



Monthly EM&A Report (August 2021)

0120/20/ED/0385 02

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

Ref.: DSDYLSTWEM00_0_0181(a)L.21

14 September 2021
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 (August 2021)

Reference is made to the Monthly EM&A Report (August 2021) by the ET with Fugro Document No. 0120/20/ED/0385 02 (the Report), which was received via e-mail dated 14 September 2021.

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,

For and on behalf of
Ramboll Hong Kong Limited



WONG Fu Nam
Independent Environmental Checker

c.c.

DSD
Fugro

Mr LAM Yu Wang
Mr YU Lap Bong, Alvin

Document Control

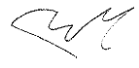


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Client Information

Client	Drainage Services Department
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Environmental Team

Initials	Name	Role	Signature
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EXECUTIVE SUMMARY

- i. This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. SPW 07/2020 "Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1". Drainage Services Department (DSD) has appointed Fugro Technical Services Limited (FTS) to undertake the Environmental Team services for the project and implement the EM&A works.
- ii. This is the 5th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 August 2021 to 31 August 2021. As informed by the Contractor, major activities in the reporting month were:
 - Pre-drill work at Primary Sedimentation Tanks (PST) by 1 drill rig;
 - Pre-drill work at CLP by 1 drill rig;
 - Temporary backfilling at PST no. 7 & 8;
 - Installation of DN1200 pipe and construction manhole for Zone 1 diversion;
 - Demolition of workshop and carpark by crusher and breaker;
 - Trial pit for Zone 2B & Zone 3; and
 - Overhaul work at Final Sedimentation Tanks (FST).
 - Site Investigation (SI) works for the Contamination Assessment Report (CAR) for Main Storeroom & Workshops and Mechanical Workshop.

Breaches of Action and Limit 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 active ardeid night roost. One active ardeid night roost site (ANR1) was observed within the Survey Area during the August 2021 monitoring period, while the other night roost site (ANR2) was not currently used by the ardeids.
- vi. No Action / Limit exceedance was recorded for the ecological monitoring of birds on 17 August 2021.

Land Contamination

- vii. Regular site inspection was carried out to ensure the recommended mitigation measures are properly implemented. No specific observation associated with land contamination was identified in the reporting month.

Complaint Log

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

Notifications of any Summons and Successful Prosecutions

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

Reporting Change

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

Future Key Issues

- xi. The main works will be anticipated in the next three months are as follow:
- Pre-drill work at CLP, Zone 2 & PST no. 8;
 - Demolition of Sludge Holding Tanks no. 3 & 4, Changing room, Waste Store area, PST no. 5-6 & FST no. 5-8;
 - Demolition of carpark;
 - Sheet pile installation at Inlet Works (IW), Aeration Tank;
 - Driven H-pile at IW & PST;
 - Zone 2 & 3 diversion work including construction temporary tank, chambers and pipe laying;
 - Removal of sonneratia in Sep & Oct;
 - Installation of instrumentation at Zone 2 & 3;
 - Construction of temporary transformer house; and
 - Construction of 11kV switch gear house and CLP substation.
 - Site Investigation (SI) works for the Contamination Assessment Report (CAR) for those proposed in the Supplementary Contamination Assessment Plan (SCAP) for some of the facilities in the plant, namely the Waste Storage Area, Surplus Activated Sludge (SAS) Thickener House, Wash Water Pumping Station, Transformer House 'A', and Screening Press House.

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1. INTRODUCTION

1.1 Background

- 1.1.1 The existing Yuen Long Sewage Treatment Works (YLSTW) is a secondary sewage treatment works, located at Yuen Long Industrial Estate serves Yuen Long Town, Yuen Long Industrial Estate and Kam Tin areas with a design capacity of 70,000 m³ per day. Based on the latest planning data, the volume of sewage generation from the YLSTW catchment is estimated to increase to 150,000 m³ per day after 20 years. In addition, since YLSTW has been operating for over 30 years and most of its facilities are of out-dated design and reaching the end of their design life, the environmental facilities of the plant will also be upgraded and hence improving the adjacent environment through upgrading the YLSTW to Yuen Long Effluent Polishing Plant (YLEPP). The Location of Proposed Yuen Long Effluent Polishing Plant is given in **Figure 1**.
- 1.1.2 YLSTW will be reconstructed in two stages to increase its capacity to 150,000 m³ per day. The proposed works, as Stage 1 of the project, will firstly increase the treatment capacity to 100,000 m³ per day. In the course of Stage 1 construction, about half of the existing facilities of YLSTW would be demolished, while the other half would be kept in operation to maintain the sewage treatment service for Yuen Long area.
- 1.1.3 The Project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) for which Environmental Impact Assessment (EIA) report and Environmental Monitoring and Audit (EM&A) Manual was approved by EPD (Register No.: AEIAR-220/2019) on 25 April 2019. The Environmental Permit (EP) (EP No. EP-565/2019) was issued by EPD on 26 April 2019.
- 1.1.4 Fugro Technical Services Limited (FTS) has been appointed as the Environmental Team (ET) by Drainage Services Department (DSD) to undertake the Environmental Team services for the Project and implement the EM&A works under the Contract No. DC/2019/10 Yuen Long Effluent Polishing Plant -Main Works for Stage 1 (hereinafter referred as "the Contract").
- 1.1.5 This is the 5th Monthly EM&A report to document the findings of site inspection activities and EM&A programme for this project from 1 August 2021 to 31 August 2021 (reporting period) and is submitted to fulfil Condition 3.4 of the EP and Section 12.4.1 of the EM&A Manual. According to Condition 4 of the EP, electronic reporting is provided on the internet website to facilitate public inspection of the report.

1.2 Project Organization

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

Table 1.1 – Contact Information of Key Personnel

Party	Position	Name	Telephone
Project Proponent (Drainage Services Department)	Engineer	Mr. Lam Yu Wang	2594 7473
Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Mr. Simon Yeung	9075 7172
	Senior Resident Engineer	Mr. Patrick Leung	6124 8838
Independent Environmental Checker (Ramboll Hong Kong Limited)	Independent Environmental Checker (IEC)	Mr. F.N. Wong	3465 2805
Contractor (Paul Y. - CREC Joint Venture)	Environmental Officer	Ms. Iris Ho	5490 5271
Environmental Team (Fugro Technical Services Limited)	Environmental Team Leader (ETL) until 11 August 2021	Mr. David Hung	3565 4371
	Environmental Team Leader (ETL) from 12 August 2021	Mr. Alvin Yu	3565 4373

1.3 Construction Programme and Activities

1.3.1 The site layout plan of the project is shown in **Figure 1**.

1.3.2 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:

- Pre-drill work at Primary Sedimentation Tanks (PST) by 1 drill rig;
- Pre-drill work at CLP by 1 drill rig;
- Temporary backfilling at PST no. 7 & 8;
- Installation of DN1200 pipe and construction manhole for Zone 1 diversion;
- Demolition of workshop and carpark by crusher and breaker;
- Trial pit for Zone 2B & Zone 3; and
- Overhaul work at Final Sedimentation Tanks (FST).

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

1.5 Status of Environmental Licences, Notification and Permits

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

Table 1.2 – Environmental Licenses, Notification and Permits Summary

Permit/ Notification/ License	Reference No	Valid From	Valid Till
Environmental Permit	EP-565/2019	26-Apr-2019	NA
Notification of Works under APCO	461616	6-Nov-2020	NA
Construction Waste Disposal Billing Account	7038933	20-Nov-2020	NA
Registration as Chemical Waste Producer under WDO	WPN5213-528-P2796-03	4-Feb-2021	NA
Construction Noise Permit	GW-RN0218-21	18-Apr-2021	17-Oct-2021
Construction Noise Permit (Percussive Pilling)	PP-RN0034-21	02-Jul-2021	31-Aug-2021
Construction Noise Permit	GW-RN0529-21	1-Aug 2021	31-Oct -2021
Construction Noise Permit (Percussive Pilling)	PP-RN0051-21	1-Sep-2021	30-Oct-2021
Admission Ticket for Disposal of Special Waste at Landfill	Admission Ticket No. 16225	3-May-2021	2-Nov-2021
Admission Ticket for Disposal of Special Waste at Landfill	Admission Ticket No. 16331	25-Jun-2021	31-Oct-2021
Water Pollution Control Ordinance (CAP. 358) Licence pursuant to Section 20	WT00038102-2021	4-Aug-2021	31-Aug-2026
Marine Dumping Permit	Ref. Number: 468850, 468851 and 468852	Under Application	NA

2. AIR QUALITY

2.1 Monitoring Requirement

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

2.2 Monitoring Equipment

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

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

2.2.3 The model of the air quality monitoring equipment used is summarized in **Table 2.1**.

Table 2.1 – Air Quality Monitoring Equipment

Item	Location	Brand	Model	Equipment	Serial No.
1	AM1	Sibata	Model LD-5R	SIBATA LD-5R Digital Dust Indicator	761105
2	AM2		Model LD-5R		882149
3		Global Water	GL500-7-2	Wind Station	2012000974

2.3 Monitoring Methodology for Direct Reading Dust Meter

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

Measuring Procedures

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

Equipment Calibration

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

2.4 Maintenance and Calibration for Direct Reading Dust Meter

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

2.5 Monitoring Locations

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

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

Table 2.2 – Air Quality Monitoring Location

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

2.6 Monitoring Results

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

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

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

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

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

Table 2.3 – Summary of Air Quality Monitoring Results

Monitoring Station	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
1-hour TSP				
AM1	33	17-54	291	500
AM2	34	17-45	296	

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

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

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

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

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

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

Monitoring Station	EIA ID	Predicted Maximum Hourly Average TSP Concentration ($\mu\text{g}/\text{m}^3$)	Maximum 1-hr TSP Monitoring Results in August 2021 ($\mu\text{g}/\text{m}^3$)
1-hour TSP			
AM1	ASR09	205-451	54
AM2	ASR11		45

Notes:

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

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

3. NOISE

3.1 Monitoring Requirement

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

3.2 Monitoring Equipment

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

3.2.2 The model of the noise monitoring equipment used is summarized in **Table 3.1**.

Table 3.1 – Construction Noise Monitoring Equipment

Item	Brand	Model	Equipment	Serial No.
1	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	0873599
2	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	1488304
3	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	4358251
4	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	5230736
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 conditions during the monitoring month are provided in **Appendix K**.

3.7.5 The noise monitoring data are summarized in **Table 3.4**. Detailed monitoring data are presented in **Appendix F**.

Table 3.4 – Summary of Construction Noise Monitoring Results

Time Period	Noise Monitoring Stations	L_{eq} (30min) dB(A) (Range)	Action Level	Limit Level dB(A)
0700-1900 hrs on normal weekdays	CM1	52-54	When one documented complaint is received	75
	CM2	54-58		75
	CM3	59-68		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 noise impact monitoring have been set and are presented in **Appendix C**.

3.7.7 The Event and Action Plan for 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 August 2021 L_{eq} (30min) dB(A)
CM1	NSR1	72	54
CM2	NSR2	74	58
CM3	NSR3	75	68

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)	19A105807
					19A105808
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, Horizontal, 3.2L / 4.2L	NA	NA	NA

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

4.3 Equipment Calibration

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

4.4 Monitoring Parameters

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

Table 4.2 – Monitoring Parameters and Frequency

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

4.5 Monitoring Operation

- 4.5.1 The position of water monitoring station will be located by the Differential Global Positioning System (DGPS) or equivalent. The water depth of water monitoring station will be determined by the echo sounder affixed to the bottom of the monitoring vessel or a portable echo sounder depth detector.
- 4.5.2 Once the location and water depth are confirmed, water samples shall be collected at 3 depths (1m below the surface, mid-depth, and 1m above the seabed) of the water column at each location, except where water depth is less than 6m, the mid-depth will be omitted and if the water depth is less than 3m only the mid-depth station will be monitored. Duplicate marine samples will be collected in each sampling event. The water samples are decanted from the water sampler into the water sample bottles. The bottles are labelled, tightly sealed, placed into a cool-box and packed with ice ready for delivery to the laboratory.

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

4.6 Laboratory Measurement / Analysis

Background

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

Quality Assurance / Quality Control

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

For each batch of 20 samples:

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

4.7 Monitoring Locations

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

Table 4.3 – Coordinates of Water Quality Monitoring Locations

Sampling Location		Easting	Northing
M1	Serve as the control station at upstream location of construction site (Flood Tide) / Serve as the impact station at downstream location of construction site (Ebb Tide)	821 086	836 656
M2	Serve as the impact station at downstream location of construction site (Flood Tide)/ Serve as the control station at upstream location of construction site (Ebb Tide)	820 996	836 246
M3	Serve as the impact station at downstream location of construction site (Flood Tide) / Serve as the control station at upstream location of construction site (Ebb Tide)	820 645	836 335

4.8 Monitoring Results

- 4.8.1 The schedule of water quality monitoring in reporting month is provided in **Appendix E**.
- 4.8.2 Impact water quality monitoring was conducted at all designated monitoring stations in the reporting month. Impact water quality monitoring results and graphical presentations are provided in **Appendix F**.
- 4.8.3 The weather conditions during the monitoring are provided in **Appendix K**.
- 4.8.4 Number of 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**.

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 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 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 Survey focused on the two active night roosts within the Survey Area 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 one 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 20 August 2021.

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 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 18:20, 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 20 August 2021 and started around 17:51 (one hour before sunset) on a low tide condition. During the pre-roost period (PRP), the period when avian individuals (ind.) gather first before flying into a night roost, individuals of Eastern Cattle Egret *Bubulcus coromandus* (5 ind.) and Little Egret *Egretta garzetta* (7 ind.) were observed in pre-roost aggregate (PRA) around 17:56 on the exposed mudflat east side (ANR1) of the Project boundary. Additionally, individuals of both species (Eastern Cattle Egret = 4 ind.; and Little Egret = 12 ind.) also exhibited PRA at the exposed mudflat northeast (ANR2) of the Project boundary at the same time (17:56) (**Table 5.2**). For the final night roost at around 18:20, Chinese Pond Heron (16 ind.) were observed at ANR1 while no night roost was observed at ANR2. No disturbances (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: 20 August 2021		Sunset Time: 18:51		Tidal Condition: Low Tide	
Pre-roost Period			Final roost Period		
Time of Return:	Eastern Cattle Egret <i>Bubulcus coromandus</i> and Little Egret <i>Egretta garzetta</i> (17:56)		Time of Return:	Chinese Pond Heron <i>Ardeola bacchus</i> (18:20)	
Parameters	Location		Parameters	Location	
	ANR1	ANR2		ANR1	ANR2
Pre-roost Aggregation (Y/N):	Y	Y	Substrate Species:	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>
Substrate Species:	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>	Substrate Height (m):	Approx. 5 m.	Approx. 3-4 m.
Substrate Height (m):	Approx. 5 m.	Approx. 3-4 m.			
Ardeid Species Composition	Abundance (individuals)		Ardeid Species Composition	Abundance (individuals)	
	ANR1	ANR2		ANR1	ANR2
Eastern Cattle Egret <i>Bubulcus coromandus</i> *	5	4	Chinese Pond Heron <i>Ardeola bacchus</i>	16	-
Little Egret <i>Egretta garzetta</i> *	7	12			
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

*: individuals aggregated on the exposed mudflat

-: not recorded

5.1.3.2 Noise Monitoring

Noise monitoring activities were conducted on 20 August 2021 in concurrence with the construction phase monthly monitoring of the pre-identified active night roosts. Noise monitoring started at 18:20 and lasted for 30 minutes, until 18:50.

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	18:20	44.9	65.5 dB(A) ¹	72.2 dB(A) ²
	NMS2	18:20	46.3		

Notes:

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

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

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

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

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

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

5.1.5 Summary

5.1.5.1 Status and Location of Any Active Ardeid Night Roost

One active ardeid night roost site (ANR1) was observed within the Survey Area during the August 2021 monitoring period. This roost was located at the mangrove strip in the east portion of the Project boundary. This was used by individuals of Chinese Pond Heron. The other night roost site (ANR2) was not used during the period.

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) 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 include 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 17 August 2021 (day time survey) which started around 07:30. The survey overlooking the mudflats and mangroves in the Shan Pui River was concurrently conducted on the same date during the low tide (generally 1.5m or below) period at around 11:30. 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 was compared to the results of the corresponding month of the baseline data.

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

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

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

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

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

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

5.2.3 Monitoring Results

Results of the avifauna survey on the different habitats within the monitoring area using the transect count and point count methods as conducted last 17 August 2021 (day time survey) are presented in **Sections 5.2.3.1** and **5.2.3.2** while results for the surveys overlooking the mudflats and mangroves in the Shan Pui River, with monitoring activities conducted on similar date during the low tide (generally 1.5m or below) period which also started around 11:30 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 422 avifauna ind. was recorded in the monitoring area during the August 2021 monitoring period, of which 185 ind. were recorded from the point count method and 237 ind. from the transect walk method. Relative to the August 2017 baseline data, current increases in total abundances were observed in both point count, and transect walk methods. These findings are summarized in **Table 5.5**.

Table 5.5 – Abundance of all Avifauna Species

Abundance of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	Aug-17	Aug-21	Remarks
P1	FLW1	10	24	+
P2	FLW2	11	9	-
P3	FLW3	14	9	-
P4	FLW4	8	5	-
P5	FLW5	23	8	-
P6	FLW6	5	21	+
P7	FLW7	6	11	+
P9	SP/NSW3	16	17	+
P10	SP/NSW2	9	10	+
P11	NSW1	47	32	-
P12	SP/NSW1	11	39	+
Total		160	185	+
Mean		15	17	+
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Aug-17	Aug-21	Remarks
Fung Lok Wai	FLW	135	121	-
Nam Sang Wai	NSW	0	65	+
YLIE-CW	YLIE-CW	5	51	+
Total		140	237	+
Mean		47	79	+

5.2.3.1.2 Avifauna Species of Conservation Importance

Of the 422 avifauna individuals recorded in the monitoring area during the August 2021 monitoring period, 201 ind. (point count method = 73 ind.; transect walk method = 128 ind.) were of conservation importance. With reference to August 2017 data, current results showed increases in total abundances of both point count method and transect walk method. These findings are summarized in **Table 5.6**.

Table 5.6 – Abundance of Species of Conservation Importance

Abundance of Species of Conservation Importance				
Point Count Method				
EIA Report ID	EM&A Manual ID	Aug-17	Aug-21	Remarks
P1	FLW1	5	10	+
P2	FLW2	1	1	=
P3	FLW3	5	0	-

Abundance of Species of Conservation Importance				
P4	FLW4	5	0	-
P5	FLW5	11	3	-
P6	FLW6	5	12	+
P7	FLW7	1	6	+
P9	SP/NSW3	13	12	-
P10	SP/NSW2	3	5	+
P11	NSW1	7	5	-
P12	SP/NSW1	10	19	+
Total		66	73	+
Mean		6	7	+
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Aug-17	Aug-21	Remarks
Fung Lok Wai	FLW	49	56	+
Nam Sang Wai	NSW	0	30	+
YLIE-CW	YLIE-CW	5	42	+
Total		54	128	+
Mean		18	43	+

5.2.3.2 Diversity (Species Richness¹ and Shannon Diversity Index²)

5.2.3.2.1 All Avifauna Species

A total of 29 avifauna species (species richness) was recorded during the August 2021 monitoring period, of which both the point count method, and transect walk method had 23 recorded species each. Relative to the baseline data (point count method = 26 spp.; transect walk method = 30 spp.), decreases in total species richness were noted. In terms of Shannon diversity index (H'), decreases from baseline reference values were also observed both in point count method (t-value = 1.05; t-crit = 1.97; p-value = 0.2954; α = 0.05), and transect walk method (t-value = 1.47; t-crit = 1.97; p-value = 0.1439; α = 0.05), however, these decreases were not significant. Details of these findings are summarized in **Table 5.7** and **Appendix F.7.1**.

Table 5.7 – Shannon Diversity Index Value of all Avifauna Species

Shannon Diversity Index Value of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	Aug-17	Aug-21	Remarks
P1	FLW1	1.75	1.46	-
P2	FLW2	1.24	1.52	+

¹ actual number of species

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

Shannon Diversity Index Value of all Avifauna Species				
P3	FLW3	1.97	0.64	-
P4	FLW4	1.91	0.67	-
P5	FLW5	1.13	0.66	+
P6	FLW6	1.05	1.53	-
P7	FLW7	1.24	1.34	+
P9	SP/NSW3	1.66	1.87	+
P10	SP/NSW2	1.89	0.94	-
P11	NSW1	1.57	1.82	+
P12	SP/NSW1	0.3	2.02	+
Overall H'		2.80	2.70	-
Species Richness		26	23	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Aug-17	Aug-21	Remarks
Fung Lok Wai	FLW	2.84	2.54	-
Nam Sang Wai	NSW	**	2.27	+
YLIE-CW	YLIE-CW	0.67	1.42	+
Overall H'		2.87	2.72	-
Species Richness		30	23	-

Note:

** no species recorded

5.2.3.2.2 Avifauna Species of Conservation Importance

Of the 29 species of avifauna identified during the August 2021 monitoring period, six species of conservation importance were identified each from the point count method, and transect walk method. Relative to the baseline values in August 2017, the number of species with conservation importance recorded from the point count method decreased by one species while the same value was maintained in the transect walk method for both periods. In terms of H', no significant decline (t-value = 1.96; t-crit = 1.98; p-value = 0.0513; $\alpha = 0.05$) was observed from the point count method, from H' = 1.68 in August 2017 to H' = 1.44 of the current period. Furthermore, an increase in H' was observed during the current period (H' = 1.60) with respect to the baseline value of H' = 1.26. Details of these findings are summarized in **Table 5.8** and **Appendix F.7.1**.

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	Aug-17	Aug-21	Remarks
P1	FLW1	1.05	0	-

Shannon Diversity Index Value of Species with Conservation Importance				
P2	FLW2	0	0	=
P3	FLW3	0.95	**	-
P4	FLW4	1.33	**	-
P5	FLW5	0.3	0	-
P6	FLW6	1.05	0.68	-
P7	FLW7	0	0.64	+
P9	SP/NSW3	1.2	1.59	-
P10	SP/NSW2	0.64	0	-
P11	NSW1	0.8	0	-
P12	SP/NSW1	0	1.36	+
Overall H'		1.68	1.44	-
Species Richness		7	6	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Aug-17	Aug-21	Remarks
Fung Lok Wai	FLW	1.10	1.21	+
Nam Sang Wai	NSW	**	1.22	+
YLIE-CW	YLIE-CW	0.67	1.02	+
Overall H'		1.26	1.60	+
Species Richness		6	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, mangrove 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 wetland habitats were less utilized by avifauna communities as evident with the very low (VL) abundances in these areas. With regards to species richness, generally very low (VL) number of species was also noted in the different wetland habitats except in the Active Ponds adjacent to Project site in Fung Lok Wai and Active Ponds North to Nullah 2 in Fung Lok Wai with low to moderate (L-M) species richness; and Active and Inactive Ponds in Nam Sang Wai with moderate (M) species richness. (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	VL
	Shan Pui River adjacent to Project site	VL	VL
	Upper course of Shan Pui River along YLIE	VL-L	VL
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai	VL-L	L-M
	Active Ponds North to Nullah 2 in Fung Lok Wai	L	L-M
	Inactive Ponds in Fung Lok Wai	VL	VL
	Active and Inactive Ponds in Nam Sang Wai	VL-L	M
Mangrove	Mangrove within Assessment Area	VL	VL
Reedbed	Reedbed in Nam Sang Wai	VL	VL

Notes:

- Abundance of avifauna species of conservation importance amongst wetland habitats within the assessment area: VL = Very Low (~<50 individuals); L = Low (~100 individuals); M = Moderate (~300 individuals); H = High (~500 individuals), VH = Very High (>700 individuals)
 - Species richness (total number of species) 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)
- Source: approved EIA Report (AEIAR-220/2019)

5.2.3.3.2 Avifauna Species of Conservation Importance

Majority of the wetland habitats were noted with very low abundances (VL) of species with conservation importance during the current monitoring period which then indicated a generally very low utilization of these areas. In terms of species richness, majority of the wetland habitats were also utilized by very low number (VL) of species (Table 5.10).

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

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

	Active and Inactive Ponds in Nam Sang Wai (P4)	VL	VL-L
Mangrove	Mangrove within Assessment Area	VL	VL
Reedbed	Reedbed in Nam Sang Wai	VL	VL

Notes:

- Abundance of avifauna species of conservation importance amongst wetland habitats within the assessment area: VL = Very Low (~ <50 individuals); L = Low (~100 individuals); M = Moderate (~300 individuals); H = High (~500 individuals), VH = Very High (>700 individuals)
- Species richness (total number of species) of conservation important species amongst wetland habitats within the assessment area:
VL = Very Low (≤ 5 species); L = Low (~10 species); M = Moderate (~15 species); H = High (~20 species), VH = Very High (>25 species)
Source: approved EIA Report (AEIAR-220/2019)

5.2.3.3 Overwintering Avifauna Species

Several species with winter visitor and passage migrant (3 spp.) status; and winter visitor with resident (2 spp.) status were observed during this monitoring period. However, as the current monitoring period covered the early autumn season, it was likely that these individuals were just either passage migrants or residents. Hence, no overwintering species that utilized the different wetland habitats was recorded during the period.

5.2.3.4 Noise Levels

Noise levels L_{Aeq} (30 min) recorded on 17 August 2021 (daytime) from each of the point count locations during the ecological bird monitoring are shown in **Table 5.11**.

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

Frequency and Period	Location	Daytime (17/08/2021)	
		Start Time	L_{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1	08:35	50.3
	FLW2	08:10	50.1
	FLW3	08:10	49.9
	FLW4	10:00	41.4
	FLW5	09:20	42.5
	FLW6	08:50	61.4
	FLW7	08:50	62.8
	SP/NSW3	11:30	54.9
	SP/NSW2	11:30	55
	NSW1	12:00	51.3
	SP/NSW1	12:00	53.9

Note:

- Close to the roadsides with low to moderate traffic. Passing vehicles, barking dogs, and noisy insects were noted during the monitoring period.

6. LANDSCAPE AND VISUAL

6.1 Audit Requirements

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

6.2 Results and Observations

6.2.1 To monitor and audit the implementation of landscape and visual mitigation measures, four weekly landscape and visual site audits were carried out on 4, 10, 18 and 25 August 2021.

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 13 August 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 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 in the next reporting month.

8. SITE INSPECTION AND AUDIT

8.1 Site Inspection

- 8.1.1 Site audits were carried out by ET on weekly basis to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.
- 8.1.2 In the reporting month, four site inspections were carried out on 4, 10, 18 and 25 August 2021.
- 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 waste generated by the construction and disposal ground 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)

- 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 containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.

9. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

9.1 Environmental Exceedance

- 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.
- 9.1.5 No Action / Limit exceedance was recorded for the ecological monitoring of birds on 17 August 2021.

9.2 Complaints, Notification of Summons and Prosecution

- 9.2.1 No environmental complaint, notification of summons and successful prosecution were received in the reporting month.
- 9.2.2 Cumulative complaint log, summaries of complaints, notification of summons and successful prosecutions are presented in **Appendix L**.

10. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE

10.1 Implementation Status

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

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

Table 10.1 – Summary of EP Submissions Status

EP Condition (EP-565/2019)	Submission	Submission Date
Condition 2.14	Contamination Assessment Report (CAR) for Main Storeroom & Workshops	The CAR for Main Storeroom & Workshops was submitted to EPD on 13 Aug 2016. EPD had comments on 9 Sep 2021. CAR will upload to the Project Website when EPD’s comments are addressed.

11. FUTURE KEY ISSUES

11.1 Construction Programme for the Next Three Month

- Pre-drill work at CLP, Zone 2 & PST no. 8;
- Demolition of Sludge Holding Tanks no. 3 & 4, Changing room, Waste Store area, PST no. 5-6 & FST no. 5-8;
- Demolition of carpark;
- Sheet pile installation at Inlet Works (IW), Aeration Tank;
- Driven H-pile at IW & PST;
- Zone 2 & 3 diversion work including construction temporary tank, chambers and pipe laying;
- Removal of sonneratia in Sep & Oct;
- Installation of instrumentation at Zone 2 & 3;
- Construction of temporary transformer house; and
- Construction of 11kV switch gear house and CLP substation.

11.2 Key Issues for the Coming Month

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

11.3 Monitoring Schedules for the Next Three Month

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

12. CONCLUSION AND RECOMMENDATION

12.1 Conclusions

- 12.1.1 1-hour TSP impact monitoring were 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 were 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 were 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. Of the two confirmed ardeid night roosts during the pre-construction survey, only ANR 1 was observed to be active. 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 during this period.
- 12.1.6 Four environmental site inspections were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.
- 12.1.7 Four landscape and visual site audits were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.
- 12.1.8 Referring to the Contractor's information, no environmental complaint, notification of summons and successful prosecution was received in the reporting month.

12.2 Comment and Recommendations

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

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

Air Quality Impact

- The Contractor is recommended to increase watering for dust suppression during demolition of workshop.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Provide mitigation to prevent direct discharge of silt-laden water into the storm drain near the boot cleaning basin.

Chemical and Waste Management

- Drip tray should be provided for the chemical as mitigation to prevent accidental spillage.

Land Contamination

- No specific observation was identified in the reporting month.

Ecological Impact

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

Landscape and Visual Impact

- No specific observation was identified in the reporting month.

Hazard to Life

- No specific observation was identified in the reporting month.

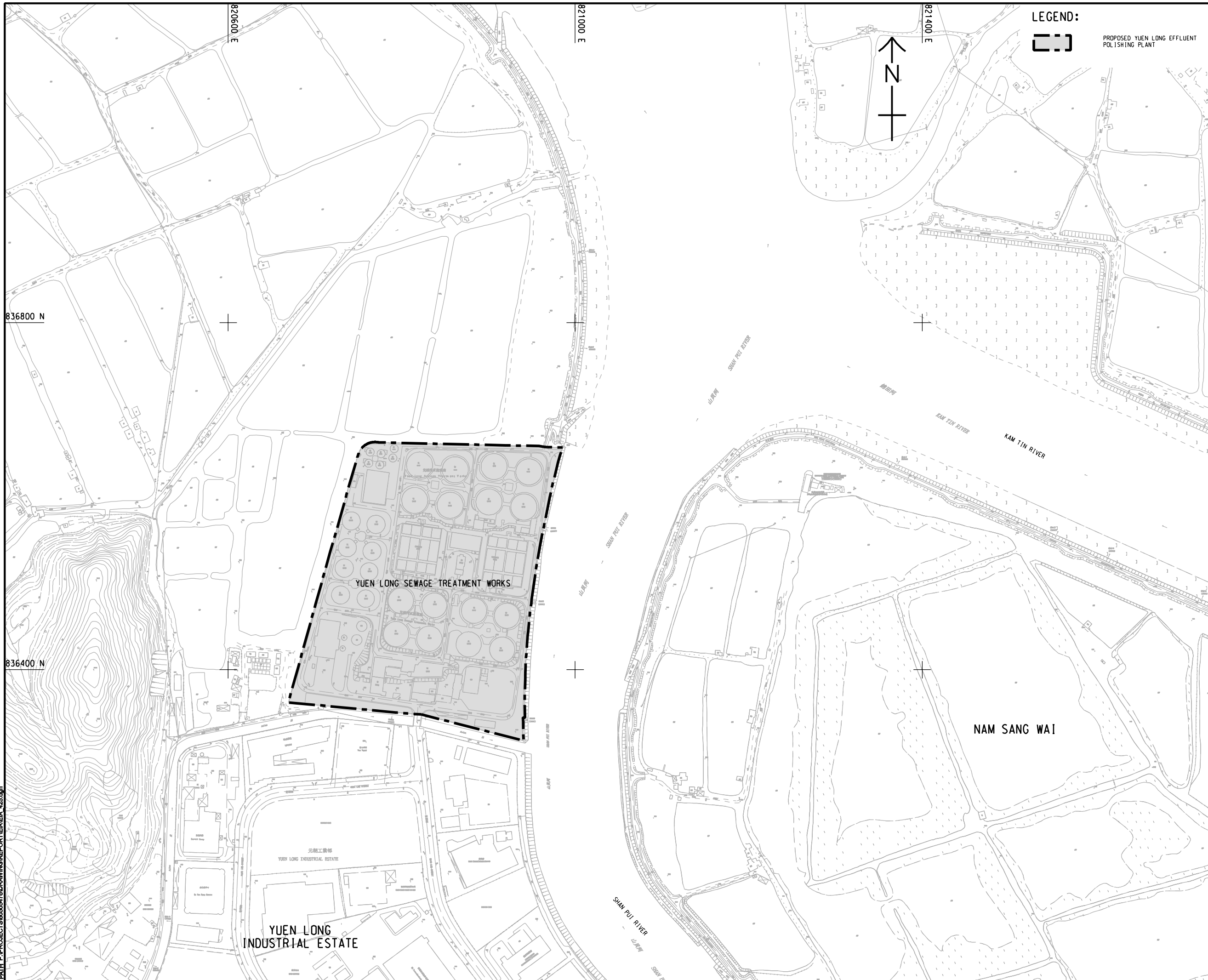
Permit/ Licenses


- No specific observation was identified in the reporting month.

Figure 1

Location of Proposed Yuen Long Effluent
Polishing Plant

Plot File by: Song YN 2018/02/27
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 Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



LEGEND:
 PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

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

CLIENT
 渠務署
 Drainage Services Department

CONSULTANT
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分判工程顧問公司

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE
 1:2000
KEY PLAN

DIMENSION UNIT
 METRES

PROJECT NO.
 60505476

CONTRACT NO.
 CE 3/2015 (DS)

SHEET TITLE
 LOCATION OF PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

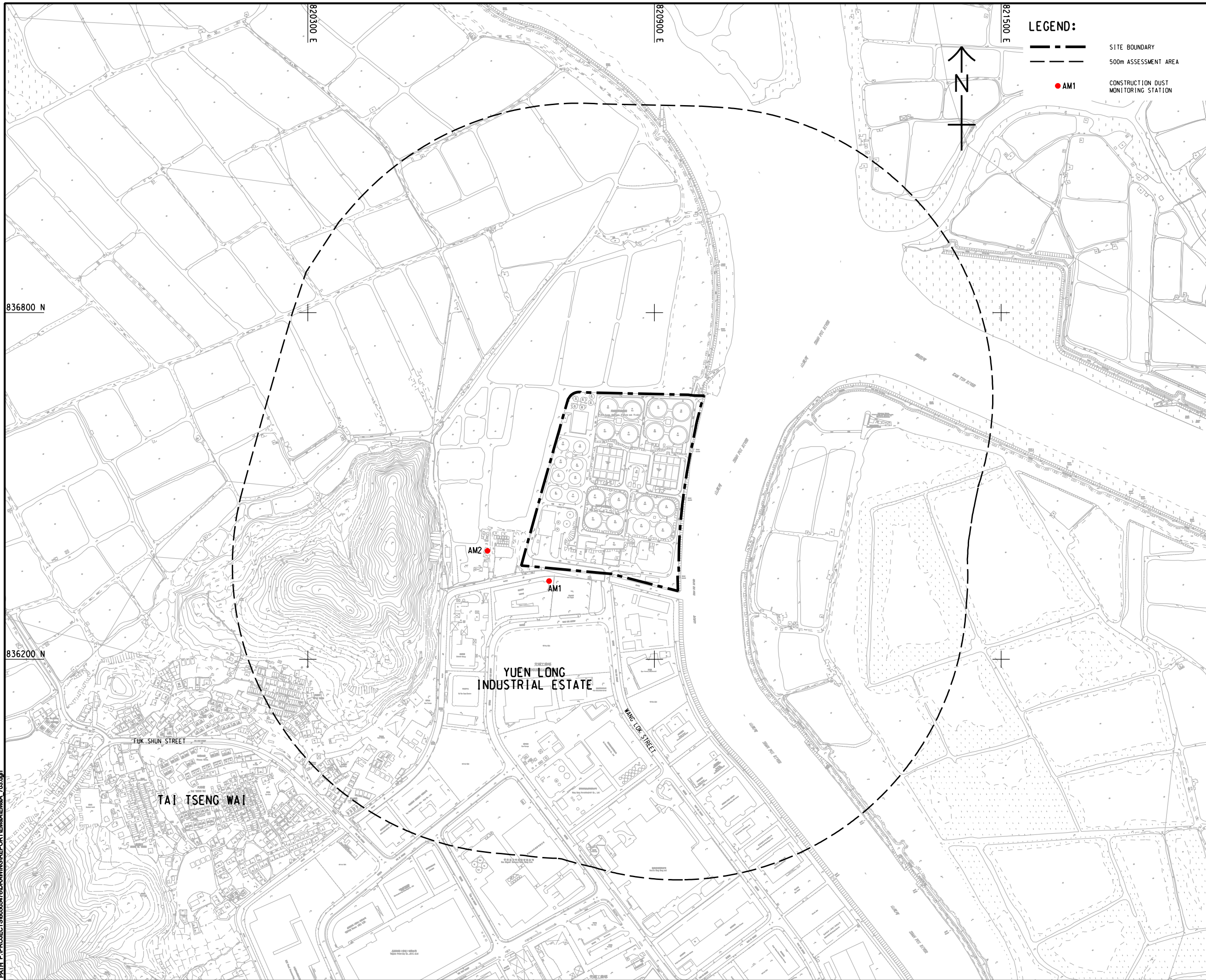
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Figure 2

Air Quality Monitoring Locations

ISO A1 594mm x 841mm
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 Checked:
 Designer:
 Project Management Initials:
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 836200 N
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LEGEND:

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



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

CLIENT
 業主
渠務署
 Drainage Services Department

CONSULTANT
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號	日期	內容摘要	核對

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SCALE
 比例
 A1 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60505476

CONTRACT NO.
 合約編號
 CE 3/2015 (DS)

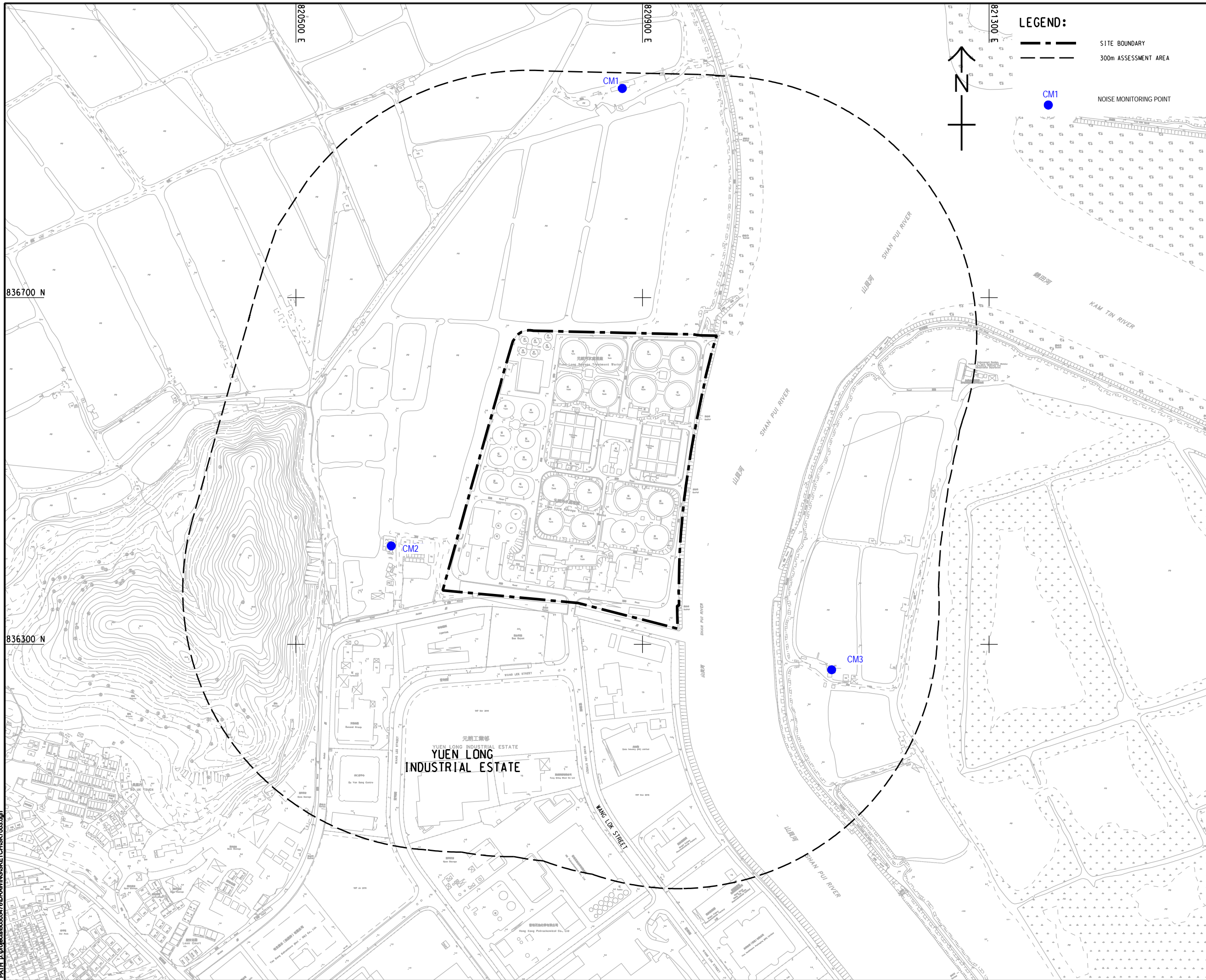
SHEET TITLE
 圖紙名稱
 LOCATION OF CONSTRUCTION DUST MONITORING STATIONS

SHEET NUMBER
 圖紙編號




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Figure 3

Noise Monitoring Locations



LEGEND:

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



PROJECT
项目

YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

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業主

 渠務署
Drainage Services Department

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METRES

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PROJECT NO.
項目編號

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CONTRACT NO.
合約編號

CE 3/2015 (DS)

SHEET TITLE
圖紙名稱

LOCATIONS OF NOISE MONITORING POINTS

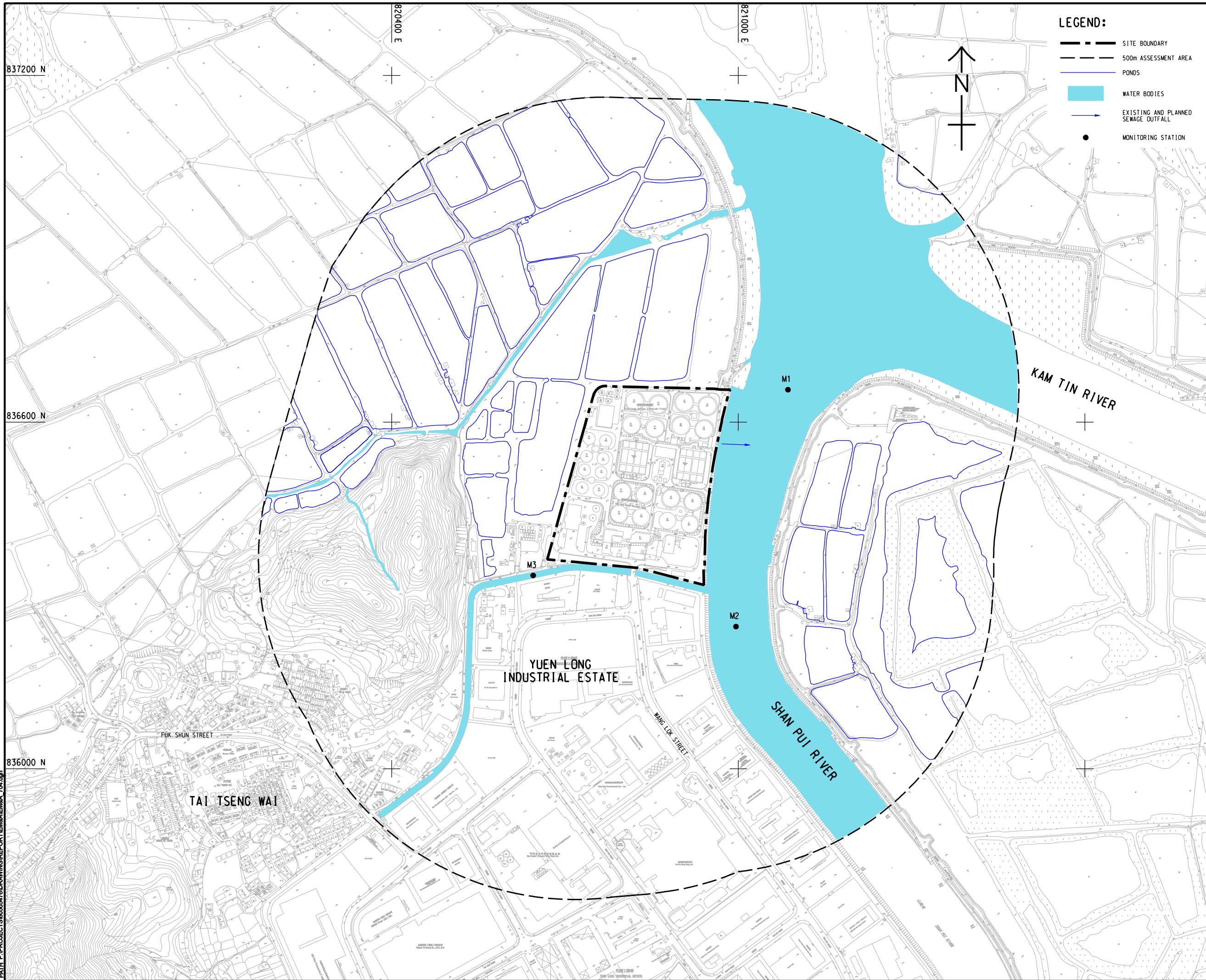
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Figure 4

Water Quality Monitoring Locations

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 Project Management Initials:
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LEGEND:

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



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YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

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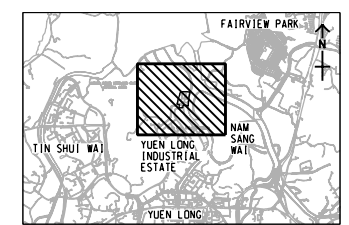
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PROJECT NO.
 項目編號
 60505476

CONTRACT NO.
 合約編號
 CE 3/2015 (DS)

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

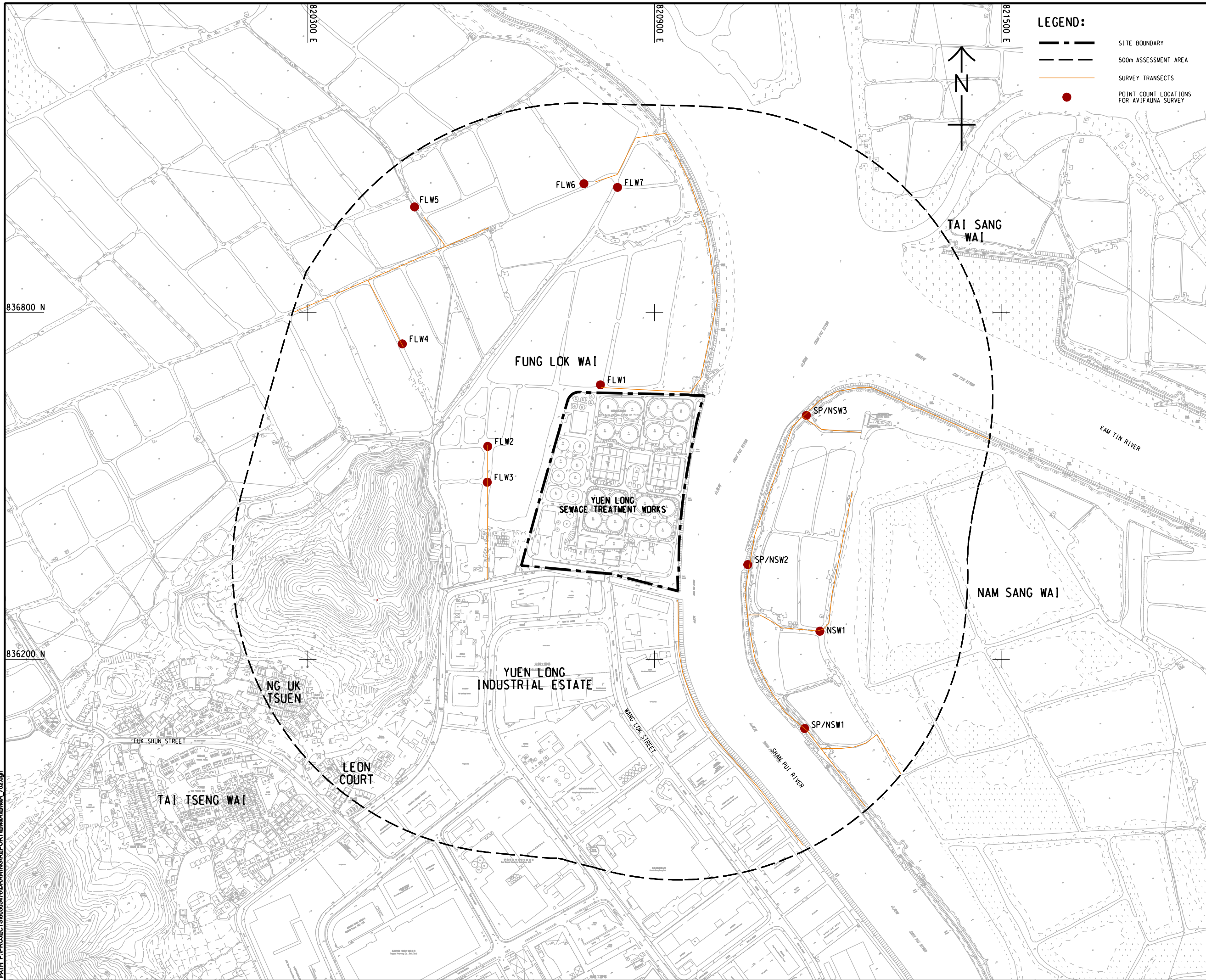
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Figure 5

Ecology Monitoring Locations

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 Designer:
 Project Management Initials:
 836800 N
 836200 N
 Pld File by: ZENGFY 2018/05/30
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LEGEND:

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



AECOM

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YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

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DIMENSION UNIT
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PROJECT NO.
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CONTRACT NO.
 合約編號
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SHEET TITLE
 圖紙名稱
 ECOLOGICAL MONITORING LOCATIONS

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Appendix A

Construction Programme

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	2022												2023												2024												2025												2026																																																																																																																																																																																																																																															
								Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																																																																																																																																																																																																																																																								
YL Effluent Polishing Plant - Main Works Stage 1 - Detailed Works Programme								2202																																																27-Oct-20 A																																																09-Nov-27																																																30-Aug-21																																																09-Nov-27																																																0																																															
UPDATE	Data Date DWP Revision 5	0		31-Aug-21 A		07-Sep-21		Data Date DWP Revision 5																																																																																																																																																																																																																																																																																															
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CD1	Contract Date	0	27-Oct-20 A		31-Aug-21																																																																																																																																																																																																																																																																																																		
CD2	Starting Date	0	09-Nov-20 A		31-Aug-21																																																																																																																																																																																																																																																																																																		
CD3	Contract Completion	0	09-Nov-26		09-Nov-26		0																																																																																																																																																																																																																																																																																																
CD4	Establishment Period (12 months)	0	09-Nov-27		09-Nov-27		0																																																																																																																																																																																																																																																																																																
CD5	Defect Date (12 months)	0	09-Nov-27		09-Nov-27		0																																																																																																																																																																																																																																																																																																
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ADP1	Portion 1 (sd)	0	09-Nov-20 A		03-Sep-21																																																																																																																																																																																																																																																																																																		
ADWA1	Work Area WA1 (sd)	0	09-Nov-20 A		04-Jun-27																																																																																																																																																																																																																																																																																																		
ADWA2	Work Area WA2 (sd) (new site possession) validity for 12 months and subject to renewal	365	05-Mar-21 A	05-Mar-22*	30-Aug-21	04-Mar-22	0	Work Area WA2 (sd) (new site possession) validity for 12 months and subject to renewal																																																																																																																																																																																																																																																																																															
ADP2	Portion 2 (sd+211d)	0	08-Jun-21 A		08-Nov-21																																																																																																																																																																																																																																																																																																		
ADP5	Portion 5 (sd+944d)	0	11-Jun-23*		11-Jun-23		0																																																																																																																																																																																																																																																																																																
ADP3	Portion 3 (sd+1218d)	0	11-Mar-24*		10-Mar-24		0																																																																																																																																																																																																																																																																																																
ADP4	Portion 4 (sd+1599d)	0	27-Mar-25*		27-Mar-25		0																																																																																																																																																																																																																																																																																																
Contract Key Dates								1765																																																07-Apr-21 A																																																05-Feb-26																																																08-Jan-24																																																09-Nov-27																																																641																																															
CKD1	KD1 - Completion of Noise Barriers (sd+150d) (8 Apr 21)	0		07-Apr-21 A		09-Nov-27		Completion of Noise Barriers (sd+150d) (8 Apr 21)																																																																																																																																																																																																																																																																																															
CKD2	KD2 - Erection of Bird Curtain in vicinity of Mainstream Bioreactor, Ancillary facilities & Tertiary Treatment(6 May 21)	0		06-May-21 A		09-Nov-27		Erection of Bird Curtain in vicinity of Mainstream Bioreactor, Ancillary facilities & Tertiary Treatment(6 May 21)																																																																																																																																																																																																																																																																																															
CKD10	KD10 - Completion of Civil & Structural works of roof floor of sludge thickening bldg(8Jan24)	0		08-Jan-24*		08-Jan-24	0	Completion of Civil & Structural works of roof floor of sludge thickening bldg(8Jan24)																																																																																																																																																																																																																																																																																															
CKD3	KD3 - Early Commissioning of Inlet Works100,000m3/d at ADWF,PST>54,000m3/d at ADWF, Civil, struct.,E&M & BS (11Mar 24)	0		11-Mar-24*		11-Mar-24	0	Early Commissioning of Inlet Works100,000m3/d at ADWF,PST>54,000m3/d at ADWF, Civil, struct.,E&M & BS (11Mar 24)																																																																																																																																																																																																																																																																																															
CKD5	KD5 - Completion of Civil & Structural works of R/F of Inlet works (separate contractor to install PV Panels) (8 Jan 25)	0		08-Jan-25*		08-Jan-25	0	Completion of Civil & Structural works of R/F of Inlet works (separate contractor to install PV Panels) (8 Jan 25)																																																																																																																																																																																																																																																																																															
CKD8	KD8 - Completion of Civil & Structural works of Sludge Dewatering Building (separate contractor E&M, BS & PV) (8 Jul 25)	0		08-Jul-25*		08-Jul-25	0	Completion of Civil & Structural works of Sludge Dewatering Building (separate contractor E&M, BS & PV) (8 Jul 25)																																																																																																																																																																																																																																																																																															
CKD9	KD9 - Completion of Civil & Structural works of Administration Building (separate contractor E&M & BS)(6 Nov 25)	0		06-Nov-25*		06-Nov-25	0	Completion of Civil & Structural works of Administration Building (separate contractor E&M & BS)(6 Nov 25)																																																																																																																																																																																																																																																																																															
CKD7	KD7 - Completion of Civil & structural works of R/F of Mainstream Bioreactor system and Ancillary facilities (8 Jan 26)	0		08-Jan-26*		08-Jan-26	0	Completion of Civil & structural works of R/F of Mainstream Bioreactor system and Ancillary facilities (8 Jan 26)																																																																																																																																																																																																																																																																																															
CKD4	KD4 - Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at AWDF (5 Feb 26)	0		05-Feb-26*		05-Feb-26	0	Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at AWDF (5 Feb 26)																																																																																																																																																																																																																																																																																															
CKD6	KD6 - Completion of Civil & Structural works of R/F of PST (separate contractor to install PV Panels) (5 Feb 26)	0		05-Feb-26*		05-Feb-26	0	Completion of Civil & Structural works of R/F of PST (separate contractor to install PV Panels) (5 Feb 26)																																																																																																																																																																																																																																																																																															
Contract Section Completion								1494																																																06-Oct-22																																																08-Nov-26																																																06-Oct-22																																																08-Nov-26																																																0																																															
CSC1	Section 1- Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.) (sd+696d=06OCT2022)	0		06-Oct-22*		06-Oct-22	0	Section 1- Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.) (sd+696d=06OCT2022)																																																																																																																																																																																																																																																																																															
CSC2	Section 2 - Landscape Softworks except those Works under other sections (sd+2190d=08NOV2026)	0		08-Nov-26*		08-Nov-26	0	Section 2 - Landscape Softworks except those Works under other sections (sd+2190d=08NOV2026)																																																																																																																																																																																																																																																																																															
CSC3	Section 3 - Remainder of the Works, except Landscape Softworks & Establishment Works (sd+2190d=08NOV2026)	0		08-Nov-26*		08-Nov-26	0	Section 3 - Remainder of the Works, except Landscape Softworks & Establishment Works (sd+2190d=08NOV2026)																																																																																																																																																																																																																																																																																															
Environmental Constraints								1969																																																09-Nov-20 A																																																31-Mar-26																																																31-Aug-21																																																09-Nov-27																																																587																																															
NMM-2135	PS 1.105A Noise Mitigation Measures 2020-2021	143	09-Nov-20 A	31-Mar-21 A	09-Nov-27	09-Nov-27		PS 1.105A Noise Mitigation Measures 2020-2021																																																																																																																																																																																																																																																																																															
EBS-2145	Egrets Breeding Season 2021	184	01-Mar-21 A	31-Aug-21	31-Aug-21	31-Aug-21	0	Egrets Breeding Season 2021																																																																																																																																																																																																																																																																																															
EBS-2155	Egrets Breeding Season 2022	184	01-Mar-22*	31-Aug-22	31-Aug-22	31-Aug-22	0	Egrets Breeding Season 2022																																																																																																																																																																																																																																																																																															
NMM-2155	PS 1.105A Noise Mitigation Measures 2022-2023	151	01-Nov-22*	31-Mar-23	01-Nov-22	31-Mar-23	0	PS 1.105A Noise Mitigation Measures 2022-2023																																																																																																																																																																																																																																																																																															
EBS-2165	Egrets Breeding Season 2023	184	01-Mar-23*	31-Aug-23	01-Mar-23	31-Aug-23	0	Egrets Breeding Season 2023																																																																																																																																																																																																																																																																																															
NMM-2165	PS 1.105A Noise Mitigation Measures 2023-2024	152	01-Nov-23*	31-Mar-24	01-Nov-23	31-Mar-24	0	PS 1.105A Noise Mitigation Measures 2023-2024																																																																																																																																																																																																																																																																																															
EBS-2175	Egrets Breeding Season 2024	184	01-Mar-24*	31-Aug-24	01-Mar-24	31-Aug-24	0	Egrets Breeding Season 2024																																																																																																																																																																																																																																																																																															
NMM-2175	PS 1.105A Noise Mitigation Measures 2024-2025	151	01-Nov-24*	31-Mar-25	01-Nov-24	31-Mar-25	0	PS 1.105A Noise Mitigation Measures 2024-2025																																																																																																																																																																																																																																																																																															
EBS-2185	Egrets Breeding Season 2025	183	02-Mar-25*	31-Aug-25	02-Mar-25	31-Aug-25	0	Egrets Breeding Season 2025																																																																																																																																																																																																																																																																																															
NMM-2185	PS 1.105A Noise Mitigation Measures 2025-2026	151	01-Nov-25*	31-Mar-26	01-Nov-25	31-Mar-26	0	PS 1.105A Noise Mitigation Measures 2025-2026																																																																																																																																																																																																																																																																																															
Planned Completion								2041																																																07-Apr-21 A																																																08-Nov-26																																																06-Oct-22																																																09-Nov-27																																																365																																															
Planned Key Dates								1765																																																07-Apr-21 A																																																05-Feb-26																																																08-Jan-24																																																09-Nov-27																																																641																																															
PKD1	KD1 - Completion of Noise Barriers (sd+150d) (8 Apr 21)	0		07-Apr-21 A		09-Nov-27		Completion of Noise Barriers (sd+150d) (8 Apr 21)																																																																																																																																																																																																																																																																																															
PKD2	KD2 - Erection of Bird Curtain in vicinity of Mainstream Bioreactor, Ancillary facilities & Tertiary Treatment(6 May 21)	0		06-May-21 A		09-Nov-27		Erection of Bird Curtain in vicinity of Mainstream Bioreactor, Ancillary facilities & Tertiary Treatment(6 May 21)																																																																																																																																																																																																																																																																																															
PKD5	KD5 - Completion of Civil & Structural works of R/F of Inlet works (separate contractor to install PV Panels) (8 Jan 25)	0		19-Sep-23*		08-Jan-25	477	Completion of Civil & Structural works of R/F of Inlet works (separate contractor to install PV Panels) (8 Jan 25)																																																																																																																																																																																																																																																																																															
PKD10	KD10 - Completion of Civil & Structural works of roof floor of sludge thickening bldg(8Jan24)	0		01-Dec-23*		08-Jan-24	38	Completion of Civil & Structural works of roof floor of sludge thickening bldg(8Jan24)																																																																																																																																																																																																																																																																																															
PPKD3	KD3 - Early Commissioning of Inlet Works100,000m3/d at ADWF,PST>54,000m3/d at ADWF, Civil, struct.,E&M & BS (11Mar 24)	0		11-Mar-24*		11-Mar-24	0	Early Commissioning of Inlet Works100,000m3/d at ADWF,PST>54,000m3/d at ADWF, Civil, struct.,E&M & BS (11Mar 24)																																																																																																																																																																																																																																																																																															
PKD7	KD7 - Completion of Civil & structural works of R/F of Mainstream Bioreactor system and Ancillary facilities (8 Jan 26)	0		16-Apr-25*		08-Jan-26	267	Completion of Civil & structural works of R/F of Mainstream Bioreactor system and Ancillary facilities (8 Jan 26)																																																																																																																																																																																																																																																																																															
PKD8	KD8 - Completion of Civil & Structural works of Sludge Dewatering Building (separate contractor E&M, BS & PV) (8 Jul 25)	0		08-Jul-25*		08-Jul-25	0	Completion of Civil & Structural works of Sludge Dewatering Building (separate contractor E&M, BS & PV) (8 Jul 25)																																																																																																																																																																																																																																																																																															
PKD9	KD9 - Completion of Civil & Structural works of Administration Building (separate contractor E&M & BS)(6 Nov 25)	0		06-Sep-25*		06-Nov-25	61	Completion of Civil & Structural works of Administration Building (separate contractor E&M & BS)(6 Nov 25)																																																																																																																																																																																																																																																																																															
PKD6	KD6 - Completion of Civil & Structural works of R/F of PST (separate contractor to install PV Panels) (5 Feb 26)	0		04-Feb-26*		05-Feb-26	1	Completion of Civil & Structural works of R/F of PST (separate contractor to install PV Panels) (5 Feb 26)																																																																																																																																																																																																																																																																																															
PPKD4	KD4 - Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at AWDF (5 Feb 26)	0		05-Feb-26*		05-Feb-26	0	Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at AWDF (5 Feb 26)																																																																																																																																																																																																																																																																																															
Planned Section Completion								1507																																																23-Sep-22																																																08-Nov-26																																																06-Oct-22																																																08-Nov-26																																																0																																															
PSC1	Section 1- Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.) (sd+696d=06OCT2022)	0		23-Sep-22*		06-Oct-22	13	Section 1- Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.) (sd+696d=06OCT2022)																																																																																																																																																																																																																																																																																															
PSC2	Section 2 - Landscape Softworks except those Works under other sections (sd+2190d=08NOV2026)	0		02-Nov-26*		08-Nov-26	6	Section 2 - Landscape Softworks except those Works under other sections (sd+2190d=08NOV2026)																																																																																																																																																																																																																																																																																															
PSC3	Section 3 - Remainder of the Works, except Landscape Softworks & Establishment Works (sd+2190d=08NOV2026)	0		08-Nov-26*		08-Nov-26	0	Section 3 - Remainder of the Works, except Landscape Softworks & Establishment Works (sd+2190d=08NOV2026)																																																																																																																																																																																																																																																																																															
Notification of Compensation Events								0																																																22-Jul-26																																																22-Jul-26																																																22-Jul-26																																																22-Jul-26																																																0																																															
NCE5	Impacted KD4 due to NCE No. 005 (11 May 2021)	0		22-Jul-26*		22-Jul-26	0	Impacted KD4 due to NCE No. 005 (11 May 2021)																																																																																																																																																																																																																																																																																															
Preliminary and Preparation Works								1443																																																27-Oct-20 A																																																05-Jun-25																																																31-Aug-21																																																09-Nov-27																																																759																																															
Subletting								680																																																27-Oct-20 A																																																06-Sep-22																																																31-Aug-21																																																09-Nov-27																																																1889																																															
SUB-110	Prebid - Ground Investigation Works	0		27-Oct-20 A		03-Sep-21		Ground Investigation Works																																																																																																																																																																																																																																																																																															
SUB-120	Prebid - Demolition of existing building and structure	0		27-Oct-20 A		06-Sep-21		Demolition of existing building and structure																																																																																																																																																																																																																																																																																															
SUB-130	Prebid - Design, Supply and Installation of Noise Barrier and Bird Curtain	0		27-Oct-20 A		09-Nov-27		Design, Supply and Installation of Noise Barrier and Bird Curtain																																																																																																																																																																																																																																																																																															
SUB-140	Prebid - Piling works for Inlet works and PST	0		27-Oct-20 A		03-Sep-21		Piling works for Inlet works and PST																																																																																																																																																																																																																																																																																															
SUB-150	Prebid - E&M works	0		27-Oct-20 A		04-Apr-22		E&M works																																																																																																																																																																																																																																																																																															
SUB-160	Submit/Approve Sub-letting Procedures	60	09-Nov-20 A	07-Jan-21 A	31-Aug-21	31-Aug-21		Submit/Approve Sub-letting Procedures																																																																																																																																																																																																																																																																																															
SUB-180	Subletting for MIC works	40	08-Jan-21 A	16-Feb-21 A	23-Sep-21	23-Sep-21		Subletting for MIC works																																																																																																																																																																																																																																																																																															
SUB-190	Subletting for Landscaping works	30	08-Jan-21 A	06-Feb-21 A	03-Sep-21	03-Sep-21		Subletting for Landscaping works																																																																																																																																																																																																																																																																																															
SUB-200	Subletting for UU detection	44	08-Jan-21 A	20-Feb-21 A	08-Sep-21	08-Sep-21		Subletting for UU detection																																																																																																																																																																																																																																																																																															



- Remaining Level of Effort
- DWP Rev.4
- Actual Work
- Remaining Work
- Critical Remaining Work

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

Project ID :
DWP.DPr5_210831
Layout : DC201910 DWP rev.5
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Detailed Works Programme			
Date	Revision	Checked	Approved
31-Aug-21	Rev. 5		
31-Jul-21	Rev. 4		
30-Jun-21	Rev. 3		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	2022												2023												2024												2025												2026											
								Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																				
Administration Building								122	22-Apr-24	21-Aug-24	02-Jul-24	31-Oct-24	71																																																						
TWD-300	Open Cut Design - Prepare & Submission for PM's review	45	22-Apr-24	05-Jun-24	02-Jul-24	15-Aug-24	71																																																												
TWD-310	Open Cut Design - Review by PM's & ICE review (28 d + 7d)	35	06-Jun-24	10-Jul-24	16-Aug-24	19-Sep-24	71																																																												
TWD-320	Open Cut Design - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	11-Jul-24	24-Jul-24	20-Sep-24	03-Oct-24	71																																																												
TWD-590	ELS - Submit to GEO (Dewatering Proposal)	28	25-Jul-24	21-Aug-24	04-Oct-24	31-Oct-24	71																																																												
TWD-330	Open Cut Design - Obtain Approval	7	15-Aug-24	21-Aug-24	25-Oct-24	31-Oct-24	71																																																												
Walkway								122	22-Apr-24	21-Aug-24	20-Apr-25	19-Aug-25	363																																																						
TWD-600	Walkway - Prepare & Submission for PM's review	45	22-Apr-24	05-Jun-24	20-Apr-25	03-Jun-25	363																																																												
TWD-610	Walkway - Review by PM's & ICE review (28 d + 7d)	35	06-Jun-24	10-Jul-24	04-Jun-25	08-Jul-25	363																																																												
TWD-620	Walkway - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	11-Jul-24	24-Jul-24	09-Jul-25	22-Jul-25	363																																																												
TWD-630	ELS - Submit to GEO (Dewatering Proposal)	28	25-Jul-24	21-Aug-24	23-Jul-25	19-Aug-25	363																																																												
TWD-640	Walkway - Obtain Approval	7	15-Aug-24	21-Aug-24	13-Aug-25	19-Aug-25	363																																																												
Contractor's Permanent Works Design (include ATAL)								1562	30-Jan-21 A	10-May-25	31-Aug-21	09-Nov-27	912																																																						
AP								359	30-Jan-21 A	25-Oct-21	31-Aug-21	09-Nov-27	2205																																																						
Package 1A - Mainstream Bio-Reactor System (AGS)								101	30-Jan-21 A	28-May-21 A	30-Nov-21	30-Nov-21																																																							
AIP-420	E&M AIP Report for Mainstream Bio-Reactor System (AGS) - Prepare & Submission for PM's review	45	30-Jan-21 A	15-Mar-21 A	30-Nov-21	30-Nov-21																																																													
AIP-430	E&M AIP Report for Mainstream Bio-Reactor System (AGS) - Review by PM's & ICE review (28 d + 7d)	35	16-Mar-21 A	19-Apr-21 A	30-Nov-21	30-Nov-21																																																													
AIP-440	E&M AIP Report for Mainstream Bio-Reactor System (AGS) - Resubmission for further review	14	20-Apr-21 A	03-May-21 A	30-Nov-21	30-Nov-21																																																													
AIP-450	E&M AIP Report for Mainstream Bio-Reactor System (AGS) - Obtain Approval	7	04-May-21 A	28-May-21 A	30-Nov-21	30-Nov-21																																																													
Package 2A - Tertiary Treatment System (TTS)								80	28-Apr-21 A	16-Jul-21 A	19-Jan-22	19-Jan-22																																																							
AIP-460	E&M AIP Report for Tertiary Treatment System (TTS) - Prepare & Submission for PM's review	45	28-Apr-21 A	11-Jun-21 A	19-Jan-22	19-Jan-22																																																													
AIP-470	E&M AIP Report for Tertiary Treatment System (TTS) - Review by PM's & ICE review (28 d + 7d)	35	19-May-21 A	22-Jun-21 A	19-Jan-22	19-Jan-22																																																													
AIP-480	E&M AIP Report for Tertiary Treatment System (TTS) - Resubmission for further review	14	26-Jun-21 A	09-Jul-21 A	19-Jan-22	19-Jan-22																																																													
AIP-490	E&M AIP Report for Tertiary Treatment System (TTS) - Obtain Approval	7	10-Jul-21 A	16-Jul-21 A	19-Jan-22	19-Jan-22																																																													
Package 3A - Plant Service Water								105	03-Apr-21 A	16-Jul-21 A	03-Jun-22	16-Aug-23																																																							
AIP-500	E&M AIP Report for Plant Service Water - Prepare & Submission for PM's review	45	03-Apr-21 A	17-May-21 A	03-Jun-22	03-Jun-22																																																													
AIP-510	E&M AIP Report for Plant Service Water - Review by PM's & ICE review (28 d + 7d)	35	19-May-21 A	22-Jun-21 A	03-Jun-22	03-Jun-22																																																													
AIP-520	E&M AIP Report for Plant Service Water - Resubmission for further review	14	26-Jun-21 A	09-Jul-21 A	16-Aug-23	16-Aug-23																																																													
AIP-530	E&M AIP Report for Plant Service Water - Obtain Approval	7	10-Jul-21 A	16-Jul-21 A	16-Aug-23	16-Aug-23																																																													
Package 4A - E&M Report for Temp. Diversion Chamber and Pumping Station								67	23-Feb-21 A	28-May-21 A	15-Oct-21	15-Oct-21																																																							
AIP-540	Advance Works - E&M Report for Temporary Diversion Chamber and Pumping Station - Prepare & Submission for PM's review	35	23-Feb-21 A	29-Mar-21 A	15-Oct-21	15-Oct-21																																																													
AIP-550	Advance Works - E&M Report for Temporary Diversion Chamber and Pumping Station - Review by PM's & ICE review (28 d + 7d)	35	06-Mar-21 A	09-Apr-21 A	15-Oct-21	15-Oct-21																																																													
AIP-560	Advance Works - E&M Report for Temporary Diversion Chamber and Pumping Station - Resubmission for further review	14	10-Apr-21 A	23-Apr-21 A	15-Oct-21	15-Oct-21																																																													
AIP-570	Advance Works - E&M Report for Temporary Diversion Chamber and Pumping Station - Obtain Approval	7	24-Apr-21 A	28-May-21 A	15-Oct-21	15-Oct-21																																																													
Package 4B - E&M Report for SCADA Relocation								119	30-Jan-21 A	28-May-21 A	17-Jan-22	17-Jan-22																																																							
AIP-580	E&M AIP Report for Advance Works (SCADA Relocation) - Prepare & Submission for PM's review	63	30-Jan-21 A	02-Apr-21 A	17-Jan-22	17-Jan-22																																																													
AIP-590	E&M AIP Report for Advance Works (SCADA Relocation) - Review by PM's & ICE review (28 d + 7d)	35	03-Apr-21 A	07-May-21 A	17-Jan-22	17-Jan-22																																																													
AIP-600	E&M AIP Report for Advance Works (SCADA Relocation) - Resubmission for further review	14	08-May-21 A	21-May-21 A	17-Jan-22	17-Jan-22																																																													
AIP-610	E&M AIP Report for Advance Works (SCADA Relocation) - Obtain Approval	7	22-May-21 A	28-May-21 A	17-Jan-22	17-Jan-22																																																													
Package 4C - E&M Report for AGS Pilot Plant								89	01-Mar-21 A	28-May-21 A	24-Jun-23	24-Jun-23																																																							
AIP-630	E&M AIP Report for Advance Works (AGS) - Prepare & Submission for PM's review	33	01-Mar-21 A	02-Apr-21 A	24-Jun-23	24-Jun-23																																																													
AIP-640	E&M AIP Report for Advance Works (AGS) - Review by PM's & ICE review (28 d + 7d)	35	03-Apr-21 A	07-May-21 A	24-Jun-23	24-Jun-23																																																													
AIP-650	E&M AIP Report for Advance Works (AGS) - Resubmission for further review	14	08-May-21 A	21-May-21 A	24-Jun-23	24-Jun-23																																																													
AIP-660	E&M AIP Report for Advance Works (AGS) - Obtain Approval	7	22-May-21 A	28-May-21 A	24-Jun-23	24-Jun-23																																																													
Package 5A - Electrical Power Supply System for Advance Works								98	20-Feb-21 A	28-May-21 A	31-Oct-21	31-Oct-21																																																							
AIP-100	Electrical Power Supply System for Advance Works - Prepare & Submission for PM's review	42	20-Feb-21 A	02-Apr-21 A	31-Oct-21	31-Oct-21																																																													
AIP-110	Electrical Power Supply System for Advance Works - Review by PM's & ICE review (28 d + 7d)	35	03-Apr-21 A	07-May-21 A	31-Oct-21	31-Oct-21																																																													
AIP-120	Electrical Power Supply System for Advance Works - Resubmission for further review	14	08-May-21 A	21-May-21 A	31-Oct-21	31-Oct-21																																																													
AIP-130	Electrical Power Supply System for Advance Works - Obtain Approval	7	22-May-21 A	28-May-21 A	31-Oct-21	31-Oct-21																																																													
Package 5B - Electrical Power Supply System for YLEPP								39	20-Apr-21 A	28-May-21 A	08-Dec-23	08-Dec-23																																																							
AIP-140	Electrical Power Supply System for YLEPP - Prepare & Submission for PM's review	11	20-Apr-21 A	30-Apr-21 A	08-Dec-23	08-Dec-23																																																													
AIP-150	Electrical Power Supply System for YLEPP - Review by PM's review	14	01-May-21 A	14-May-21 A	08-Dec-23	08-Dec-23																																																													
AIP-160	Electrical Power Supply System for YLEPP - Resubmission for PM's review	14	08-May-21 A	21-May-21 A	08-Dec-23	08-Dec-23																																																													
AIP-170	Electrical Power Supply System for YLEPP - Obtain Approval	7	22-May-21 A	28-May-21 A	08-Dec-23	08-Dec-23																																																													
Package 6A - Control & Monitoring System								143	01-May-21 A	20-Sep-21	10-Feb-23	02-Mar-23	528																																																						
AIP-180	Control & Monitoring System - Prepare & Submission for PM's review	36	01-May-21 A	05-Jun-21 A	10-Feb-23	10-Feb-23																																																													
AIP-190	Control & Monitoring System - Review by PM's & ICE review (28 d + 7d)	35	06-Jun-21 A	10-Jul-21 A	10-Feb-23	10-Feb-23																																																													
AIP-200	Control & Monitoring System - Resubmission for further review	14	12-Jul-21 A	13-Sep-21	10-Feb-23	23-Feb-23	528																																																												
AIP-620	Control & Monitoring System - Obtain Approval	7	14-Sep-21	20-Sep-21	24-Feb-23	02-Mar-23	528																																																												
Package 7A - Building Services System								60	30-Mar-21 A	28-May-21 A	22-Jan-22	22-Jan-22																																																							
AIP-220	BS System - Prepare & Submission for PM's review	7	30-Mar-21 A	05-Apr-21 A	22-Jan-22	22-Jan-22																																																													
AIP-230	BS System - Review by PM's & ICE review (28 d + 7d)	35	06-Apr-21 A	10-May-21 A	22-Jan-22	22-Jan-22																																																													
AIP-240	BS System - Resubmission for further review	14	08-May-21 A	21-May-21 A	22-Jan-22	22-Jan-22																																																													
AIP-250	BS System - Obtain Approval	7	22-May-21 A	28-May-21 A	22-Jan-22	22-Jan-22																																																													
Package 8A - E&M AIP Report for Sludge Thickening Building & Chemical System								102	01-Mar-21 A	10-Jun-21 A	29-Oct-22	29-Oct-22																																																							
AIP-260	STB - Prepare & Submission for PM's review	46	01-Mar-21 A	15-Apr-21 A	29-Oct-22	29-Oct-22																																																													
AIP-270	STB - Review by PM's & ICE review (28 d + 7d)	35	16-Apr-21 A	20-May-21 A	29-Oct-22	29-Oct-22																																																													
AIP-280	STB - Resubmission for further review	14	21-May-21 A	03-Jun-21 A	29-Oct-22	29-Oct-22																																																													
AIP-290	STB - Obtain Approval	7	04-Jun-21 A	10-Jun-21 A	29-Oct-22	29-Oct-22																																																													
Package 9A - E&M AIP Report for Inlet Work (IW)								102	01-Mar-21 A	10-Jun-21 A	09-Nov-27	09-Nov-27																																																							
AIP-670	IW - Prepare & Submission for PM's review	46	01-Mar-21 A	15-Apr-21 A	09-Nov-27	09-Nov-27																																																													
AIP-680	IW - Review by PM's & ICE review (28 d + 7d)	35	16-Apr-21 A	20-May-21 A	09-Nov-27	09-Nov-27																																																													
AIP-690	IW - Resubmission for further review	14	21-May-21 A	03-Jun-21 A	09-Nov-27	09-Nov-27																																																													
AIP-700	IW - Obtain Approval	7	04-Jun-21 A	10-Jun-21 A	09-Nov-27	09-Nov-27																																																													
Package 10A - E&M AIP Report for Primary Sedimentation Tank (PST)								113	01-Mar-21 A	21-Jun-21 A	09-Nov-27	09-Nov-27																																																							



保華-中國中鐵聯營體
PAUL Y.-CREC JOINT VENTURE

- Remaining Level of Effort
- DWP Rev.4
- Actual Work
- Remaining Work
- Critical Remaining Work

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

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31-Aug-21	Rev. 5		
31-Jul-21	Rev. 4		
30-Jun-21	Rev. 3		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart (2022-2026)																																															
								2022	2023	2024	2025	2026																																											
PMCA-240	Caving System Construction	75	31-Aug-21*	29-Nov-21	04-Jun-27	30-Aug-27	1700	[Gantt bar for Caving System Construction]																																															
PMCA-250	Caving System Installation	60	30-Nov-21	17-Feb-22	31-Aug-27	08-Nov-27	1700	[Gantt bar for Caving System Installation]																																															
Environmental Mitigation Measures for KD1 & 2																																																							
Noise Barrier																																																							
NB Northern Side																																																							
NBN-00	NB North - Concrete Block Laying (474 nos.)	12	09-Nov-20 A	21-Nov-20 A	09-Nov-27	09-Nov-27		[Gantt bar for NB North - Concrete Block Laying (474 nos.)]																																															
NBN-10	NB North - Steel Member Installation (1,150m)	30	23-Nov-20 A	29-Dec-20 A	09-Nov-27	09-Nov-27		[Gantt bar for NB North - Steel Member Installation (1,150m)]																																															
NBN-20	NB North - Rails Installation (Horizontal and Vertical)	30	23-Nov-20 A	29-Dec-20 A	09-Nov-27	09-Nov-27		[Gantt bar for NB North - Rails Installation (Horizontal and Vertical)]																																															
NBN-30	NB North - Noise Panel Installation (7077 nos.)	33	30-Dec-20 A	06-Feb-21 A	09-Nov-27	09-Nov-27		[Gantt bar for NB North - Noise Panel Installation (7077 nos.)]																																															
NB Eastern Side																																																							
NBE-00	NB East - Concrete Block Laying (681 nos.)	12	30-Dec-20 A	13-Jan-21 A	09-Nov-27	09-Nov-27		[Gantt bar for NB East - Concrete Block Laying (681 nos.)]																																															
NBE-10	NB East - Steel Member Installation (1,650m)	30	14-Jan-21 A	24-Feb-21 A	09-Nov-27	09-Nov-27		[Gantt bar for NB East - Steel Member Installation (1,650m)]																																															
NBE-20	NB East - Rails Installation (Horizontal and Vertical)	30	14-Jan-21 A	24-Feb-21 A	09-Nov-27	09-Nov-27		[Gantt bar for NB East - Rails Installation (Horizontal and Vertical)]																																															
NBE-30	NB East - Noise Panel Installation (1,057 nos.)	33	25-Feb-21 A	08-Apr-21 A	09-Nov-27	09-Nov-27		[Gantt bar for NB East - Noise Panel Installation (1,057 nos.)]																																															
NB Western Side																																																							
NBW-00B	NB West - Concrete Block Laying (225 nos.)	12	08-Feb-21 A	27-Feb-21 A	09-Nov-27	09-Nov-27		[Gantt bar for NB West - Concrete Block Laying (225 nos.)]																																															
NBW-10	NB West - Steel Member Installation (127m)	20	01-Mar-21 A	23-Mar-21 A	09-Nov-27	09-Nov-27		[Gantt bar for NB West - Steel Member Installation (127m)]																																															
NBW-20	NB West - Rails Installation (Horizontal and Vertical)	20	01-Mar-21 A	23-Mar-21 A	09-Nov-27	09-Nov-27		[Gantt bar for NB West - Rails Installation (Horizontal and Vertical)]																																															
NBW-30	NB North - Noise Panel Installation (385 nos.)	10	24-Mar-21 A	08-Apr-21 A	09-Nov-27	09-Nov-27		[Gantt bar for NB North - Noise Panel Installation (385 nos.)]																																															
Bird Curtain																																																							
BC-10	BC - Concrete Block Laying	24	30-Dec-20 A	18-Feb-21 A	09-Nov-27	09-Nov-27		[Gantt bar for BC - Concrete Block Laying]																																															
BC-20	BC - Installation of Post	32	18-Mar-21 A	29-Apr-21 A	09-Nov-27	09-Nov-27		[Gantt bar for BC - Installation of Post]																																															
BC-30	BC - Installation of Bird Curtain	19	26-Apr-21 A	06-May-21 A	09-Nov-27	09-Nov-27		[Gantt bar for BC - Installation of Bird Curtain]																																															
General Advance Works																																																							
NSWSPS Sensors																																																							
ATALGA-1130	CMS - NSWSPS Sensor	51	01-Jun-21 A	28-Dec-21	08-Nov-23	08-Nov-23	642	[Gantt bar for CMS - NSWSPS Sensor]																																															
ATALGA-1160	CGS - Method Statement for Installation	101	03-Aug-21 A	30-Nov-21	08-Nov-23	07-Feb-24	642	[Gantt bar for CGS - Method Statement for Installation]																																															
ATALGA-1170	Procurement & Delivery of Sensor	101	03-Aug-21 A	30-Nov-21	08-Nov-23	07-Feb-24	642	[Gantt bar for Procurement & Delivery of Sensor]																																															
ATALGA-1260	Installation of pressure sensors at NSWSPS	22	01-Dec-21	28-Dec-21	08-Feb-24	11-Mar-24	642	[Gantt bar for Installation of pressure sensors at NSWSPS]																																															
Air Blower House																																																							
ATALGA-1280	CMS - Air Blower System	127	01-Jun-22*	02-Nov-22	04-Jan-23	14-Jun-23	178	[Gantt bar for CMS - Air Blower System]																																															
ATALGA-1290	CGS - Method Statement for Installation	49	02-Nov-22	31-Dec-22	06-Sep-23	04-Nov-23	247	[Gantt bar for CGS - Method Statement for Installation]																																															
ATALGA-1300	Procurement & Delivery of Materials	121	02-Nov-22	03-Apr-23	15-Jun-23	08-Nov-23	178	[Gantt bar for Procurement & Delivery of Materials]																																															
ATALGA-1020	Civil Structural modification of air blower house	90	13-Jan-23*	11-May-23	17-Nov-23	11-Mar-24	247	[Gantt bar for Civil Structural modification of air blower house]																																															
ATALGA-1310	E&M installation	97	03-Apr-23	03-Aug-23	09-Nov-23	11-Mar-24	178	[Gantt bar for E&M installation]																																															
Disc Filter (DF) Pilot Plant																																																							
ATALGA-1080	CGS - Method Statement for Relocation	63	15-Jul-21 A	03-Aug-21 A	31-Aug-22	31-Aug-22		[Gantt bar for CGS - Method Statement for Relocation]																																															
ATALGA-1090	Procurement & Delivery of Materials	97	04-Aug-21 A	26-Nov-21	17-Dec-22	23-Mar-23	383	[Gantt bar for Procurement & Delivery of Materials]																																															
ATALGA-1000	Civil Structural Construction of DF Pilot Plant from STSTW c/w of relevant underground pipeworks	211	27-Nov-21*	19-Aug-22	23-Mar-23	07-Dec-23	383	[Gantt bar for Civil Structural Construction of DF Pilot Plant from STSTW c/w of relevant underground pipeworks]																																															
ATALGA-1140	E&M installation of DF Pilot Plant	51	20-Aug-22	21-Oct-22	07-Dec-23	07-Feb-24	383	[Gantt bar for E&M installation of DF Pilot Plant]																																															
ATALGA-1190	T&C	22	21-Oct-22	16-Nov-22	08-Feb-24	11-Mar-24	383	[Gantt bar for T&C]																																															
Dissolved Air Flotation (DAF) Pilot Plant																																																							
ATALGA-1100	CGS - Method Statement for Relocation	47	31-Aug-21	27-Oct-21	31-Aug-22	27-Oct-22	293	[Gantt bar for CGS - Method Statement for Relocation]																																															
ATALGA-1110	Procurement & Delivery of Materials	97	28-Oct-21	28-Feb-22	28-Oct-22	28-Feb-23	293	[Gantt bar for Procurement & Delivery of Materials]																																															
ATALGA-1070	Civil Structural Construction of DAF Pilot Plant from STSTW	97	01-Mar-22*	29-Jun-22	01-Mar-23	29-Jun-23	293	[Gantt bar for Civil Structural Construction of DAF Pilot Plant from STSTW]																																															
ATALGA-1150	E&M installation of DAF Pilot Plant	51	30-Jun-22	29-Aug-22	30-Jun-23	29-Aug-23	293	[Gantt bar for E&M installation of DAF Pilot Plant]																																															
ATALGA-1200	T&C	11	30-Aug-22	12-Sep-22	30-Aug-23	11-Sep-23	293	[Gantt bar for T&C]																																															
ATALGA-1220	Post-commissioning	144	13-Sep-22	11-Mar-23	12-Sep-23	11-Mar-24	293	[Gantt bar for Post-commissioning]																																															
Aerobic Granular Sludge (AGS) Pilot Plant																																																							
ATALGA-1030	AIP - AGS Pilot Plant	20	18-Feb-21 A	12-Mar-21 A	24-Nov-22	24-Nov-22		[Gantt bar for AIP - AGS Pilot Plant]																																															
ATALGA-1040	DDA - AGS Pilot Plant	21	13-Mar-21 A	10-Apr-21 A	05-Jun-23	05-Jun-23		[Gantt bar for DDA - AGS Pilot Plant]																																															
ATALGA-1050	CMS - AGS Pilot Plant	48	13-Mar-21 A	13-May-21 A	24-Nov-22	24-Nov-22		[Gantt bar for CMS - AGS Pilot Plant]																																															
ATALGA-1060	CGS - Method Statement for Installation	47	25-Mar-21 A	25-May-21 A	05-Jun-23	05-Jun-23		[Gantt bar for CGS - Method Statement for Installation]																																															
ATALGA-1120	Procurement & Delivery of Materials	100	28-Apr-21 A	31-Aug-21 A	24-Nov-22	24-Nov-22		[Gantt bar for Procurement & Delivery of Materials]																																															
ATALGA-1010	Civil Structural Construction of AGS Pilot Plant	150	31-Aug-21*	07-Mar-22	24-Nov-22	03-Jun-23	363	[Gantt bar for Civil Structural Construction of AGS Pilot Plant]																																															
ATALGA-1180	E&M installation of AGS Pilot Plant	36	08-Mar-22	22-Apr-22	05-Jun-23	18-Jul-23	363	[Gantt bar for E&M installation of AGS Pilot Plant]																																															
ATALGA-1210	Seeding, process start-up and T&C	52	23-Apr-22	25-Jun-22	19-Jul-23	16-Sep-23	363	[Gantt bar for Seeding, process start-up and T&C]																																															
ATALGA-1270	Post-commissioning	139	27-Jun-22	09-Dec-22	18-Sep-23	11-Mar-24	363	[Gantt bar for Post-commissioning]																																															
Zone 1 Construction																																																							
Demolition and Temporary Modification/Diversion Works																																																							
PST Overhaul Works																																																							
ATALPST-5130	Completion of Overhaul Works (Zone 1)	0		17-Jul-21 A		09-Nov-27		[Gantt bar for Completion of Overhaul Works (Zone 1)]																																															
PST Existing Primary Sedimentation Tanks (PST)																																																							
ATALPST-1000	Method Statement / PMAC Submission and Approval for PST	55	09-Nov-20 A	14-Jan-21 A	04-Apr-22	04-Apr-22		[Gantt bar for Method Statement / PMAC Submission and Approval for PST]																																															
ATALPST-1030	Procurement of Wheels, Carbon Brush, Motor/Gearbox for PST No. 1 to No. 4	60	15-Jan-21 A	01-Apr-21 A	04-Apr-22	04-Apr-22		[Gantt bar for Procurement of Wheels, Carbon Brush, Motor/Gearbox for PST No. 1 to No. 4]																																															
ATALPST-1040	Procurement of Scraper Frame Robs	32	15-Jan-21 A	27-Feb-21 A	04-Apr-22	04-Apr-22		[Gantt bar for Procurement of Scraper Frame Robs]																																															
PST No. 2 & 4																																																							
ATALPST-1020	Isolation and Pre-test for PST 2 & 4	14	15-Jan-21 A	30-Jan-21 A	04-Apr-22	04-Apr-22		[Gantt bar for Isolation and Pre-test for PST 2 & 4]																																															
ATALPST-1070	Construction of Bamboo Scaffolding	7	01-Feb-21 A	08-Feb-21 A	04-Apr-22	04-Apr-22		[Gantt bar for Construction of Bamboo Scaffolding]																																															
ATALPST-1090	Replacement of Screws for the Rotatory Bridge	11	09-Feb-21 A	27-Feb-21 A	04-Apr-22	04-Apr-22		[Gantt bar for Replacement of Screws for the Rotatory Bridge]																																															
ATALPST-1120	Replacement of Scraper Frame Robs	25	01-Mar-21 A	29-Mar-21 A	04-Apr-22	04-Apr-22		[Gantt bar for Replacement of Scraper Frame Robs]																																															
ATALPST-1160	Disassembly of Scraper Drive Unit / Penstock Actuators / Valves	3	30-Mar-21 A	01-Apr-21 A	04-Apr-22	04-Apr-22		[Gantt bar for Disassembly of Scraper Drive Unit / Penstock Actuators / Valves]																																															
ATALPST-1170	Disassembly, Condition Checking of Scraper Drive Units	17	07-Apr-21 A	26-Apr-21 A	04-Apr-22	04-Apr-22		[Gantt bar for Disassembly, Condition Checking of Scraper Drive Units]																																															



- Remaining Level of Effort
- DWP Rev.4
- Actual Work
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- Critical Remaining Work

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

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart (2022-2026)																																															
								2022	2023	2024	2025	2026																																											
IW-2900	Submission and review by EPD	44	20-Jul-21 A	20-Aug-21 A	12-Nov-21	12-Nov-21		Submission and review by EPD																																															
IW-2430	ENV-BH31	7	12-Aug-21 A	18-Aug-21 A	12-Nov-21	12-Nov-21		ENV-BH31																																															
IW-2450	ENV-BH32	7	12-Aug-21 A	18-Aug-21 A	12-Nov-21	12-Nov-21		ENV-BH32																																															
IW-2480	ENV-BH33	7	12-Aug-21 A	19-Aug-21 A	12-Nov-21	12-Nov-21		ENV-BH33																																															
IW-2910	CAR / RAP Approval	1	21-Aug-21 A	03-Sep-21	12-Nov-21	12-Nov-21	58	CAR / RAP Approval																																															
IW Foundation & ELS Stage 1								1787																																															
NMM-2020	PS 1.105A Noise Mitigation Measures 2020-2021	143	09-Nov-20 A	31-Mar-21 A	31-Aug-21	31-Aug-21		PS 1.105A Noise Mitigation Measures 2020-2021																																															
EBS-2021	Egrets Breeding Season 2021	184	01-Mar-21 A	30-Sep-21	31-Aug-21	30-Sep-21	0	Egrets Breeding Season 2021																																															
PMI014	PMI No. 014 - Revised Piling Layout at IW	0	15-Mar-21 A		09-Nov-27			PMI No. 014 - Revised Piling Layout at IW																																															
IW-2850	Inlet Work Stage 1 - Site Setup and mobilization	7	14-Apr-21 A	21-Apr-21 A	03-Sep-21	03-Sep-21		Inlet Work Stage 1 - Site Setup and mobilization																																															
IW-2380	Inlet Work Stage 1 - Driven H-piles (85hrs + 6tension piles., @ ave.1no/d/rig, 2rigs)	65	04-May-21 A	18-Sep-21	03-Sep-21	23-Sep-21	4	Inlet Work Stage 1 - Driven H-piles (85hrs + 6tension piles., @ ave.1no/d/rig, 2rigs)																																															
IW-2470	Inlet Work Stage 1 - H-piles Testing	21	22-Jul-21 A	05-Oct-21	24-Sep-21	08-Oct-21	4	Inlet Work Stage 1 - H-piles Testing																																															
IW-2880	Inlet Work Stage 1 - Submit piling record to GEO (28d)	30	05-Oct-21	04-Nov-21	29-Jan-22	27-Feb-22	116	Inlet Work Stage 1 - Submit piling record to GEO (28d)																																															
IW-2920	Inlet Work Stage 1 - Monitoring Installation and Pumping Test	21	05-Oct-21	30-Oct-21	09-Oct-21	03-Nov-21	4	Inlet Work Stage 1 - Monitoring Installation and Pumping Test																																															
IW-2420	Inlet Work Stage 1 - Sheetpiles Install (1,840m2 at 120m2/d)	18	07-Oct-21	28-Oct-21	07-Oct-21	28-Oct-21	0	Inlet Work Stage 1 - Sheetpiles Install (1,840m2 at 120m2/d)																																															
IW-2520	Inlet Work Stage 1 - Excavation (+5.2 to +4.5mPD)	30	30-Oct-21	04-Dec-21	04-Nov-21	08-Dec-21	4	Inlet Work Stage 1 - Excavation (+5.2 to +4.5mPD)																																															
IW-2500	Inlet Work Stage 1 - Marine Sediments Treatment and Disposal	60	30-Oct-21	12-Jan-22	27-Nov-21	15-Feb-22	24	Inlet Work Stage 1 - Marine Sediments Treatment and Disposal																																															
IW-2540	Inlet Work Stage 1 - Strut Installation S1 (+4.5mPD)	16	04-Dec-21	23-Dec-21	07-Feb-22	24-Feb-22	46	Inlet Work Stage 1 - Strut Installation S1 (+4.5mPD)																																															
IW-2550	Inlet Work Stage 1 - Excavation (+4.5 to +1.0mPD)	30	04-Dec-21	12-Jan-22	09-Dec-21	15-Jan-22	4	Inlet Work Stage 1 - Excavation (+4.5 to +1.0mPD)																																															
IW-2570	Inlet Work Stage 1 - Excavation (+1 to -1.55mPD)	30	12-Jan-22	23-Feb-22	17-Jan-22	26-Feb-22	4	Inlet Work Stage 1 - Excavation (+1 to -1.55mPD)																																															
IW-2580	Inlet Work Stage 1 - Strut Installation S2 (+1mPD)	16	12-Jan-22	07-Feb-22	25-Feb-22	15-Mar-22	32	Inlet Work Stage 1 - Strut Installation S2 (+1mPD)																																															
IW Foundation & ELS Stage 2								1753																																															
PP2	Portion 2 (sd+211d)	0	08-Jun-21 A		18-Oct-27			Portion 2 (sd+211d)																																															
IW-2860	Inlet Work Stage 2 - Site establishment & investigation, RAP, submit Remediation Report (carryforward from Site establ.)	53	22-Jun-21 A	21-Sep-21	18-Oct-27	08-Nov-27	1214	Inlet Work Stage 2 - Site establishment & investigation, RAP, submit Remediation Report (carryforward from Site establ.)																																															
IW-2861	Inlet Work Stage 2 - Temporary UU Diversion	14	22-Jun-21 A	08-Jul-21 A	09-Nov-27	09-Nov-27		Inlet Work Stage 2 - Temporary UU Diversion																																															
IW-2530	Inlet Work Stage 2 - Driven H-piles (122hrs., @ave.1no/d/rig, 2rigs)	61	09-Jul-21 A	29-Oct-21	14-Sep-21	12-Nov-21	12	Inlet Work Stage 2 - Driven H-piles (122hrs., @ave.1no/d/rig, 2rigs)																																															
IW-2400	Handover and Inspection of Temp. Workshop and Storage Facilities (advance work before P2 access)	8	16-Jul-21 A	24-Jul-21 A	08-Nov-21	08-Nov-21		Handover and Inspection of Temp. Workshop and Storage Facilities (advance work before P2 access)																																															
IW-2125	Complete Temporary Administration Building - Non-MIC Section	0		23-Oct-21		15-Oct-27	1771	Complete Temporary Administration Building - Non-MIC Section																																															
IW-2560	Inlet Work Stage 2 - Sheetpiles Install (2,758m2 at 120m2/d)	23	29-Oct-21	24-Nov-21	29-Oct-21	24-Nov-21	0	Inlet Work Stage 2 - Sheetpiles Install (2,758m2 at 120m2/d)																																															
IW-2590	Inlet Work Stage 2 - H-piles Testing	21	13-Nov-21	07-Dec-21	13-Nov-21	07-Dec-21	0	Inlet Work Stage 2 - H-piles Testing																																															
IW-2591	Inlet Work Stage 2 - Monitoring Installation and Pumping Test	22	13-Nov-21	08-Dec-21	13-Nov-21	08-Dec-21	0	Inlet Work Stage 2 - Monitoring Installation and Pumping Test																																															
IW-2870	Inlet Work Stage 2 - Submit piling record to GEO (28d)	28	08-Dec-21	04-Jan-22	31-Jan-22	27-Feb-22	54	Inlet Work Stage 2 - Submit piling record to GEO (28d)																																															
IW-2610	Inlet Work Stage 2 - Excavation (-1.55 to -2.5mPD)	30	09-Dec-21	15-Jan-22	09-Dec-21	15-Jan-22	0	Inlet Work Stage 2 - Excavation (-1.55 to -2.5mPD)																																															
IW-2620	Inlet Work Stage 2 - Marine Sediments Treatment and Disposal	40	12-Jan-22	07-Mar-22	16-Feb-22	02-Apr-22	24	Inlet Work Stage 2 - Marine Sediments Treatment and Disposal																																															
IW-2630	Inlet Work Stage 2 - Strut Installation S3 (-2.5mPD)	16	17-Jan-22	10-Feb-22	25-Feb-22	15-Mar-22	28	Inlet Work Stage 2 - Strut Installation S3 (-2.5mPD)																																															
IW-2640	Inlet Work Stage 2 - Excavation (-2.5 to -4.5mPD)	30	17-Jan-22	26-Feb-22	26-Feb-22	26-Feb-22	0	Inlet Work Stage 2 - Excavation (-2.5 to -4.5mPD)																																															
IW-2650	Inlet Work Stage 2 - Strut Installation S4 (-4.5mPD)	16	28-Feb-22	17-Mar-22	16-Mar-22	02-Apr-22	14	Inlet Work Stage 2 - Strut Installation S4 (-4.5mPD)																																															
IW-2660	Inlet Work Stage 2 - Excavation (-4.5 to -7.15mPD)	30	28-Feb-22	02-Apr-22	28-Feb-22	02-Apr-22	0	Inlet Work Stage 2 - Excavation (-4.5 to -7.15mPD)																																															
IW-2670	IW - Foundation & ELS Complete	0		02-Apr-22		02-Apr-22	0	IW - Foundation & ELS Complete																																															
Temporary Workshop and Storage								91																																															
IW-2120A	Design and Submission	7	02-Feb-21 A	24-Apr-21 A	14-Sep-21	14-Sep-21		Design and Submission																																															
IW-2120B	Site Formation	10	26-Apr-21 A	03-May-21 A	14-Sep-21	14-Sep-21		Site Formation																																															
IW-2120C	Foundation Work	7	04-May-21 A	08-May-21 A	14-Sep-21	14-Sep-21		Foundation Work																																															
IW-2120D	Erect Steel Structure, External Wall and Roof Cladding	10	10-May-21 A	17-May-21 A	14-Sep-21	14-Sep-21		Erect Steel Structure, External Wall and Roof Cladding																																															
IW-2120E	Erect Internal Partition and False Ceiling	6	18-May-21 A	24-May-21 A	14-Sep-21	14-Sep-21		Erect Internal Partition and False Ceiling																																															
IW-2120F	Electrical Work, Sanitary Work, Install A/C and Floor Finishes	10	18-May-21 A	29-May-21 A	14-Sep-21	14-Sep-21		Electrical Work, Sanitary Work, Install A/C and Floor Finishes																																															
IW-2390	Relocation of Workshop (advance work before P2 access)	20	25-Jun-21 A	19-Jul-21 A	08-Nov-21	08-Nov-21		Relocation of Workshop (advance work before P2 access)																																															
IW-2390B	Relocation of Storage Facilities (advance work before P2 access)	5	25-Jun-21 A	30-Jun-21 A	14-Sep-21	14-Sep-21		Relocation of Storage Facilities (advance work before P2 access)																																															
IW Civil and Structural Works								262																																															
IW Structure Stage 1 (to G/F +4.0mPD)								135																																															
IW-2600	Inlet Work Stage 1 - Structure from -1.55 mPD to +1.45 mPD	90	25-Feb-22	17-Jun-22	28-Feb-22	20-Jun-22	2	Inlet Work Stage 1 - Structure from -1.55 mPD to +1.45 mPD																																															
IW-2690	Inlet Work Stage 1 - Structure from +1.45 mPD to +4.0 mPD	45	18-Jun-22	10-Aug-22	21-Jun-22	12-Aug-22	2	Inlet Work Stage 1 - Structure from +1.45 mPD to +4.0 mPD																																															
IW Structure Stage 2 (to G/F +4.0mPD)								105																																															
IW-2680	Inlet Work Stage 2 - Structure from -7.15 mPD to -5.0 mPD	30	04-Apr-22	12-Aug-22	04-Apr-22	12-Aug-22	0	Inlet Work Stage 2 - Structure from -7.15 mPD to -5.0 mPD																																															
IW-2700	Inlet Work Stage 2 - Structure from -5.0 mPD to -2.0 mPD	25	16-May-22	14-Jun-22	16-May-22	14-Jun-22	0	Inlet Work Stage 2 - Structure from -5.0 mPD to -2.0 mPD																																															
IW-2710	Inlet Work Stage 2 - Structure from -2.0 mPD to +1.0 mPD	25	15-Jun-22	14-Jul-22	15-Jun-22	14-Jul-22	0	Inlet Work Stage 2 - Structure from -2.0 mPD to +1.0 mPD																																															
IW-2720	Inlet Work Stage 2 - Structure from +1.0 mPD to +4.0 mPD	25	15-Jul-22	12-Aug-22	12-Aug-22	12-Aug-22	0	Inlet Work Stage 2 - Structure from +1.0 mPD to +4.0 mPD																																															
IW Structure to Roof (+4.0mPD to +18.3mPD)								125																																															
IW-2730	Inlet Work - Structure to Roof from +4.0 mPD to +7.0 mPD	25	13-Aug-22	12-Sep-22	13-Aug-22	12-Sep-22	0	Inlet Work - Structure to Roof from +4.0 mPD to +7.0 mPD																																															
IW-2740	Inlet Work - Structure to Roof from +7.0 mPD to +10.0 mPD	25	13-Sep-22	13-Oct-22	13-Sep-22	13-Oct-22	0	Inlet Work - Structure to Roof from +7.0 mPD to +10.0 mPD																																															
IW-2750	Inlet Work - Structure to Roof from +10.0 mPD to +13.0 mPD	25	14-Oct-22	11-Nov-22	14-Oct-22	11-Nov-22	0	Inlet Work - Structure to Roof from +10.0 mPD to +13.0 mPD																																															
IW-2760	Inlet Work - Structure to Roof from +13.0 mPD to +16.0 mPD	25	12-Nov-22	10-Dec-22	12-Nov-22	10-Dec-22	0	Inlet Work - Structure to Roof from +13.0 mPD to +16.0 mPD																																															
IW-2770	Inlet Work - Structure to Roof from +16.0 mPD to +18.3 mPD	25	12-Dec-22	12-Jan-23	12-Dec-22	12-Jan-23	0	Inlet Work - Structure to Roof from +16.0 mPD to +18.3 mPD																																															
IW ABWF and BS Works								300																																															
IW-2780	Inlet Work - BS and ABWF Works	300	13-Sep-22	19-Sep-23	04-Mar-23	11-Mar-24	137	Inlet Work - BS and ABWF Works																																															
IW Transformer House No. 1								227																																															
IW-2785	TX House No. 1 - Piling Works (8 nos.)	10	05-Aug-22	16-Aug-22	20-Oct-22	31-Oct-22	62	TX House No. 1 - Piling Works (8 nos.)																																															
IW-2930	TX House No. 1 - ELS Works	14	17-Aug-22	01-Sep-22	30-Jan-23	14-Feb-23	130	TX House No. 1 - ELS Works																																															
IW-2790	TX House No. 1 - Structure Cable Trench at +2.2 mPD to +4.8 mPD	21	03-Sep-22	28-Sep-22	16-Feb-23	11-Mar-23	130	TX House No. 1 - Structure Cable Trench at +2.2 mPD to +4.8 mPD																																															
IW-2800	TX House No. 1 - Structure Base Level from +4.80 mPD to +6.0 mPD	21	29-Sep-22	25-Oct-22	13-Mar-23	06-Apr-23	130	TX House No. 1 - Structure Base Level from +4.80 mPD to +6.0 mPD																																															
IW-2810	TX House No. 1 - Structure G/F to Roof from +6.0 mPD to +9.0 mPD	21	26-Oct-22	18-Nov-22	11-Apr-23	05-May-23	130	TX House No. 1 - Structure G/F to Roof from +6.0 mPD to +9.0 mPD																																															
IW-2820	TX House No. 1 - Structure G/F to Roof from +9.0 mPD to +11.6 mPD	21	19-Nov-22	13-Dec-22	06-May-23	31-May-23	130	TX House No. 1 - Structure G/F to Roof from +9.0 mPD to +11.6 mPD																																															
IW-2830	TX House No. 1 - BS and ABWF	30	14-Dec-22	27-Jan-23	03-Nov-23	07-Dec-23	258	TX House No. 1 - BS and ABWF																																															
IW-2831	TX House No. 1 - E&M Handover	0	16-Jan-23		08-Dec-23		263	TX House No. 1 - E&M Handover																																															
IW-2840	TX House No. 1 - Transformer Installation and LV Switchboard Power On	72	28-Jan-23	26-Apr-23	08-Dec-23	11-Mar-24	258	TX House No. 1 - Transformer Installation and LV Switchboard Power On																																															



■ Remaining Level of Effort
■ DWP Rev.4
■ Actual Work
■ Remaining Work
■ Critical Remaining Work

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

Detailed Works Programme

Project ID : DWP.DPr5_210831
 Layout : DC201910 DWP rev.5
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Detailed Works Programme			
Date	Revision	Checked	Approved
31-Aug-21	Rev. 5		
31-Jul-21	Rev. 4		
30-Jun-21	Rev. 3		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	2022												2023												2024												2025												2026											
								Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																				
IW E&M Works		132	12-Dec-22	31-May-23	12-Dec-22	31-May-23	0																																																												
ATAL-1000	IW - Screening / Grit Removal / Inlet Pumping / DOU System / Penstock & Stoplogs	105	12-Dec-22	27-Apr-23	12-Dec-22	27-Apr-23	0																																																												
ATAL-1010	IW - Lifting Appliance	105	12-Dec-22	27-Apr-23	12-Dec-22	27-Apr-23	0																																																												
ATAL-0000	IW - E&M Handover	0	12-Dec-22		12-Dec-22		0																																																												
ATAL-1020	IW - Instrumentation	36	03-Apr-23	19-May-23	03-Apr-23	19-May-23	0																																																												
ATAL-1030	IW - Electrical Works (Cabling / LCP Termination)	30	25-Apr-23	31-May-23	25-Apr-23	31-May-23	0																																																												
ATAL-1040	IW - BS Installation (ELV, Ventilation, FS, PD)	30	25-Apr-23	31-May-23	25-Apr-23	31-May-23	0																																																												
IW E&M T&C		244	01-Jun-23	11-Mar-24	01-Jun-23	11-Mar-24	0																																																												
ATAL-1050	IW - T&C - Equipment SAT (Mechanical Dry Check)	30	01-Jun-23	07-Jul-23	01-Jun-23	07-Jul-23	0																																																												
ATAL-1060	IW - T&C - Equipment SAT (Functional Dry Check)	30	01-Jun-23	07-Jul-23	01-Jun-23	07-Jul-23	0																																																												
ATAL-1070	IW - T&C - Equipment SAT (Wet / Load Performance Check)	30	01-Jun-23	07-Jul-23	01-Jun-23	07-Jul-23	0																																																												
ATAL-1090	IW - Diversion works from existing bypass chamber to IW (Penstock Installation c/w T&C)	39	08-Jul-23	22-Aug-23	08-Jul-23	22-Aug-23	0																																																												
ATAL-1080	IW - FS Inspection and Fire Certificate	57	23-Aug-23	31-Oct-23	23-Aug-23	31-Oct-23	0																																																												
ATAL-1100	IW - T&C - Early Commissioning (100,000 m3/d) (KD3)	104	01-Nov-23	11-Mar-24	01-Nov-23	11-Mar-24	0																																																												
IW-995	KD3 (11-Mar-24)	0		11-Mar-24*		11-Mar-24	0																																																												
CLP Substations No. 1 & 2		1392	01-Jun-21 A	10-Nov-25	10-Sep-21	07-Nov-26	311																																																												
CLP-0900	Complete Temporary (Non-MIC) Administration Building	0		22-Jul-21 A		15-Oct-21																																																													
CLP-1000	Demolition Carpark (28) and Changing Room (27)	14	06-Sep-21*	21-Sep-21	15-Oct-21	30-Oct-21	31																																																												
Submissions		102	01-Jun-21 A	30-Sep-21	10-Sep-21	02-Nov-21	26																																																												
CLP-1180	Raft & Structural Design Submission	25	01-Jun-21 A	30-Jun-21 A	10-Sep-21	10-Sep-21																																																													
CLP-1190	GEO Review and Approval	44	02-Jul-21 A	02-Sep-21	18-Sep-21	21-Sep-21	17																																																												
CLP-1150	Piling Design Submission (if piling scheme is used, under review)	0		31-Aug-21*		02-Nov-21	52																																																												
CLP-1160	GEO Review and Approval (if piling scheme is used, under review)	0		30-Sep-21*		02-Nov-21	26																																																												
Foundation		106	16-Jul-21 A	19-Nov-21	10-Sep-21	30-Nov-21	9																																																												
CLP-1210	Predrilling Works	24	16-Jul-21 A	10-Sep-21	10-Sep-21	21-Sep-21	9																																																												
CLP-1200	Raft Foundation	57	11-Sep-21	19-Nov-21	23-Sep-21	30-Nov-21	9																																																												
CLP-1170	Piling Works (approx. 4 nrs, if piling scheme is used, under review)	24	02-Oct-21	30-Oct-21	03-Nov-21	30-Nov-21	26																																																												
CLP Substation No. 1		220	20-Nov-21	23-Aug-22	01-Dec-21	06-Oct-22	35																																																												
CLP-1010	CLP Substation No.1 - Structure	78	20-Nov-21	01-Mar-22	01-Dec-21	11-Mar-22	9																																																												
CLP-1040	CLP Substation No.1 - BS and ABWF Works	48	07-Mar-22	06-May-22	21-Apr-22	18-Jun-22	35																																																												
CLP-1070	CLP Substation No.1 - CLP Installation	90	07-May-22	23-Aug-22	20-Jun-22	06-Oct-22	35																																																												
CLP-1090	CLP Substation No.1 - Energization	0		23-Aug-22		06-Oct-22	35																																																												
CLP Substation No. 2		216	28-Dec-21	23-Sep-22	08-Jan-22	06-Oct-22	9																																																												
CLP-1020	CLP Substation No.2 - Structure	78	28-Dec-21	06-Apr-22	08-Jan-22	20-Apr-22	9																																																												
CLP-1050	CLP Substation No.2 - BS and ABWF Works	48	07-Apr-22	08-Jun-22	21-Apr-22	18-Jun-22	9																																																												
CLP-1080	CLP Substation No.2 - CLP Installation	90	09-Jun-22	23-Sep-22	20-Jun-22	06-Oct-22	9																																																												
CLP-1100	CLP Substation No.2 - Energization	0		23-Sep-22		06-Oct-22	9																																																												
CLP-1140	Section 1 Completion - CLP Substation 1 & 2	0		23-Sep-22		06-Oct-22	9																																																												
DSD 11kV Switchgear		917	07-Apr-22	24-May-25	06-May-22	20-Jun-26	316																																																												
CLP-1030	DSD11kV Switchgear - Structure	78	07-Apr-22	14-Jul-22	06-May-22	08-Aug-22	21																																																												
CLP-1060	DSD11kV Switchgear - BS and ABWF Works	48	15-Jul-22	08-Sep-22	09-Aug-22	06-Oct-22	21																																																												
CLP-1110	DSD11kV Switchgear - Installation	78	24-Sep-22	28-Dec-22	19-Aug-23	21-Nov-23	263																																																												
CLP-1220	DSD11kV Switchgear - Energization	14	29-Dec-22	14-Jan-23	22-Nov-23	07-Dec-23	263																																																												
CLP-1230	Demolition of existing DSD11kV Switchgear (29)	45	27-Mar-25	24-May-25	27-Apr-26	20-Jun-26	316																																																												
Walkway & Master Meter Room		360	22-Aug-24	10-Nov-25	20-Aug-25	07-Nov-26	292																																																												
CLP-1120	Walkway, Guard House and Education Corridor	180	22-Aug-24	01-Apr-25	20-Aug-25	31-Mar-26	292																																																												
CLP-1130	Master Meter Room Structure, ABWF, BS & E&M	180	02-Apr-25	10-Nov-25	01-Apr-26	07-Nov-26	292																																																												
Primary Sedimentation Tank (PST)		1878	09-Nov-20 A	08-Nov-26	31-Aug-21	08-Nov-26	0																																																												
PST Stage 1 of Works		1045	09-Nov-20 A	11-Mar-24	31-Aug-21	24-Jun-24	90																																																												
PST-1000	Preparation	44	09-Nov-20 A	31-Dec-20 A	08-Sep-21	08-Sep-21																																																													
PST-1010	UU Detection	3	22-Feb-21 A	24-Feb-21 A	08-Sep-21	08-Sep-21																																																													
PST-1020	Method Statement for Predrilling	1	25-Feb-21 A	25-Feb-21 A	08-Sep-21	08-Sep-21																																																													
PST-1030	Setting out of Drill Holes	2	26-Feb-21 A	27-Feb-21 A	08-Sep-21	08-Sep-21																																																													
PST-1040	UU Report	1	01-Mar-21 A	01-Mar-21 A	08-Sep-21	08-Sep-21																																																													
PST-1050	Site Clearance	6	02-Mar-21 A	08-Mar-21 A	08-Sep-21	08-Sep-21																																																													
PST Stage 1 - GI - Proposed Predrilling for Piling Works		144	10-May-21 A	19-Aug-21 A	08-Sep-21	28-Oct-21																																																													
Predrilling at Existing PST 8 (including Trial Pit Excavation, Level Checking, Core Inspection, SPT)		144	10-May-21 A	19-Aug-21 A	08-Sep-21	08-Sep-21																																																													
PST-1090	PD9	14	10-May-21 A	22-May-21 A	08-Sep-21	08-Sep-21																																																													
PST-1080	PD6	14	26-May-21 A	02-Jun-21 A	08-Sep-21	08-Sep-21																																																													
PST-1110	PD12	14	14-Jul-21 A	29-Jul-21 A	08-Sep-21	08-Sep-21																																																													
PST-1060	PD4	14	16-Jul-21 A	31-Jul-21 A	08-Sep-21	08-Sep-21																																																													
PST-1070	PD7	14	02-Aug-21 A	17-Aug-21 A	08-Sep-21	08-Sep-21																																																													
PST-1150	PD13 (w/ obstruction) after demolition of PST 7	14	04-Aug-21 A	19-Aug-21 A	08-Sep-21	08-Sep-21																																																													
PST-1160	PD14 (w/ obstruction) after demolition of PST 7	14	04-Aug-21 A	19-Aug-21 A	08-Sep-21	08-Sep-21																																																													
Predrilling at Existing PST 7 (including Trial Pit Excavation, Level Checking, Core Inspection, SPT)		107	11-May-21 A	19-Aug-21 A	08-Sep-21	28-Oct-21																																																													
PST-1190	PD8	49	11-May-21 A	09-Jul-21 A	08-Sep-21	08-Sep-21																																																													
PST-1140	PD2	14	02-Aug-21 A	17-Aug-21 A	08-Sep-21	08-Sep-21																																																													
PST-1200	PD10 (w/ obstruction) after demolition of PST 8	14	04-Aug-21 A	19-Aug-21 A	28-Oct-21	28-Oct-21																																																													
PST-1130	PD11 (w/ obstruction)	14	04-Aug-21 A	19-Aug-21 A	08-Sep-21	08-Sep-21																																																													
PST Stage 1 - Foundation (At First 3 Tanks, PST 7-8 Footprint)		314	24-Aug-21 A	31-Aug-22	31-Aug-21	07-Sep-22	6																																																												
PST-1175	PST Stage 1 - Site set-up of piling rigs	12	24-Aug-21 A	06-Sep-21	31-Aug-21	06-Sep-21	0																																																												
PST-1180	PST Stage 1 - Driven H-piles (88 nos. @ ave. 1.5no/d/ri) include site setup	41	08-Sep-21	28-Oct-21	08-Sep-21	28-Oct-21	0																																																												
PST-1170	PST Stage 1 - Sheetpiling (1,561 m2 at 90m2/day)	30	07-Oct-21	11-Nov-21	19-Oct-21	22-Nov-21	9																																																												
PST-1210	PST Stage 1 - H-pile Testing	21	29-Oct-21	22-Nov-21	29-Oct-21	22-Nov-21	0																																																												



- █ Remaining Level of Effort
- █ DWP Rev.4
- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart (2022-2026)																																															
								2022	2023	2024	2025	2026																																											
PST-1211	PST Stage 1 - Monitoring Installation and Pumping Test	21	29-Oct-21	22-Nov-21	29-Oct-21	22-Nov-21	0	PST Stage 1 - Monitoring Installation and Pumping Test																																															
MMM-2021	PS 1.105A Noise Mitigation Measures 2021-2022	151	01-Nov-21*	31-Mar-22	01-Nov-21	31-Mar-22	0	PS 1.105A Noise Mitigation Measures 2021-2022																																															
PST-1230	PST - Marine Sediments Treatment and Disposal	70	23-Nov-21	22-Feb-22	17-Jun-22	07-Sep-22	161	PST - Marine Sediments Treatment and Disposal																																															
PST-1220	PST Stage 1 - Excavation (+5.8 to +3.8mPD)	21	23-Nov-21	16-Dec-21	23-Nov-21	16-Dec-21	0	PST Stage 1 - Excavation (+5.8 to +3.8mPD)																																															
PST-3020	PST Stage 1 - Submit to GEO (28d)	28	23-Nov-21	24-Dec-21	24-Jan-22	03-Mar-22	50	PST Stage 1 - Submit to GEO (28d)																																															
PST-1240	PST Stage 1 - Strut Installation S1 (+3.8mPD)	18	17-Dec-21	10-Jan-22	14-Jan-22	10-Feb-22	21	PST Stage 1 - Strut Installation S1 (+3.8mPD)																																															
PST-1250	PST Stage 1 - Excavation (+3.8 to +1.3mPD)	29	17-Dec-21	22-Jan-22	17-Dec-21	22-Jan-22	0	PST Stage 1 - Excavation (+3.8 to +1.3mPD)																																															
PST-1260	PST Stage 1 - Strut Installation S2 (+1.3mPD)	18	24-Jan-22	19-Feb-22	11-Feb-22	03-Mar-22	10	PST Stage 1 - Strut Installation S2 (+1.3mPD)																																															
PST-1270	PST Stage 1 - Excavation (+1.3 to -1.05mPD)	28	24-Jan-22	03-Mar-22	24-Jan-22	03-Mar-22	0	PST Stage 1 - Excavation (+1.3 to -1.05mPD)																																															
EBS-2022	Egrets Breeding Season 2022	184	01-Mar-22*	31-Aug-22	01-Mar-22	31-Aug-22	0	Egrets Breeding Season 2022																																															
PST Stage 1 - Structure (At First 3 Tanks, PST 7-8 Footprint)																																																							
PST-1280	3-Tank Structure from +0.0 mPD to +3.0 mPD	26	04-Mar-22	02-Apr-22	04-Mar-22	02-Apr-22	0	3-Tank Structure from +0.0 mPD to +3.0 mPD																																															
PST-1290	3-Tank Structure from +3.0 mPD to +6.0 mPD	25	04-Apr-22	07-May-22	04-Apr-22	07-May-22	0	3-Tank Structure from +3.0 mPD to +6.0 mPD																																															
PST-1300	3-Tank Structure from +6.0 mPD to +9.0 mPD	25	10-May-22	08-Jun-22	10-May-22	08-Jun-22	0	3-Tank Structure from +6.0 mPD to +9.0 mPD																																															
PST-1310	3-Tank Structure from +9.0 mPD to +11.80 mPD	25	09-Jun-22	08-Jul-22	08-Jun-22	08-Jul-22	0	3-Tank Structure from +9.0 mPD to +11.80 mPD																																															
PST-1320	3-Tank Structure from +11.80 mPD to +15.0 mPD Lift 1 (3.2m)	26	09-Jul-22	08-Aug-22	09-Jul-22	08-Aug-22	0	3-Tank Structure from +11.80 mPD to +15.0 mPD Lift 1 (3.2m)																																															
PST-1330	3-Tank Structure to Roof from +15.0 mPD to +18.30 mPD Lift 2 (3.3m)	26	09-Aug-22	07-Sep-22	09-Aug-22	07-Sep-22	0	3-Tank Structure to Roof from +15.0 mPD to +18.30 mPD Lift 2 (3.3m)																																															
PST-1340	Water Retaining Test for New PST Tank No. 1	7	08-Sep-22	16-Sep-22	08-Sep-22	16-Sep-22	0	Water Retaining Test for New PST Tank No. 1																																															
PST-1350	Water Retaining Test for New PST Tank No. 3	7	08-Sep-22	16-Sep-22	08-Sep-22	16-Sep-22	0	Water Retaining Test for New PST Tank No. 3																																															
PST-1360	Water Retaining Test for New PST Tank No. 2	7	17-Sep-22	24-Sep-22	17-Sep-22	24-Sep-22	0	Water Retaining Test for New PST Tank No. 2																																															
PST Stage 1 - ABWF & BS Works																																																							
PST-1370	PST - BS and ABWF Works at 3 Tanks	300	26-Sep-22	04-Oct-23	16-Jun-23	24-Jun-24	209	PST - BS and ABWF Works at 3 Tanks																																															
PST Stage 1 - E&M Installation Works at New PST 1,2,3																																																							
ATAPST-3000	PST Stage 1 - Bottom Scraper / Scum Collection System	146	26-Sep-22	27-Mar-23	26-Sep-22	27-Mar-23	0	PST Stage 1 - Bottom Scraper / Scum Collection System																																															
ATAPST-3010	PST Stage 1 - Lamella / Sludge & Scum Pump / DOU System	146	26-Sep-22	27-Mar-23	26-Sep-22	27-Mar-23	0	PST Stage 1 - Lamella / Sludge & Scum Pump / DOU System																																															
ATAPST-3020	PST Stage 1 - Lifting Appliance	146	26-Sep-22	27-Mar-23	26-Sep-22	27-Mar-23	0	PST Stage 1 - Lifting Appliance																																															
ATAPST-3030	PST Stage 1 - Penstock / Stoplogs	146	26-Sep-22	27-Mar-23	26-Sep-22	27-Mar-23	0	PST Stage 1 - Penstock / Stoplogs																																															
ATAPST-0000	PST Stage 1 - E&M Handover	0	26-Sep-22	26-Sep-22	26-Sep-22	26-Sep-22	0	PST Stage 1 - E&M Handover																																															
ATAPST-3040	PST Stage 1 - Instrumentation	36	28-Mar-23	13-May-23	28-Mar-23	13-May-23	0	PST Stage 1 - Instrumentation																																															
ATAPST-3050	PST Stage 1 - Electrical Works (Cabling / LOP, Termination)	80	28-Mar-23	07-Jul-23	28-Mar-23	07-Jul-23	0	PST Stage 1 - Electrical Works (Cabling / LOP, Termination)																																															
ATAPST-3060	PST Stage 1 - BS Installation (ELV, Ventilation, FS, PD)	80	28-Mar-23	07-Jul-23	28-Mar-23	07-Jul-23	0	PST Stage 1 - BS Installation (ELV, Ventilation, FS, PD)																																															
PST Stage 1 - Testing and Commissioning at New PST 1,2,3																																																							
ATAPST-3070	PST Stage 1 - T&C - Equipment SAT (Mechanical Dry Check)	28	08-Jul-23	09-Aug-23	08-Jul-23	09-Aug-23	0	PST Stage 1 - T&C - Equipment SAT (Mechanical Dry Check)																																															
ATAPST-3080	PST Stage 1 - T&C - Equipment SAT (Functional Dry Check) linked to TX House POWER ON	48	26-Jul-23	19-Sep-23	26-Jul-23	19-Sep-23	0	PST Stage 1 - T&C - Equipment SAT (Functional Dry Check) linked to TX House POWER ON																																															
ATAPST-3090	PST Stage 1 - T&C - Equipment SAT (Wet / Load Performance Check)	48	26-Jul-23	19-Sep-23	26-Jul-23	19-Sep-23	0	PST Stage 1 - T&C - Equipment SAT (Wet / Load Performance Check)																																															
ATAPST-3100	PST Stage 1 - FS Inspection and Fire Certificate	42	20-Sep-23	10-Nov-23	20-Sep-23	10-Nov-23	0	PST Stage 1 - FS Inspection and Fire Certificate																																															
ATAPST-3110	PST Stage 1 - T&C - Early Commissioning (54,000 m3/d) (KD3)	68	11-Nov-23	01-Feb-24	11-Nov-23	01-Feb-24	0	PST Stage 1 - T&C - Early Commissioning (54,000 m3/d) (KD3)																																															
PKD3	Early Completion KD3	0	01-Feb-24	15-Feb-24	01-Feb-24	15-Feb-24	14	Early Completion KD3																																															
CDK3	KD3	0	11-Mar-24*	11-Mar-24	11-Mar-24	11-Mar-24	0	KD3																																															
PST Stage 2 of Works																																																							
PST GI - Propose Predrilling for Piling Works																																																							
Pre-drilling @ Existing PST 6 (including Trial Pit Excavation, Level Checking, Core Inspection, SPT)																																																							
PST-2000	PD1 (w/ obstruction, relocated)	14	31-Aug-21	15-Sep-21	06-Jun-22	21-Jun-22	220	PD1 (w/ obstruction, relocated)																																															
Pre-drilling @ Existing PST 5 (including Trial Pit Excavation, Level Checking, Core Inspection, SPT)																																																							
PST-2020	PD5	7	04-Jun-21 A	11-Jun-21 A	23-Apr-22	23-Apr-22	0	PD5																																															
PST-2010	PD3	14	12-Jun-21 A	29-Jun-21 A	23-Apr-22	23-Apr-22	0	PD3																																															
PST Foundation - Stage 2 (At Remaining 2 Tanks, PST 5-6 Footprint)																																																							
PST-2030	PST Stage 2 - Driven H-piles (57 nos. @ ave. 1.5no/d/riq)	36	16-Sep-21	30-Oct-21	23-Apr-22	07-Jun-22	51	PST Stage 2 - Driven H-piles (57 nos. @ ave. 1.5no/d/riq)																																															
PST-2061	PST Stage 2 - Monitoring Installation and Pumping Test	21	21-Oct-21	13-Nov-21	27-May-22	21-Jun-22	172	PST Stage 2 - Monitoring Installation and Pumping Test																																															
MMM-2105	PS 1.105A Noise Mitigation Measures 2021-2022	151	01-Nov-21*	31-Mar-22	01-Nov-21	31-Mar-22	0	PS 1.105A Noise Mitigation Measures 2021-2022																																															
PST-2040	PST Stage 2 - Sheetpiling (1,040 m2 at 90m2/day)	12	12-Nov-21	25-Nov-21	08-Jun-22	21-Jun-22	162	PST Stage 2 - Sheetpiling (1,040 m2 at 90m2/day)																																															
PST-2060	PST Stage 2 - H-pile Testing	18	23-Nov-21	13-Dec-21	27-Jun-22	18-Jul-22	169	PST Stage 2 - H-pile Testing																																															
PST-2050	PST Stage 2 - Excavation (+5.8 to +3.8mPD)	22	01-Dec-21	28-Dec-21	22-Jun-22	18-Jul-22	158	PST Stage 2 - Excavation (+5.8 to +3.8mPD)																																															
PST-3035	PST Stage 2 - Submit to GEO (28d)	28	18-Jan-22	18-Jan-22	06-Aug-22	07-Sep-22	185	PST Stage 2 - Submit to GEO (28d)																																															
PST-2070	PST Stage 2 - Strut Installation S1 (+3.8mPD)	14	11-Jan-22	26-Jan-22	19-Jul-22	03-Aug-22	148	PST Stage 2 - Strut Installation S1 (+3.8mPD)																																															
PST-2080	PST Stage 2 - Excavation (+3.8 to +1.3mPD)	22	11-Jan-22	11-Feb-22	19-Jul-22	12-Aug-22	148	PST Stage 2 - Excavation (+3.8 to +1.3mPD)																																															
PST-2090	PST Stage 2 - Strut Installation S2 (+1.3mPD)	14	12-Feb-22	28-Feb-22	23-Aug-22	07-Sep-22	156	PST Stage 2 - Strut Installation S2 (+1.3mPD)																																															
PST-2100	PST Stage 2 - Excavation (+1.3 to -1.05mPD)	22	12-Feb-22	09-Mar-22	13-Aug-22	07-Sep-22	148	PST Stage 2 - Excavation (+1.3 to -1.05mPD)																																															
EBS-2115	Egrets Breeding Season 2022	184	01-Mar-22*	31-Aug-22	01-Mar-22	31-Aug-22	0	Egrets Breeding Season 2022																																															
PST Stage 2 - Structure (At Remaining 2 Tanks, PST 5-6 Footprint)																																																							
PST-2110	2-Tank Structure from +0.0 mPD to +3.0 mPD	21	08-Sep-22	05-Oct-22	08-Sep-22	05-Oct-22	0	2-Tank Structure from +0.0 mPD to +3.0 mPD																																															
PST-2120	2-Tank Structure from +3.0 mPD to +6.0 mPD	21	06-Oct-22	29-Oct-22	06-Oct-22	29-Oct-22	0	2-Tank Structure from +3.0 mPD to +6.0 mPD																																															
PST-2130	2-Tank Structure from +6.0 mPD to +9.0 mPD	21	31-Oct-22	23-Nov-22	31-Oct-22	23-Nov-22	0	2-Tank Structure from +6.0 mPD to +9.0 mPD																																															
PST-2140	2-Tank Structure from +9.0 mPD to +11.80 mPD	21	24-Nov-22	17-Dec-22	24-Nov-22	17-Dec-22	0	2-Tank Structure from +9.0 mPD to +11.80 mPD																																															
PST-2150	2-Tank Structure from +11.80 mPD to +15.0 mPD Lift 1 (3.2m)	21	19-Dec-22	14-Jan-23	19-Dec-22	14-Jan-23	0	2-Tank Structure from +11.80 mPD to +15.0 mPD Lift 1 (3.2m)																																															
PST-2160	2-Tank Structure from +15.0 mPD to +18.30 mPD Lift 2 (3.3m)	21	16-Jan-23	15-Feb-23	16-Jan-23	15-Feb-23	0	2-Tank Structure from +15.0 mPD to +18.30 mPD Lift 2 (3.3m)																																															
PST-2170	Water Retaining Test for New PST Tank No. 4	13	16-Feb-23	02-Mar-23	16-Feb-23	02-Mar-23	0	Water Retaining Test for New PST Tank No. 4																																															
PST-2180	Water Retaining Test for New PST Tank No. 5	13	03-Mar-23	03-Mar-23	17-Mar-23	03-Mar-23	0	Water Retaining Test for New PST Tank No. 5																																															
CDK6	KD6	0	05-Feb-26*	05-Feb-26	05-Feb-26	05-Feb-26	0	KD6																																															
PST Stage 2 - ABWF & BS Works																																																							
PST-2190	PST - BS and ABWF Works at 2 Tanks	180	15-Mar-23	21-Oct-23	16-Jun-23	20-Jan-24	74	PST - BS and ABWF Works at 2 Tanks																																															
PST Stage 2 - E&M Installation Works at New PST 4,5																																																							
ATAPST-5000	PST Stage 2 - Bottom Scraper / Scum Collection System	87	18-Mar-23	06-Jul-23	18-Mar-23	06-Jul-23	0	PST Stage 2 - Bottom Scraper / Scum Collection System																																															
ATAPST-5010	PST Stage 2 - Lamella / Sludge & Scum Pump / DOU System	87	18-Mar-23	06-Jul-23	18-Mar-23	06-Jul-23	0	PST Stage 2 - Lamella / Sludge & Scum Pump / DOU System																																															
ATAPST-5020	PST Stage 2 - Lifting Appliance	87	18-Mar-23	06-Jul-23	18-Mar-23	06-Jul-23	0	PST Stage 2 - Lifting Appliance																																															



- Remaining Level of Effort
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30-Jun-21	Rev. 3		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	2023												2024				2025				2026				2027				2028																	
								Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4										
Z2T-180	Demolition of Final Sedimentation Tank No.5-6 (6 and 37)	50	24-Jan-22	29-Mar-22	24-Jan-22	29-Mar-22	0	Demolition of Final Sedimentation Tank No.5-6 (6 and 37)																																													
Z2T-180B	Demolition of Washwater Pumping Station (18)	25	24-Jan-22	28-Feb-22	24-Jan-22	28-Feb-22	0	Demolition of Washwater Pumping Station (18)																																													
Mainstream Bio-Reactor & Auxiliary Facility (MBR and AF)								1271	15-Jan-22	05-Feb-26	24-Mar-22	07-Nov-26	236																																								
MBR Stage 1 and AF Structure								881	15-Jan-22	07-Nov-24	24-Mar-22	07-Nov-24	0																																								
MBR Foundation and ELS Works								156	15-Jan-22	01-Aug-22	24-Mar-22	17-Aug-22	14																																								
MBR-1460	MBR Stage 1 - Monitoring Installation and Pumping Test	21	15-Jan-22	15-Feb-22	29-Mar-22	26-Apr-22	56	MBR Stage 1 - Monitoring Installation and Pumping Test																																													
MBR-1000	MBR Stage 1 - Site Clearance	25	08-Mar-22	06-Apr-22	24-Mar-22	26-Apr-22	14	MBR Stage 1 - Site Clearance																																													
MBR-1440	MBR Stage 1 - Setup and Mobilization	7	29-Mar-22	06-Apr-22	19-Apr-22	26-Apr-22	14	MBR Stage 1 - Setup and Mobilization																																													
MBR-1030	MBR Stage 1 - ELS Excavation (+5.0 to +4.0mPD)	15	07-Apr-22	27-Apr-22	27-Apr-22	16-May-22	14	MBR Stage 1 - ELS Excavation (+5.0 to +4.0mPD)																																													
MBR-1040	MBR Stage 1 - Strut Installation S1 (+4.0mPD)	7	28-Apr-22	06-May-22	17-May-22	24-May-22	14	MBR Stage 1 - Strut Installation S1 (+4.0mPD)																																													
MBR-1050	MBR Stage 1 - ELS Excavation (+4.0 to +0.5mPD)	15	28-Apr-22	17-May-22	17-May-22	02-Jun-22	14	MBR Stage 1 - ELS Excavation (+4.0 to +0.5mPD)																																													
MBR-1060	MBR Stage 1 - Strut Installation S2 (+0.5mPD)	7	18-May-22	25-May-22	04-Jun-22	11-Jun-22	14	MBR Stage 1 - Strut Installation S2 (+0.5mPD)																																													
MBR-1070	MBR Stage 1 - ELS Excavation (+0.5 to -2.5mPD)	15	18-May-22	04-Jun-22	04-Jun-22	21-Jun-22	14	MBR Stage 1 - ELS Excavation (+0.5 to -2.5mPD)																																													
MBR-1080	MBR Stage 1 - Strut Installation S3 (-2.5mPD)	7	06-Jun-22	13-Jun-22	22-Jun-22	29-Jun-22	14	MBR Stage 1 - Strut Installation S3 (-2.5mPD)																																													
MBR-1090	MBR Stage 1 - ELS Excavation (-2.5 to -5.5mPD)	15	06-Jun-22	22-Jun-22	22-Jun-22	09-Jul-22	14	MBR Stage 1 - ELS Excavation (-2.5 to -5.5mPD)																																													
MBR-1100	MBR Stage 1 - Strut Installation S4 (-5.5mPD)	7	23-Jun-22	30-Jun-22	11-Jul-22	18-Jul-22	14	MBR Stage 1 - Strut Installation S4 (-5.5mPD)																																													
MBR-1110	MBR Stage 1 - ELS Excavation (-5.5 to -9.3mPD)	15	23-Jun-22	11-Jul-22	11-Jul-22	27-Jul-22	14	MBR Stage 1 - ELS Excavation (-5.5 to -9.3mPD)																																													
MBR-1120	MBR Stage 1 - Strut Installation S5 (-8.2mPD)	7	12-Jul-22	19-Jul-22	28-Jul-22	04-Aug-22	14	MBR Stage 1 - Strut Installation S5 (-8.2mPD)																																													
MBR-1130	MBR Stage 1 - ELS Excavation (-9.3 to -12.3mPD)	18	12-Jul-22	01-Aug-22	28-Jul-22	17-Aug-22	14	MBR Stage 1 - ELS Excavation (-9.3 to -12.3mPD)																																													
MBR Foundation and ELS Works Stage 2								216	01-Mar-24	07-Nov-24	01-Mar-24	07-Nov-24	0																																								
MBR-1240	Egrets Breeding Season 2024	184	01-Mar-24*	31-Aug-24	01-Mar-24	31-Aug-24	0	Egrets Breeding Season 2024																																													
MBR-1280	MBR Stage 2 - Site Clearance	9	26-Apr-24	07-May-24	11-May-24	22-May-24	12	MBR Stage 2 - Site Clearance																																													
MBR-1450	MBR Stage 2 - Site Setup & Mobilization	7	08-May-24	16-May-24	23-May-24	30-May-24	12	MBR Stage 2 - Site Setup & Mobilization																																													
MBR-1290	MBR Stage 2 - Sheet Piles Install (9,286m2 @ 120m2/d)	77	31-May-24	30-Aug-24	31-May-24	30-Aug-24	0	MBR Stage 2 - Sheet Piles Install (9,286m2 @ 120m2/d)																																													
MBR-1470	MBR Stage 2 - Monitoring Installation and Pumping Test	21	07-Aug-24	30-Aug-24	07-Aug-24	30-Aug-24	0	MBR Stage 2 - Monitoring Installation and Pumping Test																																													
MBR-1300	MBR Stage 2 - ELS Excavation (+5.0 to +4.0mPD)	11	31-Aug-24	12-Sep-24	31-Aug-24	12-Sep-24	0	MBR Stage 2 - ELS Excavation (+5.0 to +4.0mPD)																																													
MBR-1310	MBR Stage 2 - Strut Installation S1 (+4.0mPD)	5	13-Sep-24	19-Sep-24	16-Oct-24	21-Oct-24	25	MBR Stage 2 - Strut Installation S1 (+4.0mPD)																																													
MBR-1320	MBR Stage 2 - ELS Excavation (+4.0 to +0.5mPD)	11	13-Sep-24	26-Sep-24	13-Sep-24	26-Sep-24	0	MBR Stage 2 - ELS Excavation (+4.0 to +0.5mPD)																																													
MBR-1330	MBR Stage 2 - Strut Installation S2 (+0.5mPD)	5	27-Sep-24	03-Oct-24	22-Oct-24	26-Oct-24	19	MBR Stage 2 - Strut Installation S2 (+0.5mPD)																																													
MBR-1340	MBR Stage 2 - ELS Excavation (+0.5 to -2.5mPD)	11	27-Sep-24	10-Oct-24	27-Sep-24	10-Oct-24	0	MBR Stage 2 - ELS Excavation (+0.5 to -2.5mPD)																																													
MBR-1350	MBR Stage 2 - Strut Installation S3 (-2.5mPD)	5	12-Oct-24	17-Oct-24	28-Oct-24	01-Nov-24	13	MBR Stage 2 - Strut Installation S3 (-2.5mPD)																																													
MBR-1360	MBR Stage 2 - ELS Excavation (-2.5 to -5.5mPD)	11	12-Oct-24	24-Oct-24	12-Oct-24	24-Oct-24	0	MBR Stage 2 - ELS Excavation (-2.5 to -5.5mPD)																																													
MBR-1370	MBR Stage 2 - Strut Installation S4 (-5.5mPD)	5	25-Oct-24	30-Oct-24	02-Nov-24	07-Nov-24	7	MBR Stage 2 - Strut Installation S4 (-5.5mPD)																																													
MBR-1380	MBR Stage 2 - ELS Excavation (-5.5 to -9.3mPD)	12	25-Oct-24	07-Nov-24	25-Oct-24	07-Nov-24	0	MBR Stage 2 - ELS Excavation (-5.5 to -9.3mPD)																																													
MBR Structure Stage 1								441	18-Aug-22	20-Feb-24	18-Aug-22	20-Feb-24	0																																								
MBR-1140	MBR Stage 1 - Base/Grd Floor Slab	77	18-Aug-22	18-Nov-22	18-Aug-22	18-Nov-22	0	MBR Stage 1 - Base/Grd Floor Slab																																													
MBR-1160	MBR Stage 1 - Wall and 1/F Slab	62	19-Nov-22	09-Feb-23	19-Nov-22	09-Feb-23	0	MBR Stage 1 - Wall and 1/F Slab																																													
MBR-1180	MBR Stage 1 - Wall and Roof Slab	62	10-Feb-23	27-Apr-23	10-Feb-23	27-Apr-23	0	MBR Stage 1 - Wall and Roof Slab																																													
MBR-1200	MBR Stage 1 - BS and ABWF Works	240	28-Apr-23	20-Feb-24	28-Apr-23	20-Feb-24	0	MBR Stage 1 - BS and ABWF Works																																													
Ancillary Facilities Structure Stage 1								138	08-May-23	20-Oct-23	13-May-23	27-Oct-23	5																																								
MBR-1150	Construct Ancillary Facilities - Structure Ground Floor	46	08-May-23	03-Jul-23	13-May-23	08-Jul-23	5	Construct Ancillary Facilities - Structure Ground Floor																																													
MBR-1170	Construct Ancillary Facilities - Structure First Floor	46	04-Jul-23	25-Aug-23	10-Jul-23	31-Aug-23	5	Construct Ancillary Facilities - Structure First Floor																																													
MBR-1190	Construct Ancillary Facilities - Structure Roof Floor	46	26-Aug-23	20-Oct-23	01-Sep-23	27-Oct-23	5	Construct Ancillary Facilities - Structure Roof Floor																																													
MBR Stage 1 E&M Installation								331	10-Aug-23	23-Sep-24	28-Oct-23	23-Sep-24	0																																								
MBR-1220	MBR - E&M Stage 1 Sludge Pre-thickeners System	170	10-Aug-23	08-Mar-24	28-Oct-23	30-May-24	65	MBR - E&M Stage 1 Sludge Pre-thickeners System																																													
MBR-1209	MBR Stage 1 - E&M Handover	0	18-Aug-23		28-Oct-23		58	MBR Stage 1 - E&M Handover																																													
MBR-1210	MBR - E&M Stage 1 AGS System	170	21-Oct-23	24-May-24	28-Oct-23	30-May-24	5	MBR - E&M Stage 1 AGS System																																													
MBR-1230	MBR - E&M Stage 1 Penstock/stopplogs	80	21-Feb-24	30-May-24	21-Feb-24	30-May-24	0	MBR - E&M Stage 1 Penstock/stopplogs																																													
MBR-1250	MBR - E&M Stage 1 Instrumentation	45	31-May-24	24-Jul-24	31-May-24	24-Jul-24	0	MBR - E&M Stage 1 Instrumentation																																													
MBR-1260	MBR - E&M Stage 1 Electrical (Cabling/LCP, Termination)	96	31-May-24	23-Sep-24	31-May-24	23-Sep-24	0	MBR - E&M Stage 1 Electrical (Cabling/LCP, Termination)																																													
MBR-1270	MBR - E&M Stage 1 BS Installation (ELV, Ventilation, FS, PD)	96	31-May-24	23-Sep-24	31-May-24	23-Sep-24	0	MBR - E&M Stage 1 BS Installation (ELV, Ventilation, FS, PD)																																													
MBR Stage 2 Structure								308	08-Nov-24	24-Nov-25	08-Nov-24	05-Feb-26	60																																								
MBR Structure Stage 2								308	08-Nov-24	24-Nov-25	08-Nov-24	05-Feb-26	60																																								
MBR-1390	MBR Stage 2 - Base/Grd Floor Slab	40	08-Nov-24	24-Dec-24	08-Nov-24	24-Dec-24	0	MBR Stage 2 - Base/Grd Floor Slab																																													
MBR-1400	MBR Stage 2 - Wall and 1/F Slab	44	27-Dec-24	22-Feb-25	27-Dec-24	22-Feb-25	0	MBR Stage 2 - Wall and 1/F Slab																																													
MBR-1420	MBR Stage 2 - Wall and Roof Slab	44	24-Feb-25	16-Apr-25	24-Feb-25	16-Apr-25	0	MBR Stage 2 - Wall and Roof Slab																																													
MBR-1430	MBR Stage 2 - BS and ABWF Works	180	17-Apr-25	24-Nov-25	04-Jul-25	05-Feb-26	60	MBR Stage 2 - BS and ABWF Works																																													
MBR Stage 2 E&M Installation								118	17-Apr-25	09-Sep-25	17-Apr-25	05-Feb-26	122																																								
ATALMBR-1030	MBR - E&M Stage 2 AGS System	70	17-Apr-25	15-Jul-25	17-Apr-25	15-Jul-25	0	MBR - E&M Stage 2 AGS System																																													
ATALMBR-1040	MBR - E&M Stage 2 Sludge Pre-thickeners System	70	17-Apr-25	15-Jul-25	17-Apr-25	15-Jul-25	0	MBR - E&M Stage 2 Sludge Pre-thickeners System																																													
ATALMBR-1050	MBR - E&M Stage 2 Penstock/stopplogs	48	17-Apr-25	18-Jun-25	19-May-25	15-Jul-25	22	MBR - E&M Stage 2 Penstock/stopplogs																																													
ATALMBR-1049	MBR Stage 2 - E&M Handover	0	17-Apr-25		19-May-25		22	MBR Stage 2 - E&M Handover																																													
ATALMBR-1060	MBR - E&M Stage 2 Instrumentation	24	16-Jul-25	12-Aug-25	16-Jul-25	12-Aug-25	0	MBR - E&M Stage 2 Instrumentation																																													
ATALMBR-1070	MBR - E&M Stage 2 Electrical (Cabling/LCP, Termination)	30	16-Jul-25	19-Aug-25	02-Jan-26	05-Feb-26	140	MBR - E&M Stage 2 Electrical (Cabling/LCP, Termination)																																													
ATALMBR-1080	MBR - E&M Stage 2 BS Installation (ELV, Ventilation, FS, PD)	48	16-Jul-25	09-Sep-25	16-Jul-25	09-Sep-25	0	MBR - E&M Stage 2 BS Installation (ELV, Ventilation, FS, PD)																																													
MBR and AF E&M T&C								429	24-Sep-24	05-Feb-26	24-Sep-24	05-Feb-26	0																																								
ATALMBR-1000	MBR - AGS Stage 1 - T&C - Equipment SAT	87	24-Sep-24	08-Jan-25	24-Sep-24	08-Jan-25	0	MBR - AGS Stage 1 - T&C - Equipment SAT																																													
ATALMBR-1010	MBR - AGS T&C - Seeding (20,000 m3/d)	16	09-Jan-25	27-Jan-25	09-Jan-25	27-Jan-25	0	MBR - AGS T&C - Seeding (20,000 m3/d)																																													
ATALMBR-1020	AGS - T&C - Sludge Stabilisation (20,000 m3/d)	132	03-Feb-25	15-Jul-25	03-Feb-25	15-Jul-25	0	AGS - T&C - Sludge Stabilisation (20,000 m3/d)																																													
ATALMBR-1150	MBR - AGS Testing and Commissioning Plan Submission and Approval	120	21-Jun-25	12-Nov-25	21-Jun-25	12-Nov-25	0	MBR - AGS Testing and Commissioning Plan Submission and Approval																																													
ATALMBR-1090	AGS - T&C - Process Start-up (35,000 m3/d)	70	16-Jul-25	06-Oct-25	16-Jul-25	06-Oct-25	0	AGS - T&C - Process Start-up (35,000 m3/d)																																													
ATALMBR-1100	MBR - AGS Stage 2 - T&C - Equipment SAT	52	10-Sep-25	12-Nov-25	10-Sep-25	12-Nov-25	0	MBR - AGS Stage 2 - T&C - Equipment SAT																																													
ATALMBR-1110	AGS - T&C - 7 Days Demonstration (35,000 m3/d)	6	08-Oct-25	14-Oct-25	08-Oct-25	14-Oct-25	0	AGS - T&C - 7 Days Demonstration (35,000 m3/d)																																													
ATALMBR-1120	AGS - T&C - Process Commissioning (35,000 m3/d)	24	15-Oct-25	12-Nov-25	15-Oct-25	12-Nov-25	0	AGS - T&C - Process Commissioning (35,000 m3/d)																																													
ATALMBR-1130	AGS - T&C - System Commissioning (60,000 m3/d) (KD4)	70	13-Nov-25	05-Feb-26	13-Nov-25	05-Feb-26	0	AGS - T&C - System Commissioning (60,000 m3/d) (KD4)																																													



- Remaining Level of Effort
- DWP Rev.4
- Actual Work
- Remaining Work
- Critical Remaining Work

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

Project ID :
DWP.DPr5_210831
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Detailed Works Programme			
Date	Revision	Checked	Approved
31-Aug-21	Rev. 5		
31-Jul-21	Rev. 4		
30-Jun-21	Rev. 3		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart (2022-2026)																																															
								2022	2023	2024	2025	2026																																											
Z3S3-3370	STB - Submit to GEO (28d)	28	22-Jul-22	24-Aug-22	27-Sep-22	31-Oct-22	55	[Gantt bar: 22-Jul-22 to 24-Aug-22]																																															
Z3S3-3340	STB - Monitoring Installation and Pumping Test	27	25-Aug-22	27-Sep-22	12-Sep-22	14-Oct-22	13	[Gantt bar: 25-Aug-22 to 27-Sep-22]																																															
Z3S3-2250	STB - ELS, Excavation (+6.0 to +4.5mPD)	18	27-Sep-22	20-Oct-22	15-Oct-22	04-Nov-22	13	[Gantt bar: 27-Sep-22 to 20-Oct-22]																																															
Z3S3-2290	STB - ELS, Strut Installation S1 (@ +4.5mPD)	24	20-Oct-22	17-Nov-22	05-Nov-22	02-Dec-22	13	[Gantt bar: 20-Oct-22 to 17-Nov-22]																																															
Z3S3-2360	STB - ELS, Excavation (+4.5 to +0.5mPD)	18	17-Nov-22	08-Dec-22	03-Dec-22	23-Dec-22	13	[Gantt bar: 17-Nov-22 to 08-Dec-22]																																															
Z3S3-2420	STB - ELS, Strut Installation S2 (@ +0.5mPD)	24	08-Dec-22	09-Jan-23	24-Dec-22	31-Jan-23	13	[Gantt bar: 08-Dec-22 to 09-Jan-23]																																															
Stage 3 : Chemical Building and Reclaimed Water Building								115																																															
Z3S3-2170	Construction of Reclaimed Water Building with Underground Pipeworks at Stage 3	90	22-Sep-22	11-Jan-23	04-Jan-23	24-Jan-23	128	[Gantt bar: 22-Sep-22 to 11-Jan-23]																																															
Z3S3-2160	Sludge Thickening Chemical System Building at Stage 3	90	11-Oct-22	02-Feb-23	04-Mar-23	24-Jun-23	115	[Gantt bar: 11-Oct-22 to 02-Feb-23]																																															
Stage 3 : Biogas Holder No. 1 (Continued)								0																																															
ATALZ3BH-1000	Biogas Holder No. 1 - E&M Install and associated Pipeworks	220	20-Sep-22	24-Jun-23	21-Sep-22	24-Jun-23	0	[Gantt bar: 20-Sep-22 to 24-Jun-23]																																															
ATALZ3BH-0900	Biogas Holder No. 1 - E&M Handover	0	20-Sep-22	21-Sep-22	21-Sep-22	24-Jun-23	0	[Gantt bar: 20-Sep-22 to 21-Sep-22]																																															
Stage 3 : Utility Corridor Construction (Continued)								46																																															
Stage 3 : Utility Corridor No. 3								43																																															
S3 : UC/PP3 Civil and Structural Works								43																																															
Z3S2-2140	UC/PP 3 - Structure (-3.75 to -2.20mPD, Base Slab) at Stage 3	22	15-Sep-22	12-Oct-22	07-Nov-22	01-Dec-22	43	[Gantt bar: 15-Sep-22 to 12-Oct-22]																																															
Z3S2-2180	UC/PP 3 - Structure (-2.20 to +1.0mPD)	48	13-Oct-22	07-Dec-22	02-Dec-22	06-Feb-23	43	[Gantt bar: 13-Oct-22 to 07-Dec-22]																																															
Z3S2-2250	UC/PP 3 - Structure (+1.0 to +4.2mPD) including Backfill	48	08-Dec-22	11-Feb-23	07-Feb-23	03-Apr-23	43	[Gantt bar: 08-Dec-22 to 11-Feb-23]																																															
Z3S2-3040	UC/PP 3 - BS Works	50	16-Jan-23	21-Mar-23	14-Mar-23	16-May-23	43	[Gantt bar: 16-Jan-23 to 21-Mar-23]																																															
S3 : UC/PP3 E&M Installation								43																																															
Z3S2-2280	UC/PP 3 - E&M Installation and Pipeworks	50	16-Jan-23	21-Mar-23	14-Mar-23	16-May-23	43	[Gantt bar: 16-Jan-23 to 21-Mar-23]																																															
Z3S2-2279	UC/PP 3 - E&M Handover	0	16-Jan-23	14-Mar-23	14-Mar-23	16-May-23	43	[Gantt bar: 16-Jan-23 to 14-Mar-23]																																															
Stage 3 : Utility Corridor No. 2								46																																															
S3 : UC/PP2 Foundation and ELS Works								59																																															
Z3S2-2170	UC/PP 2 - ELS, Excavation (+6.0 to +4.0mPD)	16	01-Aug-22	18-Aug-22	12-Oct-22	29-Oct-22	59	[Gantt bar: 01-Aug-22 to 18-Aug-22]																																															
Z3S2-2190	UC/PP 2 - ELS, Strut Installation S1 (+4.0mPD)	8	19-Aug-22	27-Aug-22	26-Nov-22	05-Dec-22	82	[Gantt bar: 19-Aug-22 to 27-Aug-22]																																															
Z3S2-2200	UC/PP 2 - ELS, Excavation (+4.0 to +1.5mPD)	16	19-Aug-22	06-Sep-22	31-Oct-22	17-Nov-22	59	[Gantt bar: 19-Aug-22 to 06-Sep-22]																																															
Z3S2-2260	UC/PP 2 - Marine Sediments Treatment and Disposal	30	19-Aug-22	23-Sep-22	02-Nov-22	06-Dec-22	61	[Gantt bar: 19-Aug-22 to 23-Sep-22]																																															
Z3S2-2210	UC/PP 2 - ELS, Strut Installation S2 (+1.5mPD)	8	07-Sep-22	16-Sep-22	06-Dec-22	14-Dec-22	74	[Gantt bar: 07-Sep-22 to 16-Sep-22]																																															
Z3S2-2220	UC/PP 2 - ELS, Excavation (+1.5 to -1.0mPD)	16	07-Sep-22	26-Sep-22	18-Nov-22	06-Dec-22	59	[Gantt bar: 07-Sep-22 to 26-Sep-22]																																															
Z3S2-2230	UC/PP 2 - ELS, Strut Installation S3 (-1.0mPD)	9	27-Sep-22	08-Oct-22	15-Dec-22	24-Dec-22	66	[Gantt bar: 27-Sep-22 to 08-Oct-22]																																															
Z3S2-2240	UC/PP 2 - ELS, Excavation (-1.0 to -3.75mPD)	16	27-Sep-22	17-Oct-22	07-Dec-22	24-Dec-22	59	[Gantt bar: 27-Sep-22 to 17-Oct-22]																																															
S3 : UC/PP2 Civil and Structural Works								59																																															
Z3S2-2270	UC/PP 2 - Structure (-3.75 to -2.20mPD, Base Slab)	36	18-Oct-22	28-Nov-22	28-Dec-22	15-Feb-23	59	[Gantt bar: 18-Oct-22 to 28-Nov-22]																																															
Z3S2-2290	UC/PP 2 - Structure (-2.20 to +1.0mPD)	36	29-Nov-22	12-Jan-23	16-Feb-23	29-Mar-23	59	[Gantt bar: 29-Nov-22 to 12-Jan-23]																																															
Z3S2-2300	UC/PP 2 - Structure (+1.0 to +4.2mPD) including Backfill	36	13-Jan-23	02-Mar-23	30-Mar-23	16-May-23	59	[Gantt bar: 13-Jan-23 to 02-Mar-23]																																															
Z3S2-3030	UC/PP 2 - BS Works	35	03-Mar-23	17-Apr-23	17-May-23	28-Jun-23	59	[Gantt bar: 03-Mar-23 to 17-Apr-23]																																															
S3 : UC/PP2 E&M Installation								43																																															
Z3S2-2320	UC/PP 2 - E&M Installation and Pipeworks at Stage 3	32	22-Mar-23	03-May-23	17-May-23	24-Jun-23	43	[Gantt bar: 22-Mar-23 to 03-May-23]																																															
Z3S2-2319	UC/PP 2 - E&M Handover	0	22-Mar-23	17-May-23	17-May-23	24-Jun-23	43	[Gantt bar: 22-Mar-23 to 17-May-23]																																															
Stage 3 : New Sludge Digester No. 1 and 2 (Continued)								236																																															
Stage 3 : SD 1,2 Pre-drilling Works								236																																															
Z3S3-2010	Sludge Digester No. 1-2 - Pre-drill (4 nos. SD-PD1,SD-PD2,SD-PD3,SD-PD4)	45	26-Apr-22	21-Jun-22	15-Feb-23	12-Apr-23	236	[Gantt bar: 26-Apr-22 to 21-Jun-22]																																															
Stage 4								170																																															
Z3S4-3340	Completion of Stage 4	0		16-Nov-23*		16-Nov-23	0	[Gantt bar: 16-Nov-23 to 16-Nov-23]																																															
Stage 4 : New Sludge Thickening Building (STB) (Continued)								115																																															
Stage 4 : STB Foundation and ELS								13																																															
Z3S3-2450	STB - ELS, Excavation (+0.5 to -3.55mPD)	18	09-Jan-23	06-Feb-23	01-Feb-23	21-Feb-23	13	[Gantt bar: 09-Jan-23 to 06-Feb-23]																																															
Stage 4 : STB Civil and Structural Works								115																																															
S4 : STB Substructure								13																																															
Z3S3-2500	STB - Pile Cap Construction (-3.55 to -1.5mPD, 2.055m)	40	06-Feb-23	24-Mar-23	22-Feb-23	13-Apr-23	13	[Gantt bar: 06-Feb-23 to 24-Mar-23]																																															
Z3S3-2600	STB - Structure (-1.5 to +2.5mPD)	25	24-Mar-23	27-Apr-23	14-Apr-23	13-May-23	13	[Gantt bar: 24-Mar-23 to 27-Apr-23]																																															
Z3S3-2630	STB - Structure (+2.5 to +6mPD)	25	27-Apr-23	29-May-23	15-May-23	13-Jun-23	13	[Gantt bar: 27-Apr-23 to 29-May-23]																																															
S4 : STB Superstructure								13																																															
Z3S3-3100	STB - Structure (+6.0 to +9.0mPD) Ground Floor @ +6.0mPD at Stage 4	14	29-May-23	14-Jun-23	14-Jun-23	30-Jun-23	13	[Gantt bar: 29-May-23 to 14-Jun-23]																																															
S4 : Chemical Building and Reclaimed Water Building								115																																															
Z3S3-3080	Construction of Reclaimed Water Building with Underground Pipeworks at Stage 4	120	11-Jan-23	14-Jun-23	26-Jun-23	16-Nov-23	128	[Gantt bar: 11-Jan-23 to 14-Jun-23]																																															
Z3S3-3070	Sludge Thickening Chemical System Building at Stage 4	120	03-Feb-23	30-Jun-23	26-Jun-23	16-Nov-23	115	[Gantt bar: 03-Feb-23 to 30-Jun-23]																																															
Stage 4 : Biogas Holder No. 1 (Continued)								0																																															
ATALZ3BH-1010	Biogas Holder No. 1 - Installation of pipework and instrumentation in Biogas Holder Valve Chamber No.4	56	24-Jun-23	30-Aug-23	26-Jun-23	30-Aug-23	0	[Gantt bar: 24-Jun-23 to 30-Aug-23]																																															
ATALZ3BH-1020	Biogas Holder No. 1 - Instrumentation	56	24-Jun-23	30-Aug-23	26-Jun-23	30-Aug-23	0	[Gantt bar: 24-Jun-23 to 30-Aug-23]																																															
ATALZ3BH-1030	Biogas Holder No. 1 - Installation of Biogas Booster Pump No.1 & 2	56	24-Jun-23	30-Aug-23	26-Jun-23	30-Aug-23	0	[Gantt bar: 24-Jun-23 to 30-Aug-23]																																															
ATALZ3BH-1040	Biogas Holder No. 1 - Electrical works (Cable wiring, termination, lightning arrestor)	56	24-Jun-23	30-Aug-23	26-Jun-23	30-Aug-23	0	[Gantt bar: 24-Jun-23 to 30-Aug-23]																																															
ATALZ3BH-1050	Biogas Holder No. 1 - System Commissioning	24	30-Aug-23	27-Sep-23	31-Aug-23	27-Sep-23	0	[Gantt bar: 30-Aug-23 to 27-Sep-23]																																															
Stage 4 : Utility Corridor Construction (Continued)								16																																															
Stage 4 : Utility Corridor No. 2								145																																															
S4 : UC/PP2 E&M Installation								145																																															
Z3S2-2380	UC/PP 2 - E&M Installation and Pipeworks at Stage 4	18	04-May-23	24-May-23	27-Oct-23	16-Nov-23	145	[Gantt bar: 04-May-23 to 24-May-23]																																															
Stage 4 : Utility Corridor No. 1								0																																															
Z3S4-2000	Demolish Gas Holder (12) GH2	24	27-Sep-23	28-Oct-23	28-Sep-23	28-Oct-23	0	[Gantt bar: 27-Sep-23 to 28-Oct-23]																																															
Stage 4 : New Sludge Digester No. 1 and 2 (Continued)								309																																															
Stage 4 : SD 1,2 Foundation and ELS								309																																															
Z3S3-2050	Sludge Digester No. 1-2 - Driven H-pile (90 nos @ ave. 1.5no/d/ri)	60	21-Jun-22	31-Aug-22	13-Apr-23	24-Jun-23	115	[Gantt bar: 21-Jun-22 to 31-Aug-22]																																															
Z3S3-2060	Sludge Digester No. 1-2 - Sheet Piles Install (3,128m2 @90m2/d)	36	31-Aug-22	15-Oct-22	26-Jun-23	07-Aug-23	236	[Gantt bar: 31-Aug-22 to 15-Oct-22]																																															



- Remaining Level of Effort
- DWP Rev.4
- Actual Work
- Remaining Work
- Critical Remaining Work

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31-Jul-21	Rev. 4		
30-Jun-21	Rev. 3		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	2023												2024				2025				2026													
								Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4								
Stage 7 : New Sludge Thickening Building (STB) (Continued)								189	22-May-24	27-Dec-24	24-Dec-24	08-Aug-25	192																												
Stage 7 : STB ABWF and BS Works								165	24-May-24	09-Dec-24	14-Jan-25	08-Aug-25	192																												
Z3S3-3090	STB - BS and ABWF Works at Stage 7	165	24-May-24	09-Dec-24	14-Jan-25	08-Aug-25	192	STB - BS and ABWF Works at Stage 7																																	
Stage 7 : STB E&M Installation								88	22-May-24	03-Sep-24	24-Dec-24	08-Aug-25	272																												
Z3S3-3220	STB - Electrical works (Cable wiring, termination) at Stage 7	56	22-May-24	27-Jul-24	04-Jun-25	08-Aug-25	304	STB - Electrical works (Cable wiring, termination) at Stage 7																																	
Z3S3-3230	STB - BS Installation (ELV, Ventilation, FS, PD) at Stage 7	56	22-May-24	27-Jul-24	04-Jun-25	08-Aug-25	304	STB - BS Installation (ELV, Ventilation, FS, PD) at Stage 7																																	
Z3S3-3240	STB - Reclaimed Water System and Associated Pipeworks at Stage 7	40	22-May-24	09-Jul-24	02-Jan-25	22-Feb-25	185	STB - Reclaimed Water System and Associated Pipeworks at Stage 7																																	
Z3S3-3250	STB - Sludge Thickening Chemical Dosing System and Associated Pipeworks at Stage 7	40	22-May-24	09-Jul-24	02-Jan-25	22-Feb-25	185	STB - Sludge Thickening Chemical Dosing System and Associated Pipeworks at Stage 7																																	
Z3S3-3260	STB - Deodorization System at Stage 7	86	23-May-24	03-Sep-24	26-Apr-25	08-Aug-25	272	STB - Deodorization System at Stage 7																																	
Z3S3-3270	STB - Sludge Thickening, Transferring and Pumping System and Associated Pipeworks at Stage 7	86	23-May-24	03-Sep-24	24-Dec-24	12-Apr-25	178	STB - Sludge Thickening, Transferring and Pumping System and Associated Pipeworks at Stage 7																																	
Stage 7 : STB Testing & Commissioning								147	10-Jul-24	27-Dec-24	24-Feb-25	08-Aug-25	192																												
Z3S3-2910	STB - T&C - Equipment SAT (Dry Test)	39	10-Jul-24	23-Aug-24	24-Feb-25	10-Apr-25	185	STB - T&C - Equipment SAT (Dry Test)																																	
Z3S3-2920	STB - T&C - Equipment SAT (Functional Test)	48	24-Aug-24	22-Oct-24	11-Apr-25	12-Jun-25	185	STB - T&C - Equipment SAT (Functional Test)																																	
Z3S3-2940	STB - T&C - Sludge Thickening Building & Chemical System - System Commissioning (60,000 m3/d) (KD4)	94	03-Sep-24	27-Dec-24	14-Apr-25	08-Aug-25	178	STB - T&C - Sludge Thickening Building & Chemical System - System Commissioning (60,000 m3/d) (KD4)																																	
Z3S3-2960	STB - T&C - Equipment SAT (Wet Test)	6	23-Oct-24	29-Oct-24	13-Jun-25	19-Jun-25	185	STB - T&C - Equipment SAT (Wet Test)																																	
Z3S3-2970	STB - FS Inspection and Fire Certificate	42	06-Nov-24	27-Dec-24	20-Jun-25	08-Aug-25	178	STB - FS Inspection and Fire Certificate																																	
Z3S3-2980	Achieve 60,000m3/d flowrate (KD4, 5-Feb-26)	0		27-Dec-24		08-Aug-25	224	Achieve 60,000m3/d flowrate (KD4, 5-Feb-26)																																	
Stage 7 : UC/PP Connection								30	20-Jul-24	24-Aug-24	22-Jul-24	24-Aug-24	0																												
Z3S7-2000	Permanent Sludge Pipe Connection from Sludge Thickening Building and Pipe Portal No. 1	30	20-Jul-24	24-Aug-24	22-Jul-24	24-Aug-24	0	Permanent Sludge Pipe Connection from Sludge Thickening Building and Pipe Portal No. 1																																	
Z3S7-2010	Temporary Sludge Pipe Connection into UU Corridor	30	20-Jul-24	24-Aug-24	22-Jul-24	24-Aug-24	0	Temporary Sludge Pipe Connection into UU Corridor																																	
Z3S7-2020	Temporary Sludge, Gas and Heating Water Pipe Connection into UU Corridor	30	20-Jul-24	24-Aug-24	22-Jul-24	24-Aug-24	0	Temporary Sludge, Gas and Heating Water Pipe Connection into UU Corridor																																	
Stage 7 : Pipe Portal No. 3								110	30-Dec-24	21-May-25	31-Dec-24	21-May-25	0																												
Z3S8PP3-2000	PP 3 - Structure (-6.25 to -5.0mPD, Base Slab)	16	30-Dec-24	18-Jan-25	31-Dec-24	18-Jan-25	0	PP 3 - Structure (-6.25 to -5.0mPD, Base Slab)																																	
Z3S8PP3-2010	PP 3 - Structure (-5.0 to -2.0mPD) including Backfill	15	18-Jan-25	11-Feb-25	20-Jan-25	11-Feb-25	0	PP 3 - Structure (-5.0 to -2.0mPD) including Backfill																																	
Z3S8PP3-2020	PP 3 - Structure (-2.0 to +1.0mPD) including Backfill	16	11-Feb-25	01-Mar-25	12-Feb-25	01-Mar-25	0	PP 3 - Structure (-2.0 to +1.0mPD) including Backfill																																	
Z3S8PP3-2030	PP 3 - Structure (+1.0 to +4.0mPD) including Backfill	15	01-Mar-25	19-Mar-25	03-Mar-25	19-Mar-25	0	PP 3 - Structure (+1.0 to +4.0mPD) including Backfill																																	
Z3S8PP3-2040	PP 3 - Structure (+4.0 to +7.0mPD), including Backfill SFL @ +6.0mPD	15	19-Mar-25	07-Apr-25	20-Mar-25	07-Apr-25	0	PP 3 - Structure (+4.0 to +7.0mPD), including Backfill SFL @ +6.0mPD																																	
Z3S8PP3-2050	PP 3 - Structure (+7.0 to 10.5 mPD)	11	07-Apr-25	23-Apr-25	08-Apr-25	23-Apr-25	0	PP 3 - Structure (+7.0 to 10.5 mPD)																																	
Z3S8PP3-2060	PP 3 - Structure (+10.5 to 14.0 mPD)	11	23-Apr-25	08-May-25	24-Apr-25	08-May-25	0	PP 3 - Structure (+10.5 to 14.0 mPD)																																	
Z3S8PP3-2070	PP 3 - Structure (+14.0 to 17.65 mPD)	11	08-May-25	21-May-25	09-May-25	21-May-25	0	PP 3 - Structure (+14.0 to 17.65 mPD)																																	
Stage 7 : New Sludge Digester Nos. 1 and 2 (Continued)								202	16-Dec-23	28-Aug-24	28-Nov-24	08-Aug-25	277																												
Stage 7 : E&M Installation								68	16-Dec-23	15-Mar-24	28-Nov-24	24-Feb-25	277																												
Z3S3-3280	SDT No.1&2 - Tank Internal Pipework and Jet Nozzle Installation at Stage 7	46	16-Dec-23	19-Feb-24	28-Nov-24	23-Jan-25	277	SDT No.1&2 - Tank Internal Pipework and Jet Nozzle Installation at Stage 7																																	
Z3S3-3290	SDT No.1&2 - Pumps and Heat Exchanger Installation at Stage 7	46	16-Dec-23	19-Feb-24	28-Nov-24	23-Jan-25	277	SDT No.1&2 - Pumps and Heat Exchanger Installation at Stage 7																																	
Z3S3-3300	SDT No.1&2 - Tank Associated Pipework at Stage 7	46	16-Dec-23	19-Feb-24	28-Nov-24	23-Jan-25	277	SDT No.1&2 - Tank Associated Pipework at Stage 7																																	
Z3S3-2750	SDT No.1&2 - Instrumentation	22	19-Feb-24	15-Mar-24	24-Jan-25	24-Feb-25	277	SDT No.1&2 - Instrumentation																																	
Z3S3-2760	SDT No.1&2 - Electrical works (Cable wiring, termination, lightning arrestor system)	22	19-Feb-24	15-Mar-24	24-Jan-25	24-Feb-25	277	SDT No.1&2 - Electrical works (Cable wiring, termination, lightning arrestor system)																																	
Stage 7 : Testing & Commissioning								134	15-Mar-24	28-Aug-24	25-Feb-25	08-Aug-25	277																												
S7 : Equipment SAT								44	15-Mar-24	11-May-24	25-Feb-25	17-Apr-25	277																												
Z3S3-2820	SDT No.1&2 - T&C - Equipment SAT (Dry Test)	44	15-Mar-24	11-May-24	25-Feb-25	17-Apr-25	277	SDT No.1&2 - T&C - Equipment SAT (Dry Test)																																	
Z3S3-2830	SDT No.1&2 - T&C - Equipment SAT (Functional Test)	43	15-Mar-24	10-May-24	26-Feb-25	17-Apr-25	278	SDT No.1&2 - T&C - Equipment SAT (Functional Test)																																	
Z3S3-2840	SDT No.1&2 - T&C - Equipment SAT (Wet Test)	44	15-Mar-24	11-May-24	25-Feb-25	17-Apr-25	277	SDT No.1&2 - T&C - Equipment SAT (Wet Test)																																	
S7 : Process Start-Up								90	11-May-24	28-Aug-24	22-Apr-25	08-Aug-25	277																												
Z3S3-2870	SDT No.1&2 - T&C - Purging of tank and pipeworks at Stage 7	90	11-May-24	28-Aug-24	22-Apr-25	08-Aug-25	277	SDT No.1&2 - T&C - Purging of tank and pipeworks at Stage 7																																	
Z3S3-2880	SDT No.1&2 - T&C - Seeding at Stage 7	90	11-May-24	28-Aug-24	22-Apr-25	08-Aug-25	277	SDT No.1&2 - T&C - Seeding at Stage 7																																	
Z3S3-2890	SDT No.1&2 - T&C - Sludge Mixing and Digestion at Stage 7	90	11-May-24	28-Aug-24	22-Apr-25	08-Aug-25	277	SDT No.1&2 - T&C - Sludge Mixing and Digestion at Stage 7																																	
Stage 7 : Demolition of SDT 1-4								45	24-Aug-24	19-Oct-24	26-Aug-24	19-Oct-24	0																												
Z3S7-2030	Demolish Existing SDT 2 & 4 (9)	45	24-Aug-24	19-Oct-24	26-Aug-24	19-Oct-24	0	Demolish Existing SDT 2 & 4 (9)																																	
Z3S7-2040	Demolish Existing SDT 1 & 3 (9)	45	24-Aug-24	19-Oct-24	26-Aug-24	19-Oct-24	0	Demolish Existing SDT 1 & 3 (9)																																	
Stage 7 : New Sludge Digester No. 4								299	24-Aug-24	08-Aug-25	03-Jan-25	05-Sep-25	24																												
Stage 7 : SD 4 Foundation and ELS Works								299	24-Aug-24	08-Aug-25	03-Jan-25	05-Sep-25	24																												
Z3S8SD-2000	Sludge Digester No. 4 - Pre-drill (1 no. SD-PD6)	14	24-Aug-24	10-Sep-24	03-Jan-25	18-Jan-25	106	Sludge Digester No. 4 - Pre-drill (1 no. SD-PD6)																																	
Z3S8SD-2020	Sludge Digester No. 4 - Pre-drill (1 no. SD-PD7)	14	19-Oct-24	05-Nov-24	06-Mar-25	21-Mar-25	109	Sludge Digester No. 4 - Pre-drill (1 no. SD-PD7)																																	
Z3S8SD-2030	Sludge Digester No. 4 - Driven H-pile (45 nos @ ave.1.5no/d/rig)	30	01-Apr-25	12-May-25	01-Apr-25	12-May-25	0	Sludge Digester No. 4 - Driven H-pile (45 nos @ ave.1.5no/d/rig)																																	
Z3S8SD-2250	Sludge Digester No. 4 - Monitoring Installation and Pumping Test	21	28-Apr-25	23-May-25	23-May-25	12-May-25	0	Sludge Digester No. 4 - Monitoring Installation and Pumping Test																																	
Z3S8SD-2040	Sludge Digester No. 4 - Sheet Piles Install (3,128m2, @90m2/d)	18	02-May-25	23-May-25	02-May-25	23-May-25	0	Sludge Digester No. 4 - Sheet Piles Install (3,128m2, @90m2/d)																																	
Z3S8SD-2270	Sludge Digester No. 4 - Submit to GEO (28d)	28	13-May-25	14-Jun-25	05-Aug-25	05-Sep-25	70	Sludge Digester No. 4 - Submit to GEO (28d)																																	
S7 : Excavation and Strut Installation								64	24-May-25	08-Aug-25	24-May-25	08-Aug-25	0																												
Z3S8SD-2050	Sludge Digester No. 4 - ELS Excavation (+6.0 to +4.6mPD)	16	24-May-25	12-Jun-25	24-May-25	12-Jun-25	0	Sludge Digester No. 4 - ELS Excavation (+6.0 to +4.6mPD)																																	
Z3S8SD-2060	Sludge Digester No. 4 - Marine Sediments Treatment and Disposal	30	13-Jun-25	18-Jul-25	16-Jun-25	21-Jul-25	2	Sludge Digester No. 4 - Marine Sediments Treatment and Disposal																																	
Z3S8SD-2070	Sludge Digester No. 4 - Strut Installation S1 (+4.6mPD)	8	13-Jun-25	21-Jun-25	03-Jul-25	11-Jul-25	16	Sludge Digester No. 4 - Strut Installation S1 (+4.6mPD)																																	
Z3S8SD-2080	Sludge Digester No. 4 - ELS Excavation (+4.6 to +1.1mPD)	16	13-Jun-25	02-Jul-25	13-Jun-25	02-Jul-25	0	Sludge Digester No. 4 - ELS Excavation (+4.6 to +1.1mPD)																																	
Z3S8SD-2090	Sludge Digester No. 4 - Strut Installation S2 (+1.1mPD)	8	03-Jul-25	11-Jul-25	12-Jul-25	21-Jul-25	8	Sludge Digester No. 4 - Strut Installation S2 (+1.1mPD)																																	
Z3S8SD-2100	Sludge Digester No. 4 - ELS Excavation (+1.1 to -2.4mPD)	16	03-Jul-25	21-Jul-25	03-Jul-25	21-Jul-25	0	Sludge Digester No. 4 - ELS Excavation (+1.1 to -2.4mPD)																																	
Z3S8SD-2110	Sludge Digester No. 4 - Strut Installation S3 (-2.4mPD)	8	22-Jul-25	30-Jul-25	22-Jul-25	30-Jul-25	0	Sludge Digester No. 4 - Strut Installation S3 (-2.4mPD)																																	
Z3S8SD-2120	Sludge Digester No. 4 - ELS Excavation (-2.4 to -5.9mPD)	16	22-Jul-25	08-Aug-25	22-Jul-25	08-Aug-25	0	Sludge Digester No. 4 - ELS Excavation (-2.4 to -5.9mPD)																																	
Stage 7 : New Sludge Digester No. 5 and 6								260	10-Sep-24	01-Aug-25	20-Jan-25	11-May-26	226																												
Stage 7 : SD 5,6 Foundation and ELS Works								260	10-Sep-24	01-Aug-25	20-Jan-25	11-May-26	226																												
Z3S8SD-1000	Sludge Digester No. 5-6 - Pre-drill (3 nos. SD-PD8,SD-PD9,SD-PD11)	48	10-Sep-24	08-Nov-24	20-Jan-25	21-Mar-25	106	Sludge Digester No. 5-6 - Pre-drill (3 nos. SD-PD8,SD-PD9,SD-PD11)																																	
Z3S8SD-1010	Sludge Digester No. 5-6 - Pre-drill (1 no. SD-PD10)	14	08-Nov-24	25-Nov-24	22-Mar-25	08-Apr-25	106	Sludge Digester No. 5-6 - Pre-drill (1 no. SD-PD10)																																	
Z3S8SD-1030	Sludge Digester No. 5-6 - Driven H-pile (90 nos. 1.5no/d/rig)	60	01-Apr-25	17-Jun-25	09-Apr-25	24-Jun-25	6	Sludge Digester No. 5-6 - Driven H-pile (90 nos. 1.5no/d/rig)																																	
Z3S8SD-1040	Sludge Digester No. 5-6 - Sheet Piles Install (3,128m2, @90m2/d)	38	18-Jun-25	01-Aug-25	25-Jun-25	08-Aug-25	6	Sludge Digester No. 5-6 - Sheet Piles Install (3,128m2, @90m2/d)																																	
Z3S8SD-2280	Sludge Digester No. 5-6 - Submit to GEO (28d)	28	18-Jun-25	21-Jul-25	08-Apr-26	11-May-26	236	Sludge Digester No. 5-6 - Submit to GEO (28d)																																	
Z3S8SD-2260	Sludge Digester No. 5-6 - Monitoring Installation and Pumping Test	21	09-Jul-25	01-Aug-25	12-Nov-25	05-Dec-25	105	Sludge Digester No. 5-6 - Monitoring Installation and Pumping Test																																	
Stage 7 : H2S System								65	19-Oct-24	07-Jan-25	23-May-25	08-Aug-25	170																												



- █ Remaining Level of Effort
- █ DWP Rev.4
- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	2023												2024												2025												2026											
								Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																
H2S-180	H2S Removal System - Structure Phase 1	65	19-Oct-24	07-Jan-25	23-May-25	08-Aug-25	170	[Gantt Chart for H2S Removal System - Structure Phase 1]																																															
Stage 8		594	28-Aug-24	22-Jul-26	21-Oct-24	08-Nov-27	406	[Gantt Chart for Stage 8 Summary]																																															
Z3S8-3380	Completion of Stage 8	0		22-Jul-26		08-Nov-27	401	[Gantt Chart for Completion of Stage 8]																																															
Stage 8 : New Sludge Digester No. 1 and 2 (Continued)																																																							
Stage 8 : Testing & Commissioning																																																							
S8 : Process Start-Up																																																							
Z3S3-3310	SDT No.1&2 - T&C - Purging of tank and pipeworks at Stage 8	35	28-Aug-24	10-Oct-24	31-Oct-25	10-Dec-25	345	[Gantt Chart for SDT No.1&2 - T&C - Purging of tank and pipeworks at Stage 8]																																															
Z3S3-3320	SDT No.1&2 - T&C - Seeding at Stage 8	35	28-Aug-24	10-Oct-24	31-Oct-25	10-Dec-25	345	[Gantt Chart for SDT No.1&2 - T&C - Seeding at Stage 8]																																															
Z3S3-3330	SDT No.1&2 - T&C - Sludge Mixing and Digestion at Stage 8	35	28-Aug-24	10-Oct-24	31-Oct-25	10-Dec-25	345	[Gantt Chart for SDT No.1&2 - T&C - Sludge Mixing and Digestion at Stage 8]																																															
S8 : System Commissioning																																																							
Z3S3-2900	SDT No.1&2 - T&C - System Commissioning	34	10-Oct-24	20-Nov-24	11-Dec-25	22-Jan-26	345	[Gantt Chart for SDT No.1&2 - T&C - System Commissioning]																																															
Z3S3-2930	Switch sludge to new Sludge Digester and Biogas Holder	12	20-Nov-24	04-Dec-24	23-Jan-26	05-Feb-26	345	[Gantt Chart for Switch sludge to new Sludge Digester and Biogas Holder]																																															
Z3S3-2950	Achieve 60,000m3/d Flowrate (KD4)	0		04-Dec-24		05-Feb-26	345	[Gantt Chart for Achieve 60,000m3/d Flowrate (KD4)]																																															
Stage 8 : New Sludge Digester No. 4 (Continued)																																																							
Stage 8 : SD 4 Foundation and ELS Works																																																							
S8 : Excavation and Strut Installation																																																							
Z3S8SD-2130	Sludge Digester No. 4 - Strut Installation S4 (-5.9mPD)	8	09-Aug-25	18-Aug-25	28-Aug-25	05-Sep-25	16	[Gantt Chart for Sludge Digester No. 4 - Strut Installation S4 (-5.9mPD)]																																															
Z3S8SD-2140	Sludge Digester No. 4 - ELS Excavation (-5.9 to -8.9mPD)	17	09-Aug-25	28-Aug-25	18-Aug-25	05-Sep-25	7	[Gantt Chart for Sludge Digester No. 4 - ELS Excavation (-5.9 to -8.9mPD)]																																															
Stage 8 : SD 4 Civil and Structural Works																																																							
S8 : SD 4 Substructure																																																							
Z3S8SD-2150	Sludge Digester No. 4 - Structure (-8.9 to -6.8mPD) Base Slab	18	29-Aug-25	18-Sep-25	06-Sep-25	26-Sep-25	7	[Gantt Chart for Sludge Digester No. 4 - Structure (-8.9 to -6.8mPD) Base Slab]																																															
Z3S8SD-2160	Sludge Digester No. 4 - Structure (-6.8 to -3.8mPD)	17	19-Sep-25	10-Oct-25	27-Sep-25	18-Oct-25	7	[Gantt Chart for Sludge Digester No. 4 - Structure (-6.8 to -3.8mPD)]																																															
Z3S8SD-2170	Sludge Digester No. 4 - Structure (-3.8 to -0.8mPD)	17	11-Oct-25	31-Oct-25	20-Oct-25	08-Nov-25	7	[Gantt Chart for Sludge Digester No. 4 - Structure (-3.8 to -0.8mPD)]																																															
Z3S8SD-2180	Sludge Digester No. 4 - Structure (-0.8 to 2.2mPD)	17	01-Nov-25	20-Nov-25	10-Nov-25	28-Nov-25	7	[Gantt Chart for Sludge Digester No. 4 - Structure (-0.8 to 2.2mPD)]																																															
Z3S8SD-2190	Sludge Digester No. 4 - Structure (+2.2 to +5.2mPD)	17	21-Nov-25	10-Dec-25	29-Nov-25	18-Dec-25	7	[Gantt Chart for Sludge Digester No. 4 - Structure (+2.2 to +5.2mPD)]																																															
S8 : SD 4 Superstructure																																																							
Z3S8SD-2200	Sludge Digester No. 4 - Structure (+5.2 to +8.2mPD)	10	11-Dec-25	22-Dec-25	19-Dec-25	02-Jan-26	7	[Gantt Chart for Sludge Digester No. 4 - Structure (+5.2 to +8.2mPD)]																																															
Z3S8SD-2210	Sludge Digester No. 4 - Structure (+8.2 to +11.2mPD)	10	23-Dec-25	06-Jan-26	03-Jan-26	14-Jan-26	7	[Gantt Chart for Sludge Digester No. 4 - Structure (+8.2 to +11.2mPD)]																																															
Z3S8SD-2220	Sludge Digester No. 4 - Structure (+11.2 to +14.2mPD)	10	07-Jan-26	17-Jan-26	15-Jan-26	26-Jan-26	7	[Gantt Chart for Sludge Digester No. 4 - Structure (+11.2 to +14.2mPD)]																																															
Z3S8SD-2230	Sludge Digester No. 4 - Structure (+14.2 to +16.83mPD)	10	19-Jan-26	29-Jan-26	27-Jan-26	06-Feb-26	7	[Gantt Chart for Sludge Digester No. 4 - Structure (+14.2 to +16.83mPD)]																																															
Z3S8SD-2240	Sludge Digester No. 4 - Structure (+16.83 to +18.3mPD)	11	30-Jan-26	11-Feb-26	07-Feb-26	26-Feb-26	7	[Gantt Chart for Sludge Digester No. 4 - Structure (+16.83 to +18.3mPD)]																																															
Stage 8 : E&M Works SDT No.3 & No.4																																																							
ATALZ3S8-2000	SDT No.3&4 - Tank Internal Pipework and Jet Nozzle Installation	115	12-Feb-26	10-Jul-26	27-Feb-26	18-Jul-26	7	[Gantt Chart for SDT No.3&4 - Tank Internal Pipework and Jet Nozzle Installation]																																															
ATALZ3S8-2010	SDT No.3&4 - Pumps and Heat Exchanger Installation	115	12-Feb-26	10-Jul-26	27-Feb-26	18-Jul-26	7	[Gantt Chart for SDT No.3&4 - Pumps and Heat Exchanger Installation]																																															
ATALZ3S8-2020	SDT No.3&4 - Tank Associated Pipework	115	12-Feb-26	10-Jul-26	27-Feb-26	18-Jul-26	7	[Gantt Chart for SDT No.3&4 - Tank Associated Pipework]																																															
ATALZ3S8-2001	SDT No.3&4 - E&M Handover	0		12-Feb-26		27-Feb-26	7	[Gantt Chart for SDT No.3&4 - E&M Handover]																																															
Stage 8 : New Sludge Digester No. 5 and 6 (Continued)																																																							
Stage 8 : SD 5,6 Foundation and ELS Works																																																							
Z3S8SD-1060	Sludge Digester No. 5-6 - ELS Excavation (+6.0 to +4.6mPD)	24	29-Aug-25	25-Sep-25	06-Dec-25	06-Jan-26	82	[Gantt Chart for Sludge Digester No. 5-6 - ELS Excavation (+6.0 to +4.6mPD)]																																															
Z3S8SD-1070	Sludge Digester No. 5-6 - Strut Installation S1 (+4.6mPD)	12	26-Sep-25	11-Oct-25	25-Feb-26	10-Mar-26	118	[Gantt Chart for Sludge Digester No. 5-6 - Strut Installation S1 (+4.6mPD)]																																															
Z3S8SD-1080	Sludge Digester No. 5-6 - ELS Excavation (+4.6 to +1.1mPD)	24	26-Sep-25	25-Oct-25	07-Jan-26	03-Feb-26	82	[Gantt Chart for Sludge Digester No. 5-6 - ELS Excavation (+4.6 to +1.1mPD)]																																															
Z3S8SD-1090	Sludge Digester no. 5-6 - Marine Sediments Treatment and Disposal	40	27-Oct-25	12-Dec-25	13-Feb-26	10-Apr-26	90	[Gantt Chart for Sludge Digester no. 5-6 - Marine Sediments Treatment and Disposal]																																															
Z3S8SD-1100	Sludge Digester No. 5-6 - Strut Installation S2 (+1.1mPD)	12	27-Oct-25	10-Nov-25	11-Mar-26	24-Mar-26	106	[Gantt Chart for Sludge Digester No. 5-6 - Strut Installation S2 (+1.1mPD)]																																															
Z3S8SD-1110	Sludge Digester No. 5-6 - ELS Excavation (+1.1 to -2.4mPD)	24	27-Oct-25	24-Nov-25	04-Feb-26	10-Mar-26	82	[Gantt Chart for Sludge Digester No. 5-6 - ELS Excavation (+1.1 to -2.4mPD)]																																															
Z3S8SD-1120	Sludge Digester No. 5-6 - Strut Installation S3 (-2.4mPD)	12	25-Nov-25	08-Dec-25	25-Mar-26	10-Apr-26	94	[Gantt Chart for Sludge Digester No. 5-6 - Strut Installation S3 (-2.4mPD)]																																															
Z3S8SD-1130	Sludge Digester No. 5-6 - ELS Excavation (-2.4 to -5.9mPD)	24	25-Nov-25	22-Dec-25	11-Mar-26	10-Apr-26	82	[Gantt Chart for Sludge Digester No. 5-6 - ELS Excavation (-2.4 to -5.9mPD)]																																															
Z3S8SD-1140	Sludge Digester No. 5-6 - Strut Installation S4 (-5.9mPD)	12	23-Dec-25	08-Jan-26	11-Apr-26	24-Apr-26	82	[Gantt Chart for Sludge Digester No. 5-6 - Strut Installation S4 (-5.9mPD)]																																															
Z3S8SD-1150	Sludge Digester No. 5-6 - ELS Excavation (-5.9 to -8.9mPD)	25	23-Dec-25	23-Jan-26	11-Apr-26	11-May-26	82	[Gantt Chart for Sludge Digester No. 5-6 - ELS Excavation (-5.9 to -8.9mPD)]																																															
Stage 8 : SD 5,6 Civil and Structural Works																																																							
S8 : SD 5,6 Substructure																																																							
Z3S8SD-1170	Sludge Digester No. 5-6 - Structure (-8.9 to -6.8mPD) Base Slab	25	12-Feb-26	19-Mar-26	12-May-26	10-Jun-26	66	[Gantt Chart for Sludge Digester No. 5-6 - Structure (-8.9 to -6.8mPD) Base Slab]																																															
Z3S8SD-1180	Sludge Digester No. 5-6 - Structure (-6.8 to -3.8mPD)	25	20-Mar-26	21-Apr-26	11-Jun-26	11-Jul-26	66	[Gantt Chart for Sludge Digester No. 5-6 - Structure (-6.8 to -3.8mPD)]																																															
Z3S8SD-1190	Sludge Digester No. 5-6 - Structure (-3.8 to -0.8mPD)	25	22-Apr-26	21-May-26	13-Jul-26	10-Aug-26	66	[Gantt Chart for Sludge Digester No. 5-6 - Structure (-3.8 to -0.8mPD)]																																															
Z3S8SD-1200	Sludge Digester No. 5-6 - Structure (-0.8 to 2.2mPD)	25	22-May-26	22-Jun-26	11-Aug-26	08-Sep-26	66	[Gantt Chart for Sludge Digester No. 5-6 - Structure (-0.8 to 2.2mPD)]																																															
Z3S8SD-1210	Sludge Digester No. 5-6 - Structure (+2.2 to +4.0mPD)	25	23-Jun-26	22-Jul-26	09-Sep-26	09-Oct-26	66	[Gantt Chart for Sludge Digester No. 5-6 - Structure (+2.2 to +4.0mPD)]																																															
Stage 8 : H2S System (Continued)																																																							
H2S-170	H2S Removal System - Structure Phase 2	91	07-Jan-25	06-May-25	28-Nov-25	24-Mar-26	262	[Gantt Chart for H2S Removal System - Structure Phase 2]																																															
H2S-150	H2S Removal System - E&M Installation c/w above ground pipeworks	110	06-May-25	13-Sep-25	25-Mar-26	07-Aug-26	262	[Gantt Chart for H2S Removal System - E&M Installation c/w above ground pipeworks]																																															
H2S-155	H2S Removal System - Loading of Ferric Oxide	110	06-May-25	13-Sep-25	25-Mar-26	07-Aug-26	262	[Gantt Chart for H2S Removal System - Loading of Ferric Oxide]																																															
H2S-149	H2S Removal System - E&M Handover	0		06-May-25		25-Mar-26	262	[Gantt Chart for H2S Removal System - E&M Handover]																																															
H2S-160	H2S Removal System and Other E&M T&C	52	13-Sep-25	17-Nov-25	08-Aug-26	09-Oct-26	262	[Gantt Chart for H2S Removal System and Other E&M T&C]																																															
Stage 8 : Biogas Holders No. 2,3 and 4																																																							
Z3BH-1020	Biogas Holder No. 2-4 - Ground Improvement Including Surcharge	160	19-Oct-24	10-May-25	21-Oct-24	10-May-25	0	[Gantt Chart for Biogas Holder No. 2-4 - Ground Improvement Including Surcharge]																																															
Z3BH-1030	Biogas Holder No. 2-4 - 800 Thick Base Slab Including Pipeworks	39	10-May-25	26-Jun-25	12-May-25	26-Jun-25	0	[Gantt Chart for Biogas Holder No. 2-4 - 800 Thick Base Slab Including Pipeworks]																																															
Stage 8 : E&M Installation Works BH 2,3,4																																																							
ATALZ3BH-2260	BH No. 2-4 - Installation of Biogas Holder No.2-4	184	26-Jun-25	04-Feb-26	27-Jun-25	04-Feb-26	0	[Gantt Chart for BH No. 2-4 - Installation of Biogas Holder No.2-4]																																															
ATALZ3BH-2259	BH No. 2-4 - E&M Handover	0		26-Jun-25		27-Jun-25	0	[Gantt Chart for BH No. 2-4 - E&M Handover]																																															
Stage 8 : Remaining Works																																																							
ATALZ3BH-2210	Remaining Pipe Connection to Pipe Portal 1 to 3 (Permanent Pipe Routing)	30	21-May-25	26-Jun-25	22-May-25	26-Jun-25	0	[Gantt Chart for Remaining Pipe Connection to Pipe Portal 1 to 3 (Permanent Pipe Routing)]																																															
Stage 9																																																							
Z3S9-3380	Completion of Stage 9 (all zone 3 works complete)	0		08-Nov-26*		08-Nov-26	0	[Gantt Chart for Completion of Stage 9 (all zone 3 works complete)]																																															
Stage 9 : New Sludge Digester No. 4 (Continued)																																																							
Stage 9 : E&M Works SDT No. 3 & No. 4																																																							
ATALZ3S8-2030	SDT No.3&4 - Instrumentation	34	11-Jul-26	19-Aug-26	20-Jul-26	27-Aug-26	7	[Gantt Chart for SDT No.3&4 - Instrumentation]																																															



Remaining Level of Effort
 DWP Rev.4
 Actual Work
 Remaining Work
 Critical Remaining Work

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

Detailed Works Programme

Project ID : DWP.DPr5_210831
 Layout : DC201910 DWP rev.5
 Page 26 of 27

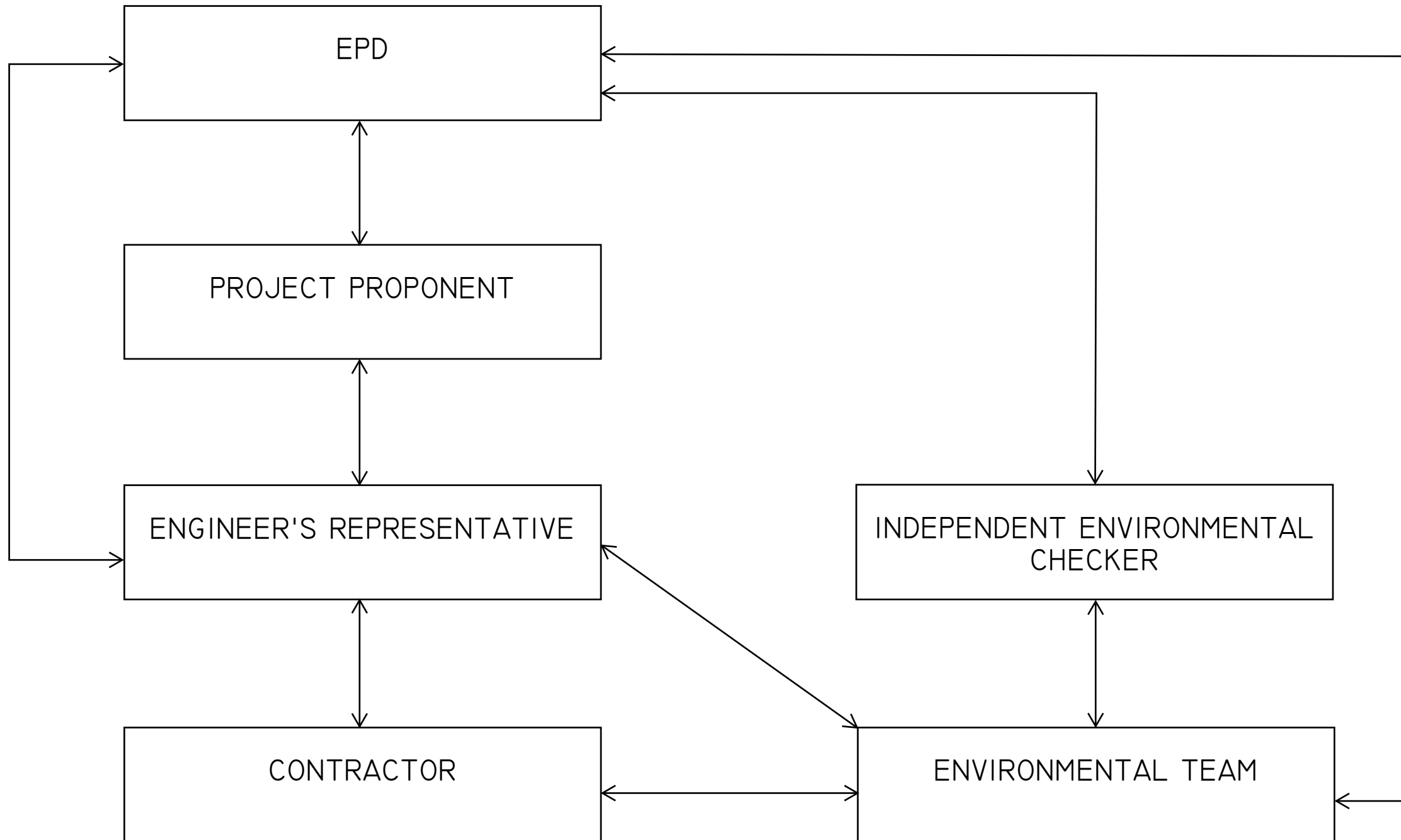
Detailed Works Programme			
Date	Revision	Checked	Approved
31-Aug-21	Rev. 5		
31-Jul-21	Rev. 4		
30-Jun-21	Rev. 3		

Appendix B

Project Organization Chart

LEGEND:

↔ LINE OF COMMUNICATION



PROJECT
項目

YUEN LONG EFFLUENT
POLISHING PLANT -
INVESTIGATION, DESIGN
AND CONSTRUCTION

CLIENT
業主



CONSULTANT
工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
發行

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

STATUS
階段

SCALE
比例

A3 1 : 40000

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號

60505476

CONTRACT NO.
合約編號

CE 3/2015 (DS)

SHEET TITLE
圖紙名稱

PROJECT ORGANISATION

SHEET NUMBER
圖紙編號

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Appendix C

Action and Limit Level

Action / Limit Levels for Air Quality

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

Notes:

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

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

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

Action and Limit Levels for Construction Noise

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

Notes:

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

Action and Limit Levels for Water Quality

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

Notes:

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

Action and Limit Levels for Ecology

Active Ardeid Night Roost Survey

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

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

Notes:

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

Ecological Monitoring of Birds

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

Notes:

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

Appendix D

Calibration Certificate of Monitoring
Equipment

Air Quality Monitoring Equipment

Report no. : 940891CA202730(1)

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser dust monitor
 Manufacturer : SIBATA
 Model No. : LD-5R
 Serial No. : 761105
 Specification Limit : NA
 Next Calibration Date : 22-Nov-2021

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
 Equipment ID. / Serial no. : 1. C-065-9 2. 4350
 Date of Calibration : 23-Nov-2020 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)
0.0915	3647	60.78
0.0469	3027	50.45
0.1172	3861	64.35

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x [UUT reading (CPM)], where K = 0.001456
3. Correlation coefficient (r) : 0.9928

Checked by : Conroy Date : 15-12-2020 Certified by : K.T. Leung Date : 15-12-2020

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no. : 940891CA202730(6)

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser dust monitor
 Manufacturer : SIBATA
 Model No. : LD-5R
 Serial No. : 882149
 Specification Limit : NA
 Next Calibration Date : 22-Nov-2021

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
 Equipment ID. / Serial no. : 1. C-065-9 2. 4350
 Date of Calibration : 23-Nov-2020 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)
0.0915	3526	58.77
0.0469	2720	45.33
0.1172	3776	62.93

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x [UUT reading (CPM)], where K = 0.001530
3. Correlation coefficient (r) : 0.9901

Checked by : Conny Date : 15-12-2020 Certified by : KT Leung Date : 15-12-2020
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : MaWTF, Ma Wan	Date of Calibration: 23-Oct-20
Location ID: A1 Site Boundary	Next Calibration Date: 22-Jan-21
	Technician: Felix

CONDITIONS

Sea Level Pressure (hPa):	1011.40	Corrected Pressure (mm Hg):	759
Temperature (°C):	24	Temperature (K):	297

CALIBRATION ORIFICE

Make: Tisch	Qstd Slope: 2.11508
Model: TE-5025A	Qstd Intercept: -0.02962
Calibration Date: 11/9/2020	Expiry Date: 11/9/2021

CALIBRATIONS

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m ³ /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.40	-6.00	11.400	1.613	61.00	61.10	Slope = 32.5454
13	4.30	-4.70	9.000	1.435	54.00	54.09	Intercept = 8.0074
10	3.30	-3.70	7.000	1.267	49.00	49.08	Corr. coeff.: 0.9991
7	2.00	-2.50	4.500	1.019	41.00	41.07	
5	1.10	-1.60	2.700	0.792	34.00	34.05	

Calculations:

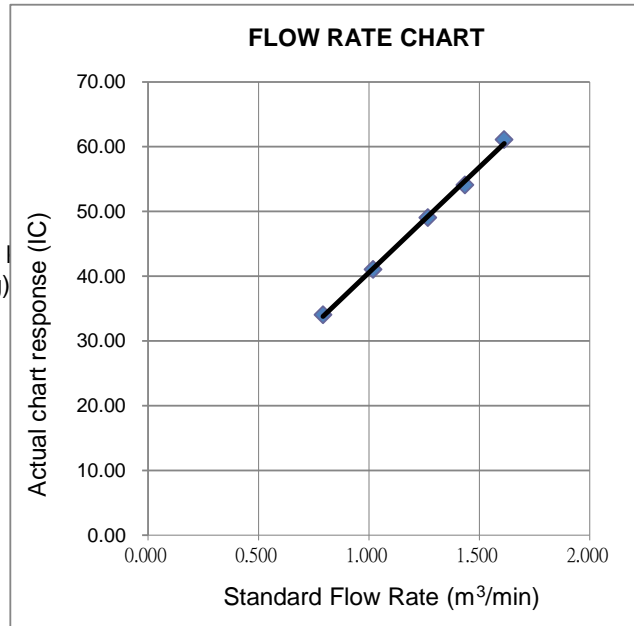
$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$
 $IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$

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

For subsequent calculation of sampler flow:

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

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





CALIBRATION REPORT OF WIND METER

Project: Contract No. SPW 07/2020	Date of Calibration: 28-Mar-2021
Location: Yuen Long Sewage Treatment Works	Next Calibration Date: 27-Sep-2021
Brand: Global Water	Technician: Sam Fong
Model: GL500-7-2	Serial No: 2012000974
Anemometer	
Brand: Benetech	Equipment ID: 08
Model: GM816	
Procedures:	
1. Wind Still Test:	The wind speed sensor was held by hand until stabilized.
2. Wind Speed Test:	The wind meter was calibrated in-situ and compared with the Anemometer.
3. Wind Direction Test:	The wind meter was calibrated in-situ and compared with a marine compass from four directions.

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

Global Water (m/s)	Anemometer (m/s)
1.2	1.0
1.5	1.4
2.8	3.0

Wind Direction Test:

	Marine Compass (o)
358	358
266	264
154	150
243	244

Wan Ka Ho
Project Consultant

Report Date: 1/4/2021

Noise Monitoring Equipment

Report no.: 203258CA211142

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Level Meter

Manufacturer : Casella

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

Equipment ID : N-45

Next Calibration Date : 27-May-2022

Specification Limit : EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -

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

Equipment ID. : R-108-1

Date of Calibration : 28-May-2021

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

Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

Parameters	Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	2.6 to -0.6
	2000Hz	2.8 to -0.4
	1000Hz	1.1 to -1.1
	500Hz	-1.8 to -4.6
	250Hz	-7.2 to -10.0
	125Hz	-14.6 to -17.6
	63Hz	-24.7 to -27.7
	31.5Hz	-37.4 to -41.4
Differential level linearity	94dB-104dB	± 0.6
	104dB-114dB	± 0.6

Remarks :

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

 Checked by : William Date : 1-6-2021 Certified by : K. T. Leung Date : 1-6-2021
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report no.: 203258CA202302(2)

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

 Description : Sound Level Meter
 Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No.	CEL-63X	CE-251	CEL-495
Serial No.	1488304	03876	002752

Equipment ID : N-62

Next Calibration Date : 29-Oct-2021

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 : 30-Oct-2020

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

Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

Parameters	Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	1.5 2.6 to -0.6
	2000Hz	1.3 2.8 to -0.4
	1000Hz	-0.1 1.1 to -1.1
	500Hz	-3.5 -1.8 to -4.6
	250Hz	-8.9 -7.2 to -10.0
	125Hz	-16.4 -14.6 to -17.6
	63Hz	-26.4 -24.7 to -27.7
	31.5Hz	-39.4 -37.4 to -41.4
Differential level linearity	94dB-104dB	± 0.6
	104dB-114dB	± 0.6

Remarks :

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

 Checked by : K. Kwok Date : 4-11-2020 Certified by : K.T. Leung Date : 4-11-2020
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 203258CA210891

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

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

Next Calibration Date : 10-May-2022

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

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

Date of Calibration : 11-May-2021

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

Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

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

Remarks :

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

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

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 203258CA201871(1)

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Sound Calibrator
 Manufacturer : Casella (Model CEL-120/1)
 Serial No. : 5230736
 Equipment ID : N-18
 Next Calibration Date : 07-Sep-2021
 Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

Description : Reference Sound level meter
 Equipment ID. : R-119-1
 Calibration Date : 08-Sep-2020
 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	0.2 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The 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 : William Date : 10-9-2020 Certified by : K. T. Leung Date : 12-9-2020
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report No. : 212769CA211145

Page 1 of 1

CALIBRATION CERTIFICATE OF ANEMOMETER

Client Supplied Information

Client : Fugro Technical Services Limited

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : SENSOR

Model No. : AR816

Serial No. : 2136513

Equipment ID.: NA

Next Calibration Date : 30-May-2022

Laboratory Information

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID.: R-101-4

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

Calibration Location : Calibration Laboratory of FTS

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

Calibration Results :

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

Remark :

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

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

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Water Quality Monitoring Equipment



Report No. : 142626WA211145(1)



Page 1 of 3

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

Information Supplied by Client

Client : Fugro Technical Services Limited (MCL)
Client's address : Rm. 723-726, 7/F, Profit Industrial Building, No. 1-15, Kwai Fung Crescent, Kwai Chung, N.T.
Sample description : One YSI EXO-3 Multi-parameter Water Quality Meter
Client sample ID : Serial No. 19A105808
Test required : Calibration of the YSI EXO-3 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID : WA211145/2
Date sample received : 08/06/2021
Date of calibration : 21/06/2021
Next calibration date : 20/09/2021
Test method used : In-house comparison method

Note : This report refers only to the sample(s) tested.

Report No. : 142626WA211145(1)

Page 2 of 3

Results :

A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.10	-0.08
6.86	6.80	-0.06

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
10	10.04	+0.04	± 0.5
20	20.00	0.00	± 1.0
30	30.22	+0.22	± 1.5
40	40.15	+0.15	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	7.59	7.60
2	7.59	7.75
3	7.57	7.60
Average	7.58	7.65

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

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

Date : 08-07-2011

Note : This report refers only to the sample(s) tested.

Report No. : 142626WA211145(1)

Page 3 of 3

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
23.2	23.102

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
0	-	-	± 0.5
4	4.32	+0.32	± 0.6
8	8.12	+0.12	± 0.8
40	41.06	+1.06	± 3.0
80	79.39	-0.61	± 4.0

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

Date : 08/07/2011
 ** End of Report **

Note : This report refers only to the sample(s) tested.

Report No. : 142626WA211145



Page 1 of 3

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

Client : Fugro Technical Services Limited (MCL)

Client's address : Rm. 723-726, 7/F, Profit Industrial Building, No. 1-15,
Kwai Fung Crescent, Kwai Chung, N.T.

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

Client sample ID : Serial No. 19A105807

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

Laboratory Information

Lab. sample ID : WA211145/1

Date sample received : 08/06/2021

Date of calibration : 21/06/2021

Next calibration date : 20/09/2021

Test method used : In-house comparison method

Note : This report refers only to the sample(s) tested.

Report No. : 142626WA211145

Page 2 of 3

Results :
A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.16	-0.02
6.86	6.87	+0.01

B. Salinity calibration


Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
10	9.99	-0.01	± 0.5
20	19.72	-0.28	± 1.0
30	29.84	-0.16	± 1.5
40	39.86	-0.14	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	7.44	7.61
2	7.44	7.60
3	7.62	7.65
Average	7.50	7.62

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

Certified by :


 Approved Signatory : CHAN Hoi Yan, Winnie
 Assistant Manager

Date :



Note : This report refers only to the sample(s) tested.

Report No. : 142626WA211145

Page 3 of 3

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
23.2	23.452

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
0	-	-	± 0.5
4	4.36	+0.36	± 0.6
8	8.64	+0.64	± 0.8
40	41.25	+1.25	± 3.0
80	80.40	+0.40	± 4.0


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

Date : 08-07-2021
** End of Report **

Note : This report refers only to the sample(s) tested.

CALIBRATION CERTIFICATE

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

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

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

A large, stylized number '50' in a bold, sans-serif font, with a small square graphic element at the top right of the '0'.

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

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

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





a xylem brand

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

Certificate of Calibration

TEST REPORT

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

POWER TEST

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

NOISE TEST

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

VERIFICATION

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

OPTIONS

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

Verified by: **ainthasane**

This report was generated on 5/24/2017.

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

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

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

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

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

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

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

Appendix E

Environmental Monitoring Schedule

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

Impact Monitoring Schedule (August 2021)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
1	2 AQM, NM	3 WQM Mid Flood(17:23) Mid Ebb(09:55)	4	5 WQM Mid Flood(17:40) Mid Ebb(11:42)	6	7 AQM, WQM Mid Flood(05:41) Mid Ebb(13:09)
8	9	10 WQM Mid Flood(07:58) Mid Ebb(15:07)	11	12 WQM Mid Flood(09:36) Mid Ebb(16:17)	13 AQM, NM	14 WQM Mid Flood(05:15) Mid Ebb(11:12)
15	16	17 WQM Mid Flood(16:14) Mid Ebb(08:19) EMB	18	19 AQM, NM, WQM Mid Flood(18:51) Mid Ebb(10:58)	20 ANRM	21 WQM Mid Flood(05:48) Mid Ebb(12:55)
22	23	24 WQM Mid Flood(08:19) Mid Ebb(15:02)	25 AQM, NM	26 WQM Mid Flood(09:39) Mid Ebb(16:02)	27	28 WQM Mid Flood(11:00) Mid Ebb(16:55)
29	30 WQM Mid Flood(12:59) Mid Ebb(06:14)	31 AQM, NM				

Remarks

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

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

Impact Monitoring Schedule (September 2021)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
			1	2 WQM Mid Flood(18:14) Mid Ebb(10:13)	3	4 WQM Mid Flood(04:44) Mid Ebb(12:02)
5	6 AQM, NM	7 WQM Mid Flood(07:19) Mid Ebb(14:07)	8	9 WQM Mid Flood(08:52) Mid Ebb(15:19)	10	11 AQM WQM Mid Flood(10:20) Mid Ebb(04:07)
12	13	14 WQM Mid Flood(14:43) Mid Ebb(06:33)	15	16 WQM Mid Flood(17:45) Mid Ebb(09:27)	17 AQM, NM	18 WQM Mid Flood(04:59) Mid Ebb(11:50)
19	20	21 WQM Mid Flood(07:28) Mid Ebb(13:58)	22	23 AQM, NM WQM Mid Flood(08:47) Mid Ebb(14:58)	24	25 WQM Mid Flood(10:03) Mid Ebb(15:51)
26	27	28 WQM Mid Flood(13:04) Mid Ebb(05:23)	29 AQM, NM	30 WQM Mid Flood(20:31) Mid Ebb(07:23)		

Remarks

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

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

Impact Monitoring Schedule (October 2021)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
					1	2 WQM Mid Flood(18:00) Mid Ebb(10:33)
3	4	5 AQM, NM WQM Mid Flood(06:26) Mid Ebb(12:58)	6	7 WQM Mid Flood(08:01) Mid Ebb(14:17)	8	9 WQM Mid Flood(09:36) Mid Ebb(15:32)
10	11 AQM, NM	12 WQM Mid Flood(13:09) Mid Ebb(05:15)	13	14 WQM Mid Flood(16:26) Mid Ebb(07:31)	15	16 AQM WQM Mid Flood(18:02) Mid Ebb(10:34)
17	18	19 WQM Mid Flood(06:35) Mid Ebb(12:52)	20	21 WQM Mid Flood(07:58) Mid Ebb(13:57)	22 AQM, NM	23 WQM Mid Flood(09:20) Mid Ebb(14:55)
24 31	25	26 WQM Mid Flood(11:51) Mid Ebb(16:43)	27	28 AQM, NM WQM Mid Flood(18:07) Mid Ebb(05:43)	29	30 WQM Mid Flood(16:30) Mid Ebb(07:57)

Remarks

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

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

Impact Monitoring Schedule (November 2021)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
	1	2 WQM Mid Flood(5:22) Mid Ebb(11:40)	3 AQM, NM	4 WQM Mid Flood(7:05) Mid Ebb(13:10)	5	6 WQM Mid Flood(8:58) Mid Ebb(14:42)
7	8	9 AQM, NM WQM Mid Flood(12:00) Mid Ebb(16:58)	10	11 WQM Mid Flood(18:40) Mid Ebb(6:01)	12	13 WQM Mid Flood(16:38) Mid Ebb(8:40)
14	15 AQM, NM	16 WQM Mid Flood(5:38) Mid Ebb(11:43)	17	18 WQM Mid Flood(7:13) Mid Ebb(12:58)	19	20 AQM WQM Mid Flood(8:46) Mid Ebb(14:05)
21	22	23 WQM Mid Flood(10:59) Mid Ebb(15:46)	24	25 WQM Mid Flood(12:35) Mid Ebb(17:07)	26 AQM, NM	27 WQM Mid Flood(14:39) Mid Ebb(6:13)
28	29	30 WQM Mid Flood(16:42) Mid Ebb(10:02)				

Remarks

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

Appendix F

Monitoring Results

Air Quality Monitoring Results

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

AM1 - Topfine Machinery (China) Co. Ltd.

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1st Measurement	2nd Measurement	3rd Measurement		
2-Aug-21	Fine	08:37	51	54	44	291	500
7-Aug-21	Cloudy	08:52	36	38	42		
13-Aug-21	Fine	08:29	29	36	39		
19-Aug-21	Fine	09:45	17	20	26		
25-Aug-21	Fine	13:11	24	30	21		
31-Aug-21	Fine	11:13	26	32	29		
		Min	17				
		Max	54				
		Average	33				

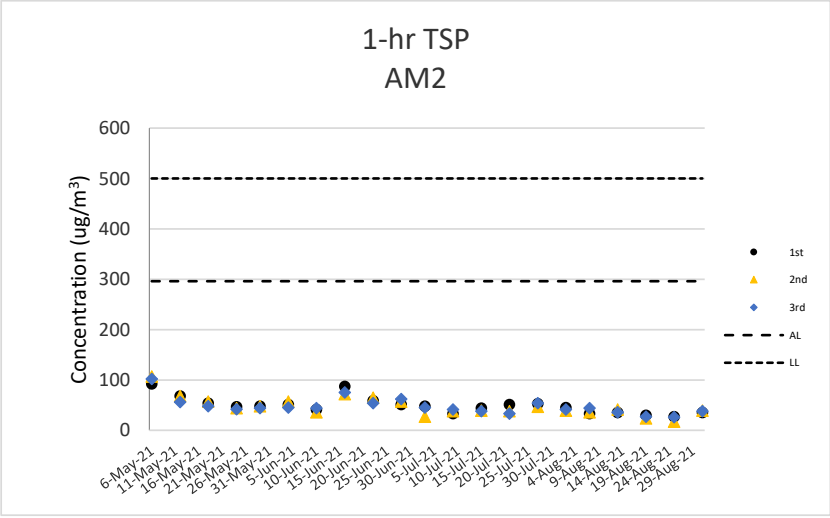
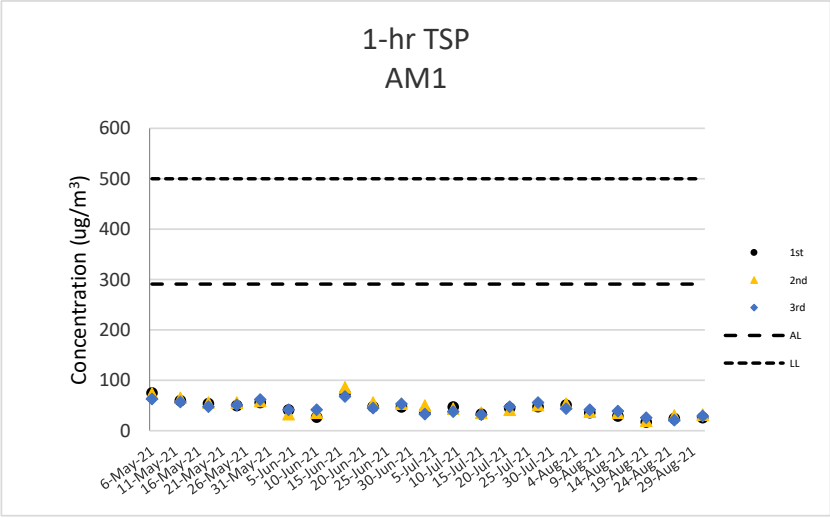
AM2 - Squatter house at the west of Yuen Long STW

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1st Measurement	2nd Measurement	3rd Measurement		
2-Aug-21	Fine	09:12	45	39	41	296	500
7-Aug-21	Cloudy	08:35	33	36	44		
13-Aug-21	Fine	09:08	35	41	36		
19-Aug-21	Fine	09:55	30	24	27		
25-Aug-21	Fine	13:29	27	17	26		
31-Aug-21	Fine	11:24	35	39	38		
		Min	17				
		Max	45				
		Average	34				

Note:

Underline: Exceedance of Action Level

Underline and Bold: Exceedance of Limit Level



Noise Monitoring Results

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

CM1 - Squatter house to the north of YLSTW

Date	Start Time	L _{eq} 30min dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
2-Aug-21	10:40	52	54	48	0.7	Fine	75
13-Aug-21	10:51	52	56	49	0.4	Cloudy	75
19-Aug-21	12:50	53	56	51	0.2	Fine	75
25-Aug-21	15:06	54	56	50	0.7	Fine	75
31-Aug-21	10:02	54	56	52	0.2	Fine	75
	Max	54					
	Min	52					

CM2 - Squatter house to the west of YLSTW

Date	Start Time	L _{eq} 30min dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
2-Aug-21	09:37	54	59	51	0.6	Fine	75
13-Aug-21	09:21	56	58	52	0.8	Cloudy	75
19-Aug-21	10:08	56	59	52	0.2	Fine	75
25-Aug-21	13:33	56	59	54	0.8	Fine	75
31-Aug-21	11:29	58	61	53	0.2	Fine	75
	Max	58					
	Min	54					

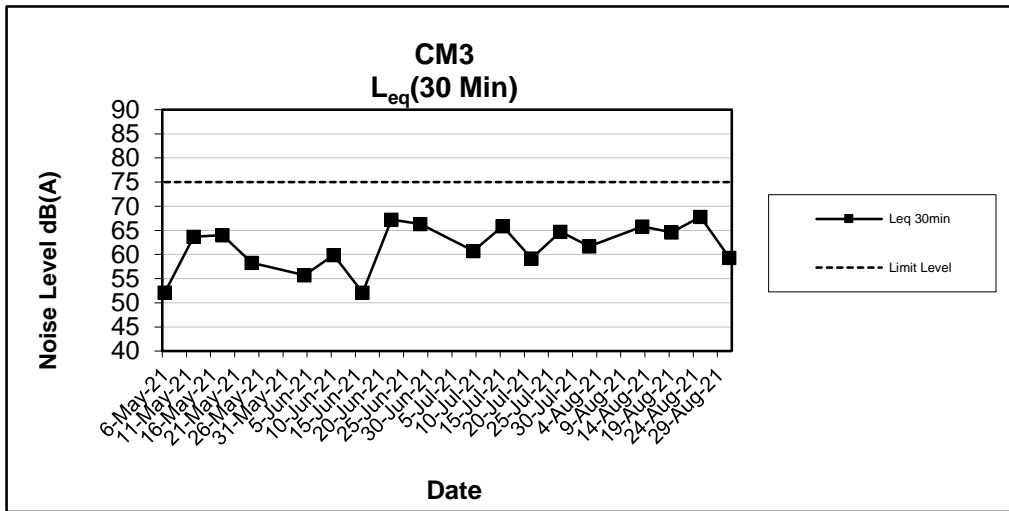
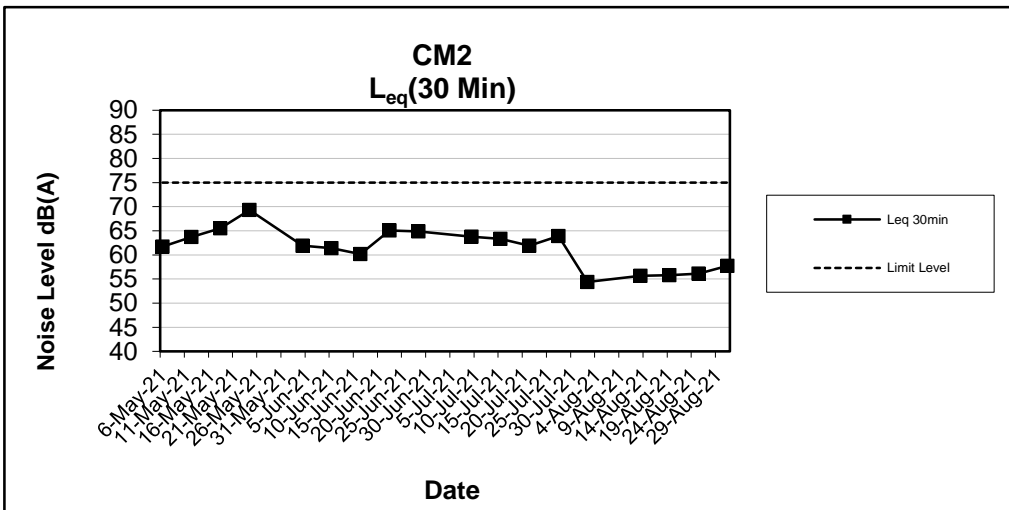
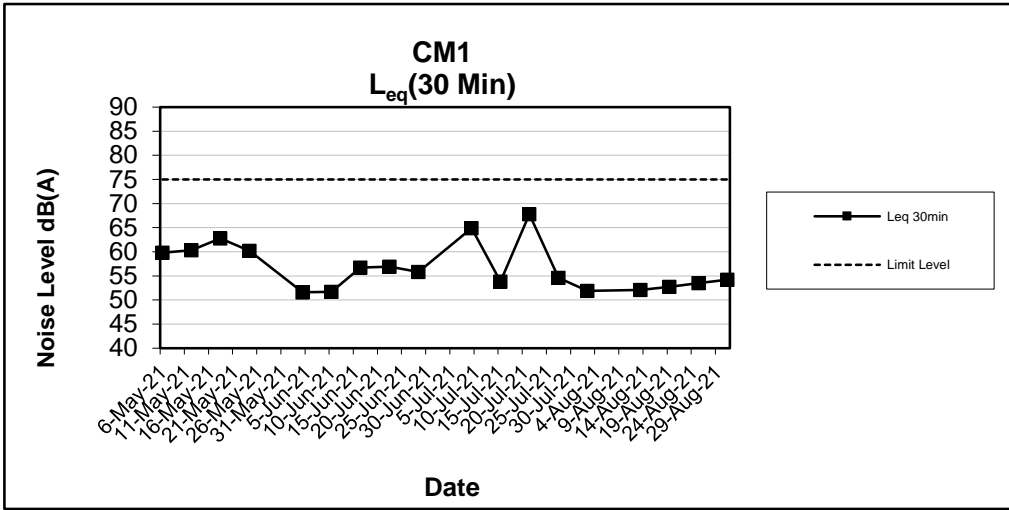
CM3 - Squatter house to the east of YLSTW

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)
2-Aug-21	11:29	62	65	57	0.8	Fine	75
13-Aug-21	11:37	66	68	60	0.9	Cloudy	75
19-Aug-21	13:56	65	67	60	0.2	Fine	75
25-Aug-21	14:12	68	70	64	0.8	Fine	75
31-Aug-21	13:06	59	63	55	0.3	Fine	75
	Max	68					
	Min	59					

Note:

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

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



Water Quality Monitoring Results

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	3/8/2021	Mid-Flood	Cloudy	Moderate	17:43	1.4	M	0.7	1	0.139	247	8.03	8.03	0.63	0.63	30.12	30.13	45.1	45.0	3.39	3.38	38.8	38.8	48	47
M1	3/8/2021	Mid-Flood	Cloudy	Moderate	17:43	1.4	M	0.7	2			8.03	8.03	0.63	0.63	30.14	30.13	44.9	45.0	3.37	3.38	38.8	38.8	45	47
M2	3/8/2021	Mid-Flood	Cloudy	Moderate	17:26	1.1	M	0.55	1	0.178	243	7.91	7.91	0.69	0.69	30.92	30.92	34.3	34.2	2.54	2.54	42.9	42.9	63	64
M2	3/8/2021	Mid-Flood	Cloudy	Moderate	17:26	1.1	M	0.55	2			7.91	7.91	0.69	0.69	30.91	30.92	34.1	34.2	2.53	2.54	42.9	42.9	65	64
M3	3/8/2021	Mid-Flood	Cloudy	Calm	17:35	1.1	M	0.55	1	0.035	221	8.31	8.34	0.17	0.17	29.17	29.18	52.7	52.9	4.02	4.06	48.3	48.4	73	72
M3	3/8/2021	Mid-Flood	Cloudy	Calm	17:35	1.1	M	0.55	2			8.37	8.34	0.16	0.17	29.19	29.18	53.1	52.9	4.10	4.06	48.4	48.4	71	72
M1	3/8/2021	Mid-Ebb	Cloudy	Moderate	10:21	1.2	M	0.6	1	0.159	177	7.11	7.12	0.77	0.77	31.41	31.41	30.8	30.7	2.35	2.35	25.5	25.6	37	38
M1	3/8/2021	Mid-Ebb	Cloudy	Moderate	10:21	1.2	M	0.6	2			7.12	7.12	0.77	0.77	31.41	31.41	30.6	30.7	2.34	2.35	25.6	25.6	38	38
M2	3/8/2021	Mid-Ebb	Cloudy	Moderate	10:35	0.8	M	0.4	1	0.182	180	7.57	7.57	0.79	0.79	31.20	31.22	36.3	36.2	2.68	2.67	24.3	24.4	35	34
M2	3/8/2021	Mid-Ebb	Cloudy	Moderate	10:35	0.8	M	0.4	2			7.57	7.57	0.79	0.79	31.23	31.22	36.0	36.2	2.66	2.67	24.4	24.4	33	34
M3	3/8/2021	Mid-Ebb	Cloudy	Calm	10:05	0.9	M	0.45	1	0.058	82	8.34	8.36	0.11	0.12	30.43	30.44	45.5	45.7	3.64	3.67	56.1	56.1	110	103
M3	3/8/2021	Mid-Ebb	Cloudy	Calm	10:05	0.9	M	0.45	2			8.37	8.36	0.12	0.12	30.44	30.44	45.8	45.7	3.69	3.67	56.1	56.1	96	103

Remark

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

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M2(Impact Station)	1.88	1.79	46.6	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	52.3	82.2	89.05

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement										Laboratory Analysis					
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	5/8/2021	Mid-Flood	Cloudy	Moderate	19:38	1.4	M	0.7	1	0.042	74	7.35	7.36	1.14	1.15	28.34	28.34	60.2	60.3	4.47	4.48	35.8	35.8	27	27
M1	5/8/2021	Mid-Flood	Cloudy	Moderate	19:38	1.4	M	0.7	2			7.36	7.36	1.15	1.15	28.34	28.34	60.3	60.3	4.48	4.48	35.8	35.8	26	26
M2	5/8/2021	Mid-Flood	Cloudy	Moderate	19:20	1.2	M	0.6	1	0.037	104	7.35	7.37	1.04	1.13	28.62	28.62	59.1	58.3	4.31	4.32	38.2	38.2	43	43
M2	5/8/2021	Mid-Flood	Cloudy	Moderate	19:20	1.2	M	0.6	2			7.38	7.37	1.21	1.13	28.62	28.62	57.4	58.3	4.32	4.32	38.2	38.2	42	42
M3	5/8/2021	Mid-Flood	Cloudy	Smooth	19:16	0.8	M	0.4	1	0.080	85	7.18	7.18	0.50	0.50	27.34	27.34	53.7	53.6	4.15	4.15	44.0	44.0	31	33
M3	5/8/2021	Mid-Flood	Cloudy	Smooth	19:16	0.8	M	0.4	2			7.18	7.18	0.50	0.50	27.33	27.34	53.5	53.6	4.14	4.15	44.0	44.0	34	33
M1	5/8/2021	Mid-Ebb	Cloudy	Moderate	11:53	0.9	M	0.45	1	0.026	142	7.41	7.42	2.61	2.63	27.31	27.32	51.8	51.7	3.84	3.83	34.2	34.2	33	32
M1	5/8/2021	Mid-Ebb	Cloudy	Moderate	11:53	0.9	M	0.45	2			7.42	7.42	2.64	2.63	27.32	27.32	51.6	51.7	3.81	3.83	34.2	34.2	31	31
M2	5/8/2021	Mid-Ebb	Cloudy	Moderate	12:12	0.8	M	0.4	1	0.041	155	7.58	7.56	1.84	1.87	27.34	27.35	49.7	49.7	3.71	3.70	35.4	35.4	28	30
M2	5/8/2021	Mid-Ebb	Cloudy	Moderate	12:12	0.8	M	0.4	2			7.54	7.56	1.89	1.87	27.35	27.35	49.6	49.7	3.68	3.70	35.3	35.4	31	31
M3	5/8/2021	Mid-Ebb	Cloudy	Smooth	11:46	0.6	M	0.3	1	0.111	256	7.16	7.16	0.24	0.24	28.65	28.64	55.9	55.8	4.32	4.32	41.6	41.6	34	34
M3	5/8/2021	Mid-Ebb	Cloudy	Smooth	11:46	0.6	M	0.3	2			7.16	7.16	0.24	0.24	28.62	28.64	55.6	55.8	4.31	4.32	41.6	41.6	33	33

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	7/8/2021	Mid-Flood	Fine	Moderate	06:08	1.2	M	0.6	1	0.14	230	7.58	7.58	0.65	0.65	30.11	30.12	44.1	44.0	3.28	3.28	31.5	31.6	17	18
M1	7/8/2021	Mid-Flood	Fine	Moderate	06:08	1.2	M	0.6	2			7.58		0.65		30.12		43.9		3.27		31.6		18	
M2	7/8/2021	Mid-Flood	Fine	Moderate	06:28	1.3	M	0.65	1	0.173	249	8.01	8.01	0.68	0.68	32.30	32.20	32.3	32.2	2.35	2.34	34.2	34.3	15	16
M2	7/8/2021	Mid-Flood	Fine	Moderate	06:28	1.3	M	0.65	2			8.01		0.68		32.10		32.1		2.33		34.3		16	
M3	7/8/2021	Mid-Flood	Fine	Calm	06:22	0.8	M	0.4	1	0.168	73	7.01	7.02	0.77	0.77	29.97	29.97	45.6	45.5	3.41	3.41	38.0	38.0	20	21
M3	7/8/2021	Mid-Flood	Fine	Calm	06:22	0.8	M	0.4	2			7.02		0.76		29.97		45.4		3.40		37.9		22	
M1	7/8/2021	Mid-Ebb	Fine	Moderate	13:33	1.1	M	0.55	1	0.174	176	7.78	7.78	0.53	0.53	31.53	31.55	42.2	42.1	3.16	3.16	30.2	30.3	13	13
M1	7/8/2021	Mid-Ebb	Fine	Moderate	13:33	1.1	M	0.55	2			7.78		0.53		31.56		42.0		3.15		30.3		13	
M2	7/8/2021	Mid-Ebb	Fine	Moderate	13:16	1.1	M	0.55	1	0.169	159	7.61	7.61	0.78	0.78	31.61	31.62	37.4	37.3	2.79	2.78	29.6	29.6	20	21
M2	7/8/2021	Mid-Ebb	Fine	Moderate	13:16	1.1	M	0.55	2			7.61		0.78		31.62		37.2		2.77		29.5		22	
M3	7/8/2021	Mid-Ebb	Fine	Calm	13:11	0.6	M	0.3	1	0.204	263	7.13	7.14	0.49	0.49	30.83	30.83	48.9	49.1	3.66	3.67	24.4	24.5	14	14
M3	7/8/2021	Mid-Ebb	Fine	Calm	13:11	0.6	M	0.3	2			7.14		0.49		30.82		49.2		3.68		24.5		13	

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	10/8/2021	Mid-Flood	Fine	Smooth	08:19	1.4	M	0.7	1	0.176	196	7.64	7.65	1.16	1.16	28.98	28.98	41.1	41.2	3.14	3.15	32.5	32.5	32	31
M1	10/8/2021	Mid-Flood	Fine	Smooth	08:19	1.4	M	0.7	2			7.65	7.65	1.16	1.16	28.97	28.98	41.3	41.2	3.16	3.15	32.5	32.5	30	31
M2	10/8/2021	Mid-Flood	Fine	Smooth	08:34	1.4	M	0.7	1	0.077	256	7.62	7.62	0.97	0.97	28.92	28.91	38.9	38.2	2.99	2.93	36.2	36.4	37	38
M2	10/8/2021	Mid-Flood	Fine	Smooth	08:34	1.4	M	0.7	2			7.61	7.62	0.97	0.97	28.89	28.91	37.5	38.2	2.87	2.93	36.6	36.4	38	38
M3	10/8/2021	Mid-Flood	Fine	Calm	08:10	1.8	M	0.9	1	0.024	122	7.07	7.08	0.45	0.46	29.65	29.64	43.2	43.1	3.30	3.29	32.2	32.2	36	35
M3	10/8/2021	Mid-Flood	Fine	Calm	08:10	1.8	M	0.9	2			7.08	7.08	0.47	0.46	29.62	29.64	42.9	43.1	3.28	3.29	32.2	32.2	34	35
M1	10/8/2021	Mid-Ebb	Fine	Smooth	15:24	1.8	M	0.9	1	0.092	280	7.66	7.66	0.91	0.91	29.40	29.41	40.3	40.1	3.10	3.10	34.2	34.3	38	36
M1	10/8/2021	Mid-Ebb	Fine	Smooth	15:24	1.8	M	0.9	2			7.66	7.66	0.91	0.91	29.41	29.41	39.9	40.1	3.08	3.09	34.3	34.3	34	36
M2	10/8/2021	Mid-Ebb	Fine	Smooth	15:09	1.2	M	0.6	1	0.135	109	7.86	7.87	0.77	0.77	29.27	29.26	36.5	36.3	2.80	2.79	38.0	37.8	33	36
M2	10/8/2021	Mid-Ebb	Fine	Smooth	15:09	1.2	M	0.6	2			7.87	7.87	0.77	0.77	29.24	29.26	36.1	36.3	2.78	2.79	37.6	37.8	38	36
M3	10/8/2021	Mid-Ebb	Fine	Calm	15:12	1.1	M	0.55	1	0.033	248	7.06	7.07	0.46	0.47	29.69	29.67	39.1	38.9	3.06	3.05	33.2	33.2	24	25
M3	10/8/2021	Mid-Ebb	Fine	Calm	15:12	1.1	M	0.55	2			7.08	7.07	0.47	0.47	29.65	29.67	38.7	38.9	3.04	3.05	33.2	33.2	25	25

Remark

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For Flood Tide

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

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	12/8/2021	Mid-Flood	Fine	Calm	09:41	1.2	M	0.6	1	0.04	197	7.95	7.97	2.61	2.62	29.85	29.85	53.1	53.2	3.97	3.96	37.9	37.9	49	49
M1	12/8/2021	Mid-Flood	Fine	Calm	09:41	1.2	M	0.6	2			7.99	7.97	2.62	2.62	29.85	29.85	53.2	53.2	3.94	3.96	37.8	37.9	48	49
M2	12/8/2021	Mid-Flood	Fine	Calm	10:00	1.4	M	0.7	1	0.036	164	7.91	7.92	2.84	2.86	29.88	29.88	52.5	52.4	3.90	3.91	38.4	38.4	56	53
M2	12/8/2021	Mid-Flood	Fine	Calm	10:00	1.4	M	0.7	2			7.93	7.92	2.88	2.86	29.88	29.88	52.3	52.4	3.91	3.91	38.4	38.4	50	53
M3	12/8/2021	Mid-Flood	Fine	Calm	09:46	1	M	0.5	1	0.23	75	7.17	7.17	0.87	0.88	29.02	29.04	52.3	52.5	3.94	3.95	56.9	56.8	63	62
M3	12/8/2021	Mid-Flood	Fine	Calm	09:46	1	M	0.5	2			7.16	7.17	0.88	0.88	29.05	29.04	52.6	52.5	3.96	3.95	56.6	56.8	61	62
M1	12/8/2021	Mid-Ebb	Fine	Calm	16:28	0.8	M	0.4	1	0.065	59	7.61	7.63	3.32	3.32	29.91	29.91	49.1	48.9	3.62	3.61	37.9	37.9	37	38
M1	12/8/2021	Mid-Ebb	Fine	Calm	16:28	0.8	M	0.4	2			7.64	7.63	3.31	3.32	29.91	29.91	48.6	48.9	3.59	3.61	37.9	37.9	38	38
M2	12/8/2021	Mid-Ebb	Fine	Calm	16:08	1.2	M	0.6	1	0.084	73	7.62	7.64	3.64	3.63	30.12	30.13	49.2	49.0	3.64	3.63	36.4	36.4	45	42
M2	12/8/2021	Mid-Ebb	Fine	Calm	16:08	1.2	M	0.6	2			7.66	7.64	3.61	3.63	30.14	30.13	48.7	49.0	3.61	3.63	36.4	36.4	38	42
M3	12/8/2021	Mid-Ebb	Fine	Calm	16:21	0.6	M	0.3	1	0.192	256	7.08	7.09	0.53	0.53	30.60	30.60	46.3	45.8	3.49	3.45	40.6	41.0	39	40
M3	12/8/2021	Mid-Ebb	Fine	Calm	16:21	0.6	M	0.3	2			7.09	7.09	0.53	0.53	30.60	30.60	45.3	45.8	3.41	3.45	41.4	41.0	41	40

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	45.4	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	14/8/2021	Mid-Flood	Cloudy	Calm	05:37	1.1	M	0.55	1	0.04	164	7.72	7.72	0.14	0.15	30.04	30.05	91.4	91.0	6.90	6.88	27.7	27.7	26	26
M1	14/8/2021	Mid-Flood	Cloudy	Calm	05:37	1.1	M	0.55	2			7.71	7.72	0.15	0.15	30.05	30.05	90.6	91.0	6.86	6.88	27.7	27.7	25	26
M2	14/8/2021	Mid-Flood	Cloudy	Calm	05:55	1.3	M	0.65	1	0.054	196	7.61	7.62	0.14	0.15	29.97	29.97	87.7	87.6	6.63	6.65	33.0	33.1	31	31
M2	14/8/2021	Mid-Flood	Cloudy	Calm	05:55	1.3	M	0.65	2			7.62	7.62	0.15	0.15	29.97	29.97	87.4	87.6	6.67	6.65	33.1	33.1	30	31
M3	14/8/2021	Mid-Flood	Cloudy	Smooth	05:04	0.6	M	0.3	1	0.094	246	7.24	7.24	0.43	0.44	28.91	28.91	44.9	45.1	3.37	3.38	51.1	51.0	34	35
M3	14/8/2021	Mid-Flood	Cloudy	Smooth	05:04	0.6	M	0.3	2			7.24	7.24	0.44	0.44	28.90	28.91	45.2	45.1	3.39	3.38	50.9	51.0	35	35
M1	14/8/2021	Mid-Ebb	Cloudy	Calm	11:46	0.8	M	0.4	1	0.095	349	7.62	7.63	0.94	0.97	29.73	29.74	80.2	80.8	6.08	6.05	35.4	35.4	30	30
M1	14/8/2021	Mid-Ebb	Cloudy	Calm	11:46	0.8	M	0.4	2			7.64	7.63	0.99	0.97	29.74	29.74	81.3	80.8	6.01	6.05	35.3	35.4	29	30
M2	14/8/2021	Mid-Ebb	Cloudy	Calm	11:26	1	M	0.5	1	0.055	317	7.53	7.54	1.03	1.04	29.91	29.92	79.2	79.2	5.94	5.94	34.1	34.1	28	28
M2	14/8/2021	Mid-Ebb	Cloudy	Calm	11:26	1	M	0.5	2			7.54	7.54	1.04	1.04	29.92	29.92	79.1	79.2	5.93	5.94	34.1	34.1	27	28
M3	14/8/2021	Mid-Ebb	Cloudy	Smooth	11:16	0.8	M	0.4	1	0.137	70	7.55	7.55	0.65	0.65	29.81	29.82	48.3	48.6	3.64	3.66	45.6	46.2	33	33
M3	14/8/2021	Mid-Ebb	Cloudy	Smooth	11:16	0.8	M	0.4	2			7.55	7.55	0.64	0.65	29.82	29.82	48.8	48.6	3.67	3.66	46.8	46.2	33	33

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For Flood Tide

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

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	48.4	52.2	59	68

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	17/8/2021	Mid-Flood	Cloudy	Calm	16:38	1.4	M	0.7	1	0.083	104	7.62	7.63	0.48	0.48	29.41	29.42	60.2	60.3	4.09	4.09	31.1	31.2	48	48
M1	17/8/2021	Mid-Flood	Cloudy	Calm	16:38	1.4	M	0.7	2			7.63	7.63	0.47	0.48	29.42	29.42	60.2	60.3	4.08	4.09	31.2	31.2	47	
M2	17/8/2021	Mid-Flood	Cloudy	Calm	16:18	1.2	M	0.6	1	0.072	55	7.58	7.59	0.33	0.36	29.79	29.79	47.2	47.6	3.36	3.39	29.5	29.5	28	28
M2	17/8/2021	Mid-Flood	Cloudy	Calm	16:18	1.2	M	0.6	2			7.59	7.59	0.38	0.36	29.79	29.79	47.9	47.6	3.42	3.39	29.5	29.5	27	
M3	17/8/2021	Mid-Flood	Cloudy	Calm	16:19	0.4	M	0.2	1	0.068	66	7.47	7.47	0.74	0.74	29.95	29.95	49.9	49.9	3.81	3.81	35.6	35.7	14	14
M3	17/8/2021	Mid-Flood	Cloudy	Calm	16:19	0.4	M	0.2	2			7.46	7.47	0.73	0.74	29.94	29.95	49.8	49.9	3.80	3.81	35.7	35.7	13	
M1	17/8/2021	Mid-Ebb	Cloudy	Calm	08:31	0.9	M	0.45	1	0.041	265	7.63	7.64	0.54	0.55	29.78	29.78	44.1	44.2	2.98	3.00	22.3	22.3	32	32
M1	17/8/2021	Mid-Ebb	Cloudy	Calm	08:31	0.9	M	0.45	2			7.64	7.64	0.56	0.55	29.77	29.78	44.2	44.2	3.02	3.00	22.3	22.3	31	
M2	17/8/2021	Mid-Ebb	Cloudy	Calm	08:46	0.7	M	0.35	1	0.064	276	7.59	7.58	0.51	0.52	29.53	29.54	50.1	50.4	3.64	3.68	31.0	31.1	26	27
M2	17/8/2021	Mid-Ebb	Cloudy	Calm	08:46	0.7	M	0.35	2			7.57	7.58	0.52	0.52	29.54	29.54	50.6	50.4	3.71	3.68	31.2	31.1	27	
M3	17/8/2021	Mid-Ebb	Cloudy	Calm	08:29	0.6	M	0.3	1	0.171	257	6.92	6.92	0.50	0.51	29.23	29.22	47.8	47.7	3.66	3.65	53.3	53.5	36	35
M3	17/8/2021	Mid-Ebb	Cloudy	Calm	08:29	0.6	M	0.3	2			6.92	6.92	0.51	0.51	29.21	29.22	47.5	47.7	3.64	3.65	53.6	53.5	33	

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For Flood Tide

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

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	50.7	55.0	59	68

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	19/8/2021	Mid-Flood	Fine	Calm	19:40	1.3	M	0.65	1	0.128	230	7.17	7.17	0.54	0.54	27.12	27.13	98.2	98.1	5.67	5.66	38.3	38.3	47	46
M1	19/8/2021	Mid-Flood	Fine	Calm	19:40	1.3	M	0.65	2			7.17	7.17	0.54	0.54	27.14	27.13	98.0	98.1	5.65	5.66	38.3	38.3	45	46
M2	19/8/2021	Mid-Flood	Fine	Calm	19:06	1.2	M	0.6	1	0.166	240	7.43	7.43	0.48	0.48	27.54	27.55	79.3	79.2	7.11	7.10	36.4	36.5	34	35
M2	19/8/2021	Mid-Flood	Fine	Calm	19:06	1.2	M	0.6	2			7.43	7.43	0.48	0.48	27.56	27.55	79.1	79.2	7.09	7.10	36.5	36.5	36	35
M3	19/8/2021	Mid-Flood	Fine	Calm	19:00	1.4	M	0.7	1	0.038	282	7.43	7.44	0.16	0.18	31.07	31.08	66.8	66.9	5.05	5.05	28.3	28.3	16	16
M3	19/8/2021	Mid-Flood	Fine	Calm	19:00	1.4	M	0.7	2			7.44	7.44	0.19	0.18	31.08	31.08	66.9	66.9	5.04	5.05	28.3	28.3	15	16
M1	19/8/2021	Mid-Ebb	Fine	Calm	11:35	1.1	M	0.55	1	0.156	179	8.91	8.91	0.34	0.34	28.80	28.81	98.7	98.6	7.60	7.59	41.7	41.7	26	26
M1	19/8/2021	Mid-Ebb	Fine	Calm	11:35	1.1	M	0.55	2			8.90	8.91	0.34	0.34	28.81	28.81	98.5	98.6	7.58	7.59	41.7	41.7	26	26
M2	19/8/2021	Mid-Ebb	Fine	Calm	11:58	1	M	0.5	1	0.174	170	7.16	7.16	0.31	0.31	29.34	29.34	98.2	98.1	8.67	8.66	40.0	40.1	38	40
M2	19/8/2021	Mid-Ebb	Fine	Calm	11:58	1	M	0.5	2			7.16	7.16	0.31	0.31	29.34	29.34	98.0	98.1	8.65	8.66	40.1	40.1	42	40
M3	19/8/2021	Mid-Ebb	Fine	Calm	10:58	0.6	M	0.3	1	0.068	15	7.17	7.16	0.64	0.65	30.68	30.69	51.2	51.6	3.84	3.85	21.1	21.3	16	16
M3	19/8/2021	Mid-Ebb	Fine	Calm	10:58	0.6	M	0.3	2			7.14	7.16	0.66	0.65	30.70	30.69	51.9	51.6	3.85	3.85	21.4	21.3	16	16

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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	46.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	21/8/2021	Mid-Flood	Fine	Calm	06:03	2.4	M	1.2	1	0.141	173	7.41	7.42	3.37	3.38	29.12	29.13	54.2	54.0	3.97	3.96	16.3	16.0	18	20
M1	21/8/2021	Mid-Flood	Fine	Calm	06:03	2.4	M	1.2	2			7.42	7.42	3.39	3.38	29.13	29.13	53.7	54.0	3.94	3.96	15.7	16.0	21	20
M2	21/8/2021	Mid-Flood	Fine	Calm	06:18	1.6	M	0.8	1	0.104	212	7.53	7.53	2.81	2.81	29.24	29.24	42.1	42.4	3.10	3.12	19.6	19.0	16	16
M2	21/8/2021	Mid-Flood	Fine	Calm	06:18	1.6	M	0.8	2			7.52	7.53	2.80	2.81	29.24	29.24	42.7	42.4	3.14	3.12	18.3	19.0	16	16
M3	21/8/2021	Mid-Flood	Fine	Calm	06:05	1.1	M	0.55	1	0.045	177	7.13	7.14	1.39	1.39	30.27	30.27	43.8	43.9	3.46	3.52	22.6	22.7	36	37
M3	21/8/2021	Mid-Flood	Fine	Calm	06:05	1.1	M	0.55	2			7.14	7.14	1.38	1.39	30.27	30.27	43.9	43.9	3.57	3.52	22.7	22.7	37	37
M1	21/8/2021	Mid-Ebb	Fine	Calm	13:17	1.8	M	0.9	1	0.273	194	7.36	7.37	1.46	1.46	31.39	31.38	40.3	40.5	2.95	2.96	18.5	18.5	20	20
M1	21/8/2021	Mid-Ebb	Fine	Calm	13:17	1.8	M	0.9	2			7.37	7.37	1.46	1.46	31.37	31.38	40.6	40.5	2.97	2.96	18.4	18.5	19	20
M2	21/8/2021	Mid-Ebb	Fine	Calm	13:01	1.2	M	0.6	1	0.209	166	7.26	7.26	1.20	1.21	31.34	31.34	34.9	35.1	2.56	2.57	21.2	20.9	20	19
M2	21/8/2021	Mid-Ebb	Fine	Calm	13:01	1.2	M	0.6	2			7.25	7.26	1.21	1.21	31.34	31.34	35.2	35.1	2.58	2.57	20.7	20.9	18	19
M3	21/8/2021	Mid-Ebb	Fine	Calm	13:00	0.9	M	0.45	1	0.03	85	7.11	7.13	1.36	1.36	30.37	30.37	48.1	47.9	4.04	3.98	22.1	22.1	18	21
M3	21/8/2021	Mid-Ebb	Fine	Calm	13:00	0.9	M	0.45	2			7.14	7.13	1.35	1.36	30.37	30.37	47.6	47.9	3.92	3.98	22.0	22.1	23	21

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For Flood Tide

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

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	24/8/2021	Mid-Flood	Fine	Calm	08:29	1.2	M	0.6	1	0.067	168	8.68	8.69	5.14	5.10	31.42	31.42	51.7	51.3	3.70	3.65	21.5	21.5	23	25
M1	24/8/2021	Mid-Flood	Fine	Calm	08:29	1.2	M	0.6	2			8.69	8.69	5.06	5.10	31.42	31.42	50.9	51.3	3.59	3.65	21.5	21.5	26	25
M2	24/8/2021	Mid-Flood	Fine	Calm	08:49	1.1	M	0.55	1	0.078	125	8.73	8.72	5.06	5.05	31.28	31.28	51.1	51.3	3.65	3.67	20.5	20.5	23	23
M2	24/8/2021	Mid-Flood	Fine	Calm	08:49	1.1	M	0.55	2			8.72	8.72	5.04	5.05	31.28	31.28	51.4	51.3	3.69	3.67	20.5	20.5	23	23
M3	24/8/2021	Mid-Flood	Fine	Calm	08:31	1.2	M	0.6	1	0.105	259	7.40	7.40	5.48	5.47	30.37	30.38	73.5	73.4	5.48	5.47	58.2	58.3	70	69
M3	24/8/2021	Mid-Flood	Fine	Calm	08:31	1.2	M	0.6	2			7.40	7.40	5.46	5.47	30.39	30.38	73.3	73.4	5.46	5.47	58.3	58.3	67	69
M1	24/8/2021	Mid-Ebb	Fine	Calm	15:26	0.8	M	0.4	1	0.072	61	8.25	8.26	3.94	3.97	31.15	31.15	58.2	58.2	4.22	4.21	17.6	17.9	21	22
M1	24/8/2021	Mid-Ebb	Fine	Calm	15:26	0.8	M	0.4	2			8.26	8.26	3.99	3.97	31.15	31.15	58.1	58.2	4.20	4.21	18.1	17.9	23	22
M2	24/8/2021	Mid-Ebb	Fine	Calm	15:09	0.9	M	0.45	1	0.081	55	8.64	8.63	3.99	3.98	31.45	31.45	55.1	55.0	3.99	3.98	19.8	19.8	24	26
M2	24/8/2021	Mid-Ebb	Fine	Calm	15:09	0.9	M	0.45	2			8.61	8.63	3.97	3.98	31.44	31.45	54.8	55.0	3.97	3.98	19.8	19.8	27	26
M3	24/8/2021	Mid-Ebb	Fine	Calm	15:16	0.8	M	0.4	1	0.096	91	7.31	7.31	1.18	1.18	30.27	30.27	80.7	80.8	6.04	6.05	62.4	62.4	71	71
M3	24/8/2021	Mid-Ebb	Fine	Calm	15:16	0.8	M	0.4	2			7.31	7.31	1.18	1.18	30.26	30.27	80.9	80.8	6.05	6.05	62.4	62.4	70	71

Remark

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

For Flood Tide

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

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1(Impact Station)	2.25	1.91	49.3	53.4	59	68

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	26/8/2021	Mid-Flood	Fine	Moderate	09:51	1.2	M	0.6	1	0.037	167	7.89	7.89	3.17	3.17	30.76	30.76	49.2	49.3	3.82	3.83	30.1	30.2	32	32
M1	26/8/2021	Mid-Flood	Fine	Moderate	09:51	1.2	M	0.6	2			7.88	7.89	3.16	3.17	30.75	30.76	49.3	49.3	3.83	3.83	30.2	30.2	31	31
M2	26/8/2021	Mid-Flood	Fine	Moderate	10:10	1.4	M	0.7	1	0.058	80	7.76	7.75	3.26	3.25	29.75	29.77	51.4	51.5	3.92	3.93	31.3	31.3	46	47
M2	26/8/2021	Mid-Flood	Fine	Moderate	10:10	1.4	M	0.7	2			7.74	7.75	3.24	3.25	29.78	29.77	51.6	51.5	3.94	3.93	31.3	31.3	47	47
M3	26/8/2021	Mid-Flood	Fine	Calm	09:50	0.8	M	0.4	1	0.115	85	7.47	7.47	1.65	1.66	30.82	30.82	58.1	58.3	4.27	4.28	43.3	43.3	16	17
M3	26/8/2021	Mid-Flood	Fine	Calm	09:50	0.8	M	0.4	2			7.46	7.47	1.66	1.66	30.81	30.82	58.5	58.3	4.29	4.28	43.3	43.3	17	17
M1	26/8/2021	Mid-Ebb	Fine	Moderate	16:31	0.9	M	0.45	1	0.066	74	7.53	7.54	4.11	4.12	28.96	28.95	41.8	40.8	3.10	3.06	36.2	36.3	9	10
M1	26/8/2021	Mid-Ebb	Fine	Moderate	16:31	0.9	M	0.45	2			7.54	7.54	4.12	4.12	28.94	28.95	39.7	40.8	3.02	3.06	36.3	36.3	10	10
M2	26/8/2021	Mid-Ebb	Fine	Moderate	16:12	1.1	M	0.55	1	0.05	88	7.41	7.45	4.06	4.07	29.74	29.66	41.9	42.4	3.18	3.22	37.4	37.5	9	10
M2	26/8/2021	Mid-Ebb	Fine	Moderate	16:12	1.1	M	0.55	2			7.49	7.45	4.08	4.07	29.58	29.66	42.8	42.4	3.26	3.22	37.5	37.5	11	11
M3	26/8/2021	Mid-Ebb	Fine	Calm	16:06	0.6	M	0.3	1	0.253	241	7.23	7.23	0.83	0.83	31.57	31.55	50.9	50.7	3.72	3.71	50.2	49.9	53	53
M3	26/8/2021	Mid-Ebb	Fine	Calm	16:06	0.6	M	0.3	2			7.23	7.23	0.83	0.83	31.53	31.55	50.4	50.7	3.69	3.71	49.6	49.9	52	52

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	52.4	56.8	59	68

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	28/8/2021	Mid-Flood	Fine	Moderate	11:04	1.2	M	0.6	1	0.056	196	7.54	7.53	0.67	0.67	28.47	28.48	51.2	51.1	4.89	4.85	37.5	37.5	35	35
M1	28/8/2021	Mid-Flood	Fine	Moderate	11:04	1.2	M	0.6	2			7.51	7.53	0.66	0.67	28.49	28.48	50.9	51.1	4.81	4.85	37.5	37.5	34	
M2	28/8/2021	Mid-Flood	Fine	Moderate	11:21	1.4	M	0.7	1	0.067	198	7.43	7.44	1.00	1.02	28.44	28.50	40.7	40.8	3.82	3.85	30.7	30.7	34	33
M2	28/8/2021	Mid-Flood	Fine	Moderate	11:21	1.4	M	0.7	2			7.44	7.44	1.03	1.02	28.56	28.50	40.8	40.8	3.88	3.85	30.7	30.7	32	
M3	28/8/2021	Mid-Flood	Fine	Smooth	11:07	0.6	M	0.3	1	0.093	74	7.73	7.73	1.69	1.69	28.80	28.81	55.9	55.7	4.09	4.07	47.7	47.8	40	42
M3	28/8/2021	Mid-Flood	Fine	Smooth	11:07	0.6	M	0.3	2			7.73	7.73	1.69	1.69	28.82	28.81	55.4	55.7	4.05	4.07	47.9	47.8	44	
M1	28/8/2021	Mid-Ebb	Fine	Moderate	17:11	1.1	M	0.55	1	0.036	65	7.74	7.73	3.18	3.19	30.29	30.29	47.3	47.3	3.45	3.46	36.4	36.4	22	23
M1	28/8/2021	Mid-Ebb	Fine	Moderate	17:11	1.1	M	0.55	2			7.72	7.73	3.19	3.19	30.29	30.29	47.2	47.3	3.46	3.46	36.4	36.4	23	
M2	28/8/2021	Mid-Ebb	Fine	Moderate	16:55	0.9	M	0.45	1	0.026	57	7.89	7.89	3.17	3.18	30.76	30.76	47.8	47.9	3.51	3.53	37.4	37.4	18	19
M2	28/8/2021	Mid-Ebb	Fine	Moderate	16:55	0.9	M	0.45	2			7.88	7.89	3.18	3.18	30.76	30.76	47.9	47.9	3.54	3.53	37.4	37.4	20	
M3	28/8/2021	Mid-Ebb	Fine	Smooth	16:59	0.4	M	0.2	1	0.139	262	7.57	7.57	3.61	3.60	29.39	29.38	49.4	49.3	3.61	3.60	38.7	38.8	38	38
M3	28/8/2021	Mid-Ebb	Fine	Smooth	16:59	0.4	M	0.2	2			7.57	7.57	3.59	3.60	29.37	29.38	49.2	49.3	3.59	3.60	38.9	38.8	38	

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	45.0	52.4	81	112
M3(Impact Station)	3.28	3.14	74.3	78.0	104	167

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	30/8/2021	Mid-Flood	Fine	Moderate	06:26	1.8	M	0.9	1	0.195	234	7.30	7.30	0.94	0.94	28.70	28.71	37.6	37.4	2.86	2.85	14.6	14.7	16	16
M1	30/8/2021	Mid-Flood	Fine	Moderate	06:26	1.8	M	0.9	2			7.30	7.30	0.93	0.94	28.71	28.71	37.2	37.4	2.83	2.85	14.7	14.7	15	15
M2	30/8/2021	Mid-Flood	Fine	Moderate	06:44	1.2	M	0.6	1	0.179	209	7.44	7.44	0.82	0.83	28.91	28.91	33.2	33.1	2.50	2.50	18.4	18.4	8	9
M2	30/8/2021	Mid-Flood	Fine	Moderate	06:44	1.2	M	0.6	2			7.43	7.43	0.84	0.83	28.91	28.91	33.0	33.1	2.49	2.50	18.4	18.4	9	9
M3	30/8/2021	Mid-Flood	Fine	Smooth	13:07	1.3	M	0.65	1	0.055	266	7.86	7.85	1.39	1.39	29.58	29.58	44.1	44.2	3.34	3.33	23.5	23.5	27	27
M3	30/8/2021	Mid-Flood	Fine	Smooth	13:07	1.3	M	0.65	2			7.84	7.84	1.38	1.39	29.57	29.58	44.2	44.2	3.32	3.33	23.4	23.4	26	26
M1	30/8/2021	Mid-Ebb	Fine	Moderate	13:16	1.6	M	0.8	1	0.103	148	7.64	7.64	2.55	2.55	29.49	29.49	39.7	39.5	3.02	3.01	16.3	16.3	15	15
M1	30/8/2021	Mid-Ebb	Fine	Moderate	13:16	1.6	M	0.8	2			7.64	7.64	2.54	2.55	29.48	29.49	39.3	39.5	2.99	3.01	16.3	16.3	16	16
M2	30/8/2021	Mid-Ebb	Fine	Moderate	13:00	1	M	0.5	1	0.141	229	7.77	7.77	2.43	2.43	29.68	29.69	36.9	37.0	2.79	2.80	23.2	23.2	22	22
M2	30/8/2021	Mid-Ebb	Fine	Moderate	13:00	1	M	0.5	2			7.76	7.76	2.43	2.43	29.69	29.69	37.1	37.0	2.80	2.80	23.2	23.2	22	22
M3	30/8/2021	Mid-Ebb	Fine	Smooth	06:47	0.9	M	0.45	1	0.065	43	7.72	7.73	1.42	1.43	29.66	29.66	39.7	39.8	3.11	3.09	17.3	17.4	20	21
M3	30/8/2021	Mid-Ebb	Fine	Smooth	06:47	0.9	M	0.45	2			7.73	7.73	1.43	1.43	29.65	29.66	39.8	39.8	3.06	3.09	17.5	17.4	21	21

Remark

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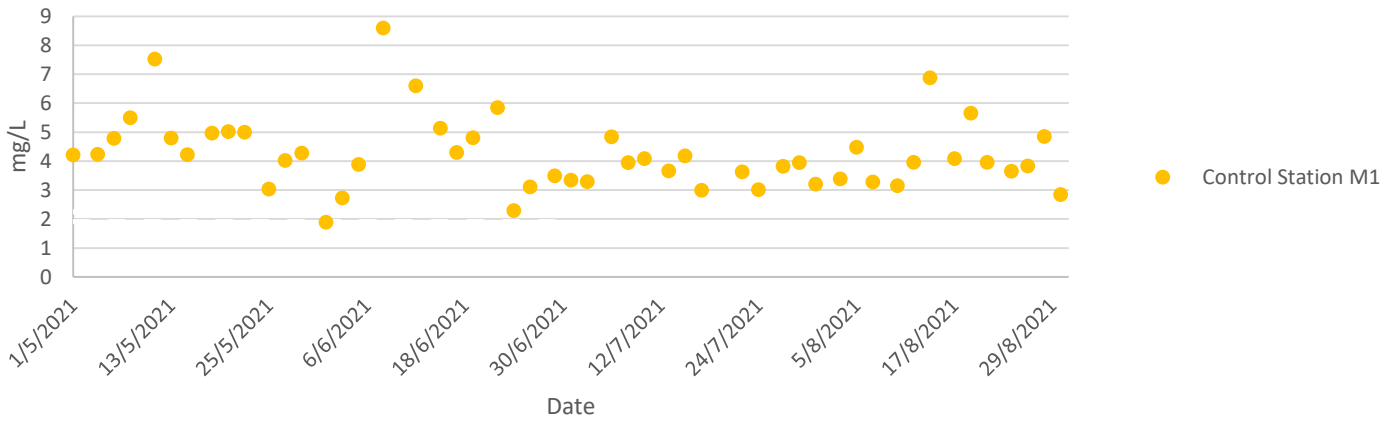
For Flood Tide

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

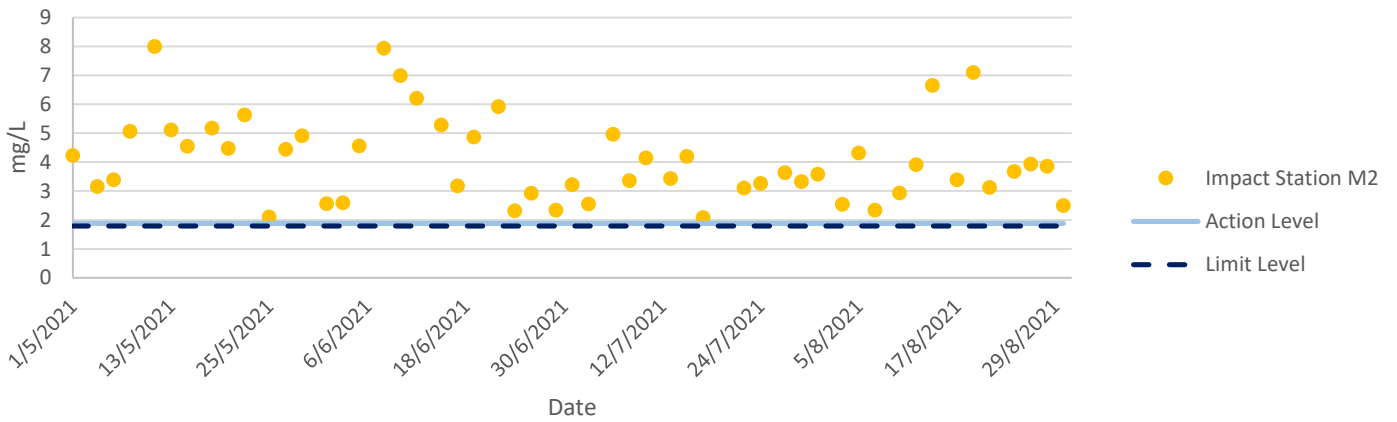
For Ebb Tide

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

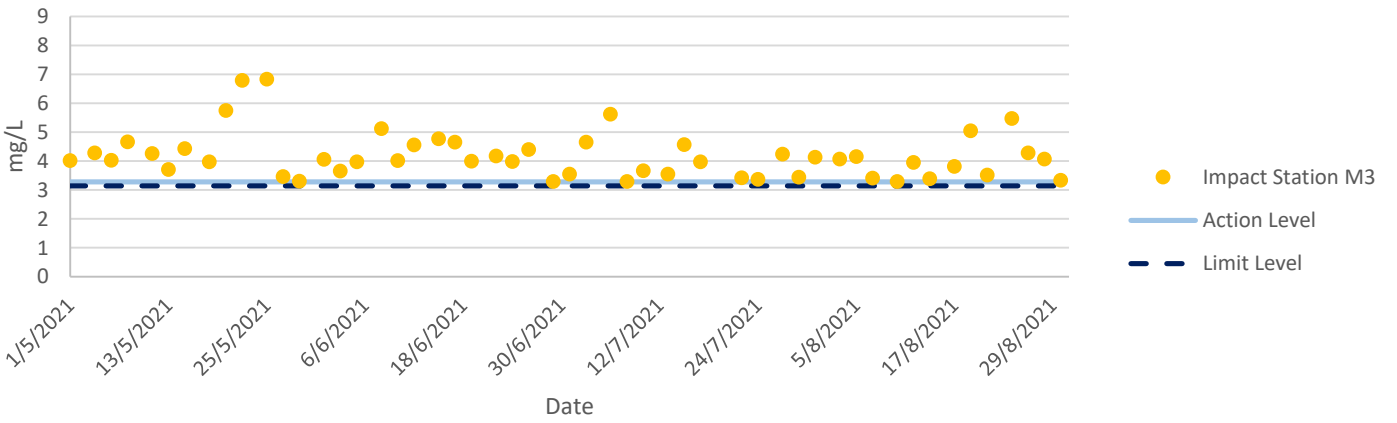
Dissolved Oxygen at Mid-Flood Tide



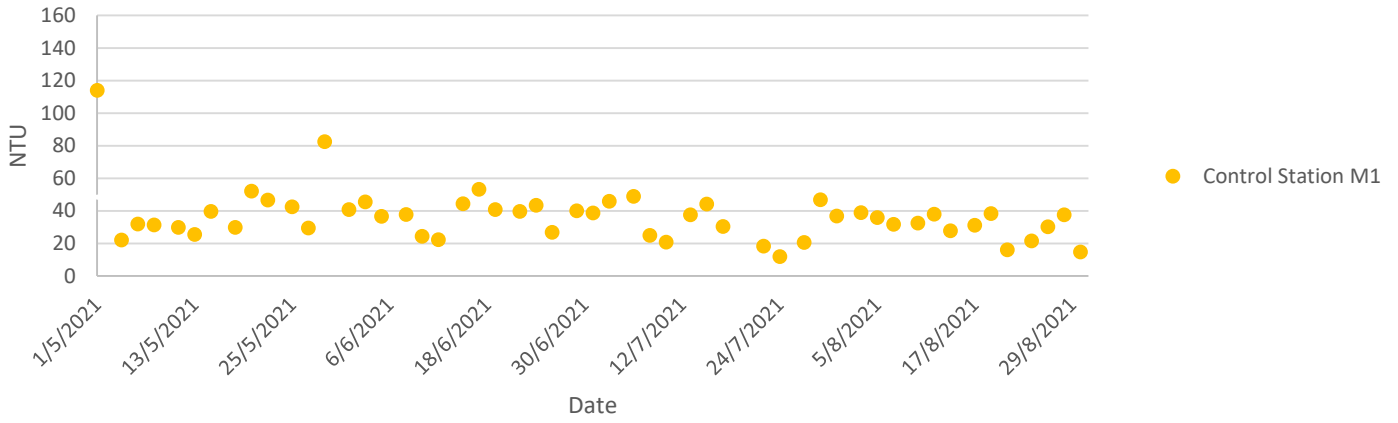
Dissolved Oxygen at Mid-Flood Tide



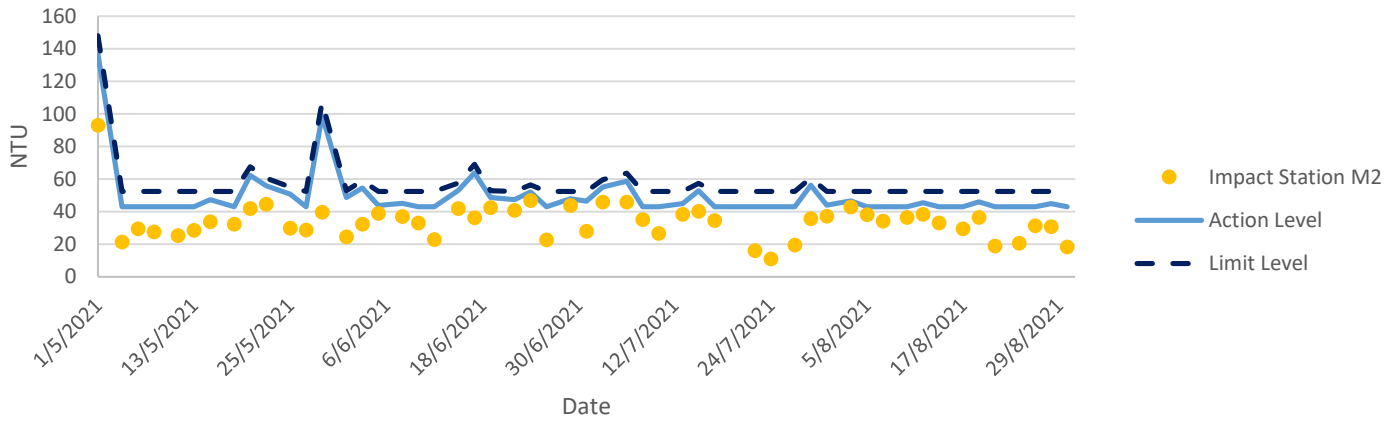
Dissolved Oxygen at Mid-Flood Tide



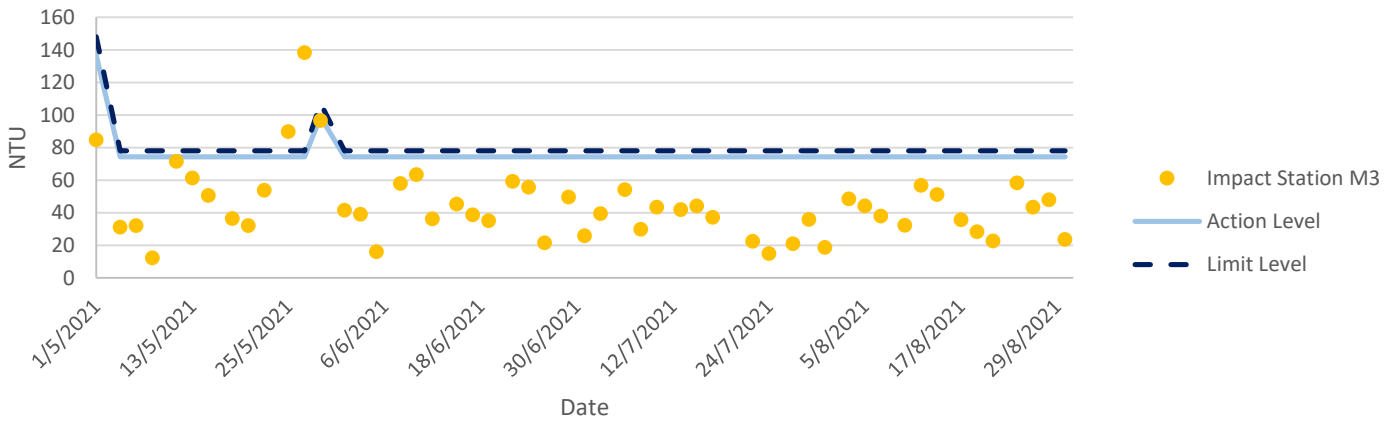
Turbidity at Mid-Flood Tide



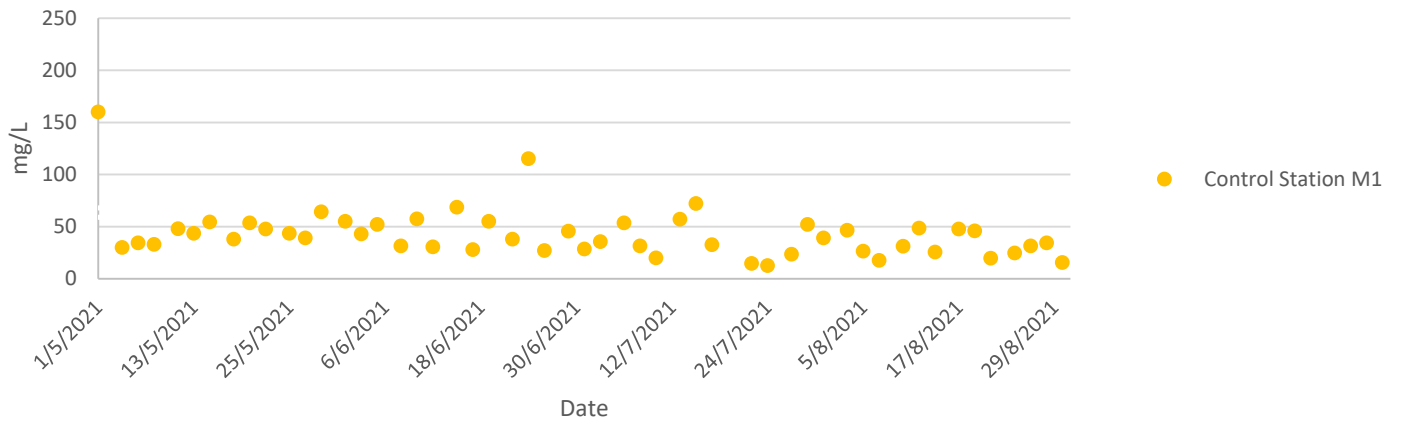
Turbidity at Mid-Flood Tide



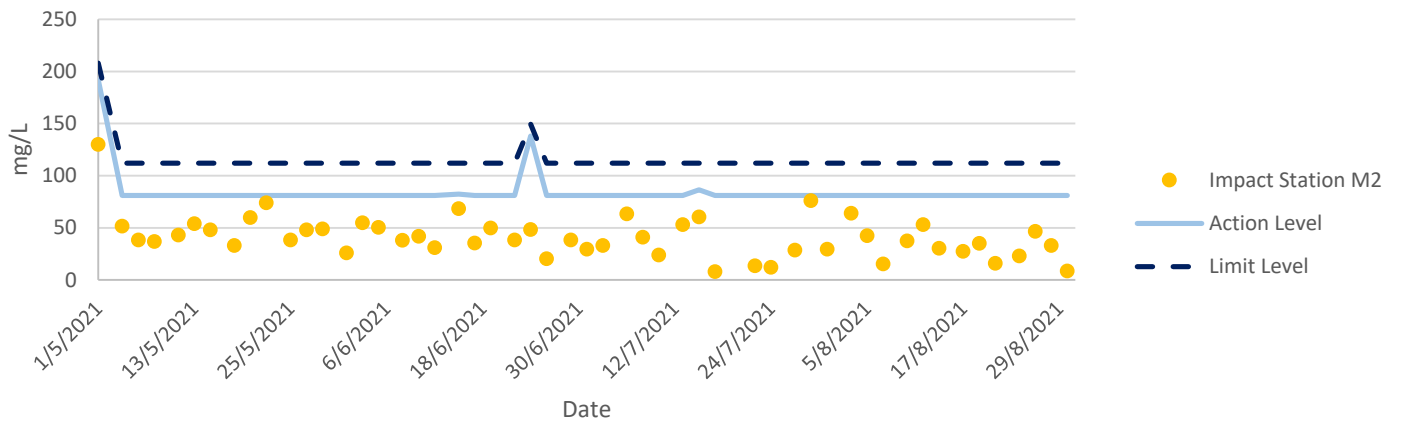
Turbidity at Mid-Flood Tide



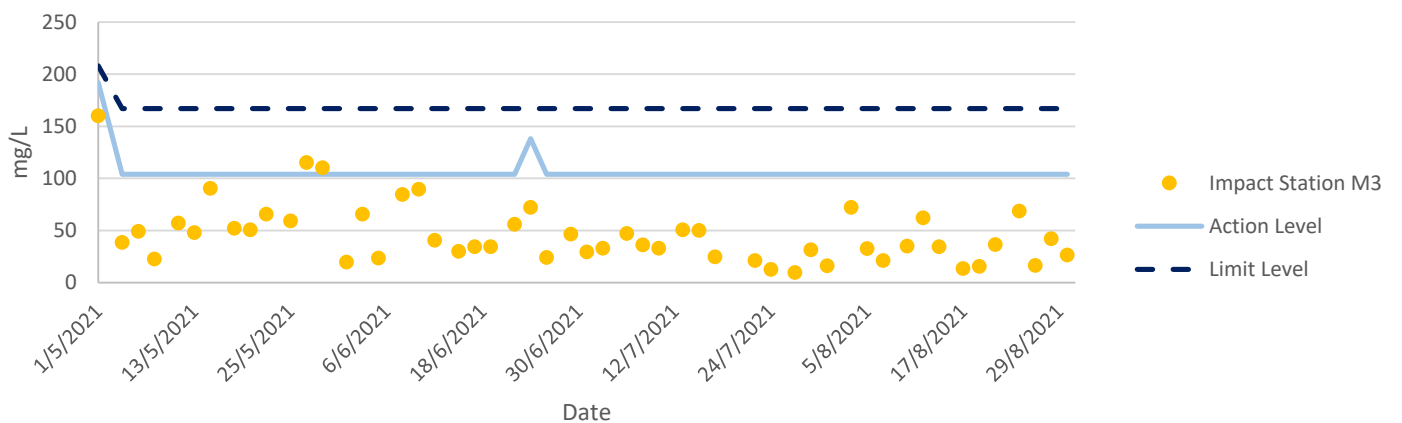
Total Suspended Solids at Mid-Flood Tide



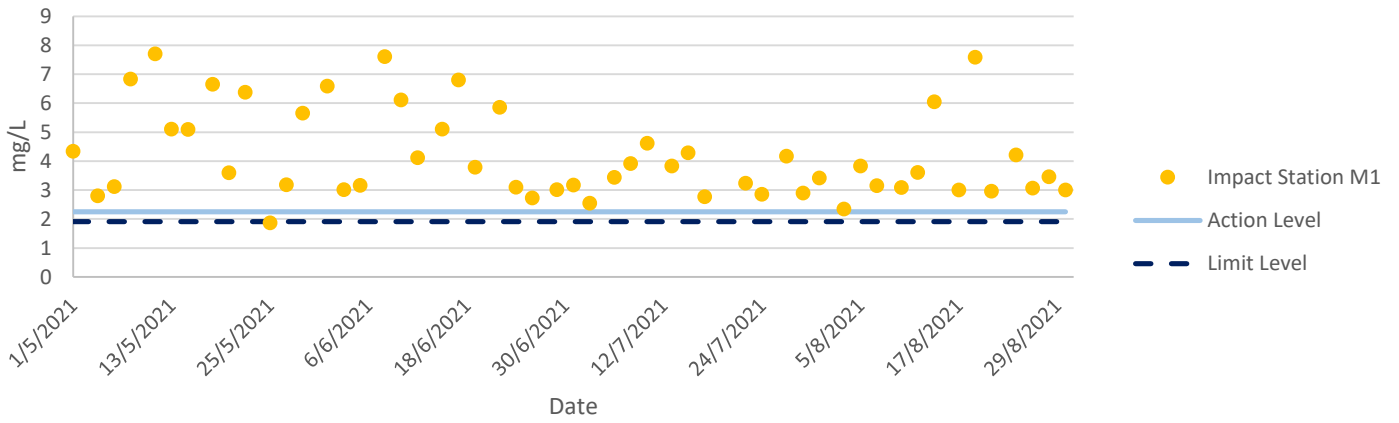
Total Suspended Solids at Mid-Flood Tide



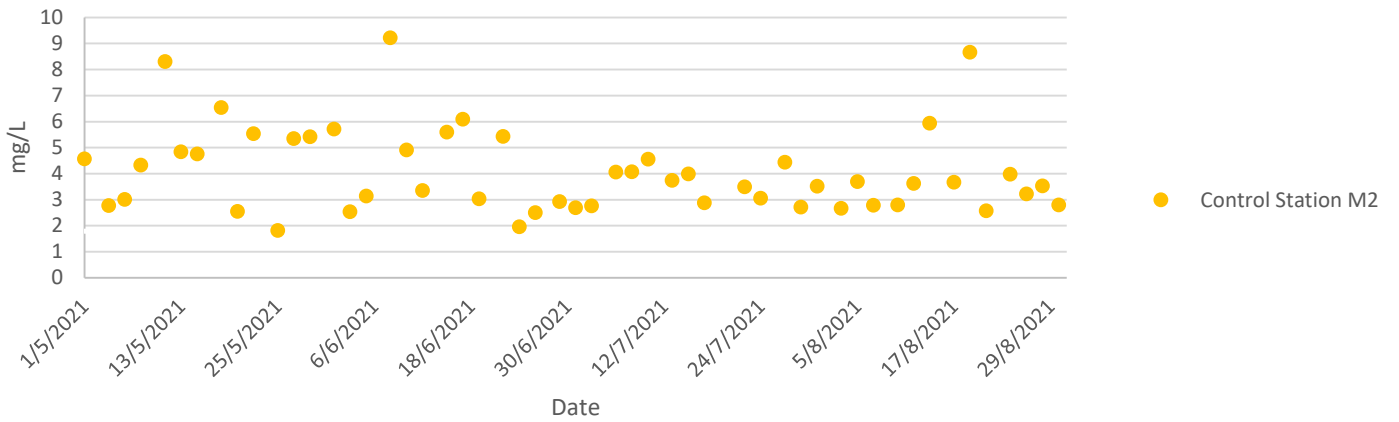
Total Suspended Solids at Mid-Flood Tide



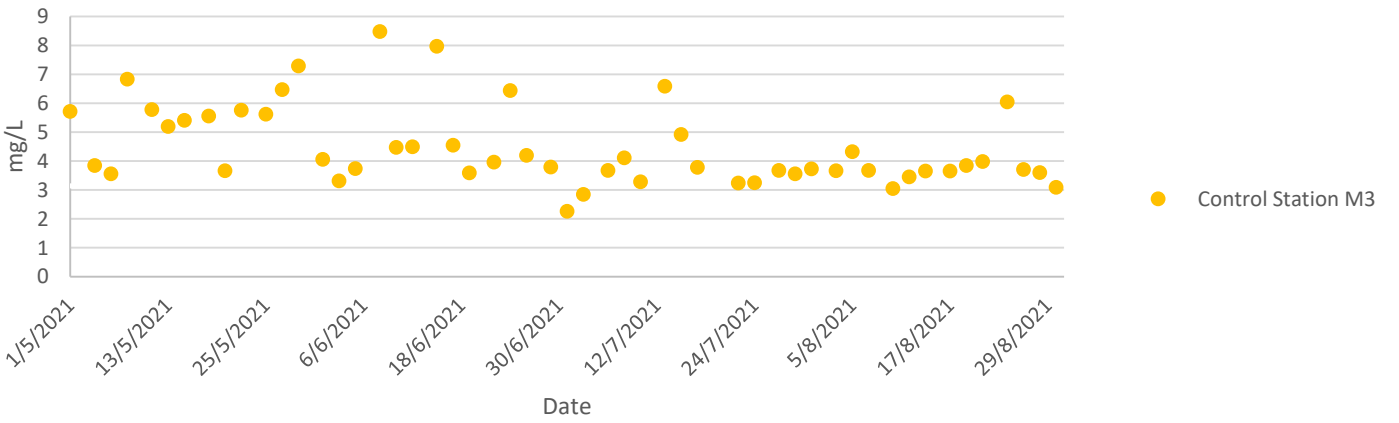
Dissolved Oxygen at Mid-Ebb Tide



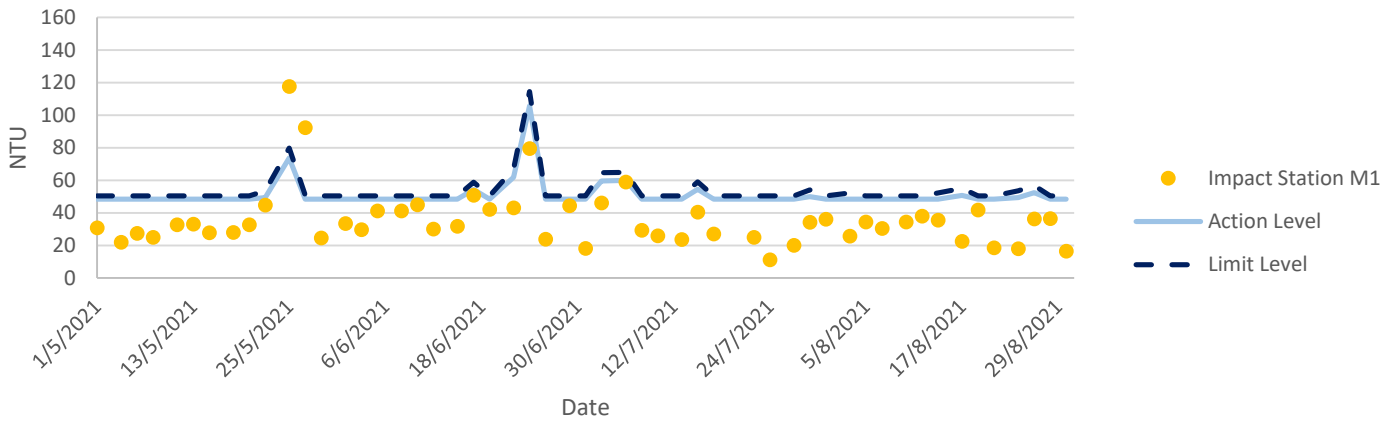
Dissolved Oxygen at Mid-Ebb Tide



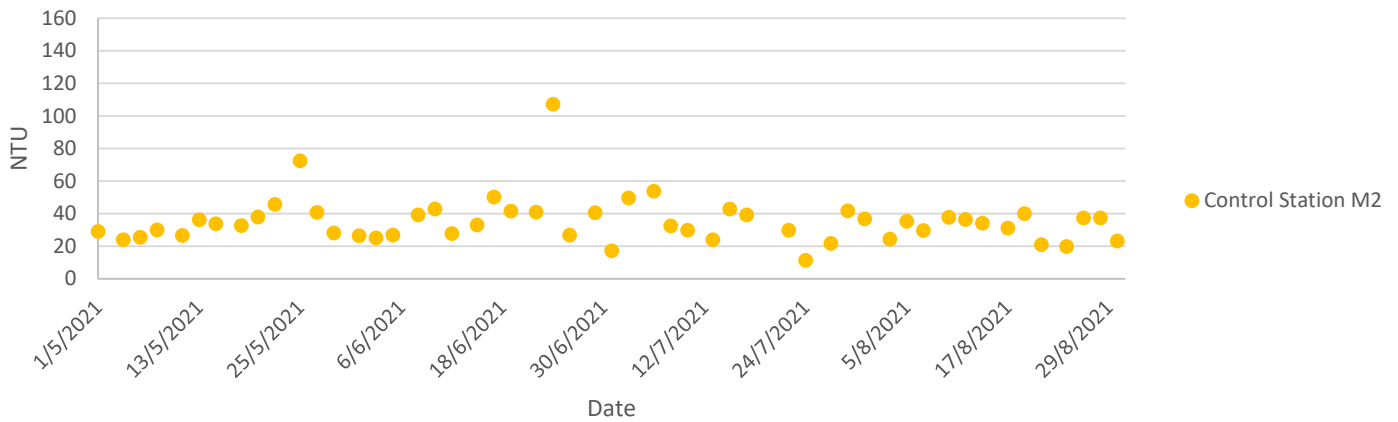
Dissolved Oxygen at Mid-Ebb Tide



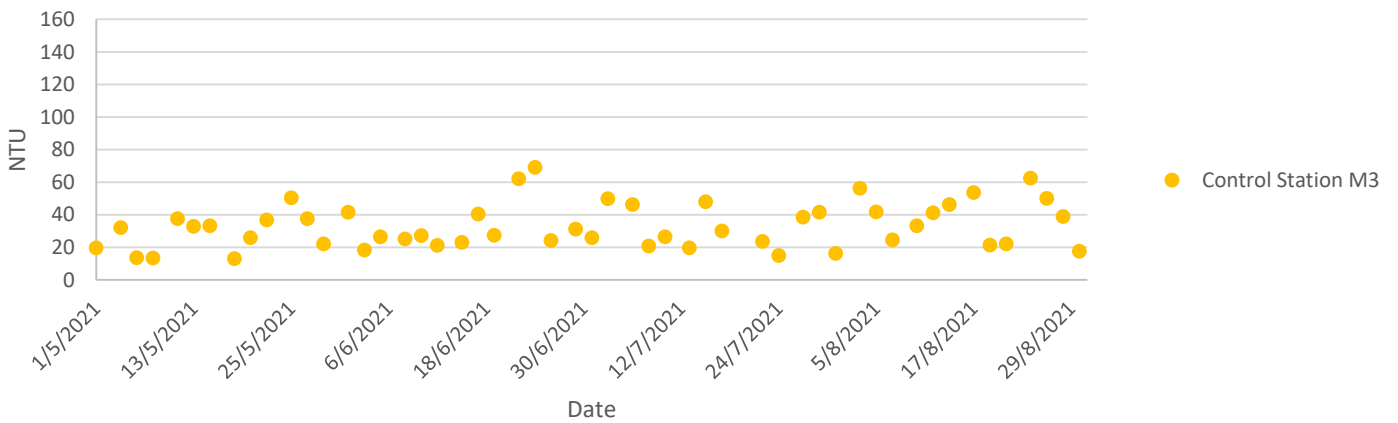
Turbidity at Mid-Ebb Tide



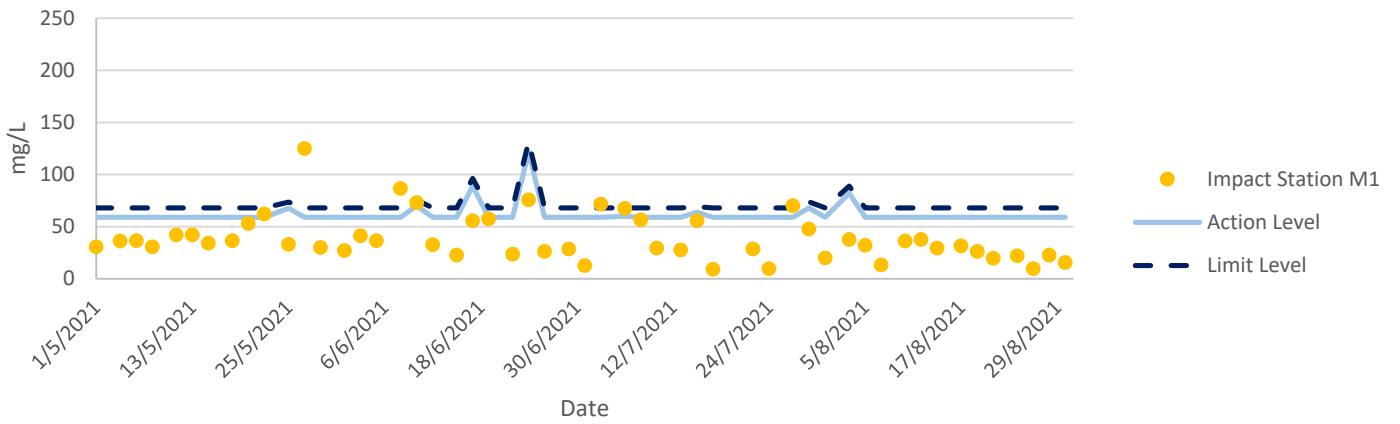
Turbidity at Mid-Ebb Tide



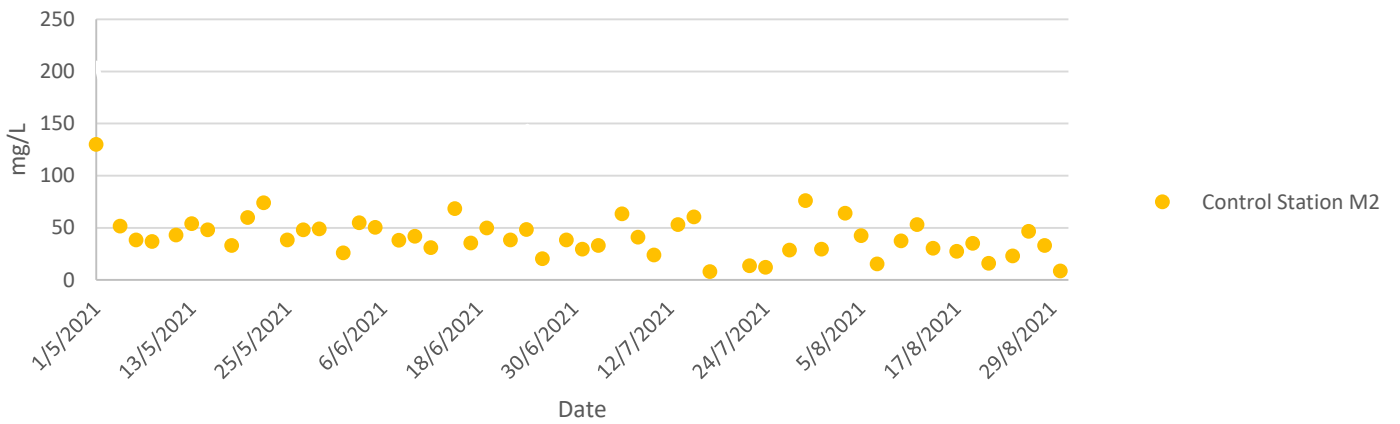
Turbidity at Mid-Ebb Tide



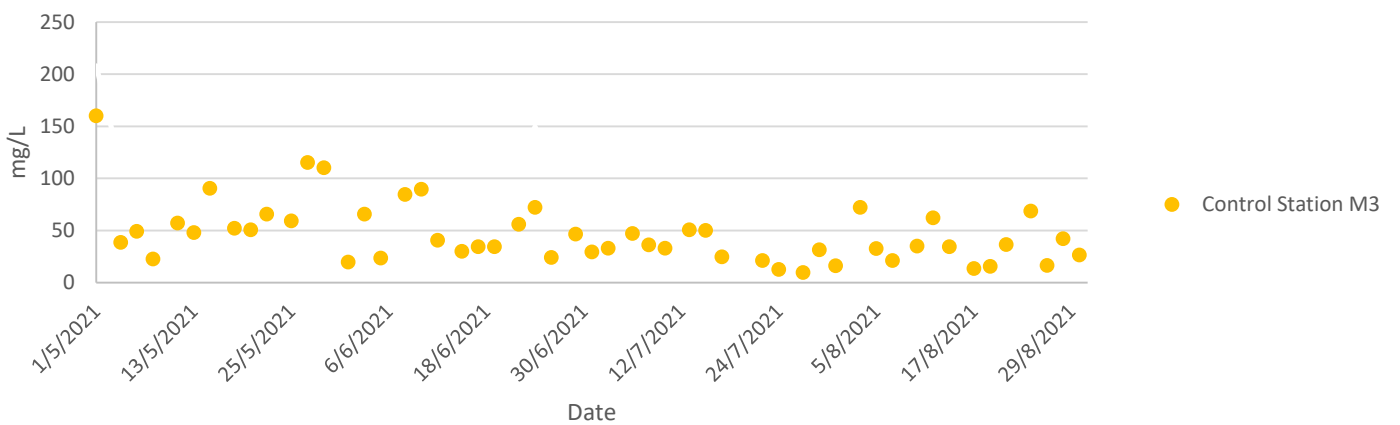
Total Suspended Solids at Mid-Ebb Tide



Total Suspended Solids at Mid-Ebb Tide



Total Suspended Solids at Mid-Ebb Tide



Ecology Monitoring Results

Ecology Monitoring Results for

Contract No. SPW 07/2020

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

Appendix F.1 Supplemental Discussion

F.1.1 Active Ardeid Night Roost

For the final night roost, a total of 16 Chinese Pond Heron individuals utilized the inside portions of the understory to canopy layers of the roosting substrate *Sonneratia apetala* and *S. caseolaris* at ANR1. The night roost (ANR2) located at the northeast of the Project boundary, as noted to be active last April 2021, was not used by the ardeids during the current monitoring period, similar with the May to July 2021 results. This was, however, not caused by the Project's construction activities as the recorded noise level ((46.3 dB(A)) near ANR2 was lower with respect to the action limit level of 65.5 dB(A) which more likely to cause behavioural responses of some kind by the ardeids (Wright et al. 2010). Furthermore, ardeid night roosts are known for their highly changeable locations and roosting population. These roosting locations can change in temporal basis and even change from day to day on a small scale. In Hong Kong, fluctuation of roosting population, abandonment or change in locations of roosting site without major nearby environmental change has been observed in roosts and locations (HKJC, 2005; Lee et al., 2004; MTRC, 2010).

F.1.2 Ecological Monitoring of Birds

F.1.2.1 Abundance

F.1.2.1.1 All Avifauna Species

Point Count

Among the different species recorded, the Chinese Pond Heron *Ardeola bacchus* was noted with the highest abundance (33 ind.), followed by Crested Myna *Acridotheres cristatellus* (24 ind.); and Eurasian Tree Sparrow *Passer montanus* (18 ind.). The high abundance of Chinese Pond Heron was due to its concurrent breeding period. On the other hand, the Common Kingfisher *Alcedo atthis*, Eastern Cattle Egret *Bubulcus coromandus*, and Oriental Magpie Robin *Copsychus saularis* was noted with the lowest abundance (only one ind.) during the reporting month.

Transect Walk

Among the different species recorded, the Little Egret *Egretta garzetta* was noted with the highest abundance (44 ind.), followed by Chinese Pond Heron and Black-winged Stilt *Himantopus himantopus* with both 23 recorded ind. each.

F.1.2.1.2 Avifauna Species of Conservation Importance

Point Count

Among the different species recorded, the Chinese Pond Heron was noted with the highest abundance (33 ind.), followed by Little Egret (15 ind.) and Common Redshank *Tringa totanus* (12 ind.). On the other hand, the Great Egret *Ardea alba* and Black Kite *Milvus migrans* were both noted with low abundances (2 ind. each).

Transect Walk

Among the different species recorded, the Little Egret *Egretta garzetta* was noted with the highest abundance (44 ind.), followed by Chinese Pond Heron and Black-winged Stilt *Himantopus himantopus* with both 23 recorded ind. each.

Appendix F.2 Ecological Bird Monitoring Results (17 August 2021)

Date (dd/mm/yyyy)	Daytime/Night time	Season	Area	Transect/Point Count	Point Count (Location)/Transect Impact	Common Name	Scientific Name	Abundance	Habitat	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 (v.2020-3) ⁷	Species of Conservation Importance	Wetland Dependent
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	2	Pond-FLW	Common	PM	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Barn Swallow	<i>Hirundo rustica</i>	2	Pond-FLW	Abundant	PM,SV	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	White Wagtail	<i>Motacilla alba</i>	2	Pond-FLW	Common	PM,WV	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	5	Plantation-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Crested Myna	<i>Acridotheres cristatellus</i>	2	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	19	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Pied Kingfisher	<i>Ceryle rudis</i>	2	Pond-FLW	Uncommon	R	-	-	-	LC	LC	N	Y
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Little Egret	<i>Egretta garzetta</i>	20	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	8	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	3	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Long-tailed Shrike	<i>Lanius schach</i>	2	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Eurasian Tree Sparrow	<i>Passer montanus</i>	9	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	6	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	4	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Spotted Dove	<i>Spilopelia chinensis</i>	14	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Great Egret	<i>Ardea alba</i>	15	Pond-FLW	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Black Kite	<i>Milvus migrans</i>	2	Pond-FLW	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Transect	FLW	Black Drongo	<i>Dicrurus macrocercus</i>	4	Plantation-FLW	Common	SV	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW1	White Wagtail	<i>Motacilla alba</i>	4	Pond-FLW	Common	PM,WV	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW1	Chinese Pond Heron	<i>Ardeola bacchus</i>	10	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW1	Cinereous Tit	<i>Parus cinereus</i>	3	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW1	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	5	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW1	Spotted Dove	<i>Spilopelia chinensis</i>	2	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW2	Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	2	Pond-FLW	Common	PM	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW2	Common Myna	<i>Acridotheres tristis</i>	3	Pond-FLW	Uncommon	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW2	Little Egret	<i>Egretta garzetta</i>	1	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW2	Eurasian Tree Sparrow	<i>Passer montanus</i>	2	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW2	Spotted Dove	<i>Spilopelia chinensis</i>	1	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW3	Crested Myna	<i>Acridotheres cristatellus</i>	3	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW3	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	6	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW4	Eurasian Tree Sparrow	<i>Passer montanus</i>	3	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N

17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW4	Spotted Dove	<i>Spilopelia chinensis</i>	2	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW5	Barn Swallow	<i>Hirundo rustica</i>	5	Pond-FLW	Abundant	PM,SV	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW5	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW6	Ruddy Kingfisher	<i>Halcyon coromanda</i>	2	Pond-FLW	Rare	PM	-	-	-	-	-	N	Y
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW6	Barn Swallow	<i>Hirundo rustica</i>	3	Pond-FLW	Abundant	PM,SV	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW6	Crested Myna	<i>Acridotheres cristatellus</i>	4	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW6	Chinese Pond Heron	<i>Ardeola bacchus</i>	5	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW6	Little Egret	<i>Egretta garzetta</i>	7	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW7	Barn Swallow	<i>Hirundo rustica</i>	2	Pond-FLW	Abundant	PM,SV	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW7	Chinese Pond Heron	<i>Ardeola bacchus</i>	4	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW7	Little Egret	<i>Egretta garzetta</i>	2	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Point Count	FLW7	Spotted Dove	<i>Spilopelia chinensis</i>	3	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Common Redshank	<i>Tringa totanus</i>	14	Modified Watercourse	Common	PM	RC	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Black-winged Stilt	<i>Himantopus himantopus</i>	3	Pond-NSW	Common	PM	RC	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Common Sandpiper	<i>Actitis hypoleucos</i>	8	Modified Watercourse	Common	PM,WV	-	-	-	LC	LC	N	Y
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Crested Myna	<i>Acridotheres cristatellus</i>	9	Modified Watercourse	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Little Egret	<i>Egretta garzetta</i>	9	Modified Watercourse	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Oriental Magpie Robin	<i>Copsychus saularis</i>	2	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	6	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Eurasian Tree Sparrow	<i>Passer montanus</i>	2	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Spotted Dove	<i>Spilopelia chinensis</i>	3	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Japanese White-eye	<i>Zosterops japonicus</i>	3	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Chinese Pond Heron	<i>Ardeola bacchus</i>	4	Pond-NSW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Transect	NSW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	NSW1	Common Kingfisher	<i>Alcedo atthis</i>	1	Pond-NSW	Common	PM,WV	-	-	-	LC	LC	N	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	NSW1	White Wagtail	<i>Motacilla alba</i>	3	Pond-NSW	Common	PM,WV	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	NSW1	Crested Myna	<i>Acridotheres cristatellus</i>	6	Pond-NSW	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	NSW1	Chinese Pond Heron	<i>Ardeola bacchus</i>	5	Pond-NSW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	NSW1	Eurasian Tree Sparrow	<i>Passer montanus</i>	8	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	NSW1	Spotted Dove	<i>Spilopelia chinensis</i>	6	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	NSW1	Plain Prinia	<i>Prinia inornata</i>	3	Reedbed	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Black-winged Stilt	<i>Himantopus himantopus</i>	6	Modified Watercourse	Common	PM	RC	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Common Redshank	<i>Tringa totanus</i>	5	Modified Watercourse	Common	PM	RC	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Common Sandpiper	<i>Actitis hypoleucos</i>	6	Modified Watercourse	Common	PM,WV	-	-	-	LC	LC	N	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Eurasian Tree Sparrow	<i>Passer montanus</i>	5	Grassland	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Crested Myna	<i>Acridotheres cristatellus</i>	7	Modified Watercourse	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Modified Watercourse	Common	R	PRC (RC)	-	-	LC	LC	Y	Y

17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Long-tailed Shrike	<i>Lanius schach</i>	2	Modified Watercourse	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Little Egret	<i>Egretta garzetta</i>	5	Pond-NSW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Common Redshank	<i>Tringa totanus</i>	5	Modified Watercourse	Common	PM	RC	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	4	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Black-winged Stilt	<i>Himantopus himantopus</i>	3	Modified Watercourse	Common	PM	RC	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Common Redshank	<i>Tringa totanus</i>	2	Modified Watercourse	Common	PM	RC	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Crested Myna	<i>Acridotheres cristatellus</i>	4	Mangrove	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Modified Watercourse	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Great Egret	<i>Ardea alba</i>	2	Modified Watercourse	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Black Kite	<i>Milvus migrans</i>	2	Pond-NSW	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	1	Modified Watercourse	Common	R,PM	-	-	-	LC	LC	N	Y
17/08/2021	Daytime	Wet Season	FLW	Transect	YLIE-CW	Black-winged Stilt	<i>Himantopus himantopus</i>	20	Modified Watercourse	Common	PM	RC	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Transect	YLIE-CW	Common Redshank	<i>Tringa totanus</i>	7	Modified Watercourse	Common	PM	RC	-	-	LC	LC	Y	Y
17/08/2021	Daytime	Wet Season	FLW	Transect	YLIE-CW	Common Sandpiper	<i>Actitis hypoleucos</i>	6	Modified Watercourse	Common	PM,WV	-	-	-	LC	LC	N	Y
17/08/2021	Daytime	Wet Season	FLW	Transect	YLIE-CW	Crested Myna	<i>Acridotheres cristatellus</i>	3	Modified Watercourse	Common	R	-	-	-	LC	LC	N	N
17/08/2021	Daytime	Wet Season	FLW	Transect	YLIE-CW	Little Egret	<i>Egretta garzetta</i>	15	Modified Watercourse	Common	R	PRC (RC)	-	-	LC	LC	Y	Y

Notes:

(1) All wild birds are protected under Wild Animals Protection Ordinance (Cap. 170).

(2) AFCD (2021). Hong Kong Biodiversity Database.

(3) Carey et al. (2001): R=resident; WV=winter visitor; SV=summer visitor; PM=passage migrant; Sp=spring; A=autumn;

(4) Fellowes et al. (2002): GC=Global Concern; LC=Local Concern; RC=Regional Concern; PRC=Potential Regional Concern; PGC: Potential Global Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in nesting and/or roosting sites rather than in general occurrence.

(5) List of Wild Animals Under State Protection (promulgated by State Forestry Administration and Ministry of Agriculture on 14 January, 1989).

(6) Zheng, G. M. and Wang, Q. S. (1998). China Red Data Book

(7) IUCN 2021. The IUCN Red List of Threatened Species. Version 2020-3.

(9) Wetland-dependent species (including wetland-dependent species and waterbirds).

(10) Jiang et al. (2016). Red List of China's Vertebrates

Appendix F.3.1 Ecological Bird Monitoring Diversity (All avifauna species in Point Count Method) in All Habitats (17 August 2021)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Acridotheres cristatellus</i>	24	0.12972973	-2.042301995	-0.264947286	0.54110237
<i>Acridotheres tristis</i>	3	0.016216216	-4.121743536	-0.066839084	0.275493564
<i>Acrocephalus bistrigiceps</i>	2	0.010810811	-4.527208645	-0.048942796	0.22157425
<i>Actitis hypoleucos</i>	6	0.032432432	-3.428596356	-0.11119772	0.381252096
<i>Alcedo atthis</i>	1	0.005405405	-5.220355825	-0.02821814	0.147308729
<i>Ardea alba</i>	2	0.010810811	-4.527208645	-0.048942796	0.22157425
<i>Ardeola bacchus</i>	33	0.178378378	-1.723848264	-0.307497258	0.530078614
<i>Bubulcus coromandus</i>	1	0.005405405	-5.220355825	-0.02821814	0.147308729
<i>Copsychus saularis</i>	1	0.005405405	-5.220355825	-0.02821814	0.147308729
<i>Egretta garzetta</i>	15	0.081081081	-2.512305624	-0.203700456	0.511757801
<i>Garrulax perspicillatus</i>	4	0.021621622	-3.834061464	-0.082898626	0.317838428
<i>Halcyon coromanda</i>	2	0.010810811	-4.527208645	-0.048942796	0.22157425
<i>Himantopus himantopus</i>	9	0.048648649	-3.023131248	-0.14707125	0.444615691
<i>Hirundo rustica</i>	10	0.054054054	-2.917770732	-0.157717337	0.460183029
<i>Lanius schach</i>	2	0.010810811	-4.527208645	-0.048942796	0.22157425
<i>Milvus migrans</i>	2	0.010810811	-4.527208645	-0.048942796	0.22157425
<i>Motacilla alba</i>	7	0.037837838	-3.274445676	-0.123897944	0.405697089
<i>Parus cinereus</i>	3	0.016216216	-4.121743536	-0.066839084	0.275493564
<i>Passer montanus</i>	18	0.097297297	-2.329984067	-0.226701152	0.528210073
<i>Prinia flaviventris</i>	11	0.059459459	-2.822460552	-0.167821979	0.473670915
<i>Prinia inornata</i>	3	0.016216216	-4.121743536	-0.066839084	0.275493564
<i>Spilopelia chinensis</i>	14	0.075675676	-2.581298495	-0.195341508	0.50423474
<i>Tringa totanus</i>	12	0.064864865	-2.735449175	-0.177434541	0.485363169
Total	185	1	-83.88799496	-2.69611271	7.960282146
Richness	23				
SS	7.960282146				
SQ	7.269023743				
H	2.69611271				
S²_H	0.004057934				

Appendix F.3.2 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Point Count Method) in All Habitats (17 August 2021)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Ardea alba</i>	2	0.02739726	-3.597312261	-0.0985565	0.354538507
<i>Ardeola bacchus</i>	33	0.452054795	-0.79395188	-0.358909754	0.284957074
<i>Egretta garzetta</i>	15	0.205479452	-1.58240924	-0.325152584	0.514524453
<i>Himantopus himantopus</i>	9	0.123287671	-2.093234864	-0.258070052	0.54020123
<i>Milvus migrans</i>	2	0.02739726	-3.597312261	-0.0985565	0.354538507
<i>Tringa totanus</i>	12	0.164383562	-1.805552791	-0.296803199	0.535893844
Total	73	1	-13.4697733	-1.436048588	2.584653613
Richness	6				
SS	2.584653613				

SQ	2.062235548				
H	1.436048588				
S ² _H	0.007625543				

Appendix F.3.3 Ecological Bird Monitoring Diversity (All avifauna species in Transect Walk Method) in All Habitats (17 August 2021)

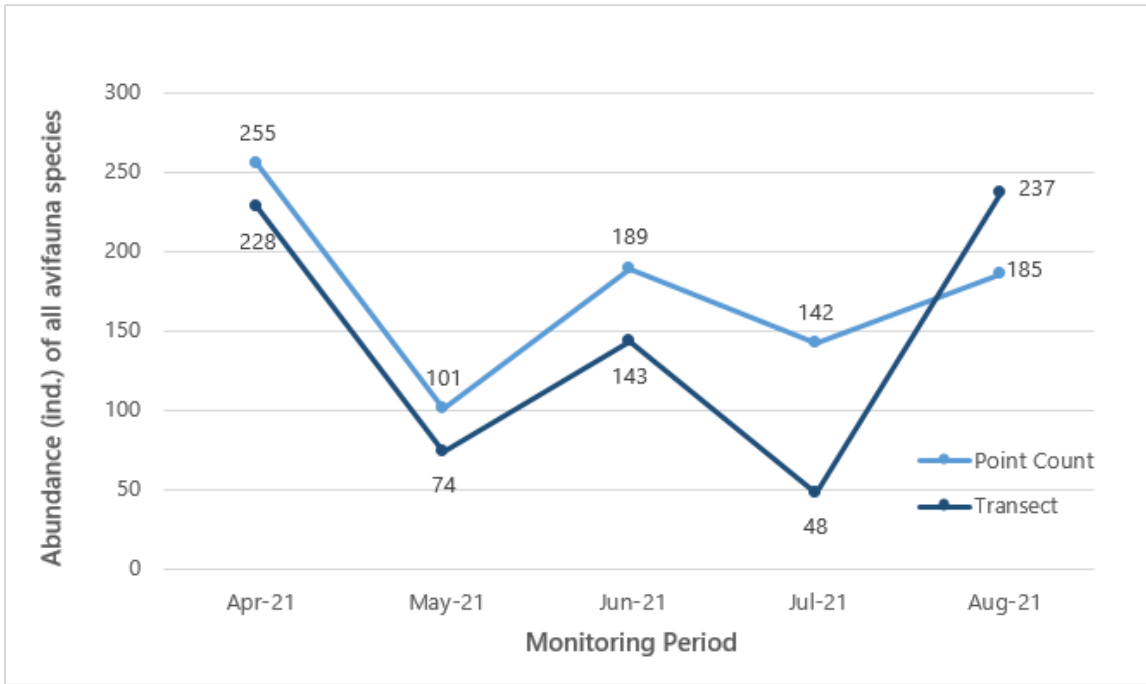
Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Acridotheres cristatellus</i>	14	0.05907173	-2.829002812	-0.16711409	0.472766231
<i>Acrocephalus bistrigiceps</i>	2	0.008438819	-4.774912961	-0.040294624	0.192403323
<i>Actitis hypoleucos</i>	14	0.05907173	-2.829002812	-0.16711409	0.472766231
<i>Ardea alba</i>	15	0.063291139	-2.76000994	-0.174684173	0.482130055
<i>Ardeola bacchus</i>	23	0.097046414	-2.332565925	-0.226367157	0.528016318
<i>Ceryle rudis</i>	2	0.008438819	-4.774912961	-0.040294624	0.192403323
<i>Copsychus saularis</i>	2	0.008438819	-4.774912961	-0.040294624	0.192403323
<i>Dicrurus macrocercus</i>	4	0.016877637	-4.08176578	-0.068890562	0.281195137
<i>Egretta garzetta</i>	44	0.185654008	-1.683870507	-0.312617309	0.526407067
<i>Garrulax perspicillatus</i>	14	0.05907173	-2.829002812	-0.16711409	0.472766231
<i>Gracupica nigricollis</i>	3	0.012658228	-4.369447852	-0.055309466	0.24167183
<i>Himantopus himantopus</i>	23	0.097046414	-2.332565925	-0.226367157	0.528016318
<i>Hirundo rustica</i>	2	0.008438819	-4.774912961	-0.040294624	0.192403323
<i>Lanius schach</i>	2	0.008438819	-4.774912961	-0.040294624	0.192403323
<i>Milvus migrans</i>	2	0.008438819	-4.774912961	-0.040294624	0.192403323
<i>Motacilla alba</i>	2	0.008438819	-4.774912961	-0.040294624	0.192403323
<i>Passer montanus</i>	11	0.046413502	-3.070164868	-0.142497104	0.437489601
<i>Prinia flaviventris</i>	6	0.025316456	-3.676300672	-0.093070903	0.342156624
<i>Pycnonotus jocosus</i>	5	0.021097046	-3.858622229	-0.081405532	0.314113196
<i>Pycnonotus sinensis</i>	6	0.025316456	-3.676300672	-0.093070903	0.342156624
<i>Spilopelia chinensis</i>	17	0.071729958	-2.634846797	-0.18899745	0.497979325
<i>Tringa totanus</i>	21	0.088607595	-2.423537703	-0.214743847	0.52043981
<i>Zosterops japonicus</i>	3	0.012658228	-4.369447852	-0.055309466	0.24167183
Total	237	1	-83.18084588	-2.71673567	8.048565687
Richness	23				
SS	8.048565687				
SQ	7.380652701				
H	2.71673567				
S²_H	0.003014036				

Appendix F.3.4 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Transect Walk Method) in All Habitats (17 August 2021)

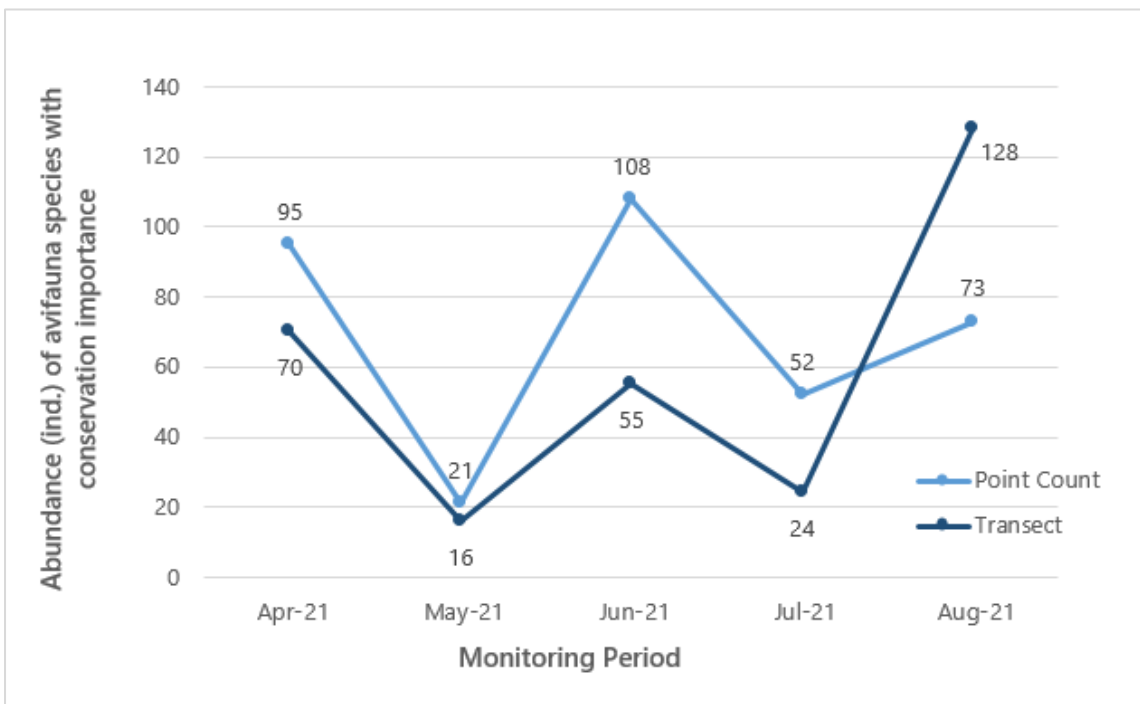
Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Ardea alba</i>	15	0.1171875	-2.143980063	-0.251247664	0.538669982
<i>Ardeola bacchus</i>	23	0.1796875	-1.716536048	-0.308440071	0.529448501
<i>Egretta garzetta</i>	44	0.34375	-1.06784063	-0.367070217	0.391972491
<i>Himantopus himantopus</i>	23	0.1796875	-1.716536048	-0.308440071	0.529448501
<i>Milvus migrans</i>	2	0.015625	-4.158883083	-0.064982548	0.27025482
<i>Tringa totanus</i>	21	0.1640625	-1.807507826	-0.296544253	0.536006058

Total	128	1	-12.6112837	-1.596724823	2.795800352
Richness	6				
SS	2.795800352				
SQ	2.549530161				
H	1.596724823				
S ² _H	0.002076574				

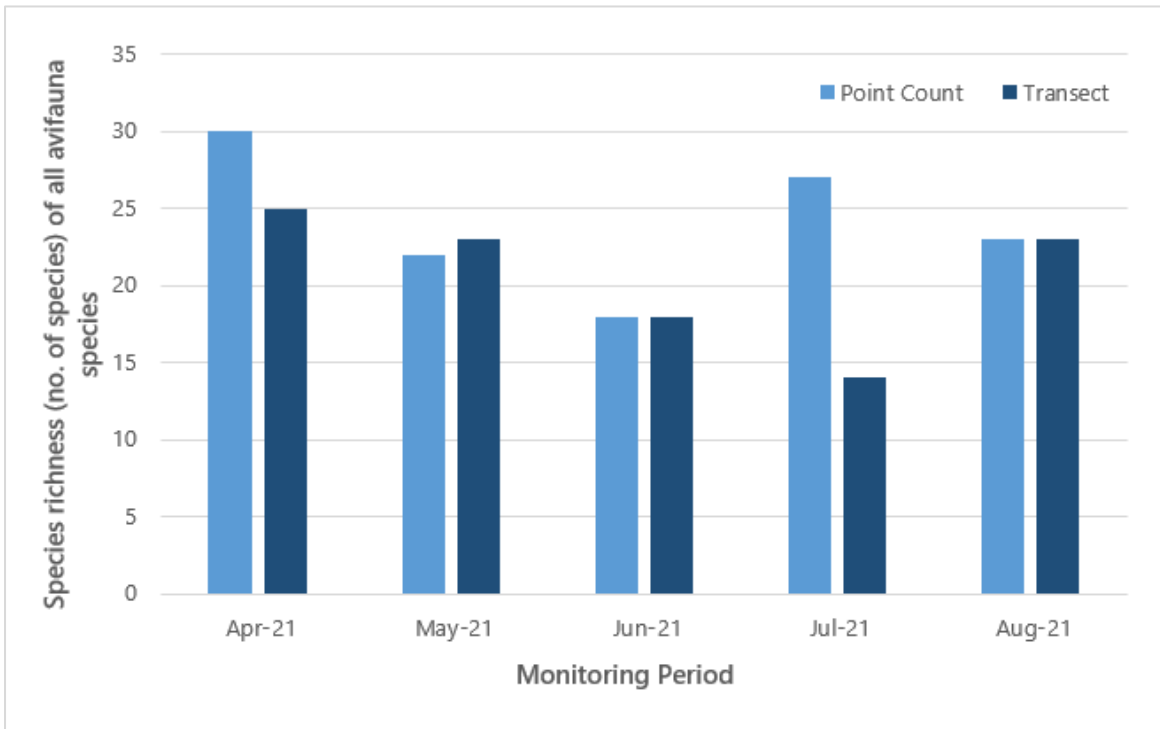
Appendix F.4.1 Abundance of all avifauna species throughout the monitoring period



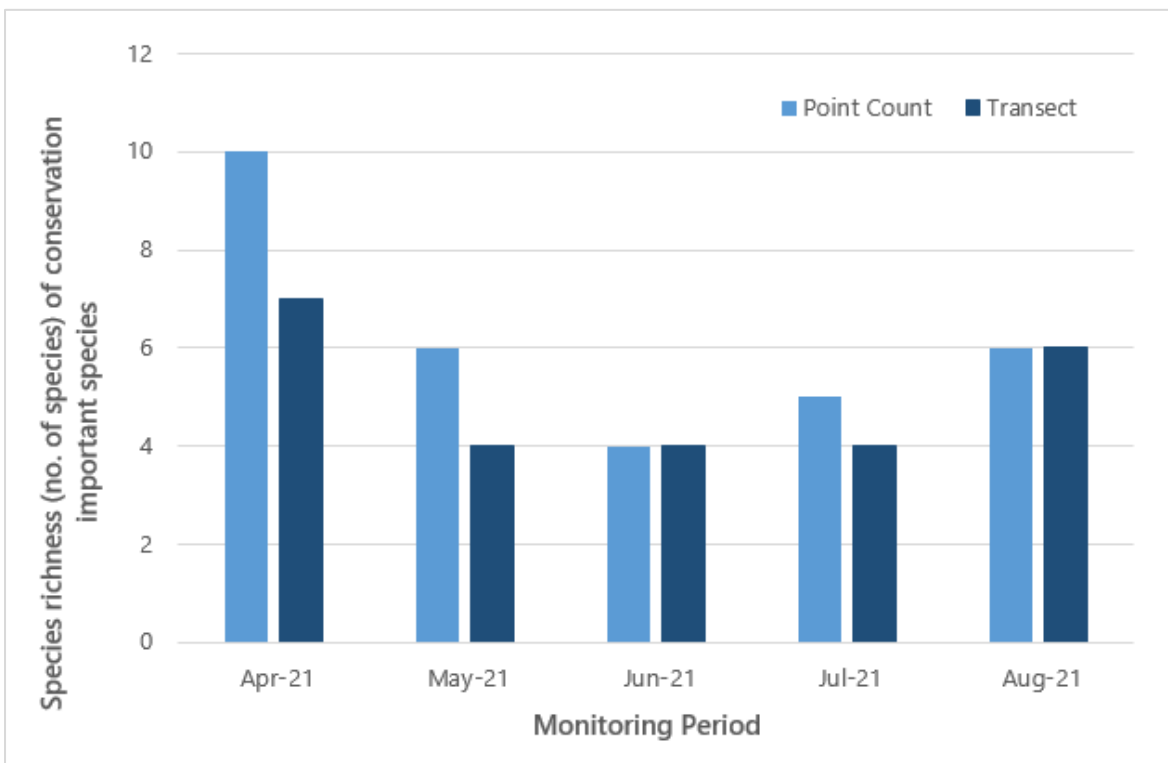
Appendix F.4.2 Abundance of avifauna species with conservation importance throughout the monitoring period



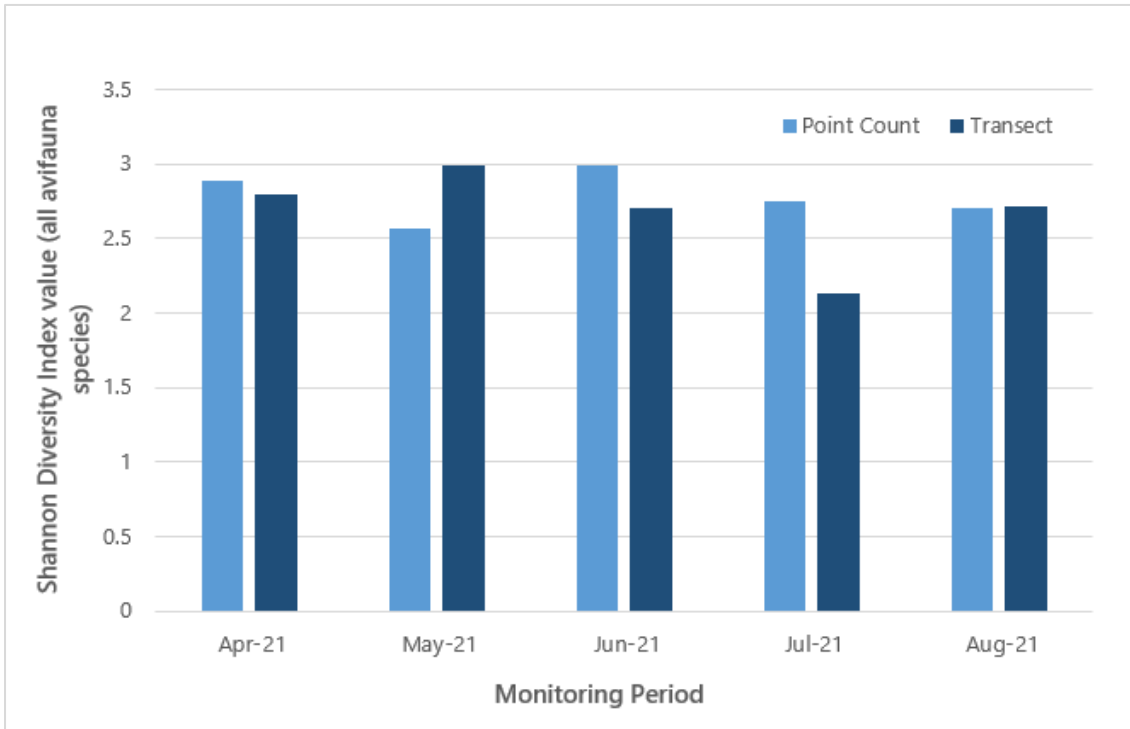
Appendix F.5.1 Species richness of all avifauna species throughout the monitoring period



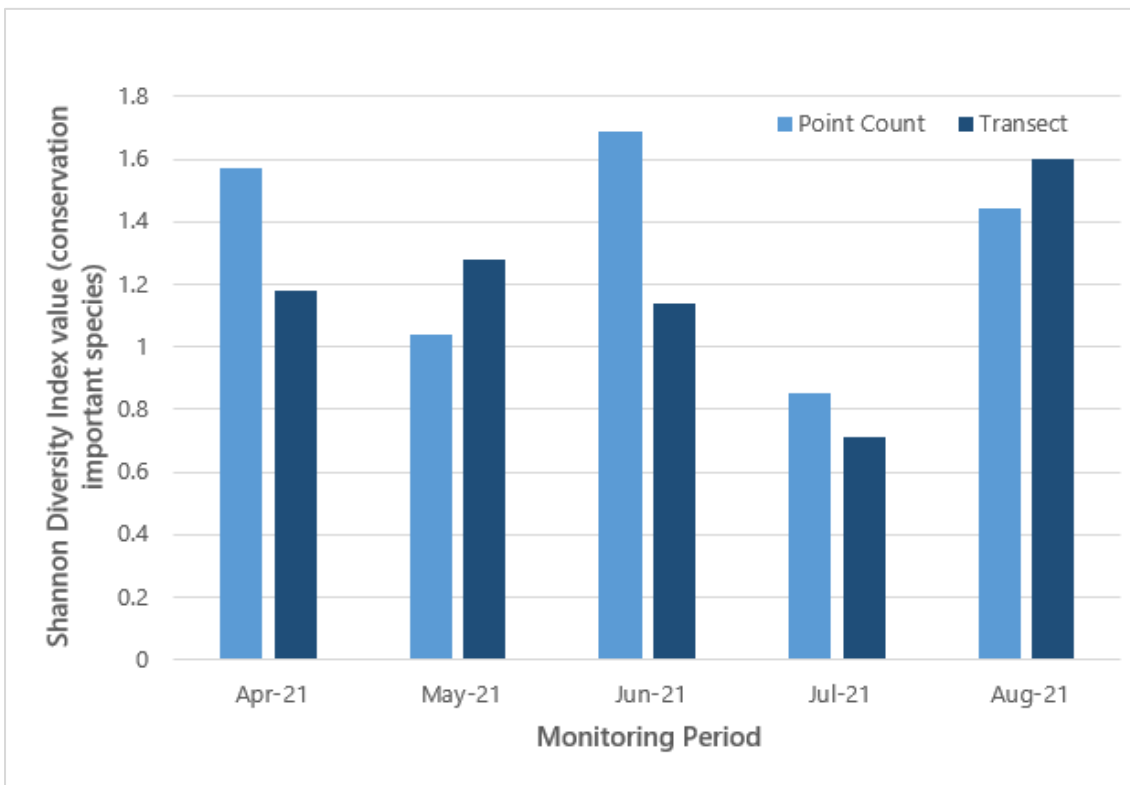
Appendix F.5.2 Species richness of avifauna species with conservation importance throughout the monitoring period



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.7.1 Hutcheson t-test testing method and output

Formula:

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

Appendix F.7.1.1 Species diversity of all avifauna species – Point Count Method

Months	August 2017	August 2021
Total	160	185
N	26	23
H	2.80	2.70
S ² _H	0.005615	0.004058
t	1.05	
df	327	
Crit	1.97	
p	0.2954	
CI	0.149868	0.127404

Appendix F.7.1.2 Species diversity of all avifauna species – Transect Walk Method

Months	August 2017	August 2021
Total	140	237
N	30	23
H	2.87	2.72
S ² _H	0.00817827	0.003014
t	1.47	
df	243	
Crit	1.97	
p	0.1439	
CI	0.180867575	0.1098

Appendix F.7.1.3 Species diversity of avifauna species with conservation importance – Point Count Method

Months	August 2017	August 2021
Total	66	73
N	7	6
H	1.68	1.44

Months	August 2017	August 2021
S^2_H	0.0072	0.0076
t	1.96	
df	138.9351	
Crit	1.98	
p	0.0513	
CI	0.1697	0.1746

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
01/08/2021 00:00	0.1	NEE
01/08/2021 01:00	0.1	SEE
01/08/2021 02:00	0.1	SES
01/08/2021 03:00	0.8	SES
01/08/2021 04:00	0.0	SE
01/08/2021 05:00	0.0	NEN
01/08/2021 06:00	0.0	SE
01/08/2021 07:00	0.3	NE
01/08/2021 08:00	0.1	NEN
01/08/2021 09:00	0.2	NEE
01/08/2021 10:00	0.4	NE
01/08/2021 11:00	0.0	E
01/08/2021 12:00	0.1	NEN
01/08/2021 13:00	0.1	E
01/08/2021 14:00	0.0	SE
01/08/2021 15:00	0.1	SEE
01/08/2021 16:00	0.1	NE
01/08/2021 17:00	0.0	NE
01/08/2021 18:00	0.0	NEN
01/08/2021 19:00	0.0	SEE
01/08/2021 20:00	0.1	N
01/08/2021 21:00	0.3	SEE
01/08/2021 22:00	0.0	SEE
01/08/2021 23:00	0.2	SES
01/08/2021 00:00	0.4	SES
02/08/2021 01:00	0.0	SEE
02/08/2021 02:00	0.7	SES
02/08/2021 03:00	0.1	SE
02/08/2021 04:00	0.6	SES
02/08/2021 05:00	0.1	SE
02/08/2021 06:00	0.8	SES
02/08/2021 07:00	0.0	E
02/08/2021 08:00	0.0	NEE
02/08/2021 09:00	0.0	NE
02/08/2021 10:00	0.1	NE
02/08/2021 11:00	0.1	NEN
02/08/2021 12:00	0.0	NEN
02/08/2021 13:00	0.0	E

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

Date	Wind Speed	Wind Direction
02/08/2021 14:00	0.0	E
02/08/2021 15:00	0.0	SEE
02/08/2021 16:00	0.0	SEE
02/08/2021 17:00	0.0	SEE
02/08/2021 18:00	0.0	E
02/08/2021 19:00	0.1	SE
02/08/2021 20:00	0.1	SE
02/08/2021 21:00	0.0	S
02/08/2021 22:00	0.1	E
02/08/2021 23:00	0.2	SE
02/08/2021 00:00	0.1	SWS
03/08/2021 01:00	0.3	SES
03/08/2021 02:00	0.4	SWS
03/08/2021 03:00	0.4	SES
03/08/2021 04:00	0.1	SEE
03/08/2021 05:00	0.1	SE
03/08/2021 06:00	0.5	SES
03/08/2021 07:00	0.2	SE
03/08/2021 08:00	0.0	SES
03/08/2021 09:00	0.1	S
03/08/2021 10:00	0.0	SEE
03/08/2021 11:00	0.1	NEE
03/08/2021 12:00	0.0	SES
03/08/2021 13:00	0.0	NEE
03/08/2021 14:00	0.0	NEE
03/08/2021 15:00	0.0	NEE
03/08/2021 16:00	0.0	NE
03/08/2021 17:00	0.0	NE
03/08/2021 18:00	0.0	NE
03/08/2021 19:00	0.0	E
03/08/2021 20:00	0.0	NE
03/08/2021 21:00	0.2	NEN
03/08/2021 22:00	0.1	SE
03/08/2021 23:00	0.0	SEE
03/08/2021 00:00	0.4	N
04/08/2021 01:00	0.9	NWW
04/08/2021 02:00	0.1	NW
04/08/2021 03:00	0.1	SW

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

Date	Wind Speed	Wind Direction
04/08/2021 04:00	0.3	SW
04/08/2021 05:00	0.1	S
04/08/2021 06:00	0.3	SWS
04/08/2021 07:00	0.0	S
04/08/2021 08:00	0.6	S
04/08/2021 09:00	0.2	SES
04/08/2021 10:00	0.1	SES
04/08/2021 11:00	0.1	S
04/08/2021 12:00	0.0	NEE
04/08/2021 13:00	0.0	NEE
04/08/2021 14:00	0.0	SE
04/08/2021 15:00	0.0	E
04/08/2021 16:00	0.0	E
04/08/2021 17:00	0.0	E
04/08/2021 18:00	0.0	E
04/08/2021 19:00	0.0	SEE
04/08/2021 20:00	0.0	SEE
04/08/2021 21:00	0.0	SEE
04/08/2021 22:00	0.0	NEE
04/08/2021 23:00	0.0	NEN
04/08/2021 00:00	0.1	NEN
05/08/2021 01:00	0.1	W
05/08/2021 02:00	0.1	SWW
05/08/2021 03:00	0.3	SWW
05/08/2021 04:00	0.4	SWW
05/08/2021 05:00	0.2	SW
05/08/2021 06:00	0.0	W
05/08/2021 07:00	0.0	SE
05/08/2021 08:00	0.1	E
05/08/2021 09:00	0.1	SE
05/08/2021 10:00	0.0	SE
05/08/2021 11:00	0.0	SE
05/08/2021 12:00	0.0	NEE
05/08/2021 13:00	0.0	NEN
05/08/2021 14:00	0.0	NEN
05/08/2021 15:00	0.0	NEN
05/08/2021 16:00	0.0	NE
05/08/2021 17:00	0.0	NE

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

Date	Wind Speed	Wind Direction
05/08/2021 18:00	0.0	NE
05/08/2021 19:00	0.0	NE
05/08/2021 20:00	0.0	NWW
05/08/2021 21:00	0.0	NEE
05/08/2021 22:00	0.0	E
05/08/2021 23:00	0.1	N
06/08/2021 00:00	0.1	SEE
06/08/2021 01:00	0.0	NEE
06/08/2021 02:00	0.1	NW
06/08/2021 03:00	0.1	NW
06/08/2021 04:00	0.2	SE
06/08/2021 05:00	0.0	NWW
06/08/2021 06:00	0.1	S
06/08/2021 07:00	0.0	SWS
06/08/2021 08:00	0.0	NWN
06/08/2021 09:00	0.1	SE
06/08/2021 10:00	0.3	SES
06/08/2021 11:00	0.0	S
06/08/2021 12:00	0.0	SE
06/08/2021 13:00	0.0	SE
06/08/2021 14:00	0.0	NE
06/08/2021 15:00	0.0	NE
06/08/2021 16:00	0.0	NE
06/08/2021 17:00	0.0	NE
06/08/2021 18:00	0.0	NE
06/08/2021 19:00	0.0	NE
06/08/2021 20:00	0.0	NEN
06/08/2021 21:00	0.0	NEN
06/08/2021 22:00	0.0	NEN
06/08/2021 23:00	0.1	NE
07/08/2021 00:00	0.2	NEE
07/08/2021 01:00	0.0	SEE
07/08/2021 02:00	0.0	SWS
07/08/2021 03:00	0.2	SE
07/08/2021 04:00	0.0	SE
07/08/2021 05:00	0.1	SWW
07/08/2021 06:00	0.3	S
07/08/2021 07:00	1.0	SES

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
07/08/2021 08:00	0.3	SE
07/08/2021 09:00	0.7	S
07/08/2021 10:00	0.1	SEE
07/08/2021 11:00	0.5	S
07/08/2021 12:00	0.1	SEE
07/08/2021 13:00	0.3	SES
07/08/2021 14:00	0.1	SES
07/08/2021 15:00	0.0	E
07/08/2021 16:00	0.1	SES
07/08/2021 17:00	0.3	SES
07/08/2021 18:00	0.1	SES
07/08/2021 19:00	0.0	SES
07/08/2021 20:00	0.0	SES
07/08/2021 21:00	0.0	SEE
07/08/2021 22:00	0.0	SES
07/08/2021 23:00	0.0	S
08/08/2021 00:00	0.0	SEE
08/08/2021 01:00	0.0	SEE
08/08/2021 02:00	0.0	SEE
08/08/2021 03:00	0.0	SEE
08/08/2021 04:00	0.0	SEE
08/08/2021 05:00	0.0	SEE
08/08/2021 06:00	0.0	SEE
08/08/2021 07:00	0.0	E
08/08/2021 08:00	0.0	NEE
08/08/2021 09:00	0.1	NWN
08/08/2021 10:00	0.0	SW
08/08/2021 11:00	0.2	W
08/08/2021 12:00	0.8	NWW
08/08/2021 13:00	0.1	SWW
08/08/2021 14:00	0.0	NWW
08/08/2021 15:00	0.2	N
08/08/2021 16:00	0.1	N
08/08/2021 17:00	0.0	SWW
08/08/2021 18:00	0.3	NWN
08/08/2021 19:00	0.0	NWN
08/08/2021 20:00	0.0	NWW
08/08/2021 21:00	0.3	SW

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

Date	Wind Speed	Wind Direction
08/08/2021 22:00	0.1	N
08/08/2021 23:00	0.0	SES
09/08/2021 00:00	0.4	SE
09/08/2021 01:00	0.2	S
09/08/2021 02:00	0.4	SES
09/08/2021 03:00	0.4	SES
09/08/2021 04:00	0.5	SES
09/08/2021 05:00	0.1	SES
09/08/2021 06:00	0.8	S
09/08/2021 07:00	0.1	SEE
09/08/2021 08:00	0.0	SE
09/08/2021 09:00	0.1	SES
09/08/2021 10:00	0.2	SES
09/08/2021 11:00	0.1	SES
09/08/2021 12:00	0.1	SE
09/08/2021 13:00	0.0	S
09/08/2021 14:00	0.1	SES
09/08/2021 15:00	0.0	SE
09/08/2021 16:00	0.0	SES
09/08/2021 17:00	0.0	SE
09/08/2021 18:00	0.0	SES
09/08/2021 19:00	0.0	SES
09/08/2021 20:00	0.0	SES
09/08/2021 21:00	0.0	NEE
09/08/2021 22:00	0.0	NEE
09/08/2021 23:00	0.0	NEE
10/08/2021 00:00	0.0	NE
10/08/2021 01:00	0.0	NE
10/08/2021 02:00	0.3	NE
10/08/2021 03:00	0.0	NW
10/08/2021 04:00	0.1	SWW
10/08/2021 05:00	0.2	W
10/08/2021 06:00	0.1	NE
10/08/2021 07:00	0.0	SE
10/08/2021 08:00	0.0	SE
10/08/2021 09:00	0.4	SW
10/08/2021 10:00	0.5	SES
10/08/2021 11:00	0.1	SE

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

Date	Wind Speed	Wind Direction
10/08/2021 12:00	0.3	SES
10/08/2021 13:00	0.4	SE
10/08/2021 14:00	0.2	SES
10/08/2021 15:00	0.1	SES
10/08/2021 16:00	0.0	SEE
10/08/2021 17:00	0.0	NE
10/08/2021 18:00	0.0	NE
10/08/2021 19:00	0.0	W
10/08/2021 20:00	0.0	N
10/08/2021 21:00	0.0	N
10/08/2021 22:00	0.0	NEN
10/08/2021 23:00	0.0	NEE
11/08/2021 00:00	0.0	SES
11/08/2021 01:00	0.0	NEE
11/08/2021 02:00	0.1	NEE
11/08/2021 03:00	0.1	NEE
11/08/2021 04:00	0.1	S
11/08/2021 05:00	0.0	W
11/08/2021 06:00	0.1	NEN
11/08/2021 07:00	0.0	SWS
11/08/2021 08:00	0.4	SE
11/08/2021 09:00	0.0	SWS
11/08/2021 10:00	0.2	SEE
11/08/2021 11:00	0.4	SES
11/08/2021 12:00	0.2	SWS
11/08/2021 13:00	0.7	SWS
11/08/2021 14:00	0.2	SES
11/08/2021 15:00	0.3	SES
11/08/2021 16:00	0.1	SE
11/08/2021 17:00	0.0	E
11/08/2021 18:00	0.0	SES
11/08/2021 19:00	0.0	SEE
11/08/2021 20:00	0.2	SES
11/08/2021 21:00	0.0	S
11/08/2021 22:00	0.0	SES
11/08/2021 23:00	0.0	NE
12/08/2021 00:00	0.0	NE
12/08/2021 01:00	0.0	NE

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

Date	Wind Speed	Wind Direction
12/08/2021 02:00	0.0	NE
12/08/2021 03:00	0.1	SWW
12/08/2021 04:00	0.2	SES
12/08/2021 05:00	0.0	SE
12/08/2021 06:00	0.0	N
12/08/2021 07:00	0.8	N
12/08/2021 08:00	0.0	N
12/08/2021 09:00	0.0	SEE
12/08/2021 10:00	0.0	SE
12/08/2021 11:00	0.0	SE
12/08/2021 12:00	0.0	N
12/08/2021 13:00	0.0	NEE
12/08/2021 14:00	0.1	NE
12/08/2021 15:00	0.1	N
12/08/2021 16:00	0.1	NE
12/08/2021 17:00	0.0	NEE
12/08/2021 18:00	0.0	NEE
12/08/2021 19:00	0.0	NEE
12/08/2021 20:00	0.0	NE
12/08/2021 21:00	0.0	NE
12/08/2021 22:00	0.0	NE
12/08/2021 23:00	0.0	NE
13/08/2021 00:00	0.0	NE
13/08/2021 01:00	0.0	NE
13/08/2021 02:00	0.0	SES
13/08/2021 03:00	0.0	E
13/08/2021 04:00	0.0	N
13/08/2021 05:00	0.0	SEE
13/08/2021 06:00	0.1	SE
13/08/2021 07:00	0.1	NEN
13/08/2021 08:00	0.2	NE
13/08/2021 09:00	0.2	SEE
13/08/2021 10:00	0.7	NEN
13/08/2021 11:00	0.1	NEE
13/08/2021 12:00	0.5	NE
13/08/2021 13:00	0.1	NE
13/08/2021 14:00	0.1	NEE
13/08/2021 15:00	0.3	NEN

Wind Data for
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Date	Wind Speed	Wind Direction
13/08/2021 16:00	0.0	NEE
13/08/2021 17:00	0.0	NE
13/08/2021 18:00	0.0	NEN
13/08/2021 19:00	0.1	N
13/08/2021 20:00	0.0	E
13/08/2021 21:00	0.1	NEE
13/08/2021 22:00	0.0	NEN
13/08/2021 23:00	0.2	NEN
14/08/2021 00:00	0.0	NE
14/08/2021 01:00	0.0	NEE
14/08/2021 02:00	0.0	NE
14/08/2021 03:00	0.0	NEE
14/08/2021 04:00	0.0	SWW
14/08/2021 05:00	0.1	SEE
14/08/2021 06:00	0.0	SES
14/08/2021 07:00	0.1	SES
14/08/2021 08:00	0.1	SES
14/08/2021 09:00	0.4	NE
14/08/2021 10:00	0.1	NEE
14/08/2021 11:00	0.6	NE
14/08/2021 12:00	0.4	NE
14/08/2021 13:00	0.3	SEE
14/08/2021 14:00	0.1	SEE
14/08/2021 15:00	0.1	NE
14/08/2021 16:00	0.3	NEE
14/08/2021 17:00	0.1	NEE
14/08/2021 18:00	0.2	NE
14/08/2021 19:00	0.3	NEE
14/08/2021 20:00	0.5	NE
14/08/2021 21:00	0.2	N
14/08/2021 22:00	0.0	NEE
14/08/2021 23:00	0.0	E
15/08/2021 00:00	0.2	NE
15/08/2021 01:00	0.0	SE
15/08/2021 02:00	1.1	NEE
15/08/2021 03:00	0.0	NE
15/08/2021 04:00	0.1	NE
15/08/2021 05:00	0.1	NEE

Wind Data for
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Yuen Long Effluent Polishing Plant Stage 1

Date	Wind Speed	Wind Direction
15/08/2021 06:00	0.2	NEE
15/08/2021 07:00	0.1	NE
15/08/2021 08:00	0.6	NE
15/08/2021 09:00	0.2	E
15/08/2021 10:00	0.1	NEE
15/08/2021 11:00	0.2	NEE
15/08/2021 12:00	0.0	SE
15/08/2021 13:00	0.2	NEN
15/08/2021 14:00	0.1	NEE
15/08/2021 15:00	0.6	NE
15/08/2021 16:00	0.3	NE
15/08/2021 17:00	0.7	NE
15/08/2021 18:00	0.4	NE
15/08/2021 19:00	0.1	NEE
15/08/2021 20:00	0.1	NE
15/08/2021 21:00	0.6	NE
15/08/2021 22:00	0.2	NEN
15/08/2021 23:00	0.3	NE
16/08/2021 00:00	0.5	NEN
16/08/2021 01:00	0.2	NEN
16/08/2021 02:00	0.1	NEE
16/08/2021 03:00	0.1	NE
16/08/2021 04:00	0.2	NEE
16/08/2021 05:00	0.1	NEE
16/08/2021 06:00	0.1	NEN
16/08/2021 07:00	0.0	NEN
16/08/2021 08:00	0.2	NEE
16/08/2021 09:00	0.1	SWW
16/08/2021 10:00	0.1	N
16/08/2021 11:00	0.0	NEN
16/08/2021 12:00	0.1	NEN
16/08/2021 13:00	0.0	E
16/08/2021 14:00	0.0	SES
16/08/2021 15:00	0.0	NE
16/08/2021 16:00	0.2	NE
16/08/2021 17:00	0.4	NE
16/08/2021 18:00	0.1	NE
16/08/2021 19:00	0.1	NE

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Date	Wind Speed	Wind Direction
16/08/2021 20:00	0.1	NE
16/08/2021 21:00	0.1	NE
16/08/2021 22:00	0.0	NEE
16/08/2021 23:00	0.2	NE
17/08/2021 00:00	0.0	N
17/08/2021 01:00	0.0	SES
17/08/2021 02:00	0.0	NE
17/08/2021 03:00	0.0	NEE
17/08/2021 04:00	0.0	NEE
17/08/2021 05:00	0.0	NE
17/08/2021 06:00	0.0	SEE
17/08/2021 07:00	0.0	NEE
17/08/2021 08:00	0.0	NE
17/08/2021 09:00	0.1	NE
17/08/2021 10:00	0.2	NEN
17/08/2021 11:00	0.0	NE
17/08/2021 12:00	0.2	NE
17/08/2021 13:00	0.3	NEE
17/08/2021 14:00	0.3	NE
17/08/2021 15:00	0.4	NE
17/08/2021 16:00	0.1	NE
17/08/2021 17:00	0.6	NE
17/08/2021 18:00	0.2	NEE
17/08/2021 19:00	0.1	SEE
17/08/2021 20:00	0.1	SE
17/08/2021 21:00	0.0	SEE
17/08/2021 22:00	0.1	NE
17/08/2021 23:00	0.0	NE
18/08/2021 00:00	0.0	NE
18/08/2021 01:00	0.0	NE
18/08/2021 02:00	0.0	NE
18/08/2021 03:00	0.0	NE
18/08/2021 04:00	0.0	NE
18/08/2021 05:00	0.0	NE
18/08/2021 06:00	0.0	NE
18/08/2021 07:00	0.0	NE
18/08/2021 08:00	0.1	NEN
18/08/2021 09:00	0.1	NEN

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Date	Wind Speed	Wind Direction
18/08/2021 10:00	0.1	NE
18/08/2021 11:00	0.3	E
18/08/2021 12:00	0.1	NEN
18/08/2021 13:00	0.3	SWS
18/08/2021 14:00	0.1	S
18/08/2021 15:00	0.1	N
18/08/2021 16:00	0.0	SW
18/08/2021 17:00	0.3	NW
18/08/2021 18:00	0.1	NW
18/08/2021 19:00	0.0	SWW
18/08/2021 20:00	0.2	W
18/08/2021 21:00	0.0	W
18/08/2021 22:00	0.1	S
18/08/2021 23:00	0.0	SWS
19/08/2021 00:00	0.2	S
19/08/2021 01:00	0.0	S
19/08/2021 02:00	0.0	S
19/08/2021 03:00	0.0	S
19/08/2021 04:00	0.0	S
19/08/2021 05:00	0.0	SWS
19/08/2021 06:00	0.0	N
19/08/2021 07:00	0.0	SW
19/08/2021 08:00	0.0	SWW
19/08/2021 09:00	0.0	SE
19/08/2021 10:00	0.0	NWW
19/08/2021 11:00	0.0	SW
19/08/2021 12:00	0.1	N
19/08/2021 13:00	0.0	NEE
19/08/2021 14:00	0.0	NWW
19/08/2021 15:00	0.6	NWW
19/08/2021 16:00	0.0	SWW
19/08/2021 17:00	0.2	NWN
19/08/2021 18:00	0.1	S
19/08/2021 19:00	0.3	W
19/08/2021 20:00	0.0	NWW
19/08/2021 21:00	0.1	SES
19/08/2021 22:00	0.2	SES
19/08/2021 23:00	0.0	SWS

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
20/08/2021 00:00	0.0	SES
20/08/2021 01:00	0.1	SWS
20/08/2021 02:00	0.0	NEE
20/08/2021 03:00	0.0	NE
20/08/2021 04:00	0.0	SES
20/08/2021 05:00	0.0	NE
20/08/2021 06:00	0.0	SES
20/08/2021 07:00	0.0	NWN
20/08/2021 08:00	0.0	SEE
20/08/2021 09:00	0.0	SEE
20/08/2021 10:00	0.0	E
20/08/2021 11:00	0.0	E
20/08/2021 12:00	0.0	NW
20/08/2021 13:00	0.0	SWW
20/08/2021 14:00	0.0	SWW
20/08/2021 15:00	0.1	W
20/08/2021 16:00	0.0	W
20/08/2021 17:00	0.6	W
20/08/2021 18:00	0.1	NWW
20/08/2021 19:00	0.0	SES
20/08/2021 20:00	0.3	SW
20/08/2021 21:00	0.9	NE
20/08/2021 22:00	0.1	SES
20/08/2021 23:00	0.0	NE
21/08/2021 00:00	0.0	NEN
21/08/2021 01:00	0.0	SEE
21/08/2021 02:00	0.1	NEN
21/08/2021 03:00	0.0	NE
21/08/2021 04:00	0.1	NWN
21/08/2021 05:00	0.0	E
21/08/2021 06:00	0.1	S
21/08/2021 07:00	0.0	SE
21/08/2021 08:00	0.0	NEE
21/08/2021 09:00	0.0	NE
21/08/2021 10:00	0.0	E
21/08/2021 11:00	0.0	NE
21/08/2021 12:00	0.0	E
21/08/2021 13:00	0.0	SEE

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Date	Wind Speed	Wind Direction
21/08/2021 14:00	0.0	SW
21/08/2021 15:00	0.7	SWS
21/08/2021 16:00	0.0	SW
21/08/2021 17:00	0.0	SES
21/08/2021 18:00	0.1	SW
21/08/2021 19:00	0.0	SWS
21/08/2021 20:00	0.1	SWS
21/08/2021 21:00	0.0	SW
21/08/2021 22:00	0.1	SWS
21/08/2021 23:00	0.1	SWS
22/08/2021 00:00	0.0	W
22/08/2021 01:00	0.0	NWW
22/08/2021 02:00	0.3	W
22/08/2021 03:00	0.1	SWW
22/08/2021 04:00	0.0	NEE
22/08/2021 05:00	0.0	SWW
22/08/2021 06:00	0.4	S
22/08/2021 07:00	0.1	SES
22/08/2021 08:00	0.0	SWS
22/08/2021 09:00	0.0	SW
22/08/2021 10:00	0.0	NE
22/08/2021 11:00	0.0	W
22/08/2021 12:00	0.1	S
22/08/2021 13:00	0.1	SWS
22/08/2021 14:00	0.0	SES
22/08/2021 15:00	0.0	NWN
22/08/2021 16:00	0.0	SWW
22/08/2021 17:00	0.0	NEN
22/08/2021 18:00	0.0	S
22/08/2021 19:00	0.0	S
22/08/2021 20:00	0.0	S
22/08/2021 21:00	0.0	S
22/08/2021 22:00	0.0	SES
22/08/2021 23:00	0.0	E
23/08/2021 00:00	0.0	NWW
23/08/2021 01:00	0.0	SW
23/08/2021 02:00	0.0	W
23/08/2021 03:00	0.0	NW

Wind Data for
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Date	Wind Speed	Wind Direction
23/08/2021 04:00	0.1	SWW
23/08/2021 05:00	0.0	SW
23/08/2021 06:00	0.1	SWW
23/08/2021 07:00	0.0	NWW
23/08/2021 08:00	0.1	SE
23/08/2021 09:00	0.6	SE
23/08/2021 10:00	0.2	SES
23/08/2021 11:00	0.1	SE
23/08/2021 12:00	0.2	NEN
23/08/2021 13:00	0.0	SES
23/08/2021 14:00	0.0	SES
23/08/2021 15:00	0.0	SE
23/08/2021 16:00	0.0	NEN
23/08/2021 17:00	0.0	NE
23/08/2021 18:00	0.2	NE
23/08/2021 19:00	0.1	NEN
23/08/2021 20:00	0.1	NEE
23/08/2021 21:00	0.0	N
23/08/2021 22:00	0.1	NE
23/08/2021 23:00	0.1	NE
24/08/2021 00:00	0.1	N
24/08/2021 01:00	0.1	NEE
24/08/2021 02:00	0.3	NE
24/08/2021 03:00	0.2	NEN
24/08/2021 04:00	0.1	NEE
24/08/2021 05:00	0.1	NEE
24/08/2021 06:00	0.2	NE
24/08/2021 07:00	0.2	E
24/08/2021 08:00	0.6	NE
24/08/2021 09:00	0.2	NE
24/08/2021 10:00	0.2	NEE
24/08/2021 11:00	0.0	NEN
24/08/2021 12:00	0.1	NE
24/08/2021 13:00	0.2	NEN
24/08/2021 14:00	0.1	NE
24/08/2021 15:00	0.1	NE
24/08/2021 16:00	0.3	N
24/08/2021 17:00	0.0	NEN

Wind Data for
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Date	Wind Speed	Wind Direction
24/08/2021 18:00	0.0	NEN
24/08/2021 19:00	0.0	NEN
24/08/2021 20:00	0.0	NEN
24/08/2021 21:00	0.0	NEN
24/08/2021 22:00	0.0	N
24/08/2021 23:00	0.0	NW
25/08/2021 00:00	0.0	SWW
25/08/2021 01:00	0.1	NW
25/08/2021 02:00	0.1	NWN
25/08/2021 03:00	0.3	N
25/08/2021 04:00	0.2	N
25/08/2021 05:00	0.2	NW
25/08/2021 06:00	0.0	W
25/08/2021 07:00	0.0	SWS
25/08/2021 08:00	0.1	SWW
25/08/2021 09:00	0.5	SE
25/08/2021 10:00	0.5	SW
25/08/2021 11:00	0.0	S
25/08/2021 12:00	0.0	S
25/08/2021 13:00	0.0	E
25/08/2021 14:00	0.1	SWW
25/08/2021 15:00	0.0	SWS
25/08/2021 16:00	0.0	S
25/08/2021 17:00	0.0	NWW
25/08/2021 18:00	0.3	NWW
25/08/2021 19:00	0.0	NWW
25/08/2021 20:00	0.0	W
25/08/2021 21:00	0.2	SWW
25/08/2021 22:00	0.1	NEN
25/08/2021 23:00	0.1	SW
26/08/2021 00:00	0.1	W
26/08/2021 01:00	0.0	SWW
26/08/2021 02:00	0.2	NWW
26/08/2021 03:00	0.6	W
26/08/2021 04:00	0.3	SWW
26/08/2021 05:00	0.4	SWS
26/08/2021 06:00	0.1	SW
26/08/2021 07:00	0.0	SWS

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Date	Wind Speed	Wind Direction
26/08/2021 08:00	0.0	S
26/08/2021 09:00	0.0	NW
26/08/2021 10:00	0.0	SWW
26/08/2021 11:00	0.0	NEN
26/08/2021 12:00	0.0	NEE
26/08/2021 13:00	0.0	E
26/08/2021 14:00	0.0	SES
26/08/2021 15:00	0.0	SES
26/08/2021 16:00	0.0	S
26/08/2021 17:00	0.4	N
26/08/2021 18:00	0.0	SE
26/08/2021 19:00	0.0	SE
26/08/2021 20:00	0.0	SW
26/08/2021 21:00	0.0	SE
26/08/2021 22:00	0.0	W
26/08/2021 23:00	0.0	SW
27/08/2021 00:00	0.0	SWW
27/08/2021 01:00	0.0	SW
27/08/2021 02:00	0.0	NWW
27/08/2021 03:00	0.0	SWW
27/08/2021 04:00	0.6	SWW
27/08/2021 05:00	0.2	SWW
27/08/2021 06:00	0.0	SWS
27/08/2021 07:00	0.1	SWS
27/08/2021 08:00	0.3	SWS
27/08/2021 09:00	0.1	SW
27/08/2021 10:00	0.0	SWS
27/08/2021 11:00	0.1	SWS
27/08/2021 12:00	0.0	S
27/08/2021 13:00	0.0	S
27/08/2021 14:00	0.0	SES
27/08/2021 15:00	0.0	N
27/08/2021 16:00	0.0	N
27/08/2021 17:00	0.0	SWS
27/08/2021 18:00	0.0	N
27/08/2021 19:00	0.0	NEN
27/08/2021 20:00	0.0	NEN
27/08/2021 21:00	0.0	NWW

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Date	Wind Speed	Wind Direction
27/08/2021 22:00	0.0	SW
27/08/2021 23:00	0.0	SW
28/08/2021 00:00	0.0	NWW
28/08/2021 01:00	0.1	N
28/08/2021 02:00	0.2	N
28/08/2021 03:00	0.0	SWW
28/08/2021 04:00	0.5	NWW
28/08/2021 05:00	0.1	SWS
28/08/2021 06:00	0.2	SEE
28/08/2021 07:00	0.0	NE
28/08/2021 08:00	0.0	NEN
28/08/2021 09:00	0.0	SE
28/08/2021 10:00	0.0	SES
28/08/2021 11:00	0.0	SES
28/08/2021 12:00	0.0	N
28/08/2021 13:00	0.0	SWS
28/08/2021 14:00	0.0	SWS
28/08/2021 15:00	0.0	N
28/08/2021 16:00	0.0	E
28/08/2021 17:00	0.0	S
28/08/2021 18:00	0.0	S
28/08/2021 19:00	0.0	S
28/08/2021 20:00	0.0	SE
28/08/2021 21:00	0.0	SES
28/08/2021 22:00	0.0	S
28/08/2021 23:00	0.0	S
29/08/2021 00:00	0.1	SWS
29/08/2021 01:00	0.1	SES
29/08/2021 02:00	0.0	SWS
29/08/2021 03:00	0.0	SWS
29/08/2021 04:00	0.0	SW
29/08/2021 05:00	0.1	SWS
29/08/2021 06:00	0.2	SWW
29/08/2021 07:00	0.1	N
29/08/2021 08:00	0.0	NEE
29/08/2021 09:00	0.1	SE
29/08/2021 10:00	0.1	NEN
29/08/2021 11:00	0.0	NEE

Wind Data for
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Date	Wind Speed	Wind Direction
29/08/2021 12:00	0.0	NEE
29/08/2021 13:00	0.0	N
29/08/2021 14:00	0.0	NEN
29/08/2021 15:00	0.0	NEN
29/08/2021 16:00	0.5	SES
29/08/2021 17:00	0.0	SES
29/08/2021 18:00	0.0	SES
29/08/2021 19:00	0.0	NEE
29/08/2021 20:00	0.0	NEE
29/08/2021 21:00	0.0	NEE
29/08/2021 22:00	0.0	NEE
29/08/2021 23:00	0.0	S
30/08/2021 00:00	0.0	E
30/08/2021 01:00	0.3	S
30/08/2021 02:00	0.3	SE
30/08/2021 03:00	0.3	SWS
30/08/2021 04:00	0.2	S
30/08/2021 05:00	0.1	SE
30/08/2021 06:00	0.3	SES
30/08/2021 07:00	0.1	SWS
30/08/2021 08:00	0.3	S
30/08/2021 09:00	0.5	NWN
30/08/2021 10:00	0.0	SEE
30/08/2021 11:00	0.0	SES
30/08/2021 12:00	0.0	SES
30/08/2021 13:00	0.0	SE
30/08/2021 14:00	0.0	SE
30/08/2021 15:00	0.0	SE
30/08/2021 16:00	0.0	NE
30/08/2021 17:00	0.0	NEN
30/08/2021 18:00	0.0	NE
30/08/2021 19:00	0.0	NE
30/08/2021 20:00	0.1	SES
30/08/2021 21:00	0.0	SES
30/08/2021 22:00	0.1	SE
30/08/2021 23:00	0.0	S
31/08/2021 00:00	0.0	SWW
31/08/2021 01:00	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
31/08/2021 02:00	0.0	NEN
31/08/2021 03:00	0.1	SEE
31/08/2021 04:00	0.1	SE
31/08/2021 05:00	0.2	SE
31/08/2021 06:00	0.1	SWS
31/08/2021 07:00	0.0	SES
31/08/2021 08:00	0.1	SE
31/08/2021 09:00	0.1	SE
31/08/2021 10:00	0.0	SEE
31/08/2021 11:00	0.0	SE
31/08/2021 12:00	0.0	SES
31/08/2021 13:00	0.0	SEE
31/08/2021 14:00	0.0	SE
31/08/2021 15:00	0.0	SES
31/08/2021 16:00	0.1	SES
31/08/2021 17:00	0.0	SE
31/08/2021 18:00	0.0	NE
31/08/2021 19:00	0.0	NE
31/08/2021 20:00	0.0	NE
31/08/2021 21:00	0.0	SE
31/08/2021 22:00	0.0	SEE
31/08/2021 23:00	0.0	S
01/09/2021 00:00	0.0	NWW

Appendix H

Event and Action Plan

Event and Action Plan for Air Quality (Construction Dust)

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

Event and Action Plan for Noise (Construction)

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

Event and Action Plan for Water Quality Monitoring

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

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

Event and Action Plan for Ecology Monitoring

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

Appendix I

Waste Flow Table

Waste Flow Table for Year 2021											
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)
2021 Jan	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2021 Feb	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2021 Mar	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2021 Apr	216.92	Nil	Nil	Nil	152.94	Nil	Nil	Nil	Nil	Nil	63.98
2021 May	277.74	Nil	Nil	Nil	268.92	Nil	Nil	0.11	Nil	Nil	8.71
2021 Jun	715.93	Nil	Nil	Nil	551.41	Nil	146.74	0.11	Nil	Nil	17.67
2021 Jul	1521.38	Nil	Nil	Nil	1466.15	Nil	32.46	Nil	Nil	Nil	22.77
2021 Aug	2108.79	Nil	Nil	Nil	2057.77	Nil	29.59	0.13	Nil	Nil	21.30
2021 Sep											
2021 Oct											
2021 Nov											
2021 Dec											
Total	4840.76	0	0	0	4497.19	0	208.79	0.35	0	0	134.43

Note:

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

Appendix J

Implementation Status of Environment

Mitigation Measures

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
5.8.1.17	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Construction Sites / Construction Phase	N/A
5.8.1.18	Disposal of chemical wastes should be carried out in compliance with the WDO. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the WDO should be followed to avoid leakage or spillage of chemicals.	Construction Sites / Construction Phase	N/A
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	
	<ul style="list-style-type: none"> • Nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility; 		Implemented
	<ul style="list-style-type: none"> • Training of site personnel in proper waste management and chemical waste handling procedures; 		Implemented
	<ul style="list-style-type: none"> • Provision of sufficient waste reception/ disposal points, of a suitable vermin-proof design that minimises windblown litter; 		N/A
	<ul style="list-style-type: none"> • Arrangement for regular collection of waste for transport off-site and final disposal; 		Implemented
	<ul style="list-style-type: none"> • Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; 		Implemented
	<ul style="list-style-type: none"> • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; 		N/A

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

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

Note:

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

Appendix K

Weather and Meteorological
Conditions

July 2021 Weather

Station: Wetland Park

Date	Mean Pressure (hPa)	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
July 2021						
1	1005.6	33.7	30.2	27.8	83	0
2	1006.1	33.6	30.4	28.1	83	0
3	1005.7	32.7#	30.1	27.8#	87	0.5
4	1006.6	34.3#	30.4	27.5#	83	0
5	1006.9	33.9#	30	27.1#	80	0
6	1005.9	33.7#	29.7	27.4#	80	0
7	1008.5	32.2#	29.2	26.9#	85	5
8	1010.7	33.9	30.3	27.7	78	0
9	1009.9	34.1	29.8	26	81	0
10	1009.8	33.3	29.4	25.7	83	0
11	1010.6	33.3	29.5	26.2	85	1
12	1009.6	34.5#	30.5	27.0#	80	0
13	1008	35.5	30.6	26.9	78	0
14	1007.7	35.1#	30.7	27.1#	79	0
15	1008.3	35.5#	30.9	27.2#	77	0
16	1008.1#	31.2#	28.7#	25.5#	89#	26
17	1005.4	31.4#	28.7	26.5#	84	0
18	1002.9	32.5#	28.6	25.9#	84	10
19	1002	28.3#	26.7	25.5#	95	57.5
20	1002.2	27.0#	25.6	24.4#	99	80.5
21	1002.4	28.1#	26.5	25.5#	96	2.5
22	1000.6	33.4#	28.9	25.4#	84	0
23	997.9	35.5#	30.6	26.0#	81	0
24	997.5	35.6#	29.8	26.5#	83	0.5
25	998.9	34.5#	29.4	25.7#	87	6.5
26	997.6	35.4#	30.8	28.1#	83	0
27	996.4	36.2	30.6	26	84	2.5
28	997	35.1	30.3	26.6	86	1.5
29	999.6	33.9	29.3	27.5	88	1
30	1000.8	31.8	28.6	26.2	92	17.5
31	999.7	33.6#	29.8	27.4#	88	13.5

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

August 2021 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)		
August 2021						
1	998.5	32.5	29.4	27.1	83	11.6
2	998.3	33.9	30	28.5	80	Trace
3	997.2	29.7	28.2	27.1	88	19.7
4	995.6	31.3	28.2	25.9	85	41.9
5	996	28.6	27.6	26.2	90	28.1
6	998	29.7	28.3	26.4	89	31
7	1001.3	30.9	28.8	27.6	85	0
8	1004.3	31.5	29.3	27.8	85	3.1
9	1005.4	31.3	29.1	27.2	85	36.3
10	1005.9	30.4	29	27.5	87	17.3
11	1008.3	32.1	29.5	27.1	84	3
12	1008.9	33	29	26.8	82	1
13	1006.2	30.7	28.6	26.6	83	5.4
14	1006.4	29.2	28	26.6	85	2.2
15	1010.2	30	27.3	25.7	87	5.7
16	1012.5	31	28.3	26.2	83	3.9
17	1010.5	32.5	29.5	27.4	78	0
18	1008.2	32.3	29.5	28.1	77	0
19	1008.6	31	28.6	26.2	84	34.6
20	1009.5	32.5	29.5	27.3	77	Trace
21	1008.6	32.5	29.8	28	76	0
22	1007.4	33.1	30.1	28.3	74	0
23	1007.2	33.2	30.2	28.4	75	Trace
24	1007.7	32.1	29.6	26.6	79	23.7
25	1009	34.4	29.7	28.2	79	1.1
26	1011	32.7	29.7	27.1	80	2.2
27	1012	29.2	25.6	23.4	89	29.3
28	1011.6	29.8	26.9	24.9	81	22
29	1011.2	29.9	27.8	25.3	83	13.9
30	1011.4	32.9	29.1	27.4	81	Trace
31	1011.1	29.1	27.3	25.2	88	13.5

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	25 Aug 2021	Recommendation 1: The Contractor is recommended to increase watering for dust suppression during demolition of workshop (Portion 1 – YLSTW).	25 Aug 2021
Noise	NA		
Water Quality	4 Aug 2021	Observation 1: Provide mitigation to prevent direct discharge of silt-laden water into the storm drain near the boot cleaning basin (Portion 1 – YLSTW).	5 Aug 2021
Chemical and Waste Management	4 Aug 2021	Observation 2: Drip tray should be provided for the chemical as mitigation to prevent accidental spillage (Portion 1 – YLSTW).	5 Aug 2021
Land Contamination	NA		
Ecological Impact	25 Aug 2021	Reminder 1: The Contractor is reminded to maintain and reinstate the silentup at the northern site boundary (Portion 1 – YLSTW).	25 Aug 2021
Landscape and Visual Impact	NA		
Permit / Licenses	NA		
Others	NA		

Appendix N

Outstanding Issues and Deficiencies

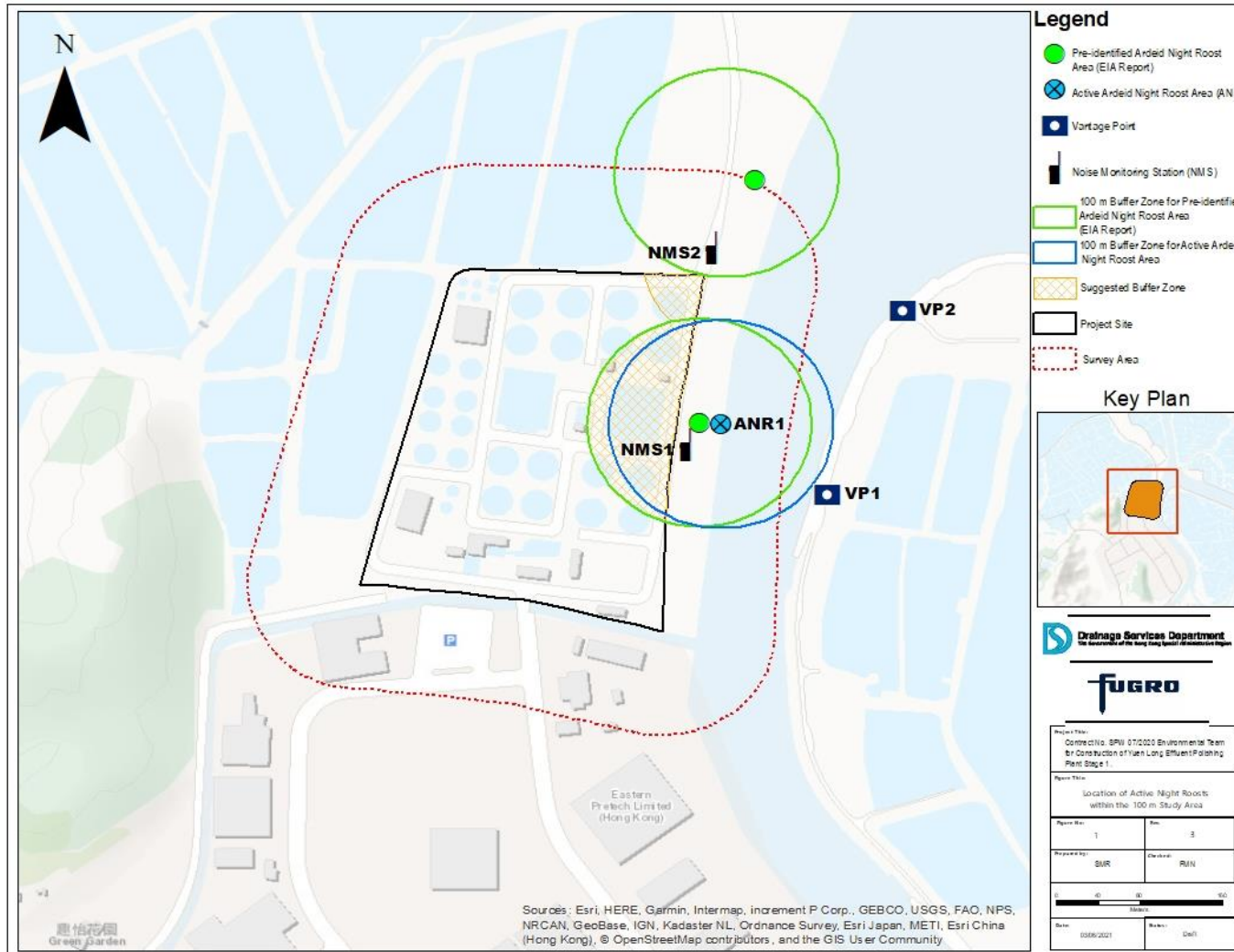
Summary of Outstanding Issues and Deficiencies in the Reporting Month

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

Appendix O

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

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



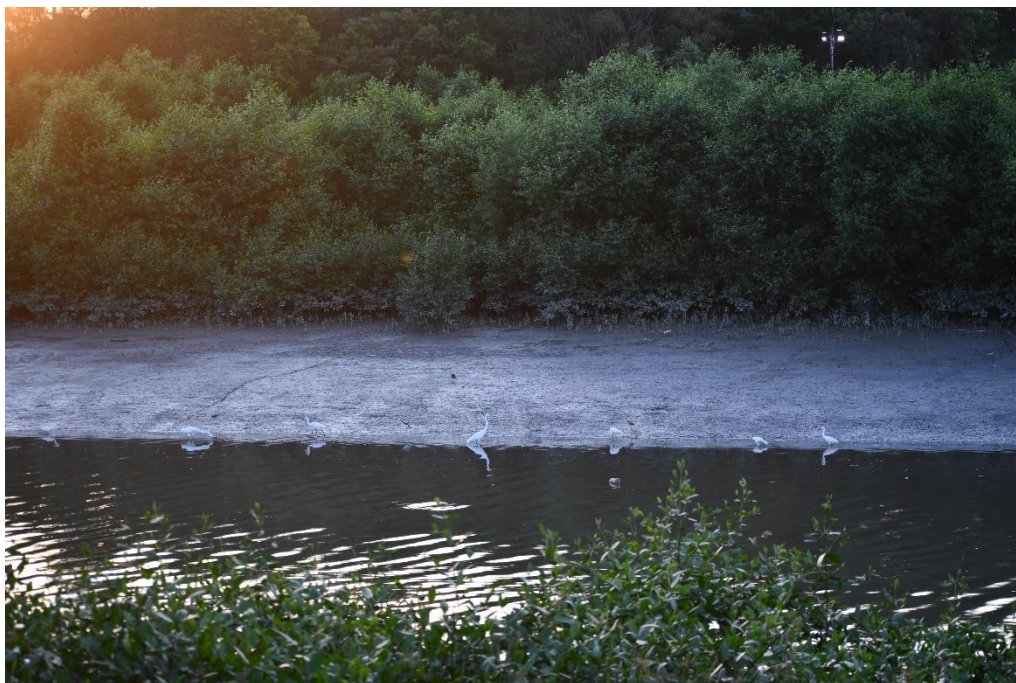
Appendix O.1: Monitoring Area, Vantage Points for Observation of Active Night Roost and Noise Monitoring Stations

O.2 Survey Photos

O.2.1 Pre-roosting Aggregate



Appendix O.2.1a: Pre-roost aggregate of the Eastern Cattle Egret *Bubulcus coromandus* and Little Egret *Egretta garzetta* in the mudflat area east of the Project boundary observed on 20 August 2021 around 17:56



Appendix O.2.1b: Pre-roost aggregate of the Eastern Cattle Egret *Bubulcus coromandus* and Little Egret *Egretta garzetta* in the mudflat area northeast of the Project boundary observed on 20 August 2021 around 17:56

O.2.2 Active Night Roosting Site and Roosting Substrates



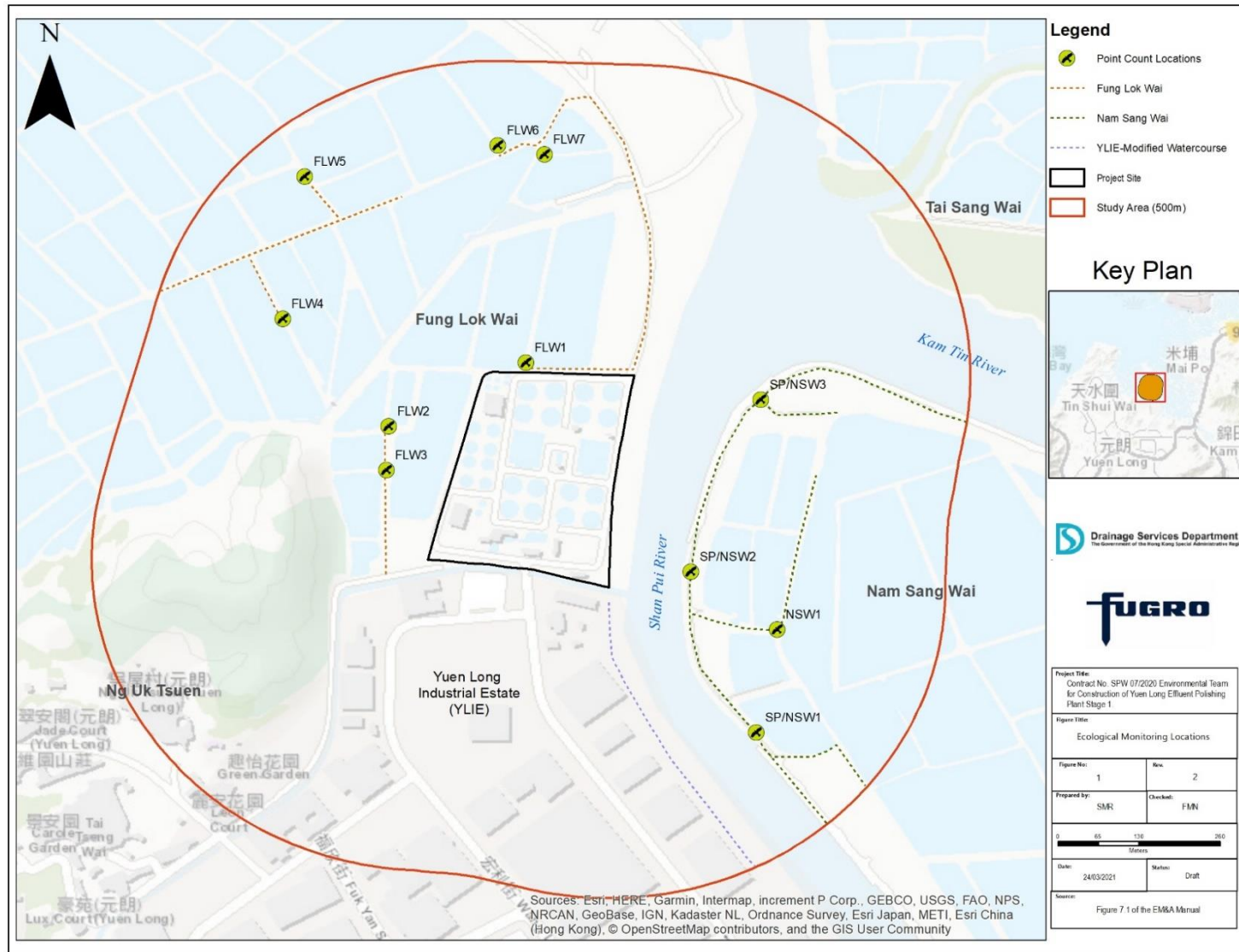
Appendix O.2.2a: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located east of the Project boundary observed on 20 August 2021 around 18:20



Appendix O.2.2b: Another angle of the active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate still located east of the Project boundary observed on 20 August 2021 around 18:20

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