



Monthly EM&A Report (November 2021)

0120/20/ED/0418 02

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



Ref.: DSDYLSTWEM00_0_0260L.21

10 December 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 (November 2021)**

Reference is made to the Monthly EM&A Report (November 2021) by the ET with Fugro Document No. 0120/20/ED/0418 02 (the Report), which was received via e-mail dated 10 December 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,

WONG Fu Nam
Independent Environmental Checker

c.c.

DSD
Fugro

Mr LAM Yu Wang
Mr YU Lap Bong

By E-mail
By E-mail

Document Control




Document Information

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Client Information

Client	Drainage Services Department
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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 8th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 November 2021 to 30 November 2021. As informed by the Contractor, major activities in the reporting month were:
 - Site formation works at PST no. 5 & 6;
 - Demolition of FST no. 7 & 8 by crusher excavator;
 - Pre-drill work at PST Stage 1 by 1 rig;
 - Installation of sheet pile at IW;
 - Pile load test at IW;
 - Installation of sheet pile and excavation work at Zone 2A;
 - Construction of RC structure at Zone 3 (Temp. Sludge Holding Tank and Temp. Water Heater Tank);
 - Reinstatement work at Zone 1 diversion area;
 - Overhaul work at Sludge Digestion Tank; and
 - Env. Drill holes at Waste Storage Area.

Breaches of Environmental Quality Performance Limits (AL levels)

- iii. No Action and Limit Level exceedance was recorded for air quality monitoring and construction noise monitoring in the reporting month.
- iv. No Action and Limit Level exceedance was recorded for water quality monitoring in the reporting month.
- v. No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the two active ardeid night roosts (ANR1 and ANR2) observed within the Survey Area during the reporting month.
- vi. No Action / Limit exceedance for the ecological monitoring of birds in the reporting month.
- vii. No corrective actions were required according to the Event-Action Plans.

Land Contamination

- viii. Regular site inspection was carried out to ensure the recommended mitigation measures are properly implemented. Site investigation (SI) work was completed by 4th August 2021 and the signed final Contamination Assessment Report (CAR) for Main Storeroom & Workshops was submitted to EPD on 1 November 2021. The signed final Contamination Assessment Report (CAR) for Mechanical Workshop was submitted to EPD on 23rd November 2021. No contaminated soil and ground water was found within the Main Storeroom & Workshop and the Mechanical Workshop, hence no remedial action is required.

Complaint Log

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

Notifications of any Summons and Successful Prosecutions

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

Reporting Change

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

Future Key Issues

- xii. The main works will be anticipated in the next three months are as follow:
- Demolition of FST no. 5-8, Sludge Holding Tanks no. 3 & 4, Auxiliary Pumping Station and Carparks;
 - Construction RC structure for Temp. Thickening tank (Zone 3B);
 - Laying pipes and construction of RC chamber at Zone 2A and subsequence diversion work (nights work);
 - Env. Drill holes at Waste Storage Area;
 - Sheet pile installation at IW & PST;
 - Installation of sheet pile, excavation and construction of temporary chamber at Zone 2B;
 - Construction RC structure at zone 3 (Temp. water heater house and temp. thickening tank);
 - Pipe Laying for Zone 3;
 - Env. Drill holes at Air Floatation Thickener;
 - Installation of sheet pile at Auxiliary Pumping Station;
 - Installation of sheet pile for demolition of Aeration Tank no. 5-8 at AGS;
 - Construction of temp. transformer room (1600A);
 - Construction of Digested Sludge Pumping Station (Zone 3A); and
 - Construction of Temp. Sludge Gravity Thickening Tank (Zone 3B).

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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 8th Monthly EM&A report to document the findings of site inspection activities and EM&A programme for this project from 1 November 2021 to 30 November 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)	Mr. Alvin Yu	3565 4373

1.3 Construction Programme and Activities

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

1.4 Works undertaken during the month

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

- Site formation works at PST no. 5 & 6;
- Demolition of FST no. 7 & 8 by crusher excavator;
- Pre-drill work at PST Stage 1 by 1 rig;
- Installation of sheet pile at IW;
- Pile load test at IW;
- Installation of sheet pile and excavation work at Zone 2A;
- Construction of RC structure at Zone 3 (Temp. Sludge Holding Tank and Temp. Water Heater Tank);
- Reinstatement work at Zone 1 diversion area;
- Overhaul work at Sludge Digestion Tank; and
- Env. Drill holes at Waste Storage Area.

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

1.5 Status of Environmental Licences, Notification and Permits

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

Table 1.2 – Environmental Licenses, Notification and Permits Summary

Permit/ Notification/ License	Reference No	Valid From	Valid Till
Environmental Permit	EP-565/2019	26-Apr-2019	NA
Notification of Works under APCO	461616	6-Nov-2020	NA
Construction Waste Disposal Billing Account	7038933	20-Nov-2020	NA
Registration as Chemical Waste Producer under WDO	WPN5213-528-P2796-03	4-Feb-2021	NA
Construction Noise Permit	GW-RN0720-21	18-Oct-2021	17-Apr-2022
Admission Ticket for Disposal of Special Waste at Landfill	Admission Ticket No. 16225	3-May-2021	2-Nov-2021 (Superseded by Admission Ticket No. 16485)
Admission Ticket for Disposal of Special Waste at Landfill	Admission Ticket No. 16595	4-Nov-2021	31-Jan-2022
Water Pollution Control Ordinance (CAP. 358) Licence pursuant to Section 20	WT00038102-2021	4-Aug-2021	31-Aug-2026
Marine Dumping Permit	Ref. Number: 468850, 468851 and 468852	Under Application	NA

2. AIR QUALITY

2.1 Monitoring Requirement

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

2.2 Monitoring Equipment

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

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

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

Table 2.1 – Air Quality Monitoring Equipment

Item	Location	Brand	Model	Equipment	Serial No.
1	AM1	Sibata	Model LD-5R	SIBATA LD-5R Digital Dust Indicator	155716
2	AM2		Model LD-5R		155717
3		Global Water	GL500-7-2	Wind Station	2012000974

2.3 Monitoring Methodology for Direct Reading Dust Meter

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

Measuring Procedures

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

Equipment Calibration

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

2.4 Maintenance and Calibration for Direct Reading Dust Meter

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

2.5 Monitoring Locations

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

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

Table 2.2 – Air Quality Monitoring Location

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

2.6 Monitoring Results

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

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

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

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

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

Table 2.3 – Summary of Air Quality Monitoring Results

Monitoring Station	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
1-hour TSP				
AM1	35	24-53	291	500
AM2	42	29-63	296	

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

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

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

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

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

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

Monitoring Station	EIA ID	Predicted Maximum Hourly Average TSP Concentration ($\mu\text{g}/\text{m}^3$)	Maximum 1-hr TSP Monitoring Results in November 2021 ($\mu\text{g}/\text{m}^3$)
1-hour TSP			
AM1	ASR09	205-451	53
AM2	ASR11		63

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 \pm 0.1 dB).

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

Table 3.1 – Construction Noise Monitoring Equipment

Item	Brand	Model	Equipment	Serial No.
1	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	0873599
2	Casella	CEL-63X Series	Casella 63x Digital Sound Level Meter	1488272
3	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	4358251
4	Casella	CEL-120/1	Casella 120 Acoustic Calibrator	2383707
5	SENSOR	AR816	Anemometer	2136513

3.3 Monitoring Parameters and Frequency

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

Table 3.2 – Monitoring Parameters and Frequencies of Noise Monitoring

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

3.4 Monitoring Methodology

3.4.1 Noise measurement should be conducted as the following procedures:

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

3.5 Maintenance and Calibration

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

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

3.6 Monitoring Locations

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

Table 3.3 – Construction Noise Monitoring Location

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

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

3.7 Monitoring Results

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

Table 3.4 – Summary of Construction Noise Monitoring Results

Time Period	Noise Monitoring Stations	L_{eq} (30min) dB(A) (Range)	Action Level	Limit Level dB(A)
0700-1900 hrs on normal weekdays	CM1	53-55	When one documented complaint is received	75
	CM2	61-63		75
	CM3	60-62		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 November 2021 L_{eq} (30min) dB(A)
CM1	NSR1	72	55
CM2	NSR2	74	63
CM3	NSR3	75	62

Notes:

Predicted TSP Concentration extracted from Table 4.9 of EIA Report, AEIAR-220/2019

3.8.2 The construction noise monitoring results at CM1, CM2 and CM3 were below the Maximum Predicted mitigated Construction Noise Level in the approved Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-220/2019).

4. WATER QUALITY

4.1 Monitoring Requirement

4.1.1 In accordance with the EM&A Manual, impact monitoring is conducted for three days per week at mid-flood and mid-ebb with sampling and measurement at the designated monitoring stations.

4.2 Monitoring Equipment

4.2.1 Equipment used for in-situ measurement and water sampling during impact water quality monitoring is summarised in **Table 4.1**. The equipment is in compliance with the requirements set out in the EM&A Manual. All in-situ monitoring instruments were calibrated by a HOKLAS-accredited laboratory. Calibration of temperature, DO, salinity, pH and turbidity is conducted in three month interval. Calibration certificates for the water quality monitoring equipment are attached in **Appendix D**.

Table 4.1 – Water Quality Monitoring and Sampling Equipment

Parameter	Equipment	Model	Range	Equipment Accuracy	Serial No.
Temperature, Dissolved Oxygen, Salinity, pH, Turbidity	YSI Water Quality Multipara meter Sonde	Xylem EXO 3	Temp: -5 to 50°C DO: 0-50mg/L DO%: 0-500% Sal: 0 to 70ppt pH: 0 to 14 pH units Turb: 0- 4000NTU	Temp: $\pm 0.2^{\circ}\text{C}$ DO: $\pm 0.1\text{mg/L}$ or 1% for 0-20mg/L; $\pm 5\%$ for 20-50mg/L Sal: $\pm 2\%$ of the reading or 0.2 ppt (whichever greater) pH: ± 0.2 units Turb: $\pm 3\%$ or 0.3NTU (FNU) (whichever greater)	19E100633
					19E100634
Current Velocity and Direction	Current Meter	Valeport Model 106	Speed: 0.03 to 5 m/s Direction: 0 to 360	Speed: $\pm 1.5\%$ of reading above 0.15m/s, ± 0.004 m/s below 0.15m/s Direction: $\pm 2.5^{\circ}$	67738
		River Surveyor M9	Water Depth: 0- 80m	Water Depth: 1% Current speed: $\pm 0.25\%$ of measured velocity or $\pm 0.2\text{cm/s}$ Current direction: $\pm 2^{\circ}$ degree magnetic	5906
Water Sampling	Water Sampler	Acrylic Beta Water Bottle Kit,	NA	NA	NA

Parameter	Equipment	Model	Range	Equipment Accuracy	Serial No.
		Horizontal, 3.2L / 4.2L			
Positioning	DGPS	Simrad MX521B Smart Antenna with Simrad MX610 CDU	NA	GPS: ±1m	NA
Water Depth	Echo Sounder	Garmin ECHO 101	Maximum depth: 457.2 m	0.1 m	NA

4.3 Equipment Calibration

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

4.4 Monitoring Parameters

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

Table 4.2 – Monitoring Parameters and Frequency

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

4.5 Monitoring Operation

- 4.5.1 The position of water monitoring station will be located by the Differential Global Positioning System (DGPS) or equivalent. The water depth of water monitoring station will be determined by the echo sounder affixed to the bottom of the monitoring vessel or a portable echo sounder depth detector.
- 4.5.2 Once the location and water depth are confirmed, water samples shall be collected at 3 depths (1m below the surface, mid-depth, and 1m above the seabed) of the water column at each location, except where water depth is less than 6m, the mid-depth will be omitted and if the

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

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

4.6 Laboratory Measurement / Analysis

Background

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

Quality Assurance / Quality Control

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

For each batch of 20 samples:

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

4.7 Monitoring Locations

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

Table 4.3 – Coordinates of Water Quality Monitoring Locations

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

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

4.8 Monitoring Results

- 4.8.1 The schedule of water quality monitoring in reporting month is provided in **Appendix E**.
- 4.8.2 Impact water quality monitoring was conducted at all designated monitoring stations in the reporting month. Impact water quality monitoring results and graphical presentations are provided in **Appendix F**.
- 4.8.3 The weather conditions during the monitoring are provided in **Appendix K**.
- 4.8.4 Number of Action/ Limit exceedance recorded in the reporting month at each impact stations is summarized in **Table 4.4**.

Table 4.4 – Summary of Water Quality Exceedance

Sampling Location	Exceedance Level	DO		Turbidity		Suspended Solids		Total	
		Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb
M1	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
M2	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
M3	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
Total	Action	0	0	0	0	0	0	0	
	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 19 November 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 17:58, 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 19 November 2021 and started around 16:39 (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 Chinese Pond Heron *Ardeola bacchus* (7 ind.), Eastern Cattle Egret *Bubulcus coromandus* (3 ind.) and Intermediate Egret *Egretta intermedia* (5 ind.) were observed in pre-roost aggregate (PRA) around 17:04 on the exposed mudflat east side (ANR1) of the Project boundary. No PRA was noted on the exposed mudflat northeast (ANR2) of the Project boundary during the period (**Table 5.2**).

For the final night roost at around 17:58, Chinese Pond Heron individuals were observed at both the roosting areas ANR1 (3 ind.) and ANR2 (64 ind.) utilizing the inside portions of the understory to canopy layers of the roosting substrate *Sonneratia apetala* and *S. caseolaris* while individuals of Little Egret *Egretta garzetta* (23 ind.) as noted at ANR2 utilized the canopy layer of the aforementioned roosting substrate.

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: 19 November 2021			Sunset Time: 17:39		
			Tidal Condition: Low Tide		
Pre-roost Period			Final roost Period		
Time of Return:	Chinese Pond Heron <i>Ardeola bacchus</i> , Eastern Cattle Egret (<i>Bubulcus coromandus</i>) Intermediate Egret <i>Egretta intermedia</i> (17:04)		Time of Return:	Chinese Pond Heron <i>Ardeola bacchus</i> and Little Egret <i>Egretta garzetta</i> (17:58)	
Parameters	Location		Parameters	Location	
	ANR1	ANR2		ANR1	ANR2
Pre-roost Aggregation (Y/N):	Y	N	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
Chinese Pond Heron <i>Ardeola bacchus</i>	7	-	Chinese Pond Heron <i>Ardeola bacchus</i>	3	64
Eastern Cattle Egret <i>Bubulcus coromandus</i>	3	-	Little Egret <i>Egretta garzetta</i>	-	23
Intermediate Egret <i>Egretta intermedia</i>	5	-			
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 19 November 2021 in concurrence with the construction phase monthly monitoring of the pre-identified active night roosts. Noise monitoring started at 17:58 and lasted for 30 minutes, until 18:28.

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

Table 5.3 – Noise Monitoring Results

Frequency and Period	Location	Start Time	L_{Aeq} (30 min.)	Action Level	Limit Level
Monthly in concurrence with the construction phase monthly monitoring of the active night roosts	NMS1	17:58	43.9	65.5 dB(A) ¹	72.2 dB(A) ²
	NMS2	17:58	40.2		

Notes:

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

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

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

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

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

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

5.1.5 Summary

5.1.5.1 Status and Location of Any Active Ardeid Night Roost

Two active ardeid night roost areas (ANR1 and ANR2) were observed within the Survey Area during the November 2021 monitoring period. These roosts were located at the mangrove strips in the east and northeast portions of the Project boundary. These were used by individuals of Chinese Pond Heron and Little Egret.

5.1.5.2 Noise Monitoring Results

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

5.2 Ecological Monitoring of Birds

5.2.1 Monitoring Requirement

With reference to **Section 7.3.6** of the **EM&A Manual**, monthly ecological monitoring of birds, focusing on avifauna species of conservation interest, and overwintering waterbirds utilising wetland habitats in Fung Lok Wai and Nam Sang Wai as well as along Shan Pui River and Kam Tin River within the monitoring area (500 m from the Project Boundary) 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 15 November 2021 (day time survey) which started around 07:30. Meanwhile, the survey overlooking the mudflats and mangroves in the Shan Pui River was concurrently conducted on the same date with the day time survey during the low tide (generally 1.5m or below) period at around 11:15. The methodology for the monitoring activity followed **Sections 8.3.3.6** and **8.3.3.7** of the **EIA Report (AEIAR-220/2019)** and as detailed below.

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

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

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

Table 5.4 - Noise Monitoring Parameters

Parameter	Frequency and Location
L _{Aeq} (30 min) (L ₁₀ and L ₉₀ 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 15 November 2021 (daytime survey) are presented in **Sections 5.2.3.1** and **5.2.3.2**. Meanwhile, results for the surveys overlooking the mudflats and mangroves in the Shan Pui River, with monitoring activities conducted on similar date with the day time survey during the low tide (generally 1.5m or below) period which started around 11:15 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 645 avifauna ind. was recorded in the monitoring area during the November 2021 monitoring period, of which 462 ind. were recorded from the point count method and 183 ind. from the transect walk method. Relative to the November 2016 baseline data (point count method = 608; and transect walk = 125), a current insignificant decrease in total

abundance for the point count method (t-value = 0.32; p-value = 0.75; $\alpha = 0.05$) and an increase in the transect walk method results were noted. 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	Nov-16	Nov -21	Remarks
P1	FLW1	8	77	+
P2	FLW2	13	6	-
P3	FLW3	9	23	+
P4	FLW4	66	41	-
P5	FLW5	21	72	+
P6	FLW6	64	39	-
P7	FLW7	48	20	-
P9	SP/NSW3	214	50	-
P10	SP/NSW2	52	39	-
P11	NSW1	48	55	+
P12	SP/NSW1	65	40	-
Total		608	462	-
Mean		55	42	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov -21	Remarks
Fung Lok Wai	FLW	107	150	+
Nam Sang Wai	NSW	18	14	-
YLIE-CW	YLIE-CW	0	19	+
Total		125	183	+
Mean		42	61	+

5.2.3.12 Avifauna Species of Conservation Importance

Of the 645 avifauna individuals recorded in the monitoring area during the November 2021 monitoring period, 339 ind. (point count method = 271 ind.; transect walk method = 68 ind.) were of conservation importance. With reference to November 2016 data, current results showed an insignificant decrease in total abundance of point count method (t-value = 0.18; p-value = 0.86; $\alpha = 0.05$) while an increase in transect walk method was noted. 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				

Abundance of Species of Conservation Importance				
EIA Report ID	EM&A Manual ID	Nov-16	Nov -21	Remarks
P1	FLW1	4	68	+
P2	FLW2	3	4	+
P3	FLW3	2	15	+
P4	FLW4	65	13	-
P5	FLW5	6	22	+
P6	FLW6	50	5	-
P7	FLW7	30	4	-
P9	SP/NSW3	163	35	-
P10	SP/NSW2	11	32	+
P11	NSW1	31	51	+
P12	SP/NSW1	29	22	-
Total		394	271	-
Mean		36	25	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov -21	Remarks
Fung Lok Wai	FLW	58	61	+
Nam Sang Wai	NSW	1	5	+
YLIE-CW	YLIE-CW	0	2	+
Total		59	68	+
Mean		20	23	+

5.2.3.2 Diversity (Species Richness¹ and Shannon Diversity Index²)

5.2.3.2.1 All Avifauna Species

A total of 44 avifauna species (species richness) was recorded during the November 2021 monitoring period, of which, 40 spp. were recorded by the point count method while 21 spp. were noted by the transect walk method. Relative to the baseline data (point count method = 48 spp.; transect walk method = 20 spp.), decrease in total species richness for the point count method was noted while an increase of total species richness in transect walk method was observed. In terms of Shannon diversity index (H'), an increase from baseline reference values was observed in point count method while an insignificant decrease of H' in transect walk method (t -value = 0.21; t -crit = 1.97; p -value = 0.84; α = 0.05) was noted. Details of these findings are summarized in **Table 5.7**.

¹ actual number of species

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

Table 5.7 – Shannon Diversity Index Value of all Avifauna Species

Shannon Diversity Index Value of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov -21	Remarks
P1	FLW1	1.32	0.80	-
P2	FLW2	1.59	1.56	-
P3	FLW3	1.68	1.19	-
P4	FLW4	0.78	1.54	+
P5	FLW5	1.34	2.20	+
P6	FLW6	1.49	2.06	+
P7	FLW7	1.95	1.90	-
P9	SP/NSW3	2.43	2.23	-
P10	SP/NSW2	2.22	2.36	+
P11	NSW1	1.91	0.43	-
P12	SP/NSW1	2.62	2.61	-
Overall H'		2.81	2.82	+
Species Richness		48	40	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov -21	Remarks
Fung Lok Wai	FLW	2.12	2.16	+
Nam Sang Wai	NSW	1.77	1.91	+
YLIE-CW	YLIE-CW	**	1.91	+
Overall H'		2.39	2.36	-
Species Richness		20	21	+

Note:

** no species recorded

5.2.3.2.2 Avifauna Species of Conservation Importance

Of the 44 species of avifauna identified during the November 2021 monitoring period, 17 species were of conservation importance (point count method = 17 spp.; transect walk method = 7 spp.). Relative to the baseline values in November 2016, decrease in the number of species with conservation importance was recorded from the point count method while no change in the number of species with conservation importance for the transect walk method was noted. In terms of H', no significant decline (t-value = 1.82; t-crit = 1.96; p-value = 0.07; α = 0.05) was observed from the point count method, from H' = 1.91 in November 2016 to H' = 1.71 of the current period. An insignificant current decline in transect walk method results (t-value = 0.18; t-crit = 1.98; p-value = 0.86; α = 0.05) with respect to the baseline value of H' = 1.12 was also noted. Details of these findings are summarized in **Table 5.8** and **Appendix F.8**.

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

Shannon Diversity Index Value of Species with Conservation Importance				
Point Count Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov -21	Remarks
P1	FLW1	0.69	0.37	-
P2	FLW2	0	1.04	+
P3	FLW3	0.35	0	-
P4	FLW4	0.72	0.27	-
P5	FLW5	1.01	1.15	+
P6	FLW6	0.92	0.67	-
P7	FLW7	1.33	1.39	+
P9	SP/NSW3	1.97	1.76	-
P10	SP/NSW2	1.26	2.06	+
P11	NSW1	1.19	0.10	-
P12	SP/NSW1	2.35	1.87	-
Overall H'		1.91	1.71	-
Species Richness		20	17	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov -21	Remarks
Fung Lok Wai	FLW	1.10	0.99	-
Nam Sang Wai	NSW	0	1.05	+
YLIE-CW	YLIE-CW	**	0.69	+
Overall H'		1.12	1.08	-
Species Richness		7	7	=

Note:

** no species recorded

5.2.3.3 Wetland Habitat Utilization

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

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

5.2.3.3.1 All Avifauna Species

During the current monitoring period, majority of the wetland habitats were less utilized by avifauna communities in terms of their abundances (very low) although some areas such as Active Ponds adjacent to Project site in Fung Lok Wai, and Active Ponds North to Nullah 2 in Fung Lok Wai were noted with low to moderate number of avifauna individuals. In terms of

species richness, particularly high to very high number of species were present in Upper course of Shan Pui River along YLIE, and Active Ponds North to Nullah 2 in Fung Lok Wai during the period (Table 5.9).

Table 5.9 – Wetland habitat utilization of all avifauna species

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

Notes:

- Abundance of avifauna species of conservation importance amongst wetland habitats within the assessment area: VL = Very Low (~<50 individuals); L = Low (~100 individuals); M = Moderate (~300 individuals); H = High (~500 individuals), VH = Very High (>700 individuals)
 - Species richness (total number of species) amongst wetland habitats within the assessment area: VL = Very Low (≤5 species); L = Low (~10 species); M = Moderate (~15 species); H = High (~20 species), VH = Very High (>25 species)
- : no recorded individuals

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

5.2.3.3.2 Avifauna Species of Conservation Importance

Majority of the wetland habitats were less utilized by avifauna communities in terms of their abundances (very low) although one habitat, the Active Ponds adjacent to Project site in Fung Lok Wai, was observed with low to moderate abundance (L-M). In terms of species richness, majority of the wetland habitats were also consequently 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	VL	VL-L
	Shan Pui River adjacent to Project site	VL	L
	Upper course of Shan Pui River along YLIE	VL	VL-L
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai	L-M	VL

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

Notes:

- Abundance of avifauna species of conservation importance amongst wetland habitats within the assessment area: VL = Very Low (~<50 individuals); L = Low (~100 individuals); M = Moderate (~300 individuals); H = High (~500 individuals), VH = Very High (>700 individuals)
- Species richness (total number of species) of conservation important species amongst wetland habitats within the assessment area:
VL = Very Low (≤ 5 species); L = Low (~10 species); M = Moderate (~15 species); H = High (~20 species), VH = Very High (>25 species)
-: no recorded individuals
Source: approved EIA Report (AEIAR-220/2019)

5.2.3.3 Overwintering Avifauna Species

A total of 14 winter visitor species were observed utilizing the wetland habitats within the survey area during this monitoring period. Majority of these wetland habitats were noted with very low (VL) abundances and species richness of overwintering avifauna species (**Table 5.11**).

Table 5.11 – Wetland habitat utilization of overwintering avifauna species

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

Notes:

- Abundance of avifauna species of conservation importance amongst wetland habitats within the assessment area: VL = Very Low (~<50 individuals); L = Low (~100 individuals); M = Moderate (~300 individuals); H = High (~500 individuals), VH = Very High (>700 individuals)
- Species richness (total number of species) of conservation important species amongst wetland habitats within the assessment area:
VL = Very Low (≤ 5 species); L = Low (~10 species); M = Moderate (~15 species); H = High (~20 species), VH = Very High (>25 species)
-: no recorded individuals
Source: approved EIA Report (AEIAR-220/2019)

5.2.3.4 Noise Levels

Noise levels L_{Aeq} (30 min) recorded on 15 November 2021 (daytime) from each of the point count locations during the ecological bird monitoring are shown in **Table 5.12**.

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

Frequency and Period	Location	Daytime (15/11/2021)	
		Start Time	L_{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1	08:20	47.4
	FLW2	07:50	56.4
	FLW3	07:50	52.2
	FLW4	09:30	49.3
	FLW5	10:30	52.5
	FLW6	09:55	47.0
	FLW7	10:05	48.6
	SP/NSW3	11:45	52.8
	SP/NSW2	11:15	54.2
	NSW1	11:45	50.5
	SP/NSW1	11:15	54.4

6. LANDSCAPE AND VISUAL

6.1 Audit Requirements

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

6.2 Results and Observations

6.2.1 To monitor and audit the implementation of landscape and visual mitigation measures, five weekly landscape and visual site audits were carried out on 3, 9, 17, 24 and 30 November 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 1 November 2021.
- 7.1.2 Risk-Based Remediation Goals (RBRGs) for Industrial have been adopted for the “Mechanical Workshop” and the laboratory results for the sampling works (conducted between 23 July 2021 to 4 August 2021) show that there are no exceedances of the adopted RBRGs for the “Mechanical Workshop”. As no contaminated soil and groundwater was found within the “Mechanical Workshop”, no remediation actions are required for contaminated soil and groundwater for the scheduled land use of the “Mechanical Workshop”. Their findings are summarized in Contamination Assessment Report (CAR) and submitted to EPD on 23 November 2021.

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, five site inspections were carried out on 3, 9, 17, 24 and 30 November 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 management of waste generated by the construction is presented in **Table 8.1**.

Table 8.1 – Waste Generated by the Construction and Disposal Ground

Types of Waste	Disposal Ground
Inert C&D Waste (Excluding slurry and bentonite)	Tuen Mun Area 38
Inert C&D Waste (For slurry and bentonite)	Tseung Kwan O Area 137
Non-inert C&D Materials	North East New Territories Landfill (NENT)

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

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

9.1 Non-compliance (Exceedances of AL levels)

- 9.1.1 No Action / Limit Level exceedance was recorded for 1-hr TSP level at AM1 and AM2 in the reporting month.
- 9.1.2 No Action / Limit Level exceedance was recorded for construction noise at CM1, CM2 and CM3 in the reporting month.
- 9.1.3 No Action and Limit Level exceedance were recorded for water quality at M1, M2 and M3 in the reporting month.
- 9.1.4 No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the active ardeid night roosts in the reporting month.
- 9.1.5 No Action / Limit exceedance was noted for the ecological monitoring of birds in the reporting month.
- 9.1.6 No corrective actions were required according to the Even-Action Plans.

9.2 Complaints, Notification of Summons and Prosecution

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

10. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE

10.1 Implementation Status

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

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

Table 10.1 – Summary of EP Submissions Status

EP Condition (EP-565/2019)	Submission Title	Submission Status
Condition 2.9	Construction Phase Emergency Response Plan	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.11	Pre-construction Ardeid Night Roost Survey Report	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
EM&A Manual Sec. 7.3.3 & 7.3.4	Baseline Bird Survey Report	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.12	Noise Mitigation Measures Plan	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.13	Proposal for Minimization of Overspill Light to Ecological Sensitive Areas	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.14	Supplementary Contamination Assessment Plan	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 2.14	Contamination Assessment Report for Main Storeroom & Workshops	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.14	Contamination Assessment Report for Mechanical Workshop	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 2.15	Landscape and Visual Mitigation Plan	Submitted to EPD with ET certification and IEC verification, to be finalised and made available for public inspection via the dedicated website.
Condition 3.3	Baseline Monitoring Report	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.
Condition 3.4	Monthly EM&A Report (from April to October 2021)	Submitted to EPD with ET certification and IEC verification, finalised and available for public inspection via the dedicated website.

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

11. FUTURE KEY ISSUES

11.1 Construction Programme for the Next Three Month

- Demolition of FST no. 5-8, Sludge Holding Tanks no. 3 & 4, Auxiliary Pumping Station and Carparks;
- Construction RC structure for Temp. Thickening tank (Zone 3B);
- Laying pipes and construction of RC chamber at Zone 2A and subsequence diversion work (nights work);
- Env. Drill holes at Waste Storage Area;
- Sheet pile installation at IW & PST;
- Installation of sheet pile, excavation and construction of temporary chamber at Zone 2B;
- Construction RC structure at zone 3 (Temp. water heater house and temp. thickening tank);
- Pipe Laying for Zone 3;
- Env. Drill holes at Air Floatation Thickener;
- Installation of sheet pile at Auxiliary Pumping Station;
- Installation of sheet pile for demolition of Aeration Tank no. 5-8 at AGS;
- Construction of temp. transformer room (1600A);
- Construction of Digested Sludge Pumping Station (Zone 3A); and
- Construction of Temp. Sludge Gravity Thickening Tank (Zone 3B).

11.2 Key Issues for the Coming Month

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

11.3 Monitoring Schedules for the Next Three Month

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

12. CONCLUSION AND RECOMMENDATION

12.1 Conclusions

- 12.1.1 1-hour TSP impact monitoring was carried out in the reporting month. No Action / Limit Level exceedance at AM1 and AM2 was recorded during the period.
- 12.1.2 Construction noise monitoring was carried out in the reporting month. No Action / Limit Level exceedance at CM1, CM2 and CM3 was recorded during the period.
- 12.1.3 No Action and Limit Level exceedance was recorded for water quality at M1, M2 and M3 in the reporting month.
- 12.1.4 Ardeid night roost monitoring was carried out in the reporting month. Two active ardeid night roost areas (ANR1 and ANR2) were observed within the Survey Area. These roosts were located at the mangrove strips in the east and northeast portions of the Project boundary. No Action / Limit Level exceedance at NMS1 and NMS2 was recorded during the period.
- 12.1.5 Ecological bird monitoring was carried out in the reporting month. No Action / Limit Level exceedance was recorded for the ecological monitoring of birds on this period.
- 12.1.6 Five environmental site inspections were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.
- 12.1.7 Five landscape and visual site audits were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.
- 12.1.8 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 reminded to cover the excavated soil properly with tarpaulin sheets to prevent dust emission.
- The Contractor is reminded to increase watering for dust suppression at loading/unloading area.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- No specific observation was identified in the reporting month .

Chemical and Waste Management

- Clean up the oil stain on road in front of Methane Compressor House with chemical absorbent pad and treat it as chemical waste for disposal.

Land Contamination

- No specific observation was identified in the reporting month.

Ecological Impact

- No specific observation was identified in the reporting month.

Landscape and Visual Impact

- Keep area around retained trees clear of construction material as far as possible.
- Keep tree protection zone clear of construction equipment / tools .
- Keep tree protection zone free of stockpiling or construction materials.

Hazard to Life

- No specific observation was identified in the reporting month.

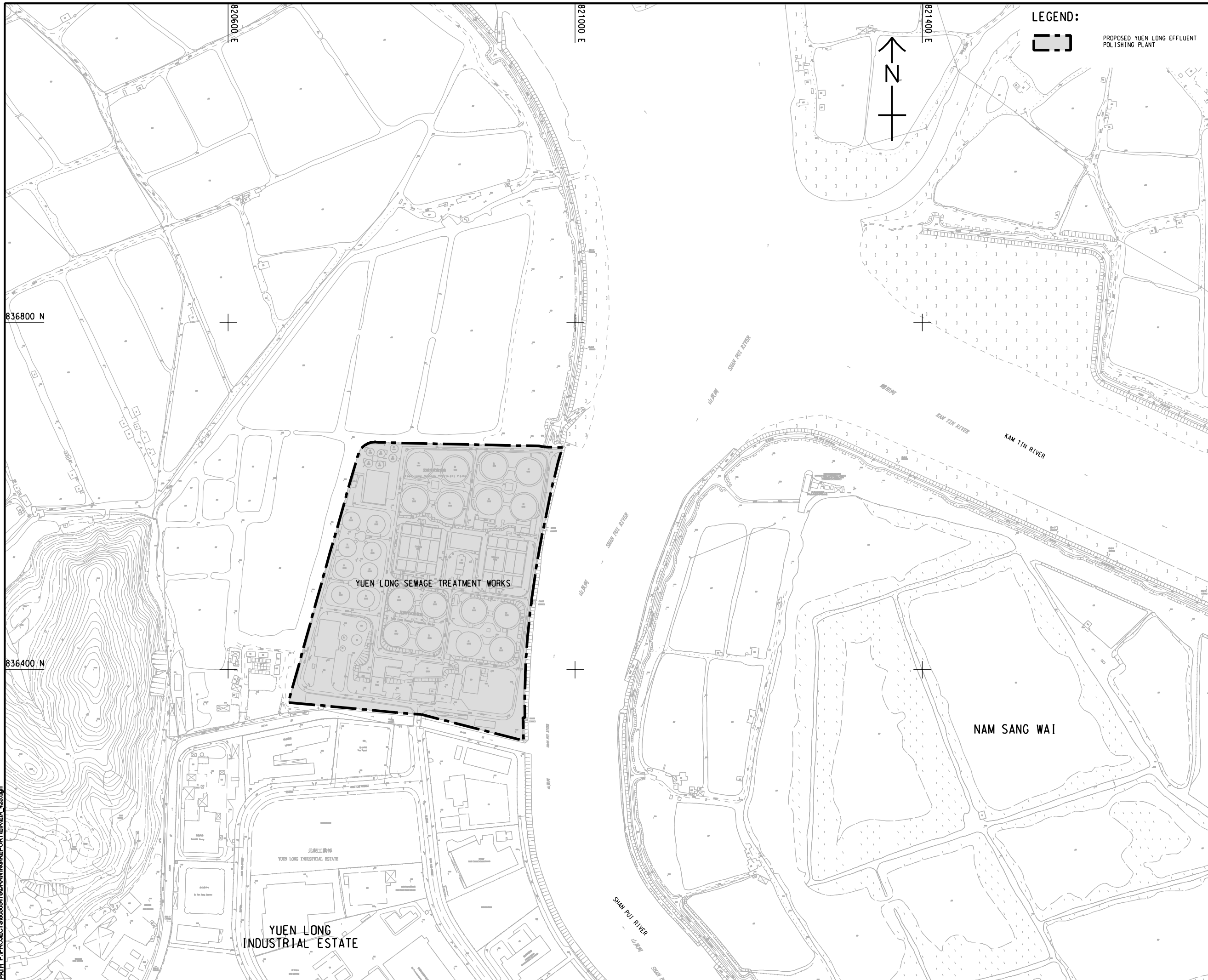
Permit/ Licenses


- No specific observation was identified in the reporting month.

Figure 1

Location of Proposed Yuen Long Effluent
Polishing Plant

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

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 Drainage Services Department

CONSULTANT
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KEY PLAN
 索引圖

PROJECT NO.
 項目編號: 60505476

CONTRACT NO.
 合約編號: CE 3/2015 (DS)

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

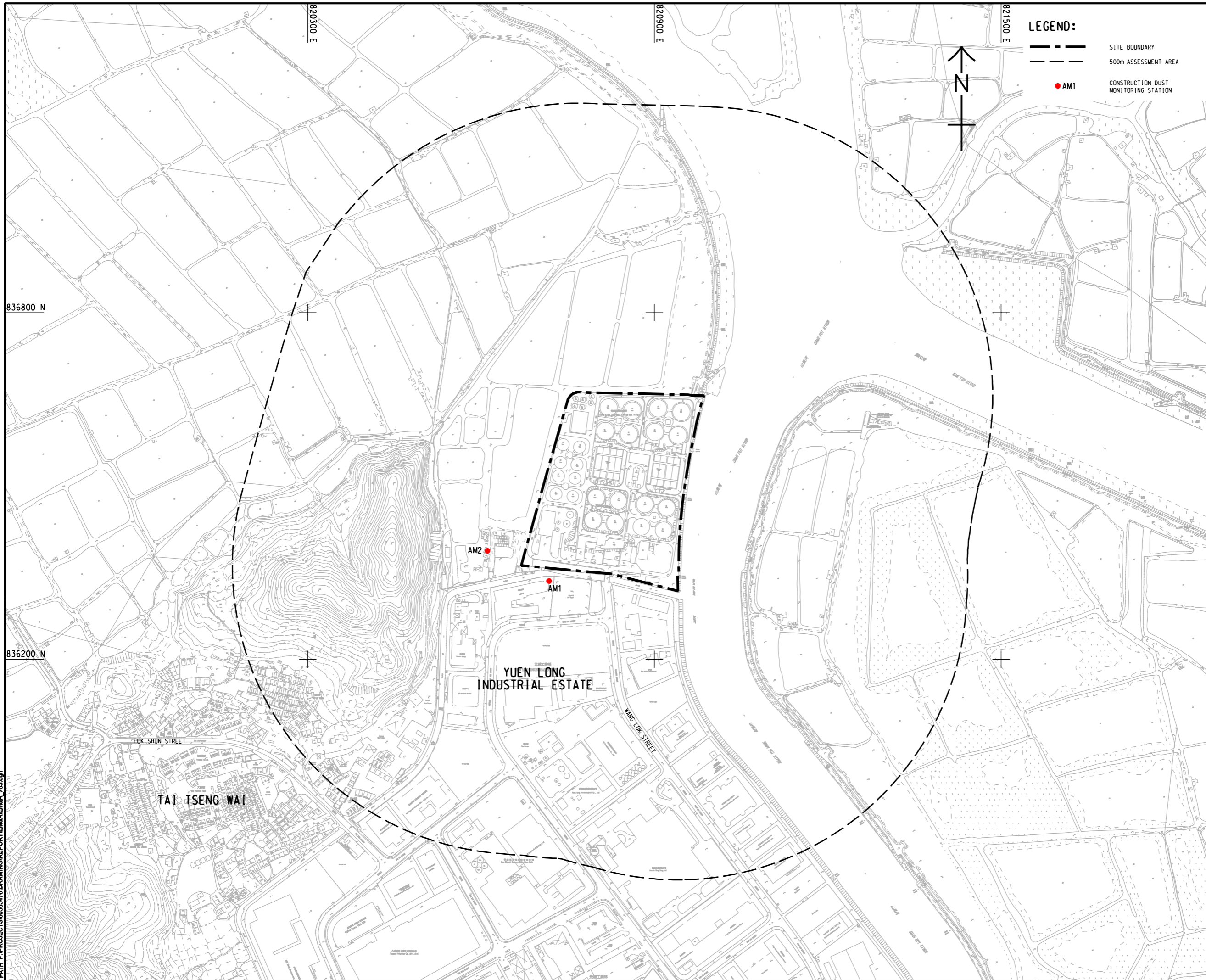
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Figure 2

Air Quality Monitoring Locations

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 Designer:
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 836200 N
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LEGEND:

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



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

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CONTRACT NO.
 合約編號
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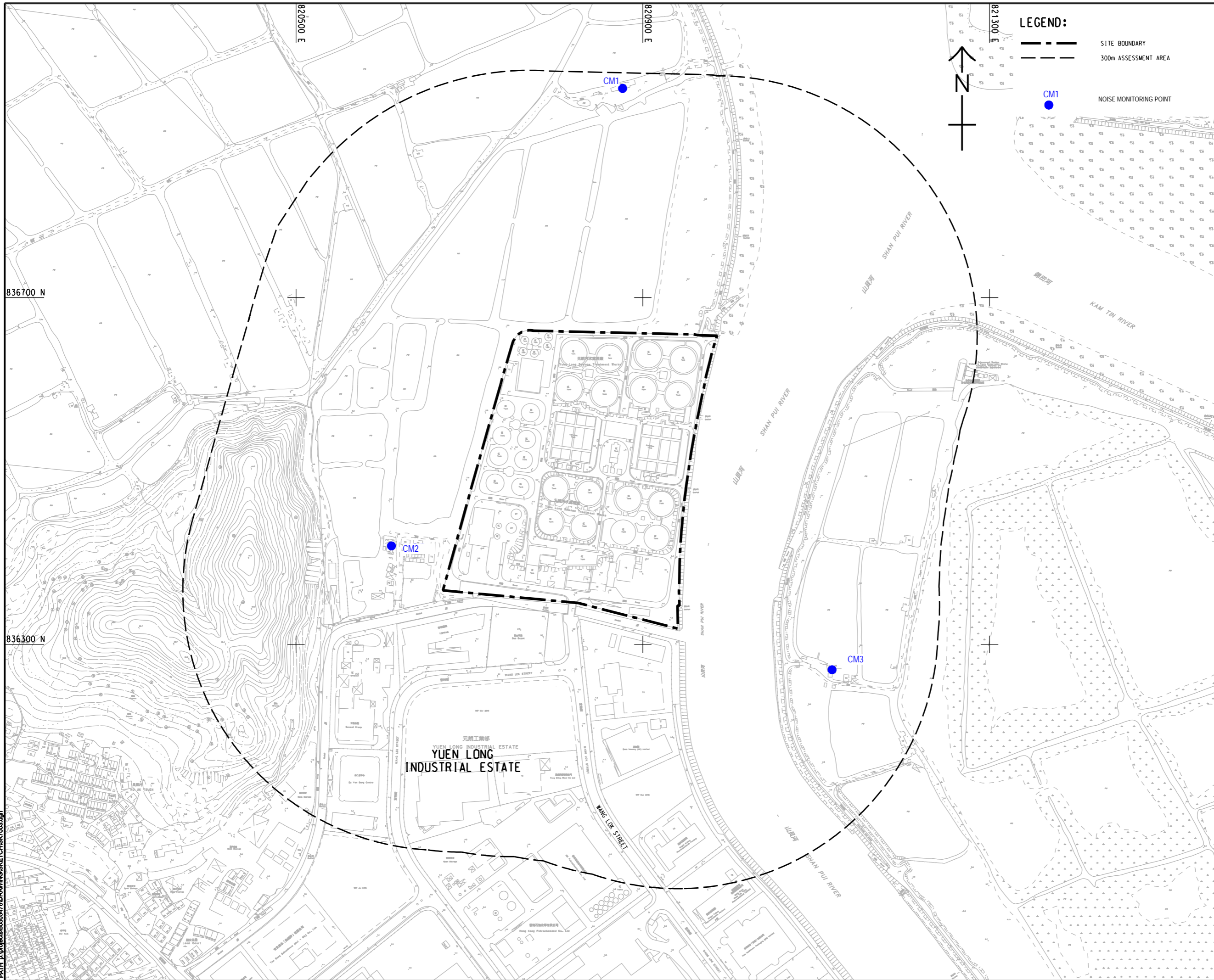
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 LOCATION OF CONSTRUCTION DUST MONITORING STATIONS

SHEET NUMBER
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Figure 3

Noise Monitoring Locations



LEGEND:

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



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

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LOCATIONS OF NOISE MONITORING POINTS

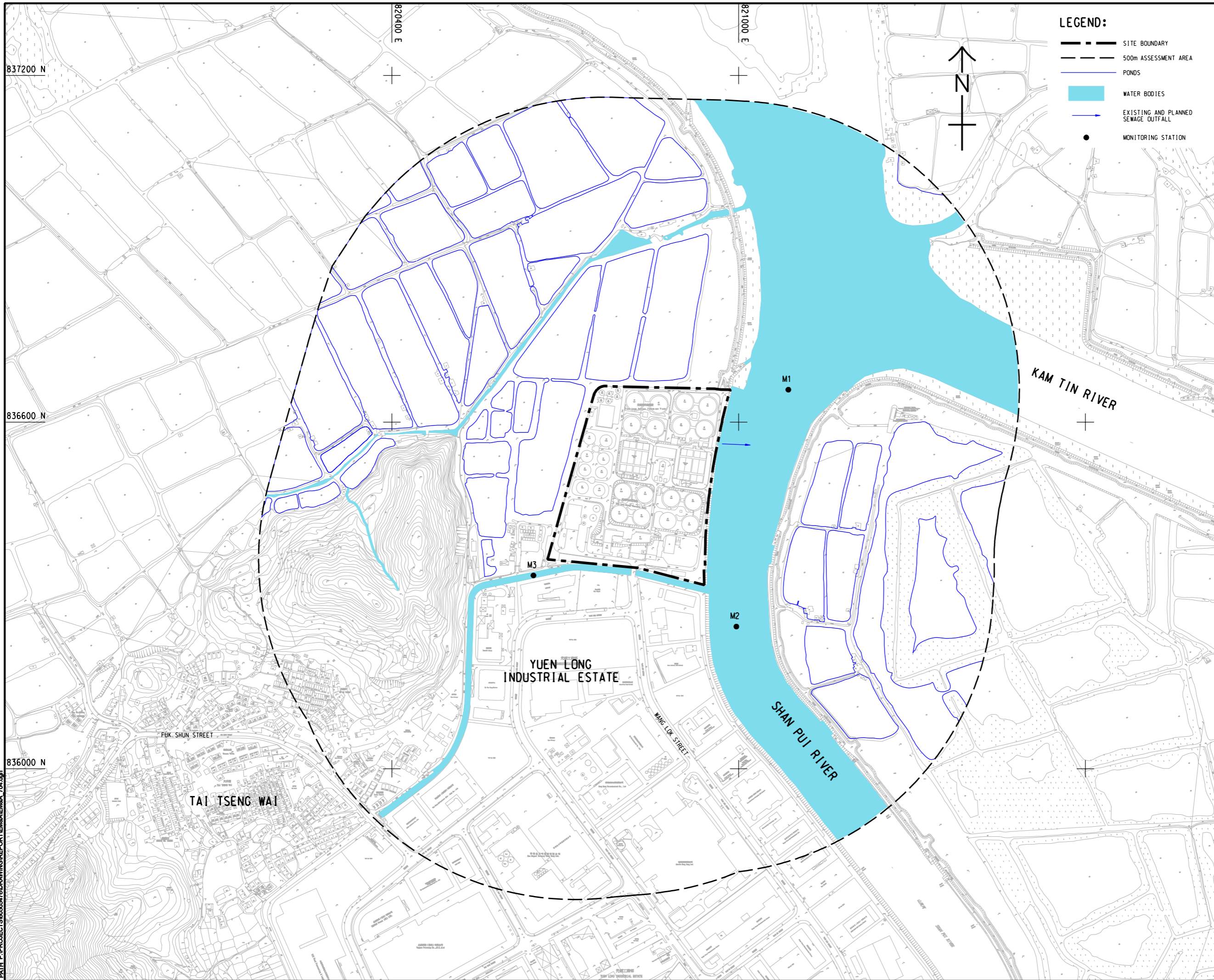
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Figure 4

Water Quality Monitoring Locations

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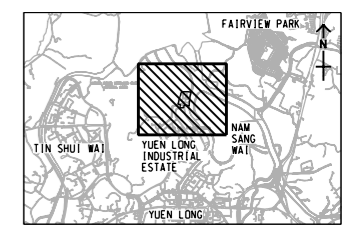
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SHEET TITLE
 圖名
 LOCATIONS OF WATER QUALITY MONITORING STATIONS FOR CONSTRUCTION PHASE

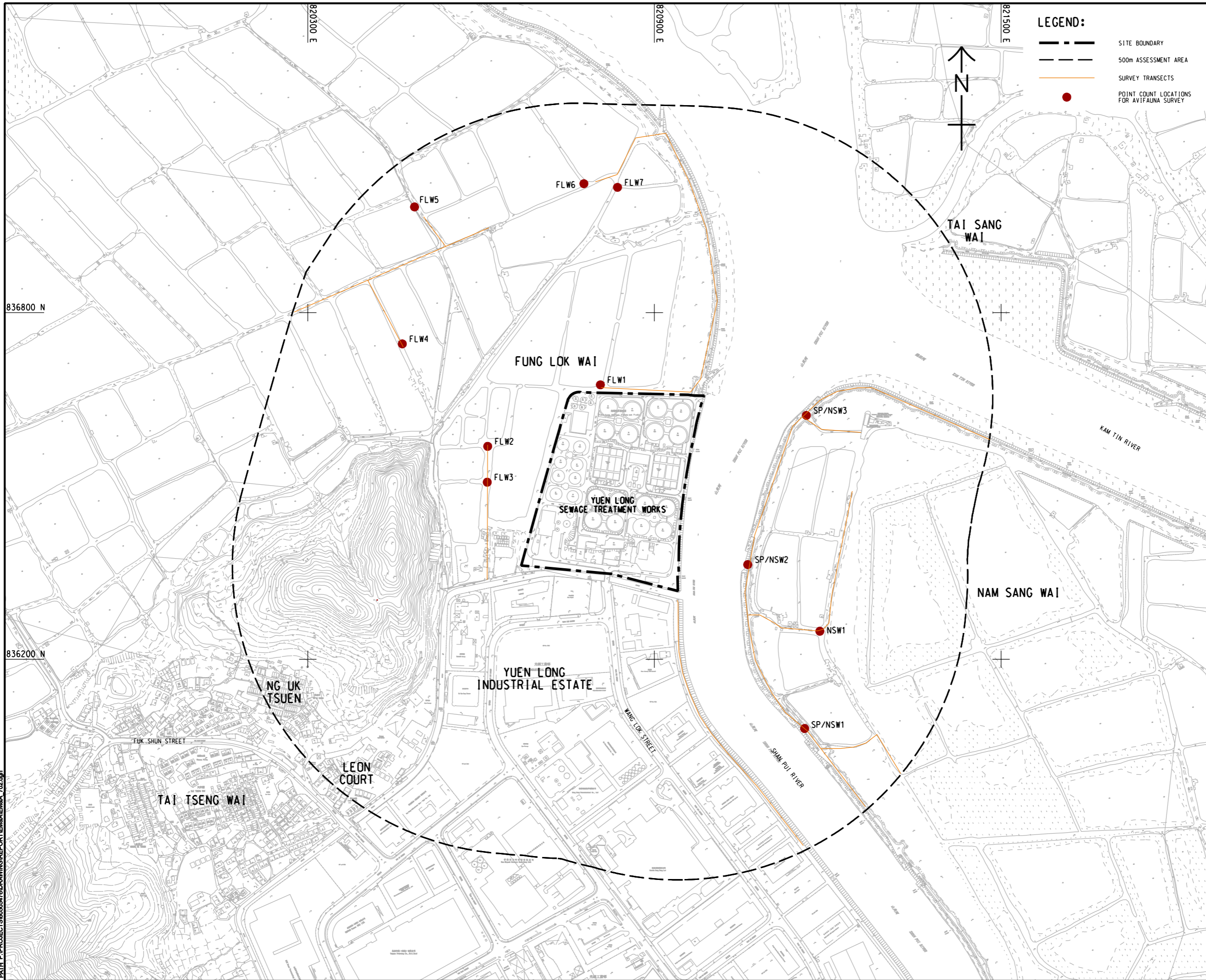
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Figure 5

Ecology Monitoring Locations

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LEGEND:

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

AECOM

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

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 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	Gantt Chart																																	
								2022	2023	2024	2025	2026	2027	2028																											
YL Effluent Polishing Plant - Main Works Stage 1 - Detailed Works Programme								2202	27-Oct-20 A	09-Nov-27	30-Oct-21	09-Nov-27	0	[Gantt Chart]																											
UPDATE	Data Date DWP Revision 5	0		31-Aug-21 A		07-Nov-21		Data Date DWP Revision 5																																	
UPDATE-R6	Data Date DWP Revision 6	0		30-Sep-21 A		07-Nov-21		Data Date DWP Revision 6																																	
Contract Data Part 1								2569	27-Oct-20 A	09-Nov-27	30-Oct-21	09-Nov-27	0	[Gantt Chart]																											
Commencement Date								2569	27-Oct-20 A	09-Nov-27	30-Oct-21	09-Nov-27	0	[Gantt Chart]																											
CD1	Contract Date	0	27-Oct-20 A		30-Oct-21			[Gantt Chart]																																	
CD2	Starting Date	0	09-Nov-20 A		30-Oct-21			[Gantt Chart]																																	
CD3	Contract Completion	0	09-Nov-26		09-Nov-26		0	Contract Completion																																	
CD4	Establishment Period (12 months)	0	09-Nov-27		09-Nov-27		0	Establishment Period																																	
CD5	Defect Date (12 months)	0	09-Nov-27		09-Nov-27		0	Defect Date																																	
Access Dates								1599	09-Nov-20 A	27-Mar-25	31-Oct-21	04-Jun-27	799	[Gantt Chart]																											
ADP1	Portion 1 (sd)	0	09-Nov-20 A		08-Nov-21			[Gantt Chart]																																	
ADWA1	Work Area WA1 (sd)	0	09-Nov-20 A		04-Jun-27			[Gantt Chart]																																	
ADWA2	Work Area WA2 (sd) (new site possession) validity for 12 months and subject to renewal	365	05-Mar-21 A	03-Mar-22*	31-Oct-21	04-Mar-22	1	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		25-Nov-21			[Gantt Chart]																																	
ADP5	Portion 5 (sd+944d)	0	11-Jun-23*		11-Jun-23		0	Portion 5 (sd+944d)																																	
ADP3	Portion 3 (sd+1218d)	0	11-Mar-24*		10-Mar-24		0	Portion 3 (sd+1218d)																																	
ADP4	Portion 4 (sd+1599d)	0	27-Mar-25*		27-Mar-25		0	Portion 4 (sd+1599d)																																	
Contract Key Dates								1765	07-Apr-21 A	05-Feb-26	08-Jan-24	09-Nov-27	641	[Gantt Chart]																											
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 (8 Jan 24)	0		08-Jan-24*		08-Jan-24	0	Completion of Civil & Structural works of roof floor of sludge thickening bldg (8 Jan 24)																																	
CKD3	KD3 - Early Commissioning of Inlet Works 100,000m3/d at ADWF, PST-54,000m3/d at ADWF, Civil, struct., E&M & BS (11 Mar 24)	0		11-Mar-24*		11-Mar-24	0	Early Commissioning of Inlet Works 100,000m3/d at ADWF, PST-54,000m3/d at ADWF, Civil, struct., E&M & BS (11 Mar 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 ADWF (5 Feb 26)	0		05-Feb-26*		05-Feb-26	0	Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at ADWF (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	[Gantt Chart]																											
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-Oct-21	09-Nov-27	587	[Gantt Chart]																											
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 A	31-Oct-21	31-Oct-21		Egrets Breeding Season 2021																																	
EBS-2155	Egrets Breeding Season 2022	184	01-Mar-22*	31-Aug-22*	01-Mar-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								2036	07-Apr-21 A	03-Nov-26	06-Oct-22	09-Nov-27	370	[Gantt Chart]																											
Planned Key Dates								1765	07-Apr-21 A	05-Feb-26	08-Jan-24	09-Nov-27	641	[Gantt Chart]																											
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 (8 Jan 24)	0		08-Dec-23*		08-Jan-24	31	Completion of Civil & Structural works of roof floor of sludge thickening bldg (8 Jan 24)																																	
PPKD3	KD3 - Early Commissioning of Inlet Works 100,000m3/d at ADWF, PST-54,000m3/d at ADWF, Civil, struct., E&M & BS (11 Mar 24)	0		11-Mar-24*		11-Mar-24	0	Early Commissioning of Inlet Works 100,000m3/d at ADWF, PST-54,000m3/d at ADWF, Civil, struct., E&M & BS (11 Mar 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)																																	
PPKD4	KD4 - Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at ADWF (5 Feb 26)	0		05-Feb-26*		05-Feb-26	0	Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at ADWF (5 Feb 26)																																	
PKD6	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)																																	
Planned Section Completion								1489	06-Oct-22	03-Nov-26	06-Oct-22	08-Nov-26	5	[Gantt Chart]																											
PSC1	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)																																	
PSC2	Section 2 - Landscape Softworks except those Works under other sections (sd+2190d=08NOV2026)	0		03-Nov-26*		08-Nov-26	5	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		03-Nov-26*		08-Nov-26	5	Section 3 - Remainder of the Works, except Landscape Softworks & Establishment Works (sd+2190d=08NOV2026)																																	
Notification of Compensation Events								1727	30-Oct-21	22-Jul-26	22-Jul-26	08-Nov-27	474	[Gantt Chart]																											
NCE51	Impacted KD3 due to NCE No. 051 (XX Oct 2021)	0		30-Oct-21		08-Nov-27	2201	Impacted KD3 due to NCE No. 051 (XX Oct 2021)																																	
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								1751	27-Oct-20 A	31-May-26	30-Oct-21	09-Nov-27	451	[Gantt Chart]																											
Subletting								680	27-Oct-20 A	06-Sep-22	30-Oct-21	09-Nov-27	1889	[Gantt Chart]																											
SUB-110	Prebid - Ground Investigation Works	0		27-Oct-20 A		08-Nov-21		Ground Investigation Works																																	
SUB-120	Prebid - Demolition of existing building and structure	0		27-Oct-20 A		10-Nov-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		08-Nov-21		Piling works for Inlet works and PST																																	
SUB-150	Prebid - E&M works	0		27-Oct-20 A		11-Apr-22		E&M works																																	
SUB-160	Submit/Approve Sub-letting Procedures	60	09-Nov-20 A	07-Jan-21 A	30-Oct-21	30-Oct-21		Sub-letting Procedures																																	
SUB-180	Subletting for MIC works	40	08-Jan-21 A	16-Feb-21 A	01-Dec-21	01-Dec-21		MIC works																																	



- █ Remaining Level of Effort
- █ DWP Rev.5
- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work

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

Detailed Works Programme

Project ID : DWP.DPR7_211030
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Detailed Works Programme			
Date	Revision	Checked	Approved
30-Oct-21	Rev. 7		
30-Sep-21	Rev. 6		
31-Aug-21	Rev. 5		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart																							
								2022	2023	2024	2025	2026	2027	2028																	
SUB-190	Subletting for Landscaping works	30	08-Jan-21 A	06-Feb-21 A	08-Nov-21	08-Nov-21		Landscaping works																							
SUB-200	Subletting for UU detection	44	08-Jan-21 A	20-Feb-21 A	02-Dec-21	02-Dec-21		UU detection																							
SUB-210	Subletting for Design Consultant	22	08-Jan-21 A	29-Jan-21 A	30-Oct-21	30-Oct-21		Design Consultant																							
SUB-100	Subletting for Diversion Works (Zone 1)	84	30-Jan-21 A	22-Apr-21 A	27-Nov-21	27-Nov-21		Diversion Works (Zone 1)																							
SUB-170	Subletting for Diversion Works (Zone 2)	84	30-Jan-21 A	23-Apr-21 A	30-Oct-21	30-Oct-21		Diversion Works (Zone 2)																							
SUB-370	Subletting for Instrumentation installation and monitoring	67	11-Feb-21 A	18-Apr-21 A	08-Nov-21	08-Nov-21		Instrumentation installation and monitoring																							
SUB-220	Subletting for Sheet piling works for IW, PST	150	15-May-21 A	11-Oct-21 A	01-Nov-21	01-Nov-21		Sheet piling works for IW, PST																							
SUB-260	Subletting for Diversion Works (Zone 3)	80	01-Jun-21 A	23-Jul-21 A	01-Nov-21	01-Nov-21		Diversion Works (Zone 3)																							
SUB-230	Subletting for CLP Substation No.1 & 2 Structure	100	01-Jun-21 A	07-Nov-21	22-Nov-21	30-Nov-21	23	CLP Substation No.1 & 2 Structure																							
SUB-330	Subletting for Dewatering System	30	02-Jun-21 A	01-Jul-21 A	08-Nov-21	08-Nov-21		Dewatering System																							
SUB-250	Subletting for Ground Improvement works for Biogas Holder	86	07-Jul-21 A	30-Oct-21	25-Feb-22	25-Feb-22	118	Ground Improvement works for Biogas Holder																							
SUB-240	Subletting for CLP Substation No.1 & 2 ABWF & BS	100	30-Aug-21 A	15-Jan-22	11-Feb-22	20-Apr-22	95	CLP Substation No.1 & 2 ABWF & BS																							
SUB-270	Subletting for ELS works for IW, PST, SDB, STB, SD, MBB, TTB, underpass and open cut for admin. bldg	50	12-Oct-21 A	28-Nov-21	01-Nov-21	30-Nov-21	2	ELS works for IW, PST, SDB, STB, SD, MBB, TTB, underpass and open cut for admin. bldg																							
SUB-380	Subletting for Sheet piling works for remaining areas	150	12-Oct-21 A	09-Mar-22	22-Nov-21	01-Apr-22	23	Sheet piling works for remaining areas																							
SUB-280	Subletting for RC works for IW, PST, SDB, STB, SD, Biogas holder, underpass and admin. bldg	105	29-Nov-21	13-Mar-22	01-Dec-21	15-Mar-22	2	RC works for IW, PST, SDB, STB, SD, Biogas holder, underpass and admin. bldg																							
SUB-350	Subletting for Waterproofing membrane and protection board	86	29-Nov-21	22-Feb-22	01-Dec-21	24-Feb-22	2	Waterproofing membrane and protection board																							
SUB-360	Subletting for Rebar fixing	86	29-Nov-21	22-Feb-22	01-Dec-21	24-Feb-22	2	Rebar fixing																							
SUB-310	Subletting for Utilities Corridor ELS	90	30-Dec-21	29-Mar-22	07-Jan-22	06-Apr-22	8	Utilities Corridor ELS																							
SUB-290	Subletting for ABWF works for IW, PST, SDB, STB, MBR, TTB and admin. bldg	60	14-Mar-22	12-May-22	03-Jan-23	03-Mar-23	295	ABWF works for IW, PST, SDB, STB, MBR, TTB and admin. bldg																							
SUB-320	Subletting for Trellis outside Admin. building & Steel Working Platform	120	10-May-22	06-Sep-22	09-Feb-25	08-Jun-25	1006	Trellis outside Admin. building & Steel Working Platform																							
SUB-340	Subletting for Drainage, Sewage & waterworks	86	13-May-22	06-Aug-22	20-Oct-25	13-Jan-26	1256	Drainage, Sewage & waterworks																							
SUB-300	Subletting for RC works for MBR, Ancillary Building, TTB	60	19-Jun-22	17-Aug-22	18-Aug-22	16-Oct-22	60	RC works for MBR, Ancillary Building, TTB																							
Design Submission		1562	30-Jan-21 A	10-May-25	30-Oct-21	09-Nov-27	912																								
Temporary Works Design		1269	02-Mar-21 A	21-Aug-24	30-Oct-21	05-Nov-25	441																								
Inlet Work and Primary Sedimentation Tank		256	02-Mar-21 A	03-Nov-21	30-Oct-21	10-Nov-21	6																								
TWD-100	ELS Stage 1 - Prepare & Submission for PM's review	46	02-Mar-21 A	16-Apr-21 A	30-Oct-21	30-Oct-21		Stage 1 - Prepare & Submission for PM's review																							
TWD-420	ELS Stage 2 - Prepare & Submission for PM's review	72	05-Apr-21 A	15-Jun-21 A	05-Nov-21	05-Nov-21		Stage 2 - Prepare & Submission for PM's review																							
TWD-110	ELS Stage 1 - Review by PM's & ICE review (28 d + 7d)	36	02-Jun-21 A	07-Jul-21 A	30-Oct-21	30-Oct-21		Stage 1 - Review by PM's & ICE review (28 d + 7d)																							
TWD-430	ELS Stage 2 - Review by PM's & ICE review (28 d + 7d)	36	16-Jun-21 A	21-Jul-21 A	05-Nov-21	05-Nov-21		Stage 2 - Review by PM's & ICE review (28 d + 7d)																							
TWD-120	ELS Stage 1 - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	15	03-Jul-21 A	17-Jul-21 A	30-Oct-21	30-Oct-21		Stage 1 - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																							
TWD-440	ELS Stage 2 - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	15	22-Jul-21 A	30-Oct-21	05-Nov-21	05-Nov-21	6	Stage 2 - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																							
TWD-500	ELS Stage 1 - Submit to GEO (Dewatering Proposal)	29	23-Aug-21 A	30-Oct-21	30-Oct-21	30-Oct-21	0	Stage 1 - Submit to GEO (Dewatering Proposal)																							
TWD-510	ELS Stage 2 - Submit to GEO (Dewatering Proposal)	30	05-Sep-21 A	03-Nov-21	06-Nov-21	09-Nov-21	6	Stage 2 - Submit to GEO (Dewatering Proposal)																							
TWD-130	ELS Stage 1 - Obtain Approval	8	29-Sep-21 A	30-Oct-21 A	31-Oct-21	31-Oct-21		Stage 1 - Obtain Approval																							
TWD-450	ELS Stage 2 - Obtain Approval	8	05-Oct-21 A	30-Oct-21 A	10-Nov-21	10-Nov-21		Stage 2 - Obtain Approval																							
Mainstream Bio-Reactor System		94	01-Sep-21 A	06-Jan-22	14-Jan-22	23-Mar-22	76																								
TWD-220	ELS - Prepare & Submission for PM's review	45	01-Sep-21 A	17-Nov-21	14-Jan-22	01-Feb-22	76	ELS - Prepare & Submission for PM's review																							
TWD-230	ELS - Review by PM's & ICE review (28 d + 7d)	35	16-Oct-21 A	18-Nov-21	02-Feb-22	02-Feb-22	76	ELS - Review by PM's & ICE review (28 d + 7d)																							
TWD-240	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	19-Nov-21	02-Dec-21	03-Feb-22	16-Feb-22	76	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																							
TWD-520	ELS - Submit to GEO	28	03-Dec-21	17-Feb-22	16-Mar-22	16-Mar-22	76	ELS - Submit to GEO																							
TWD-250	ELS - Obtain Approval	7	31-Dec-21	06-Jan-22	17-Mar-22	23-Mar-22	76	ELS - Obtain Approval																							
Biogas Holders		93	31-Aug-21 A	31-Dec-21	01-Jan-22	04-Mar-22	63																								
TWD-380	Ground Improvement Works - Prepare & Submission for PM's review	45	31-Aug-21 A	13-Nov-21	01-Jan-22	15-Jan-22	63	Ground Improvement Works - Prepare & Submission for PM's review																							
TWD-390	Ground Improvement Works - Review by PM's & ICE review (28 d + 7d)	37	15-Oct-21 A	19-Nov-21	16-Jan-22	21-Jan-22	63	Ground Improvement Works - Review by PM's & ICE review (28 d + 7d)																							
TWD-400	Ground Improvement Works - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	20-Nov-21	03-Dec-21	22-Jan-22	04-Feb-22	63	Ground Improvement Works - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																							
TWD-530	Ground Improvement Works - Submit to GEO	28	04-Dec-21	31-Dec-21	05-Feb-22	04-Mar-22	63	Ground Improvement Works - Submit to GEO																							
TWD-410	Ground Improvement Works - Obtain Approval	7	25-Dec-21	31-Dec-21	26-Feb-22	04-Mar-22	63	Ground Improvement Works - Obtain Approval																							
Sludge Thickening Building		119	12-Jan-22	10-May-22	29-Mar-22	25-Jul-22	76																								
TWD-180	ELS - Prepare & Submission for PM's review	42	12-Jan-22*	22-Feb-22	29-Mar-22	09-May-22	76	ELS - Prepare & Submission for PM's review																							
TWD-190	ELS - Review by PM's & ICE review (28 d + 7d)	35	23-Feb-22	29-Mar-22	10-May-22	13-Jun-22	76	ELS - Review by PM's & ICE review (28 d + 7d)																							
TWD-200	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	30-Mar-22	12-Apr-22	14-Jun-22	27-Jun-22	76	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																							
TWD-540	Ground Improvement Works - Submit to GEO	28	13-Apr-22	10-May-22	28-Jun-22	25-Jul-22	76	Ground Improvement Works - Submit to GEO																							
TWD-210	ELS - Obtain Approval	7	04-May-22	10-May-22	19-Jul-22	25-Jul-22	76	ELS - Obtain Approval																							
Tertiary Treatment System		122	02-Dec-21	02-Apr-22	28-Feb-22	29-Jun-22	88																								
TWD-140	ELS - Prepare & Submission for PM's review	45	02-Dec-21*	15-Jan-22	28-Feb-22	13-Apr-22	88	ELS - Prepare & Submission for PM's review																							
TWD-150	ELS - Review by PM's & ICE review (28 d + 7d)	35	16-Jan-22	19-Feb-22	14-Apr-22	18-May-22	88	ELS - Review by PM's & ICE review (28 d + 7d)																							
TWD-160	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	20-Feb-22	05-Mar-22	19-May-22	01-Jun-22	88	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																							
TWD-550	ELS - Submit to GEO (Dewatering Proposal)	28	06-Mar-22	02-Apr-22	02-Jun-22	29-Jun-22	88	ELS - Submit to GEO (Dewatering Proposal)																							
TWD-170	ELS - Obtain Approval	7	27-Mar-22	02-Apr-22	23-Jun-22	29-Jun-22	88	ELS - Obtain Approval																							
Utilities Corridor		91	31-Aug-21 A	29-Dec-21	07-Nov-21	06-Jan-22	8																								
TWD-340	ELS - Prepare & Submission for PM's review	45	31-Aug-21 A	13-Nov-21	07-Nov-21	21-Nov-21	8	ELS - Prepare & Submission for PM's review																							
TWD-350	ELS - Review by PM's & ICE review (28 d + 7d)	35	15-Oct-21 A	17-Nov-21	22-Nov-21	25-Nov-21	8	ELS - Review by PM's & ICE review (28 d + 7d)																							
TWD-360	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	18-Nov-21	01-Dec-21	26-Nov-21	09-Dec-21	8	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																							
TWD-560	ELS - Submit to GEO (Dewatering Proposal)	28	02-Dec-21	29-Dec-21	10-Dec-21	06-Jan-22	8	ELS - Submit to GEO (Dewatering Proposal)																							
TWD-370	ELS - Obtain Approval	7	23-Dec-21	29-Dec-21	31-Dec-21	06-Jan-22	8	ELS - Obtain Approval																							
Sludge Digester		122	30-Dec-21	30-Apr-22	24-Feb-23	25-Jun-23	421																								
TWD-460	ELS - Prepare & Submission for PM's review	45	30-Dec-21	12-Feb-22	24-Feb-23	09-Apr-23	421	ELS - Prepare & Submission for PM's review																							
TWD-470	ELS - Review by PM's & ICE review (28 d + 7d)	35	13-Feb-22	19-Mar-22	10-Apr-23	14-May-23	421	ELS - Review by PM's & ICE review (28 d + 7d)																							
TWD-480	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	20-Mar-22	02-Apr-22	15-May-23	28-May-23	421	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																							
TWD-570	ELS - Submit to GEO (Dewatering Proposal)	28	03-Apr-22	30-Apr-22	29-May-23	25-Jun-23	421	ELS - Submit to GEO (Dewatering Proposal)																							
TWD-490	ELS - Obtain Approval	7	24-Apr-22	30-Apr-22	19-Jun-23	25-Jun-23	421	ELS - Obtain Approval																							
Sludge Dewatering and Underpass		122	02-Jul-22	31-Oct-22	17-Mar-24	16-Jul-24	624																								
TWD-260	ELS - Prepare & Submission for PM's review	45	02-Jul-22*	15-Aug-22	17-Mar-24	30-Apr-24	624	ELS - Prepare & Submission for PM's review																							
TWD-270	ELS - Review by PM's & ICE review (28 d + 7d)	35	16-Aug-22	19-Sep-22	01-Mar-24	04-Jun-24	624	ELS - Review by PM's & ICE review (28 d + 7d)																							
TWD-280	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	20-Sep-22	03-Oct-22	05-Jun-24	18-Jun-24	624	ELS - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																							
TWD-580	ELS - Submit to GEO (Dewatering Proposal)	28	04-Oct-22	31-Oct-22	19-Jun-24	16-Jul-24	624	ELS - Submit to GEO (Dewatering Proposal)																							



- Remaining Level of Effort
- DWP Rev.5
- Actual Work
- Remaining Work
- Critical Remaining Work

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

Detailed Works Programme

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Detailed Works Programme			
Date	Revision	Checked	Approved
30-Oct-21	Rev. 7		
30-Sep-21	Rev. 6		
31-Aug-21	Rev. 5		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart																											
								2022	2023	2024	2025	2026	2027	2028																					
TWD-290	ELS - Obtain Approval	7	25-Oct-22	31-Oct-22	10-Jul-24	16-Jul-24	624	ELS - Obtain Approval																											
Administration Building																																			
TWD-300	Open Cut Design - Prepare & Submission for PM's review	45	22-Apr-24	05-Jun-24	02-Jul-24	31-Oct-24	71	Open Cut Design - Prepare & Submission for PM's review																											
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	Open Cut Design - Review by PM's & ICE review (28 d + 7d)																											
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	Open Cut Design - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																											
TWD-590	ELS - Submit to GEO (Dewatering Proposal)	28	25-Jul-24	21-Aug-24	04-Oct-24	31-Oct-24	71	ELS - Submit to GEO (Dewatering Proposal)																											
TWD-330	Open Cut Design - Obtain Approval	7	15-Aug-24	21-Aug-24	25-Oct-24	31-Oct-24	71	Open Cut Design - Obtain Approval																											
Walkway																																			
TWD-600	Walkway - Prepare & Submission for PM's review	45	22-Apr-24	05-Jun-24	07-Jul-25	20-Aug-25	441	Walkway - Prepare & Submission for PM's review																											
TWD-610	Walkway - Review by PM's & ICE review (28 d + 7d)	35	06-Jun-24	10-Jul-24	21-Aug-25	24-Sep-25	441	Walkway - Review by PM's & ICE review (28 d + 7d)																											
TWD-620	Walkway - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)	14	11-Jul-24	24-Jul-24	25-Sep-25	08-Oct-25	441	Walkway - Resubmission for PM's & ICE review (7d prep & resub. + 7d ICE)																											
TWD-630	ELS - Submit to GEO (Dewatering Proposal)	28	25-Jul-24	21-Aug-24	09-Oct-25	05-Nov-25	441	ELS - Submit to GEO (Dewatering Proposal)																											
TWD-640	Walkway - Obtain Approval	7	15-Aug-24	21-Aug-24	30-Oct-25	05-Nov-25	441	Walkway - Obtain Approval																											
Contractor's Permanent Works Design (include ATAL)																																			
AP																																			
Package 1A - Mainstream Bio-Reactor System (AGS)																																			
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	28-Jan-22	28-Jan-22	2179	E&M AIP Report for Mainstream Bio-Reactor System (AGS) - Prepare & Submission for PM's review																											
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	28-Jan-22	28-Jan-22	2179	E&M AIP Report for Mainstream Bio-Reactor System (AGS) - Review by PM's & ICE review (28 d + 7d)																											
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	28-Jan-22	28-Jan-22	2179	E&M AIP Report for Mainstream Bio-Reactor System (AGS) - Resubmission for further review																											
AIP-450	E&M AIP Report for Mainstream Bio-Reactor System (AGS) - Obtain Approval	7	04-May-21 A	28-May-21 A	28-Jan-22	28-Jan-22	2179	E&M AIP Report for Mainstream Bio-Reactor System (AGS) - Obtain Approval																											
Package 2A - Tertiary Treatment System (TTS)																																			
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	11-Feb-22	11-Feb-22	2179	E&M AIP Report for Tertiary Treatment System (TTS) - Prepare & Submission for PM's review																											
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	11-Feb-22	11-Feb-22	2179	E&M AIP Report for Tertiary Treatment System (TTS) - Review by PM's & ICE review (28 d + 7d)																											
AIP-480	E&M AIP Report for Tertiary Treatment System (TTS) - Resubmission for further review	14	26-Jun-21 A	09-Jul-21 A	11-Feb-22	11-Feb-22	2179	E&M AIP Report for Tertiary Treatment System (TTS) - Resubmission for further review																											
AIP-490	E&M AIP Report for Tertiary Treatment System (TTS) - Obtain Approval	7	10-Jul-21 A	16-Jul-21 A	11-Feb-22	11-Feb-22	2179	E&M AIP Report for Tertiary Treatment System (TTS) - Obtain Approval																											
Package 3A - Plant Service Water																																			
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	02-Aug-22	02-Aug-22	2179	E&M AIP Report for Plant Service Water - Prepare & Submission for PM's review																											
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	02-Aug-22	02-Aug-22	2179	E&M AIP Report for Plant Service Water - Review by PM's & ICE review (28 d + 7d)																											
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	2179	E&M AIP Report for Plant Service Water - Resubmission for further review																											
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	2179	E&M AIP Report for Plant Service Water - Obtain Approval																											
Package 4A - E&M Report for Temp. Diversion Chamber and Pumping Station																																			
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	27-Nov-21	27-Nov-21	2179	Advance Works - E&M Report for Temporary Diversion Chamber and Pumping Station - Prepare & Submission for PM's review																											
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	27-Nov-21	27-Nov-21	2179	Advance Works - E&M Report for Temporary Diversion Chamber and Pumping Station - Review by PM's & ICE review (28 d + 7d)																											
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	27-Nov-21	27-Nov-21	2179	Advance Works - E&M Report for Temporary Diversion Chamber and Pumping Station - Resubmission for further review																											
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	27-Nov-21	27-Nov-21	2179	Advance Works - E&M Report for Temporary Diversion Chamber and Pumping Station - Obtain Approval																											
Package 4B - E&M Report for SCADA Relocation																																			
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	2179	E&M AIP Report for Advance Works (SCADA Relocation) - Prepare & Submission for PM's review																											
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	2179	E&M AIP Report for Advance Works (SCADA Relocation) - Review by PM's & ICE review (28 d + 7d)																											
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	2179	E&M AIP Report for Advance Works (SCADA Relocation) - Resubmission for further review																											
AIP-610	E&M AIP Report for Advance Works (SCADA Relocation) - Obtain Approval	7	22-May-21 A	17-Jan-22	17-Jan-22	17-Jan-22	2179	E&M AIP Report for Advance Works (SCADA Relocation) - Obtain Approval																											
Package 4C - E&M Report for AGS Pilot Plant																																			
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	17-Jul-23	17-Jul-23	2179	E&M AIP Report for Advance Works (AGS) - Prepare & Submission for PM's review																											
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	17-Jul-23	17-Jul-23	2179	E&M AIP Report for Advance Works (AGS) - Review by PM's & ICE review (28 d + 7d)																											
AIP-650	E&M AIP Report for Advance Works (AGS) - Resubmission for further review	14	08-May-21 A	21-May-21 A	17-Jul-23	17-Jul-23	2179	E&M AIP Report for Advance Works (AGS) - Resubmission for further review																											
AIP-660	E&M AIP Report for Advance Works (AGS) - Obtain Approval	7	22-May-21 A	28-May-21 A	17-Jul-23	17-Jul-23	2179	E&M AIP Report for Advance Works (AGS) - Obtain Approval																											
Package 5A - Electrical Power Supply System for Advance Works																																			
AIP-100	Electrical Power Supply System for Advance Works - Prepare & Submission for PM's review	42	20-Feb-21 A	02-Apr-21 A	30-Dec-21	30-Dec-21	2179	Electrical Power Supply System for Advance Works - Prepare & Submission for PM's review																											
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	30-Dec-21	30-Dec-21	2179	Electrical Power Supply System for Advance Works - Review by PM's & ICE review (28 d + 7d)																											
AIP-120	Electrical Power Supply System for Advance Works - Resubmission for further review	14	08-May-21 A	21-May-21 A	30-Dec-21	30-Dec-21	2179	Electrical Power Supply System for Advance Works - Resubmission for further review																											
AIP-130	Electrical Power Supply System for Advance Works - Obtain Approval	7	22-May-21 A	28-May-21 A	30-Dec-21	30-Dec-21	2179	Electrical Power Supply System for Advance Works - Obtain Approval																											
Package 5B - Electrical Power Supply System for YLEPP																																			
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	2179	Electrical Power Supply System for YLEPP - Prepare & Submission for PM's review																											
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	2179	Electrical Power Supply System for YLEPP - Review by PM's review																											
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	2179	Electrical Power Supply System for YLEPP - Resubmission for PM's review																											
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	2179	Electrical Power Supply System for YLEPP - Obtain Approval																											
Package 6A - Control & Monitoring System																																			
AIP-180	Control & Monitoring System - Prepare & Submission for PM's review	36	01-May-21 A	05-Jun-21 A	11-Apr-23	11-Apr-23	528	Control & Monitoring System - Prepare & Submission for PM's review																											
AIP-190	Control & Monitoring System - Review by PM's & ICE review (28 d + 7d)	35	06-Jun-21 A	10-Jul-21 A	11-Apr-23	11-Apr-23	528	Control & Monitoring System - Review by PM's & ICE review (28 d + 7d)																											
AIP-200	Control & Monitoring System - Resubmission for further review	14	12-Jul-21 A	30-Oct-21	11-Apr-23	11-Apr-23	528	Control & Monitoring System - Resubmission for further review																											
AIP-620	Control & Monitoring System - Obtain Approval	7	14-Sep-21 A	31-Oct-21	12-Apr-23	12-Apr-23	528	Control & Monitoring System - Obtain Approval																											
Package 7A - Building Services System																																			
AIP-220	BS System - Prepare & Submission for PM's review	7	30-Mar-21 A	05-Apr-21 A	22-Mar-22	22-Mar-22	2179	BS System - Prepare & Submission for PM's review																											
AIP-230	BS System - Review by PM's & ICE review (28 d + 7d)	35	06-Apr-21 A	10-May-21 A	22-Mar-22	22-Mar-22	2179	BS System - Review by PM's & ICE review (28 d + 7d)																											
AIP-240	BS System - Resubmission for further review	14	08-May-21 A	21-May-21 A	22-Mar-22	22-Mar-22	2179	BS System - Resubmission for further review																											
AIP-250	BS System - Obtain Approval	7	22-May-21 A	28-May-21 A	22-Mar-22	22-Mar-22	2179	BS System - Obtain Approval																											
Package 8A - E&M AIP Report for Sludge Thickening Building & Chemical System																																			
AIP-260	STB - Prepare & Submission for PM's review	46	01-Mar-21 A	15-Apr-21 A	29-Oct-22	29-Oct-22	2179	STB - Prepare & Submission for PM's review																											
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	2179	STB - Review by PM's & ICE review (28 d + 7d)																											
AIP-280	STB - Resubmission for further review	14	21-May-21 A	03-Jun-21 A	29-Oct-22	29-Oct-22	2179	STB - Resubmission for further review																											
AIP-290	STB - Obtain Approval	7	04-Jun-21 A	10-Jun-21 A	29-Oct-22	29-Oct-22	2179	STB - Obtain Approval																											
Package 9A - E&M AIP Report for Inlet Work (IW)																																			
AIP-670	IW - Prepare & Submission for PM's review	46	01-Mar-21 A	15-Apr-21 A	09-Nov-27	09-Nov-27	2179	IW - Prepare & Submission for PM's review																											
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	2179	IW - Review by PM's & ICE review (28 d + 7d)																											
AIP-690	IW - Resubmission for further review	14	21-May-21 A	03-Jun-21 A	09-Nov-27	09-Nov-27	2179	IW - Resubmission for further review																											
AIP-700	IW - Obtain Approval	7	04-Jun-21 A	10-Jun-21 A	09-Nov-27	09-Nov-27	2179	IW - Obtain Approval																											



- Remaining Level of Effort
- DWP Rev.5
- Actual Work
- Remaining Work
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Contract DC/2019/10 - YLEPP - Main Works for Stage 1

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30-Oct-21	Rev. 7		
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31-Aug-21	Rev. 5		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart																											
								2022				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
TS-1070	Layout and Wiring Diagram for YLEPP PLC Panel - Prep(144d), Sub.&Review(45d), Comment&Resub(14d)&Approval(7d)	210	30-Nov-21	27-Jun-22	12-May-23	07-Dec-23	528	[Gantt bar: 30-Nov-21 to 07-Dec-23]																											
TS-1080	System Architecture for Existing YLSTW Temporary SCADA System - Prep(144d), Sub.&Rev(45d), Comments&Resub(14d), Approval(7d)	210	30-Nov-21	27-Jun-22	12-May-23	07-Dec-23	528	[Gantt bar: 30-Nov-21 to 07-Dec-23]																											
TS-1090	Layout and Wiring Diagram for Existing YLSTW Temp PLC Panel - Prep(144d), Sub.&Rev(45d), Comments&Resub(14d), Approval(7d)	210	30-Nov-21	27-Jun-22	12-May-23	07-Dec-23	528	[Gantt bar: 30-Nov-21 to 07-Dec-23]																											
TS-1100	System Architecture for YLEPP SCADA System - Prep(144d), Sub.&Review(45d), Comment&Resub(14d)&Approval(7d)	210	30-Nov-21	27-Jun-22	12-May-23	07-Dec-23	528	[Gantt bar: 30-Nov-21 to 07-Dec-23]																											
Utility Corridor and Pipe Portal								210	30-Nov-21	27-Jun-22	19-Oct-23	15-May-24	688	[Gantt bar: 30-Nov-21 to 15-May-24]																					
TS-1110	General Arrangement Drawing - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval(7d)	210	30-Nov-21	27-Jun-22	19-Oct-23	15-May-24	688	[Gantt bar: 30-Nov-21 to 15-May-24]																											
TS-1120	Civil Requirement Drawings (Superstructure) - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval(7d)	210	30-Nov-21	27-Jun-22	19-Oct-23	15-May-24	688	[Gantt bar: 30-Nov-21 to 15-May-24]																											
TS-1140	Equipment Loading Summary - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval(7d)	210	30-Nov-21	27-Jun-22	19-Oct-23	15-May-24	688	[Gantt bar: 30-Nov-21 to 15-May-24]																											
Hazardous Area Classification and Fire Risk Assessment								127	31-Aug-21 A	03-Feb-22	16-Jun-22	20-Sep-22	229	[Gantt bar: 31-Aug-21 to 20-Sep-22]																					
TS-1800	Hazardous Area Classification and Fire Risk Assessment Specialist - Submission & Approval	20	31-Aug-21 A	30-Oct-21	16-Jun-22	16-Jun-22	229	[Gantt bar: 31-Aug-21 to 16-Jun-22]																											
TS-1810	Hazardous Area Classification Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval(7d)	126	20-Sep-21 A	03-Feb-22	17-Jun-22	20-Sep-22	229	[Gantt bar: 20-Sep-21 to 20-Sep-22]																											
TS-1820	Fire Risk Assessment - Prep(60), Sub.&Review(45d), Comment&resub(14d) & Approval(7d)	126	20-Sep-21 A	03-Feb-22	17-Jun-22	20-Sep-22	229	[Gantt bar: 20-Sep-21 to 20-Sep-22]																											
Material Submission, Procurement, Manufacturing and Delivery								300	09-Nov-20 A	03-Nov-21	06-Nov-21	11-Mar-24	859	[Gantt bar: 09-Nov-20 to 11-Mar-24]																					
PRE-240	Submit/Procure/Manufacture/Deliver TTS & Auxiliary Facility Equip.	270	09-Nov-20 A	30-Oct-21	19-Dec-23	19-Dec-23	780	[Gantt bar: 09-Nov-20 to 19-Dec-23]																											
PRE-230	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip.	270	09-Nov-20 A	30-Oct-21	27-Oct-23	27-Oct-23	727	[Gantt bar: 09-Nov-20 to 27-Oct-23]																											
PRE-210	Submit/Procure/Manufacture/Deliver New Inlet Works Equip.	180	09-Nov-20 A	07-May-21 A	12-Dec-22	12-Dec-22		[Gantt bar: 09-Nov-20 to 12-Dec-22]																											
PRE-220	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip.	180	09-Nov-20 A	07-May-21 A	26-Sep-22	26-Sep-22		[Gantt bar: 09-Nov-20 to 26-Sep-22]																											
PRE-250	Submit/Procure/Manufacture/Deliver Thickening System/Digestion/sludge holding Tanks	300	09-Nov-20 A	03-Nov-21	07-Mar-24	11-Mar-24	859	[Gantt bar: 09-Nov-20 to 11-Mar-24]																											
PRE-260	Submit/Procure/Manufacture/Deliver Diversion Works	44	09-Nov-20 A	22-Dec-20 A	06-Nov-21	06-Nov-21		[Gantt bar: 09-Nov-20 to 06-Nov-21]																											
Site Establishment Works								1432	09-Nov-20 A	05-Jun-25	08-Nov-21	09-Nov-27	759	[Gantt bar: 09-Nov-20 to 09-Nov-27]																					
PG-100	Prepare/Submit Supplementary Contamination Assessment Plan (CAP)	12	21-Dec-20 A	06-Jan-21 A	08-Nov-21	08-Nov-21		[Gantt bar: 21-Dec-20 to 08-Nov-21]																											
PG-120	Procurement Asbestos Specialist	30	21-Dec-20 A	19-Jan-21 A	26-Nov-21	26-Nov-21		[Gantt bar: 21-Dec-20 to 26-Nov-21]																											
PG-110	Approved Supplementary CAP	30	07-Jan-21 A	05-Feb-21 A	08-Nov-21	08-Nov-21		[Gantt bar: 07-Jan-21 to 08-Nov-21]																											
PG-130	Submit/Approve Methos Statement for Asbestos Treatment and Removal	30	20-Jan-21 A	18-Feb-21 A	26-Nov-21	26-Nov-21		[Gantt bar: 20-Jan-21 to 26-Nov-21]																											
Portion 1 - IW Stage 1, PST, MBR, AF, TTS, STCS, Utilities Corridor, Pipe Portal								147	09-Nov-20 A	14-May-21 A	08-Nov-21	26-Nov-21		[Gantt bar: 09-Nov-20 to 26-Nov-21]																					
P1-100	Portion 1 - Initial Survey and Record, Underground Utilities Detection	60	09-Nov-20 A	20-Jan-21 A	08-Nov-21	08-Nov-21		[Gantt bar: 09-Nov-20 to 08-Nov-21]																											
P1-120	Portion 1 - Land Contamination Site Investigation	13	06-Feb-21 A	27-Feb-21 A	08-Nov-21	08-Nov-21		[Gantt bar: 06-Feb-21 to 08-Nov-21]																											
P1-110	Portion 1 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	48	08-Feb-21 A	15-Apr-21 A	08-Nov-21	08-Nov-21		[Gantt bar: 08-Feb-21 to 08-Nov-21]																											
P1-200	Portion 1 - Asbestos Survey	18	19-Feb-21 A	11-Mar-21 A	26-Nov-21	26-Nov-21		[Gantt bar: 19-Feb-21 to 26-Nov-21]																											
P1-130	Portion 1 - Submit/Approve CAR and RAP	18	01-Mar-21 A	20-Mar-21 A	08-Nov-21	08-Nov-21		[Gantt bar: 01-Mar-21 to 08-Nov-21]																											
P1-210	Portion 1 - Asbestos Removal	48	12-Mar-21 A	12-May-21 A	26-Nov-21	26-Nov-21		[Gantt bar: 12-Mar-21 to 26-Nov-21]																											
P1-140	Portion 1 - Carry out RAP	24	22-Mar-21 A	22-Apr-21 A	08-Nov-21	08-Nov-21		[Gantt bar: 22-Mar-21 to 08-Nov-21]																											
P1-150	Portion 1 - Submit Remediation Report	18	23-Apr-21 A	14-May-21 A	08-Nov-21	08-Nov-21		[Gantt bar: 23-Apr-21 to 08-Nov-21]																											
Portion 2 - IW Stage 2								92	08-Jun-21 A	01-Nov-21	25-Nov-21	09-Nov-27	1784	[Gantt bar: 08-Jun-21 to 09-Nov-27]																					
P2-100	Portion 2 - Initial Survey and Record, Underground Utilities Detection	12	08-Jun-21 A	22-Jun-21 A	26-Nov-21	26-Nov-21		[Gantt bar: 08-Jun-21 to 26-Nov-21]																											
P2-110	Portion 2 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	12	08-Jun-21 A	22-Jun-21 A	26-Nov-21	26-Nov-21		[Gantt bar: 08-Jun-21 to 26-Nov-21]																											
P2-120	Portion 2 - Land Contamination Site Investigation	18	14-Jul-21 A	01-Nov-21	25-Nov-21	26-Nov-21	22	[Gantt bar: 14-Jul-21 to 26-Nov-21]																											
P2-140	Portion 2 - Carry out RAP	24	19-Jul-21 A	26-Aug-21 A	09-Nov-27	09-Nov-27		[Gantt bar: 19-Jul-21 to 09-Nov-27]																											
P2-150	Submit Remediation Report	7	27-Aug-21 A	27-Aug-21 A	09-Nov-27	09-Nov-27		[Gantt bar: 27-Aug-21 to 09-Nov-27]																											
Portion 3 - PST, SDB, Admin. Bldg								69	02-Feb-24	04-May-24	17-Feb-24	13-May-24	7	[Gantt bar: 02-Feb-24 to 13-May-24]																					
P3-100	Portion 3 - Initial Survey and Record, Underground Utilities Detection	12	02-Feb-24	22-Feb-24	17-Feb-24	01-Mar-24	7	[Gantt bar: 02-Feb-24 to 01-Mar-24]																											
P3-110	Portion 3 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	17	02-Feb-24	28-Feb-24	17-Feb-24	07-Mar-24	7	[Gantt bar: 02-Feb-24 to 07-Mar-24]																											
P3-120	Portion 3 - Land Contamination Site Investigation	10	29-Feb-24	11-Mar-24	08-Mar-24	19-Mar-24	7	[Gantt bar: 29-Feb-24 to 19-Mar-24]																											
P3-140	Portion 3 - Carry out RAP	24	12-Mar-24	12-Apr-24	20-Mar-24	20-Apr-24	7	[Gantt bar: 12-Mar-24 to 20-Apr-24]																											
P3-150	Portion 3 - Submit Remediation Report	18	13-Apr-24	04-May-24	22-Apr-24	13-May-24	7	[Gantt bar: 13-Apr-24 to 13-May-24]																											
Portion 4 - EVA								54	27-Mar-25	05-Jun-25	16-Apr-26	20-Jun-26	307	[Gantt bar: 27-Mar-25 to 20-Jun-26]																					
P4-100	Portion 4 - Initial Survey and Record, Underground Utilities Detection	12	27-Mar-25	10-Apr-25	06-Jun-26	20-Jun-26	349	[Gantt bar: 27-Mar-25 to 20-Jun-26]																											
P4-110	Portion 4 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	12	27-Mar-25	10-Apr-25	06-Jun-26	20-Jun-26	349	[Gantt bar: 27-Mar-25 to 20-Jun-26]																											
P4-120	Portion 4 - Land Contamination Site Investigation	12	27-Mar-25	10-Apr-25	16-Apr-26	29-Apr-26	307	[Gantt bar: 27-Mar-25 to 29-Apr-26]																											
P4-140	Portion 4 - Carry out RAP	24	11-Apr-25	14-May-25	30-Apr-26	29-May-26	307	[Gantt bar: 11-Apr-25 to 29-May-26]																											
P4-150	Portion 4 - Submit Remediation Report	18	15-May-25	05-Jun-25	30-May-26	20-Jun-26	307	[Gantt bar: 15-May-25 to 20-Jun-26]																											
Portion 5 - Walkway								12	12-Jun-23	26-Jun-23	22-Oct-25	05-Nov-25	697	[Gantt bar: 12-Jun-23 to 05-Nov-25]																					
P5-100	Portion 5 - Initial Survey and Record, Underground Utilities Detection	12	12-Jun-23	26-Jun-23	22-Oct-25	05-Nov-25	697	[Gantt bar: 12-Jun-23 to 05-Nov-25]																											
P5-110	Portion 5 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	12	12-Jun-23	26-Jun-23	22-Oct-25	05-Nov-25	697	[Gantt bar: 12-Jun-23 to 05-Nov-25]																											
Temporary Transformer 1600A								60	01-Sep-21 A	10-Dec-21	28-Sep-27	08-Nov-27	1750	[Gantt bar: 01-Sep-21 to 08-Nov-27]																					
P5-120	Construct temporary transformer structure	20	01-Sep-21 A	30-Oct-21	28-Sep-27	28-Sep-27	1750	[Gantt bar: 01-Sep-21 to 28-Sep-27]																											
P5-130	ABWF & E&M works	24	25-Sep-21 A	01-Nov-21	29-Sep-27	29-Sep-27	1750	[Gantt bar: 25-Sep-21 to 29-Sep-27]																											
P5-140	CLP Inspection	11	26-Oct-21 A	06-Nov-21	30-Sep-27	05-Oct-27	1750	[Gantt bar: 26-Oct-21 to 05-Oct-27]																											
P5-150	Energization of temporary transformer	0		06-Nov-21		05-Oct-27	1750	[Gantt bar: 06-Nov-21 to 05-Oct-27]																											
P5-160	LV switchboard metering (Finish On or Before 15-Dec-21)	29	08-Nov-21	10-Dec-21	06-Oct-27	08-Nov-27	1750	[Gantt bar: 08-Nov-21 to 08-Nov-27]																											
PM and Contractor Accomodation								342	18-Feb-21 A	20-Apr-22	04-Jun-27	08-Nov-27	1651	[Gantt bar: 18-Feb-21 to 08-Nov-27]																					
Project Manager's & Contractor Site Accommodation								234	18-Feb-21 A	30-Nov-21	04-Jun-27	08-Nov-27	1759	[Gantt bar: 18-Feb-21 to 08-Nov-27]																					
PMCA-110	Design and Procurement of MIC	45	18-Feb-21 A	15-Apr-21 A	04-Jun-27	04-Jun-27		[Gantt bar: 18-Feb-21 to 04-Jun-27]																											
PMCA-140	Submission and approved MS & PMAC	18	16-Apr-21 A	07-May-21 A	04-Jun-27	04-Jun-27		[Gantt bar: 16-Apr-21 to 04-Jun-27]																											
MIC Section								51	31-Aug-21 A	30-Nov-21	08-Oct-27	08-Nov-27	1759	[Gantt bar: 31-Aug-21 to 08-Nov-27]																					
PMCA-150	Construction of Pad Footing	6	31-Aug-21 A	06-Sep-21 A	08-Oct-27	08-Oct-27		[Gantt bar: 31-Aug-21 to 08-Oct-27]																											
PMCA-160	Construction of Sewage pipeworks and Septic Tank	17	07-Sep-21 A	27-Sep-21 A	08-Oct-27	08-Oct-27		[Gantt bar: 07-Sep-21 to 08-Oct-27]																											
PMCA-170	Construction of G/F Structure Works	16	09-Sep-21 A	20-Oct-21 A	08-Oct-27	08-Oct-27		[Gantt bar: 09-Sep-21 to 08-Oct-27]																											
PMCA-210	Installation of E&M and ABWF Works	12	11-Oct-21 A	30-Nov-21	18-Oct-27	08-Nov-27	1759	[Gantt bar: 11-Oct-21 to 08-Nov-27]																											
PMCA-180	Construction of 1/F Structure Works	18	18-Oct-21 A	31-Oct-21 A	08-Oct-27	08-Oct-27		[Gantt bar: 18-Oct-21 to 08-Oct-27]																											
PMCA-190	Installation of Green Roof	16	09-Nov-21	26-Nov-21	21-Oct-27	08-Nov-27	1762	[Gantt bar: 09-Nov-21 to 08-Nov-27]																											
PMCA-220	Installation of Energy Efficient Features	12	09-Nov-21	22-Nov-21	26-Oct-27	08-Nov-27	1766	[Gantt bar: 09-Nov-21 to 08-Nov-27]																											
PMCA-200	Construction of Covered Car Park	13	09-Nov-21	23-Nov-21	18-Oct-27	01-Nov-27	1759	[Gantt bar: 09-Nov-21 to 01-Nov-27]																											
PMCA-230	Construction of Rain and Surface Water Drainage Works	10	12-Nov-21	24-Nov-21	28-Oct-27	08-Nov-27	1765	[Gantt bar: 12-Nov-21 to 08-Nov-27]																											



- Remaining Level of Effort
- DWP Rev.5
- Actual Work
- Remaining Work
- Critical Remaining Work

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

Detailed Works Programme

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Detailed Works Programme			
Date	Revision	Checked	Approved
30-Oct-21	Rev. 7		
30-Sep-21	Rev. 6		
31-Aug-21	Rev. 5		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart																											
								2022	2023	2024	2025	2026	2027	2028																					
ATALGA-1030	AIP - AGS Pilot Plant	20	18-Feb-21 A	12-Mar-21 A	31-Jan-23	31-Jan-23		Not Plant																											
ATALGA-1040	DDA - AGS Pilot Plant	21	13-Mar-21 A	10-Apr-21 A	05-Jun-23	05-Jun-23		S Pilot Plant																											
ATALGA-1050	CMS - AGS Pilot Plant	48	13-Mar-21 A	13-May-21 A	31-Jan-23	31-Jan-23		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		Method Statement for Installation																											
ATALGA-1120	Procurement & Delivery of Materials	100	28-Apr-21 A	31-Aug-21 A	31-Jan-23	31-Jan-23		Procurement & Delivery of Materials																											
ATALGA-1010	Civil Structural Construction of AGS Pilot Plant	150	31-Aug-21 A	07-Mar-22	31-Jan-23	03-Jun-23	363	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	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	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	Post-commissioning																											
Zone 1 Construction		1878	09-Nov-20 A	08-Nov-26	30-Oct-21	09-Nov-27	313																												
Temporary Works Design		1063	30-Oct-21	22-Mar-25	09-Nov-21	08-Nov-27	823																												
IW and PST		0	30-Oct-21	30-Oct-21	09-Nov-21	09-Nov-21	9																												
TWD-1010	ELS for IW(Inlet works) & PST(Primary Sedimentation Tanks (Stage 1) - Consent Date	0		30-Oct-21*		09-Nov-21	9	ELS for IW(Inlet works) & PST(Primary Sedimentation Tanks (Stage 1) - Consent Date																											
TWD-1020	ELS for IW(Inlet works) & PST(Primary Sedimentation Tanks (Stage 2) - Consent Date	0		30-Oct-21*		09-Nov-21	9	ELS for IW(Inlet works) & PST(Primary Sedimentation Tanks (Stage 2) - Consent Date																											
SDB		668	16-Jul-22	13-May-24	09-Sep-22	07-Jul-24	55																												
TWD-1030	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - ICE Period Submission	31	16-Jul-22*	15-Aug-22	09-Sep-22	09-Oct-22	55	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - ICE Period Submission																											
TWD-1060	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - ICE Review Period	31	16-Aug-22	15-Sep-22	10-Oct-22	09-Nov-22	55	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - ICE Review Period																											
TWD-1070	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - PM Review Period	46	16-Sep-22	31-Oct-22	10-Nov-22	25-Dec-22	55	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - PM Review Period																											
TWD-1080	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - Consent Date	0		13-May-24*		07-Jul-24	55	ELS for SDB(Sludge Dewatering Building) & Underpass (SDB) - Consent Date																											
ADB		707	21-Sep-22	27-Aug-24	16-Nov-22	22-Oct-24	56																												
TWD-1040	Excavation for Administration Building (ADB) - ICE Period Submission	30	21-Sep-22*	20-Oct-22	16-Nov-22	15-Dec-22	56	Excavation for Administration Building (ADB) - ICE Period Submission																											
TWD-1090	Excavation for Administration Building (ADB) - ICE Review Period	28	21-Oct-22	17-Nov-22	16-Dec-22	12-Jan-23	56	Excavation for Administration Building (ADB) - ICE Review Period																											
TWD-1100	Excavation for Administration Building (ADB) - PM Review Period	49	18-Nov-22	05-Jan-23	13-Jan-23	02-Mar-23	56	Excavation for Administration Building (ADB) - PM Review Period																											
TWD-1110	Excavation for Administration Building (ADB) - Consent Date	0		27-Aug-24*		22-Oct-24	56	Excavation for Administration Building (ADB) - Consent Date																											
Walkway Abutment		914	21-Sep-22	22-Mar-25	25-Jul-27	08-Nov-27	961																												
TWD-1050	ELS for Walkway Abutment - ICE Period Submission	30	21-Sep-22*	20-Oct-22	25-Jul-27	23-Aug-27	1768	ELS for Walkway Abutment - ICE Period Submission																											
TWD-1120	ELS for Walkway Abutment - ICE Review Period	28	21-Oct-22	17-Nov-22	24-Aug-27	20-Sep-27	1768	ELS for Walkway Abutment - ICE Review Period																											
TWD-1130	ELS for Walkway Abutment - PM Review Period	49	18-Nov-22	05-Jan-23	21-Sep-27	08-Nov-27	1768	ELS for Walkway Abutment - PM Review Period																											
TWD-1140	ELS for Walkway Abutment - Consent Date	0		22-Mar-25*		08-Nov-27	961	ELS for Walkway Abutment - Consent Date																											
Demolition and Temporary Modification/Diversion Works		311	09-Nov-20 A	10-Nov-21	10-Nov-21	09-Nov-27	1876																												
PST Overhaul Works		199	09-Nov-20 A	17-Jul-21 A	11-Apr-22	09-Nov-27																													
ATLPST-5130	Completion of Overhaul Works (Zone 1)	0		17-Jul-21 A		09-Nov-27		Completion of Overhaul Works (Zone 1)																											
PST Existing Primary Sedimentation Tanks (PST)		199	09-Nov-20 A	14-Jul-21 A	11-Apr-22	11-Apr-22																													
ATLPST-1000	Method Statement / PMAC Submission and Approval for PST	55	09-Nov-20 A	14-Jan-21 A	11-Apr-22	11-Apr-22		Method Statement / PMAC Submission and Approval for PST																											
ATLPST-1030	Procurement of Wheels, Carbon Brush, Motor/Gearbox for PST No. 1 to No. 4	60	15-Jan-21 A	01-Apr-21 A	11-Apr-22	11-Apr-22		Procurement of Wheels, Carbon Brush, Motor/Gearbox for PST No. 1 to No. 4																											
ATLPST-1040	Procurement of Scraper Frame Robs	32	15-Jan-21 A	27-Feb-21 A	11-Apr-22	11-Apr-22		Procurement of Scraper Frame Robs																											
PST No. 2 & 4		84	15-Jan-21 A	13-May-21 A	11-Apr-22	11-Apr-22																													
ATLPST-1020	Isolation and Pre-test for PST 2 & 4	14	15-Jan-21 A	30-Jan-21 A	11-Apr-22	11-Apr-22		Isolation and Pre-test for PST 2 & 4																											
ATLPST-1070	Construction of Bamboo Scaffolding	7	01-Feb-21 A	08-Feb-21 A	11-Apr-22	11-Apr-22		Construction of Bamboo Scaffolding																											
ATLPST-1090	Replacement of Screws for the Rotatory Bridge	11	09-Feb-21 A	27-Feb-21 A	11-Apr-22	11-Apr-22		Replacement of Screws for the Rotatory Bridge																											
ATLPST-1120	Replacement of Scraper Frame Robs	25	01-Mar-21 A	29-Mar-21 A	11-Apr-22	11-Apr-22		Replacement of Scraper Frame Robs																											
ATLPST-1160	Disassembly of Scraper Drive Unit / Penstock Actuators / Valves	3	30-Mar-21 A	01-Apr-21 A	11-Apr-22	11-Apr-22		Disassembly of Scraper Drive Unit / Penstock Actuators / Valves																											
ATLPST-1170	Disassembly, Condition Checking of Scraper Drive Units	17	07-Apr-21 A	26-Apr-21 A	11-Apr-22	11-Apr-22		Disassembly, Condition Checking of Scraper Drive Units																											
ATLPST-1180	Removal of Centre Bearing from PST 2	17	07-Apr-21 A	26-Apr-21 A	11-Apr-22	11-Apr-22		Removal of Centre Bearing from PST 2																											
ATLPST-1190	Reconditioning and Replacement of Scraper Drive Units	17	07-Apr-21 A	26-Apr-21 A	11-Apr-22	11-Apr-22		Reconditioning and Replacement of Scraper Drive Units																											
ATLPST-1230	Return of all Drive Units and Centre Bearing for Reassembly	4	27-Apr-21 A	30-Apr-21 A	11-Apr-22	11-Apr-22		Return of all Drive Units and Centre Bearing for Reassembly																											
ATLPST-1260	Power Reconnection and Testing	3	03-May-21 A	13-May-21 A	11-Apr-22	11-Apr-22		Power Reconnection and Testing																											
PST No. 1		52	01-Mar-21 A	13-May-21 A	11-Apr-22	11-Apr-22																													
ATLPST-1440	Isolation and Conduct Pre-test for PST No. 1	4	01-Mar-21 A	04-Mar-21 A	11-Apr-22	11-Apr-22		Isolation and Conduct Pre-test for PST No. 1																											
ATLPST-1450	Construction of Access and Tank Cleaning of PST No. 1	3	05-Mar-21 A	08-Mar-21 A	11-Apr-22	11-Apr-22		Construction of Access and Tank Cleaning of PST No. 1																											
ATLPST-1460	Disassembly of Scraper Drive Unit / Penstock Actuators / Valves	21	09-Mar-21 A	01-Apr-21 A	11-Apr-22	11-Apr-22		Disassembly of Scraper Drive Unit / Penstock Actuators / Valves																											
ATLPST-1470	Construction of Bamboo Scaffolding	5	09-Mar-21 A	13-Mar-21 A	11-Apr-22	11-Apr-22		Construction of Bamboo Scaffolding																											
ATLPST-1480	Replacement of Screws for Rotatory Bridge	12	15-Mar-21 A	27-Mar-21 A	11-Apr-22	11-Apr-22		Replacement of Screws for Rotatory Bridge																											
ATLPST-1490	Replacement of Scraper Frame Robs	8	29-Mar-21 A	10-Apr-21 A	11-Apr-22	11-Apr-22		Replacement of Scraper Frame Robs																											
ATLPST-1500	Reconditioning and Replacement of Scraper Drive Units	13	12-Apr-21 A	26-Apr-21 A	11-Apr-22	11-Apr-22		Reconditioning and Replacement of Scraper Drive Units																											
ATLPST-1510	Return of all Drive Units and Centre Bearing for Reassembly	4	27-Apr-21 A	30-Apr-21 A	11-Apr-22	11-Apr-22		Return of all Drive Units and Centre Bearing for Reassembly																											
ATLPST-1520	Power Reconnection and Testing	3	03-May-21 A	13-May-21 A	11-Apr-22	11-Apr-22		Power Reconnection and Testing																											
PST No. 3		53	14-May-21 A	14-Jul-21 A	11-Apr-22	11-Apr-22																													
ATLPST-1280	Switch Duty from PST 3 to PST 2 or 4	2	14-May-21 A	15-May-21 A	11-Apr-22	11-Apr-22		Switch Duty from PST 3 to PST 2 or 4																											
ATLPST-1300	Isolation and Pre-test for PST 3	1	17-May-21 A	17-May-21 A	11-Apr-22	11-Apr-22		Isolation and Pre-test for PST 3																											
ATLPST-1310	Drain Sewage and Tank Cleaning for PST 3	4	18-May-21 A	22-May-21 A	11-Apr-22	11-Apr-22		Drain Sewage and Tank Cleaning for PST 3																											
ATLPST-1320	Construction of Bamboo Scaffolding	6	24-May-21 A	29-May-21 A	11-Apr-22	11-Apr-22		Construction of Bamboo Scaffolding																											
ATLPST-1360	Replacement of Scraper Frame Robs	18	26-May-21 A	16-Jun-21 A	11-Apr-22	11-Apr-22		Replacement of Scraper Frame Robs																											
ATLPST-1330	Replacement of Screws for the Rotatory Bridge	7	31-May-21 A	07-Jun-21 A	11-Apr-22	11-Apr-22		Replacement of Screws for the Rotatory Bridge																											
ATLPST-1380	Disassembly of Scraper Drive Unit / Penstock Actuators / Valves	3	24-Jun-21 A	26-Jun-21 A	11-Apr-22	11-Apr-22		Disassembly of Scraper Drive Unit / Penstock Actuators / Valves																											
ATLPST-1390	Reconditioning and Replacement of Scraper Drive Units	14	24-Jun-21 A	10-Jul-21 A	11-Apr-22	11-Apr-22		Reconditioning and Replacement of Scraper Drive Units																											
ATLPST-1400	Disassembly, Condition Checking of Scraper Drive Units	11	28-Jun-21 A	10-Jul-21 A	11-Apr-22	11-Apr-22		Disassembly, Condition Checking of Scraper Drive Units																											
ATLPST-1430	Power Reconnection and Testing	3	07-Jul-21 A	07-Jul-21 A	11-Apr-22	11-Apr-22		Power Reconnection and Testing																											
ATLPST-1420	Return of all Drive Units and Centre Bearing for Reassembly	3	12-Jul-21 A	14-Jul-21 A	11-Apr-22	11-Apr-22		Return of all Drive Units and Centre Bearing for Reassembly																											
Detritors 1 & 2		178	09-Nov-20 A	22-Jun-21 A	11-Apr-22	11-Apr-22																													
ATLPST-1010	Method Statement / PMAC Submission and Approval for Detritor	57	09-Nov-20 A	16-Jan-21 A	11-Apr-22	11-Apr-22		Method Statement / PMAC Submission and Approval for Detritor																											
Detritor No. 2		73	18-Jan-21 A	23-Apr-21 A	11-Apr-22	11-Apr-22																													
ATLPST-1050	Isolation of Detritor No. 2 and Conduct Pre-test	17	18-Jan-21 A	05-Feb-21 A	11-Apr-22	11-Apr-22		Isolation of Detritor No. 2 and Conduct Pre-test																											
ATLPST-1080	Pump out sewage and tank cleaning	6	06-Feb-21 A	19-Feb-21 A	11-Apr-22	11-Apr-22		Pump out sewage and tank cleaning																											



- Remaining Level of Effort
- DWP Rev.5
- Actual Work
- Remaining Work
- Critical Remaining Work

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

Detailed Works Programme

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart (2022-2028)																																																			
								2022 Q1-Q4	2023 Q1-Q4	2024 Q1-Q4	2025 Q1-Q4	2026 Q1-Q4	2027 Q1-Q4	2028 Q1-Q4																																													
IW-2125	Complete Temporary Administration Building - Non-MIC Section	0		04-Jan-22		15-Oct-27	1712	Complete Temporary Administration Building - Non-MIC Section																																																			
IW-2640	Inlet Work Stage 2 - Excavation (-2.5 to -4.5mPD)	30	14-Jan-22	24-Feb-22	17-Jan-22	26-Feb-22	2	Inlet Work Stage 2 - Excavation (-2.5 to -4.5mPD)																																																			
IW-2620	Inlet Work Stage 2 - Marine Sediments Treatment and Disposal	40	20-Jan-22	14-Mar-22	16-Feb-22	02-Apr-22	17	Inlet Work Stage 2 - Marine Sediments Treatment and Disposal																																																			
IW-2630	Inlet Work Stage 2 - Strut Installation S3 (-2.5mPD)	16	22-Jan-22	16-Feb-22	16-Feb-22	02-Apr-22	39	Inlet Work Stage 2 - Strut Installation S3 (-2.5mPD)																																																			
IW-2650	Inlet Work Stage 2 - Strut Installation S4 (-4.5mPD)	16	25-Feb-22	15-Mar-22	16-Mar-22	02-Apr-22	16	Inlet Work Stage 2 - Strut Installation S4 (-4.5mPD)																																																			
IW-2660	Inlet Work Stage 2 - Excavation (-4.5 to -7.15mPD)	30	25-Feb-22	31-Mar-22	28-Feb-22	02-Apr-22	2	Inlet Work Stage 2 - Excavation (-4.5 to -7.15mPD)																																																			
IW-2670	IW - Foundation & ELS Complete	0		31-Mar-22		02-Apr-22	2	IW - Foundation & ELS Complete																																																			
Temporary Workshop and Storage								91	02-Feb-21 A	19-Jul-21 A	25-Nov-21	26-Nov-21																																															
IW-2120A	Design and Submission	7	02-Feb-21 A	24-Apr-21 A	25-Nov-21	25-Nov-21		Design and Submission																																																			
IW-2120B	Site Formation	10	26-Apr-21 A	03-May-21 A	25-Nov-21	25-Nov-21		Site Formation																																																			
IW-2120C	Foundation Work	7	04-May-21 A	08-May-21 A	25-Nov-21	25-Nov-21		Foundation Work																																																			
IW-2120D	Erect Steel Structure, External Wall and Roof Cladding	10	10-May-21 A	17-May-21 A	25-Nov-21	25-Nov-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	25-Nov-21	25-Nov-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	25-Nov-21	25-Nov-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	26-Nov-21	26-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	25-Nov-21	25-Nov-21		Relocation of Storage Facilities (advance work before P2 access)																																																			
IW Backfilling & Watertight								49	13-Aug-22	12-Oct-22	09-Nov-24	08-Jan-25	659																																														
IW-2955	IW Works - Watertightness	14	13-Aug-22	29-Aug-22	09-Nov-24	25-Nov-24	659	IW Works - Watertightness																																																			
IW-2960	IW Works - Sheet Piling Removal	21	30-Aug-22	23-Sep-22	26-Nov-24	19-Dec-24	659	IW Works - Sheet Piling Removal																																																			
IW-2970	IW Works - Backfilling and Levelling up to +5.5mPD	21	16-Sep-22	12-Oct-22	12-Dec-24	08-Jan-25	659	IW Works - Backfilling and Levelling up to +5.5mPD																																																			
IW Civil and Structural Works								262	25-Feb-22	12-Jan-23	25-Feb-22	12-Jan-23	0																																														
IW Structure Stage 1 (to G/F +4.0mPD)								135	25-Feb-22	10-Aug-22	10-Aug-22	10-Aug-22	0																																														
IW-2600	Inlet Work Stage 1 - Structure from -1.55 mPD to +1.45 mPD	90	25-Feb-22	17-Jun-22	25-Feb-22	17-Jun-22	0	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	18-Jun-22	10-Aug-22	0	Inlet Work Stage 1 - Structure from +1.45 mPD to +4.0 mPD																																																			
IW Structure Stage 2 (to G/F +4.0mPD)								107	01-Apr-22	12-Aug-22	04-Apr-22	12-Aug-22	0																																														
IW-2680	Inlet Work Stage 2 - Structure from -7.15 mPD to -5.0 mPD	30	01-Apr-22	12-May-22	04-Apr-22	14-May-22	2	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	13-May-22	11-Jun-22	16-May-22	14-Jun-22	2	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	13-Jun-22	12-Jul-22	15-Jun-22	14-Jul-22	2	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	15-Jul-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	13-Aug-22	12-Jan-23	13-Aug-22	12-Jan-23	0																																														
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-Oct-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	13-Sep-22	19-Sep-23	04-Mar-23	11-Mar-24	137																																														
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								232	05-Aug-22	02-May-23	20-Oct-22	11-Mar-24	269																																														
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-2840	TX House No. 1 - Transformer Installation and LV Switchboard Power On	72	02-Feb-23	02-May-23	08-Dec-23	11-Mar-24	254	TX House No. 1 - Transformer Installation and LV Switchboard Power On																																																			
IW-2831	TX House No. 1 - E&M Handover	0	02-Feb-23	08-Dec-23	08-Dec-23		254	TX House No. 1 - E&M Handover																																																			
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	IW - Screening / Grit Removal / Inlet Pumping / DOU System / Penstock & Stoplogs																																																			
ATAL-1010	IW - Lifting Appliance	105	12-Dec-22	27-Apr-23	12-Dec-22	27-Apr-23	0	IW - Lifting Appliance																																																			
ATAL-0000	IW - E&M Handover	0	12-Dec-22		12-Dec-22		0	IW - E&M Handover																																																			
ATAL-1020	IW - Instrumentation	36	03-Apr-23	19-May-23	03-Apr-23	19-May-23	0	IW - Instrumentation																																																			
ATAL-1030	IW - Electrical Works (Cabling / LCP, Termination)	30	25-Apr-23	31-May-23	25-Apr-23	31-May-23	0	IW - Electrical Works (Cabling / LCP, Termination)																																																			
ATAL-1040	IW - BS Installation (ELV, Ventilation, FS, PD)	30	25-Apr-23	31-May-23	25-Apr-23	31-May-23	0	IW - BS Installation (ELV, Ventilation, FS, PD)																																																			
ATAL-1120	IW - Plant Service Water System (PSW) Installation	30	25-Apr-23	31-May-23	25-Apr-23	31-May-23	0	IW - Plant Service Water System (PSW) Installation																																																			
ATAL-1110	IW - Installation, Set-Up & T&C for SCADA System	14	15-May-23	31-May-23	15-May-23	31-May-23	0	IW - Installation, Set-Up & T&C for SCADA System																																																			
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	IW - T&C - Equipment SAT (Mechanical Dry Check)																																																			
ATAL-1060	IW - T&C - Equipment SAT (Functional Dry Check)	30	01-Jun-23	07-Jul-23	01-Jun-23	07-Jul-23	0	IW - T&C - Equipment SAT (Functional Dry Check)																																																			
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	IW - T&C - Equipment SAT (Wet / Load Performance Check)																																																			
ATAL-1130	IW - T&C - Plant Service Water System (PSW)	30	01-Jun-23	07-Jul-23	01-Jun-23	07-Jul-23	0	IW - T&C - Plant Service Water System (PSW)																																																			
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	IW - Diversion works from existing bypass chamber to IW (Penstock Installation c/w T&C)																																																			
ATAL-1080	IW - FS Inspection and Fire Certificate	57	23-Aug-23	31-Oct-23	23-Aug-23	31-Oct-23	0	IW - FS Inspection and Fire Certificate																																																			
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 - T&C - Early Commissioning (100,000 m3/d) (KD3)																																																			
IW-995	KD3 (11-Mar-24)	0		11-Mar-24*		11-Mar-24	0	KD3 (11-Mar-24)																																																			
CLP Substations No. 1 & 2								1168	01-Jun-21 A	24-May-25	30-Oct-21	07-Nov-26	432																																														
CLP-0900	Complete Temporary (Non-MIC) Administration Building	0		22-Jul-21 A		01-Dec-21		Complete Temporary (Non-MIC) Administration Building																																																			
CLP-1000	Demolition Changing Room (27)	14	30-Sep-21 A	23-Oct-21 A	01-Dec-21	01-Dec-21		Demolition Changing Room (27)																																																			
CLP-1240	Demolition Carpark (28)	14	30-Oct-21	15-Nov-21	15-Nov-21	30-Nov-21	13	Demolition Carpark (28)																																																			
Submissions								69	01-Jun-21 A	03-Sep-21 A	30-Oct-21	04-Nov-21																																															
CLP-1180	Raft & Structural Design Submission	25	01-Jun-21 A	30-Jun-21 A	30-Oct-21	30-Oct-21		Raft & Structural Design Submission																																																			
CLP-1190	GEO Review and Approval	44	02-Jul-21 A	03-Sep-21 A	04-Nov-21	04-Nov-21		GEO Review and Approval																																																			
Foundation								149	16-Jul-21 A	12-Jan-22	30-Oct-21	12-Jan-22	0																																														
CLP-1210	Predrilling Works	24	16-Jul-21 A	03-Nov-21	30-Oct-21	03-Nov-21	0	Predrilling Works																																																			
CLP-1200	Raft Foundation	57	04-Nov-21	12-Jan-22	04-Nov-21	12-Jan-22	0	Raft Foundation																																																			



█ Remaining Level of Effort
█ DWP Rev.5
█ Actual Work
█ Remaining Work
█ Critical Remaining Work

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

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Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	2022												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				
SDB GI - Pre-drilling Works								87	02-Feb-24	13-May-24	16-Feb-24	13-May-24	0																																
SDB-1220	Access Date	0	02-Feb-24		16-Feb-24		14	Access Date																																					
SDB-1100	Demolition of Existing PST 1 & 3	20	12-Mar-24	08-Apr-24	12-Mar-24	08-Apr-24	0	Demolition of Existing PST 1 & 3																																					
SDB-1320	Demolition of Existing PST 2 & 4	20	02-Apr-24	25-Apr-24	02-Apr-24	25-Apr-24	0	Demolition of Existing PST 2 & 4																																					
SDB At PST 1,3 Footprint								75	02-Feb-24	11-May-24	16-Feb-24	13-May-24	1																																
SDB-1010	PD10	14	02-Feb-24	24-Feb-24	20-Mar-24	09-Apr-24	34	PD10																																					
SDB-1020	PD19	14	02-Feb-24	24-Feb-24	20-Mar-24	09-Apr-24	34	PD19																																					
SDB-1030	PD22	14	02-Feb-24	24-Feb-24	16-Feb-24	02-Mar-24	6	PD22																																					
SDB-1040	PD20	14	26-Feb-24	12-Mar-24	10-Apr-24	25-Apr-24	34	PD20																																					
SDB-1050	PD12	14	26-Feb-24	12-Mar-24	10-Apr-24	25-Apr-24	34	PD12																																					
SDB-1060	PD23	14	26-Feb-24	12-Mar-24	04-Mar-24	19-Mar-24	6	PD23																																					
SDB-1070	PD15	14	13-Mar-24	28-Mar-24	26-Apr-24	13-May-24	34	PD15																																					
SDB-1080	PD21	14	13-Mar-24	28-Mar-24	26-Apr-24	13-May-24	34	PD21																																					
SDB-1090	PD24	14	13-Mar-24	28-Mar-24	20-Mar-24	09-Apr-24	6	PD24																																					
SDB-1110	PD11 w/ obstruction (PST1)	14	02-Apr-24	18-Apr-24	10-Apr-24	25-Apr-24	6	PD11 w/ obstruction (PST1)																																					
SDB-1140	PD16 w/ obstruction (PST1)	14	02-Apr-24	18-Apr-24	10-Apr-24	25-Apr-24	6	PD16 w/ obstruction (PST1)																																					
SDB-1120	PD13 w/ obstruction (PST3)	14	09-Apr-24	24-Apr-24	10-Apr-24	25-Apr-24	1	PD13 w/ obstruction (PST3)																																					
SDB-1130	PD14 w/ obstruction (PST3)	14	09-Apr-24	24-Apr-24	10-Apr-24	25-Apr-24	1	PD14 w/ obstruction (PST3)																																					
SDB-1150	PD17 w/ obstruction (PST3)	14	25-Apr-24	11-May-24	26-Apr-24	13-May-24	1	PD17 w/ obstruction (PST3)																																					
SDB-1160	PD18 w/ obstruction (PST3)	14	25-Apr-24	11-May-24	26-Apr-24	13-May-24	1	PD18 w/ obstruction (PST3)																																					
SDB At PST 2,4 Footprint								76	02-Feb-24	13-May-24	20-Mar-24	13-May-24	0																																
SDB-1230	PD1	14	02-Feb-24	24-Feb-24	10-Apr-24	25-Apr-24	48	PD1																																					
SDB-1240	PD3	14	02-Feb-24	24-Feb-24	20-Mar-24	09-Apr-24	34	PD3																																					
SDB-1250	PD6	14	02-Feb-24	24-Feb-24	10-Apr-24	25-Apr-24	48	PD6																																					
SDB-1290	PD7	14	26-Feb-24	12-Mar-24	26-Apr-24	13-May-24	48	PD7																																					
SDB-1260	PD8	14	26-Feb-24	12-Mar-24	10-Apr-24	25-Apr-24	34	PD8																																					
SDB-1300	PD9	14	26-Feb-24	12-Mar-24	10-Apr-24	25-Apr-24	34	PD9																																					
SDB-1350	PD4 w/ obstruction (PST4)	14	26-Apr-24	13-May-24	26-Apr-24	13-May-24	0	PD4 w/ obstruction (PST4)																																					
SDB-1360	PD5 w/ obstruction (PST4)	14	26-Apr-24	13-May-24	26-Apr-24	13-May-24	0	PD5 w/ obstruction (PST4)																																					
SDB-1370	PD2 w/ obstruction (PST2)	14	26-Apr-24	13-May-24	26-Apr-24	13-May-24	0	PD2 w/ obstruction (PST2)																																					
SDB Foundation - PST 1-4 Footprint								1027	01-Nov-21	10-Feb-25	01-Nov-21	10-Feb-25	0																																
MMM-2095	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																																					
EBS-2105	Egrets Breeding Season 2022	184	01-Mar-22*	31-Aug-22	01-Mar-22	31-Aug-22	0	Egrets Breeding Season 2022																																					
MMM-2022	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-2023	Egrets Breeding Season 2023	184	01-Mar-23	31-Aug-23	23-Mar-23	22-Sep-23	22	Egrets Breeding Season 2023																																					
MMM-2023	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-2024	Egrets Breeding Season 2024	184	01-Mar-24*	31-Aug-24	01-Mar-24	31-Aug-24	0	Egrets Breeding Season 2024																																					
SDB-1190	SDB - Sheetpiles (4,720m ²)	45	14-May-24	08-Jul-24	17-Jul-24	06-Sep-24	52	SDB - Sheetpiles (4,720m ²)																																					
SDB-1170	SDB - Driven H-piles (359 nos @1.5no/d/rig, 2rigs)	120	14-May-24	05-Oct-24	14-May-24	05-Oct-24	0	SDB - Driven H-piles (359 nos @1.5no/d/rig, 2rigs)																																					
SDB-1610	SDB - Monitoring Installation and Pumping Test	21	19-Sep-24	15-Oct-24	19-Sep-24	15-Oct-24	0	SDB - Monitoring Installation and Pumping Test																																					
SDB-1180	SDB - H-piles Testing	14	27-Sep-24	15-Oct-24	27-Sep-24	15-Oct-24	0	SDB - H-piles Testing																																					
SDB-1200	SDB - Excavation (+6.0 to +4.5mPD)	24	16-Oct-24	12-Nov-24	16-Oct-24	12-Nov-24	0	SDB - Excavation (+6.0 to +4.5mPD)																																					
SDB-1210	SDB - Marine Sediments Treatment and Disposal	83	16-Oct-24	23-Jan-25	28-Oct-24	10-Feb-25	10	SDB - Marine Sediments Treatment and Disposal																																					
SDB-1620	SDB - Submit to GEO (28d)	28	16-Oct-24	16-Nov-24	03-Jan-25	10-Feb-25	65	SDB - Submit to GEO (28d)																																					
SDB-1270	SDB - Strut Installation S1 (+4.5mPD)	16	13-Nov-24	30-Nov-24	07-Dec-24	27-Dec-24	21	SDB - Strut Installation S1 (+4.5mPD)																																					
SDB-1280	SDB - Excavation (+4.5 to +1.5mPD)	23	13-Nov-24	09-Dec-24	13-Nov-24	09-Dec-24	0	SDB - Excavation (+4.5 to +1.5mPD)																																					
SDB-1330	SDB - Strut Installation S2 (+1.5mPD)	16	10-Dec-24	30-Dec-24	28-Dec-24	16-Jan-25	14	SDB - Strut Installation S2 (+1.5mPD)																																					
SDB-1340	SDB - Excavation (+1.5 to -1.5mPD)	23	10-Dec-24	08-Jan-25	10-Dec-24	08-Jan-25	0	SDB - Excavation (+1.5 to -1.5mPD)																																					
SDB-1390	SDB - Strut Installation S3 (-1.5mPD)	16	09-Jan-25	27-Jan-25	17-Jan-25	10-Feb-25	7	SDB - Strut Installation S3 (-1.5mPD)																																					
SDB-1400	SDB - Excavation (-1.5 to -3.75mPD)	23	09-Jan-25	10-Feb-25	09-Jan-25	10-Feb-25	0	SDB - Excavation (-1.5 to -3.75mPD)																																					
SDB Structure								127	11-Feb-25	08-Jul-25	11-Feb-25	08-Jul-25	0																																
SDB-1510	SDB - Structure to G/F (-3.75 to -2.2mPD)	14	11-Feb-25	26-Feb-25	11-Feb-25	26-Feb-25	0	SDB - Structure to G/F (-3.75 to -2.2mPD)																																					
SDB-1530	SDB - Structure to G/F (-2.2 to 0.0mPD)	14	27-Feb-25	14-Mar-25	27-Feb-25	14-Mar-25	0	SDB - Structure to G/F (-2.2 to 0.0mPD)																																					
SDB-1540	SDB - Structure to G/F (0 to +3.0mPD)	14	15-Mar-25	31-Mar-25	15-Mar-25	31-Mar-25	0	SDB - Structure to G/F (0 to +3.0mPD)																																					
SDB-1550	SDB - Structure to G/F (+3.0 to +6.0mPD)	14	01-Apr-25	17-Apr-25	01-Apr-25	17-Apr-25	0	SDB - Structure to G/F (+3.0 to +6.0mPD)																																					
SDB-1560	SDB - G/F to Roof (+6.0 to 9.0mPD)	15	22-Apr-25	10-May-25	22-Apr-25	10-May-25	0	SDB - G/F to Roof (+6.0 to 9.0mPD)																																					
SDB-1570	SDB - G/F to Roof (+9.0 to 12.0mPD)	16	12-May-25	29-May-25	12-May-25	29-May-25	0	SDB - G/F to Roof (+9.0 to 12.0mPD)																																					
SDB-1580	SDB - G/F to Roof (+12.0 to 15.0mPD)	16	30-May-25	18-Jun-25	30-May-25	18-Jun-25	0	SDB - G/F to Roof (+12.0 to 15.0mPD)																																					
SDB-1590	SDB - G/F to Roof (+15.0 to 18.3mPD)	16	19-Jun-25	08-Jul-25	19-Jun-25	08-Jul-25	0	SDB - G/F to Roof (+15.0 to 18.3mPD)																																					
SDB-1600	KD8 (08-Jul-25)	0		08-Jul-25*		08-Jul-25	0	KD8 (08-Jul-25)																																					
SDB ABWF Works								119	11-Feb-25	08-Jul-25	11-Feb-25	08-Jul-25	0																																
SDB-1520	SDB - BS & ABWF Works	119	11-Feb-25	08-Jul-25	11-Feb-25	08-Jul-25	0	SDB - BS & ABWF Works																																					
External Works -Sludge Dewatering and Administration Buildings Perimeter								338	07-Jun-25	29-Jul-26	15-Sep-25	07-Nov-26	84																																
EW-1110	SDB/ADB Perimeter - Drainage/Sewer/Watermain/Utility Installation	180	07-Jun-25	10-Jan-26	15-Sep-25	29-Apr-26	84	SDB/ADB Perimeter - Drainage/Sewer/Watermain/Utility Installation																																					
EW-1130	SDB/ADB Perimeter - Road Works	158	12-Jan-26	29-Jul-26	30-Apr-26	07-Nov-26	84	SDB/ADB Perimeter - Road Works																																					
Underpass								177	07-Sep-24	01-Apr-25	07-Sep-24	08-Jul-25	84																																
UDP Foundation and ELS Works								85	07-Sep-24	14-Dec-24	07-Sep-24	22-Mar-25	84																																
UDP-1000	UDP - Sheet Pile Wall	36	07-Sep-24	22-Oct-24	07-Sep-24	22-Oct-24	0	UDP - Sheet Pile Wall																																					
UDP-1090	UDP - Monitoring Installation and Pumping Test	21	07-Oct-24	31-Oct-24	08-Jan-25	06-Feb-25	76	UDP - Monitoring Installation and Pumping Test																																					
UDP-1010	UDP - Driven H-pile (8 nos @ave.1.5no./d/rig)	8	23-Oct-24	31-Oct-24	23-Oct-24	31-Oct-24	0	UDP - Driven H-pile (8 nos @ave.1.5no./d/rig)																																					
UDP-1020	UDP - Excavation (+6.0 to 4.5mPD)	12	01-Nov-24	14-Nov-24	07-Feb-25	20-Feb-25	76	UDP - Excavation (+6.0 to 4.5mPD)																																					
UDP-1030	UDP - Strut Installation S1 (+4.5mPD)	8	15-Nov-24	23-Nov-24	05-Mar-25	13-Mar-25	86	UDP - Strut Installation S1 (+4.5mPD)																																					
UDP-1040	UDP - Excavation (+4.5 to +1.5mPD)	14	15-Nov-24	30-Nov-24	21-Feb-25	08-Mar-25	76	UDP - Excavation (+4.5 to +1.5mPD)																																					
UDP-1050	UDP - Strut Installation S2 (+1.5mPD)	8	02-Dec-24	10-Dec-24	14-Mar-25	22-Mar-25	80	UDP - Strut Installation S2 (+1.5mPD)																																					
UDP-1060	UDP - Excavation (+1.5 to -0.5mPD)	12	02-Dec-24	14-Dec-24	10-Mar-25	22-Mar-25	76	UDP - Excavation (+1.5 to -0.5mPD)																																					



- Remaining Level of Effort
- DWP Rev.5
- Actual Work
- Remaining Work
- Critical Remaining Work

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

Detailed Works Programme

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 Layout : DC201912 DWP rev.7
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Detailed Works Programme			
Date	Revision	Checked	Approved
30-Oct-21	Rev. 7		
30-Sep-21	Rev. 6		
31-Aug-21	Rev. 5		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart																											
								2022	2023	2024	2025	2026	2027	2028																					
Z2A-1040	Divert Sewage Flow to PST 5.6 (PST 1-4 standby)	1	09-Jul-21 A	09-Jul-21 A	30-Oct-21	30-Oct-21		Divert Sewage Flow to PST 5.6 (PST 1-4 standby)																											
Z2A-1050	Sheetpile Installation	10	30-Sep-21 A	30-Oct-21	30-Oct-21	30-Oct-21	0	Sheetpile Installation																											
Z2A-1060	Excavation to 1st Layer of Strut	2	01-Nov-21	02-Nov-21	01-Nov-21	02-Nov-21	0	Excavation to 1st Layer of Strut																											
Z2A-1070	Strut and Waling Installation	7	03-Nov-21	10-Nov-21	03-Nov-21	10-Nov-21	0	Strut and Waling Installation																											
Z2A-1080	Excavation to Formation Level	5	10-Nov-21	15-Nov-21	10-Nov-21	15-Nov-21	0	Excavation to Formation Level																											
Z2A-1090	Manhole Base Slab	5	15-Nov-21	19-Nov-21	15-Nov-21	19-Nov-21	0	Manhole Base Slab																											
Z2A-1100	Pipe Installation (Manhole to Section before T-Joint Connection)	4	19-Nov-21	23-Nov-21	19-Nov-21	23-Nov-21	0	Pipe Installation (Manhole to Section before T-Joint Connection)																											
Z2A-1110	Manhole Wall	5	23-Nov-21	27-Nov-21	23-Nov-21	27-Nov-21	0	Manhole Wall																											
Z2A-1120	Demolition of Existing DN1200 Pipe	2	27-Nov-21	29-Nov-21	27-Nov-21	29-Nov-21	0	Demolition of Existing DN1200 Pipe																											
Z2A-1130	Pipe Testing	3	29-Nov-21	01-Dec-21	29-Nov-21	01-Dec-21	0	Pipe Testing																											
Z2A-1140	1st Night Work (Demolition of Existing DN1000 pipe and joint the new pipeline)	1	01-Dec-21	01-Dec-21	01-Dec-21	01-Dec-21	0	1st Night Work (Demolition of Existing DN1000 pipe and joint the new pipeline)																											
Z2A-1150	Divert Sewage to PST 1-4	1	01-Dec-21	01-Dec-21	01-Dec-21	01-Dec-21	0	Divert Sewage to PST 1-4																											
Z2A-1160	Backfill Pipeline to Ground Level	6	01-Dec-21	07-Dec-21	01-Dec-21	07-Dec-21	0	Backfill Pipeline to Ground Level																											
Z2A-1170	Complete Zone 2A Temporary Diversion	0		07-Dec-21		07-Dec-21	0	Complete Zone 2A Temporary Diversion																											
Zone 2B : FST, Temporary RAS to Aeration Tanks		894	13-May-21 A	30-May-24	30-Oct-21	16-Jul-24	38																												
Z2D-1110	Procurement of Equipment (Civil and E&M)	90	13-May-21 A	30-Oct-21	01-Nov-21	01-Nov-21	1	Procurement of Equipment (Civil and E&M)																											
Z2D-1100	Submit/Approve Method Statement for ELS	52	01-Jun-21 A	17-Jun-21 A	30-Oct-21	30-Oct-21		Submit/Approve Method Statement for ELS																											
Z2D-4300	Submit/Approve Design for Temp. RAS Pumping Station, Diversion Chamber, and Wash Water Pumping Station	56	01-Jun-21 A	30-Oct-21	30-Oct-21	30-Oct-21	0	Submit/Approve Design for Temp. RAS Pumping Station, Diversion Chamber, and Wash Water Pumping Station																											
Temporary Settled Sewage Diversion Chamber		28	02-Sep-21 A	04-Nov-21	30-Oct-21	04-Nov-21	0																												
Z2D-2000	Stage 1 - ELS Installation and Pipe Laying up to Temporary Gate Valve	18	02-Sep-21 A	01-Nov-21	30-Oct-21	01-Nov-21	0	Stage 1 - ELS Installation and Pipe Laying up to Temporary Gate Valve																											
Z2D-2010	Stage 2 - Cut Pipe Connection in Chamber	6	24-Sep-21 A	02-Nov-21	02-Nov-21	02-Nov-21	0	Stage 2 - Cut Pipe Connection in Chamber																											
Z2D-2020	Stage 3 - Night Work for T-Junction Installation with Gate Valve	1	03-Nov-21	03-Nov-21	03-Nov-21	03-Nov-21	0	Stage 3 - Night Work for T-Junction Installation with Gate Valve																											
Z2D-2030	Stage 3 - Day operation for Plug Pipe for Diversion, Temp Diversion from PST to AT	1	04-Nov-21	04-Nov-21	04-Nov-21	04-Nov-21	0	Stage 3 - Day operation for Plug Pipe for Diversion, Temp Diversion from PST to AT																											
Temporary Wash Water Pumping Station, RAS Pumping Station, RAS Diversion Chamber		740	04-Oct-21 A	13-May-24	30-Oct-21	16-Jul-24	52																												
Z2A-1190	Completion of Overhaul FST	0		04-Oct-21 A		30-Oct-21		Completion of Overhaul FST																											
Z2D-2090	Stage 1.2b - Construct Extension Chamber to JC "F"	11	30-Oct-21	11-Nov-21	30-Oct-21	11-Nov-21	0	Stage 1.2b - Construct Extension Chamber to JC "F"																											
Z2D-4360	Stage 1.2d - ELS for Temp. RAS Pumping Station	10	30-Oct-21	10-Nov-21	01-Nov-21	11-Nov-21	1	Stage 1.2d - ELS for Temp. RAS Pumping Station																											
Z2D-2050	Stage 1.2a - Construction of Temp. RAS Pumping Station	22	01-Nov-21	25-Nov-21	01-Nov-21	25-Nov-21	0	Stage 1.2a - Construction of Temp. RAS Pumping Station																											
ATALZ2D-1150	Stage 1.2e - Temp RASPS / RAS diversion chamber E&M Installation	20	02-Nov-21	24-Nov-21	02-Nov-21	24-Nov-21	0	Stage 1.2e - Temp RASPS / RAS diversion chamber E&M Installation																											
ATALZ2D-1160	Stage 1.2f - Temp Settled Sewage receiving chamber E&M Installation (to be deleted)	20	02-Nov-21	24-Nov-21	02-Nov-21	24-Nov-21	0	Stage 1.2f - Temp Settled Sewage receiving chamber E&M Installation (to be deleted)																											
Z2D-2040	Stage 1.2c - Construction of Temp. Wash Water Pumping Station	25	02-Nov-21	30-Nov-21	02-Nov-21	30-Nov-21	0	Stage 1.2c - Construction of Temp. Wash Water Pumping Station																											
Z2D-2060	Stage 1.2d - Construction of Temp. RAS Diversion Chamber	25	02-Nov-21	30-Nov-21	02-Nov-21	30-Nov-21	0	Stage 1.2d - Construction of Temp. RAS Diversion Chamber																											
Z2D-2045	Stage 1.5 - Lay Pipework from Temp. Wash Water PS for Connection to Existing Pipework	15	12-Nov-21	29-Nov-21	12-Nov-21	29-Nov-21	0	Stage 1.5 - Lay Pipework from Temp. Wash Water PS for Connection to Existing Pipework																											
Z2D-2070	Stage 1.3 - Laying of Temp. Sludge Pipework to Aeration Tank Inlet	14	13-Nov-21	29-Nov-21	13-Nov-21	29-Nov-21	0	Stage 1.3 - Laying of Temp. Sludge Pipework to Aeration Tank Inlet																											
Z2D-2080	Stage 1.4 - Laying of Temp. Sludge Pipework to Temp. Plant Room for Thickener	14	13-Nov-21	29-Nov-21	13-Nov-21	29-Nov-21	0	Stage 1.4 - Laying of Temp. Sludge Pipework to Temp. Plant Room for Thickener																											
ATALZ2D-1170	Stage 2.2c - Temp RASPS / RAS Diversion chamber / SS Receiving Chamber/ Temp WWPS T&C	12	16-Nov-21	29-Nov-21	16-Nov-21	29-Nov-21	0	Stage 2.2c - Temp RASPS / RAS Diversion chamber / SS Receiving Chamber/ Temp WWPS T&C																											
Z2D-2100	Stage 2.1 - Break Wall for Connection to Temporary RAS	3	30-Nov-21	02-Dec-21	30-Nov-21	02-Dec-21	0	Stage 2.1 - Break Wall for Connection to Temporary RAS																											
Z2D-4320	Stage 1.1 - Decommissioning of Existing RAS	8	03-Dec-21	11-Dec-21	03-Dec-21	11-Dec-21	0	Stage 1.1 - Decommissioning of Existing RAS																											
Z2D-2110	Stage 2.2a - Switch Over to Temp. RAS System	5	13-Dec-21	17-Dec-21	13-Dec-21	17-Dec-21	0	Stage 2.2a - Switch Over to Temp. RAS System																											
Z2D-2120	Stage 2.2b - Plug Off Abandoned Pipe Work	2	18-Dec-21	20-Dec-21	18-Dec-21	20-Dec-21	0	Stage 2.2b - Plug Off Abandoned Pipe Work																											
Z2D-4330	Stage 3.1 - Temporary Pumping between Detritors and New PST while IW is still in progress	9	01-Mar-24	11-Mar-24	01-Mar-24	11-Mar-24	0	Stage 3.1 - Temporary Pumping between Detritors and New PST while IW is still in progress																											
Z2D-4340	Stage 3.2 - Temporary Routing btw new PST and existing Aeration Tank (PST No. 4 Demolition)	14	26-Apr-24	13-May-24	29-Jun-24	16-Jul-24	52	Stage 3.2 - Temporary Routing btw new PST and existing Aeration Tank (PST No. 4 Demolition)																											
Z2D-4350	Stage 3.3 - Alternate Route to switch back to PST 1-4 if new PST is not yet fully operational	14	26-Apr-24	13-May-24	29-Jun-24	16-Jul-24	52	Stage 3.3 - Alternate Route to switch back to PST 1-4 if new PST is not yet fully operational																											
FST Tank Nos. 5-8 Diversion		26	21-Dec-21	22-Jan-22	21-Dec-21	22-Jan-22	0																												
Z2D-2200	Isolation for Diversion	26	21-Dec-21	22-Jan-22	21-Dec-21	22-Jan-22	0	Isolation for Diversion																											
Z2A-1180	Complete Zone 2B Temporary Diversion	0		22-Jan-22		22-Jan-22	0	Complete Zone 2B Temporary Diversion																											
Modification Works for Auxiliary Pumping Station		76	30-Oct-21	29-Jan-22	30-Oct-21	29-Jan-22	0																												
Z2D-1050	Modification Works for Auxiliary Pumping Station (22)	76	30-Oct-21	29-Jan-22	30-Oct-21	29-Jan-22	0	Modification Works for Auxiliary Pumping Station (22)																											
Temporary Sewage Routing		90	01-Feb-24	30-May-24	02-Feb-24	30-May-24	0																												
Z2D-2140	Early Commissioning PST Stage 1	0		01-Feb-24		11-Mar-24	27	Early Commissioning PST Stage 1																											
Z2D-2130	Stage 6 - Temporary Pumping between Detritors and New PST while IW is In-Progress	27	02-Feb-24	11-Mar-24	02-Feb-24	11-Mar-24	0	Stage 6 - Temporary Pumping between Detritors and New PST while IW is In-Progress																											
Z2D-2150	Inlet Works T&C Complete	0		11-Mar-24		11-Mar-24	0	Inlet Works T&C Complete																											
Z2D-2160	Demolition of PST4	0		25-Apr-24		25-Apr-24	0	Demolition of PST4																											
Z2D-2170	Stage 6 - Temporary Routing Between New PST and Existing Aeration Tank	14	26-Apr-24	13-May-24	26-Apr-24	13-May-24	0	Stage 6 - Temporary Routing Between New PST and Existing Aeration Tank																											
Z2D-2180	Stage 6 - Alternate Route to Switch Back to PST 1-4 (contingency for PST1-4 not fully operated)	14	14-May-24	30-May-24	14-May-24	30-May-24	0	Stage 6 - Alternate Route to Switch Back to PST 1-4 (contingency for PST1-4 not fully operated)																											
Demolition Works		392	01-Jun-21 A	31-Aug-22	01-Nov-21	31-Aug-22	0																												
NMM-2115	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																											
EBS-2125	Egrets Breeding Season 2022	184	01-Mar-22*	31-Aug-22	01-Mar-22	31-Aug-22	0	Egrets Breeding Season 2022																											
Sheetpile Installation		207	01-Jun-21 A	12-Feb-22	17-Nov-21	02-Mar-22	15																												
Z2D-4290	Submit/Approve Design for Sheetpiles	55	01-Jun-21 A	03-Nov-21	17-Nov-21	20-Nov-21	15	Submit/Approve Design for Sheetpiles																											
Z2D-4310	Procurement and Delivery of Sheetpiles	21	04-Sep-21 A	04-Nov-21	29-Nov-21	29-Nov-21	21	Procurement and Delivery of Sheetpiles																											
Z2D-4280	Submit/Approve Method Statement for Sheetpiling Works	15	11-Sep-21 A	04-Nov-21	29-Nov-21	29-Nov-21	21	Submit/Approve Method Statement for Sheetpiling Works																											
MBR-1010	MBR Stage 1 - Sheet Piles Install (approx. 391m, 9,390m ² @ 120m ² /d)	78	04-Nov-21	12-Feb-22	22-Nov-21	02-Mar-22	15	MBR Stage 1 - Sheet Piles Install (approx. 391m, 9,390m ² @ 120m ² /d)																											
Z2D-4270	Completion Temporary Diversion	0		22-Jan-22*		29-Jan-22	6	Completion Temporary Diversion																											
Aeration Tanks		55	22-Jan-22	02-Apr-22	16-Feb-22	26-Apr-22	16																												
Z2T-150	Demolition of Existing Aeration Tank No. 5, 6, 7 & 8	55	22-Jan-22	02-Apr-22	16-Feb-22	25-Apr-22	15	Demolition of Existing Aeration Tank No. 5, 6, 7 & 8																											
Z2T-152	Demolition of Return Activated Sludge Screw Pumps PS (16) & Chamber (33)	47	22-Jan-22	24-Mar-22	26-Feb-22	26-Apr-22	24	Demolition of Return Activated Sludge Screw Pumps PS (16) & Chamber (33)																											
Z2T-154	Demolition of Flow Measurement Chamber (34) & SSD Chamber (32)	24	25-Feb-22	24-Mar-22	25-Mar-22	26-Apr-22	24	Demolition of Flow Measurement Chamber (34) & SSD Chamber (32)																											
Z2T-154B	Demolition of Settled Sewage Overflow Chamber (31)	24	25-Feb-22	24-Mar-22	25-Mar-22	26-Apr-22	24	Demolition of Settled Sewage Overflow Chamber (31)																											
Z2T-150B	Demolition of Auxiliary Pumping Station (19)	24	07-Mar-22	02-Apr-22	24-Mar-22	25-Apr-22	15	Demolition of Auxiliary Pumping Station (19)																											
Final Sedimentation Tanks		120	25-Oct-21 A	29-Mar-22	17-Dec-21	29-Mar-22	0																												
Z2T-190	Demolition of Final Sedimentation Tank No.7-8 (6)	50	25-Oct-21 A	02-Dec-21	17-Dec-21	22-Jan-22	41	Demolition of Final Sedimentation Tank No.7-8 (6)																											
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)		1246	14-Feb-22	05-Feb-26	24-Mar-22	07-Nov-26	236																												



■ Remaining Level of Effort
■ DWP Rev.5
■ Actual Work
■ Remaining Work
■ Critical Remaining Work

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30-Oct-21	Rev. 7		
30-Sep-21	Rev. 6		
31-Aug-21	Rev. 5		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Gantt Chart (2022-2028)																											
								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
External Works - Mainstream Bio-Reactor System Perimeter																																			
EW-1000	MBR Perimeter - Drainage/Sewer/Watermain/Utility Installation	102	17-Apr-25	14-Nov-25	14-Apr-26	07-Nov-26	288	[Gantt bar for EW-1000]																											
EW-1010	MBR Perimeter - Process Pipe Installation	102	17-Apr-25	21-Aug-25	14-Apr-26	14-Aug-26	288	[Gantt bar for EW-1010]																											
EW-1030	MBR Perimeter - Road Works	70	22-Aug-25	14-Nov-25	15-Aug-26	07-Nov-26	288	[Gantt bar for EW-1030]																											
Tertiary Treatment System (TTS)																																			
Foundation and ELS																																			
NMM-2125	PS 1.105A Noise Mitigation Measures 2021-2022	151	01-Nov-21*	31-Mar-22	01-Nov-21	31-Mar-22	0	[Gantt bar for NMM-2125]																											
EBS-2135	Egrets Breeding Season 2022	184	01-Mar-22*	31-Aug-22	01-Mar-22	31-Aug-22	0	[Gantt bar for EBS-2135]																											
TTS-1000	TTS - Site Clearance	18	04-Apr-22	28-Apr-22	09-Jun-22	29-Jun-22	50	[Gantt bar for TTS-1000]																											
TTS-1010	TTS - Sheet Piles Install (4,639m ² @120m ² /d)	52	29-Apr-22	02-Jul-22	30-Jun-22	30-Aug-22	50	[Gantt bar for TTS-1010]																											
TTS-1230	TTS - Monitoring Installation and Pumping Test	21	08-Jun-22	02-Jul-22	06-Aug-22	30-Aug-22	50	[Gantt bar for TTS-1230]																											
TTS-1020	TTS - ELS Excavation (+5.0 to +3.5mPD)	25	04-Jul-22	01-Aug-22	31-Aug-22	29-Sep-22	50	[Gantt bar for TTS-1020]																											
TTS-1030	TTS - Strut Installation S1 (+4.5mPD)	14	02-Aug-22	17-Aug-22	28-Oct-22	12-Nov-22	72	[Gantt bar for TTS-1030]																											
TTS-1040	TTS - ELS Excavation (+3.5 to +0.5mPD)	25	02-Aug-22	30-Aug-22	30-Sep-22	31-Oct-22	50	[Gantt bar for TTS-1040]																											
TTS-1050	TTS - Strut Installation S2 (+1.5mPD)	14	31-Aug-22	16-Sep-22	14-Nov-22	29-Nov-22	61	[Gantt bar for TTS-1050]																											
TTS-1060	TTS - ELS Excavation (+0.5 to -2.4mPD)	25	31-Aug-22	29-Sep-22	01-Nov-22	29-Nov-22	50	[Gantt bar for TTS-1060]																											
TTS-1070	TTS - Box Raft Foundation (-2.4 to -0.80mPD)	30	30-Sep-22	05-Nov-22	30-Nov-22	06-Jan-23	50	[Gantt bar for TTS-1070]																											
Structure																																			
TTS-1080	TTS - Wall to G/F Slab (-0.8mPD to +2.7mPD)	60	07-Nov-22	18-Jan-23	07-Jan-23	24-Mar-23	50	[Gantt bar for TTS-1080]																											
TTS-1090	TTS - Wall to G/F Slab (+2.7mPD to +6.2mPD)	60	19-Jan-23	06-Apr-23	25-Mar-23	09-Jun-23	50	[Gantt bar for TTS-1090]																											
TTS-1100	TTS - Structure to Roof (+6.2mPD to +9.4mPD)	60	11-Apr-23	21-Jun-23	10-Jun-23	21-Aug-23	50	[Gantt bar for TTS-1100]																											
TTS-1110	TTS - Structure to Roof (+9.4mPD to +12.6mPD)	60	23-Jun-23	01-Sep-23	22-Aug-23	02-Nov-23	50	[Gantt bar for TTS-1110]																											
TTS-1120	TTS - Structure to Roof (+12.6mPD to +15.75mPD)	40	02-Sep-23	20-Oct-23	03-Nov-23	19-Dec-23	50	[Gantt bar for TTS-1120]																											
BS & ABWF Works																																			
TTS-1130	TTS - BS and ABWF Works	390	02-Sep-23	28-Dec-24	14-Oct-24	05-Feb-26	326	[Gantt bar for TTS-1130]																											
E&M Installation Works																																			
TTS-1140	TTS - Disc Filter System, UV Disinfection System, Effluent Pumping Station & DO System	148	21-Oct-23	26-Apr-24	20-Dec-23	27-Jun-24	50	[Gantt bar for TTS-1140]																											
TTS-1150	TTS - Penstocks & Stoplogs, Pipework, Valves & Accessories	148	21-Oct-23	26-Apr-24	20-Dec-23	27-Jun-24	50	[Gantt bar for TTS-1150]																											
TTS-1139	TTS - E&M Handover	0	21-Oct-23		20-Dec-23		50	[Gantt bar for TTS-1139]																											
TTS-1160	TTS - Instrumentation	48	27-Apr-24	25-Jun-24	28-Jun-24	23-Aug-24	50	[Gantt bar for TTS-1160]																											
TTS-1170	TTS - Electrical Works (Cabling / LCP, Termination)	124	26-Jun-24	21-Nov-24	24-Aug-24	22-Jan-25	50	[Gantt bar for TTS-1170]																											
TTS-1180	TTS - BS Installation (ELV, Ventilation, FS, PD)	124	26-Jun-24	21-Nov-24	24-Aug-24	22-Jan-25	50	[Gantt bar for TTS-1180]																											
TTS-1240	TTS - Plant Service Water System (PSW) Installation	30	18-Oct-24	21-Nov-24	25-Nov-25	31-Dec-25	326	[Gantt bar for TTS-1240]																											
TTS-1185	TTS - Installation, Set-Up & T&C for SCADA System	14	06-Nov-24	21-Nov-24	07-Jan-25	22-Jan-25	50	[Gantt bar for TTS-1185]																											
Testing and Commissioning (T&C) - KD4																																			
TTS-1190	TTS - T&C - Equipment SAT	208	22-Nov-24	09-Aug-25	23-Jan-25	09-Oct-25	50	[Gantt bar for TTS-1190]																											
TTS-1200	TTS - T&C - System Commissioning (60,000 m ³ /d) (KD4)	98	11-Aug-25	05-Dec-25	10-Oct-25	05-Feb-26	50	[Gantt bar for TTS-1200]																											
TTS-1210	TTS - FS Inspection and Fire Certificate	50	08-Oct-25	05-Dec-25	06-Dec-25	05-Feb-26	50	[Gantt bar for TTS-1210]																											
TTS-1250	TTS - T&C - Plant Service Water System (PSW)	30	01-Nov-25	05-Dec-25	02-Jan-26	05-Feb-26	50	[Gantt bar for TTS-1250]																											
TTS-1220	TTS - E&M Works Complete	0		05-Dec-25		05-Feb-26	50	[Gantt bar for TTS-1220]																											
PKD4a	Achieve 60,000m ³ /d Flowrate (KD4)	0		05-Feb-26		05-Feb-26	0	[Gantt bar for PKD4a]																											
External Works - Tertiary Treatment System Perimeter																																			
EW-1100	TTS Perimeter - Drainage/Sewer/Watermain/Utility Installation	150	16-Nov-24	26-May-25	07-Jul-25	03-Jan-26	183	[Gantt bar for EW-1100]																											
EW-1070	TTS Perimeter - Process Pipe Installation	120	16-Nov-24	15-Apr-25	07-Jul-25	26-Nov-25	183	[Gantt bar for EW-1070]																											
EW-1120	TTS Perimeter - Road Works	90	27-May-25	10-Sep-25	05-Jan-26	29-Apr-26	183	[Gantt bar for EW-1120]																											
Zone 3 Construction																																			
Temporary Works Design																																			
UC (Utilities Corridor)																																			
TWD-1230	ELS for Utilities Corridor (UC) - ICE Period Submission	30	16-Nov-21*	15-Dec-21	12-Dec-21	10-Jan-22	26	[Gantt bar for TWD-1230]																											
TWD-1240	ELS for Utilities Corridor (UC) - ICE Review Period	28	16-Dec-21	12-Jan-22	11-Jan-22	07-Feb-22	26	[Gantt bar for TWD-1240]																											
TWD-1250	ELS for Utilities Corridor (UC) - PM Review Period	49	13-Jan-22	02-Mar-22	08-Feb-22	28-Mar-22	26	[Gantt bar for TWD-1250]																											
TWD-1260	ELS for Utilities Corridor (UC) - Consent Date	0		02-Mar-22*		28-Mar-22	26	[Gantt bar for TWD-1260]																											
Sludge Thickening Building (STB)																																			
TWD-1270	ELS for Sludge Thickening Building (STB) - ICE Period Submission	30	24-Jan-22*	22-Feb-22	28-Jan-22	26-Feb-22	4	[Gantt bar for TWD-1270]																											
TWD-1280	ELS for Sludge Thickening Building (STB) - ICE Review Period	28	23-Feb-22	22-Mar-22	27-Feb-22	26-Mar-22	4	[Gantt bar for TWD-1280]																											
TWD-1290	ELS for Sludge Thickening Building (STB) - PM Review Period	49	23-Mar-22	10-May-22	27-Mar-22	14-May-22	4	[Gantt bar for TWD-1290]																											
TWD-1300	ELS for Sludge Thickening Building (STB) - Consent Date	0		12-Jul-22*		16-Jul-22	4	[Gantt bar for TWD-1300]																											
Biogas Holder (BH)																																			
TWD-1310	Ground Improvement for Biogas Holder (BH) - ICE Period Submission	30	30-Oct-21	28-Nov-21	04-Nov-21	03-Dec-21	5	[Gantt bar for TWD-1310]																											
TWD-1320	Ground Improvement for Biogas Holder (BH) - ICE Review Period	28	29-Nov-21	26-Dec-21	04-Dec-21	31-Dec-21	5	[Gantt bar for TWD-1320]																											
TWD-1330	Ground Improvement for Biogas Holder (BH) - PM Review Period	49	27-Dec-21	13-Feb-22	01-Jan-22	18-Feb-22	5	[Gantt bar for TWD-1330]																											
TWD-1340	Ground Improvement for Biogas Holder (BH) - Consent Date	0		27-Feb-22*		04-Mar-22	5	[Gantt bar for TWD-1340]																											
Sludge Digester (SD)																																			
TWD-1350	ELS for Sludge Digesters (SD) - ICE Period Submission	30	24-Jan-22*	22-Feb-22	13-Feb-22	14-Mar-22	20	[Gantt bar for TWD-1350]																											
TWD-1360	ELS for Sludge Digesters (SD) - ICE Review Period	28	23-Feb-22	22-Mar-22	15-Mar-22	11-Apr-22	20	[Gantt bar for TWD-1360]																											
TWD-1370	ELS for Sludge Digesters (SD) - PM Review Period	49	23-Mar-22	10-May-22	12-Apr-22	30-May-22	20	[Gantt bar for TWD-1370]																											
TWD-1380	ELS for Sludge Digesters (SD) - Consent Date	0		11-Jan-23*		31-Jan-23	20	[Gantt bar for TWD-1380]																											
Stage 1																																			
Z3S1	Confirm Zone 3 Temporary Diversion Scheme	0		16-Jun-21 A		30-Oct-21		[Gantt bar for Z3S1]																											
Z3S1-3000	Completion of Stage 1	0		24-Jan-22*		24-Jan-22	0	[Gantt bar for Z3S1-3000]																											
PKD20	KD10 - Completion of Civil & Structural works of roof floor of sludge thickening bldg(8Jan24)	0		08-Dec-23*		08-Jan-24	31	[Gantt bar for PKD20]																											
PPKD14	KD4 - Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m ³ /d at AWDF (5 Feb 26)	0		04-Jan-25*		05-Feb-26	397	[Gantt bar for PPKD14]																											
PSC13	Section 3 - Remainder of the Works, except Landscape Softworks & Establishment Works (sd+2190d=08NOV2026)	0		07-Nov-26*		08-Nov-26	1	[Gantt bar for PSC13]																											
Advance Works																																			



- █ Remaining Level of Effort
- █ DWP Rev.5
- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work

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31-Aug-21	Rev. 5		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	2022												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		
Temporary Thickened Sludge / Supernatant Pumping Station								162	02-Jul-21 A	13-Jan-22	30-Oct-21	13-Jan-22	0																																
ATALZ3S1-2000	CMS - Pumps	24	02-Jul-21 A	29-Jul-21 A	30-Oct-21	30-Oct-21	0	CMS - Pumps																																					
ATALZ3S1-2060	Method Statement for Thickened Sludge / Supernatant Pumping Station	20	20-Aug-21 A	05-Nov-21	30-Oct-21	05-Nov-21	0	Method Statement for Thickened Sludge / Supernatant Pumping Station																																					
Z3S1-2070	Civil Structural Construction for Thickened Sludge / Supernatant Pumping Station (Location E)	36	01-Nov-21	11-Dec-21	01-Nov-21	11-Dec-21	0	Civil Structural Construction for Thickened Sludge / Supernatant Pumping Station (Location E)																																					
ATALZ3S1-2140	E&M installation of pumping system c/w pipework & valves & cabling	30	25-Nov-21	31-Dec-21	25-Nov-21	31-Dec-21	0	E&M installation of pumping system c/w pipework & valves & cabling																																					
ATALZ3S1-2180	T&C (Functional test for Thickened Sludge / Supernatant Pumping System)	15	24-Dec-21	13-Jan-22	24-Dec-21	13-Jan-22	0	T&C (Functional test for Thickened Sludge / Supernatant Pumping System)																																					
Relocation of Heater Room								102	20-Aug-21 A	22-Jan-22	30-Oct-21	22-Jan-22	0																																
ATALZ3S1-2080	CGS - Method Statement Submission and Approval for Relocation	25	20-Aug-21 A	19-Nov-21	30-Oct-21	19-Nov-21	0	CGS - Method Statement Submission and Approval for Relocation																																					
Z3S1-2090	Civil Structural Construction for Heating Room	30	18-Sep-21 A	24-Nov-21	20-Nov-21	24-Nov-21	0	Civil Structural Construction for Heating Room																																					
ATALZ3S1-2150	Relocation works c/w T&C	48	25-Nov-21	22-Jan-22	25-Nov-21	22-Jan-22	0	Relocation works c/w T&C																																					
Temporary Polymer Preparation & Dosing System								111	02-Aug-21 A	13-Jan-22	30-Oct-21	13-Jan-22	0																																
ATALZ3S1-2020	CMS - Polymer Preparation System & Pumps	27	02-Aug-21 A	01-Nov-21	30-Oct-21	01-Nov-21	0	CMS - Polymer Preparation System & Pumps																																					
Z3S1-2100	Civil Structural Construction for Polymer Preparation & Dosing System	50	02-Sep-21 A	01-Dec-21	02-Nov-21	01-Dec-21	0	Civil Structural Construction for Polymer Preparation & Dosing System																																					
ATALZ3S1-2160	E&M installation of polymer preparation & dosing system c/w pipework & valves & cabling	35	03-Nov-21	13-Dec-21	15-Nov-21	24-Dec-21	10	E&M installation of polymer preparation & dosing system c/w pipework & valves & cabling																																					
ATALZ3S1-1220	T&C (Functional test for Polymer Preparation & Dosing System)	14	28-Dec-21	13-Jan-22	28-Dec-21	13-Jan-22	0	T&C (Functional test for Polymer Preparation & Dosing System)																																					
Relocation of Ferric Chloride (FeCl3) Dosing System								111	20-Aug-21 A	13-Jan-22	02-Nov-21	13-Jan-22	0																																
ATALZ3S1-2040	CGS - Method Statement Submission and Approval for Relocation	22	20-Aug-21 A	13-Nov-21	10-Nov-21	24-Nov-21	9	CGS - Method Statement Submission and Approval for Relocation																																					
Z3S1-2055	UU diversion prior to the construction for Temporary Sludge Pump Chamber (Location E)	21	30-Oct-21*	23-Nov-21	02-Nov-21	25-Nov-21	2	UU diversion prior to the construction for Temporary Sludge Pump Chamber (Location E)																																					
Z3S1-2110	Civil Structural Construction for FeCl3 Dosing System	37	02-Nov-21	14-Dec-21	02-Nov-21	14-Dec-21	0	Civil Structural Construction for FeCl3 Dosing System																																					
ATALZ3S1-2170	Relocation Works of FeCl3 Dosing System	36	13-Nov-21	24-Dec-21	13-Nov-21	24-Dec-21	0	Relocation Works of FeCl3 Dosing System																																					
ATALZ3S1-1230	T&C (Functional test FeCl3 Dosing System)	14	28-Dec-21	13-Jan-22	28-Dec-21	13-Jan-22	0	T&C (Functional test FeCl3 Dosing System)																																					
Temporary Digested Sludge Pumping System and Forward Pumping Station								138	02-Aug-21 A	21-Feb-22	08-Nov-21	20-Sep-22	172																																
ATALZ3S1-2030	CMS - Digested Sludge Pump / Forward Pump	22	02-Aug-21 A	26-Aug-21 A	08-Nov-21	08-Nov-21	0	CMS - Digested Sludge Pump / Forward Pump																																					
Z3S1-2050	Civil Structural Construction for Digested Sludge Pumping System	53	31-Aug-21 A	01-Dec-21	08-Nov-21	09-Dec-21	7	Civil Structural Construction for Digested Sludge Pumping System																																					
ATALZ3S1-2200	E&M installation of digested sludge pump c/w pipework & valves & cabling at Stage 1A	36	02-Dec-21	15-Jan-22	10-Dec-21	24-Jan-22	7	E&M installation of digested sludge pump c/w pipework & valves & cabling at Stage 1A																																					
ATALZ3S2-1030	E&M installation of digested sludge pump c/w pipework & valves & cabling at Stage 2	15	17-Jan-22	09-Feb-22	22-Aug-22	07-Sep-22	172	E&M installation of digested sludge pump c/w pipework & valves & cabling at Stage 2																																					
ATALZ3S2-1040	T&C (Functional test for Digested Sludge Pumping System)	10	10-Feb-22	21-Feb-22	08-Sep-22	20-Sep-22	172	T&C (Functional test for Digested Sludge Pumping System)																																					
Temporary Primary Sludge Pumping Station (P)								96	02-Aug-21 A	25-Jan-22	18-Dec-21	22-Mar-22	42																																
Z3TD1-4040	CMS - Primary Sludge Pump	22	02-Aug-21 A	26-Aug-21 A	04-Jan-22	04-Jan-22	0	CMS - Primary Sludge Pump																																					
Z3TD1-4015	UU diversion prior to the construction for Temporary Primary Sludge Pumping Station (Primary Sludge Draw-off Chamber)	21	30-Oct-21*	23-Nov-21	18-Dec-21	14-Jan-22	42	UU diversion prior to the construction for Temporary Primary Sludge Pumping Station (Primary Sludge Draw-off Chamber)																																					
Z3TD1-4010	Civil Structural Construction of Temporary Primary Sludge Pumping Station (Location D)	40	12-Nov-21	30-Dec-21	04-Jan-22	25-Feb-22	42	Civil Structural Construction of Temporary Primary Sludge Pumping Station (Location D)																																					
Z3TD1-4100	E&M Installation of Primary Sludge Pump for pipework & cabling	24	13-Dec-21	12-Jan-22	10-Feb-22	09-Mar-22	42	E&M Installation of Primary Sludge Pump for pipework & cabling																																					
Z3TD1-4110	T&C (Functional test for Pumping System)	11	13-Jan-22	25-Jan-22	10-Mar-22	22-Mar-22	42	T&C (Functional test for Pumping System)																																					
Gas Holder 2 (GH2)								95	01-Sep-21 A	23-Dec-21	02-Nov-21	24-Dec-21	1																																
ATALZ3S1-1200	CGS - Method Statement Submission and Approval	71	01-Sep-21 A	23-Dec-21	02-Nov-21	24-Dec-21	1	CGS - Method Statement Submission and Approval																																					
ATALZ3S1-1210	Examination Works for BH No.2 c/w T&C	25	25-Nov-21	23-Dec-21	26-Nov-21	24-Dec-21	1	Examination Works for BH No.2 c/w T&C																																					
Gas Holder 1 (GH1)								206	13-Nov-21	30-Jul-22	17-Mar-22	24-Jun-23	263																																
ATALZ3S2-1000	Submission & Approval of Method Statement	60	13-Nov-21*	25-Jan-22	17-Mar-22	01-Jun-22	97	Submission & Approval of Method Statement																																					
ATALZ3S2-1010	Procurement of parts	72	26-Jan-22	30-Apr-22	02-Jun-22	26-Aug-22	97	Procurement of parts																																					
ATALZ3S2-1020	Overhaul works	20	03-May-22	26-May-22	27-Aug-22	20-Sep-22	97	Overhaul works																																					
ATALZ3S3-1000	Overhaul works	39	27-May-22	13-Jul-22	20-Apr-23	06-Jun-23	263	Overhaul works																																					
ATALZ3S3-1050	Re-commissioning	15	14-Jul-22	30-Jul-22	07-Jun-23	24-Jun-23	263	Re-commissioning																																					
Submissions								76	17-Jun-21 A	05-Nov-21	30-Oct-21	14-Jan-22	59																																
Design Submission								15	17-Jun-21 A	05-Jul-21 A	30-Oct-21	14-Jan-22																																	
TDZ3S1-1140	Pipework Sizing Calculation for Zone 3 Temporary Diversion	15	17-Jun-21 A	05-Jul-21 A	30-Oct-21	30-Oct-21		Pipework Sizing Calculation for Zone 3 Temporary Diversion																																					
TDZ3S1-1150	Design of Temporary Water Heater House	15	17-Jun-21 A	05-Jul-21 A	20-Nov-21	20-Nov-21		Design of Temporary Water Heater House																																					
TDZ3S1-1180	Design of 400m3 for Sludge Holding Tank	15	17-Jun-21 A	05-Jul-21 A	14-Jan-22	14-Jan-22		Design of 400m3 for Sludge Holding Tank																																					
TDZ3S1-1190	Design of 400m3 for Sludge Thickening Tank	15	17-Jun-21 A	05-Jul-21 A	14-Jan-22	14-Jan-22		Design of 400m3 for Sludge Thickening Tank																																					
Material Submission								19	06-Jul-21 A	27-Jul-21 A	30-Oct-21	30-Oct-21																																	
TDZ3S1-1200	Temp. Sludge Pipes, Fittings, Support and all Accessories	19	06-Jul-21 A	27-Jul-21 A	30-Oct-21	30-Oct-21		Temp. Sludge Pipes, Fittings, Support and all Accessories																																					
TDZ3S1-1210	Temp. Water Pipes, Fittings, Support and all Accessories	19	06-Jul-21 A	27-Jul-21 A	30-Oct-21	30-Oct-21		Temp. Water Pipes, Fittings, Support and all Accessories																																					
TDZ3S1-1220	Temp. Biogas Pipes, Fittings, Support and all Accessories	19	06-Jul-21 A	27-Jul-21 A	30-Oct-21	30-Oct-21		Temp. Biogas Pipes, Fittings, Support and all Accessories																																					
Method Statement Submissions								15	17-Jul-21 A	01-Nov-21	04-Nov-21	05-Nov-21	4																																
TDZ3S1-1260	Installation works for Temporary Diversion Pipework	15	17-Jul-21 A	30-Oct-21	05-Nov-21	05-Nov-21	5	Installation works for Temporary Diversion Pipework																																					
TDZ3S1-1270	Construction of Temporary Water Heater House	15	17-Jul-21 A	30-Oct-21	05-Nov-21	05-Nov-21	5	Construction of Temporary Water Heater House																																					
TDZ3S1-1280	Relocation of pipework including Biogas Pipe, Sludge Pipe, Heat Water Pipe	15	17-Jul-21 A	01-Nov-21	04-Nov-21	05-Nov-21	4	Relocation of pipework including Biogas Pipe, Sludge Pipe, Heat Water Pipe																																					
Procurement								76	17-Jun-21 A	05-Nov-21	30-Oct-21	05-Nov-21	0																																
TDZ3S1-1290	Advise of material availabilities and lead time for material	6	17-Jun-21 A	23-Jun-21 A	30-Oct-21	30-Oct-21		Advise of material availabilities and lead time for material																																					
TDZ3S1-1300	Review of material with DSD ST1/AECOM	6	24-Jun-21 A	30-Jun-21 A	30-Oct-21	30-Oct-21		Review of material with DSD ST1/AECOM																																					
TDZ3S1-1310	Confirm material procurement	6	01-Jul-21 A	07-Jul-21 A	30-Oct-21	30-Oct-21		Confirm material procurement																																					
TDZ3S1-1230	Temp. Sludge Pipes, Fittings, Support and all Accessories (min duration allowed, subject to size and availabilities)	50	17-Jul-21 A	05-Nov-21	30-Oct-21	05-Nov-21	0	Temp. Sludge Pipes, Fittings, Support and all Accessories (min duration allowed, subject to size and availabilities)																																					
TDZ3S1-1240	Temp. Water Pipes, Fittings, Support and all Accessories (min duration allowed, subject to size and availabilities)	50	17-Jul-21 A	05-Nov-21	30-Oct-21	05-Nov-21	0	Temp. Water Pipes, Fittings, Support and all Accessories (min duration allowed, subject to size and availabilities)																																					
TDZ3S1-1250	Temp. Biogas Pipes, Fittings, Support and all Accessories (min duration allowed, subject to size and availabilities)	50	17-Jul-21 A	05-Nov-21	30-Oct-21	05-Nov-21	0	Temp. Biogas Pipes, Fittings, Support and all Accessories (min duration allowed, subject to size and availabilities)																																					
Overhaul Works At Existing SHT Footprint								202	09-Nov-20 A	21-Jul-21 A	30-Oct-21	09-Nov-27																																	
Z3S1a.7-40	Completion Overhaul SHT No. 3 and No. 4	0		21-Jul-21 A		09-Nov-27		Completion Overhaul SHT No. 3 and No. 4																																					
Overhaul at SHT								202	09-Nov-20 A	21-Jul-21 A	30-Oct-21	30-Oct-21																																	
ATALZ3S1A-2000	Method Statement / PMAC Submission and Approval for SHTs	67	09-Nov-20 A	28-Jan-21 A	30-Oct-21	30-Oct-21		Method Statement / PMAC Submission and Approval for SHTs																																					
ATALZ3S1A-2010	Removal of Sludge at SHT 1	41	29-Jan-21 A	24-Mar-21 A	30-Oct-21	30-Oct-21		Removal of Sludge at SHT 1																																					
ATALZ3S1A-2020	Removal of Sludge at SHT 2	36	09-Mar-21 A	23-Apr-21 A	30-Oct-21	30-Oct-21		Removal of Sludge at SHT 2																																					
ATALZ3S1A-2030	Switch Duty to SHT 1 & 2 and Isolation of SHT 3 & 4	2	24-Apr-21 A	26-Apr-21 A	30-Oct-21	30-Oct-21		Switch Duty to SHT 1 & 2 and Isolation of SHT 3 & 4																																					
ATALZ3S1A-2040	Removal of Sludge at SHT 3	38	27-Apr-21 A	11-Jun-21 A	30-Oct-21	30-Oct-21		Removal of Sludge at SHT 3																																					
ATALZ3S1A-2050	Removal of Sludge at SHT 4	49	24-May-21 A	21-Jul-21 A	30-Oct-21	30-Oct-21		Removal of Sludge at SHT 4																																					
Overhaul Works At Existing SDT Footprint								337	09-Nov-20 A	31-Dec-21	06-Nov-21	24-Jan-22	19																																
Z3S1a.7-30	Completion Overhaul SDT No. 3 and No. 4 (Partial Completion)	0		02-Oct-21 A		24-Jan-22		Completion Overhaul SDT No. 3 and No. 4 (Partial Completion)																																					
Z3S1a.7-80	Completion Overhaul SDT No. 3 and No. 4 (Completion up to Postponed Works)	0		31-Dec-21		24-Jan-22	19	Completion Overhaul SDT No. 3 and No. 4 (Completion up to Postponed Works)																																					
SDT No. 1 and 2								105	09-Nov-20 A	20-Mar-21 A	06-Nov-21	06-Nov-21																																	



- Remaining Level of Effort
- DWP Rev.5
- 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	2023	2024	2025	2026	2027	2028																											
S2 : UC/PP3 Foundation and ELS Works								156	26-Jan-22	11-Aug-22	23-Mar-22	18-Aug-22	6	[Gantt bars for S2 UC/PP3 Foundation and ELS Works]																											
Z3S2-2340	UC/PP 3 - Site Setup & Mobilization	12	26-Jan-22	15-Feb-22	23-Mar-22	06-Apr-22	42	[Gantt bar for Z3S2-2340]																																	
Z3S2-2060	UC/PP 3 - Sheetpile Installation (2,674m2 @90m2/d)	30	30-Mar-22	10-May-22	07-Apr-22	17-May-22	6	[Gantt bar for Z3S2-2060]																																	
Z3S2-3050	UC/PP 3 - Monitoring Installation and Pumping Test	21	11-Apr-22	21-Apr-22	17-May-22	17-May-22	6	[Gantt bar for Z3S2-3050]																																	
Z3S2-2070	UC/PP 3 - ELS, Excavation (+6.0 to +4.0mPD)	20	11-May-22	02-Jun-22	18-May-22	10-Jun-22	6	[Gantt bar for Z3S2-2070]																																	
Z3S2-2090	UC/PP 3 - ELS, Excavation (+4.0 to +1.5mPD)	20	31-May-22	23-Jun-22	08-Jun-22	30-Jun-22	6	[Gantt bar for Z3S2-2090]																																	
Z3S2-2080	UC/PP 3 - ELS, Strut Installation S1 (+4.0mPD)	12	04-Jun-22	17-Jun-22	27-Jun-22	11-Jul-22	19	[Gantt bar for Z3S2-2080]																																	
Z3S2-2160	UC/PP 3 - Marine Sediments Treatment and Disposal	30	04-Jun-22	09-Jul-22	20-Jun-22	25-Jul-22	13	[Gantt bar for Z3S2-2160]																																	
Z3S2-2100	UC/PP 3 - ELS, Strut Installation S2 (+1.5mPD)	12	24-Jun-22	08-Jul-22	12-Jul-22	25-Jul-22	14	[Gantt bar for Z3S2-2100]																																	
Z3S2-2110	UC/PP 3 - ELS, Excavation (+1.5 to -1.0mPD)	20	24-Jun-22	18-Jul-22	02-Jul-22	25-Jul-22	6	[Gantt bar for Z3S2-2110]																																	
Z3S2-2120	UC/PP 3 - ELS, Strut Installation S3 (-1.0mPD)	12	19-Jul-22	01-Aug-22	26-Jul-22	08-Aug-22	6	[Gantt bar for Z3S2-2120]																																	
Z3S2-2130	UC/PP 3 - ELS, Excavation (-1.0 to -3.75mPD)	21	19-Jul-22	11-Aug-22	26-Jul-22	18-Aug-22	6	[Gantt bar for Z3S2-2130]																																	
S2 : UC/PP3 Civil and Structural Works								27	12-Aug-22	13-Sep-22	19-Aug-22	20-Sep-22	6	[Gantt bars for S2 UC/PP3 Civil and Structural Works]																											
Z3S2-2370	UC/PP 3 - Structure (-3.75 to -2.20mPD, Base Slab) at Stage 2	27	12-Aug-22	13-Sep-22	19-Aug-22	20-Sep-22	6	[Gantt bar for Z3S2-2370]																																	
Stage 2 : Utility Corridor No. 2								30	24-Jun-22	29-Jul-22	16-Aug-22	11-Oct-22	60	[Gantt bar for Stage 2 Utility Corridor No. 2]																											
S2 : UC/PP2 Foundation and ELS Works								30	24-Jun-22	29-Jul-22	16-Aug-22	11-Oct-22	60	[Gantt bars for S2 UC/PP2 Foundation and ELS Works]																											
Z3S2-2150	UC/PP 2 - Sheetpile Installation (2,674m2 @90m2/d)	30	24-Jun-22	29-Jul-22	16-Aug-22	20-Sep-22	44	[Gantt bar for Z3S2-2150]																																	
Z3S2-3060	UC/PP 2 - Monitoring Installation and Pumping Test	21	06-Jul-22	29-Jul-22	15-Sep-22	11-Oct-22	60	[Gantt bar for Z3S2-3060]																																	
Stage 3								368	22-Apr-22	24-Jun-23	05-May-22	28-Jun-23	3	[Gantt bar for Stage 3]																											
Z3S3-3030	Completion of Stage 3	0		24-Jun-23*		24-Jun-23	0	[Gantt bar for Z3S3-3030]																																	
Stage 3 : New Sludge Thickening Building (STB) (Continued)								247	22-Apr-22	03-Feb-23	05-May-22	24-Jun-23	121	[Gantt bars for Stage 3 STB (Continued)]																											
Stage 3 : STB Foundation and ELS								231	22-Apr-22	16-Jan-23	05-May-22	31-Jan-23	13	[Gantt bars for Stage 3 STB Foundation and ELS]																											
Z3S3-3010	STB - Site Setup & Mobilization	10	22-Apr-22	04-May-22	05-May-22	17-May-22	10	[Gantt bar for Z3S3-3010]																																	
Z3S1a.7-70	Complete Predrilling Works for STB	0		04-May-22		17-May-22	10	[Gantt bar for Z3S1a.7-70]																																	
Z3S3-2090	STB - Driven H-pile (101 nos. @1.5no/d/rig)	68	10-May-22	29-Jul-22	18-May-22	06-Aug-22	7	[Gantt bar for Z3S3-2090]																																	
Z3S3-2180	STB - Sheetpile Installation (2,955m2 @90m2/d)	40	18-Jul-22	01-Sep-22	26-Jul-22	09-Sep-22	7	[Gantt bar for Z3S3-2180]																																	
Z3S3-3370	STB - Submit to GEO (28d)	28	30-Jul-22	31-Aug-22	27-Sep-22	31-Oct-22	49	[Gantt bar for Z3S3-3370]																																	
Z3S3-3340	STB - Monitoring Installation and Pumping Test	27	02-Sep-22	06-Oct-22	12-Sep-22	14-Oct-22	7	[Gantt bar for Z3S3-3340]																																	
Z3S3-2250	STB - ELS, Excavation (+6.0 to +4.5mPD)	18	07-Oct-22	27-Oct-22	15-Oct-22	04-Nov-22	7	[Gantt bar for Z3S3-2250]																																	
Z3S3-2290	STB - ELS, Strut Installation S1 (@ +4.5mPD)	24	28-Oct-22	24-Nov-22	05-Nov-22	02-Dec-22	7	[Gantt bar for Z3S3-2290]																																	
Z3S3-2360	STB - ELS, Excavation (+4.5 to +0.5mPD)	18	25-Nov-22	15-Dec-22	03-Dec-22	23-Dec-22	7	[Gantt bar for Z3S3-2360]																																	
Z3S3-2420	STB - ELS, Strut Installation S2 (@ +0.5mPD)	24	16-Dec-22	16-Jan-23	24-Dec-22	31-Jan-23	7	[Gantt bar for Z3S3-2420]																																	
Stage 3 : Chemical Building and Reclaimed Water Building								98	30-Sep-22	03-Feb-23	04-Mar-23	24-Jun-23	114	[Gantt bars for Stage 3 Chemical Building and Reclaimed Water Building]																											
Z3S3-2170	Construction of Reclaimed Water Building with Underground Pipeworks at Stage 3	90	30-Sep-22	18-Jan-23	04-Mar-23	24-Jun-23	122	[Gantt bar for Z3S3-2170]																																	
Z3S3-2160	Sludge Thickening Chemical System Building at Stage 3	90	12-Oct-22	03-Feb-23	04-Mar-23	24-Jun-23	114	[Gantt bar for Z3S3-2160]																																	
Stage 3 : Biogas Holder No. 1 (Continued)								220	21-Sep-22	24-Jun-23	21-Sep-22	24-Jun-23	0	[Gantt bars for Stage 3 Biogas Holder No. 1 (Continued)]																											
ATALZ3BH-1000	Biogas Holder No. 1 - E&M Install and associated Pipeworks	220	21-Sep-22	24-Jun-23	21-Sep-22	24-Jun-23	0	[Gantt bar for ATALZ3BH-1000]																																	
ATALZ3BH-0900	Biogas Holder No. 1 - E&M Handover	0	21-Sep-22	21-Sep-22	21-Sep-22	24-Jun-23	0	[Gantt bar for ATALZ3BH-0900]																																	
Stage 3 : Utility Corridor Construction (Continued)								220	30-Jul-22	02-May-23	12-Oct-22	28-Jun-23	47	[Gantt bars for Stage 3 Utility Corridor Construction (Continued)]																											
Stage 3 : Utility Corridor No. 3								150	14-Sep-22	20-Mar-23	07-Nov-22	24-Jun-23	76	[Gantt bars for Stage 3 Utility Corridor No. 3]																											
S3 : UC/PP3 Civil and Structural Works								150	14-Sep-22	20-Mar-23	07-Nov-22	16-May-23	44	[Gantt bars for S3 UC/PP3 Civil and Structural Works]																											
Z3S2-2140	UC/PP 3 - Structure (-3.75 to -2.20mPD, Base Slab) at Stage 3	22	14-Sep-22	11-Oct-22	07-Nov-22	01-Dec-22	44	[Gantt bar for Z3S2-2140]																																	
Z3S2-2180	UC/PP 3 - Structure (-2.20 to +1.0mPD)	48	12-Oct-22	06-Dec-22	02-Dec-22	06-Feb-23	44	[Gantt bar for Z3S2-2180]																																	
Z3S2-2250	UC/PP 3 - Structure (+1.0 to +4.2mPD) including Backfill	48	07-Dec-22	10-Feb-23	07-Feb-23	03-Apr-23	44	[Gantt bar for Z3S2-2250]																																	
Z3S2-3040	UC/PP 3 - BS Works	50	14-Jan-23	20-Mar-23	14-Mar-23	16-May-23	44	[Gantt bar for Z3S2-3040]																																	
S3 : UC/PP3 E&M Installation								50	14-Jan-23	20-Mar-23	14-Mar-23	24-Jun-23	76	[Gantt bars for S3 UC/PP3 E&M Installation]																											
Z3S2-2280	UC/PP 3 - E&M Installation and Pipeworks	50	14-Jan-23	20-Mar-23	14-Mar-23	16-May-23	44	[Gantt bar for Z3S2-2280]																																	
Z3S2-2279	UC/PP 3 - E&M Handover	0	14-Jan-23	14-Mar-23	14-Mar-23	16-May-23	44	[Gantt bar for Z3S2-2279]																																	
Z3S2-2285	UC/PP 3 - Installation and Set-Up for SCADA System	14	04-Mar-23	20-Mar-23	08-Jun-23	24-Jun-23	76	[Gantt bar for Z3S2-2285]																																	
Stage 3 : Utility Corridor No. 2								220	30-Jul-22	02-May-23	12-Oct-22	28-Jun-23	47	[Gantt bars for Stage 3 Utility Corridor No. 2]																											
S3 : UC/PP2 Foundation and ELS Works								64	30-Jul-22	15-Oct-22	12-Oct-22	24-Dec-22	60	[Gantt bars for S3 UC/PP2 Foundation and ELS Works]																											
Z3S2-2170	UC/PP 2 - ELS, Excavation (+6.0 to +4.0mPD)	16	30-Jul-22	17-Aug-22	12-Oct-22	29-Oct-22	60	[Gantt bar for Z3S2-2170]																																	
Z3S2-2190	UC/PP 2 - ELS, Strut Installation S1 (+4.0mPD)	8	18-Aug-22	26-Aug-22	26-Nov-22	05-Dec-22	83	[Gantt bar for Z3S2-2190]																																	
Z3S2-2200	UC/PP 2 - ELS, Excavation (+4.0 to +1.5mPD)	16	18-Aug-22	05-Sep-22	31-Oct-22	17-Nov-22	60	[Gantt bar for Z3S2-2200]																																	
Z3S2-2260	UC/PP 2 - Marine Sediments Treatment and Disposal	30	18-Aug-22	22-Sep-22	02-Nov-22	06-Dec-22	62	[Gantt bar for Z3S2-2260]																																	
Z3S2-2210	UC/PP 2 - ELS, Strut Installation S2 (+1.5mPD)	8	06-Sep-22	15-Sep-22	06-Dec-22	14-Dec-22	75	[Gantt bar for Z3S2-2210]																																	
Z3S2-2220	UC/PP 2 - ELS, Excavation (+1.5 to -1.0mPD)	16	06-Sep-22	24-Sep-22	18-Nov-22	06-Dec-22	60	[Gantt bar for Z3S2-2220]																																	
Z3S2-2230	UC/PP 2 - ELS, Strut Installation S3 (-1.0mPD)	9	26-Sep-22	07-Oct-22	15-Dec-22	24-Dec-22	67	[Gantt bar for Z3S2-2230]																																	
Z3S2-2240	UC/PP 2 - ELS, Excavation (-1.0 to -3.75mPD)	16	26-Sep-22	15-Oct-22	07-Dec-22	24-Dec-22	60	[Gantt bar for Z3S2-2240]																																	
S3 : UC/PP2 Civil and Structural Works								143	17-Oct-22	15-Apr-23	28-Dec-22	28-Jun-23	60	[Gantt bars for S3 UC/PP2 Civil and Structural Works]																											
Z3S2-2270	UC/PP 2 - Structure (-3.75 to -2.20mPD, Base Slab)	36	17-Oct-22	26-Nov-22	28-Dec-22	15-Feb-23	60	[Gantt bar for Z3S2-2270]																																	
Z3S2-2290	UC/PP 2 - Structure (-2.20 to +1.0mPD)	36	28-Nov-22	11-Jan-23	16-Feb-23	29-Mar-23	60	[Gantt bar for Z3S2-2290]																																	
Z3S2-2300	UC/PP 2 - Structure (+1.0 to +4.2mPD) including Backfill	36	12-Jan-23	01-Mar-23	30-Mar-23	16-May-23	60	[Gantt bar for Z3S2-2300]																																	
Z3S2-3030	UC/PP 2 - BS Works	35	02-Mar-23	15-Apr-23	17-May-23	28-Jun-23	60	[Gantt bar for Z3S2-3030]																																	
S3 : UC/PP2 E&M Installation								32	21-Mar-23	02-May-23	17-May-23	24-Jun-23	44	[Gantt bars for S3 UC/PP2 E&M Installation]																											
Z3S2-2320	UC/PP 2 - E&M Installation and Pipeworks at Stage 3	32	21-Mar-23	02-May-23	17-May-23	24-Jun-23	44	[Gantt bar for Z3S2-2320]																																	
Z3S2-2319	UC/PP 2 - E&M Handover	0	21-Mar-23	17-May-23	17-May-23	24-Jun-23	44	[Gantt bar for Z3S2-2319]																																	
Z3S2-2325	UC/PP 2 - Installation and Set-Up for SCADA System	14	15-Apr-23	02-May-23	08-Jun-23	24-Jun-23	44	[Gantt bar for Z3S2-2325]																																	
Stage 3 : New Sludge Digester No. 1 and 2 (Continued)								45	05-May-22	28-Jun-22	15-Feb-23	12-Apr-23	230	[Gantt bars for Stage 3 New Sludge Digester No. 1 and 2 (Continued)]																											
Stage 3 : SD 1,2 Pre-drilling Works								45	05-May-22	28-Jun-22	15-Feb-23	12-Apr-23	230	[Gantt bars for Stage 3 SD 1,2 Pre-drilling Works]																											
Z3S3-2010	Sludge Digester No. 1-2 - Pre-drill (4 nos. SD-PD1,SD-PD2,SD-PD3,SD-PD4)	45	05-May-22	28-Jun-22	15-Feb-23	12-Apr-23	230	[Gantt bar for Z3S3-2010]																																	
Stage 4								434	29-Jun-22	16-Nov-23	01-Feb-23	20-Jun-24	186	[Gantt bars for Stage 4]																											
Z3S4-3340	Completion of Stage 4	0		16-Nov-23*		16-Nov-23	0	[Gantt bar for Z3S4-3340]																																	
Stage 4 : New Sludge Thickening Building (STB) (Continued)								130	17-Jan-23	03-Jul-23	01-Feb-23	16-Nov-23	114	[Gantt bars for Stage 4 New Sludge Thickening Building (STB) (Continued)]																											
Stage 4 : STB Foundation and ELS								18	17-Jan-23	13-Feb-23	01-Feb-23	21-Feb-23	7	[Gantt bars for Stage 4 STB Foundation and ELS]																											



■ Remaining Level of Effort
■ DWP Rev.5
■ 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	2023	2024	2025	2026	2027	2028																	
Z3S6PP2-2000	PP 2 - Structure (-6.25 to -5.0mPD, Base Slab)	18	11-Jul-24	31-Jul-24	16-Jul-24	05-Aug-24	4	PP 2 - Structure (-6.25 to -5.0mPD, Base Slab)																							
Z3S6PP2-2010	PP 2 - Structure (-5.0 to -2.0mPD) including Backfill	18	01-Aug-24	21-Aug-24	06-Aug-24	26-Aug-24	4	PP 2 - Structure (-5.0 to -2.0mPD) including Backfill																							
Z3S6PP2-2020	PP 2 - Structure (-2.0 to +1.0mPD) including Backfill	18	22-Aug-24	11-Sep-24	27-Aug-24	16-Sep-24	4	PP 2 - Structure (-2.0 to +1.0mPD) including Backfill																							
Z3S6PP2-2030	PP 2 - Structure (+1.0 to +4.0mPD) including Backfill	18	12-Sep-24	04-Oct-24	17-Sep-24	09-Oct-24	4	PP 2 - Structure (+1.0 to +4.0mPD) including Backfill																							
Z3S6PP2-2040	PP 2 - Structure (+4.0 to +7.0mPD), including Backfill SFL@ +6.0mPD	18	05-Oct-24	26-Oct-24	10-Oct-24	31-Oct-24	4	PP 2 - Structure (+4.0 to +7.0mPD), including Backfill SFL@ +6.0mPD																							
Z3S6PP2-2050	PP 2 - Structure (+7.0 to 10.5 mPD)	18	28-Oct-24	16-Nov-24	01-Nov-24	21-Nov-24	4	PP 2 - Structure (+7.0 to 10.5 mPD)																							
Z3S6PP2-2060	PP 2 - Structure (+10.5 to 14.0 mPD)	18	18-Nov-24	07-Dec-24	22-Nov-24	12-Dec-24	4	PP 2 - Structure (+10.5 to 14.0 mPD)																							
Z3S6PP2-2070	PP 2 - Structure (+14.0 to 17.65 mPD)	18	09-Dec-24	31-Dec-24	13-Dec-24	06-Jan-25	4	PP 2 - Structure (+14.0 to 17.65 mPD)																							
Stage 6 : New Sludge Digester No. 1 and 2 (Continued)																															
Stage 6 : SD 1,2 Superstructure																															
Z3S3-2620	Sludge Digester No. 1-2 - Structure (+14.2 to +16.83mPD)	30	12-Aug-23	24-Oct-23	17-Jul-24	25-Sep-24	271	Sludge Digester No. 1-2 - Structure (+14.2 to +16.83mPD)																							
Z3S3-2640	Sludge Digester No. 1-2 - Structure (+16.83 to +18.3mPD)	30	16-Sep-23	24-Oct-23	21-Aug-24	25-Sep-24	271	Sludge Digester No. 1-2 - Structure (+16.83 to +18.3mPD)																							
Stage 6 : SD 1,2 E&M Installation																															
Z3S3-2670	SDT No.1&2 - Tank Internal Pipework and Jet Nozzle Installation at Stage 6	52	25-Oct-23	23-Dec-23	26-Sep-24	27-Nov-24	271	SDT No.1&2 - Tank Internal Pipework and Jet Nozzle Installation at Stage 6																							
Z3S3-2680	SDT No.1&2 - Pumps and Heat Exchanger Installation at Stage 6	52	25-Oct-23	23-Dec-23	26-Sep-24	27-Nov-24	271	SDT No.1&2 - Pumps and Heat Exchanger Installation at Stage 6																							
Z3S3-2690	SDT No.1&2 - Tank Associated Pipework at Stage 6	52	25-Oct-23	23-Dec-23	26-Sep-24	27-Nov-24	271	SDT No.1&2 - Tank Associated Pipework at Stage 6																							
Z3S3-2669	SDT No.1&2 - E&M Handover	0	25-Oct-23		26-Sep-24		271	SDT No.1&2 - E&M Handover																							
Z3S3-2675	SDT No.1&2 - Installation, Set-Up & T&C for SCADA System	14	08-Dec-23	23-Dec-23	02-Jan-25	17-Jan-25	312	SDT No.1&2 - Installation, Set-Up & T&C for SCADA System																							
Stage 6 : New Sludge Digester No. 3 (Continued)																															
Stage 6 : SD 3 Civil and Structural Works																															
S6 : SD 3 Substructure																															
Z3S3-2480	Sludge Digester No. 3 - Structure (-3.8 to -0.8mPD)	15	26-Aug-23	12-Sep-23	04-Oct-24	22-Oct-24	325	Sludge Digester No. 3 - Structure (-3.8 to -0.8mPD)																							
Z3S3-2490	Sludge Digester No. 3 - Structure (-0.8 to 2.2mPD)	15	13-Sep-23	29-Sep-23	23-Oct-24	08-Nov-24	325	Sludge Digester No. 3 - Structure (-0.8 to 2.2mPD)																							
Z3S3-2530	Sludge Digester No. 3 - Structure (+2.2 to +5.2mPD)	15	03-Oct-23	19-Oct-23	09-Nov-24	26-Nov-24	325	Sludge Digester No. 3 - Structure (+2.2 to +5.2mPD)																							
S6 : SD 3 Superstructure																															
Z3S3-2540	Sludge Digester No. 3 - Structure (+5.2 to +8.2mPD)	8	20-Oct-23	30-Oct-23	27-Nov-24	05-Dec-24	325	Sludge Digester No. 3 - Structure (+5.2 to +8.2mPD)																							
Z3S3-2560	Sludge Digester No. 3 - Structure (+8.2 to +11.2mPD)	8	31-Oct-23	08-Nov-23	06-Dec-24	14-Dec-24	325	Sludge Digester No. 3 - Structure (+8.2 to +11.2mPD)																							
Z3S3-2570	Sludge Digester No. 3 - Structure (+11.2 to +14.2mPD)	8	09-Nov-23	17-Nov-23	16-Dec-24	24-Dec-24	325	Sludge Digester No. 3 - Structure (+11.2 to +14.2mPD)																							
Z3S3-2590	Sludge Digester No. 3 - Structure (+14.2 to +16.83mPD)	8	18-Nov-23	27-Nov-23	27-Dec-24	06-Jan-25	325	Sludge Digester No. 3 - Structure (+14.2 to +16.83mPD)																							
Z3S3-2610	Sludge Digester No. 3 - Structure (+16.83 to +18.3mPD)	10	28-Nov-23	08-Dec-23	07-Jan-25	17-Jan-25	325	Sludge Digester No. 3 - Structure (+16.83 to +18.3mPD)																							
Stage 7																															
Z3S7-3370	Completion of Stage 7	0		08-Aug-25*		08-Aug-25	0	Completion of Stage 7																							
Stage 7 : New Sludge Thickening Building (STB) (Continued)																															
Stage 7 : STB ABWF and BS Works																															
Z3S3-3090	STB - BS and ABWF Works at Stage 7	165	01-Jun-24	16-Dec-24	14-Jan-25	08-Aug-25	186	STB - BS and ABWF Works at Stage 7																							
Stage 7 : STB E&M Installation																															
Z3S3-3220	STB - Electrical works (Cable wiring, termination) at Stage 7	56	23-May-24	29-Jul-24	09-Apr-25	19-Jun-25	261	STB - Electrical works (Cable wiring, termination) at Stage 7																							
Z3S3-3230	STB - BS Installation (ELV, Ventilation, FS, PD) at Stage 7	56	23-May-24	29-Jul-24	09-Apr-25	19-Jun-25	261	STB - BS Installation (ELV, Ventilation, FS, PD) at Stage 7																							
Z3S3-3240	STB - Reclaimed Water System and Associated Pipeworks at Stage 7	40	23-May-24	10-Jul-24	02-Jan-25	22-Feb-25	184	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	23-May-24	10-Jul-24	02-Jan-25	22-Feb-25	184	STB - Sludge Thickening Chemical Dosing System and Associated Pipeworks at Stage 7																							
Z3S3-3260	STB - Deodourization System at Stage 7	86	31-May-24	10-Sep-24	04-Mar-25	19-Jun-25	224	STB - Deodourization System at Stage 7																							
Z3S3-3270	STB - Sludge Thickening, Transferring and Pumping System and Associated Pipeworks at Stage 7	86	31-May-24	10-Sep-24	24-Dec-24	12-Apr-25	172	STB - Sludge Thickening, Transferring and Pumping System and Associated Pipeworks at Stage 7																							
Z3S3-3440	STB - Plant Service Water System (PSW) Installation	30	07-Aug-24	10-Sep-24	05-Oct-27	08-Nov-27	946	STB - Plant Service Water System (PSW) Installation																							
Z3S3-3275	STB - Installation and Set-Up for SCADA System	14	26-Aug-24	10-Sep-24	04-Jun-25	19-Jun-25	224	STB - Installation and Set-Up for SCADA System																							
Stage 7 : STB Testing & Commissioning																															
Z3S3-2910	STB - T&C - Equipment SAT (Dry Test)	39	11-Jul-24	24-Aug-24	24-Feb-25	10-Apr-25	184	STB - T&C - Equipment SAT (Dry Test)																							
Z3S3-2920	STB - T&C - Equipment SAT (Functional Test)	48	26-Aug-24	23-Oct-24	11-Apr-25	12-Jun-25	184	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	11-Sep-24	04-Jan-25	14-Apr-25	08-Aug-25	172	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	24-Oct-24	30-Oct-24	13-Jun-25	19-Jun-25	184	STB - T&C - Equipment SAT (Wet Test)																							
Z3S3-2970	STB - FS Inspection and Fire Certificate	42	14-Nov-24	04-Jan-25	20-Jun-25	08-Aug-25	172	STB - FS Inspection and Fire Certificate																							
Z3S3-3450	STB - T&C - Plant Service Water System (PSW)	30	28-Nov-24	04-Jan-25	05-Jul-25	08-Aug-25	172	STB - T&C - Plant Service Water System (PSW)																							
Z3S3-2980	Achieve 60,000m3/d flowrate (KD4, 5-Feb-26)	0		04-Jan-25		08-Aug-25	216	Achieve 60,000m3/d flowrate (KD4, 5-Feb-26)																							
Stage 7 : UC/PP Connection																															
Z3S7-2000	Permanent Sludge Pipe Connection from Sludge Thickening Building and Pipe Portal No. 1	30	23-Jul-24	26-Aug-24	27-Jul-24	30-Aug-24	4	Permanent Sludge Pipe Connection from Sludge Thickening Building and Pipe Portal No. 1																							
Z3S7-2010	Temporary Sludge Pipe Connection into UU Corridor	30	23-Jul-24	26-Aug-24	27-Jul-24	30-Aug-24	4	Temporary Sludge Pipe Connection into UU Corridor																							
Z3S7-2020	Temporary Sludge, Gas and Heating Water Pipe Connection into UU Corridor	30	23-Jul-24	26-Aug-24	27-Jul-24	30-Aug-24	4	Temporary Sludge, Gas and Heating Water Pipe Connection into UU Corridor																							
Stage 7 : Pipe Portal No. 3																															
Z3S8PP3-2000	PP 3 - Structure (-6.25 to -5.0mPD, Base Slab)	16	02-Jan-25	20-Jan-25	07-Jan-25	24-Jan-25	4	PP 3 - Structure (-6.25 to -5.0mPD, Base Slab)																							
Z3S8PP3-2010	PP 3 - Structure (-5.0 to -2.0mPD) including Backfill	15	21-Jan-25	12-Feb-25	25-Jan-25	17-Feb-25	4	PP 3 - Structure (-5.0 to -2.0mPD) including Backfill																							
Z3S8PP3-2020	PP 3 - Structure (-2.0 to +1.0mPD) including Backfill	16	13-Feb-25	03-Mar-25	18-Feb-25	07-Mar-25	4	PP 3 - Structure (-2.0 to +1.0mPD) including Backfill																							
Z3S8PP3-2030	PP 3 - Structure (+1.0 to +4.0mPD) including Backfill	15	04-Mar-25	20-Mar-25	08-Mar-25	25-Mar-25	4	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	21-Mar-25	08-Apr-25	26-Mar-25	12-Apr-25	4	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	09-Apr-25	24-Apr-25	14-Apr-25	29-Apr-25	4	PP 3 - Structure (+7.0 to 10.5 mPD)																							
Z3S8PP3-2060	PP 3 - Structure (+10.5 to 14.0 mPD)	11	25-Apr-25	09-May-25	30-Apr-25	14-May-25	4	PP 3 - Structure (+10.5 to 14.0 mPD)																							
Z3S8PP3-2070	PP 3 - Structure (+14.0 to 17.65 mPD)	11	10-May-25	22-May-25	15-May-25	27-May-25	4	PP 3 - Structure (+14.0 to 17.65 mPD)																							
Stage 7 : New Sludge Digester Nos. 1 and 2 (Continued)																															
Stage 7 : E&M Installation																															
Z3S3-3280	SDT No.1&2 - Tank Internal Pipework and Jet Nozzle Installation at Stage 7	46	27-Dec-23	22-Mar-24	28-Nov-24	24-Feb-25	271	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	27-Dec-23	26-Feb-24	28-Nov-24	23-Jan-25	271	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	27-Dec-23	26-Feb-24	28-Nov-24	23-Jan-25	271	SDT No.1&2 - Tank Associated Pipework at Stage 7																							
Z3S3-2750	SDT No.1&2 - Instrumentation	22	27-Feb-24	22-Mar-24	24-Jan-25	24-Feb-25	271	SDT No.1&2 - Instrumentation																							
Z3S3-2760	SDT No.1&2 - Electrical works (Cable wiring, termination, lightning arrestor system)	22	27-Feb-24	22-Mar-24	24-Jan-25	24-Feb-25	271	SDT No.1&2 - Electrical works (Cable wiring, termination, lightning arrestor system)																							
Z3S3-3420	SDT No.1&2 - Installation and Set-Up for SCADA System	14	07-Mar-24	22-Mar-24	08-Feb-25	24-Feb-25	271	SDT No.1&2 - Installation and Set-Up for SCADA System																							
Stage 7 : Testing & Commissioning																															
S7 : Equipment SAT																															



- Remaining Level of Effort
- DWP Rev.5
- Actual Work
- Remaining Work
- Critical Remaining Work

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

Detailed Works Programme

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Detailed Works Programme			
Date	Revision	Checked	Approved
30-Oct-21	Rev. 7		
30-Sep-21	Rev. 6		
31-Aug-21	Rev. 5		

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	2022				2023				2024				2025				2026				2027				2028			
								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	
Stage 8 : SD 5,6 Foundation and ELS Works		121	29-Aug-25	23-Jan-26	06-Dec-25	11-May-26	82																												
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	■ 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	■ 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	■ 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	■ 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	■ 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	■ 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	■ 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	■ 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	■ 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	■ Sludge Digester No. 5-6 - ELS Excavation (-5.9 to -8.9mPD)																											
Stage 8 : SD 5,6 Civil and Structural Works		125	12-Feb-26	22-Jul-26	12-May-26	09-Oct-26	66																												
S8 : SD 5,6 Substructure		125	12-Feb-26	22-Jul-26	12-May-26	09-Oct-26	66																												
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	■ 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	■ 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	■ 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	■ 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	■ Sludge Digester No. 5-6 - Structure (+2.2 to +4.0mPD)																											
Stage 8 : H2S System (Continued)		253	09-Jan-25	18-Nov-25	28-Nov-25	09-Oct-26	261																												
H2S-170	H2S Removal System - Structure Phase 2	91	09-Jan-25	07-May-25	28-Nov-25	24-Mar-26	261	■ H2S Removal System - Structure Phase 2																											
H2S-150	H2S Removal System - E&M Installation c/w above ground pipeworks	110	08-May-25	15-Sep-25	25-Mar-26	07-Aug-26	261	■ H2S Removal System - E&M Installation c/w above ground pipeworks																											
H2S-155	H2S Removal System - Loading of Ferric Oxide	110	08-May-25	15-Sep-25	25-Mar-26	07-Aug-26	261	■ H2S Removal System - Loading of Ferric Oxide																											
H2S-149	H2S Removal System - E&M Handover	0	08-May-25		25-Mar-26		261	■ H2S Removal System - E&M Handover																											
H2S-160	H2S Removal System and Other E&M T&C	52	16-Sep-25	18-Nov-25	08-Aug-26	09-Oct-26	261	■ H2S Removal System and Other E&M T&C																											
Stage 8 : Biogas Holders No. 2,3 and 4		383	22-Oct-24	05-Feb-26	26-Oct-24	10-Feb-26	4																												
Z3BH-1020	Biogas Holder No. 2-4 - Ground Improvement Including Surcharge	160	22-Oct-24	12-May-25	26-Oct-24	16-May-25	4	■ Biogas Holder No. 2-4 - Ground Improvement Including Surcharge																											
Z3BH-1030	Biogas Holder No. 2-4 - 800 Thick Base Slab Including Pipeworks	39	13-May-25	27-Jun-25	17-May-25	03-Jul-25	4	■ Biogas Holder No. 2-4 - 800 Thick Base Slab Including Pipeworks																											
Stage 8 : E&M Installation Works BH 2,3,4		184	28-Jun-25	05-Feb-26	04-Jul-25	10-Feb-26	4																												
ATALZ3BH-2260	BH No. 2-4 - Installation of Biogas Holder No.2-4	184	28-Jun-25	05-Feb-26	04-Jul-25	10-Feb-26	4	■ BH No. 2-4 - Installation of Biogas Holder No.2-4																											
ATALZ3BH-2259	BH No. 2-4 - E&M Handover	0	28-Jun-25		04-Jul-25		4	■ BH No. 2-4 - E&M Handover																											
ATALZ3BH-2265	BH No. 2-4 - Installation and Set-Up for SCADA System	14	21-Jan-26	05-Feb-26	26-Jan-26	10-Feb-26	4	■ BH No. 2-4 - Installation and Set-Up for SCADA System																											
Stage 8 : Remaining Works		30	23-May-25	27-Jun-25	28-May-25	03-Jul-25	4																												
ATALZ3BH-2210	Remaining Pipe Connection to Pipe Portal 1 to 3 (Permanent Pipe Routing)	30	23-May-25	27-Jun-25	28-May-25	03-Jul-25	4	■ Remaining Pipe Connection to Pipe Portal 1 to 3 (Permanent Pipe Routing)																											
Stage 9		236	06-Feb-26	07-Nov-26	11-Feb-26	07-Nov-26	0																												
Z3S9-3380	Completion of Stage 9 (all zone 3 works complete)	0		07-Nov-26*		07-Nov-26	0	■ Completion of Stage 9 (all zone 3 works complete)																											
Stage 9 : New Sludge Digester No. 4 (Continued)		69	11-Jul-26	30-Sep-26	20-Jul-26	09-Oct-26	7																												
Stage 9 : E&M Works SDT No. 3 & No. 4		69	11-Jul-26	30-Sep-26	20-Jul-26	09-Oct-26	7																												
ATALZ3S8-2030	SDT No.3&4 - Instrumentation	34	11-Jul-26	19-Aug-26	20-Jul-26	27-Aug-26	7	■ SDT No.3&4 - Instrumentation																											
ATALZ3S8-2040	SDT No.3&4 - Electrical works (Cable wiring, termination, lightning arrestor)	34	11-Jul-26	19-Aug-26	20-Jul-26	27-Aug-26	7	■ SDT No.3&4 - Electrical works (Cable wiring, termination, lightning arrestor)																											
ATALZ3S8-2050	SDT No.3&4 - T&C	35	20-Aug-26	30-Sep-26	28-Aug-26	09-Oct-26	7	■ SDT No.3&4 - T&C																											
ATALZ3S8-2055	SDT No.3&4 - Installation, Set-Up & T&C for SCADA System	14	14-Sep-26	30-Sep-26	22-Sep-26	09-Oct-26	7	■ SDT No.3&4 - Installation, Set-Up & T&C for SCADA System																											
Stage 9 : Biogas Holders No. 2,3 and 4 (Continued)		236	06-Feb-26	07-Nov-26	11-Feb-26	07-Nov-26	0																												
Stage 9 : E&M Installation Works BH 2,3,4		126	06-Feb-26	17-Jul-26	11-Feb-26	07-Nov-26	94																												
ATALZ3BH-2000	BH No. 2-4 - Installation of Biogas Holder No.2-4	126	06-Feb-26	17-Jul-26	11-Feb-26	22-Jul-26	4	■ BH No. 2-4 - Installation of Biogas Holder No.2-4																											
ATALZ3BH-2010	BH No.2-4 - Installation of pipework and instrumentation in Biogas Holder Valve Chamber No.2-4	95	17-Mar-26	13-Jul-26	15-Apr-26	07-Aug-26	22	■ BH No.2-4 - Installation of pipework and instrumentation in Biogas Holder Valve Chamber No.2-4																											
ATALZ3BH-2020	BH No.2-4 - Instrumentation	95	17-Mar-26	13-Jul-26	16-Apr-26	08-Aug-26	23	■ BH No.2-4 - Instrumentation																											
ATALZ3BH-2030	BH No.2-4 - Electrical works (Cable wiring, termination, lightning arrestor)	95	17-Mar-26	13-Jul-26	16-Apr-26	08-Aug-26	23	■ BH No.2-4 - Electrical works (Cable wiring, termination, lightning arrestor)																											
ATALZ3BH-2140	BH No. 2-4 - Plant Service Water System(PSW) Installation	30	06-Jun-26	13-Jul-26	03-Oct-26	07-Nov-26	98	■ BH No. 2-4 - Plant Service Water System(PSW) Installation																											
ATALZ3BH-2035	BH No.2-4 - Installation, Set-Up & T&C for SCADA System	14	02-Jul-26	17-Jul-26	23-Oct-26	07-Nov-26	94	■ BH No.2-4 - Installation, Set-Up & T&C for SCADA System																											
Stage 9 : E&M Installation Works for Biogas Holders No. 1-4		203	17-Mar-26	07-Nov-26	15-Apr-26	07-Nov-26	0																												
ATALZ3BH-2040	BH No.1-4 - Installation of Underground Biogas Pipework	95	17-Mar-26	13-Jul-26	15-Apr-26	07-Aug-26	22	■ BH No.1-4 - Installation of Underground Biogas Pipework																											
ATALZ3BH-2050	BH No.1-4 - Installation of Biogas Booster Pump No.3 & 4 and Transfer Pump	95	17-Mar-26	13-Jul-26	15-Apr-26	07-Aug-26	22	■ BH No.1-4 - Installation of Biogas Booster Pump No.3 & 4 and Transfer Pump																											
ATALZ3BH-2060	BH No.1-4 - Installation of Waste Gas Burner	95	17-Mar-26	13-Jul-26	15-Apr-26	07-Aug-26	22	■ BH No.1-4 - Installation of Waste Gas Burner																											
ATALZ3BH-2275	BH No.1-4 - Plant Service Water System(PSW) Installation	30	06-Jun-26	13-Jul-26	03-Oct-26	07-Nov-26	98	■ BH No.1-4 - Plant Service Water System(PSW) Installation																											
ATALZ3BH-2175	BH No.2-4 - Installation and Set-Up for SCADA System	14	26-Jun-26	13-Jul-26	23-Jul-26	07-Aug-26	22	■ BH No.2-4 - Installation and Set-Up for SCADA System																											
ATALZ3BH-2170	Section 3 Completion	0		07-Nov-26*		07-Nov-26	0	■ Section 3 Completion																											
Stage 9 : Testing and Commissioning (T&C)		52	14-Jul-26	11-Sep-26	08-Aug-26	09-Oct-26	22																												
S9 : BH No.1		52	14-Jul-26	11-Sep-26	08-Aug-26	09-Oct-26	22																												
ATALZ3BH-2070	BH No. 1 - T&C - E&M SAT of Biogas Holder No.1 (using Air to test membrane only)	15	14-Jul-26	30-Jul-26	08-Aug-26	25-Aug-26	22	■ BH No. 1 - T&C - E&M SAT of Biogas Holder No.1 (using Air to test membrane only)																											
ATALZ3BH-2090	BH No. 1 - T&C - E&M SAT of whole Biogas Holder No.1 and associated valve and pipework (N2 Purging)	20	14-Jul-26	05-Aug-26	08-Aug-26	31-Aug-26	22	■ BH No. 1 - T&C - E&M SAT of whole Biogas Holder No.1 and associated valve and pipework (N2 Purging)																											
ATALZ3BH-2100	BH No. 1 - T&C - E&M SAT of Biogas Booster Pump No.1 & 2	20	14-Jul-26	05-Aug-26	08-Aug-26	31-Aug-26	22	■ BH No. 1 - T&C - E&M SAT of Biogas Booster Pump No.1 & 2																											
ATALZ3BH-2160	BH No. 1 - System Commissioning	32	06-Aug-26	11-Sep-26	01-Sep-26	09-Oct-26	22	■ BH No. 1 - System Commissioning																											
S9 : BH No.2, 3 & 4		18	14-Jul-26	03-Aug-26	10-Aug-26	09-Oct-26	56																												
ATALZ3BH-2080	BH No.2-4 - T&C - E&M SAT of Biogas Holder No.2-4 (using Air to test membrane only)	14	14-Jul-26	29-Jul-26	10-Aug-26	25-Aug-26	23	■ BH No.2-4 - T&C - E&M SAT of Biogas Holder No.2-4 (using Air to test membrane only)																											
ATALZ3BH-2110	BH No.2-4 - T&C - E&M SAT of whole Biogas Holder No.2-4 and associated valve and pipework (N2 Purging)	18	14-Jul-26	03-Aug-26	17-Sep-26	09-Oct-26	56	■ BH No.2-4 - T&C - E&M SAT of whole Biogas Holder No.2-4 and associated valve and pipework (N2 Purging)																											
S9 : BH No.1, 2, 3 & 4		51	14-Jul-26	10-Sep-26	10-Aug-26	09-Oct-26	23																												
ATALZ3BH-2120	BH No.1-4 - T&C - E&M SAT of Biogas Booster Pump No.3 & 4 and Transfer Pump	15	14-Jul-26	30-Jul-26	10-Aug-26	26-Aug-26	23	■ BH No.1-4 - T&C - E&M SAT of Biogas Booster Pump No.3 & 4 and Transfer Pump																											
ATALZ3BH-2130	BH No.1-4 - T&C - E&M SAT of Waste Gas Burner	15	14-Jul-26	30-Jul-26	10-Aug-26	26-Aug-26	23	■ BH No.1-4 - T&C - E&M SAT of Waste Gas Burner																											
ATALZ3BH-2150	BH No.1-4 - System Commissioning	36	31-Jul-26	10-Sep-26	27-Aug-26	09-Oct-26	23	■ BH No.1-4 - System Commissioning																											
Stage 9 : Remaining Works		49	12-Sep-26	07-Nov-26	10-Oct-26	07-Nov-26	0																												
ATALZ3BH-2200	Demolish Gas Holder (GH1), Methane Compressor House and Water Heater House	24	12-Sep-26	12-Oct-26	10-Oct-26	07-Nov-26	22	■ Demolish Gas Holder (GH1), Methane Compressor House and Water Heater House																											
ATALZ3BH-2220	Demolish Consolidation Tanks C3-C6	24	12-Sep-26	12-Oct-26	10-Oct-26	07-Nov-26	22	■ Demolish Consolidation Tanks C3-C6																											
ATALZ3BH-2230	Demolish Temp. Consolidation Tank System & Polymer Dosing System	24	12-Sep-26	12-Oct-26	10-Oct-26	07-Nov-26	22	■ Demolish Temp. Consolidation Tank System & Polymer Dosing System																											
ATALZ3BH-2240	Demolish Temp. Sludge Holding Tank (SHT)	24	12-Sep-26	12-Oct-26	10-Oct-26	07-Nov-26	22	■ Demolish Temp. Sludge Holding Tank (SHT)																											
ATALZ3BH-2250	Section 3 Completion	0		07-Nov-26*		07-Nov-26	0	■ Section 3 Completion																											



- Remaining Level of Effort
- DWP Rev.5
- Actual Work
- Remaining Work
- Critical Remaining Work

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

Detailed Works Programme

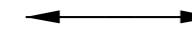
Project ID : DWP.DPR7_211030
 Layout : DC201912 DWP rev.7
 Page 28 of 29

Detailed Works Programme			
Date	Revision	Checked	Approved
30-Oct-21	Rev. 7		
30-Sep-21	Rev. 6		
31-Aug-21	Rev. 5		

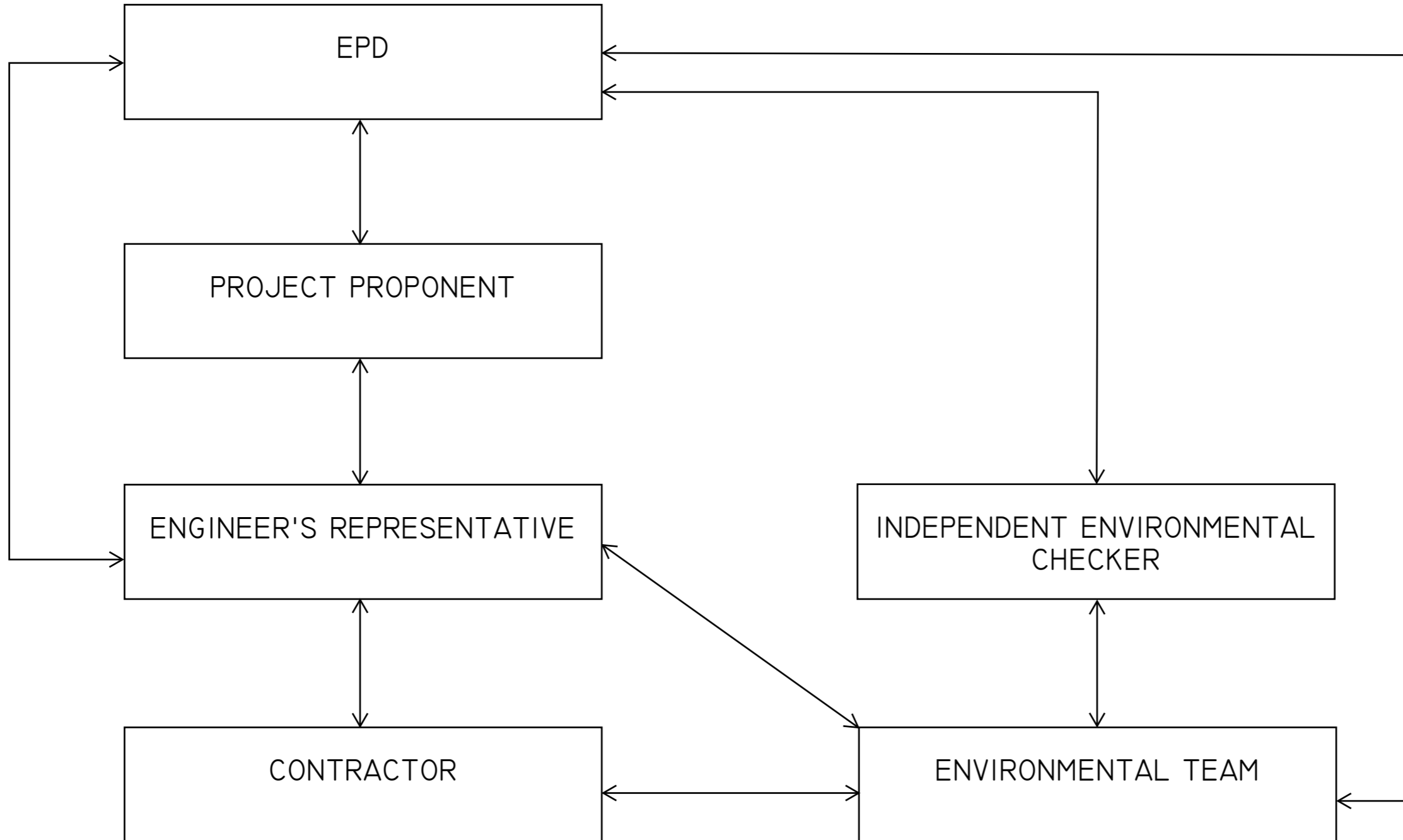
Appendix B

Project Organization Chart

LEGEND:



LINE OF COMMUNICATION



PROJECT

YUEN LONG EFFLUENT
POLISHING PLANT -
INVESTIGATION, DESIGN
AND CONSTRUCTION

CLIENT

渠務署
Drainage Services Department

CONSULTANT

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.

STATUS

SCALE

A3 1 : 40000

DIMENSION UNIT

METRES

KEY PLAN

PROJECT NO.

60505476

CONTRACT NO.

CE 3/2015 (DS)

SHEET TITLE

PROJECT ORGANISATION

SHEET NUMBER

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Appendix C

Action and Limit Level

Action / Limit Levels for Air Quality

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

Notes:

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

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

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

Action and Limit Levels for Construction Noise

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

Notes:

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

Action and Limit Levels for Water Quality

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

Notes:

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

Action and Limit Levels for Ecology

Active Ardeid Night Roost Survey

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

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

Notes:

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

Ecological Monitoring of Birds

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

Notes:

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

Appendix D

Calibration Certificate of Monitoring
Equipment

Air Quality Monitoring Equipment

Report no. : 940891CA212394(1)

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

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

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
 Equipment ID. / Serial no. : 1. C-065-9 2. 4350
 Date of Calibration : 03-Sep-2021 Ambient Temperature : 25 ± 10 °C
 Calibration Location : General Chemical Laboratory of FTS and Ma Wan A1 Site Boundary
 Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

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

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x [UUT reading (CPM)], where K = 0.003460
3. Correlation coefficient (r) : 0.9992

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

** End of Report **

Report no. : 940891CA212394

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

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

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
 Equipment ID. / Serial no. : 1. C-065-9 2. 4350
 Date of Calibration : 03-Sep-2021 Ambient Temperature : 25 ± 10 °C
 Calibration Location : General Chemical Laboratory of FTS and Ma Wan A1 Site Boundary
 Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

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

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x [UUT reading (CPM)], where K = 0.003345
3. Correlation coefficient (r) : 0.9940

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

** End of Report **



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATIONS

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

Calculations:

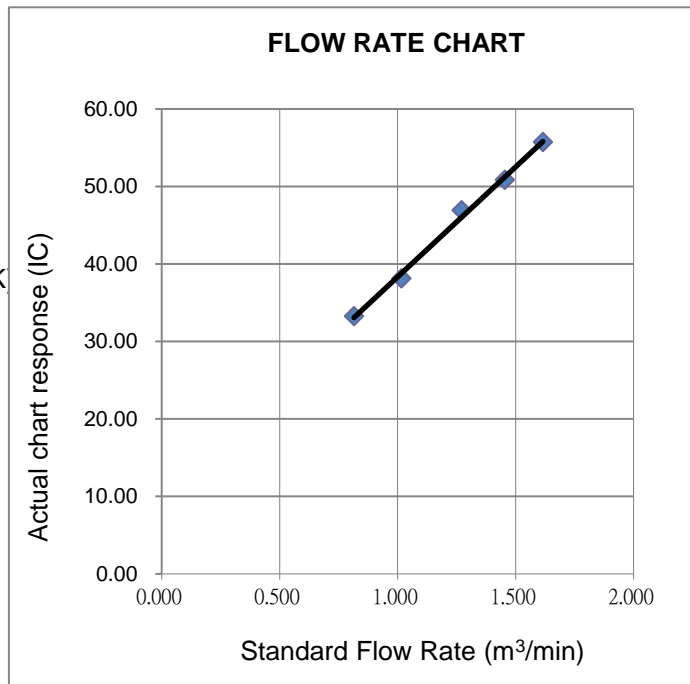
$Qstd = 1/m[\text{sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$
 $IC = I[\text{sqrt}(Pa/Pstd)(Tstd/Ta)]$

- 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 Location: Yuen Long Sewage Treatment Works	Date of Calibration: 27-Sep-2021 Next Calibration Date: 26-Mar-2022 Technician: Sam Fong
Brand: Global Water Model: GL500-7-2	Serial No: 2012000974
Anemometer	
Brand: Benetech Model: GM816	Equipment ID: 08
Procedures:	
1.	Wind Still Test: The wind speed sensor was held by hand until stabilized.
2.	Wind Speed Test: The wind meter was calibrated in-situ and compared with the Anemometer.
3.	Wind Direction Test: The wind meter was calibrated in-situ and compared with a marine compass from four directions.

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

Global Water (m/s)	Anemometer (m/s)
1.7	1.5
2.5	2.4
1.4	1.6

Wind Direction Test:

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



Wan Ka Ho
 Project Consultant

Report Date: 29/9/2021

Noise Monitoring Equipment

Report no.: 203258CA211142

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Level Meter

Manufacturer : Casella

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

Equipment ID : N-45

Next Calibration Date : 27-May-2022

Specification Limit : EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -

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

Equipment ID. : R-108-1

Date of Calibration : 28-May-2021

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

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

Calibration Results :

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

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
4. The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
- 5 The values given in this Calibration Certificate only relate to unit under test and the values measured at the time of the test. Any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during 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.: 212769CA212463(1)

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.	1488272	03876	002752

Equipment ID : N/A

Next Calibration Date : 27-Oct-2022

Specification Limit : EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -

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

Equipment ID. : R-108-1

Date of Calibration : 28-Oct-2021

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

Remarks :

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

Checked by : Canny Date : 3-11-2021 Certified by : K.T. Leung Date : 4.11.2021
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)**** End of Report ****

Report no.: 203258CA210891

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

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

Next Calibration Date : 10-May-2022

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

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

Date of Calibration : 11-May-2021

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

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

Calibration Results :

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

Remarks :

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

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

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 212769CA212069(3)

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Sound Calibrator
 Manufacturer : Casella (Model CEL-120/1)
 Serial No. : 2383707
 Equipment ID : N/A

Next Calibration Date : 25-Aug-2022

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

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

Date of Calibration : 26-Aug-2021

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

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

Calibration Results :

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

Remarks :

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

Checked by : Canny Date : 27-8-2021 Certified by : K. Leung Date : 27-8-2021
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report No. : 212769CA211145

Page 1 of 1

CALIBRATION CERTIFICATE OF ANEMOMETER

Client Supplied Information

Client : Fugro Technical Services Limited

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : SENSOR

Model No. : AR816

Serial No. : 2136513

Equipment ID.: NA

Next Calibration Date : 30-May-2022

Laboratory Information

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID.: R-101-4

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

Calibration Location : Calibration Laboratory of FTS

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

Calibration Results :

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

Remark :

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

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

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Water Quality Monitoring Equipment





Report No. : 142626WA211884



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. 19E100633
Test required : Calibration of the YSI EXO-3 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID : WA211884/1
Date sample received : 14/09/2021
Date of calibration : 16/09/2021
Next calibration date : 15/12/2021
Test method used : In-house comparison method

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

Report No. : 142626WA211884

Page 2 of 3

Results :
A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.19	+0.01
6.86	6.82	-0.04


B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.00	0.00	± 0.1
10	9.95	-0.05	± 0.5
20	19.87	-0.13	± 1.0
30	29.91	-0.09	± 1.5
40	39.70	-0.30	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	7.47	7.64
2	7.85	7.72
3	7.57	7.76
Average	7.63	7.71

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

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

Date : 6/10/2011

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

Report No. : 142626WA211884

Page 3 of 3

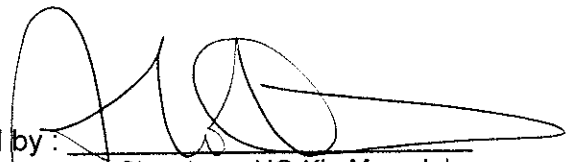
Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
24.40	24.31

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.20	+0.20	± 0.6
8	8.08	+0.08	± 0.8
40	38.54	-1.46	± 3.0
80	80.26	+0.26	± 4.0

Certified by : 
 Approved Signatory : HO Kin Man, John
 Assistant General Manager – Laboratories
 Date : 6/10/2021

**** End of Report ****

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



Report No. : 142626WA211884(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. 19E100634
Test required : Calibration of the YSI EXO-3 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID : WA211884/2
Date sample received : 14/09/2021
Date of calibration : 16/09/2021
Next calibration date : 15/12/2021
Test method used : In-house comparison method

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

Report No. : 142626WA211884(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	9.15	-0.03
6.86	6.81	-0.05

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.00	0.00	± 0.1
10	9.96	-0.04	± 0.5
20	19.91	-0.09	± 1.0
30	29.97	-0.03	± 1.5
40	39.76	-0.24	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	7.50	7.64
2	7.65	7.64
3	7.57	7.61
Average	7.57	7.63

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

Certified by : 

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

Date : 6/10/2011

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

Report No. : 142626WA211884(1)

Page 3 of 3

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
23.30	23.31

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.26	+0.26	± 0.6
8	7.61	-0.39	± 0.8
40	39.98	-0.02	± 3.0
80	79.85	-0.15	± 4.0

F. Chlorophyll calibration

Chlorophyll reading at 22.4°C for Std. solution (62.5ug/L)		
Theoretical (ug/L) (Temp.-compensated)	Measured	Deviation
66.0	66.1	+0.1

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

Date : 6/10/2021

** End of Report **

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

CALIBRATION CERTIFICATE

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

Calibration Certificate Number:

61134

Instrument Type:

MODEL 106

Instrument Serial Number:

67738

Calibrated By:

N.PADDON

Date:

11TH NOVEMBER 2019

Signed:

N. Paddon

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

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 (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, EMB	16 WQM Mid Flood(5:38) Mid Ebb(11:43)	17	18 WQM Mid Flood(7:13) Mid Ebb(12:58)	19 ANRM	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

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

Impact Monitoring Schedule (December 2021)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
			1	2 AQM, NM WQM Mid Flood(6:05) Mid Ebb(11:59)	3	4 WQM Mid Flood(8:14) Mid Ebb(13:46)
5	6	7 WQM Mid Flood(11:01) Mid Ebb(15:52)	8 AQM, NM	9 WQM Mid Flood(12:53) Mid Ebb(4:58)	10	11 WQM Mid Flood(14:56) Mid Ebb(6:44)
12	13	14 AQM, NM WQM Mid Flood(16:52) Mid Ebb(10:19)	15	16 WQM Mid Flood(6:32) Mid Ebb(11:59)	17	18 WQM Mid Flood(8:09) Mid Ebb(13:11)
19	20 AQM, NM	21 WQM Mid Flood(10:11) Mid Ebb(14:51)	22	23 WQM Mid Flood(11:25) Mid Ebb(16:04)	24 AQM	25 WQM Mid Flood(12:47) Mid Ebb(5:08)
26	27	28 WQM Mid Flood(14:55) Mid Ebb(7:39)	29	30 AQM, NM WQM Mid Flood(16:18) Mid Ebb(10:43)	31	

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 (January 2022)

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

Remarks

- 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 (February 2022)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
		1 WQM Mid Flood(9:06) Mid Ebb(14:12)	2	3 WQM Mid Flood(10:18) Mid Ebb(15:41)	4	5 AQM WQM Mid Flood(11:17) Mid Ebb(17:03)
6	7	8 WQM Mid Flood(12:11) Mid Ebb(18:49)	9	10 WQM Mid Flood(8:36) Mid Ebb(23:35)	11 AQM, NM	12 WQM Mid Flood(15:47) Mid Ebb(11:31)
13	14	15 WQM Mid Flood(8:20) Mid Ebb(13:13)	16	17 AQM, NM WQM Mid Flood(9:12) Mid Ebb(14:24)	18	19 WQM Mid Flood(10:01) Mid Ebb(15:36)
20	21	22 WQM Mid Flood(11:12) Mid Ebb(17:25)	23 AQM, NM	24 WQM Mid Flood(12:26) Mid Ebb(19:24)	25	26 WQM Mid Flood(15:00) Mid Ebb(10:55)
27	28					

Remarks

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

Appendix F

Monitoring Results

Air Quality Monitoring Results

1-hour TSP Monitoring Result for

Contract No. SPW 07/2020

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

AM1 - Topfine Machinery (China) Co. Ltd.

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level (ug/m^3)	Limit Level (ug/m^3)
			1st Measurement	2nd Measurement	3rd Measurement		
3-Nov-21	Cloudy	8:43	35	41	44	291	500
9-Nov-21	Fine	9:19	53	48	47		
15-Nov-21	Cloudy	8:31	29	33	26		
20-Nov-21	Fine	8:29	26	24	29		
26-Nov-21	Fine	8:33	32	36	27		
		Min	24				
		Max	53				
		Average	35				

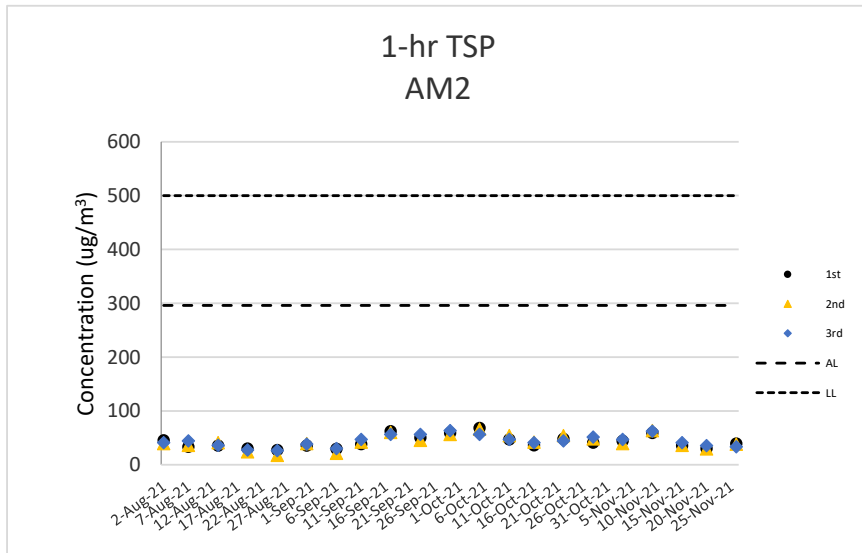
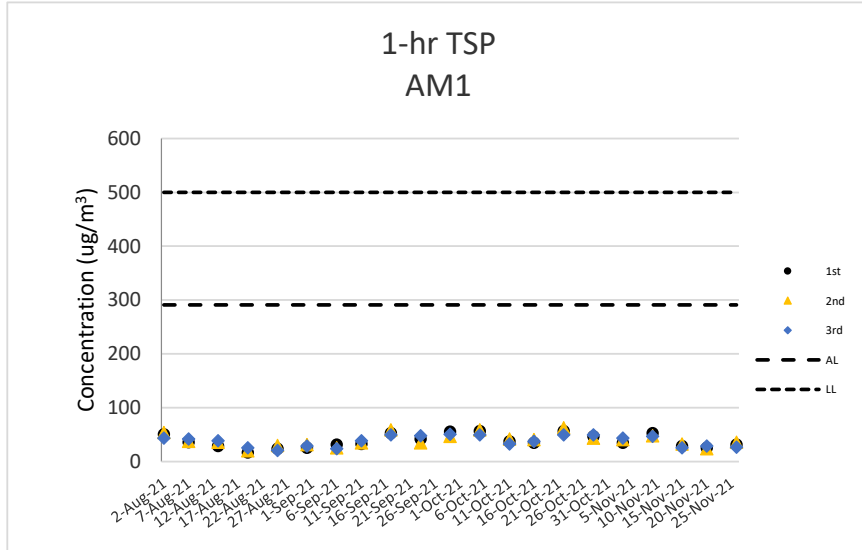
AM2 - Squatter house at the west of Yuen Long STW

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level (ug/m^3)	Limit Level (ug/m^3)
			1st Measurement	2nd Measurement	3rd Measurement		
3-Nov-21	Cloudy	8:56	44	39	47	296	500
9-Nov-21	Fine	8:32	59	63	62		
15-Nov-21	Cloudy	8:43	35	36	41		
20-Nov-21	Fine	8:43	30	29	35		
26-Nov-21	Fine	8:46	39	38	33		
		Min	29				
		Max	63				
		Average	42				

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)
3-Nov-21	10:09	53	55	51	0.1	Cloudy	75
9-Nov-21	11:26	54	55	51	0.4	Fine	75
15-Nov-21	10:11	55	57	52	0.1	Cloudy	75
26-Nov-21	10:06	54	55	51	0.1	Fine	75
	Max	55					
	Min	53					

CM2 - Squatter house to the west of YLSTW

Date	Start Time	L _{eq} 30min dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
3-Nov-21	9:01	63	67	55	0.3	Cloudy	75
9-Nov-21	8:37	62	66	55	0.5	Fine	75
15-Nov-21	8:49	63	67	56	0.2	Cloudy	75
26-Nov-21	8:52	61	64	56	0.3	Fine	75
	Max	63					
	Min	61					

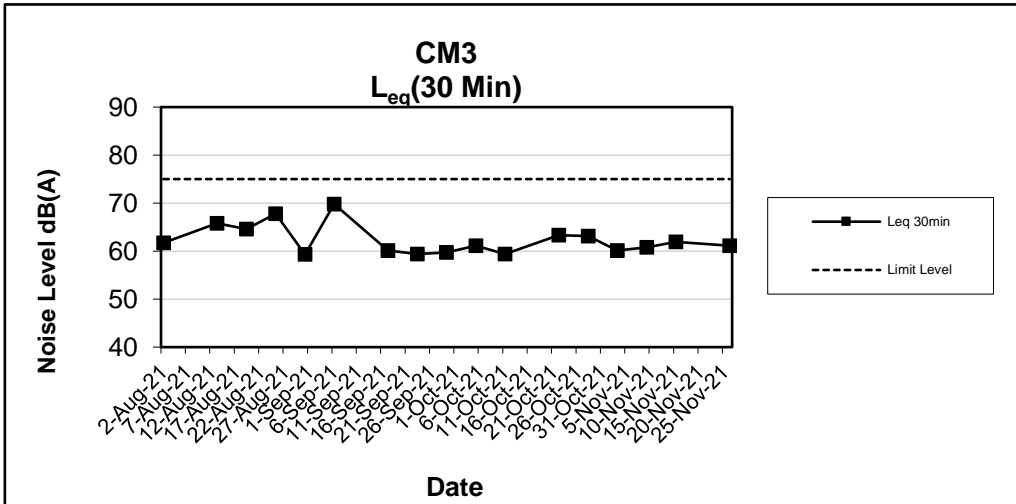
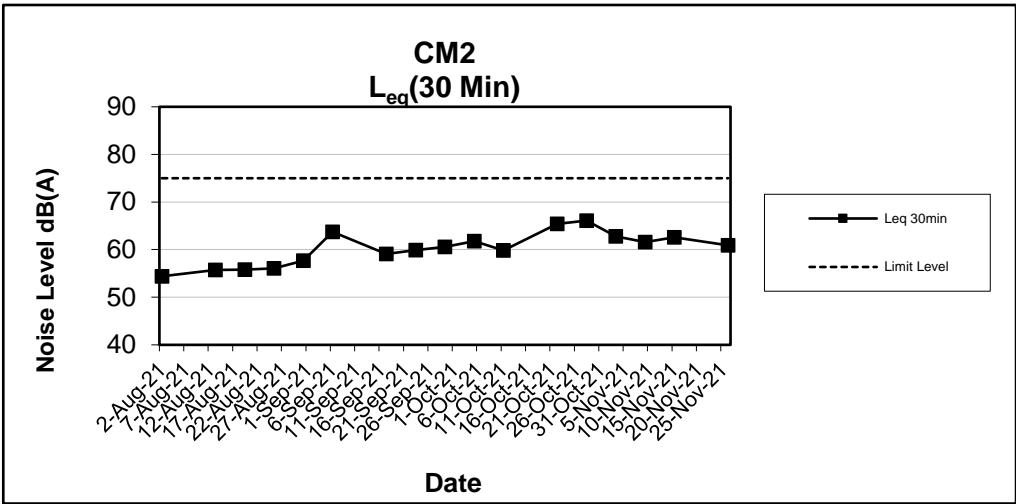
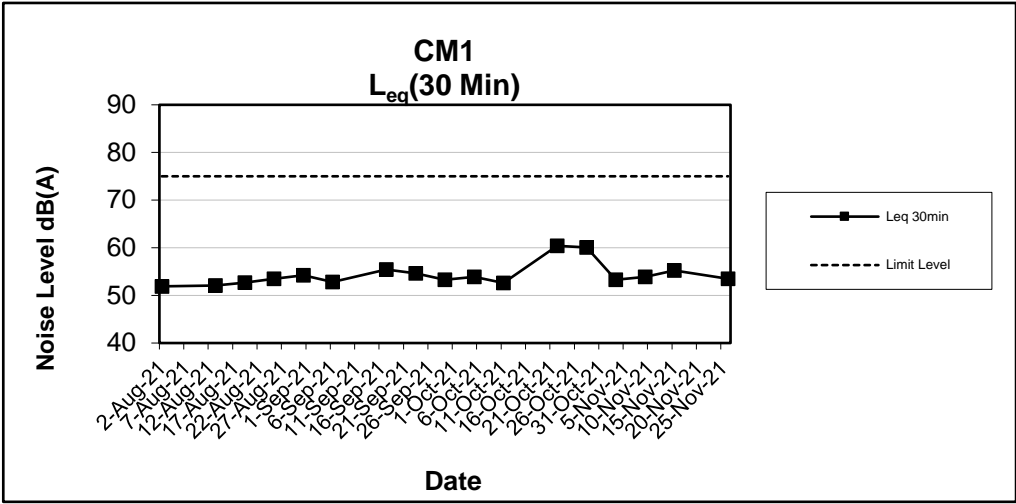
CM3 - Squatter house to the east of YLSTW

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)
3-Nov-21	11:28	60	64	55	0.2	Cloudy	75
9-Nov-21	10:03	61	65	55	0.5	Fine	75
15-Nov-21	11:29	62	67	55	0.3	Cloudy	75
26-Nov-21	11:27	61	65	55	0.2	Fine	75
	Max	62					
	Min	60					

Note:

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

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



Water Quality Monitoring Results

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	2/11/2021	Mid-Flood	Fine	Moderate	5:33	0.9	M	0.45	1	0.065	24.8	7.03	7.03	8.65	8.62	26.35	26.36	36.7	36.9	2.92	2.93	11.0	10.9	23	22
M1	2/11/2021	Mid-Flood	Fine	Moderate	5:33	0.9	M	0.45	2			7.03		8.59		26.36		37.1		2.94		10.8		21	
M2	2/11/2021	Mid-Flood	Fine	Moderate	5:53	1.1	M	0.55	1	0.042	175	7.03	7.03	8.15	8.15	26.36	26.35	41.4	41.7	3.62	3.63	11.1	11.2	11	12
M2	2/11/2021	Mid-Flood	Fine	Moderate	5:53	1.1	M	0.55	2			7.02		8.14		26.34		41.9		3.64		11.2		12	
M3	2/11/2021	Mid-Flood	Fine	Calm	5:41	0.6	M	0.3	1	0.125	74	7.47	7.47	5.61	5.61	24.96	24.97	42.3	42.7	3.36	3.39	10.1	10.0	7	7
M3	2/11/2021	Mid-Flood	Fine	Calm	5:41	0.6	M	0.3	2			7.46		5.60		24.97		43.1		3.42		9.9		6	
M1	2/11/2021	Mid-Ebb	Fine	Moderate	11:59	0.6	M	0.3	1	0.063	72	7.10	7.11	8.61	8.62	26.37	26.38	35.8	35.9	2.84	2.86	10.6	10.7	11	11
M1	2/11/2021	Mid-Ebb	Fine	Moderate	11:59	0.6	M	0.3	2			7.11		8.62		26.38		35.9		2.88		10.7		10	
M2	2/11/2021	Mid-Ebb	Fine	Moderate	11:40	0.8	M	0.4	1	0.123	313	7.16	7.15	8.03	8.04	27.14	27.13	32.4	32.6	2.62	2.64	8.6	8.7	11	11
M2	2/11/2021	Mid-Ebb	Fine	Moderate	11:40	0.8	M	0.4	2			7.14		8.04		27.11		32.8		2.66		8.7		10	
M3	2/11/2021	Mid-Ebb	Fine	Calm	11:43	0.4	M	0.2	1	0.177	257	7.20	7.20	6.85	6.86	25.49	25.50	54.9	54.6	4.28	4.25	14.6	14.3	15	15
M3	2/11/2021	Mid-Ebb	Fine	Calm	11:43	0.4	M	0.2	2			7.19		6.86		25.51		54.2		4.22		14.0		15	

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.
M1	4/11/2021	Mid-Flood	Cloudy	Smooth	7:18	1.8	M	0.9	1	0.184	248	7.38	7.39	11.71	11.72	25.85	25.85	63.7	63.4	4.77	4.60	9.9	9.8	15	16
M1	4/11/2021	Mid-Flood	Cloudy	Smooth	7:18	1.8	M	0.9	2			7.39	7.47	11.73	11.16	25.84	25.64	63.1	70.3	4.42	5.29	4.60	9.8	9.8	16
M2	4/11/2021	Mid-Flood	Cloudy	Smooth	7:36	1	M	0.5	1	0.209	165	7.47	7.47	11.15	11.16	25.63	25.64	70.9	70.3	5.34	5.29	12.8	12.6	19	18
M2	4/11/2021	Mid-Flood	Cloudy	Smooth	7:36	1	M	0.5	2			7.47	7.47	11.16	11.16	25.65	25.64	69.6	70.3	5.24	5.29	12.5	12.6	17	18
M3	4/11/2021	Mid-Flood	Fine	Moderate	7:30	1.2	M	0.6	1	0.068	128	7.25	7.26	7.14	7.20	26.74	26.74	58.5	57.7	4.43	4.37	13.3	13.2	17	17
M3	4/11/2021	Mid-Flood	Fine	Moderate	7:30	1.2	M	0.6	2			7.26	7.26	7.26	7.20	26.74	26.74	56.8	57.7	4.31	4.37	13.1	13.2	16	17
M1	4/11/2021	Mid-Ebb	Cloudy	Smooth	13:36	2	M	1	1	0.252	320	7.22	7.23	9.38	9.38	26.61	26.62	55.9	56.2	4.22	4.25	19.5	19.5	20	19
M1	4/11/2021	Mid-Ebb	Cloudy	Smooth	13:36	2	M	1	2			7.23	7.23	9.38	9.38	26.62	26.62	56.5	56.2	4.27	4.25	19.4	19.5	18	19
M2	4/11/2021	Mid-Ebb	Cloudy	Smooth	13:18	1.2	M	0.6	1	0.239	287	7.27	7.27	9.27	9.27	26.73	26.73	54.5	54.4	4.13	4.12	17.4	17.6	20	20
M2	4/11/2021	Mid-Ebb	Cloudy	Smooth	13:18	1.2	M	0.6	2			7.26	7.26	9.26	9.27	26.72	26.73	54.3	54.4	4.11	4.12	17.8	17.6	20	20
M3	4/11/2021	Mid-Ebb	Fine	Moderate	13:10	0.9	M	0.45	1	0.042	246	7.24	7.24	7.36	7.37	26.94	26.97	58.9	58.9	4.45	4.45	12.2	12.2	19	19
M3	4/11/2021	Mid-Ebb	Fine	Moderate	13:10	0.9	M	0.45	2			7.23	7.23	7.38	7.37	26.99	26.97	58.8	58.9	4.44	4.45	12.3	12.2	18	19

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	6/11/2021	Mid-Flood	Fine	Moderate	9:08	0.9	M	0.45	1	0.053	190	7.14	7.15	8.25	8.25	26.89	26.85	39.2	39.0	3.14	3.11	36.2	36.1	42	42
M1	6/11/2021	Mid-Flood	Fine	Moderate	9:08	0.9	M	0.45	2			7.15		8.24		26.82		38.7		3.08		36.1		41	
M2	6/11/2021	Mid-Flood	Fine	Moderate	9:34	1.2	M	0.6	1	0.093	306	7.22	7.23	8.35	8.33	26.73	26.76	42.4	42.8	3.29	3.34	32.1	32.1	37	38
M2	6/11/2021	Mid-Flood	Fine	Moderate	9:34	1.2	M	0.6	2			7.24		8.31		26.79		43.1		3.38		32.1		39	
M3	6/11/2021	Mid-Flood	Fine	Smooth	9:00	1.3	M	0.65	1	0.065	128	7.08	7.10	8.28	8.27	26.63	26.45	47.9	49.6	3.82	3.87	26.4	26.8	38	37
M3	6/11/2021	Mid-Flood	Fine	Smooth	9:00	1.3	M	0.65	2			7.11		8.26		26.27		51.3		3.91		27.3		35	
M1	6/11/2021	Mid-Ebb	Fine	Moderate	15:07	0.7	M	0.35	1	0.035	220	7.17	7.17	7.14	7.16	26.92	26.92	45.2	45.3	3.44	3.46	26.0	25.9	49	48
M1	6/11/2021	Mid-Ebb	Fine	Moderate	15:07	0.7	M	0.35	2			7.16		7.18		26.91		45.4		3.47		25.9		47	
M2	6/11/2021	Mid-Ebb	Fine	Moderate	14:49	0.9	M	0.45	1	0.101	313	7.14	7.15	7.24	7.23	26.80	26.81	39.2	39.2	2.99	2.97	30.0	30.0	46	45
M2	6/11/2021	Mid-Ebb	Fine	Moderate	14:49	0.9	M	0.45	2			7.15		7.22		26.81		39.1		2.94		30.0		43	
M3	6/11/2021	Mid-Ebb	Fine	Smooth	14:50	0.8	M	0.4	1	0.056	245	7.28	7.35	5.55	5.51	27.59	27.51	69.8	70.5	5.39	5.41	27.8	27.4	42	42
M3	6/11/2021	Mid-Ebb	Fine	Smooth	14:50	0.8	M	0.4	2			7.42		5.46		27.43		71.1		5.43		27.0		41	

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	43.4	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	9/11/2021	Mid-Flood	Fine	Moderate	12:06	1.4	M	0.7	1	0.066	134	6.98	6.99	5.59	5.57	21.60	21.71	42.9	42.4	3.87	3.81	25.2	25.2	45	44
M1	9/11/2021	Mid-Flood	Fine	Moderate	12:06	1.4	M	0.7	2			6.99		5.54		21.81		41.8		3.74		25.2		43	
M2	9/11/2021	Mid-Flood	Fine	Moderate	12:25	1.1	M	0.55	1	0.121	325	7.03	7.04	5.74	5.73	21.60	21.59	45.7	45.7	4.09	4.08	25.7	25.5	44	45
M2	9/11/2021	Mid-Flood	Fine	Moderate	12:25	1.1	M	0.55	2			7.04		5.72		21.58		45.6		4.06		25.4		46	
M3	9/11/2021	Mid-Flood	Fine	Calm	12:38	0.4	M	0.2	1	0.202	81	7.47	7.47	2.91	2.91	20.83	20.83	38.9	38.4	3.46	3.42	14.9	14.8	13	13
M3	9/11/2021	Mid-Flood	Fine	Calm	12:38	0.4	M	0.2	2			7.46		2.91		20.82		37.8		3.37		14.7		12	
M1	9/11/2021	Mid-Ebb	Fine	Moderate	17:18	0.8	M	0.4	1	0.058	312	7.03	7.04	6.12	6.13	22.83	22.89	61.8	62.4	4.86	4.89	28.7	28.7	38	37
M1	9/11/2021	Mid-Ebb	Fine	Moderate	17:18	0.8	M	0.4	2			7.04		6.14		22.94		62.9		4.91		28.6		36	
M2	9/11/2021	Mid-Ebb	Fine	Moderate	16:58	0.9	M	0.45	1	0.036	177	6.87	6.85	7.31	7.32	21.60	21.59	58.7	58.9	4.66	4.69	25.6	25.5	46	44
M2	9/11/2021	Mid-Ebb	Fine	Moderate	16:58	0.9	M	0.45	2			6.82		7.32		21.58		59.1		4.72		25.4		41	
M3	9/11/2021	Mid-Ebb	Fine	Calm	17:03	0.6	M	0.3	1	0.13	273	7.20	7.20	2.07	2.07	21.69	21.70	46.2	46.5	3.91	3.93	20.5	20.6	14	15
M3	9/11/2021	Mid-Ebb	Fine	Calm	17:03	0.6	M	0.3	2			7.19		2.06		21.71		46.8		3.95		20.8		15	

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	11/11/2021	Mid-Flood	Fine	Moderate	18:57	1.4	M	0.7	1	0.073	313	7.29	7.28	5.35	5.34	21.22	21.22	40.0	39.9	3.44	3.43	23.4	23.4	33	32
M1	11/11/2021	Mid-Flood	Fine	Moderate	18:57	1.4	M	0.7	2			7.26		5.33		21.22		39.7		3.41		23.4		31	
M2	11/11/2021	Mid-Flood	Fine	Moderate	18:43	1.3	M	0.65	1	0.088	165	7.33	7.34	5.37	5.37	21.23	21.23	46.5	46.5	4.00	4.00	23.9	23.9	39	39
M2	11/11/2021	Mid-Flood	Fine	Moderate	18:43	1.3	M	0.65	2			7.34		5.36		21.23		46.4		3.99		23.9		39	
M3	11/11/2021	Mid-Flood	Fine	Calm	18:43	0.6	M	0.3	1	0.187	91	7.19	7.20	5.94	5.94	22.61	22.62	54.8	55.1	4.64	4.67	25.1	25.0	36	36
M3	11/11/2021	Mid-Flood	Fine	Calm	18:43	0.6	M	0.3	2			7.20		5.93		22.62		55.4		4.70		24.9		36	
M1	11/11/2021	Mid-Ebb	Fine	Moderate	6:24	0.9	M	0.45	1	0.07	123	7.14	7.18	5.88	5.90	21.39	21.39	39.6	39.4	3.39	3.38	30.6	30.6	39	38
M1	11/11/2021	Mid-Ebb	Fine	Moderate	6:24	0.9	M	0.45	2			7.22		5.91		21.39		39.2		3.36		30.5		37	
M2	11/11/2021	Mid-Ebb	Fine	Moderate	6:41	1.2	M	0.6	1	0.053	70	7.20	7.21	5.68	5.69	22.13	22.13	50.5	50.5	4.26	4.25	34.3	34.2	34	34
M2	11/11/2021	Mid-Ebb	Fine	Moderate	6:41	1.2	M	0.6	2			7.21		5.69		22.13		50.4		4.23		34.1		34	
M3	11/11/2021	Mid-Ebb	Fine	Calm	6:32	0.4	M	0.2	1	0.26	245	6.96	6.96	4.87	4.87	20.93	20.94	43.7	43.0	3.65	3.59	34.1	33.9	44	43
M3	11/11/2021	Mid-Ebb	Fine	Calm	6:32	0.4	M	0.2	2			6.95		4.86		20.94		42.2		3.53		33.6		42	

Remark

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For Flood Tide

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

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	13/11/2021	Mid-Flood	Fine	Smooth	16:59	2	M	1	1	0.217	223	7.25	7.25	5.93	5.93	24.06	24.06	38.4	38.8	3.20	3.23	20.8	20.7	28	27
M1	13/11/2021	Mid-Flood	Fine	Smooth	16:59	2	M	1	2			7.24		5.92		24.05		39.1		3.25		20.6		25	
M2	13/11/2021	Mid-Flood	Fine	Smooth	16:40	1.2	M	0.6	1	0.197	241	7.17	7.16	5.76	5.75	23.43	23.44	36.5	36.3	3.07	3.06	24.2	24.3	33	32
M2	13/11/2021	Mid-Flood	Fine	Smooth	16:40	1.2	M	0.6	2			7.15		5.74		23.45		36.1		3.04		24.3		30	
M3	13/11/2021	Mid-Flood	Fine	Smooth	16:41	0.4	M	0.2	1	0.191	73	7.09	7.08	5.60	5.60	23.30	23.30	42.4	42.0	3.58	3.54	27.3	27.6	27	29
M3	13/11/2021	Mid-Flood	Fine	Smooth	16:41	0.4	M	0.2	2			7.07		5.59		23.29		41.5		3.50		27.9		30	
M1	13/11/2021	Mid-Ebb	Fine	Smooth	8:57	2.2	M	1.1	1	0.173	294	6.91	6.92	5.01	5.01	22.31	22.31	37.3	37.2	3.09	3.08	30.1	30.1	47	47
M1	13/11/2021	Mid-Ebb	Fine	Smooth	8:57	2.2	M	1.1	2			6.92		5.01		22.30		37.0		3.06		30.0		46	
M2	13/11/2021	Mid-Ebb	Fine	Smooth	9:17	1.2	M	0.6	1	0.206	271	7.12	7.12	4.98	4.97	22.54	22.53	34.3	34.1	2.83	2.81	26.1	26.0	40	39
M2	13/11/2021	Mid-Ebb	Fine	Smooth	9:17	1.2	M	0.6	2			7.11		4.96		22.52		33.8		2.79		25.9		37	
M3	13/11/2021	Mid-Ebb	Fine	Smooth	8:57	0.4	M	0.2	1	0.176	238	7.32	7.32	4.68	4.68	22.06	22.07	39.7	40.3	3.29	3.33	23.9	24.0	29	30
M3	13/11/2021	Mid-Ebb	Fine	Smooth	8:57	0.4	M	0.2	2			7.31		4.67		22.08		40.8		3.37		24.0		30	

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	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	16/11/2021	Mid-Flood	Fine	Calm	6:02	2.2	M	1.1	1	0.225	268	7.37	7.37	6.55	6.55	21.09	21.10	48.6	48.4	3.93	3.91	15.8	15.6	24	24
M1	16/11/2021	Mid-Flood	Fine	Calm	6:02	2.2	M	1.1	2			7.36		6.54		21.10		48.1		3.89		15.3		24	
M2	16/11/2021	Mid-Flood	Fine	Calm	6:20	1.2	M	0.6	1	0.235	275	7.30	7.31	6.33	6.34	21.24	21.25	46.2	46.5	3.81	3.83	18.4	18.6	23	23
M2	16/11/2021	Mid-Flood	Fine	Calm	6:20	1.2	M	0.6	2			7.31		6.35		21.25		46.8		3.85		18.8		23	
M3	16/11/2021	Mid-Flood	Fine	Calm	5:59	0.6	M	0.3	1	0.207	95	7.22	7.21	5.60	5.60	20.97	20.97	43.3	43.2	3.57	3.57	17.9	17.7	23	24
M3	16/11/2021	Mid-Flood	Fine	Calm	5:59	0.6	M	0.3	2			7.19		5.60		20.96		43.1		3.56		17.5		25	
M1	16/11/2021	Mid-Ebb	Fine	Calm	12:08	2	M	1	1	0.217	315	7.26	7.27	5.86	5.85	24.05	24.06	44.5	44.3	3.65	3.64	23.7	23.6	13	14
M1	16/11/2021	Mid-Ebb	Fine	Calm	12:08	2	M	1	2			7.27		5.84		24.06		44.1		3.62		23.5		15	
M2	16/11/2021	Mid-Ebb	Fine	Calm	11:52	1	M	0.5	1	0.193	235	7.16	7.17	5.33	5.34	24.13	24.13	39.1	39.5	3.21	3.25	17.1	17.1	18	20
M2	16/11/2021	Mid-Ebb	Fine	Calm	11:52	1	M	0.5	2			7.17		5.34		24.13		39.9		3.28		17.1		21	
M3	16/11/2021	Mid-Ebb	Fine	Calm	11:46	0.4	M	0.2	1	0.18	250	7.11	7.11	5.07	5.06	23.58	23.58	41.2	41.0	3.37	3.36	25.8	25.1	28	27
M3	16/11/2021	Mid-Ebb	Fine	Calm	11:46	0.4	M	0.2	2			7.10		5.05		23.57		40.8		3.35		24.5		26	

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	18/11/2021	Mid-Flood	Fine	Smooth	7:28	1.2	M	0.6	1	0.122	222	7.09	7.09	8.70	8.70	23.90	23.89	55.8	55.7	4.49	4.48	28.2	28.2	33	35
M1	18/11/2021	Mid-Flood	Fine	Smooth	7:28	1.2	M	0.6	2			7.09	7.09	8.70	8.70	23.89	23.89	55.6	55.6	4.46	4.46	28.3	28.2	36	
M2	18/11/2021	Mid-Flood	Fine	Smooth	7:48	1.3	M	0.65	1	0.137	239	7.23	7.23	8.03	8.03	23.95	23.95	47.0	46.9	3.78	3.78	23.0	23.0	25	25
M2	18/11/2021	Mid-Flood	Fine	Smooth	7:48	1.3	M	0.65	2			7.23	7.23	8.03	8.03	23.95	23.95	46.8	46.8	3.77	3.77	23.0	23.0	25	
M3	18/11/2021	Mid-Flood	Cloudy	Calm	7:43	0.6	M	0.3	1	0.237	85	7.34	7.33	8.16	8.16	23.12	23.11	44.9	44.6	3.65	3.65	17.4	17.4	29	32
M3	18/11/2021	Mid-Flood	Cloudy	Calm	7:43	0.6	M	0.3	2			7.32	7.33	8.16	8.16	23.10	23.11	44.3	44.6	3.60	3.63	17.3	17.4	34	
M1	18/11/2021	Mid-Ebb	Fine	Smooth	13:25	1	M	0.5	1	0.167	181	7.21	7.21	7.94	7.94	25.34	25.35	49.6	49.6	4.00	4.00	30.1	30.1	31	33
M1	18/11/2021	Mid-Ebb	Fine	Smooth	13:25	1	M	0.5	2			7.21	7.21	7.94	7.94	25.35	25.35	49.5	49.6	3.99	4.00	30.1	30.1	34	
M2	18/11/2021	Mid-Ebb	Fine	Smooth	13:05	1.1	M	0.55	1	0.145	149	7.26	7.26	7.72	7.72	25.25	25.25	47.7	47.6	3.83	3.82	20.7	20.7	27	28
M2	18/11/2021	Mid-Ebb	Fine	Smooth	13:05	1.1	M	0.55	2			7.26	7.26	7.72	7.72	25.26	25.25	47.5	47.6	3.81	3.82	20.7	20.7	28	
M3	18/11/2021	Mid-Ebb	Cloudy	Calm	12:59	0.4	M	0.2	1	0.212	263	7.18	7.17	6.86	6.85	23.96	23.96	48.6	48.4	3.91	3.90	22.3	22.3	25	25
M3	18/11/2021	Mid-Ebb	Cloudy	Calm	12:59	0.4	M	0.2	2			7.16	7.17	6.84	6.85	23.95	23.96	48.2	48.4	3.88	3.88	22.2	22.2	24	

Remark

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For Flood Tide

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

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	20/11/2021	Mid-Flood	Fine	Smooth	8:58	2	M	1	1	0.276	240	7.23	7.22	8.86	8.87	23.96	23.96	59.3	59.1	4.75	4.73	25.7	26.2	33	33
M1	20/11/2021	Mid-Flood	Fine	Smooth	8:58	2	M	1	2			7.21		8.88		23.95		58.8		4.71		26.7		32	
M2	20/11/2021	Mid-Flood	Fine	Smooth	9:13	1.2	M	0.6	1	0.249	257	7.31	7.31	8.46	8.46	24.10	24.11	50.7	50.4	4.07	4.04	31.6	31.1	38	38
M2	20/11/2021	Mid-Flood	Fine	Smooth	9:13	1.2	M	0.6	2			7.30		8.46		24.12		50.1		4.01		30.7		37	
M3	20/11/2021	Mid-Flood	Fine	Calm	9:02	0.4	M	0.2	1	0.271	95	7.29	7.29	7.79	7.79	24.02	24.03	49.2	49.5	3.81	3.83	37.5	37.8	32	32
M3	20/11/2021	Mid-Flood	Fine	Calm	9:02	0.4	M	0.2	2			7.28		7.78		24.03		49.7		3.84		38.1		31	
M1	20/11/2021	Mid-Ebb	Fine	Smooth	14:24	2.2	M	1.1	1	0.245	294	7.39	7.39	8.33	8.34	25.29	25.28	44.8	44.7	3.62	3.61	25.0	25.1	32	32
M1	20/11/2021	Mid-Ebb	Fine	Smooth	14:24	2.2	M	1.1	2			7.39		8.34		25.27		44.5		3.60		25.2		32	
M2	20/11/2021	Mid-Ebb	Fine	Smooth	14:05	1.2	M	0.6	1	0.23	173	7.52	7.52	8.27	8.26	25.12	25.12	46.9	47.2	3.78	3.81	20.2	20.6	26	27
M2	20/11/2021	Mid-Ebb	Fine	Smooth	14:05	1.2	M	0.6	2			7.51		8.25		25.11		47.5		3.83		20.9		27	
M3	20/11/2021	Mid-Ebb	Fine	Calm	14:09	0.6	M	0.3	1	0.221	275	7.40	7.41	7.31	7.31	24.94	24.95	43.8	44.0	3.45	3.46	33.5	33.5	36	38
M3	20/11/2021	Mid-Ebb	Fine	Calm	14:09	0.6	M	0.3	2			7.42		7.30		24.96		44.1		3.47		33.6		40	

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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	23/11/2021	Mid-Flood	Cloudy	Smooth	11:03	1.2	M	0.6	1	0.126	230	6.88	6.88	6.17	6.17	19.82	19.83	28.9	28.8	2.55	2.54	28.6	28.5	36	38
M1	23/11/2021	Mid-Flood	Cloudy	Smooth	11:03	1.2	M	0.6	2			6.88		6.17		19.84		19.83		28.7		2.52		28.5	
M2	23/11/2021	Mid-Flood	Cloudy	Smooth	11:28	1.3	M	0.65	1	0.134	238	7.15	7.15	5.79	5.79	19.74	19.74	33.2	33.1	2.94	2.93	26.1	26.0	33	35
M2	23/11/2021	Mid-Flood	Cloudy	Smooth	11:28	1.3	M	0.65	2			7.15		5.79		19.74		19.74		32.9		2.91		26.0	
M3	23/11/2021	Mid-Flood	Cloudy	Smooth	11:01	0.9	M	0.45	1	0.089	79	7.10	7.10	5.79	5.79	19.60	19.61	38.7	38.7	3.47	3.47	27.2	27.2	39	39
M3	23/11/2021	Mid-Flood	Cloudy	Smooth	11:01	0.9	M	0.45	2			7.10		5.79		19.61		19.61		38.6		3.46		27.2	
M1	23/11/2021	Mid-Ebb	Cloudy	Smooth	16:13	1	M	0.5	1	0.132	200	7.36	7.36	5.87	5.87	19.92	19.93	44.1	44.1	3.93	3.93	27.9	27.9	27	30
M1	23/11/2021	Mid-Ebb	Cloudy	Smooth	16:13	1	M	0.5	2			7.36		5.87		19.93		19.93		44.0		3.92		27.9	
M2	23/11/2021	Mid-Ebb	Cloudy	Smooth	15:48	1.1	M	0.55	1	0.101	144	7.16	7.16	5.23	5.23	19.91	19.92	42.5	42.4	3.77	3.76	28.0	28.0	38	41
M2	23/11/2021	Mid-Ebb	Cloudy	Smooth	15:48	1.1	M	0.55	2			7.16		5.23		19.92		19.92		42.3		3.75		28.0	
M3	23/11/2021	Mid-Ebb	Cloudy	Smooth	15:47	0.7	M	0.35	1	0.08	249	7.20	7.20	5.55	5.55	20.11	20.11	39.3	39.3	3.52	3.52	24.5	24.5	32	32
M3	23/11/2021	Mid-Ebb	Cloudy	Smooth	15:47	0.7	M	0.35	2			7.20		5.55		20.11		20.11		39.2		3.51		24.5	

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For Flood Tide

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

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement														Laboratory Analysis	
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	25/11/2021	Mid-Flood	Fine	Smooth	12:43	1.1	M	0.55	1	0.093	230	6.87	6.87	6.85	6.85	19.64	19.64	34.8	34.7	3.09	3.08	24.2	24.2	41	43
M1	25/11/2021	Mid-Flood	Fine	Smooth	12:43	1.1	M	0.55	2			6.87		6.85		19.65		34.6		3.07		24.3		45	
M2	25/11/2021	Mid-Flood	Fine	Smooth	12:58	1.1	M	0.55	1	0.108	238	7.06	7.06	6.37	6.37	20.34	20.34	32.3	32.2	2.82	2.81	18.9	18.9	27	28
M2	25/11/2021	Mid-Flood	Fine	Smooth	12:58	1.1	M	0.55	2			7.06		6.37		20.35		32.1		2.80		18.9		28	
M3	25/11/2021	Mid-Flood	Fine	Smooth	12:58	1	M	0.5	1	0.062	91	7.35	7.35	4.67	4.67	21.22	21.23	40.6	40.5	3.68	3.67	29.6	29.6	17	17
M3	25/11/2021	Mid-Flood	Fine	Smooth	12:58	1	M	0.5	2			7.35		4.67		21.23		40.4		3.66		29.6		16	
M1	25/11/2021	Mid-Ebb	Fine	Smooth	17:36	0.8	M	0.4	1	0.123	196	7.18	7.18	5.27	5.27	21.64	21.64	35.8	35.7	3.12	3.12	16.9	16.9	35	36
M1	25/11/2021	Mid-Ebb	Fine	Smooth	17:36	0.8	M	0.4	2			7.18		5.27		21.64		35.6		3.11		16.9		37	
M2	25/11/2021	Mid-Ebb	Fine	Smooth	17:16	0.7	M	0.35	1	0.078	124	7.12	7.12	5.35	5.35	21.31	21.31	34.0	34.4	2.98	2.98	18.3	18.3	37	36
M2	25/11/2021	Mid-Ebb	Fine	Smooth	17:16	0.7	M	0.35	2			7.12		5.35		21.31		34.8		2.97		18.3		34	
M3	25/11/2021	Mid-Ebb	Fine	Smooth	17:10	0.9	M	0.45	1	0.076	251	7.45	7.45	3.85	3.85	20.83	20.83	38.6	38.6	3.47	3.47	36.0	36.0	11	12
M3	25/11/2021	Mid-Ebb	Fine	Smooth	17:10	0.9	M	0.45	2			7.45		3.85		20.83		38.5		3.46		36.0		12	

Remark

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

For Flood Tide

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

For Ebb Tide

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

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
												Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	27/11/2021	Mid-Flood	Fine	Smooth	15:04	0.8	M	0.4	1	0.109	224	7.28	7.28	6.96	6.96	21.95	21.95	40.9	40.9	3.46	3.46	16.8	16.8	22	23
M1	27/11/2021	Mid-Flood	Fine	Smooth	15:04	0.8	M	0.4	2			7.28		6.96		21.96		40.8		3.45		16.8		23	
M2	27/11/2021	Mid-Flood	Fine	Smooth	14:47	1	M	0.5	1	0.13	229	7.22	7.22	7.16	7.16	21.57	21.58	35.3	35.2	2.98	2.98	19.3	19.3	19	18
M2	27/11/2021	Mid-Flood	Fine	Smooth	14:47	1	M	0.5	2			7.22		7.16		21.58		35.1		2.97		19.3		17	
M3	27/11/2021	Mid-Flood	Fine	Smooth	14:45	1.1	M	0.55	1	0.077	89	7.61	7.61	3.78	3.78	22.62	22.62	50.7	50.6	4.36	4.35	23.3	23.3	19	19
M3	27/11/2021	Mid-Flood	Fine	Smooth	14:45	1.1	M	0.55	2			7.61		3.78		22.62		50.5		4.34		23.3		19	
M1	27/11/2021	Mid-Ebb	Fine	Smooth	6:23	0.6	M	0.3	1	0.093	200	6.99	6.99	5.07	5.07	18.96	18.96	41.2	41.1	3.40	3.39	23.2	23.2	29	31
M1	27/11/2021	Mid-Ebb	Fine	Smooth	6:23	0.6	M	0.3	2			6.99		5.07		18.97		41.0		3.38		23.2		32	
M2	27/11/2021	Mid-Ebb	Fine	Smooth	6:41	0.8	M	0.4	1	0.107	115	7.29	7.29	5.46	5.46	19.21	19.22	42.1	42.0	3.58	3.57	18.1	18.1	19	19
M2	27/11/2021	Mid-Ebb	Fine	Smooth	6:41	0.8	M	0.4	2			7.29		5.46		19.22		41.9		3.56		18.1		19	
M3	27/11/2021	Mid-Ebb	Fine	Smooth	6:21	0.8	M	0.4	1	0.059	260	7.55	7.55	0.75	0.75	18.08	18.09	48.0	47.9	4.17	4.16	22.3	22.3	14	15
M3	27/11/2021	Mid-Ebb	Fine	Smooth	6:21	0.8	M	0.4	2			7.55		0.75		18.09		47.7		4.15		22.3		16	

Remark

1. Orange and Bold: Action Level Exceedance (For Impact Station Only)
2. Red and Bold: Limit Level Exceedance (For Impact Station Only)
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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	30/11/2021	Mid-Flood	Fine	Moderate	17:06	1.6	M	0.8	1	0.067	54	7.15	7.15	10.09	10.09	21.65	21.65	37.5	37.7	3.73	3.75	23.1	23.2	37	35
M1	30/11/2021	Mid-Flood	Fine	Moderate	17:06	1.6	M	0.8	2			7.14		10.08		21.65		37.9		3.76		23.3		33	
M2	30/11/2021	Mid-Flood	Fine	Moderate	16:47	1.4	M	0.7	1	0.114	72	7.19	7.19	10.15	10.16	21.40	21.41	40.9	40.9	3.97	3.97	18.1	18.1	15	17
M2	30/11/2021	Mid-Flood	Fine	Moderate	16:47	1.4	M	0.7	2			7.18		10.17		21.41		40.8		3.96		18.1		19	
M3	30/11/2021	Mid-Flood	Fine	Calm	16:45	0.4	M	0.2	1	0.207	85	7.36	7.36	9.27	9.27	24.74	24.75	48.3	48.0	3.74	3.72	31.0	31.5	25	25
M3	30/11/2021	Mid-Flood	Fine	Calm	16:45	0.4	M	0.2	2			7.35		9.27		24.75		47.6		3.69		32.0		25	
M1	30/11/2021	Mid-Ebb	Fine	Moderate	10:13	0.8	M	0.4	1	0.042	126	6.83	6.86	9.66	9.64	23.62	23.62	40.7	41.0	3.91	3.94	23.5	23.5	43	40
M1	30/11/2021	Mid-Ebb	Fine	Moderate	10:13	0.8	M	0.4	2			6.89		9.61		23.62		41.2		3.96		23.5		36	
M2	30/11/2021	Mid-Ebb	Fine	Moderate	10:36	1.1	M	0.55	1	0.058	167	7.02	7.03	9.80	9.77	23.11	23.11	38.2	38.3	3.64	3.65	21.0	21.0	21	20
M2	30/11/2021	Mid-Ebb	Fine	Moderate	10:36	1.1	M	0.55	2			7.03		9.74		23.12		38.3		3.66		21.0		19	
M3	30/11/2021	Mid-Ebb	Fine	Calm	10:16	0.4	M	0.2	1	0.237	265	7.08	7.08	7.64	7.64	23.60	23.61	42.6	42.9	3.37	3.39	23.6	24.2	38	37
M3	30/11/2021	Mid-Ebb	Fine	Calm	10:16	0.4	M	0.2	2			7.07		7.63		23.62		43.1		3.41		24.8		36	

Remark

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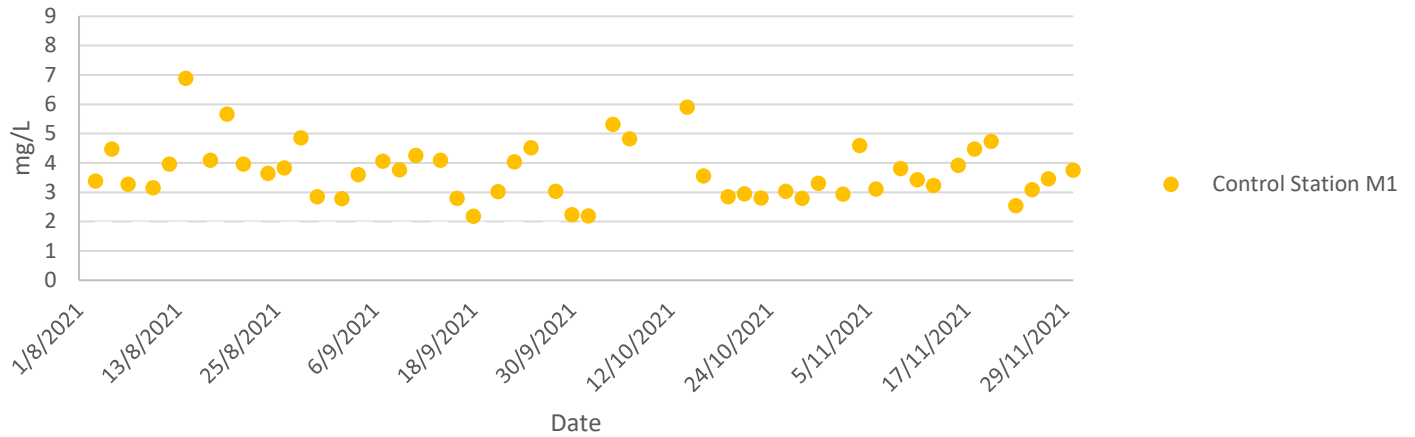
For Flood Tide

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

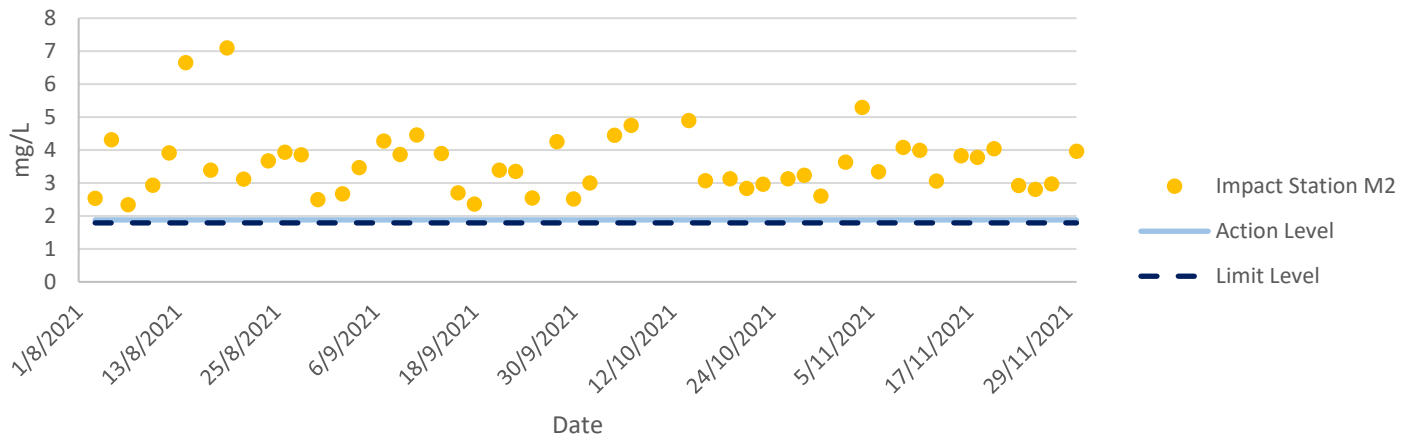
For Ebb Tide

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

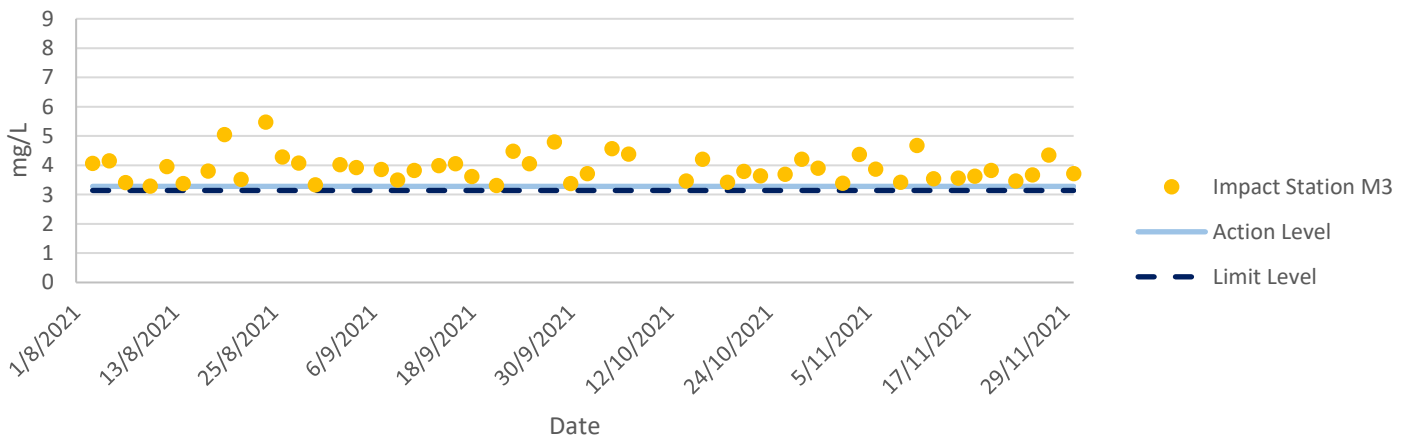
Dissolved Oxygen at Mid-Flood Tide



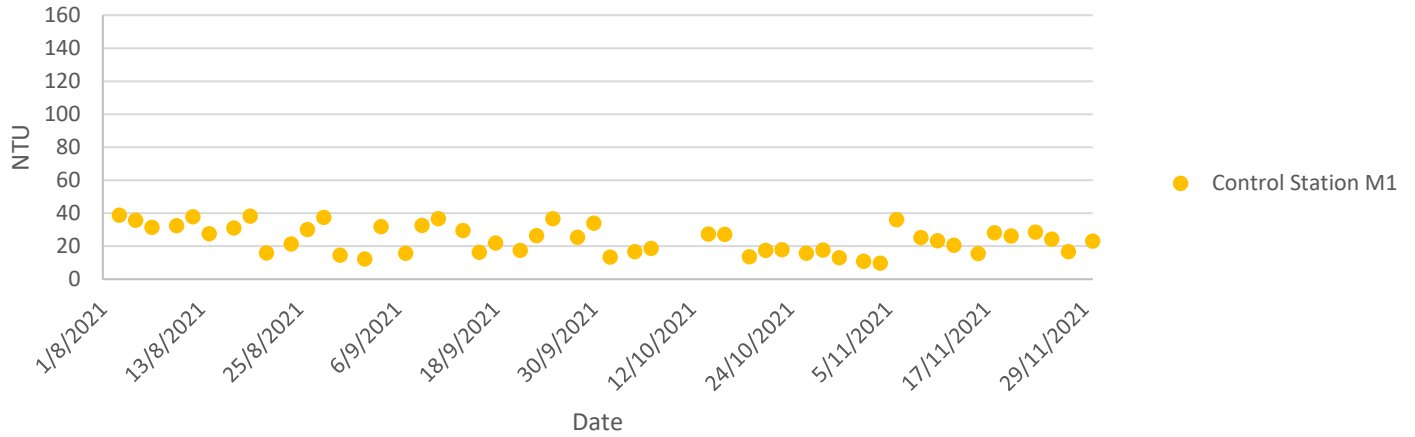
Dissolved Oxygen at Mid-Flood Tide



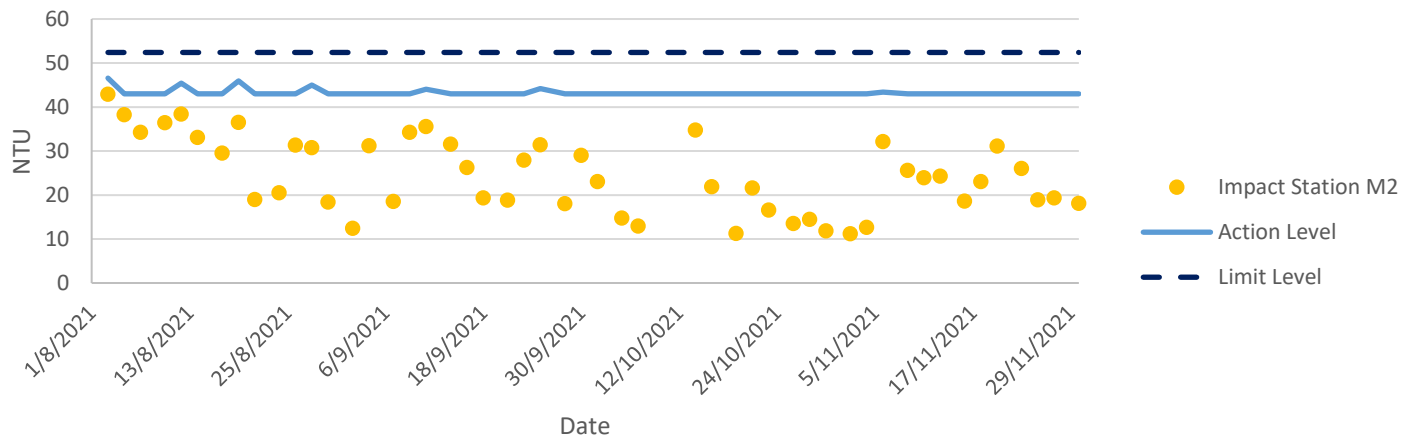
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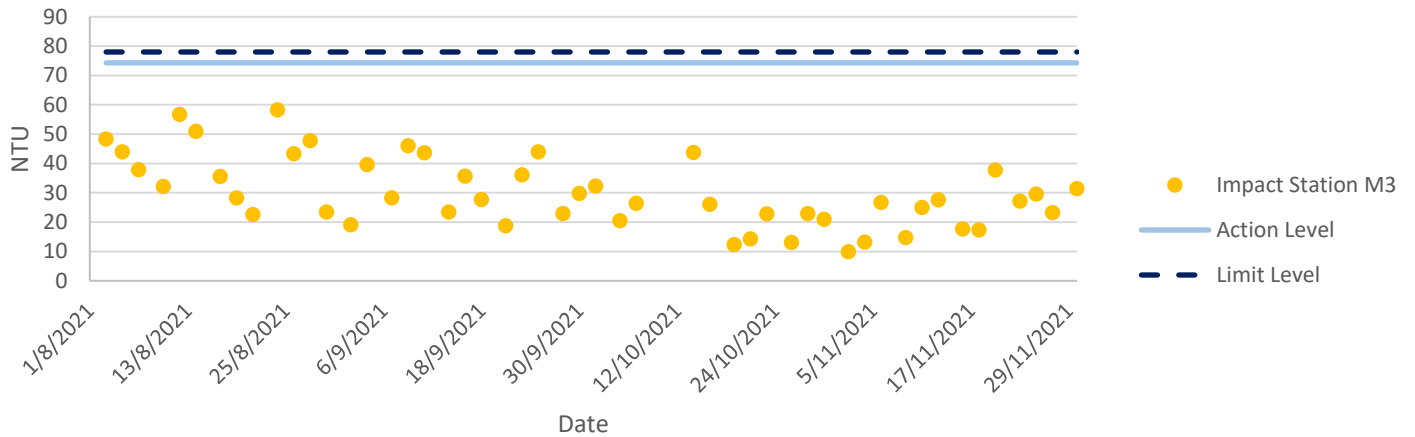
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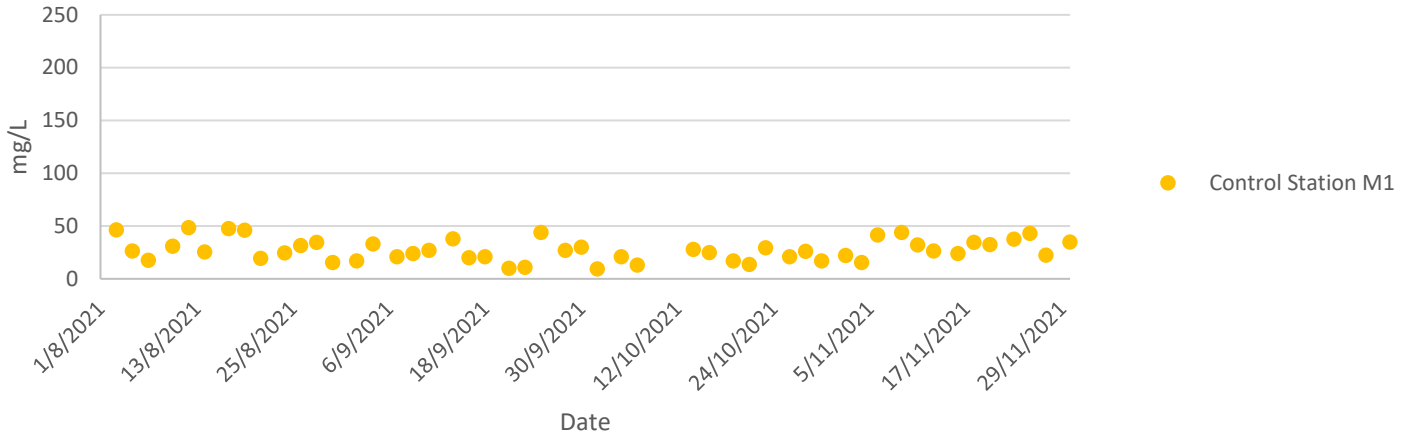
Turbidity at Mid-Flood Tide



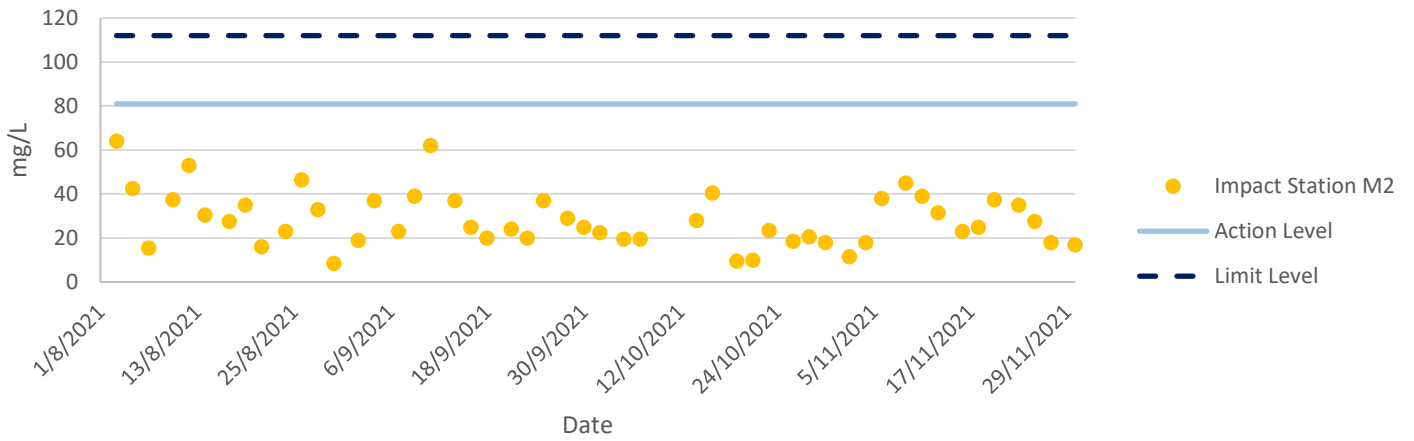
Turbidity at Mid-Flood Tide



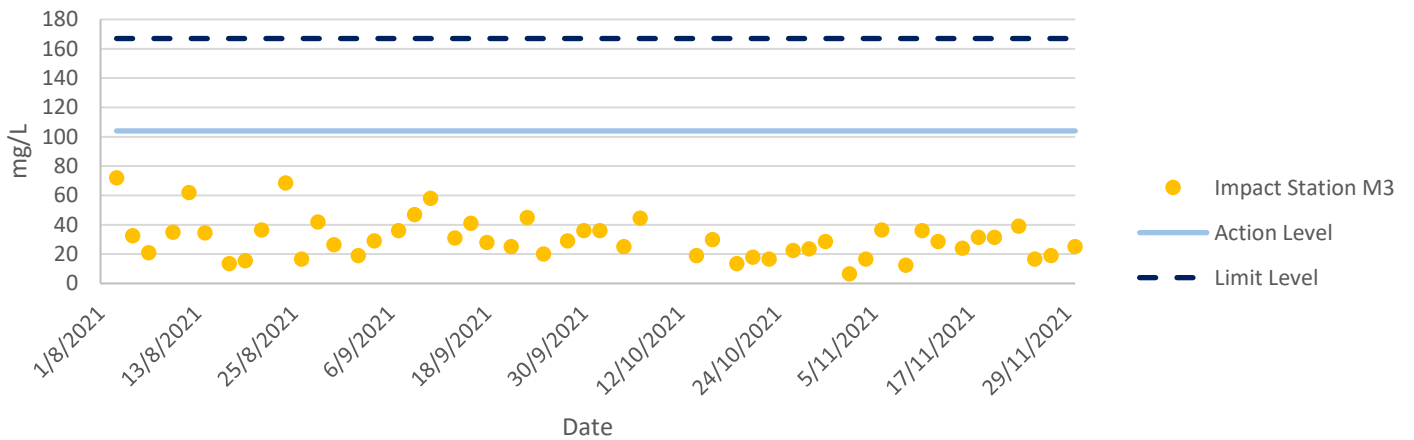
Total Suspended Solids at Mid-Flood Tide



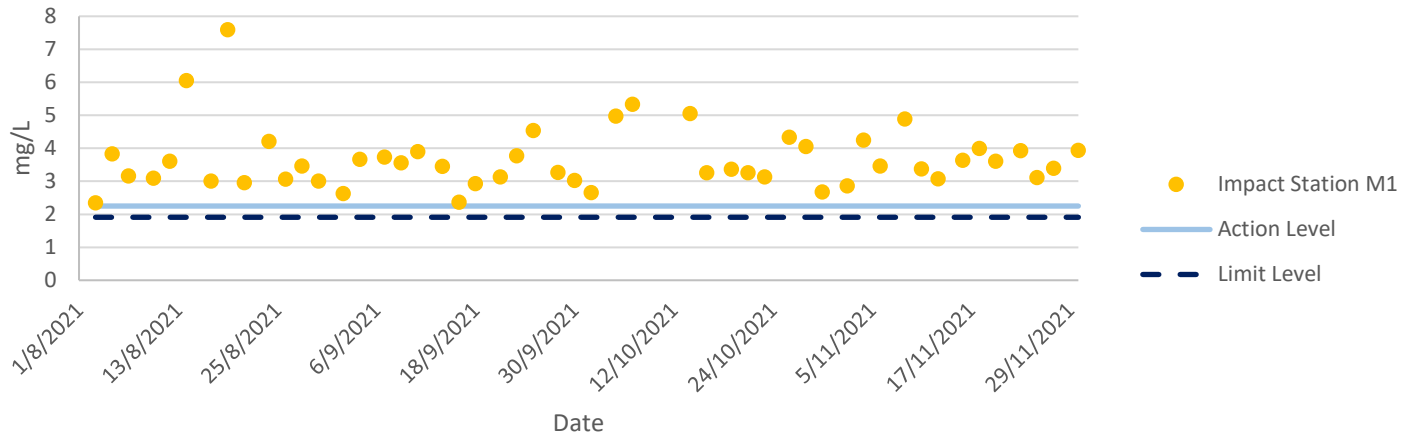
Total Suspended Solids at Mid-Flood Tide



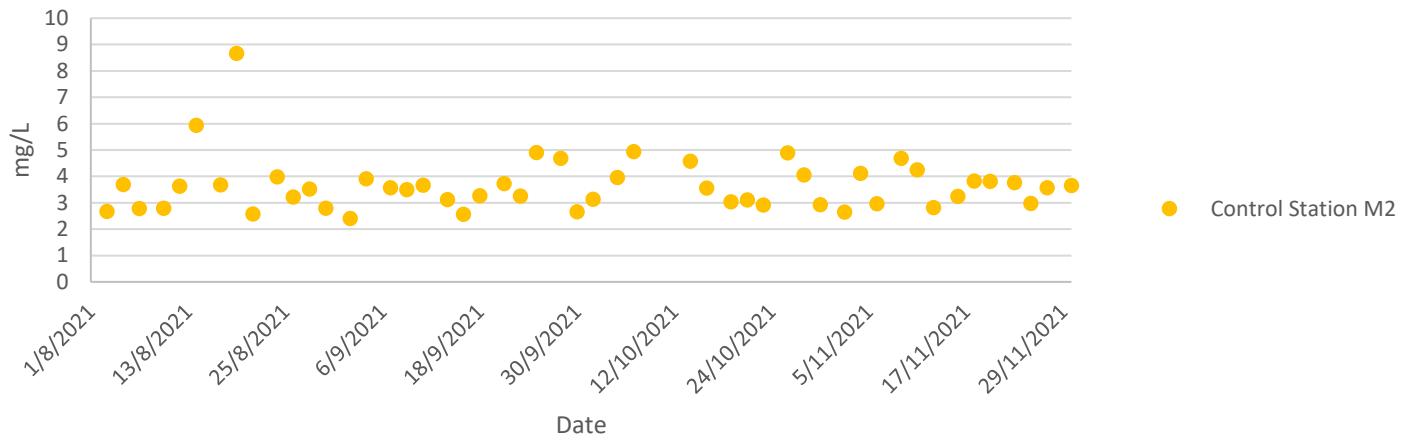
Total Suspended Solids at Mid-Flood Tide



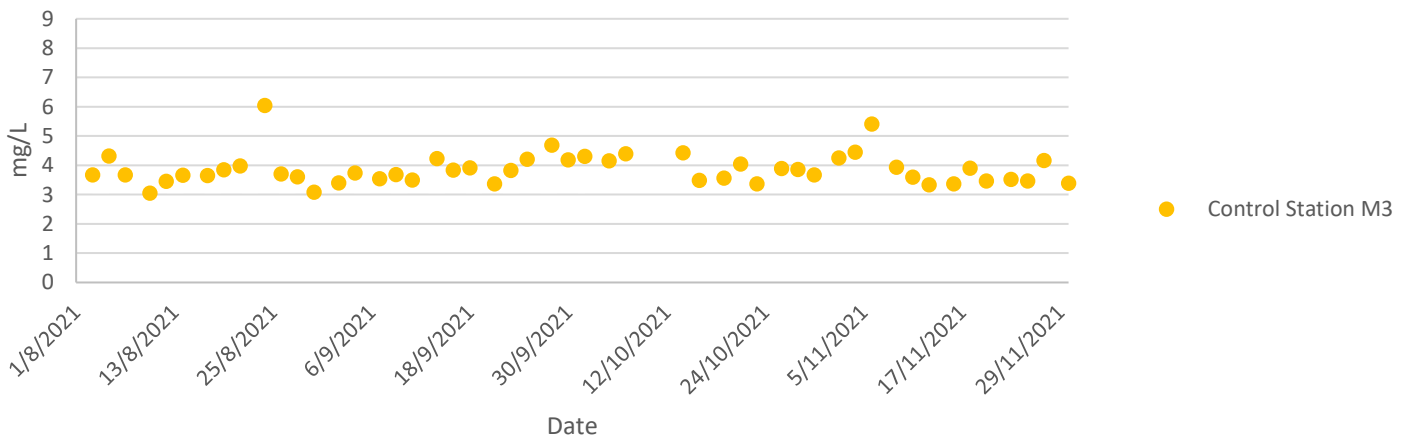
Dissolved Oxygen at Mid-Ebb Tide



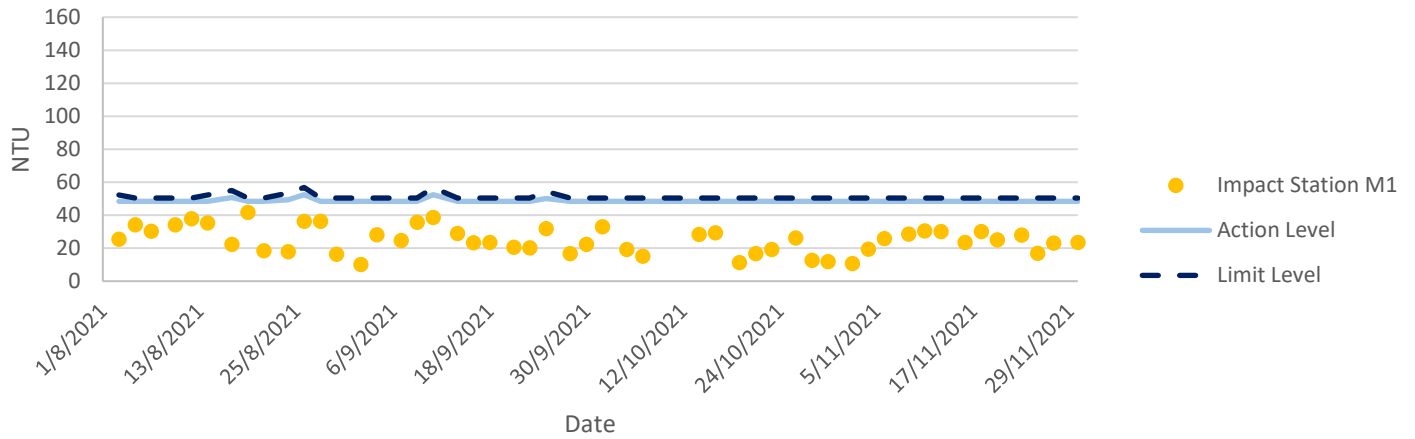
Dissolved Oxygen at Mid-Ebb Tide



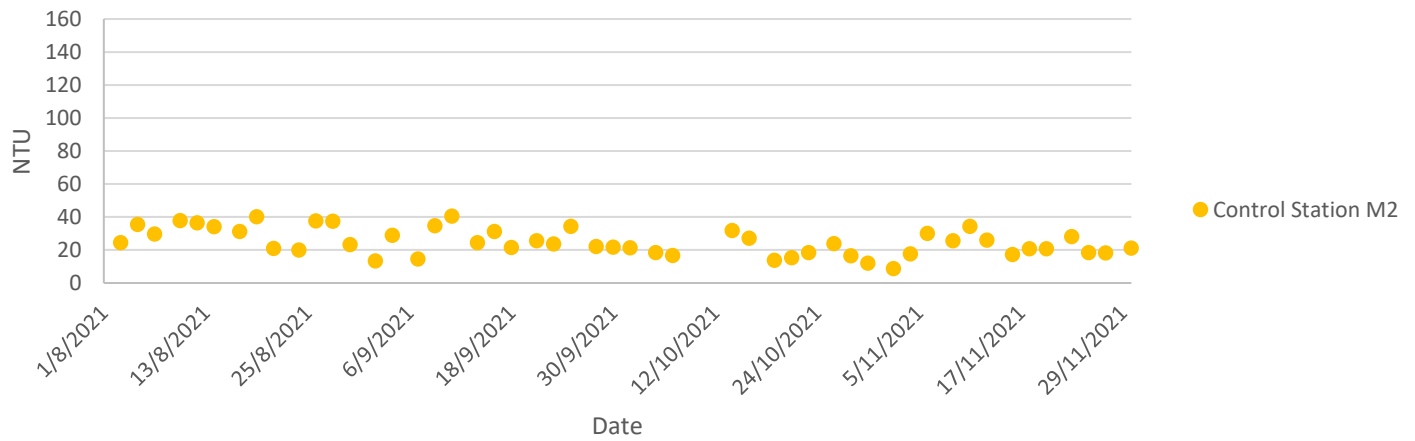
Dissolved Oxygen at Mid-Ebb Tide



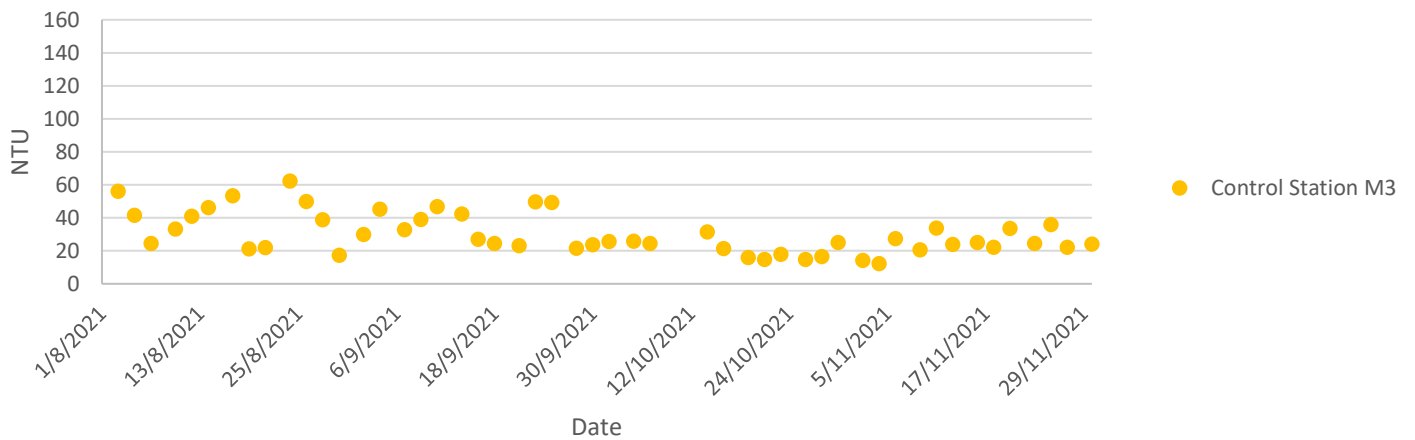
Turbidity at Mid-Ebb Tide

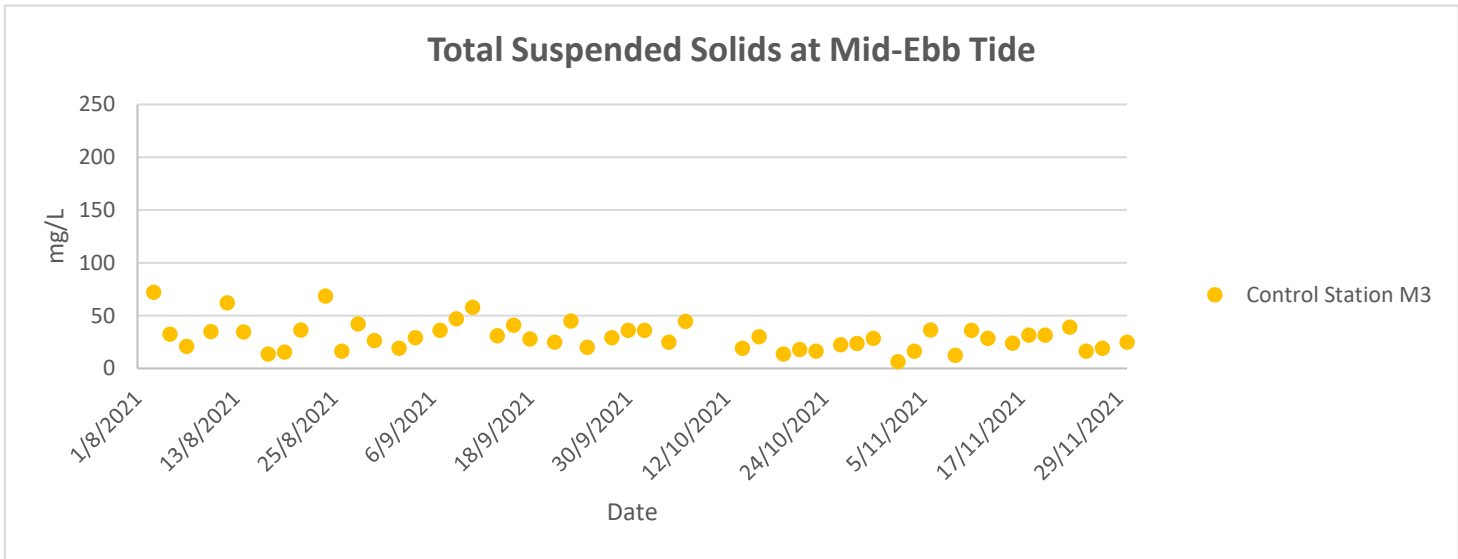
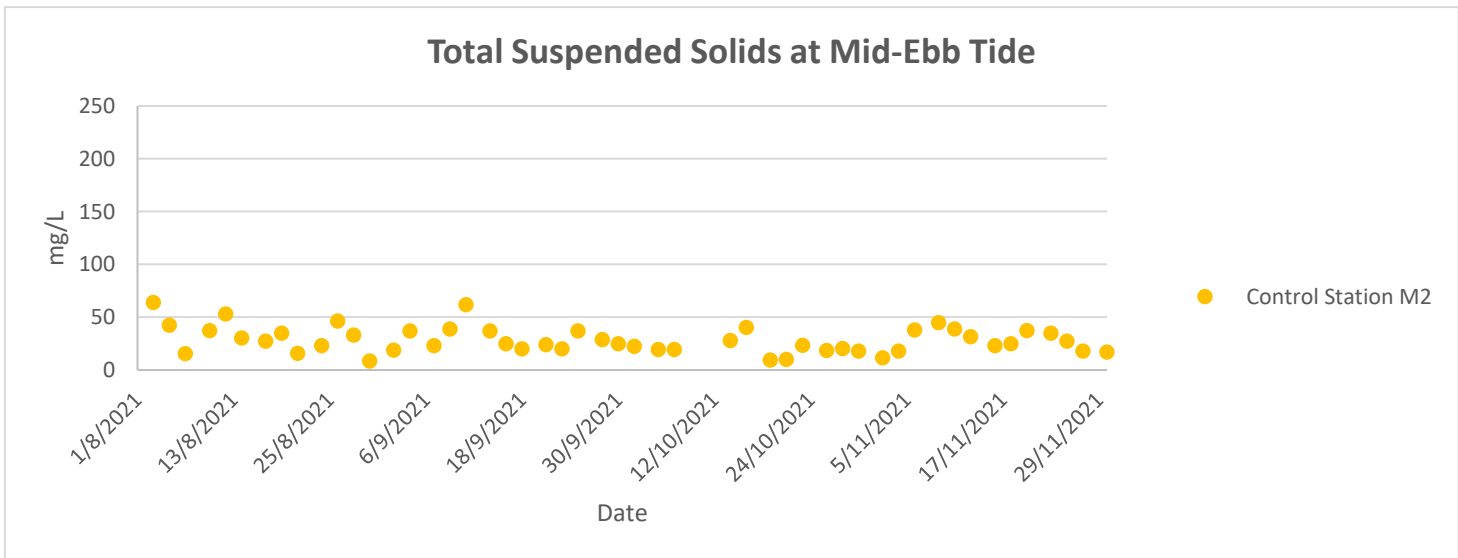
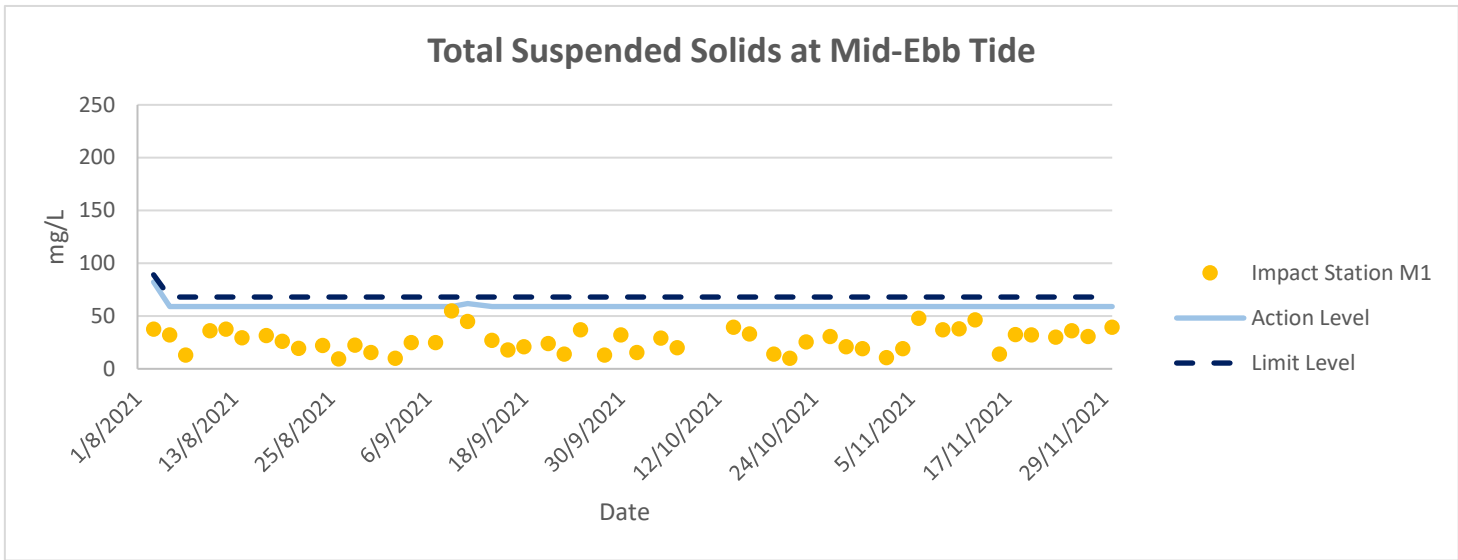


Turbidity at Mid-Ebb Tide



Turbidity at Mid-Ebb Tide





Ecology Monitoring Results

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 Ecological Monitoring of Birds

F.1.1.1 Abundance

F.1.1.1.1 All Avifauna Species

Point Count

Among the different species recorded, the Great Cormorant *Phalacrocorax carbo* was noted with the highest abundance (156 ind.) with majority of its individuals recorded while they were in flight, and resting on a *Eucalyptus* tree in Nam Sang Wai. Flocks were in flight to the direction of the nearby Deep Bay area. On the other hand, species with the least abundance (1 ind.) include the Greater Coucal *Centropus sinensis* and Collared Crow *Corvus torquatus*.

Transect Walk

Among the different species recorded, the Great Cormorant was noted with the highest abundance (48 ind.) and followed by Crested Myna *Acridotheres cristatellus* (43 ind.). On the other hand, the Common Kingfisher *Alcedo atthis*, Whiskered Tern *Chlidonias hybrida*, Collared Crow *Corvus torquatus*, Black Kite *Milvus migrans* and Yellow-bellied Prinia *Prinia flaviventris* had the lowest abundance (1 ind. each).

F.1.1.1.2 Avifauna Species of Conservation Importance

Point Count

Among the different species recorded, the Great Cormorant was recorded with the highest abundance (156 ind.). on the other hand, the Collared Crow and Greater Coucal had the lowest abundance (1 ind. each).

Transect Walk

Among the different species recorded, the Great Cormorant was noted with the highest abundance (48 ind.) while both Black Kite and Collared Crow had the lowest recorded abundance (1 ind. each).

Appendix F.2 Ecological Bird Monitoring Results (15 November 2021)

Date (dd/mm/yyyy)	Daytime/ Night time	Season	Area	Transect/ Point Count	Point Count (Location)/ Transect Impact	Habitat	Common Name	Scientific Name	Abundance	Distribution in Hong Kong ²	Principal Status ³	Level of Concern ⁴	Protection Status in China ⁵	China Red Data Book ⁶	Red List of China's Vertebrates ¹⁰	IUCN Red List ⁷ (v.202 0-3)	Species of Conservation Importance	Wetland Dependent	Remarks
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	4	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	6	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Azure-winged Magpie	<i>Cyanopica cyanus</i>	4	Introduced	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW1	In Flight	Black Kite	<i>Milvus migrans</i>	1	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW1	In Flight	Great Cormorant	<i>Phalacrocorax carbo</i>	61	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Dusky Warbler	<i>Phylloscopus fuscatus</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Common	R	LC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW3	In Flight	Great Cormorant	<i>Phalacrocorax carbo</i>	15	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Red Turtle Dove	<i>Streptopelia tranquebarica</i>	2	Uncommon	PM	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	1	Common	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW4	In Flight	Whiskered Tern	<i>Chlidonias hybrida</i>	2	Uncommon	PM	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Barn Swallow	<i>Hirundo rustica</i>	3	Abundant	PM,SV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Scaly-breasted Munia	<i>Lonchura punctulata</i>	18	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW4	In Flight	Great Cormorant	<i>Phalacrocorax carbo</i>	12	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Red Turtle Dove	<i>Streptopelia tranquebarica</i>	2	Uncommon	PM	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	20	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	2	Common	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Egret	<i>Ardea alba</i>	7	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	7	Common	R,PM	-	-	-	LC	LC	N	Y	

15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	8	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Barn Swallow	<i>Hirundo rustica</i>	7	Abundant	PM,SV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	11	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Dusky Warbler	<i>Phylloscopus fuscatus</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Red Turtle Dove	<i>Streptopelia tranquebarica</i>	1	Uncommon	PM	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	2	Common	R	LC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	1	Common	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	8	Common	R,PM	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Azure-winged Magpie	<i>Cyanopica cyanus</i>	3	Introduced	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	8	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	1	Common	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Barn Swallow	<i>Hirundo rustica</i>	2	Abundant	PM,SV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	In Flight	Great Cormorant	<i>Phalacrocorax carbo</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	9	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	4	Common	R,PM	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW7	Plantation-FLW	Greater Coucal	<i>Centropus sinensis</i>	1	Common	R	-	Class II	Vulnerable	LC	LC	Y	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW7	Plantation-FLW	Black Drongo	<i>Dicrurus macrocercus</i>	2	Common	SV	-	-		LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	1	Common	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Barn Swallow	<i>Hirundo rustica</i>	7	Abundant	PM,SV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Common	R	LC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Pied Kingfisher	<i>Ceryle rudis</i>	1	Uncommon	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	NSW1	Reedbed	Scaly-breasted Munia	<i>Lonchura punctulata</i>	1	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Cormorant	<i>Phalacrocorax carbo</i>	50	Common	WV	PRC	-	-	LC	LC	Y	Y	Resting on a <i>Eucalyptus</i> tree

15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Crested Myna	<i>Acridotheres cristatellus</i>	1	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Pond-NSW	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Ringed Plover	<i>Charadrius dubius</i>	3	Common	WV,PM	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Collared Crow	<i>Corvus torquatus</i>	1	Uncommon	R	LC	-	-	NT	VU	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Intermediate Egret	<i>Egretta intermedia</i>	3	Common	PM	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Snipe	<i>Gallinago gallinago</i>	2	Common	PM,WV	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	4	Common	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Plantation-NSW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	3	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	8	Common	PM	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	In Flight	Black Kite	<i>Milvus migrans</i>	1	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Plantation-NSW	Common Tailorbird	<i>Orthotomus sutorius</i>	2	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Dusky Warbler	<i>Phylloscopus fuscatus</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-faced Spoonbill	<i>Platalea minor</i>	1	Common	WV	PGC	Class II	EN	EN	EN	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Greenshank	<i>Tringa nebularia</i>	4	Abundant	PM,WV	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	5	Abundant	WV	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	8	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Intermediate Egret	<i>Egretta intermedia</i>	5	Common	PM	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Snipe	<i>Gallinago gallinago</i>	2	Common	PM,WV	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	3	Common	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Plantation-NSW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	2	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	2	Common	PM	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-faced Spoonbill	<i>Platalea minor</i>	2	Common	WV	PGC	Class II	EN	EN	EN	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Pied Avocet	<i>Recurvirostra avosetta</i>	2	Abundant	WV	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Marsh Sandpiper	<i>Tringa stagnatilis</i>	2	Common	PM,WV	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Redshank	<i>Tringa totanus</i>	3	Common	PM	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Crested Myna	<i>Acridotheres cristatellus</i>	3	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y	

15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	4	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Pied Kingfisher	<i>Ceryle rudis</i>	1	Uncommon	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Ringed Plover	<i>Charadrius dubius</i>	2	Common	WV,PM	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	8	Common	R	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	14	Common	PM	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Plantation-NSW	Common Tailorbird	<i>Orthotomus sutorius</i>	1	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	5	Common	R	LC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Greenshank	<i>Tringa nebularia</i>	5	Abundant	PM,WV	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Redshank	<i>Tringa totanus</i>	2	Common	PM	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	36	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Northern Shoveler	<i>Anas clypeata</i>	4	Abundant	WV	RC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Egret	<i>Ardea alba</i>	4	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Collared Crow	<i>Corvus torquatus</i>	1	Uncommon	R	LC	-	-	NT	VU	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Azure-winged Magpie	<i>Cyanopica cyanus</i>	10	Introduced	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Barn Swallow	<i>Hirundo rustica</i>	12	Abundant	PM,SV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	In Flight	Black Kite	<i>Milvus migrans</i>	1	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	7	Common	PM,WV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	In Flight	Great Cormorant	<i>Phalacrocorax carbo</i>	45	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Dusky Warbler	<i>Phylloscopus fuscatus</i>	3	Common	PM,WV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	1	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	8	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	9	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	5	Common	R	LC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Azure-winged Magpie	<i>Cyanopica cyanus</i>	2	Introduced	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Scaly-breasted Munia	<i>Lonchura punctulata</i>	2	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Eurasian Tree Sparrow	<i>Passer montanus</i>	3	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Common	R	LC	-	-	LC	LC	Y	Y	

15/11/2021	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Crested Myna	<i>Acridotheres cristatellus</i>	5	Common	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Whiskered Tern	<i>Chlidonias hybrida</i>	1	Uncommon	PM	-	-	-	LC	LC	N	Y	
15/11/2021	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Eurasian Tree Sparrow	<i>Passer montanus</i>	2	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y	
15/11/2021	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Spotted Dove	<i>Spilopelia chinensis</i>	4	Abundant	R	-	-	-	LC	LC	N	N	
15/11/2021	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Japanese White-eye	<i>Zosterops japonicus</i>	3	Abundant	R	-	-	-	LC	LC	N	N	

Notes:

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

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

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

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

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

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

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

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

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

Appendix F.3.1 Ecological Bird Monitoring Diversity (All avifauna species in Point Count Method) in All Habitats (15 November 2021)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Acridotheres cristatellus</i>	30	0.064935	-2.73437	-0.17756	0.485504
<i>Amaurornis phoenicurus</i>	4	0.008658	-4.74927	-0.04112	0.195286
<i>Anas clypeata</i>	5	0.010823	-4.52613	-0.04898	0.221708
<i>Ardea alba</i>	7	0.015152	-4.18965	-0.06348	0.265958
<i>Ardea cinerea</i>	8	0.017316	-4.05612	-0.07024	0.284885
<i>Ardeola bacchus</i>	22	0.047619	-3.04452	-0.14498	0.441387
<i>Bubulcus coromandus</i>	19	0.041126	-3.19113	-0.13124	0.418793
<i>Centropus sinensis</i>	1	0.002165	-6.13556	-0.01328	0.081483
<i>Ceryle rudis</i>	2	0.004329	-5.44242	-0.02356	0.128225
<i>Charadrius dubius</i>	5	0.010823	-4.52613	-0.04898	0.221708
<i>Chlidonias hybrida</i>	2	0.004329	-5.44242	-0.02356	0.128225
<i>Copsychus saularis</i>	2	0.004329	-5.44242	-0.02356	0.128225
<i>Corvus torquatus</i>	1	0.002165	-6.13556	-0.01328	0.081483
<i>Cyanopica cyanus</i>	7	0.015152	-4.18965	-0.06348	0.265958
<i>Dicrurus macrocercus</i>	2	0.004329	-5.44242	-0.02356	0.128225
<i>Egretta garzetta</i>	7	0.015152	-4.18965	-0.06348	0.265958
<i>Egretta intermedia</i>	8	0.017316	-4.05612	-0.07024	0.284885
<i>Gallinago gallinago</i>	4	0.008658	-4.74927	-0.04112	0.195286
<i>Gallinula chloropus</i>	15	0.032468	-3.42751	-0.11128	0.381424
<i>Garrulax perspicillatus</i>	5	0.010823	-4.52613	-0.04898	0.221708
<i>Gracupica nigricollis</i>	16	0.034632	-3.36298	-0.11647	0.391675
<i>Halcyon smyrnensis</i>	2	0.004329	-5.44242	-0.02356	0.128225
<i>Himantopus himantopus</i>	24	0.051948	-2.95751	-0.15364	0.454383
<i>Hirundo rustica</i>	19	0.041126	-3.19113	-0.13124	0.418793
<i>Lonchura punctulata</i>	19	0.041126	-3.19113	-0.13124	0.418793
<i>Milvus migrans</i>	2	0.004329	-5.44242	-0.02356	0.128225
<i>Motacilla alba</i>	5	0.010823	-4.52613	-0.04898	0.221708
<i>Orthotomus sutorius</i>	3	0.006494	-5.03695	-0.03271	0.164746
<i>Phalacrocorax carbo</i>	156	0.337662	-1.08571	-0.3666	0.398024
<i>Phylloscopus fuscatus</i>	3	0.006494	-5.03695	-0.03271	0.164746
<i>Platalea minor</i>	3	0.006494	-5.03695	-0.03271	0.164746
<i>Prinia inornata</i>	4	0.008658	-4.74927	-0.04112	0.195286
<i>Pycnonotus sinensis</i>	3	0.006494	-5.03695	-0.03271	0.164746
<i>Recurvirostra avosetta</i>	2	0.004329	-5.44242	-0.02356	0.128225
<i>Spilopelia chinensis</i>	15	0.032468	-3.42751	-0.11128	0.381424
<i>Streptopelia tranquebarica</i>	5	0.010823	-4.52613	-0.04898	0.221708
<i>Tachybaptus ruficollis</i>	9	0.019481	-3.93834	-0.07672	0.302153
<i>Tringa nebularia</i>	9	0.019481	-3.93834	-0.07672	0.302153
<i>Tringa stagnatilis</i>	2	0.004329	-5.44242	-0.02356	0.128225
<i>Tringa totanus</i>	5	0.010823	-4.52613	-0.04898	0.221708
Total	462	1	-175.534	-2.823	9.926005
Richness	40				
SS	9.926005				
SQ	7.96935				
H	2.823				
S²_H	0.004327				

Appendix F.3.2 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Point Count Method) in All Habitats (15 November 2021)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Anas clypeata</i>	5	0.01845	-3.99268	-0.07367	0.294124
<i>Ardea alba</i>	7	0.02583	-3.65621	-0.09444	0.345295
<i>Ardea cinerea</i>	8	0.02952	-3.52268	-0.10399	0.366325
<i>Ardeola bacchus</i>	22	0.081181	-2.51108	-0.20385	0.511886
<i>Centropus sinensis</i>	1	0.00369	-5.60212	-0.02067	0.115807
<i>Corvus torquatus</i>	1	0.00369	-5.60212	-0.02067	0.115807
<i>Egretta garzetta</i>	7	0.02583	-3.65621	-0.09444	0.345295
<i>Egretta intermedia</i>	8	0.02952	-3.52268	-0.10399	0.366325
<i>Himantopus himantopus</i>	24	0.088561	-2.42406	-0.21468	0.520392
<i>Milvus migrans</i>	2	0.00738	-4.90897	-0.03623	0.177845
<i>Phalacrocorax carbo</i>	156	0.575646	-0.55226	-0.31791	0.175569
<i>Platalea minor</i>	3	0.01107	-4.50351	-0.04985	0.224519
<i>Recurvirostra avosetta</i>	2	0.00738	-4.90897	-0.03623	0.177845
<i>Tachybaptus ruficollis</i>	9	0.03321	-3.40489	-0.11308	0.385018
<i>Tringa nebularia</i>	9	0.03321	-3.40489	-0.11308	0.385018
<i>Tringa stagnatilis</i>	2	0.00738	-4.90897	-0.03623	0.177845
<i>Tringa totanus</i>	5	0.01845	-3.99268	-0.07367	0.294124
Total	271	1	-65.075	-1.70667	4.979038
Richness	17				
SS	4.979038				
SQ	2.912721				
H	1.70667				
S²_H	0.007734				

Appendix F.3.3 Ecological Bird Monitoring Diversity (All avifauna species in Transect Walk Method) in All Habitats (15 November 2021)

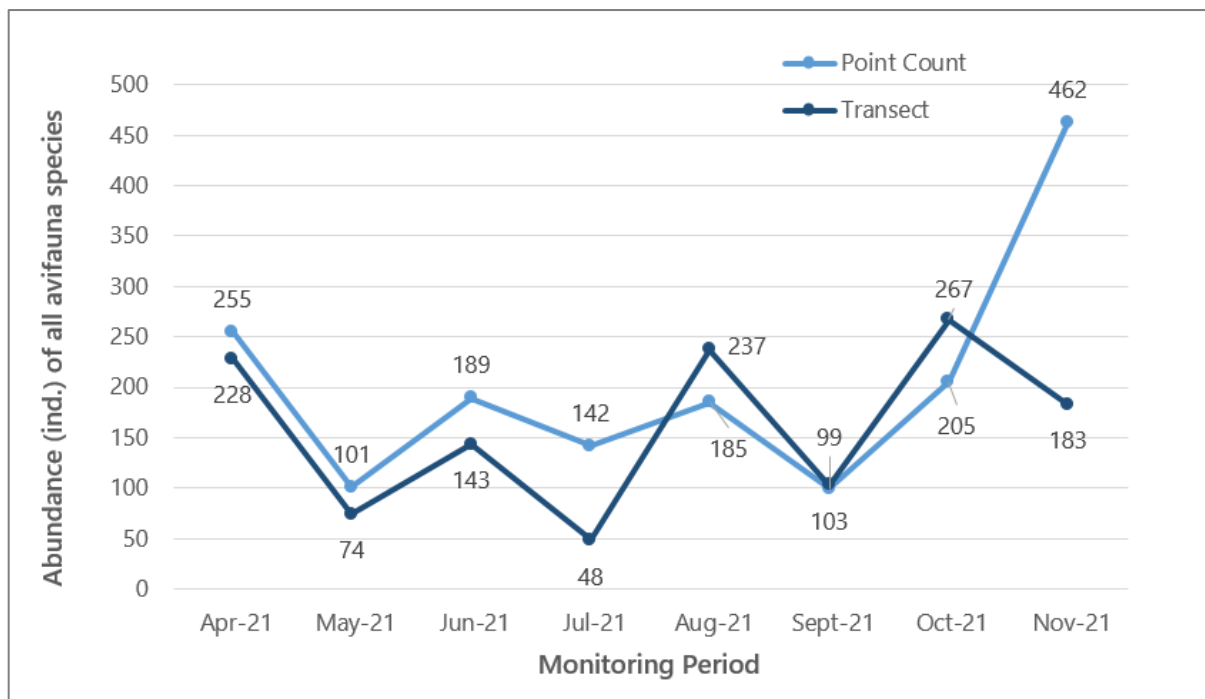
Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Acridotheres cristatellus</i>	43	0.234973	-1.44829	-0.34031	0.492863
<i>Alcedo atthis</i>	1	0.005464	-5.20949	-0.02847	0.148299
<i>Anas clypeata</i>	4	0.021858	-3.82319	-0.08357	0.319493
<i>Ardea alba</i>	4	0.021858	-3.82319	-0.08357	0.319493
<i>Ardea cinerea</i>	4	0.021858	-3.82319	-0.08357	0.319493
<i>Chlidonias hybrida</i>	1	0.005464	-5.20949	-0.02847	0.148299
<i>Corvus torquatus</i>	1	0.005464	-5.20949	-0.02847	0.148299
<i>Cyanopica cyanus</i>	12	0.065574	-2.72458	-0.17866	0.486776
<i>Hirundo rustica</i>	12	0.065574	-2.72458	-0.17866	0.486776
<i>Lonchura punctulata</i>	2	0.010929	-4.51634	-0.04936	0.222922
<i>Milvus migrans</i>	1	0.005464	-5.20949	-0.02847	0.148299
<i>Motacilla alba</i>	9	0.04918	-3.01226	-0.14814	0.446249
<i>Passer montanus</i>	5	0.027322	-3.60005	-0.09836	0.354108
<i>Phalacrocorax carbo</i>	48	0.262295	-1.33829	-0.35103	0.469772
<i>Phylloscopus fuscatus</i>	3	0.016393	-4.11087	-0.06739	0.277037
<i>Prinia flaviventris</i>	1	0.005464	-5.20949	-0.02847	0.148299
<i>Prinia inornata</i>	8	0.043716	-3.13004	-0.13683	0.428292
<i>Pycnonotus sinensis</i>	2	0.010929	-4.51634	-0.04936	0.222922

<i>Spilopelia chinensis</i>	13	0.071038	-2.64454	-0.18786	0.496811
<i>Tachybaptus ruficollis</i>	6	0.032787	-3.41773	-0.11206	0.382979
<i>Zosterops japonicus</i>	3	0.016393	-4.11087	-0.06739	0.277037
Total	183	1	-78.8118	-2.35845	6.744518
Richness	21				
SS	6.744518				
SQ	5.562291				
H	2.35845				
S²_H	0.006759				

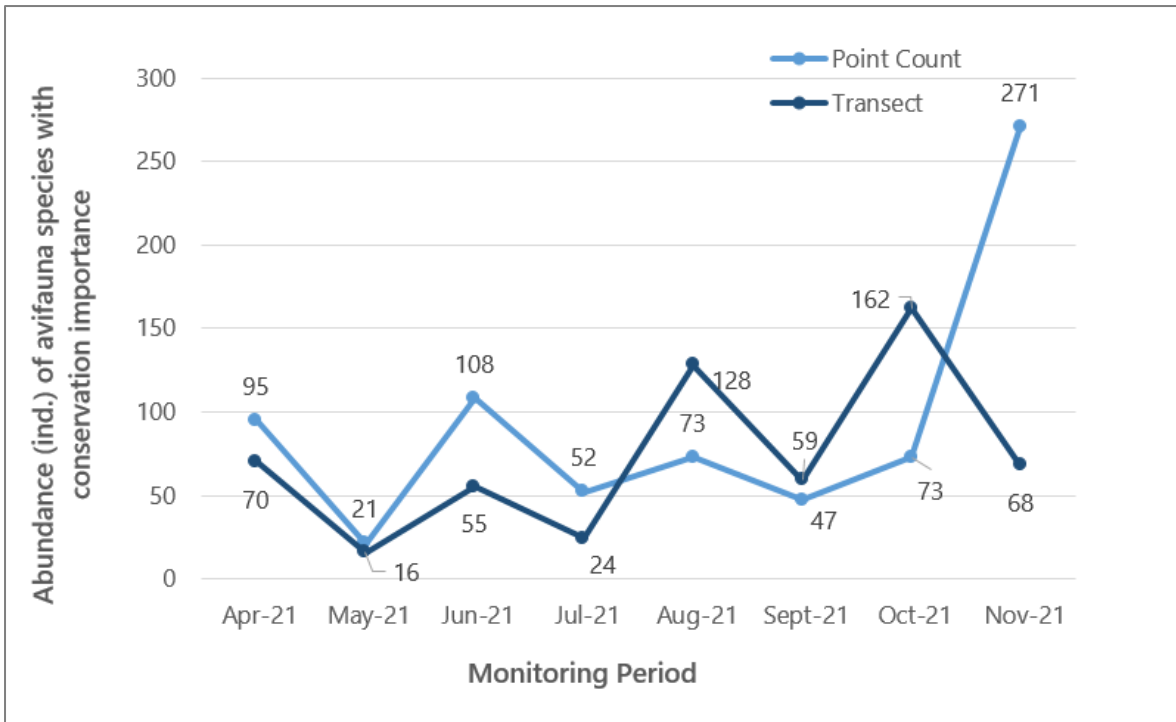
Appendix F.3.4 Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Transect Walk Method) in All Habitats (15 November 2021)

Scientific Name	Count	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
<i>Anas clypeata</i>	4	0.058824	-2.83321	-0.16666	0.472182
<i>Ardea alba</i>	4	0.058824	-2.83321	-0.16666	0.472182
<i>Ardea cinerea</i>	4	0.058824	-2.83321	-0.16666	0.472182
<i>Corvus torquatus</i>	1	0.014706	-4.21951	-0.06205	0.261827
<i>Milvus migrans</i>	1	0.014706	-4.21951	-0.06205	0.261827
<i>Phalacrocorax carbo</i>	48	0.705882	-0.34831	-0.24586	0.085636
<i>Tachybaptus ruficollis</i>	6	0.088235	-2.42775	-0.21421	0.520055
Total	68	1	-19.7147	-1.08416	2.545892
Richness	7				
SS	2.545892				
SQ	1.1754				
H	1.08416				
S²_H	0.020803				

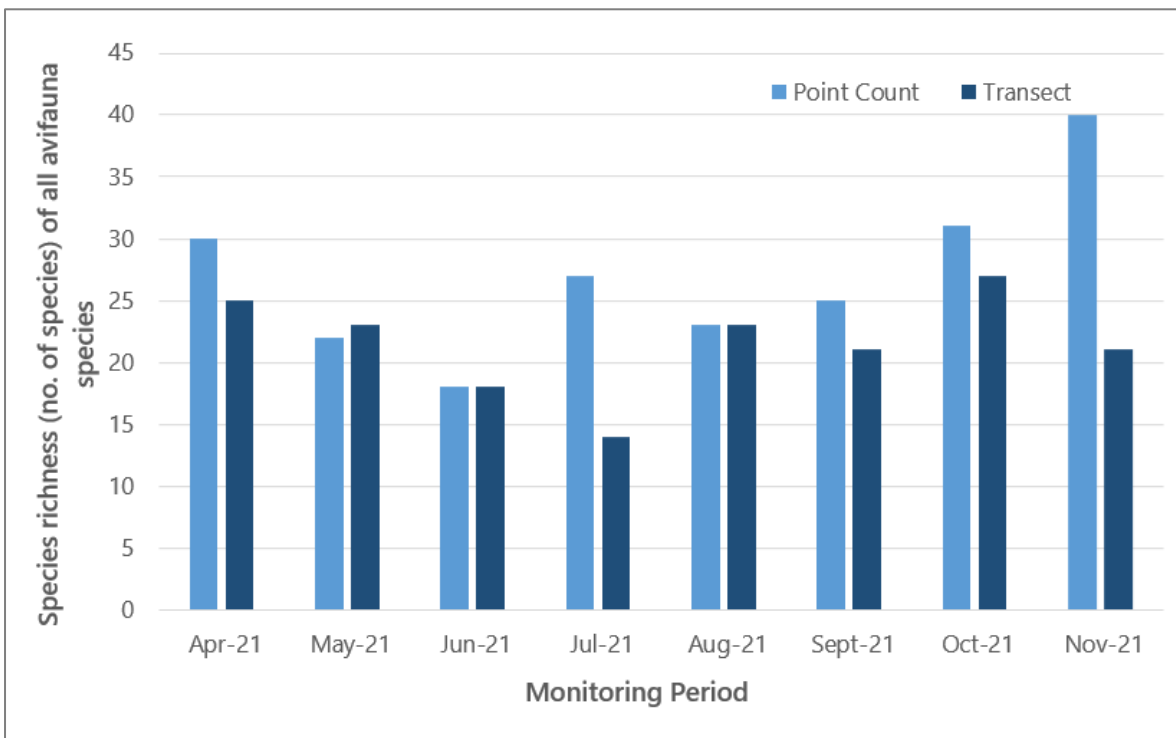
Appendix F.4.1 Abundance of all avifauna species throughout the monitoring period



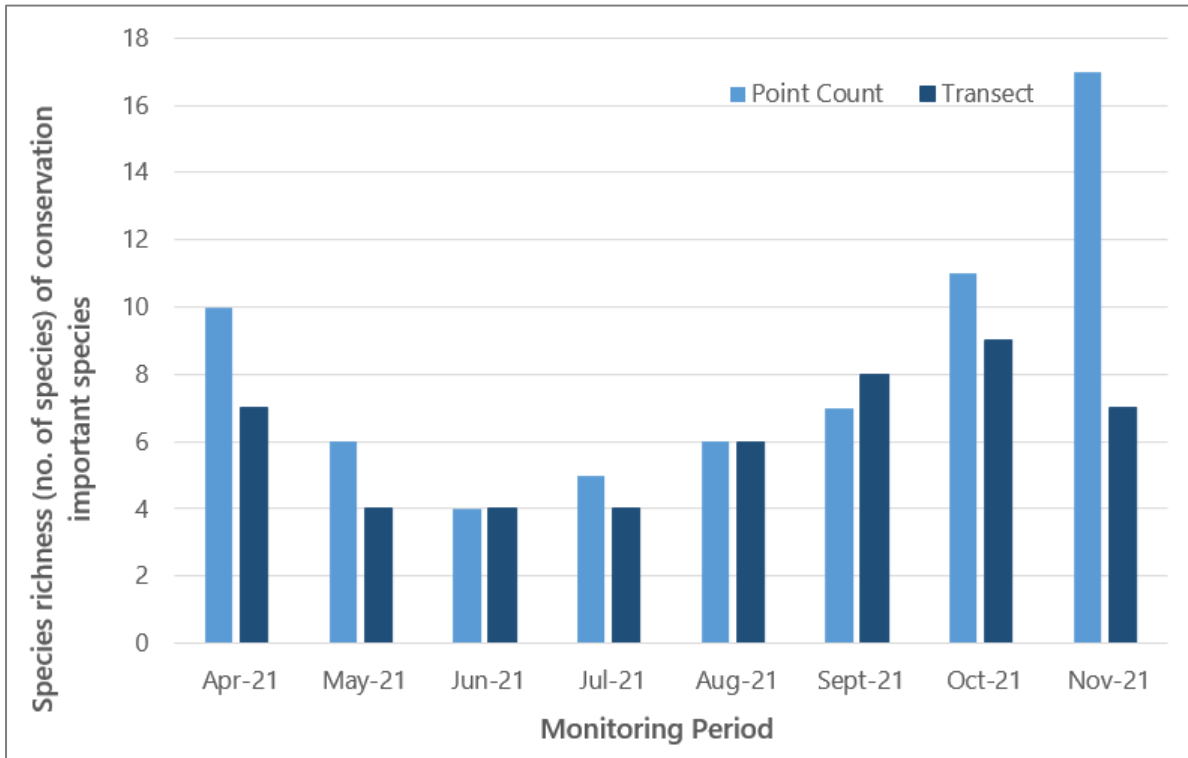
Appendix F.4.2 Abundance of avifauna species with conservation importance throughout the monitoring period



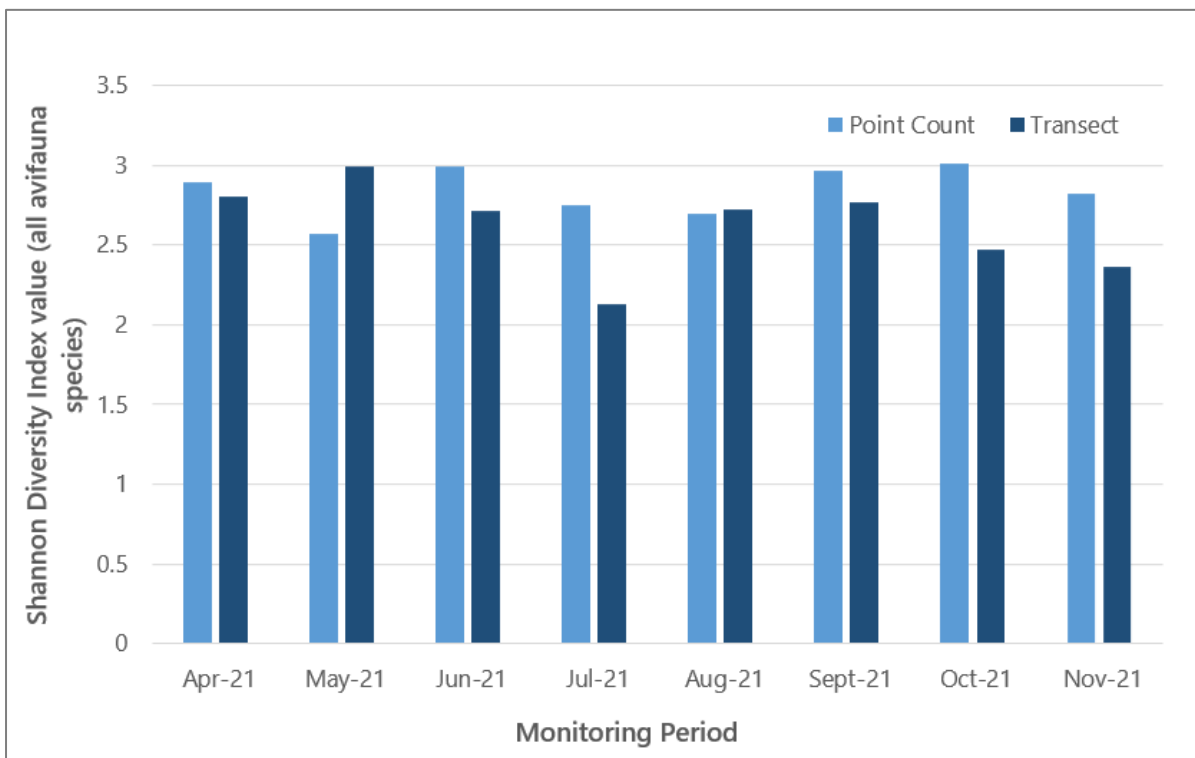
Appendix F.5.1 Species richness of all avifauna species throughout the monitoring period



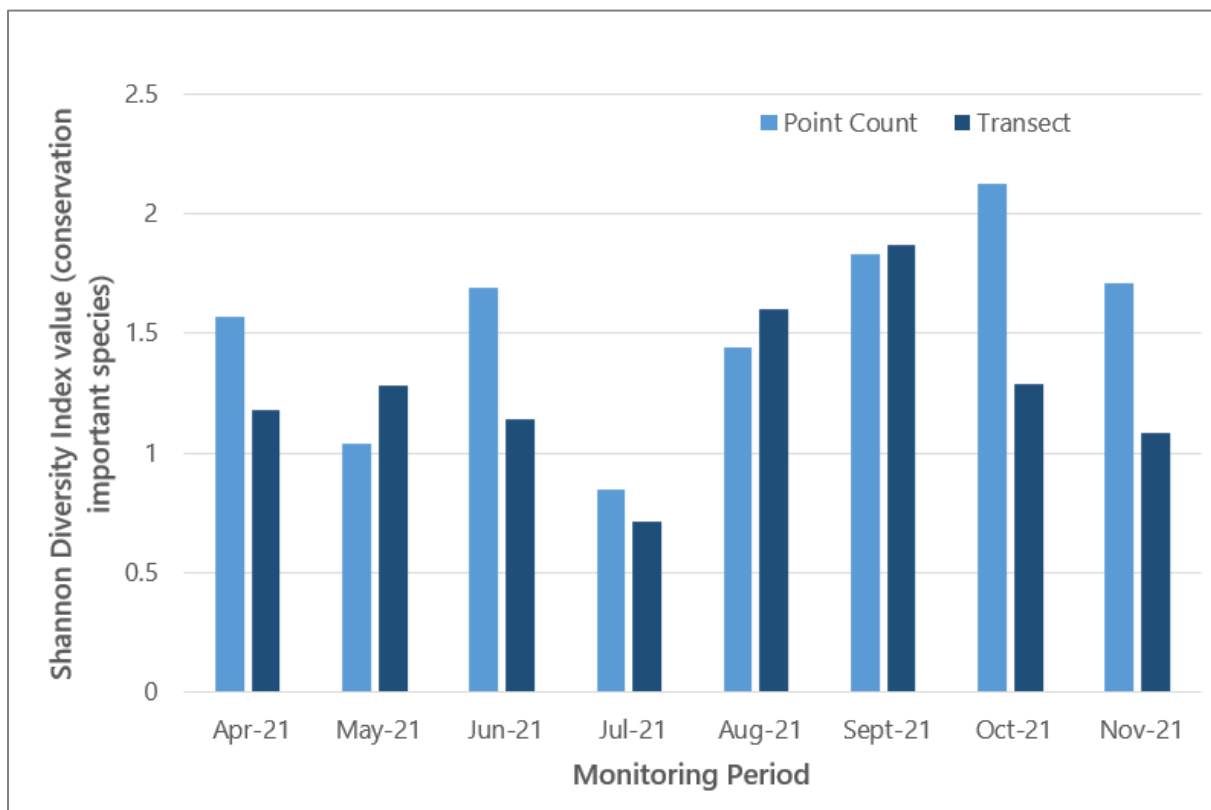
Appendix F.5.2 Species richness of avifauna species with conservation importance throughout the monitoring period



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



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



Appendix F.7 Two-tailed Unpaired T-test

Formula:

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

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

Months	November 2016	November 2021
N	129	106
df	128	105
M	4.71	4.36
SS	9704.39	6756.38
S ²	75.82	64.35
t-value	0.32	
p-value	0.75	
Notes: N: Number of samples/observation df: Degrees of freedom M: Mean SS: Sum of Squares		

Months	November 2016	November 2021
S ² : Measure on a random sample that is used to estimate the variance of the population		

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

Months	November 2016	November 2021
N	64	47
df	63	46
M	6.16	5.77
SS	8110.44	5788.43
S ²	128.74	125.84
t-value	0.18	
p-value	0.86	
Notes: N: Number of samples/observation df: Degrees of freedom M: Mean SS: Sum of Squares S ² : Measure on a random sample that is used to estimate the variance of the population		

Appendix F.8 Hutcheson t-test testing method and output

Formula:

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

Appendix F.8.1 Species diversity of all avifauna species – Transect Walk Method

Months	November 2016	November 2021
Total	125	183
N	20	21
H	2.39	2.36
S ² _H	0.010155007	0.006759
t	0.21	
df	266	
Crit	1.97	
p	0.84	
CI	0.20154411	0.164425
Notes: Total: Total abundance		

Months	November 2016	November 2021
N: Number of species H: Shannon Diversity Index S^2_H : variance t: t-value df: degrees of freedom Crit: critical value p: p-value CI: confidence interval		

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

Months	November 2016	November 2021
Total	394	271
N	20	17
H	1.91	1.71
S^2_H	0.005	0.008
t	1.82	
df	563.15	
Crit	1.96	
p	0.07	
CI	0.139	0.176
Notes: Total: Total abundance N: Number of species H: Shannon Diversity Index S^2_H : variance t: t-value df: degrees of freedom Crit: critical value p: p-value CI: confidence interval		

Appendix F.8.3 Species diversity of avifauna species with conservation importance – Transect Walk Method

Months	November 2016	November 2021
Total	59	68
N	7	7
H	1.12	1.08
S^2_H	0.022109546	0.020803
t	0.18	
df	126	
Crit	1.98	
p	0.86	

Months	November 2016	November 2021
CI	0.297385582	0.288466
Notes: Total: Total abundance N: Number of species H: Shannon Diversity Index S^2_H : variance t: t-value df: degrees of freedom Crit: critical value p: p-value CI: confidence interval		

Appendix G

Wind Data

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

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

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

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

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

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Date	Wind Speed	Wind Direction
07/11/2021 08:00	0.0	E
07/11/2021 09:00	0.1	S
07/11/2021 10:00	0.0	NEE
07/11/2021 11:00	0.0	NE
07/11/2021 12:00	0.2	SES
07/11/2021 13:00	0.1	NE
07/11/2021 14:00	0.1	SE
07/11/2021 15:00	0.0	SEE
07/11/2021 16:00	0.0	SE
07/11/2021 17:00	0.0	SE
07/11/2021 18:00	0.0	SE
07/11/2021 19:00	0.0	SE
07/11/2021 20:00	0.0	NEN
07/11/2021 21:00	0.0	NEN
07/11/2021 22:00	0.0	NEN
07/11/2021 23:00	0.0	NEN
08/11/2021 00:00	0.0	N
08/11/2021 01:00	0.8	NEN
08/11/2021 02:00	0.4	NWN
08/11/2021 03:00	0.4	N
08/11/2021 04:00	0.5	N
08/11/2021 05:00	0.8	NEN
08/11/2021 06:00	0.5	N
08/11/2021 07:00	1.1	NEN
08/11/2021 08:00	0.1	NEE
08/11/2021 09:00	0.3	N
08/11/2021 10:00	0.5	NWN
08/11/2021 11:00	1.1	NWN
08/11/2021 12:00	1.5	NWN
08/11/2021 13:00	0.7	NWN
08/11/2021 14:00	0.9	N
08/11/2021 15:00	0.1	NEN
08/11/2021 16:00	0.4	NEN
08/11/2021 17:00	0.4	NEN
08/11/2021 18:00	0.8	N
08/11/2021 19:00	0.5	NEE
08/11/2021 20:00	0.5	NEN
08/11/2021 21:00	1.1	NEN

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Date	Wind Speed	Wind Direction
08/11/2021 22:00	0.1	NEN
08/11/2021 23:00	0.4	N
09/11/2021 00:00	0.5	NEN
09/11/2021 01:00	0.3	N
09/11/2021 02:00	0.2	NEN
09/11/2021 03:00	0.6	N
09/11/2021 04:00	1.0	NEN
09/11/2021 05:00	0.3	NE
09/11/2021 06:00	0.3	NEE
09/11/2021 07:00	0.4	N
09/11/2021 08:00	0.6	NEN
09/11/2021 09:00	0.5	NEN
09/11/2021 10:00	0.3	NEN
09/11/2021 11:00	0.1	N
09/11/2021 12:00	0.1	N
09/11/2021 13:00	0.1	N
09/11/2021 14:00	0.1	NWW
09/11/2021 15:00	0.6	N
09/11/2021 16:00	0.3	N
09/11/2021 17:00	0.2	NWN
09/11/2021 18:00	0.1	N
09/11/2021 19:00	0.0	NEN
09/11/2021 20:00	0.1	NEE
09/11/2021 21:00	0.2	N
09/11/2021 22:00	0.1	NEN
09/11/2021 23:00	0.6	NEN
10/11/2021 00:00	0.1	NEE
10/11/2021 01:00	0.0	N
10/11/2021 02:00	0.0	NE
10/11/2021 03:00	0.0	NEE
10/11/2021 04:00	0.2	NE
10/11/2021 05:00	0.1	NEN
10/11/2021 06:00	0.0	N
10/11/2021 07:00	0.6	NEN
10/11/2021 08:00	0.4	N
10/11/2021 09:00	1.1	N
10/11/2021 10:00	0.1	NWN
10/11/2021 11:00	1.0	NEN

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

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

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

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

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

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

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

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Date	Wind Speed	Wind Direction
21/11/2021 14:00	0.2	NE
21/11/2021 15:00	0.3	N
21/11/2021 16:00	0.1	S
21/11/2021 17:00	0.0	SES
21/11/2021 18:00	0.0	NE
21/11/2021 19:00	0.0	NE
21/11/2021 20:00	0.0	NE
21/11/2021 21:00	0.0	NE
21/11/2021 22:00	0.0	NE
21/11/2021 23:00	0.0	NEN
22/11/2021 00:00	0.0	NEE
22/11/2021 01:00	0.0	NEE
22/11/2021 02:00	0.0	E
22/11/2021 03:00	0.0	E
22/11/2021 04:00	0.0	W
22/11/2021 05:00	0.1	N
22/11/2021 06:00	0.5	NEN
22/11/2021 07:00	0.1	N
22/11/2021 08:00	0.1	N
22/11/2021 09:00	0.9	NEN
22/11/2021 10:00	0.6	N
22/11/2021 11:00	0.6	NEN
22/11/2021 12:00	1.6	NEN
22/11/2021 13:00	0.4	NEN
22/11/2021 14:00	0.3	NEN
22/11/2021 15:00	0.3	NEN
22/11/2021 16:00	0.2	NEN
22/11/2021 17:00	0.3	NWN
22/11/2021 18:00	0.6	NE
22/11/2021 19:00	1.0	NEN
22/11/2021 20:00	0.6	NEN
22/11/2021 21:00	0.5	NEN
22/11/2021 22:00	1.3	NEN
22/11/2021 23:00	0.3	NE
23/11/2021 00:00	0.5	N
23/11/2021 01:00	1.0	NEN
23/11/2021 02:00	0.6	N
23/11/2021 03:00	0.2	N

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Date	Wind Speed	Wind Direction
23/11/2021 04:00	0.0	N
23/11/2021 05:00	0.9	NEN
23/11/2021 06:00	0.3	N
23/11/2021 07:00	0.2	N
23/11/2021 08:00	0.2	N
23/11/2021 09:00	0.7	NE
23/11/2021 10:00	0.4	N
23/11/2021 11:00	0.4	NEN
23/11/2021 12:00	0.0	N
23/11/2021 13:00	0.4	NEN
23/11/2021 14:00	0.1	NEN
23/11/2021 15:00	0.3	NE
23/11/2021 16:00	0.3	N
23/11/2021 17:00	0.2	NEE
23/11/2021 18:00	0.1	N
23/11/2021 19:00	0.0	NE
23/11/2021 20:00	0.3	NEN
23/11/2021 21:00	0.0	NE
23/11/2021 22:00	0.1	NEN
23/11/2021 23:00	0.3	NEN
24/11/2021 00:00	0.5	NEE
24/11/2021 01:00	0.1	NEN
24/11/2021 02:00	0.1	NEE
24/11/2021 03:00	0.1	NEN
24/11/2021 04:00	0.1	NE
24/11/2021 05:00	0.3	N
24/11/2021 06:00	0.1	NEN
24/11/2021 07:00	0.1	NE
24/11/2021 08:00	0.4	N
24/11/2021 09:00	0.2	NEN
24/11/2021 10:00	0.2	NEN
24/11/2021 11:00	0.1	NEN
24/11/2021 12:00	0.6	NEN
24/11/2021 13:00	0.1	NEN
24/11/2021 14:00	0.0	N
24/11/2021 15:00	0.0	NW
24/11/2021 16:00	0.0	SWW
24/11/2021 17:00	0.0	SWW

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
24/11/2021 18:00	0.0	SWW
24/11/2021 19:00	0.0	NEE
24/11/2021 20:00	0.0	NEE
24/11/2021 21:00	0.0	NEE
24/11/2021 22:00	0.0	E
24/11/2021 23:00	0.0	E
25/11/2021 00:00	0.0	E
25/11/2021 01:00	0.0	E
25/11/2021 02:00	0.0	SEE
25/11/2021 03:00	0.0	SEE
25/11/2021 04:00	0.0	SEE
25/11/2021 05:00	0.0	SEE
25/11/2021 06:00	0.0	N
25/11/2021 07:00	0.0	NEE
25/11/2021 08:00	0.1	NE
25/11/2021 09:00	0.0	NE
25/11/2021 10:00	0.2	NEN
25/11/2021 11:00	0.4	NE
25/11/2021 12:00	0.1	SWW
25/11/2021 13:00	0.2	W
25/11/2021 14:00	0.0	SWW
25/11/2021 15:00	0.1	N
25/11/2021 16:00	0.0	NWW
25/11/2021 17:00	0.0	NWN
25/11/2021 18:00	0.0	NE
25/11/2021 19:00	0.0	E
25/11/2021 20:00	0.0	E
25/11/2021 21:00	0.0	E
25/11/2021 22:00	0.0	E
25/11/2021 23:00	0.0	E
26/11/2021 00:00	0.0	E
26/11/2021 01:00	0.0	NWN
26/11/2021 02:00	0.0	NE
26/11/2021 03:00	0.0	NE
26/11/2021 04:00	0.0	N
26/11/2021 05:00	0.0	NE
26/11/2021 06:00	0.0	NEN
26/11/2021 07:00	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
26/11/2021 08:00	0.1	NEN
26/11/2021 09:00	0.1	NEN
26/11/2021 10:00	0.2	NEE
26/11/2021 11:00	0.1	NEE
26/11/2021 12:00	0.1	NEN
26/11/2021 13:00	0.0	NEN
26/11/2021 14:00	0.2	NEE
26/11/2021 15:00	0.2	NE
26/11/2021 16:00	0.0	NWW
26/11/2021 17:00	0.1	NEN
26/11/2021 18:00	0.0	NE
26/11/2021 19:00	0.0	NE
26/11/2021 20:00	0.0	NE
26/11/2021 21:00	0.0	NE
26/11/2021 22:00	0.0	NE
26/11/2021 23:00	0.0	NE
27/11/2021 00:00	0.0	NE
27/11/2021 01:00	0.0	NEE
27/11/2021 02:00	0.1	NE
27/11/2021 03:00	0.0	N
27/11/2021 04:00	0.1	NE
27/11/2021 05:00	0.0	NE
27/11/2021 06:00	0.0	NEN
27/11/2021 07:00	0.0	NEE
27/11/2021 08:00	0.0	NEE
27/11/2021 09:00	0.5	NE
27/11/2021 10:00	0.4	NEN
27/11/2021 11:00	0.0	NEN
27/11/2021 12:00	0.5	NWN
27/11/2021 13:00	0.3	NEN
27/11/2021 14:00	0.3	NEN
27/11/2021 15:00	0.0	N
27/11/2021 16:00	0.1	NEN
27/11/2021 17:00	0.0	E
27/11/2021 18:00	0.0	SEE
27/11/2021 19:00	0.0	NEE
27/11/2021 20:00	0.0	NEE
27/11/2021 21:00	0.0	NEE

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

Date	Wind Speed	Wind Direction
27/11/2021 22:00	0.0	E
27/11/2021 23:00	0.0	E
28/11/2021 00:00	0.0	E
28/11/2021 01:00	0.0	E
28/11/2021 02:00	0.0	E
28/11/2021 03:00	0.0	E
28/11/2021 04:00	0.0	E
28/11/2021 05:00	0.0	E
28/11/2021 06:00	0.0	E
28/11/2021 07:00	0.0	NEN
28/11/2021 08:00	0.1	NEE
28/11/2021 09:00	0.1	NEN
28/11/2021 10:00	0.3	NEN
28/11/2021 11:00	0.0	N
28/11/2021 12:00	0.0	NEE
28/11/2021 13:00	0.6	NE
28/11/2021 14:00	0.3	NE
28/11/2021 15:00	0.2	NEN
28/11/2021 16:00	0.1	NEE
28/11/2021 17:00	0.0	NE
28/11/2021 18:00	0.0	NE
28/11/2021 19:00	0.0	NEN
28/11/2021 20:00	0.0	NEE
28/11/2021 21:00	0.0	NEE
28/11/2021 22:00	0.0	NEE
28/11/2021 23:00	0.0	NEE
29/11/2021 00:00	0.0	NEE
29/11/2021 01:00	0.0	NEE
29/11/2021 02:00	0.0	N
29/11/2021 03:00	0.0	NE
29/11/2021 04:00	0.0	NEN
29/11/2021 05:00	0.0	NE
29/11/2021 06:00	0.0	NE
29/11/2021 07:00	0.0	NE
29/11/2021 08:00	0.4	NEN
29/11/2021 09:00	0.7	N
29/11/2021 10:00	0.5	NE
29/11/2021 11:00	0.6	NWN

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

Date	Wind Speed	Wind Direction
29/11/2021 12:00	0.2	N
29/11/2021 13:00	0.6	NEN
29/11/2021 14:00	0.4	NEN
29/11/2021 15:00	0.1	NE
29/11/2021 16:00	0.1	NE
29/11/2021 17:00	0.0	NE
29/11/2021 18:00	0.0	NW
29/11/2021 19:00	0.0	NW
29/11/2021 20:00	0.0	SES
29/11/2021 21:00	0.0	SE
29/11/2021 22:00	0.0	SE
29/11/2021 23:00	0.0	SE
30/11/2021 00:00	0.0	SE
30/11/2021 01:00	0.0	NE
30/11/2021 02:00	0.0	N
30/11/2021 03:00	0.0	N
30/11/2021 04:00	0.0	NE
30/11/2021 05:00	0.0	N
30/11/2021 06:00	0.0	NE
30/11/2021 07:00	0.0	NWN
30/11/2021 08:00	0.5	NEN
30/11/2021 09:00	0.8	N
30/11/2021 10:00	0.4	NEN
30/11/2021 11:00	0.6	NWN
30/11/2021 12:00	0.9	N
30/11/2021 13:00	0.1	NW
30/11/2021 14:00	0.4	NEN
30/11/2021 15:00	2.0	N
30/11/2021 16:00	0.3	NWN
30/11/2021 17:00	0.4	N
30/11/2021 18:00	0.7	NEE
30/11/2021 19:00	0.1	NEN
30/11/2021 20:00	0.1	NE
30/11/2021 21:00	0.6	NE
30/11/2021 22:00	1.0	NEN
30/11/2021 23:00	0.0	NE
01/12/2021 00:00	0.0	NEN

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	3648.77	Nil	Nil	Nil	3576.22	Nil	50.31	Nil	Nil	Nil	22.24
2021 Oct	1943.76	Nil	Nil	Nil	1751.71	Nil	182.36	0.11	Nil	Nil	9.58
2021 Nov	672.99	Nil	Nil	Nil	618.26	Nil	49.85	0.11	Nil	Nil	4.77
2021 Dec											
Total	11106.28	0	0	0	10443.38	0	491.31	0.57	0	0	171.02

Note:

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

Appendix J

Implementation Status of Environment

Mitigation Measures

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

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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

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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	Partially Implemented

Waste Management Implication
Construction Phase

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

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EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.5			Implemented
	<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; 		Partially Implemented
	<ul style="list-style-type: none"> • Maintain and clean storage areas routinely; 		Partially Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

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

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EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.15	<p>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.</p>	Construction Sites	Implemented
6.6.1.16	<p>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.</p>	Construction Sites	Implemented
6.6.1.17 – 6.6.1.18	<p>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.</p>	Construction Sites	N/A
6.6.1.19	<p>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.</p>	Construction Sites	N/A
6.6.1.20	<p>For off-site disposal, the basic requirements and procedures specified under ETWB TC(W) No. 34/2002 shall be followed.</p>	Transportation Route of Waste / Construction Phase	N/A
6.6.1.24	<p>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).</p>	Construction Sites	N/A

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EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.25	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			

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

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

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

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Note:

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

Appendix K

Weather and Meteorological
Conditions

October 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)		
October 2021						
1	1009.5	32.3	28.8	26.6	89	8.5
2	1011.3	32.3	28.6	26.0	84	0.5
3	1012.8	30.5	27.9	26.0	84	0
4	1012.9	33.1#	28.8	25.6#	77	0
5	1011.8	32.8#	29.1	26.3#	75	0
6	1008.9	33.1#	29.2	25.4#	72	0
7	1006.3	31.6#	28.5	25.6#	80	8.5
8	1005.3	25.6#	24.7	24.0#	99	189.5
9	1005.4	27.9	26.0	24.5	92	51.5
10	1008.5	27.5	25.7	24.5	94	11.0
11	1006.6	32.4	27.3	23.9	78	0
12	1003.2	25.8	24.3	22.4	71	0.5
13	1003.7	27.6	24.3	21.3	93	55.5
14	1009.8	30.4	26.5	24.7	91	10.5
15	1011.1	26.7	25.2	24.5	93	6.0
16	1014.8	29.4	25.8	23.6	78	0
17	1019.3	25.8	22.7	20.7	71	0
18	1019.2	28.9	22.5	19.2	74	0
19	1018.2	30.4	24.0	20.0	83	0
20	1016.2	30.2	25.5	22.0	84	0
21	1015.9	28.3	22.6	19.1	84	0
22	1020.7	19.4	18.1	16.4	77	0
23	1021.5	21.4	18.9	17.7	77	0
24	1020.1	25.9#	20.7	18.0#	73	0
25	1017.6	27.9	21.9	17.5	71	0
26	1016.6	29.7	23.9	19.4	75	0
27	1017.2	29.0	25.2	23.7	80	0
28	1018.4	27.9	25.1	23.4	80	0
29	1018.7	28.2	24.9	22.5	81	0
30	1019.6	25.1	23.5	22.1	82	0
31	1019.4	26.8#	23.1	21.1#	80	0

Note (From Hong Kong Observatory):

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

Source: Hong Kong Observatory

November 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)		
November 2021						
1	1018.5	27.6	25.2	23.7	76	Trace
2	1018.0	27.9	25.1	24.1	76	Trace
3	1016.7	27.4	25.2	24.1	75	Trace
4	1014.9	27.9	25.5	24.1	78	0
5	1012.5	27.8	25.6	24.6	84	0
6	1010.1	29.2	26.4	24.0	79	0
7	1012.2	29.0	26.1	24.8	83	0
8	1017.2	25.3	20.1	18.1	61	2.0
9	1019.3	23.0	19.5	16.9	50	0
10	1018.7	24.7	20.5	17.8	41	0
11	1017.7	25.0	21.5	18.9	47	0
12	1018.8	25.7	22.6	20.0	51	0
13	1018.1	25.4	22.3	20.1	49	Trace
14	1018.2	24.7	21.6	19.3	59	0
15	1017.2	25.5	22.1	20.4	65	0
16	1017.0	26.3	23.2	21.0	71	0
17	1017.1	26.5	23.5	22.0	74	0
18	1014.3	25.8	22.4	20.2	69	0
19	1012.2	25.7	23.0	21.3	77	Trace
20	1012.9	26.1	23.7	22.4	77	0.3
21	1014.1	25.6	23.5	22.7	82	0
22	1017.0	23.3	19.6	16.8	76	3.5
23	1021.1	17.4	16.1	14.3	69	Trace
24	1020.3	22.1	19.0	16.9	65	0
25	1018.2	23.7	20.6	18.4	64	0
26	1018.4	24.8	21.6	18.6	64	0
27	1020.1	24.3	21.2	18.7	63	0
28	1019.5	24.5	21.6	19.2	69	0
29	1017.3	26.1	22.4	19.4	67	0
30	1018.4	24.6	21.3	17.1	59	0

Note (From Hong Kong Observatory):
Trace means rainfall less than 0.05 mm

Source: Hong Kong Observatory

Remark: The corresponding weather station at Wetland Park were unavailable at the time of preparation of this report. The corresponding month's weather will be provided in the next reporting month.

Appendix L

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

Environmental Complaints Log

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

Cumulative Statistics on Complaints

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

Cumulative Statistics on Notification of Summons and Successful Prosecutions

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

Appendix M

ET Leader's Site Environmental Audit

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

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality	3 Nov 2021	Reminder 1: The Contractor is reminded to cover the excavated soil properly with tarpaulin sheets to prevent dust emission (Portion 1 – YLSTW).	3 Nov 2021
	30 Nov 2021	Reminder 1: The Contractor is reminded to increase watering for dust suppression at loading/unloading area (Portion 1 – YLSTW).	30 Nov 2021
Noise	NA		
Water Quality	NA		
Chemical and Waste Management	24 Nov 2021	Observation 1: Clean up the oil stain on road in front of Methane Compressor House with chemical absorbent pad and treat it as chemical waste for disposal (Portion 1 – YLSTW).	24 Nov 2021
Land Contamination	NA		
Ecological Impact	NA		
Landscape and Visual Impact	3 Nov 2021	Recommendation 1: Keep area around retained trees clear of construction material as far as possible (Portion 1 – YLSTW).	4 Nov 2021
	17 Nov 2021	Recommendation 1: Keep tree protection zone clear of construction equipment / tools (Portion 1 – YLSTW).	17 Nov 2021
	30 Nov 2021	Recommendation 1: Keep tree protection zone free of stockpiling or construction materials (Portion 1 – YLSTW).	1 Dec 2021
Permit / Licenses	NA		
Others	NA		

Appendix N

Outstanding Issues and Deficiencies

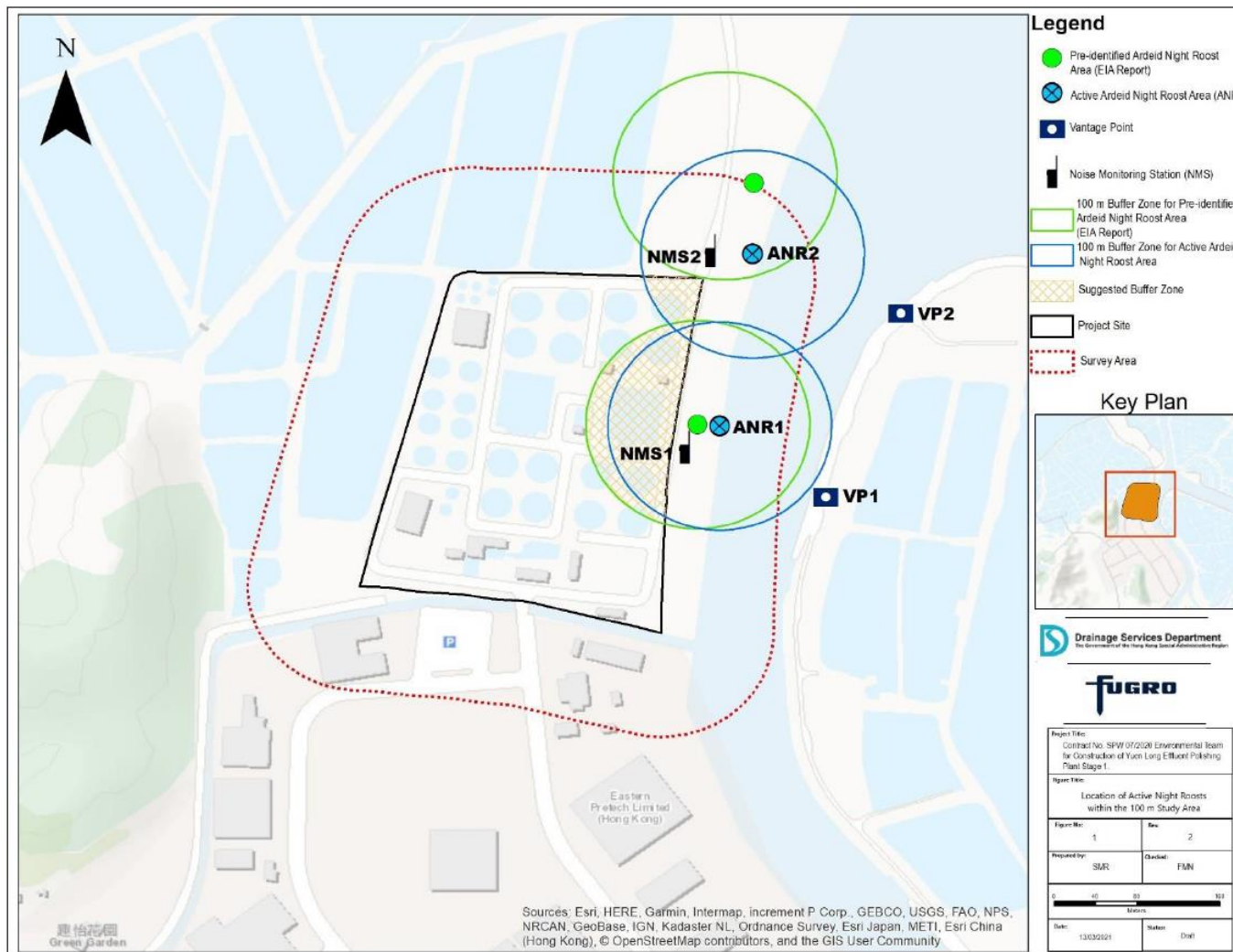
Summary of Outstanding Issues and Deficiencies in the Reporting Month

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

Appendix O

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

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



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

O.2 Survey Photos

O.2.1 Pre-roosting Aggregate



Appendix O.2.1a: Pre-roost aggregate of Intermediate Egret *Egretta intermedia* in the mudflat area east of the Project boundary observed on November 2021 around 17:04

O.2.2 Active Night Roosting Site and Roosting Substrates



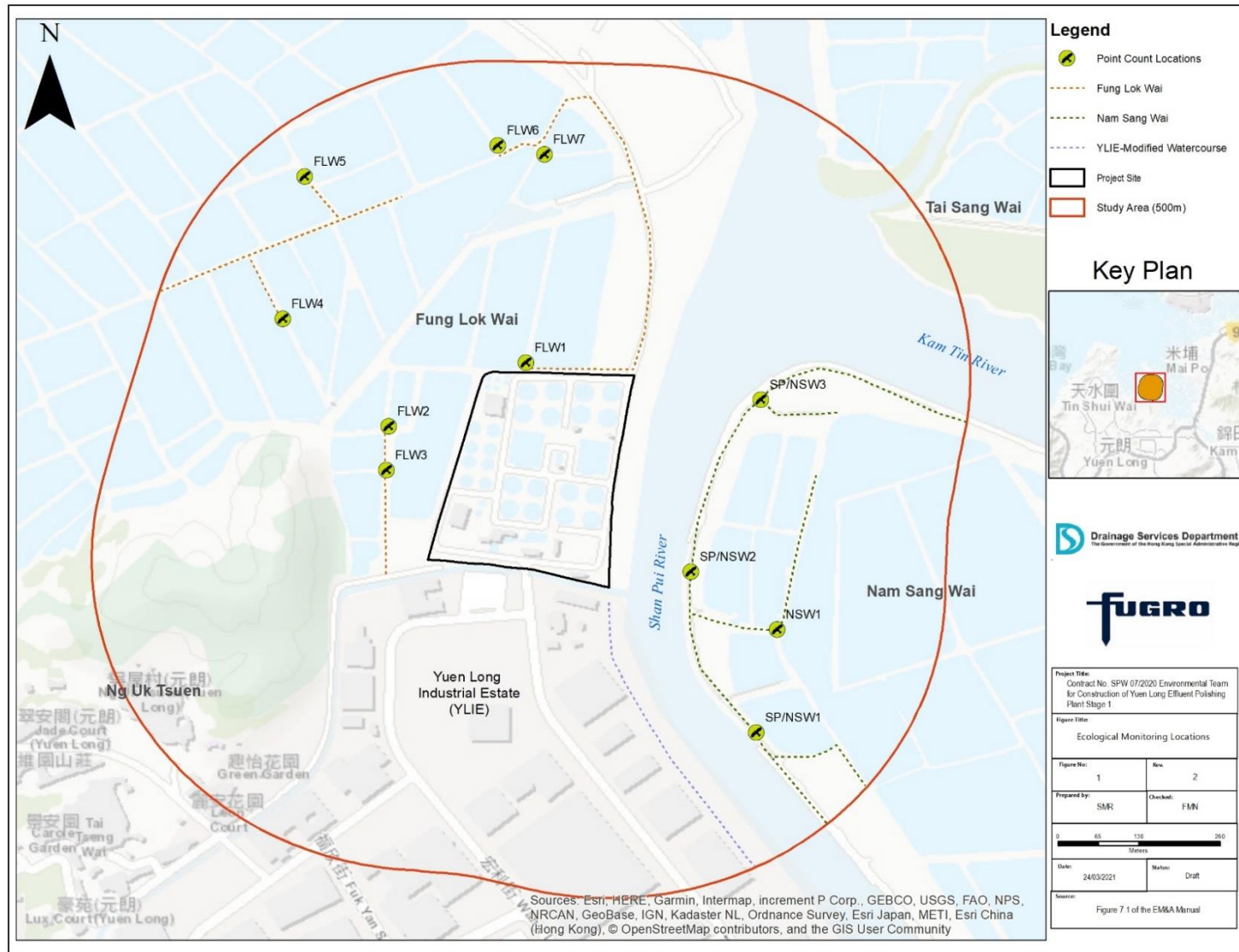
Appendix O.2.2a: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located east of the Project boundary observed on 19 November 2021 around 17:58



Appendix O.2.2b: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located northeast of the Project boundary observed on 19 November 2021 around 17:58

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