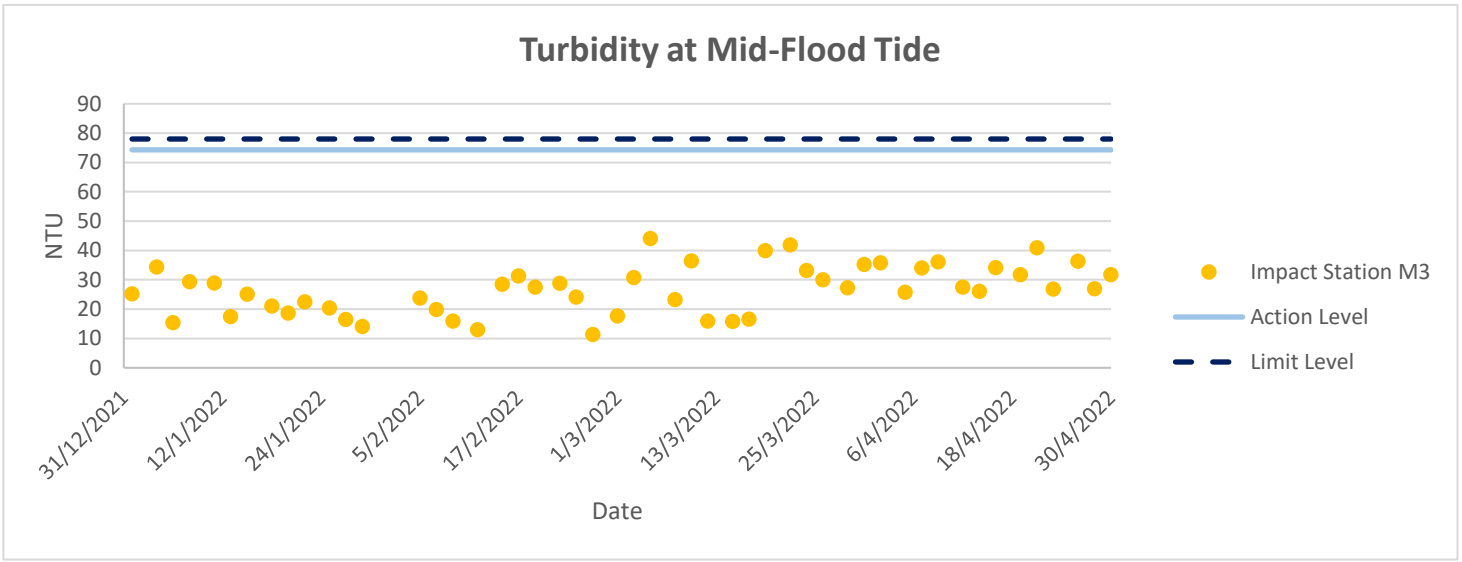




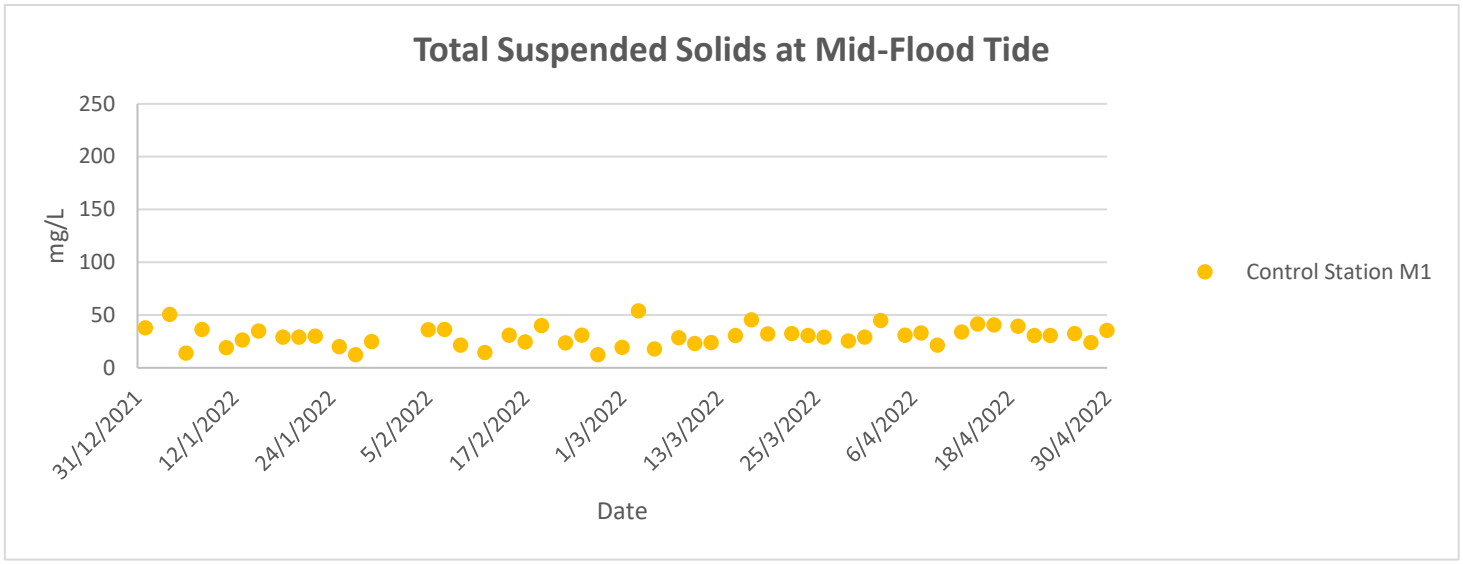
Water Quality Monitoring Results

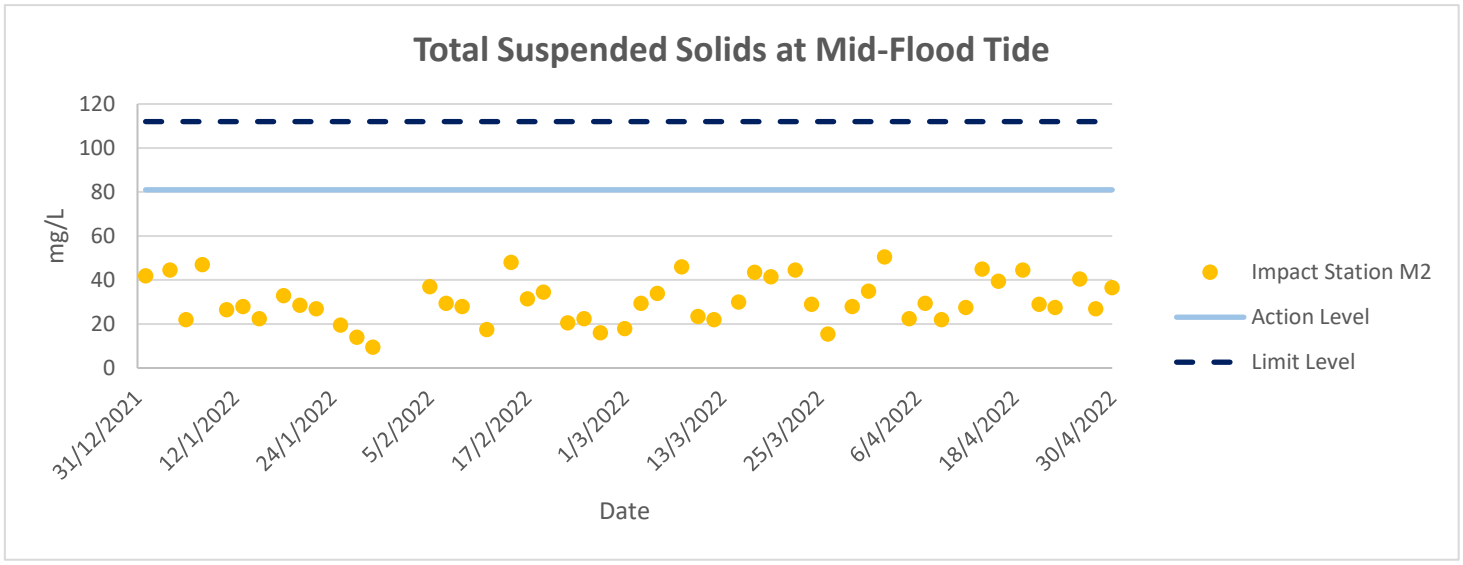


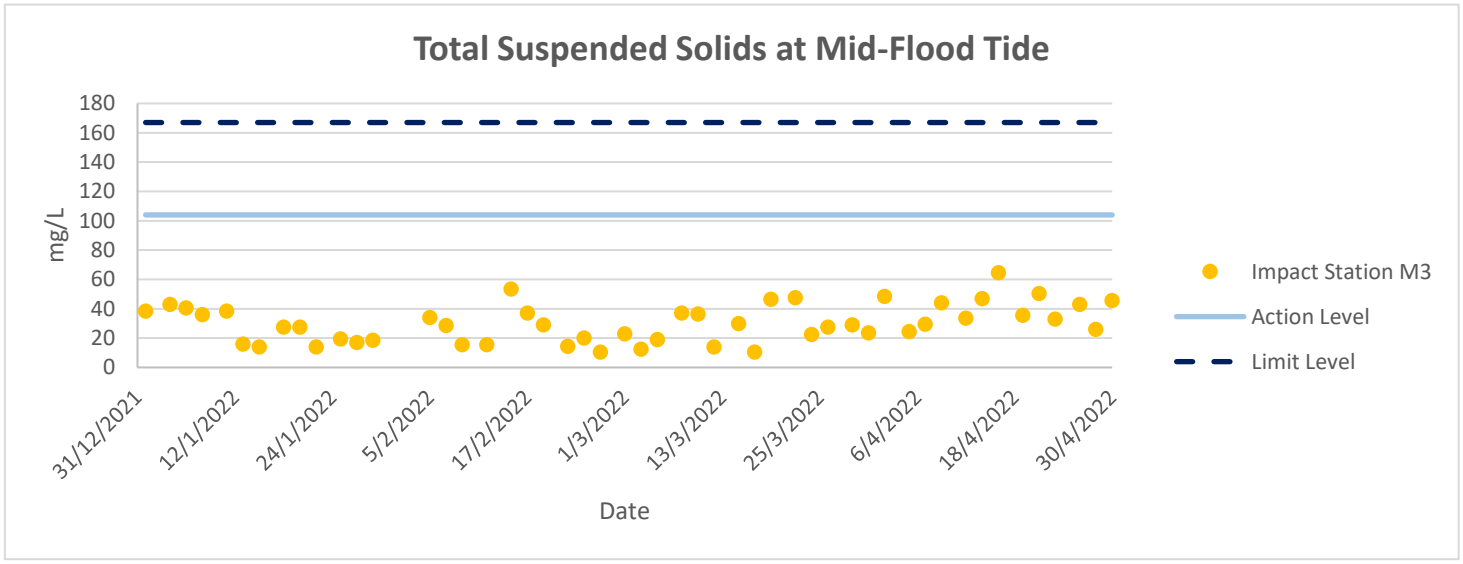




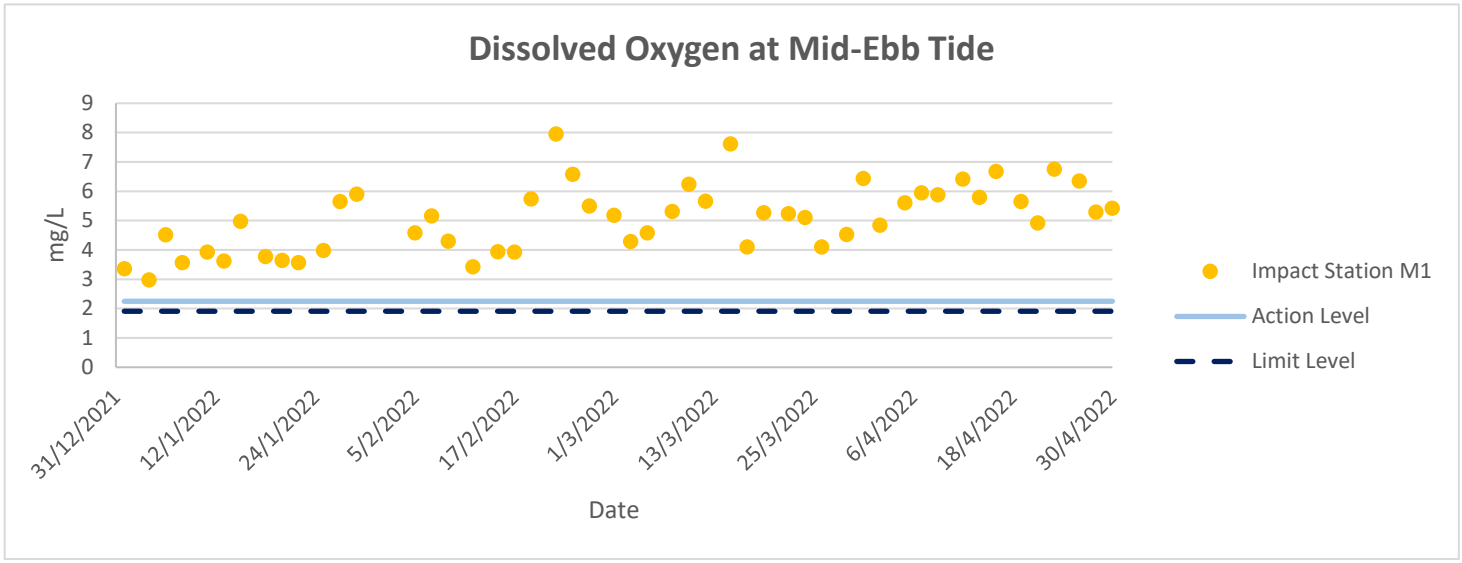
Water Quality Monitoring Results

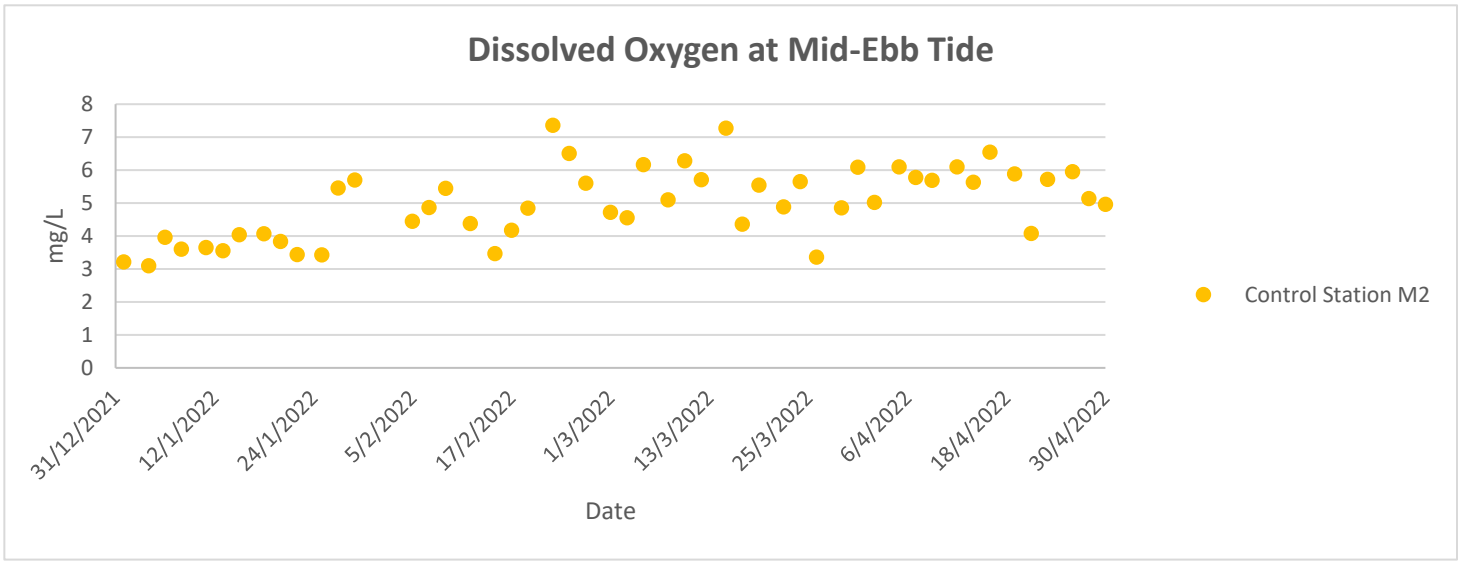


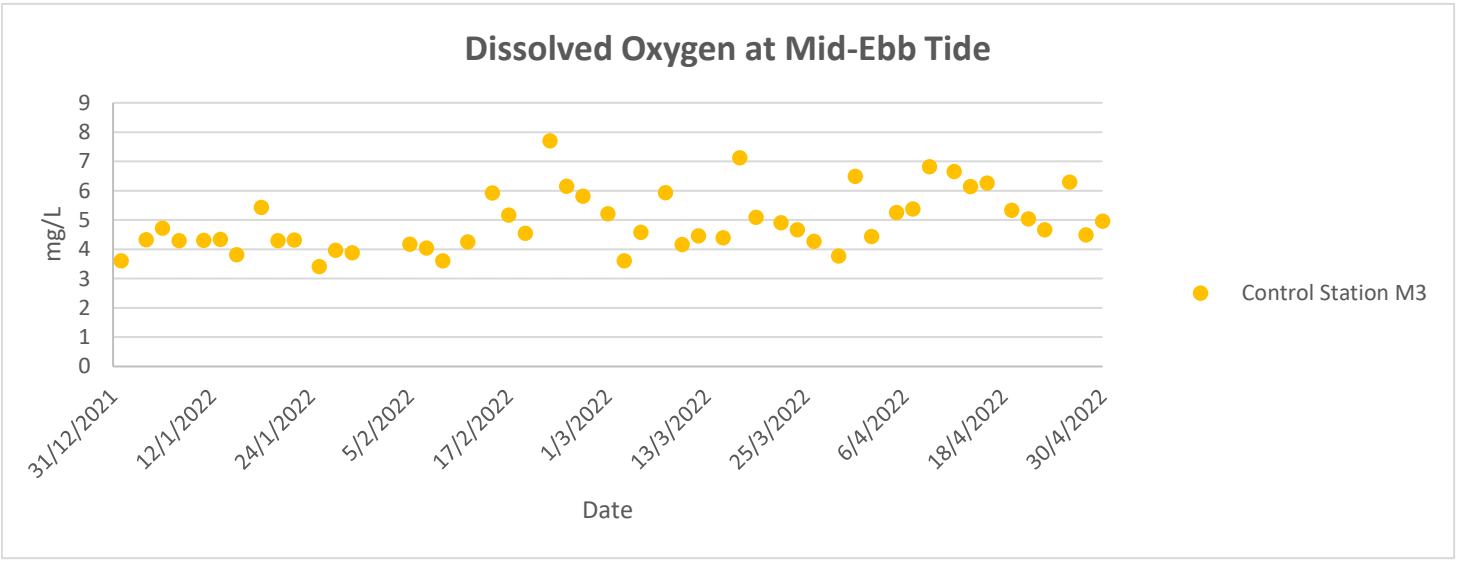




Water Quality Monitoring Results







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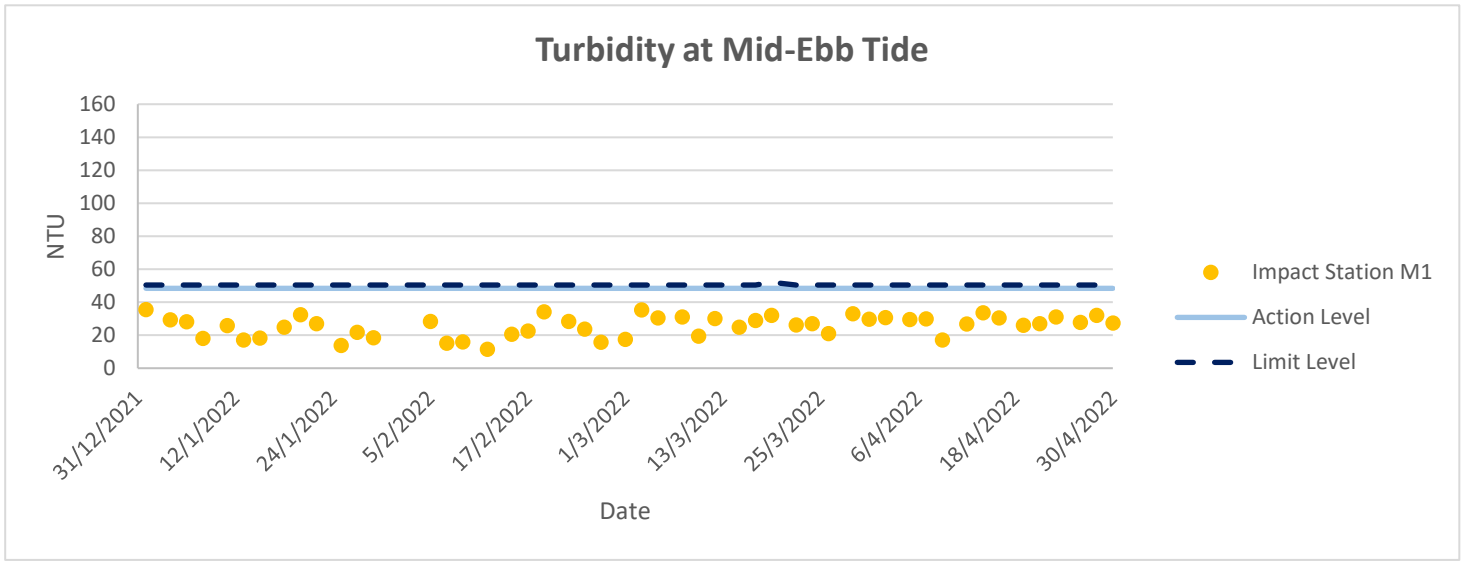

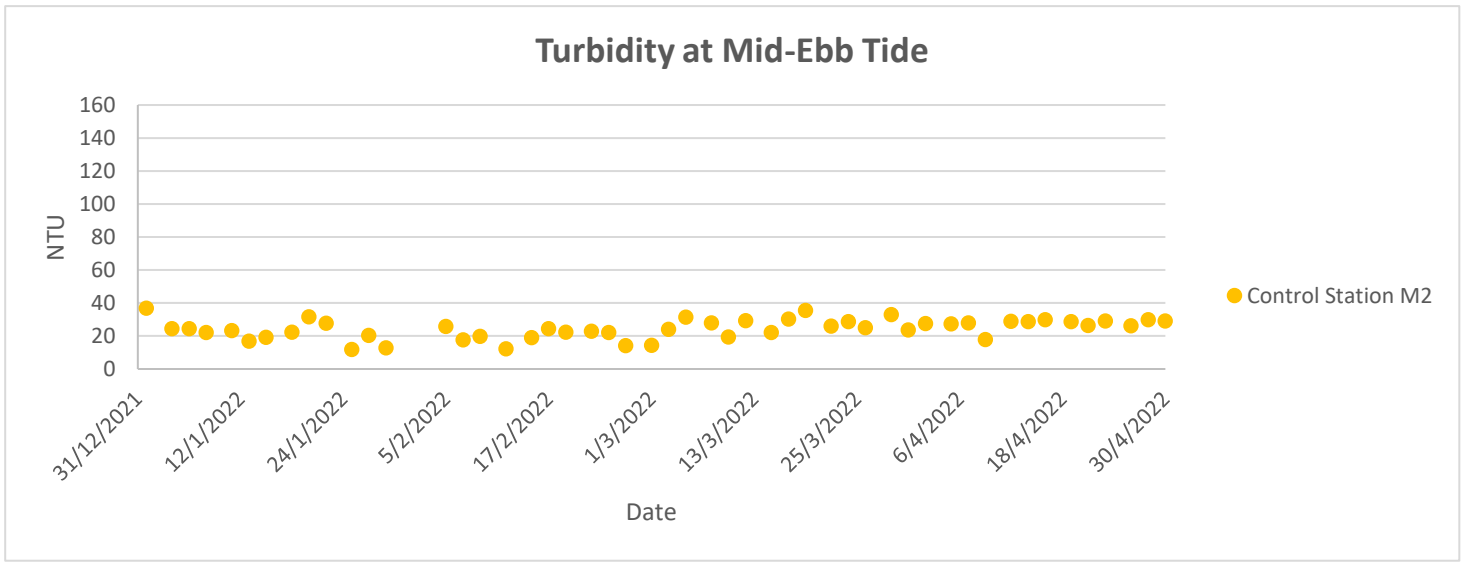

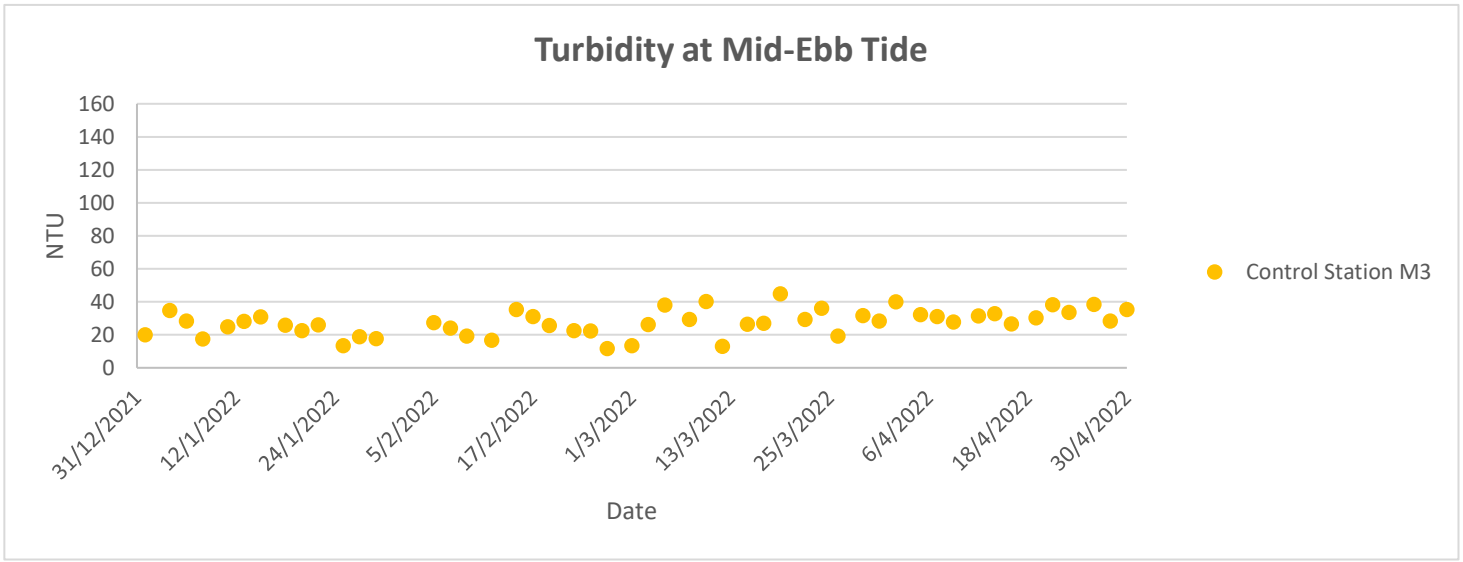

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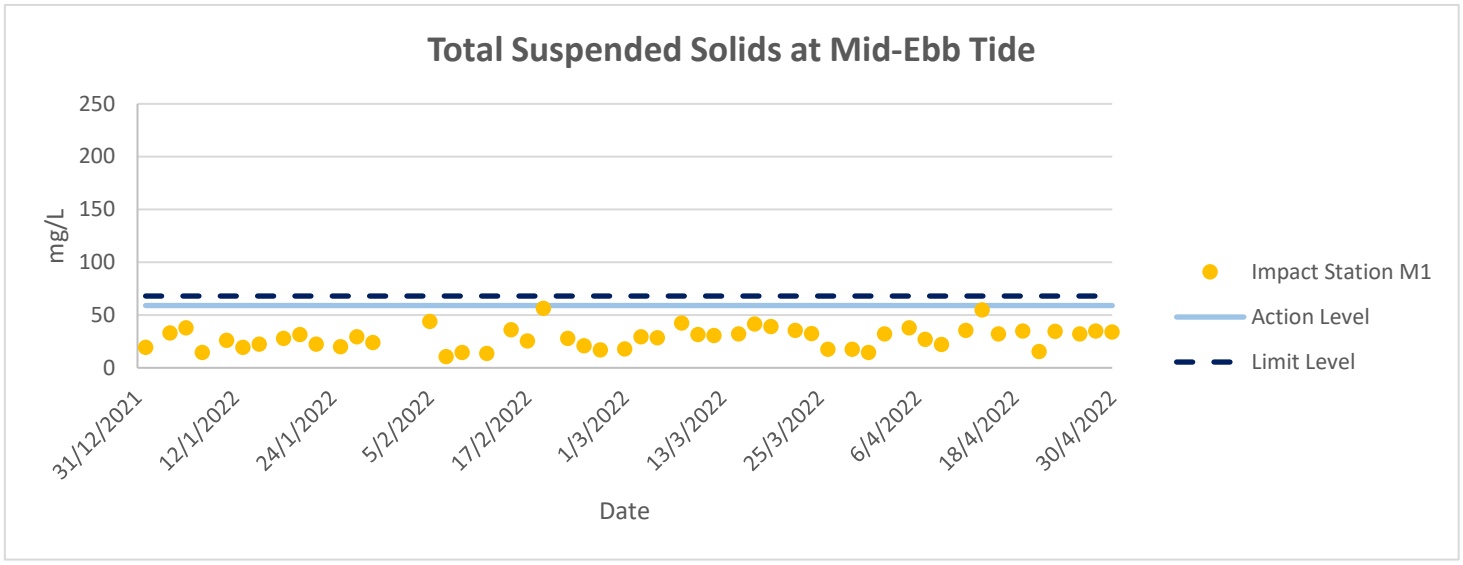
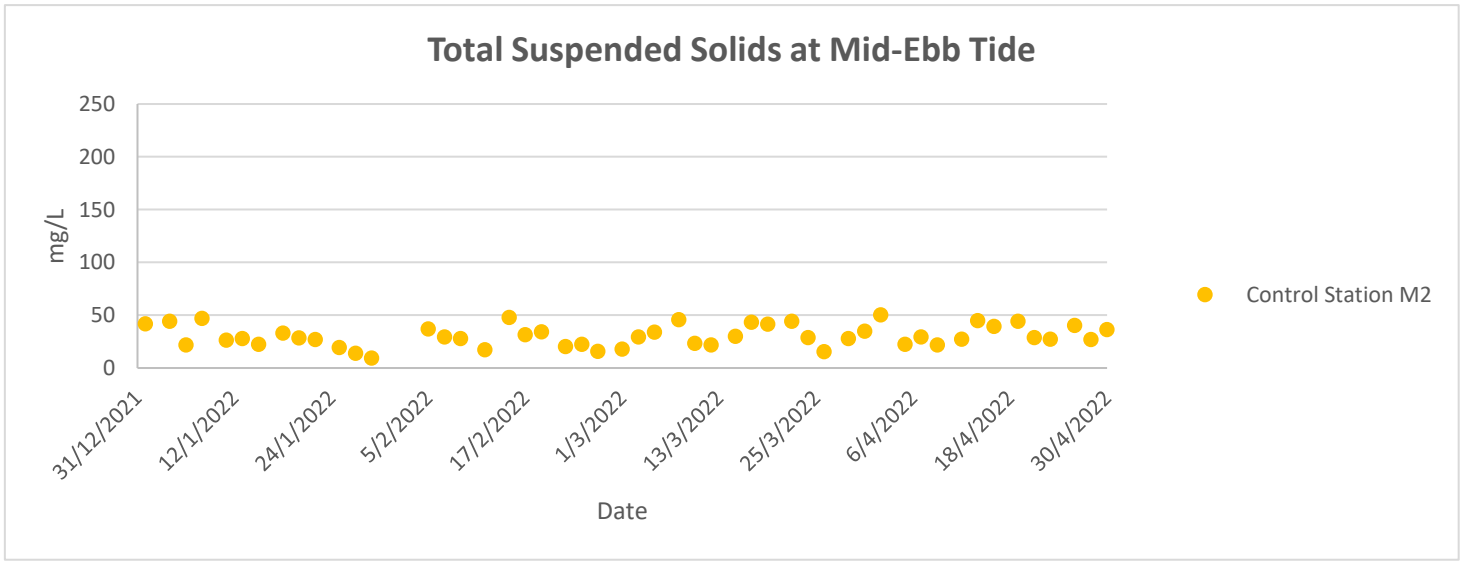
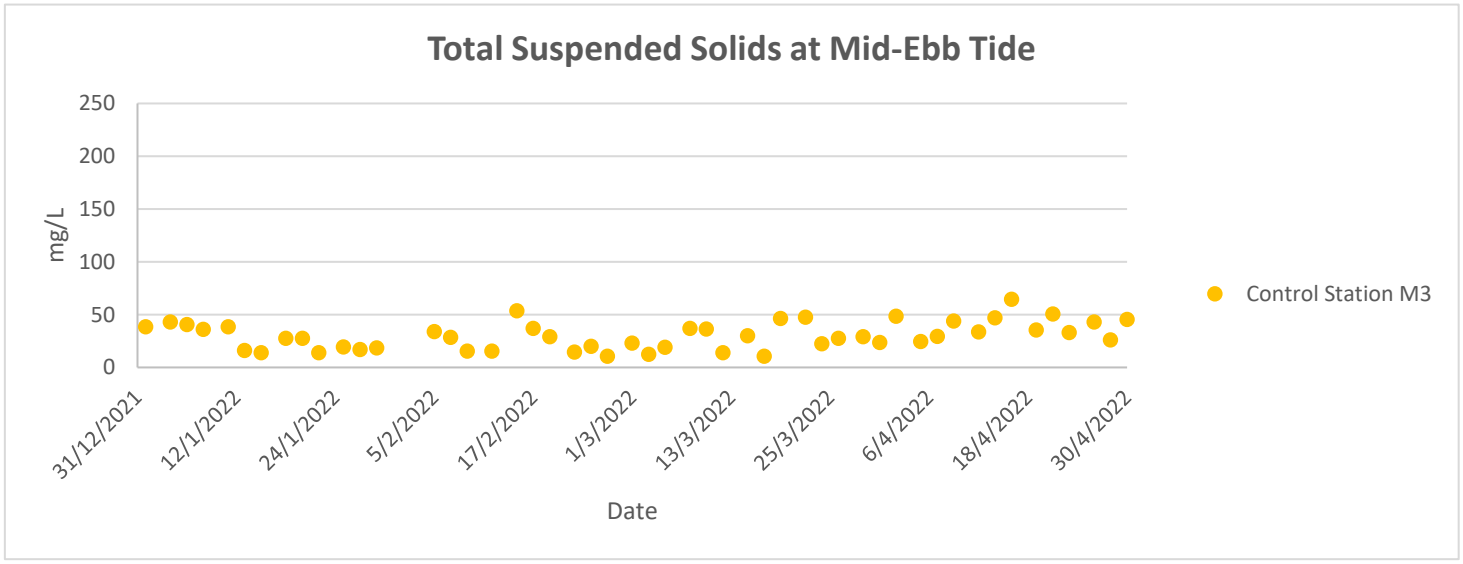






Water Quality Monitoring Results

Ecology Monitoring Results

Appendix F.1 Supplemental Discussion

F.1.1 Ecological Monitoring of Birds

F.1.1.1 Abundance

F.1.1.1.1 All Avifauna Species

Point Count

Among the different species recorded, the Chinese Pond Heron *Ardeola bacchus* was noted with the highest abundance (33 individuals). On the other hand, species with the least abundance (1 individual each) were the Asian Koel *Eudynamys scolopaceus,* Black-collared Straling *Gracupica nigricollis,* Common Kingfisher *Alcedo atthis*, Scaly-breasted Munia *Lonchura punctulata*, and White-throated Kingfisher *Halcyon smyrnensis.*

Transect Walk

Among the different species recorded, the Crested Myna *Acridotheres cristatellus* was noted with the highest abundance (8 individuals); while the species Eurasian Collared Dove *Streptopelia decaocto,* Oriental Magpie Robin *Copsychus saularis*, and Spotted Dove *Spilopelia chinensis* had the least abundance (1 individual each).

F.1.1.1.2 Avifauna Species of Conservation Importance

Point Count

Among the different species recorded, the Chinese Pond Heron was recorded with the highest abundance (33 individuals). On the other hand, the Black Kite *Milvus migrans*, Black-faced Spoonbill *Platalea minor*, and Greater Coucal *Centropus sinensis* had the lowest abundance (1 individual each).

Transect Walk

Among the different species recorded, the Great Egret *Ardea alba* was noted with the highest abundance (7 ind.) while the Chinese Pond Heron and Little Egret *Egretta garzetta* had the lowest recorded abundance (1 individual each).

Appendix F.2 Ecological Bird Monitoring Result (20 and 22 April 2022)

Date (dd/mm/yyyy)	Daytime/Night time	Season	Area	Transect/Point Count	Point Count (Location)/Transect Impact	Habitat	Common Name	Scientific Name	Abundance	Distribution in Hong Kong[2]	Principal Status[3]	Level of Concern[4]	Protection Status in China[5]	China Red Data Book [6]	Red List of China's Vertebrates [10]	IUCN Red List [7] (v.2020-3)	Species of Conservation Importance	Wetland Dependent
20/04/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	5	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Barn Swallow	*Hirundo rustica*	4	Abundant	PM,SV	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Eastern Yellow Wagtail	*Motacilla tschutschensis*	2	Common	PM,WV	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Yellow-bellied Prinia	*Prinia flaviventris*	2	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Great Egret	*Ardea alba*	5	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	5	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Greater Coucal	*Centropus sinensis*	1	Common	R	-	Class II	Vulnerable	LC	LC	Y	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Pied Kingfisher	*Ceryle rudis*	4	Uncommon	R	-	-	-	LC	LC	N	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	1	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	3	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Black Kite	*Milvus migrans*	1	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N

20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Little Ringed Plover	*Charadrius dubius*	2	Common	WV,PM	-	-	-	LC	LC	N	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Yellow-browed Warbler	*Phylloscopus inornatus*	2	Common	WV,Sp	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Oriental Magpie Robin	*Copsychus saularis*	1	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Scaly-breasted Munia	*Lonchura punctulata*	1	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	2	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Great Egret	*Ardea alba*	3	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	5	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Little Grebe	*Tachybaptus ruficollis*	4	Common	R	LC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Plain Prinia	*Prinia inornata*	1	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Eurasian Wigeon	*Anas penelope*	3	Common	WV	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	*Ardea alba*	3	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	6	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Little Ringed Plover	*Charadrius dubius*	2	Common	WV,PM	-	-	-	LC	LC	N	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	White Wagtail	*Motacilla alba*	4	Common	PM,WV	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Great Egret	*Ardea alba*	2	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	7	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y

20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Barn Swallow	*Hirundo rustica*	3	Abundant	PM,SV	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Eastern Yellow Wagtail	*Motacilla tschutschensis*	3	Common	PM,WV	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Crested Myna	*Acridotheres cristatellus*	1	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	House Swift	*Apus nipalensis*	3	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	Oriental Magpie Robin	*Copsychus saularis*	1	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	Eurasian Tree Sparrow	*Passer montanus*	2	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	Yellow-bellied Prinia	*Prinia flaviventris*	1	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	Red-whiskered Bulbul	*Pycnonotus jocosus*	7	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Chinese Bulbul	*Pycnonotus sinensis*	4	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Transect	NSW	Plantation-NSW	Eurasian Collared Dove	*Streptopelia decaocto*	1	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Crested Myna	*Acridotheres cristatellus*	5	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Common Kingfisher	*Alcedo atthis*	1	Common	PM,WV	-	-	-	LC	LC	N	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	White-breasted Waterhen	*Amaurornis phoenicurus*	1	Common	R	-	-	-	LC	LC	N	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Reedbed	Greater Coucal	*Centropus sinensis*	1	Common	R	-	Class II	Vulnerable	LC	LC	Y	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Oriental Magpie Robin	*Copsychus saularis*	1	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Eurasian Collared Dove	*Streptopelia decaocto*	1	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	House Swift	*Apus nipalensis*	4	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N

20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Egret	*Ardea alba*	5	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Grey Heron	*Ardea cinerea*	2	Common	WV	PRC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Chinese Pond Heron	*Ardeola bacchus*	6	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Asian Koel	*Eudynamys scolopaceus*	1	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Moorhen	*Gallinula chloropus*	2	Common	R	-	-	-	LC	LC	N	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Marsh Sandpiper	*Tringa stagnatilis*	5	Common	PM,WV	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Plain Prinia	*Prinia inornata*	3	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Red-whiskered Bulbul	*Pycnonotus jocosus*	4	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Chinese Bulbul	*Pycnonotus sinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Eurasian Collared Dove	*Streptopelia decaocto*	1	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Redshank	*Tringa totanus*	4	Common	PM	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Japanese White-eye	*Zosterops japonicus*	3	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	White-breasted Waterhen	*Amaurornis phoenicurus*	1	Common	R	-	-	-	LC	LC	N	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Egret	*Ardea alba*	3	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Grey Heron	*Ardea cinerea*	2	Common	WV	PRC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Pond Heron	*Ardeola bacchus*	4	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-faced Spoonbill	*Platalea minor*	2	Common	WV	PGC	Class II	EN	EN	EN	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	White-throated Kingfisher	*Halcyon smyrnensis*	1	Common	R	-	-	-	LC	LC	N	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Barn Swallow	*Hirundo rustica*	2	Abundant	PM,SV	-	-	-	LC	LC	N	N

20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Greenshank	*Tringa nebularia*	3	Abundant	PM,WV	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	White Wagtail	*Motacilla alba*	2	Common	PM,WV	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Yellow-browed Warbler	*Phylloscopus inornatus*	1	Common	WV,Sp	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Plain Prinia	*Prinia inornata*	2	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Bulbul	*Pycnonotus sinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Redshank	*Tringa totanus*	5	Common	PM	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Eurasian Wigeon	*Anas penelope*	4	Common	WV	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Egret	*Ardea alba*	2	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black Kite	*Milvus migrans*	1	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Grebe	*Tachybaptus ruficollis*	5	Common	R	LC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Marsh Sandpiper	*Tringa stagnatilis*	7	Common	PM,WV	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Redshank	*Tringa totanus*	5	Common	PM	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
20/04/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Greenshank	*Tringa nebularia*	4	Abundant	PM,WV	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Marsh Sandpiper	*Tringa stagnatilis*	4	Common	PM,WV	RC	-	-	LC	LC	Y	Y
20/04/2022	Daytime	Wet Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Redshank	*Tringa totanus*	6	Common	PM	RC	-	-	LC	LC	Y	Y
22/04/2022	Night-time	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	1	Common	R	-	-	-	LC	LC	N	N
22/04/2022	Night-time	Wet Season	NSW	Point Count	SP/NSW1	In flight	Little Egret	*Egretta garzetta*	4	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
22/04/2022	Night-time	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	House Swift	*Apus nipalensis*	2	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N

Notes:

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

Appendix F.3.1 Ecological Bird Monitoring Diversity (All avifauna species in Point Count Method) in All Habitats (20 and 22 April 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Acridotheres cristatellus	17	0.07489	-2.59174	-0.19409	0.503043
Alcedo atthis	1	0.004405	-5.42495	-0.0239	0.129648
Amaurornis phoenicurus	2	0.008811	-4.7318	-0.04169	0.197268
Anas penelope	7	0.030837	-3.47904	-0.10728	0.373242
Apus nipalensis	6	0.026432	-3.63319	-0.09603	0.348901
Ardea alba	18	0.079295	-2.53458	-0.20098	0.509399
Ardea cinerea	4	0.017621	-4.03866	-0.07117	0.287414
Ardeola bacchus	33	0.145374	-1.92844	-0.28035	0.540632
Centropus sinensis	2	0.008811	-4.7318	-0.04169	0.197268
Ceryle rudis	4	0.017621	-4.03866	-0.07117	0.287414
Charadrius dubius	4	0.017621	-4.03866	-0.07117	0.287414
Copsychus saularis	2	0.008811	-4.7318	-0.04169	0.197268
Egretta garzetta	29	0.127753	-2.05765	-0.26287	0.5409
Eudynamys scolopaceus	1	0.004405	-5.42495	-0.0239	0.129648
Gallinula chloropus	2	0.008811	-4.7318	-0.04169	0.197268
Gracupica nigricollis	1	0.004405	-5.42495	-0.0239	0.129648
Halcyon smyrnensis	1	0.004405	-5.42495	-0.0239	0.129648
Hirundo rustica	5	0.022026	-3.81551	-0.08404	0.320664
Lonchura punctulata	1	0.004405	-5.42495	-0.0239	0.129648
Milvus migrans	2	0.008811	-4.7318	-0.04169	0.197268
Motacilla alba	6	0.026432	-3.63319	-0.09603	0.348901
Motacilla tschutschensis	3	0.013216	-4.32634	-0.05718	0.247364
Phylloscopus inornatus	3	0.013216	-4.32634	-0.05718	0.247364
Platalea minor	2	0.008811	-4.7318	-0.04169	0.197268
Prinia inornata	6	0.026432	-3.63319	-0.09603	0.348901
Pycnonotus jocosus	4	0.017621	-4.03866	-0.07117	0.287414
Pycnonotus sinensis	12	0.052863	-2.94004	-0.15542	0.456944
Spilopelia chinensis	6	0.026432	-3.63319	-0.09603	0.348901
Streptopelia decaocto	2	0.008811	-4.7318	-0.04169	0.197268
Tachybaptus ruficollis	9	0.039648	-3.22773	-0.12797	0.413057
Tringa nebularia	3	0.013216	-4.32634	-0.05718	0.247364
Tringa stagnatilis	12	0.052863	-2.94004	-0.15542	0.456944
Tringa totanus	14	0.061674	-2.78589	-0.17182	0.478664
Zosterops japonicus	3	0.013216	-4.32634	-0.05718	0.247364
Total	**227**	**1**	**-136.541**	**-3.04906**	**10.15732**
Richness	**34**				
SS	**10.2**				
SQ	**9.3**				
H	**3.05**				
S^2_H	**0**				

Appendix F.3.2 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Point Count Method) in All Habitats (20 and 22 April 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P)^2
Anas penelope	7	0.051852	-2.95936	-0.15345	0.45411
Ardea alba	18	0.133333	-2.0149	-0.26865	0.541311
Ardea cinerea	4	0.02963	-3.51898	-0.10427	0.36691
Ardeola bacchus	33	0.244444	-1.40877	-0.34437	0.485131
Centropus sinensis	2	0.014815	-4.21213	-0.0624	0.262845
Egretta garzetta	29	0.214815	-1.53798	-0.33038	0.508119
Milvus migrans	2	0.014815	-4.21213	-0.0624	0.262845
Platalea minor	2	0.014815	-4.21213	-0.0624	0.262845
Tachybaptus ruficollis	9	0.066667	-2.70805	-0.18054	0.488902
Tringa nebularia	3	0.022222	-3.80666	-0.08459	0.322015
Tringa stagnatilis	12	0.088889	-2.42037	-0.21514	0.520727
Tringa totanus	14	0.103704	-2.26622	-0.23502	0.532595
Total	**135**	**1**	**-35.2777**	**-2.10361**	**5.008355**
Richness	**12**				
SS	**5.01**				
SQ	**4.43**				
H	**2.1**				
S^2_H	**0**				

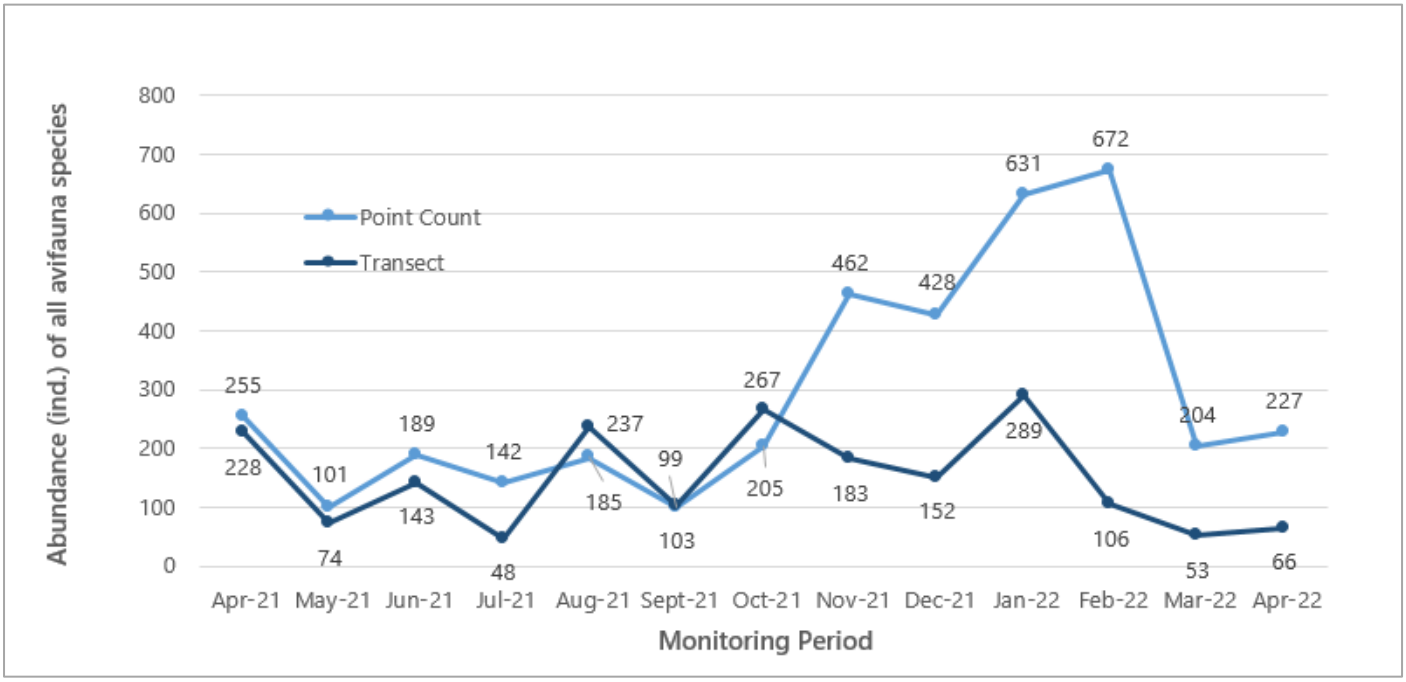
Appendix F.3.3 Ecological Bird Monitoring Diversity (All avifauna species in Transect Walk Method) in All Habitats (20 and 22 April 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P)^2
Acridotheres cristatellus	8	0.121212	-2.11021	-0.25578	0.539758
Apus nipalensis	3	0.045455	-3.09104	-0.1405	0.434297
Ardea alba	7	0.106061	-2.24374	-0.23797	0.53395
Ardeola bacchus	3	0.045455	-3.09104	-0.1405	0.434297
Copsychus saularis	1	0.015152	-4.18965	-0.06348	0.265958
Egretta garzetta	3	0.045455	-3.09104	-0.1405	0.434297
Hirundo rustica	4	0.060606	-2.80336	-0.1699	0.476293
Motacilla tschutschensis	2	0.030303	-3.49651	-0.10595	0.370472
Passer montanus	2	0.030303	-3.49651	-0.10595	0.370472
Prinia flaviventris	3	0.045455	-3.09104	-0.1405	0.434297
Pycnonotus jocosus	7	0.106061	-2.24374	-0.23797	0.53395
Pycnonotus sinensis	7	0.106061	-2.24374	-0.23797	0.53395
Spilopelia chinensis	1	0.015152	-4.18965	-0.06348	0.265958
Streptopelia decaocto	1	0.015152	-4.18965	-0.06348	0.265958
Tringa nebularia	4	0.060606	-2.80336	-0.1699	0.476293
Tringa stagnatilis	4	0.060606	-2.80336	-0.1699	0.476293
Tringa totanus	6	0.090909	-2.3979	-0.21799	0.522718
Total	**66**	**1**	**-51.5756**	**-2.66175**	**7.369211**
Richness	**17**				
SS	**7.369211**				
SQ	**7.084916**				
H	**2.661751**				
S^2_H	**0.006144**				

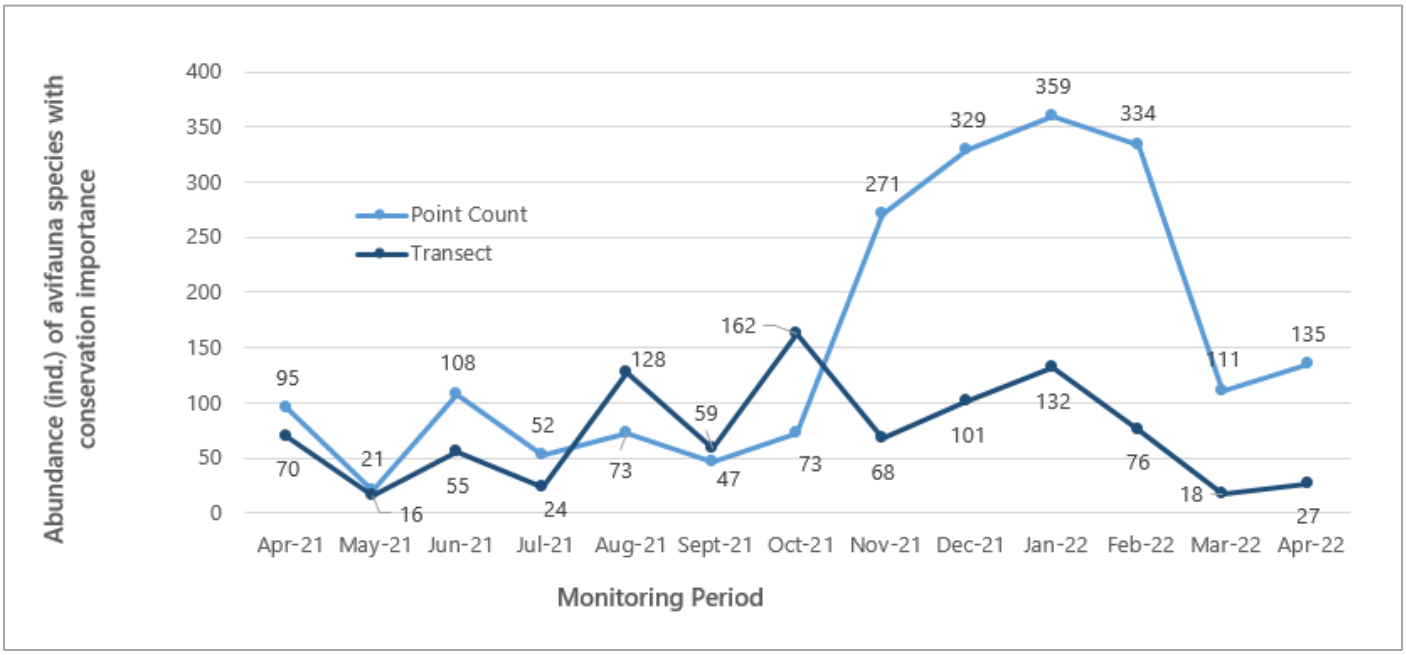
Appendix F.3.4 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Transect Walk Method) in All Habitats (20 and 22 April 2022)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Ardea alba	7	0.259259	-1.34993	-0.34998	0.472449
Ardeola bacchus	3	0.111111	-2.19722	-0.24414	0.536422
Egretta garzetta	3	0.111111	-2.19722	-0.24414	0.536422
Tringa nebularia	4	0.148148	-1.90954	-0.2829	0.5402
Tringa stagnatilis	4	0.148148	-1.90954	-0.2829	0.5402
Tringa totanus	6	0.222222	-1.50408	-0.33424	0.502722
Total	**27**	**1**	**-11.0675**	**-1.73828**	**3.128415**
Richness	**6**				
SS	**3.128415**				
SQ	**3.021628**				
H	**1.738283**				
S^2_H	**0.007384**				

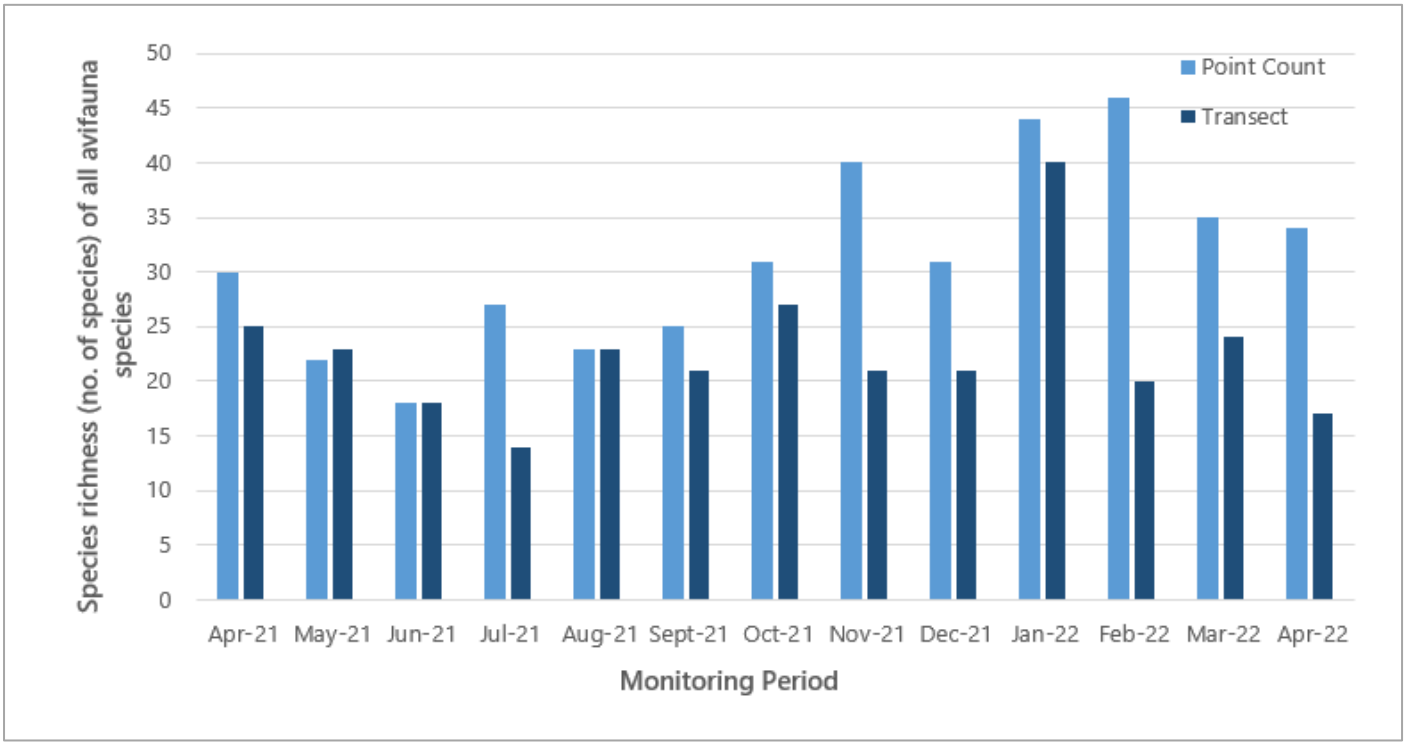
Appendix F.4.1 Abundance of all avifauna species throughout the monitoring period



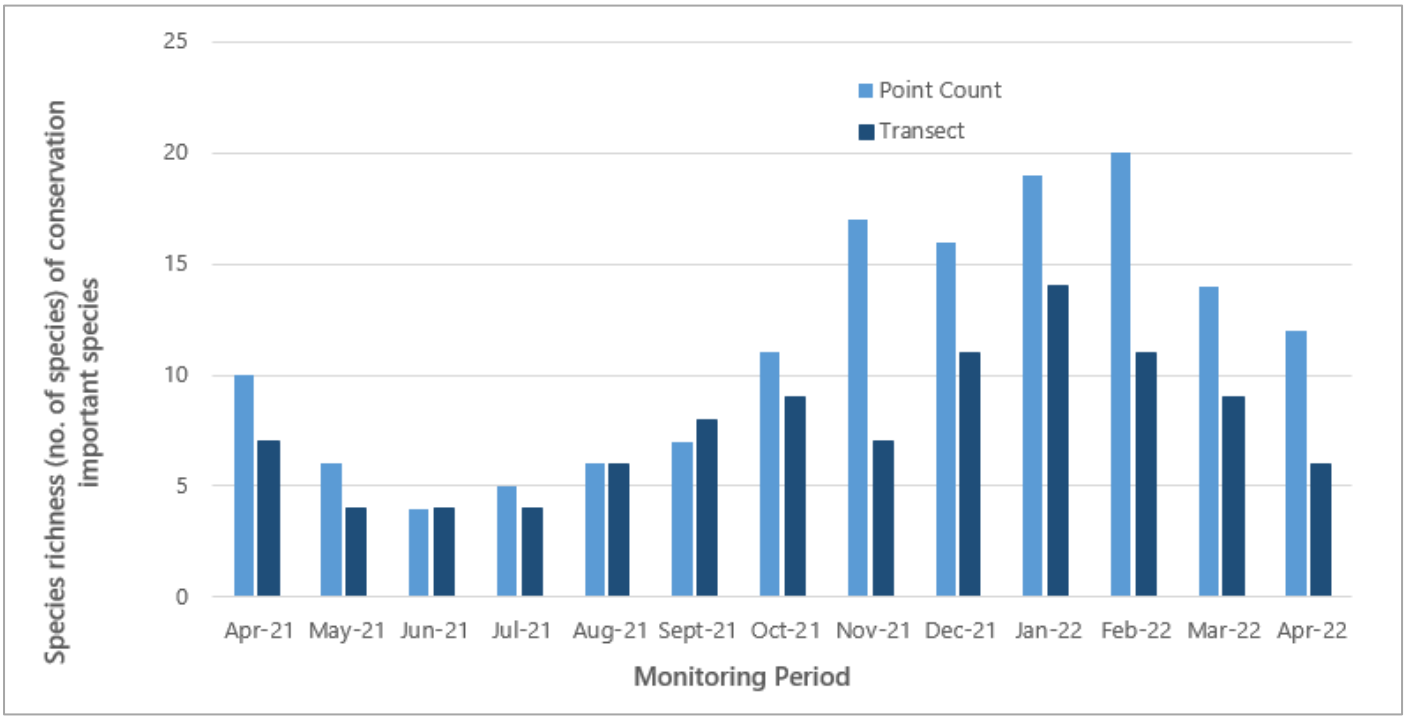
Appendix F.4.2 Abundance of avifauna species with conservation importance throughout the monitoring period



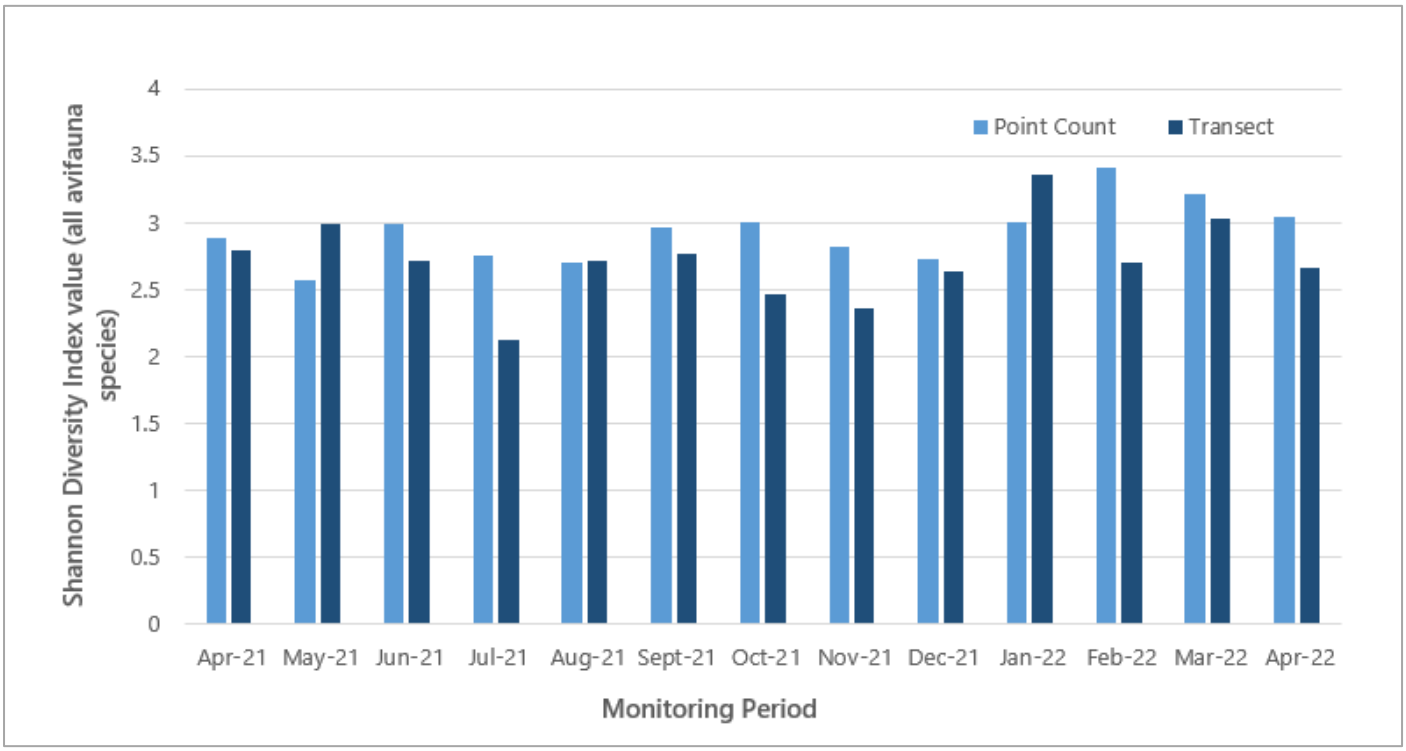
Appendix F.5.1 Species richness of all avifauna species throughout the monitoring period



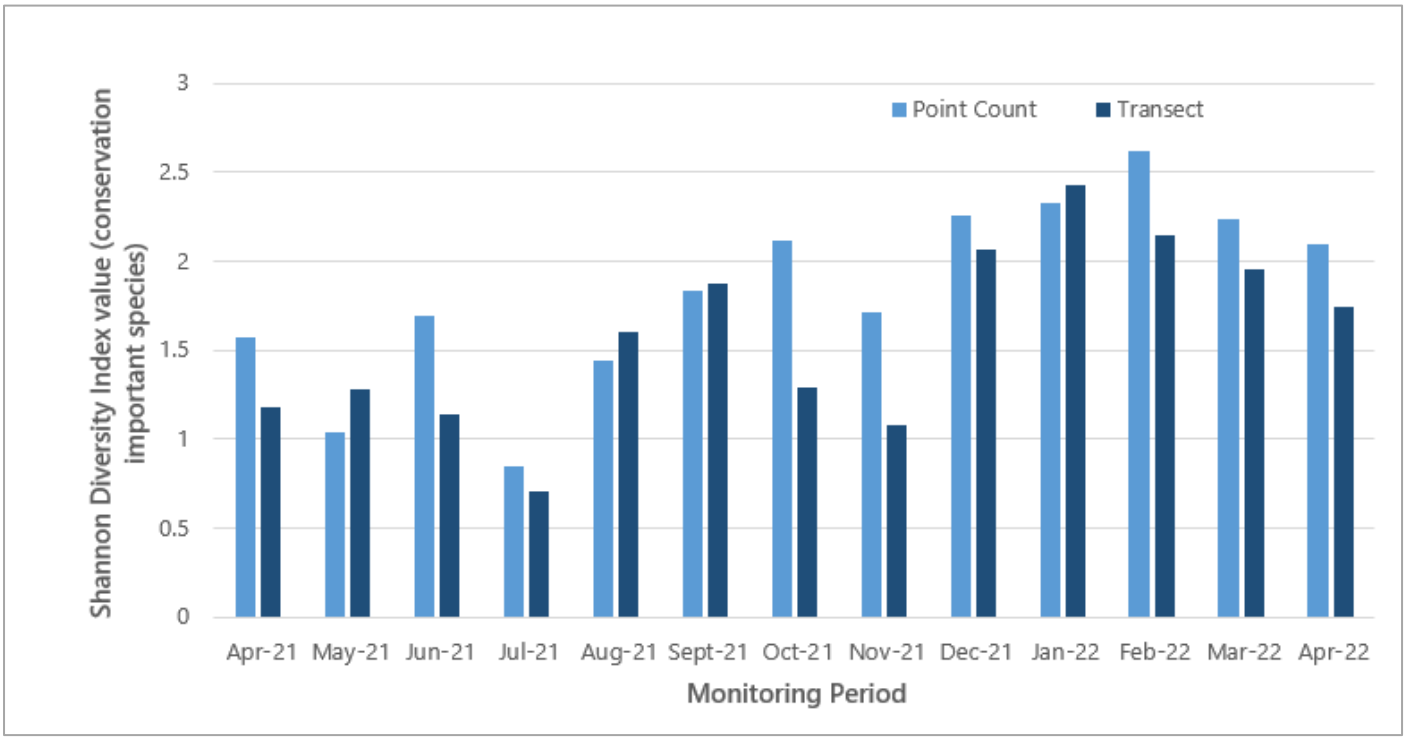
Appendix F.5.2 Species richness of avifauna species with conservation importance throughout the monitoring period



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



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



Appendix F.7 Two-tailed Unpaired T-test

Formula:

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

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

Months	April 2017	April 2022
N	107	85
df	106	84
M	2.79	2.67
SS	1840.06	192.78
S^2	17.36	2.29
t-value	0.24	
p-value	0.81	

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

Appendix F.7.2 Abundance of avifauna species with conservation importance – Point Count Method

Months	April 2017	April 2022
N	37	40
df	36	39
M	5.41	3.38
SS	1414.92	103.38
S^2	39.3	2.65
t-value	1.98	
p-value	.05	

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

Appendix F.8. 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.8.1 Species diversity of all avifauna species – Point Count Method

Months	April 2017	April 2022
Total	298	227
N	41	34
H	3.16	3.05
S^2_H	0.003	0.004
t	1.32	
df	498.58	
Crit	1.97	
p	0.19	
CI	0.12	0.13

Notes:
Total: Total abundance
N: Number of species
H: Shannon Diversity Index
S^2_H: variance
t: t-value
df: degrees of freedom
Crit: critical value

Months	April 2017	April 2022
p: p-value Cl: confidence interval		

Appendix F.8.2 Species diversity of avifauna species with conservation importance – Point Count Method

Months	April 2017	April 2022
Total	200	135
N	13	12
H	2.24	2.10
S^2_H	0.002	0.005
t	1.67	
df	255.97	
Crit	1.97	
p	0.08	
Cl	0.09	0.14
Notes: Total: Total abundance N: Number of species H: Shannon Diversity Index S^2_H: variance t: t-value df: degrees of freedom Crit: critical value p: p-value Cl: confidence interval		

Appendix G

Wind Data

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

Date	Wind Speed	Wind Direction
01/04/2022 00:00	0.1	N
01/04/2022 01:00	0.1	N
01/04/2022 02:00	2.1	NE
01/04/2022 03:00	0.0	NE
01/04/2022 04:00	4.1	NEE
01/04/2022 05:00	0.1	NE
01/04/2022 06:00	3.2	NE
01/04/2022 07:00	2.1	NE
01/04/2022 08:00	1.2	NE
01/04/2022 09:00	4.1	NEN
01/04/2022 10:00	1.1	NE
01/04/2022 11:00	0.9	NEE
01/04/2022 12:00	3.3	NEE
01/04/2022 13:00	2.6	NEN
01/04/2022 14:00	2.2	NEE
01/04/2022 15:00	6.7	NEE
01/04/2022 16:00	1.3	NEN
01/04/2022 17:00	4.9	N
01/04/2022 18:00	2.1	N
01/04/2022 19:00	10.4	NEN
01/04/2022 20:00	4.0	NEN
01/04/2022 21:00	8.1	NEN
01/04/2022 22:00	4.9	NEN
01/04/2022 23:00	7.5	NEN
01/04/2022 00:00	10.9	NE
02/04/2022 01:00	5.8	NE
02/04/2022 02:00	4.2	SES
02/04/2022 03:00	16.7	N
02/04/2022 04:00	0.1	N
02/04/2022 05:00	1.3	N
02/04/2022 06:00	5.3	N
02/04/2022 07:00	0.3	NEN
02/04/2022 08:00	7.5	N
02/04/2022 09:00	5.2	NWN
02/04/2022 10:00	0.2	NEE
02/04/2022 11:00	6.0	NEN
02/04/2022 12:00	3.2	NEN
02/04/2022 13:00	7.8	NEN

Wind Data for
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Date	Wind Speed	Wind Direction
02/04/2022 14:00	5.4	NEN
02/04/2022 15:00	1.0	NEN
02/04/2022 16:00	0.9	NEN
02/04/2022 17:00	0.0	N
02/04/2022 18:00	1.7	NEN
02/04/2022 19:00	0.0	NEN
02/04/2022 20:00	0.0	NE
02/04/2022 21:00	0.1	NE
02/04/2022 22:00	0.1	NEN
02/04/2022 23:00	0.1	NEE
02/04/2022 00:00	0.0	NE
03/04/2022 01:00	0.1	NEN
03/04/2022 02:00	0.3	N
03/04/2022 03:00	4.9	N
03/04/2022 04:00	0.5	NEN
03/04/2022 05:00	0.1	NE
03/04/2022 06:00	0.2	NEE
03/04/2022 07:00	0.9	NE
03/04/2022 08:00	3.3	NEN
03/04/2022 09:00	9.7	NEN
03/04/2022 10:00	9.7	N
03/04/2022 11:00	2.6	NWN
03/04/2022 12:00	4.2	NE
03/04/2022 13:00	1.2	NEN
03/04/2022 14:00	4.5	NE
03/04/2022 15:00	4.2	N
03/04/2022 16:00	4.3	N
03/04/2022 17:00	4.3	SWS
03/04/2022 18:00	3.4	SW
03/04/2022 19:00	0.1	N
03/04/2022 20:00	0.1	NWN
03/04/2022 21:00	0.1	NE
03/04/2022 22:00	0.1	NE
03/04/2022 23:00	0.0	E
03/04/2022 00:00	0.1	NEE
04/04/2022 01:00	0.3	NE
04/04/2022 02:00	0.0	NEN
04/04/2022 03:00	0.1	NEN

Wind Data for
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Date	Wind Speed	Wind Direction
04/04/2022 04:00	0.2	NE
04/04/2022 05:00	0.1	NE
04/04/2022 06:00	0.1	NEN
04/04/2022 07:00	0.0	NE
04/04/2022 08:00	0.6	N
04/04/2022 09:00	0.9	NE
04/04/2022 10:00	1.5	NE
04/04/2022 11:00	5.1	N
04/04/2022 12:00	1.9	N
04/04/2022 13:00	0.0	SE
04/04/2022 14:00	2.6	NEN
04/04/2022 15:00	4.9	W
04/04/2022 16:00	1.2	NWN
04/04/2022 17:00	1.3	W
04/04/2022 18:00	0.1	SWW
04/04/2022 19:00	0.1	NEN
04/04/2022 20:00	0.0	N
04/04/2022 21:00	0.0	SES
04/04/2022 22:00	0.0	NEE
04/04/2022 23:00	0.0	NEE
04/04/2022 00:00	0.1	NEN
05/04/2022 01:00	0.0	S
05/04/2022 02:00	0.1	S
05/04/2022 03:00	0.1	NWN
05/04/2022 04:00	0.1	NWN
05/04/2022 05:00	0.1	NWN
05/04/2022 06:00	0.1	N
05/04/2022 07:00	0.1	NEN
05/04/2022 08:00	0.1	E
05/04/2022 09:00	0.0	NE
05/04/2022 10:00	0.1	NWW
05/04/2022 11:00	0.1	NWW
05/04/2022 12:00	1.7	NW
05/04/2022 13:00	0.1	SW
05/04/2022 14:00	2.0	NWW
05/04/2022 15:00	0.5	W
05/04/2022 16:00	0.1	SWW
05/04/2022 17:00	0.1	SWS

Wind Data for
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Date	Wind Speed	Wind Direction
05/04/2022 18:00	0.0	SW
05/04/2022 19:00	0.1	SES
05/04/2022 20:00	0.1	S
05/04/2022 21:00	0.4	SES
05/04/2022 22:00	0.1	S
05/04/2022 23:00	0.0	NEE
06/04/2022 00:00	0.1	NEE
06/04/2022 01:00	0.0	NEE
06/04/2022 02:00	0.1	NEE
06/04/2022 03:00	0.1	NEE
06/04/2022 04:00	0.1	NEE
06/04/2022 05:00	0.0	NEE
06/04/2022 06:00	0.1	NEE
06/04/2022 07:00	0.0	NEE
06/04/2022 08:00	0.1	NEE
06/04/2022 09:00	0.1	NE
06/04/2022 10:00	0.1	NW
06/04/2022 11:00	1.0	NWN
06/04/2022 12:00	0.0	N
06/04/2022 13:00	0.1	NEN
06/04/2022 14:00	5.0	SES
06/04/2022 15:00	1.4	SES
06/04/2022 16:00	4.5	SWS
06/04/2022 17:00	2.9	S
06/04/2022 18:00	2.0	SES
06/04/2022 19:00	0.1	NE
06/04/2022 20:00	0.0	N
06/04/2022 21:00	0.1	N
06/04/2022 22:00	0.1	NEN
06/04/2022 23:00	0.1	NEN
07/04/2022 00:00	0.0	NEN
07/04/2022 01:00	0.0	NEN
07/04/2022 02:00	0.1	NEN
07/04/2022 03:00	0.1	NEN
07/04/2022 04:00	0.0	NEN
07/04/2022 05:00	0.1	NEN
07/04/2022 06:00	0.1	NEN
07/04/2022 07:00	0.0	NEN

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

Date	Wind Speed	Wind Direction
07/04/2022 08:00	0.0	NEN
07/04/2022 09:00	0.1	SES
07/04/2022 10:00	0.1	N
07/04/2022 11:00	2.9	N
07/04/2022 12:00	0.0	NWW
07/04/2022 13:00	2.6	NE
07/04/2022 14:00	7.5	NE
07/04/2022 15:00	0.1	E
07/04/2022 16:00	2.1	NE
07/04/2022 17:00	0.0	NE
07/04/2022 18:00	2.1	E
07/04/2022 19:00	0.6	N
07/04/2022 20:00	10.1	NEN
07/04/2022 21:00	0.9	N
07/04/2022 22:00	2.5	NEN
07/04/2022 23:00	2.3	NEN
08/04/2022 00:00	4.1	N
08/04/2022 01:00	0.2	NEE
08/04/2022 02:00	0.1	NEE
08/04/2022 03:00	0.3	NWN
08/04/2022 04:00	8.8	NE
08/04/2022 05:00	3.4	NEN
08/04/2022 06:00	1.2	NEN
08/04/2022 07:00	10.6	NWN
08/04/2022 08:00	11.9	NEN
08/04/2022 09:00	4.7	N
08/04/2022 10:00	3.1	NEN
08/04/2022 11:00	10.9	NEN
08/04/2022 12:00	9.2	N
08/04/2022 13:00	6.2	NE
08/04/2022 14:00	3.0	NEN
08/04/2022 15:00	3.1	N
08/04/2022 16:00	1.6	NWN
08/04/2022 17:00	0.3	NEN
08/04/2022 18:00	1.0	NWN
08/04/2022 19:00	1.6	N
08/04/2022 20:00	8.3	N
08/04/2022 21:00	7.5	NEN

Wind Data for
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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed	Wind Direction
08/04/2022 22:00	0.9	NEN
08/04/2022 23:00	5.2	NEN
09/04/2022 00:00	6.1	NEN
09/04/2022 01:00	6.5	N
09/04/2022 02:00	1.9	NE
09/04/2022 03:00	2.3	NEN
09/04/2022 04:00	3.4	N
09/04/2022 05:00	0.3	NEN
09/04/2022 06:00	0.0	NE
09/04/2022 07:00	3.1	NEN
09/04/2022 08:00	0.0	NEN
09/04/2022 09:00	0.1	NE
09/04/2022 10:00	0.0	NEE
09/04/2022 11:00	0.1	NEE
09/04/2022 12:00	0.1	NE
09/04/2022 13:00	5.1	NEN
09/04/2022 14:00	1.5	N
09/04/2022 15:00	2.0	N
09/04/2022 16:00	4.8	N
09/04/2022 17:00	0.3	NEN
09/04/2022 18:00	0.1	NEN
09/04/2022 19:00	0.1	NE
09/04/2022 20:00	5.1	NE
09/04/2022 21:00	2.9	N
09/04/2022 22:00	6.0	NEN
09/04/2022 23:00	0.1	N
10/04/2022 00:00	2.7	NE
10/04/2022 01:00	6.1	N
10/04/2022 02:00	5.7	N
10/04/2022 03:00	6.1	NEN
10/04/2022 04:00	0.5	NEN
10/04/2022 05:00	1.4	S
10/04/2022 06:00	1.0	SES
10/04/2022 07:00	0.1	NWN
10/04/2022 08:00	0.1	SES
10/04/2022 09:00	0.1	NE
10/04/2022 10:00	0.1	E
10/04/2022 11:00	0.1	E

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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed	Wind Direction
10/04/2022 12:00	1.2	NEN
10/04/2022 13:00	1.5	NE
10/04/2022 14:00	0.1	NEN
10/04/2022 15:00	0.1	NE
10/04/2022 16:00	0.0	NE
10/04/2022 17:00	0.1	NEN
10/04/2022 18:00	0.1	NEN
10/04/2022 19:00	0.0	NE
10/04/2022 20:00	0.2	NEN
10/04/2022 21:00	2.0	NEN
10/04/2022 22:00	4.4	N
10/04/2022 23:00	3.4	N
11/04/2022 00:00	3.5	N
11/04/2022 01:00	0.0	SEE
11/04/2022 02:00	1.6	SWW
11/04/2022 03:00	3.9	W
11/04/2022 04:00	5.5	NW
11/04/2022 05:00	2.4	W
11/04/2022 06:00	0.0	W
11/04/2022 07:00	0.1	N
11/04/2022 08:00	0.1	SES
11/04/2022 09:00	0.1	NEE
11/04/2022 10:00	0.1	NEE
11/04/2022 11:00	0.1	SEE
11/04/2022 12:00	0.0	S
11/04/2022 13:00	0.1	S
11/04/2022 14:00	0.0	S
11/04/2022 15:00	0.1	NWN
11/04/2022 16:00	0.0	NWN
11/04/2022 17:00	0.0	NWN
11/04/2022 18:00	0.1	NEN
11/04/2022 19:00	0.1	NEN
11/04/2022 20:00	0.1	NEN
11/04/2022 21:00	1.0	N
11/04/2022 22:00	0.1	NWW
11/04/2022 23:00	0.1	NWW
12/04/2022 00:00	1.1	SWW
12/04/2022 01:00	2.4	N

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Date	Wind Speed	Wind Direction
12/04/2022 02:00	1.6	SWW
12/04/2022 03:00	5.5	NWW
12/04/2022 04:00	0.1	SWS
12/04/2022 05:00	1.7	SW
12/04/2022 06:00	0.0	SES
12/04/2022 07:00	0.0	SES
12/04/2022 08:00	0.0	SES
12/04/2022 09:00	0.1	SES
12/04/2022 10:00	0.0	NEE
12/04/2022 11:00	0.1	NEE
12/04/2022 12:00	0.1	NEE
12/04/2022 13:00	0.0	NEE
12/04/2022 14:00	0.1	NEE
12/04/2022 15:00	0.1	NEE
12/04/2022 16:00	0.1	NEE
12/04/2022 17:00	0.0	NEE
12/04/2022 18:00	0.1	NEE
12/04/2022 19:00	0.0	NEE
12/04/2022 20:00	0.1	NEE
12/04/2022 21:00	1.1	N
12/04/2022 22:00	0.0	W
12/04/2022 23:00	0.1	NWN
13/04/2022 00:00	0.2	NWW
13/04/2022 01:00	0.4	NW
13/04/2022 02:00	0.6	SWS
13/04/2022 03:00	0.1	S
13/04/2022 04:00	1.9	SW
13/04/2022 05:00	0.2	SE
13/04/2022 06:00	0.3	NEE
13/04/2022 07:00	0.1	NEN
13/04/2022 08:00	0.1	N
13/04/2022 09:00	0.1	NEN
13/04/2022 10:00	0.1	NEN
13/04/2022 11:00	0.1	NEN
13/04/2022 12:00	0.1	NEN
13/04/2022 13:00	0.0	NEN
13/04/2022 14:00	0.1	NEN
13/04/2022 15:00	0.0	NEN

Wind Data for
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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed	Wind Direction
13/04/2022 16:00	0.1	NEN
13/04/2022 17:00	0.1	NEN
13/04/2022 18:00	0.1	NEN
13/04/2022 19:00	0.0	NEN
13/04/2022 20:00	0.2	E
13/04/2022 21:00	0.1	N
13/04/2022 22:00	0.8	NEN
13/04/2022 23:00	0.0	SES
14/04/2022 00:00	0.0	E
14/04/2022 01:00	0.3	SEE
14/04/2022 02:00	0.2	SEE
14/04/2022 03:00	0.1	E
14/04/2022 04:00	0.3	NEE
14/04/2022 05:00	0.0	E
14/04/2022 06:00	0.2	SEE
14/04/2022 07:00	0.0	SE
14/04/2022 08:00	0.0	NEE
14/04/2022 09:00	0.2	NEE
14/04/2022 10:00	0.0	E
14/04/2022 11:00	0.0	NE
14/04/2022 12:00	0.0	E
14/04/2022 13:00	0.3	NE
14/04/2022 14:00	0.1	NE
14/04/2022 15:00	0.6	N
14/04/2022 16:00	0.0	SE
14/04/2022 17:00	0.3	NEE
14/04/2022 18:00	0.0	SE
14/04/2022 19:00	0.0	NE
14/04/2022 20:00	0.0	E
14/04/2022 21:00	0.2	NEE
14/04/2022 22:00	0.2	NEE
14/04/2022 23:00	0.7	NEN
15/04/2022 00:00	0.0	SEE
15/04/2022 01:00	0.0	NE
15/04/2022 02:00	0.2	NEN
15/04/2022 03:00	0.4	NEE
15/04/2022 04:00	0.3	NEE
15/04/2022 05:00	0.2	NEE

Wind Data for
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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed	Wind Direction
15/04/2022 06:00	0.2	NE
15/04/2022 07:00	0.0	NEE
15/04/2022 08:00	0.1	NE
15/04/2022 09:00	0.0	E
15/04/2022 10:00	0.0	NEN
15/04/2022 11:00	0.1	N
15/04/2022 12:00	0.0	NE
15/04/2022 13:00	0.0	NE
15/04/2022 14:00	0.0	NEN
15/04/2022 15:00	0.1	NE
15/04/2022 16:00	0.1	NEN
15/04/2022 17:00	0.0	NEE
15/04/2022 18:00	0.0	NEE
15/04/2022 19:00	0.0	N
15/04/2022 20:00	0.0	E
15/04/2022 21:00	0.1	NE
15/04/2022 22:00	0.0	SEE
15/04/2022 23:00	0.1	NE
16/04/2022 00:00	0.2	NEE
16/04/2022 01:00	0.9	NEN
16/04/2022 02:00	0.2	NE
16/04/2022 03:00	0.1	NEE
16/04/2022 04:00	0.1	NE
16/04/2022 05:00	0.2	NEN
16/04/2022 06:00	0.3	NEN
16/04/2022 07:00	0.0	N
16/04/2022 08:00	0.0	NEN
16/04/2022 09:00	0.0	N
16/04/2022 10:00	0.0	N
16/04/2022 11:00	0.0	NE
16/04/2022 12:00	0.0	NE
16/04/2022 13:00	0.0	N
16/04/2022 14:00	0.0	NEN
16/04/2022 15:00	0.0	NE
16/04/2022 16:00	0.0	NE
16/04/2022 17:00	0.0	NE
16/04/2022 18:00	0.0	NEE
16/04/2022 19:00	0.1	NEN

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

Date	Wind Speed	Wind Direction
16/04/2022 20:00	0.1	NE
16/04/2022 21:00	0.0	NEN
16/04/2022 22:00	0.0	E
16/04/2022 23:00	0.0	SES
17/04/2022 00:00	0.0	SE
17/04/2022 01:00	0.0	SE
17/04/2022 02:00	0.0	SWS
17/04/2022 03:00	0.0	SWS
17/04/2022 04:00	0.0	S
17/04/2022 05:00	0.0	E
17/04/2022 06:00	0.0	NE
17/04/2022 07:00	0.0	NE
17/04/2022 08:00	0.0	NEN
17/04/2022 09:00	0.0	N
17/04/2022 10:00	0.0	NW
17/04/2022 11:00	0.0	NW
17/04/2022 12:00	0.0	NW
17/04/2022 13:00	0.0	SE
17/04/2022 14:00	0.0	SEE
17/04/2022 15:00	0.0	NE
17/04/2022 16:00	0.1	NEN
17/04/2022 17:00	0.1	NEN
17/04/2022 18:00	0.0	N
17/04/2022 19:00	0.0	NEN
17/04/2022 20:00	0.0	NE
17/04/2022 21:00	0.3	N
17/04/2022 22:00	0.2	E
17/04/2022 23:00	0.1	NE
18/04/2022 00:00	0.5	SE
18/04/2022 01:00	0.3	NEE
18/04/2022 02:00	0.1	E
18/04/2022 03:00	0.3	NE
18/04/2022 04:00	0.1	SEE
18/04/2022 05:00	0.1	NEN
18/04/2022 06:00	0.1	NE
18/04/2022 07:00	0.1	NE
18/04/2022 08:00	0.1	NEE
18/04/2022 09:00	0.1	NE

Wind Data for
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Date	Wind Speed	Wind Direction
18/04/2022 10:00	0.1	SES
18/04/2022 11:00	0.5	NE
18/04/2022 12:00	0.6	NE
18/04/2022 13:00	0.2	NE
18/04/2022 14:00	0.3	NE
18/04/2022 15:00	0.5	NEN
18/04/2022 16:00	0.1	NE
18/04/2022 17:00	0.8	NEN
18/04/2022 18:00	0.6	NEE
18/04/2022 19:00	0.2	NEE
18/04/2022 20:00	0.2	NEE
18/04/2022 21:00	0.7	NEE
18/04/2022 22:00	0.7	NE
18/04/2022 23:00	0.9	NE
19/04/2022 00:00	0.4	NEE
19/04/2022 01:00	0.1	NEE
19/04/2022 02:00	0.4	NEN
19/04/2022 03:00	0.1	NE
19/04/2022 04:00	0.2	SEE
19/04/2022 05:00	0.3	NEE
19/04/2022 06:00	0.0	E
19/04/2022 07:00	0.0	NE
19/04/2022 08:00	0.1	NE
19/04/2022 09:00	0.0	NEE
19/04/2022 10:00	0.0	NEE
19/04/2022 11:00	0.0	NE
19/04/2022 12:00	0.0	NEE
19/04/2022 13:00	0.1	NEE
19/04/2022 14:00	0.1	NEE
19/04/2022 15:00	0.0	E
19/04/2022 16:00	0.0	SEE
19/04/2022 17:00	0.0	NEN
19/04/2022 18:00	0.1	NEE
19/04/2022 19:00	0.0	SEE
19/04/2022 20:00	0.0	NEE
19/04/2022 21:00	0.4	NEE
19/04/2022 22:00	0.3	E
19/04/2022 23:00	0.6	NE

Wind Data for
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Yuen Long Effluent Polishing Plant Stage 1

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

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

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

Wind Data for
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Date	Wind Speed	Wind Direction
23/04/2022 04:00	0.1	SW
23/04/2022 05:00	0.8	SES
23/04/2022 06:00	0.3	SES
23/04/2022 07:00	0.1	SES
23/04/2022 08:00	0.0	SES
23/04/2022 09:00	0.0	SEE
23/04/2022 10:00	0.0	S
23/04/2022 11:00	0.1	S
23/04/2022 12:00	0.0	NE
23/04/2022 13:00	0.0	NWW
23/04/2022 14:00	0.0	N
23/04/2022 15:00	0.0	N
23/04/2022 16:00	0.0	SWW
23/04/2022 17:00	0.1	NEE
23/04/2022 18:00	0.1	NEE
23/04/2022 19:00	0.1	NEE
23/04/2022 20:00	0.2	NE
23/04/2022 21:00	0.4	E
23/04/2022 22:00	0.1	E
23/04/2022 23:00	0.2	E
24/04/2022 00:00	0.1	SE
24/04/2022 01:00	0.1	NWN
24/04/2022 02:00	0.1	SE
24/04/2022 03:00	0.6	SES
24/04/2022 04:00	0.1	S
24/04/2022 05:00	0.1	SES
24/04/2022 06:00	0.0	SE
24/04/2022 07:00	0.1	NE
24/04/2022 08:00	0.0	NEE
24/04/2022 09:00	0.0	NE
24/04/2022 10:00	0.0	E
24/04/2022 11:00	0.0	NEN
24/04/2022 12:00	0.0	NEN
24/04/2022 13:00	0.0	NEN
24/04/2022 14:00	0.0	NEN
24/04/2022 15:00	0.0	NEN
24/04/2022 16:00	0.0	SE
24/04/2022 17:00	0.0	NEN

Wind Data for
Contract No. SPW 07/2020 Environmental Team for Construction of
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Date	Wind Speed	Wind Direction
24/04/2022 18:00	0.0	NEE
24/04/2022 19:00	0.1	NEN
24/04/2022 20:00	0.0	NEE
24/04/2022 21:00	0.1	NEN
24/04/2022 22:00	0.0	NE
24/04/2022 23:00	0.0	SES
25/04/2022 00:00	0.0	SW
25/04/2022 01:00	0.3	S
25/04/2022 02:00	0.4	SW
25/04/2022 03:00	0.1	S
25/04/2022 04:00	0.0	NEE
25/04/2022 05:00	0.0	SE
25/04/2022 06:00	0.0	SEE
25/04/2022 07:00	0.0	SEE
25/04/2022 08:00	0.1	NEE
25/04/2022 09:00	0.0	NE
25/04/2022 10:00	0.4	NEN
25/04/2022 11:00	0.6	NEE
25/04/2022 12:00	0.0	NEN
25/04/2022 13:00	0.3	NEE
25/04/2022 14:00	0.8	NE
25/04/2022 15:00	0.1	NE
25/04/2022 16:00	0.1	NE
25/04/2022 17:00	0.0	NEN
25/04/2022 18:00	0.1	NEN
25/04/2022 19:00	0.1	NE
25/04/2022 20:00	0.0	NE
25/04/2022 21:00	0.4	NE
25/04/2022 22:00	0.1	NE
25/04/2022 23:00	0.3	NEE
26/04/2022 00:00	0.3	NEE
26/04/2022 01:00	0.4	E
26/04/2022 02:00	0.1	SEE
26/04/2022 03:00	0.0	SEE
26/04/2022 04:00	0.2	NE
26/04/2022 05:00	0.0	SEE
26/04/2022 06:00	0.2	NE
26/04/2022 07:00	0.0	NEE

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

Date	Wind Speed	Wind Direction
26/04/2022 08:00	0.1	NE
26/04/2022 09:00	0.1	NE
26/04/2022 10:00	0.0	NEE
26/04/2022 11:00	0.2	NEN
26/04/2022 12:00	0.1	NEE
26/04/2022 13:00	0.3	N
26/04/2022 14:00	0.3	NEN
26/04/2022 15:00	0.0	NE
26/04/2022 16:00	0.0	NEN
26/04/2022 17:00	0.1	NEN
26/04/2022 18:00	0.1	NEE
26/04/2022 19:00	0.1	NEN
26/04/2022 20:00	0.3	NEE
26/04/2022 21:00	0.0	SE
26/04/2022 22:00	0.0	NE
26/04/2022 23:00	0.0	NEE
27/04/2022 00:00	0.1	NEE
27/04/2022 01:00	0.0	NEE
27/04/2022 02:00	0.0	NEE
27/04/2022 03:00	0.0	NEE
27/04/2022 04:00	0.3	NE
27/04/2022 05:00	0.1	NE
27/04/2022 06:00	0.1	NEN
27/04/2022 07:00	0.0	NE
27/04/2022 08:00	0.1	N
27/04/2022 09:00	0.0	NE
27/04/2022 10:00	0.1	NEE
27/04/2022 11:00	0.1	NE
27/04/2022 12:00	0.1	NE
27/04/2022 13:00	0.0	NE
27/04/2022 14:00	0.0	NEN
27/04/2022 15:00	0.0	NEN
27/04/2022 16:00	0.0	NEN
27/04/2022 17:00	0.0	NE
27/04/2022 18:00	0.0	NEE
27/04/2022 19:00	0.0	NE
27/04/2022 20:00	0.0	NEE
27/04/2022 21:00	0.0	NWN

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

Date	Wind Speed	Wind Direction
27/04/2022 22:00	0.0	S
27/04/2022 23:00	0.0	S
28/04/2022 00:00	0.3	SES
28/04/2022 01:00	0.0	S
28/04/2022 02:00	0.4	SES
28/04/2022 03:00	0.0	SW
28/04/2022 04:00	0.0	NWW
28/04/2022 05:00	0.0	W
28/04/2022 06:00	0.0	NWW
28/04/2022 07:00	0.0	NWN
28/04/2022 08:00	0.0	W
28/04/2022 09:00	0.0	NWW
28/04/2022 10:00	0.0	N
28/04/2022 11:00	0.0	N
28/04/2022 12:00	0.0	N
28/04/2022 13:00	0.0	NEN
28/04/2022 14:00	0.0	NE
28/04/2022 15:00	0.0	N
28/04/2022 16:00	0.0	NEN
28/04/2022 17:00	0.2	NE
28/04/2022 18:00	0.1	NEN
28/04/2022 19:00	0.0	N
28/04/2022 20:00	0.0	NE
28/04/2022 21:00	0.1	NEN
28/04/2022 22:00	0.0	N
28/04/2022 23:00	0.4	NEN
29/04/2022 00:00	0.0	NWN
29/04/2022 01:00	0.4	NW
29/04/2022 02:00	0.0	W
29/04/2022 03:00	0.1	SW
29/04/2022 04:00	0.1	W
29/04/2022 05:00	0.0	SES
29/04/2022 06:00	0.1	SWS
29/04/2022 07:00	0.0	SE
29/04/2022 08:00	0.0	SE
29/04/2022 09:00	0.0	SE
29/04/2022 10:00	0.0	SE
29/04/2022 11:00	0.0	SE

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

Date	Wind Speed	Wind Direction
29/04/2022 12:00	0.0	SE
29/04/2022 13:00	0.0	SE
29/04/2022 14:00	0.0	SE
29/04/2022 15:00	0.0	SE
29/04/2022 16:00	0.0	SE
29/04/2022 17:00	0.0	SE
29/04/2022 18:00	0.0	SE
29/04/2022 19:00	0.0	NEE
29/04/2022 20:00	0.0	NWN
29/04/2022 21:00	0.1	NWN
29/04/2022 22:00	0.0	NW
29/04/2022 23:00	0.0	NWN
30/04/2022 00:00	0.0	W
30/04/2022 01:00	0.9	NWW
30/04/2022 02:00	0.4	SW
30/04/2022 03:00	0.4	SW
30/04/2022 04:00	0.1	SE
30/04/2022 05:00	0.4	SE
30/04/2022 06:00	0.4	SES
30/04/2022 07:00	0.1	SE
30/04/2022 08:00	0.1	SES
30/04/2022 09:00	0.1	S
30/04/2022 10:00	0.0	E
30/04/2022 11:00	0.0	E
30/04/2022 12:00	0.1	NW
30/04/2022 13:00	0.4	SW
30/04/2022 14:00	0.5	SWS
30/04/2022 15:00	0.4	SW
30/04/2022 16:00	0.7	SES
30/04/2022 17:00	0.1	SE
30/04/2022 18:00	0.0	SES
30/04/2022 19:00	0.4	SE
30/04/2022 20:00	0.1	SE
30/04/2022 21:00	0.4	SES
30/04/2022 22:00	0.5	S
30/04/2022 23:00	0.1	SE
01/05/2022 00:00	0.1	SES

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 2022

Monthly Ending	Total Quantity Generated	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
		Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2022 Jan	243.88	Nil	Nil	Nil	215.24	Nil	17.46	0.04	Nil	Nil	11.14
2022 Feb	92.65	Nil	Nil	Nil	38.73	Nil	43.95	Nil	Nil	Nil	9.97
2022 Mar	398.96	Nil	Nil	Nil	312.08	Nil	76.31	Nil	Nil	Nil	10.57
2022 Apr	3619.84	Nil	Nil	Nil	3552.01	Nil	58.86	0.13	Nil	Nil	8.84
2022 May											
2022 Jun											
2022 Jul											
2022 Aug											
2022 Sep											
2022 Oct											
2022 Nov											
2022 Dec											
Total	4355.33	0	0	0	4118.06	0	196.58	0.17	0	0	40.52

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.		N/A
	• 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	Implemented
	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.		N/A
	• 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.		N/A
	• 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	N/A
5.8.1.9	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion	Construction Sites / Construction Phase	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	N/A
5.8.1.11	Construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms	Construction Sites / Construction Phase	Implemented
5.8.1.12	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Construction Sites / Construction Phase	Implemented
5.8.1.13	The practices outlined in Environment, Transport and Works Bureau (ETWB) TC (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works" should also be adopted where applicable to minimise the water quality impacts upon any natural streams or surface water systems.	Construction Sites / Construction Phase	N/A
5.8.1.14	Sufficient chemical toilets should be provided in the works areas. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis.	Construction Sites / Construction Phase	Implemented
5.8.1.15	Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment.	Construction Sites / Construction Phase	Implemented
5.8.1.16	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The WDO (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes.	Construction Sites / Construction Phase	Implemented

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	N/A
5.8.2.11	Chemical should be stored on site at bunded area and separate drainage system as appropriate should be provided to avoid any spilled chemicals from entering the storm drain in case of accidental spillage. Also, adequate tools for cleanup of spilled chemicals should be stored on site and appropriate training shall be provided to staffs to further prevent potential adverse water quality impacts from happening.	Project site / Design and Operation Phase	Implemented
Waste Management Implication			
Construction Phase			
6.6.1.3	<u>Good Site Practices</u> 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;		N/A

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;		N/A
	• 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	N/A

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	N/A
6.6.1.20	For off-site disposal, the basic requirements and procedures specified under ETWB TC(W) No. 34/2002 shall be followed.	Transportation Route of Waste / Construction Phase	N/A
6.6.1.24	Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiles should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).	Construction Sites	N/A

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

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;		N/A
	• Speed control for the trucks carrying contaminated materials shall be enforced;		N/A

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		N/A
	• Pollution control measures for air emissions (e.g. from biopile blower and handling of cement), noise emissions (e.g. from blower or earthmoving equipment), and water discharges (e.g. runoff control from treatment facility) shall be implemented and complied with relevant regulations and guidelines.		N/A
Ecological Impact (Terrestrial and Aquatic)			
Construction Phase			
8.10.2.1	<u>Avoidance of Recognised Site of Conservation Importance</u> Construction works are designed to be confined to the boundary of the existing YLSTW that direct impacts on all other sites of conservation importance within the assessment area, including the Ramsar Site, Priority Site, WCA, WBA, SSSI and CA would be avoided.	Project site / Construction Phase	Implemented
8.10.2.3 – 8.10.2.4	<u>Avoidance of Demolition Works Using Breakers Mounted on Excavators and Percussive Piling during Dry Season</u> In order to minimise the construction noise disturbance on overwintering waterbirds, the noisy construction works, i.e. all percussive piling works and demolition using breakers mounted on excavators, would therefore be scheduled outside the dry season (i.e. November to March, which is the peak overwintering period of waterbirds).	Construction sites /Construction Phase	Implemented
8.10.2.5	<u>Restriction of Construction Hours</u> No construction activities with the use of PME should be conducted within 100m from any night roost confirmed by the pre-construction survey after 18:00 during wet season and 17:30 during dry season to avoid disturbance to the nearby ardeids night roosts.	Construction sites / Construction Phase	Implemented
8.10.3.2 – 8.10.3.3	<u>Minimising Construction Noise Disturbance Impacts through Consideration of Alternative Construction Methods</u> Demolition using concrete crusher is quieter than demolition using breaker that its construction noise level is comparable to other general construction activities and concrete crusher would be used for demolition works to be undertaken during dry season months. The quieter foundation methods, including bored piling, raft foundation and shallow foundation, would be adopted as far as possible.	Construction sites / Construction Phase	Implemented

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;		N/A

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;		N/A
	• 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

March 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)		
March 2022						
1	1017.5	29.3	21.8	15.9	79	0
2	1017.4	28.7	21.2	17.0	85	0
3	1017.2	30.5#	21.3	17.1#	75	0
4	1015.0	29.5#	21.2	16.0#	84	0
5	1013.7	26.7	21.5	17.3	85	0
6	1015.8	26.3	21.1	18.1	72	0
7	1018.0	26.9	20.5	16.8	70	5.5
8	1018.7	25.5	17.8	13.2	54	0
9	1017.5	28.0	19.1	12.1	61	0
10	1016.1	28.9	21.0	15.6	68	0
11	1014.5	27.9	20.7	14.9	80	0
12	1013.9	30.4	22.6	16.4	75	0
13	1013.2	29.5	23.4	18.4	78	0
14	1012.4	29.7	24.0	19.0	80	0
15	1011.2	30.2#	23.8	19.1#	84	0
16	1011.8	27.9#	23.5	20.6#	79	0
17	1009.8	30.7#	25.0	21.9#	87	1.0
18	1009.3	29.9	25.2	21.2	85	0
19	1010.0	31.2	25.2	22.2	82	0
20	1012.7	24.2	22.3	20.9	91	9.5
21	1012.9	30.4	24.9	21.2	87	0
22	1012.8	31.5	25.9	22.7	89	0
23	1015.8	24.8#	16.8	14.9#	98	48.5
24	1014.6	19.8	17.6	14.7	97	2.0
25	1010.5	27.5	24.2	19.3	92	1.0
26	1010.7	29.7	27.0	24.6	87	0
27	1014.2	26.0	22.4	17.8	79	0
28	1018.3	17.8	16.4	15.1	97	39.0
29	1017.8	21.4	19.2	16.7	89	0
30	1016.3	29.9	24.1	19.7	75	0
31	1016.5	32.7	25.4	20.8	75	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

April 2022 Weather

Station: Hong Kong Observatory

Date	Mean Pressure (hPa)	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
April 2022						
1	1020.5	22.0	19.0	15.7	83	0.5
2	1023.2	16.1	15.0	13.7	76	1.3
3	1022.1	23.9	18.7	15.2	54	0
4	1022.2	25.6	20.1	16.8	53	0
5	1020.0	26.9	21.3	18.1	64	0
6	1017.6	26.2	22.3	19.4	70	0
7	1016.8	26.7	22.8	20.0	68	0
8	1015.7	29.1	23.6	20.5	50	0
9	1013.8	27.6	23.1	20.3	65	0
10	1012.4	28.5	23.8	20.5	67	0
11	1011.0	30.3	25.5	22.6	74	0
12	1008.9	30.2	25.7	23.0	77	0
13	1006.8	28.1	25.3	23.9	81	Trace
14	1008.4	27.8	25.5	23.0	69	0
15	1012.1	27.6	24.3	22.8	69	Trace
16	1013.7	22.9	21.8	21.2	73	Trace
17	1015.6	24.9	21.4	19.2	72	0.4
18	1016.7	23.2	21.7	20.9	76	Trace
19	1017.3	21.1	20.1	19.1	83	0.8
20	1015.4	25.6	21.9	19.8	75	0
21	1013.3	28.4	23.9	21.4	78	0
22	1012.3	27.2	24.8	23.4	84	0
23	1010.9	30.3	26.4	24.1	81	Trace
24	1009.3	30.9	27.2	24.9	79	0
25	1008.6	31.4	27.9	26.3	79	0
26	1008.3	29.8	27.7	26.2	80	0
27	1009.4	31.6	28.4	26.1	78	0
28	1010.8	31.6	28.4	26.8	79	0
29	1011.0	32.0	28.2	26.2	79	0
30	1012.3	26.8	25.4	24.3	85	0.5

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	6 Apr 2022	Recommendation 1: The Contractor is recommended to provide water spraying to prevent dust emission for access road at FST Area (Portion 1 - YLSTW).	6 Apr 2022
	12 Apr 2022	Reminder 1: The Contractor is reminded to provide water spraying for dust suppression at haul roads (Portion 1 - YLSTW).	12 Apr 2022
Noise	NA		
Water Quality	NA		
Chemical and Waste Management	20 Apr 2022	Reminder 1: The Contractor is reminded to clean up the oil stain on road with chemical absorbent pad and treat it as chemical waste for disposal (Portion 1 - YLSTW).	20 Apr 2022
Land Contamination	NA		
Ecological Impact	NA		
Landscape and Visual Impact	27 Apr 2022	Reminder 1 (Landscape & Visual Impact): Please keep adjacent ground of trees free of construction materials (Portion 1 - YLSTW).	27 Apr 2022
Permit / Licenses	NA		
Others	NA		

Appendix N

Outstanding Issues and Deficiencies

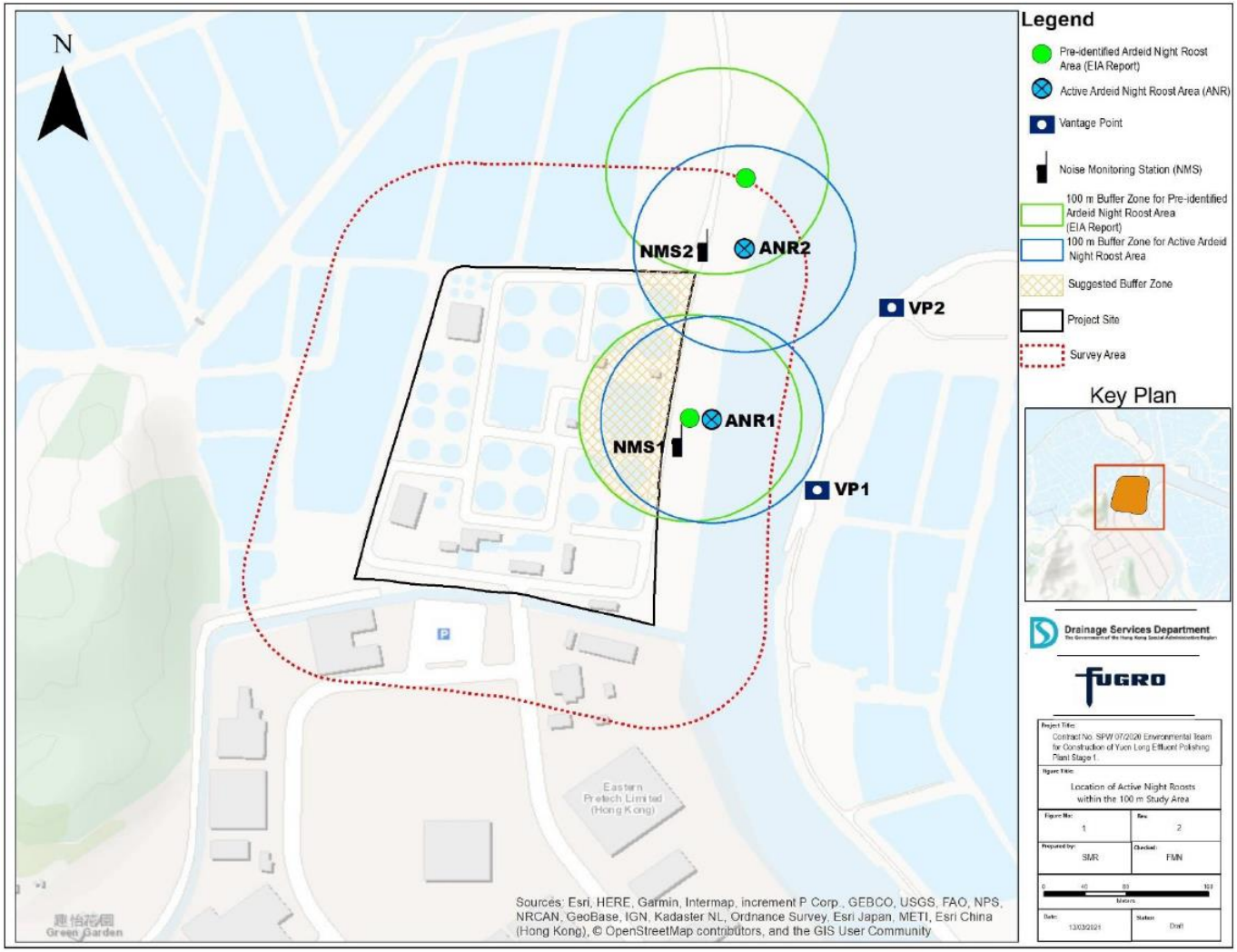
Summary of Outstanding Issues and Deficiencies in the Reporting Month

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

Appendix O

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

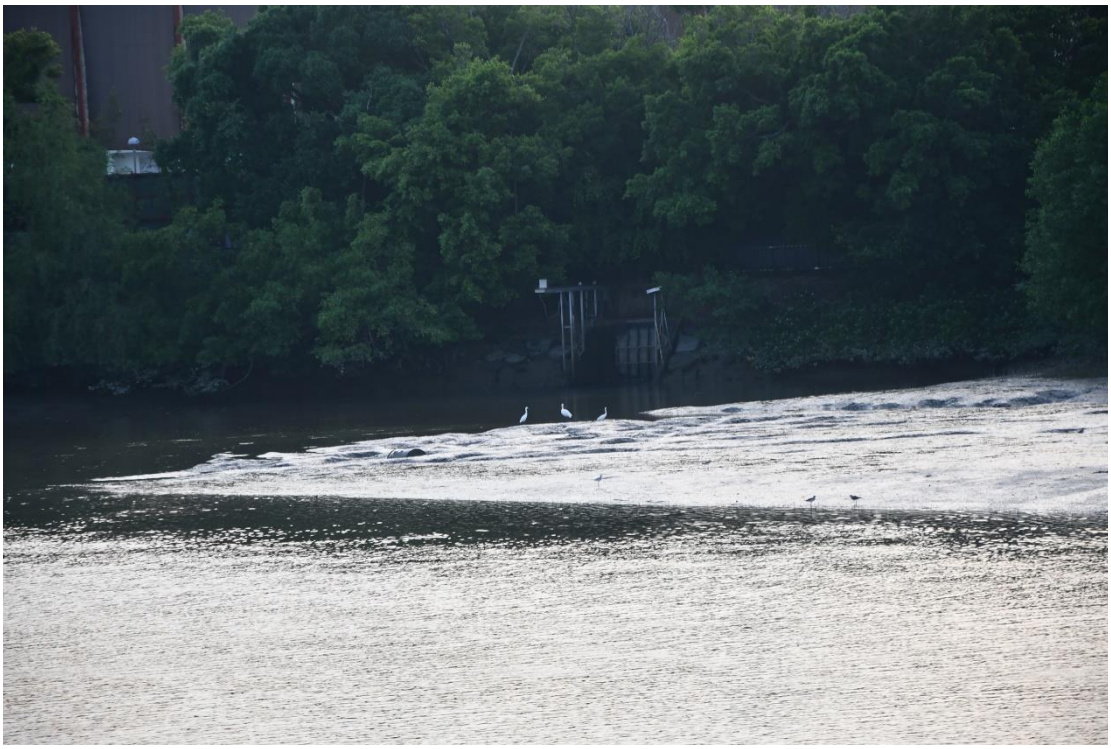
O.1 Map of the Monitoring Area, Vantage Points for Observation of Active Night Roosts and Noise Monitoring Stations



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

O.2 Survey Photos

O.2.1 Pre-roosting Aggregate



Appendix O.2.1: Pre-roost aggregate of Little Egret *Egretta garzetta* in the mudflat area east of the Project boundary observed on 21 April 2022 around 18:35

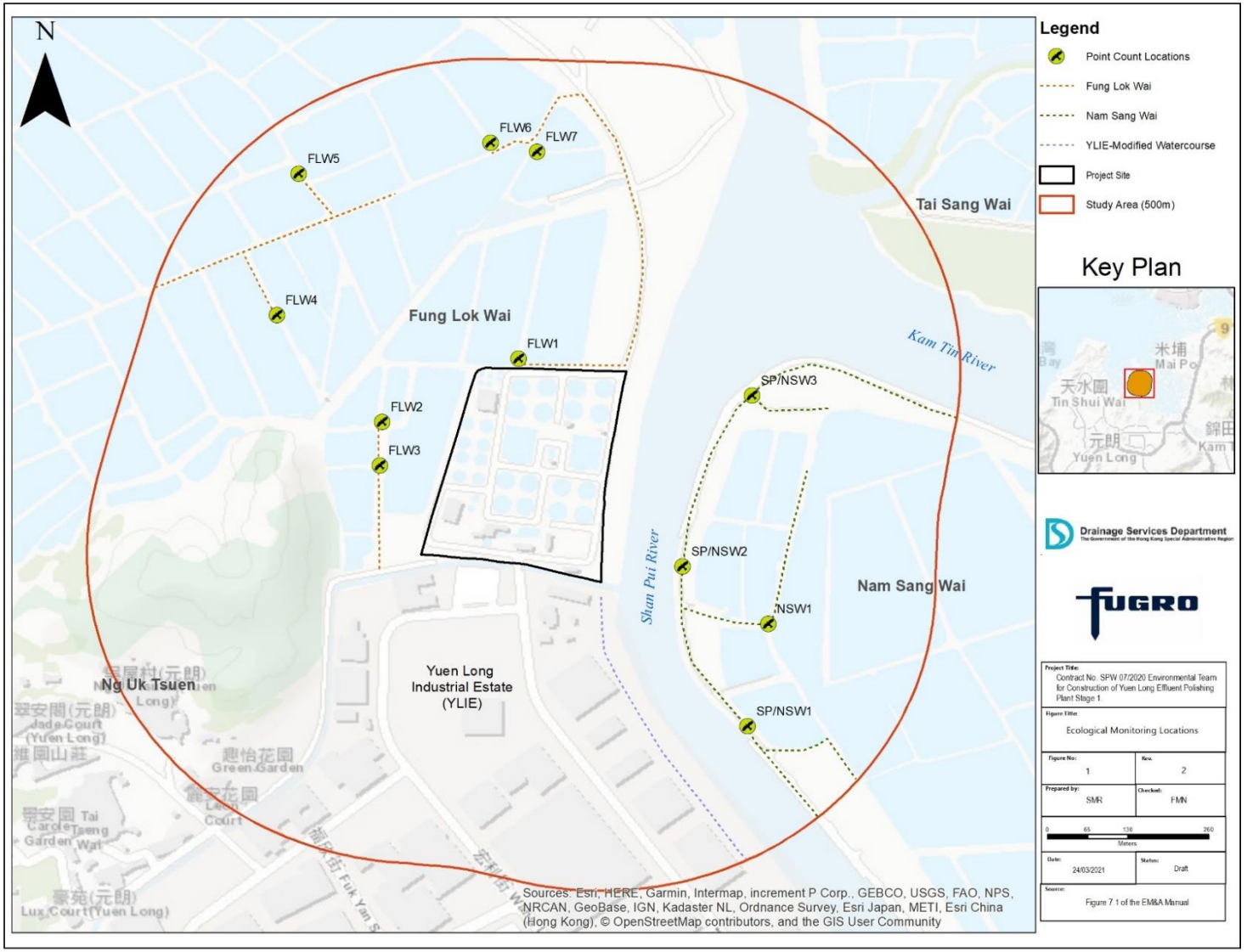
O.2.2 Active Night Roosting Site and Roosting Substrates

Appendix O.2.2a: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located east of the Project boundary observed on 21 April 2022 around 18:59

Appendix O.2.2b: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located northeast of the Project boundary observed on observed on 21 April 2022 around 18:59

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