



Monthly EM&A Report (May 2021)

0120/20/ED/0345 02

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



Ref.: DSDYLSTWEM00_0_0102L.21

15 June 2021

By Hand and by E-mail

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 (May 2021)

Reference is made to the Monthly EM&A Report (May 2021) by the ET ref. Fugro Document No. 0120/20/ED/0345 02 (the Report), which was received via e-mail dated 14 June 2021. We have no further comments on the Report 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 (Tel. 3465 2805) or our Mr. Y.H. HUI (Tel. 3465 2850) should you have any questions on the matter.

Yours sincerely,

For and on behalf of
Ramboll Hong Kong Limited

Wong Fu Nam
Independent Environmental Checker

c.c.
DSD Mr LAM Yu Wang By E-mail
Fugro Mr HUNG David By E-mail

Contract No. SPW 07/2020

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

Baseline Monitoring Report

Responses to Comment as identified from IEC dated 11 June 2021

IEC Comments

Items	Comments	Responses
1	Sections 1.1.1 , 1.1.4 &1.1.5: Three different references are used for Yuen Long Effluent Polishing Plant -Main Works Stage 1 (YLEPP). Please use one consistent reference for YLEPP throughout the whole report, e.g. “the Project”.	Amended
2	Section 1.1.5: Please include compliance with EP 4 (“Electronic Reporting of EM&A Information”).	Provided in section 1.1.5
3	Section 1.5: Please include the status of application for water discharge license;	The status of water discharge license is provided in Table 1.2.
4	Section 2.3.1: Please include determination of wind speed and wind direction as required in EM&A Manual 2.2.11 & 2.2.12.	The information is provided in section 2.2.2 and section 2.6.4.
5	Table 2.1: Referring to Section 2.3.1, please amend Item 3 of Table 2.1 as appropriate.	As discussed on the phone, wind station is used for wind speed and wind direction.
6	Section 2.4.1: The calibration certificate of single-pan balance is expired. Please replace with a valid one.	The calibration of laser dust monitor are conducted on 23 Nov 2020 while the balance certification is valid to 8 Apr 2021.
7	Section 3.1.1: Please indicate “when there are Project-related construction activities being undertaken within a radius of 300 m from the monitoring stations”	Amended

Items	Comments	Responses
8	Table 3.1, Item 5: No information of "Serial No." was provided in Appendix D "Calibration Certificate of Anemometer". Please check serial no. of "WS08" and amend as appropriate.	Amended
9	Table 3.2: Please add "when construction activities are underway" as appropriate.	Added
10	Section 3.7.3: Please elaborate "effect that arose from the other factors" or amend the statement.	Other factors for CM2 is provided. No factors for CM1 and CM3 was observed.
11	Section 4.2.1, Appendix D: Please remove expired Valeport calibration certificate, or replace with the valid one.	As discussed on the phone, the certificate is still valid.
12	Table 4.2, In-situ measurement: Please use "DO (in mg/L and % of saturation)" for Dissolved Oxygen.	Amended
13	Table 4.2, Monitoring frequency: Please replace the sentence in brackets with "The interval between two sets of monitoring shall not be less than 36 hours except where there are exceedances of Action and/or Limit levels, in which case the monitoring frequency shall be increased."	Amended. The water quality monitoring frequency is conducted in accordance with the EM&A Manual Section 4.6.6. In the event that the Action and/ or Limit Level are exceeded, Event and Action Plan in Appendix H shall be followed.
14	Section 4.5.2: Please indicate "in-situ measurements and replicate samples collected from each independent sampling event are required for laboratory analysis of all the required parameters".	Mentioned in Section 4.5.3
15	Section 4.8.1, Appendix E: Please remove Monitoring Schedule of July 2021	As discussed on the phone, three month schedule will be provided in Monthly Report.

Ecology Section

Items	Comments	Responses
1	Ecology section: Full reference to all the literature cited shall be provided.	Provided.
2	ES, bullet vi: the text "(including but not limited to overwintering waterbirds)" shall be removed as there was no separate statistical test for overwintering birds.	Removed.
3	As per the EM&A Manual, graphical plots of the monitored parameters shall be presented. Accordingly, the plotting shall include abundance, species richness and diversity index. The graphical plots shall be included in the appropriate appendix section similar to other monitoring components	Included.
4	<p>Section 5.2.3.1.1, Point Count:</p> <p>it is mentioned that "a decline in the current monitoring results was observed the decline was not statistically significant at $\alpha = 0.05$."</p> <ul style="list-style-type: none"> • Please state the type of statistical test performed, the parameter used and • Provide the details (testing method, data set, input and output, etc.) of the statistical test performed for review. 	<ul style="list-style-type: none"> • Stated type of statistical test performed and parameter used • Details provided in Appendix F.
5	<p>Section 5.2.3.1.1, Section 5.2.3.1.2, Transect Walk:</p> <p>it is mentioned that "baseline data which only recorded 2 ind" Please critically review the validity of the statically</p>	Agreed. An increase was already noted in the impact monitoring relative to the extremely

Items	Comments	Responses
	tested with such extreme low sample size, and if valid, provide the details of the statical test provided.	low baseline data. No need for statistical analysis of significant increase. Section revised.
6	Section 5.2.3.2, 1st para: The comparison shall be with May 2017 baseline, not April 2017 baseline, please review and update	Reviewed and updated.
7	Section 5.2.3.2: Exceedances of AL/LL shall be highlighted here. Please amend.	Highlighted.
8	Section 5.2.3.2.1, Table 5.9 and other relevant sections: as per previous comment on the exceedance investigation report, please review and revise those wording (high, moderate, etc) after the calculated H' value.	Wordings after the calculated H' value removed. Table 5.9 removed.
9	Section 5.2.3.2.1: The explanation of exceedances shall be exceedance investigation report. Please amend.	Amended.
10	Table 5.9: Please demonstrate the applicability of the quoted refence in local context.	Table 5.9 removed.

Document Control

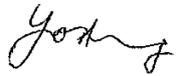
Document Information

Project Title	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1
Document Title	Monthly EM&A Report (May 2021)
Fugro Project No.	0120/20
Fugro Document No.	0120/20/ED/0345
Issue Number	02

Client Information

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

Environmental Team

Initials	Name	Role	Signature
YO	David Y.O. Hung	Environmental Team Leader	
CY	Cyrus C.Y. Lai	Senior Environmental Consultant	
KH	Toby K.H. Wan	Assistant Environmental Consultant	

EXECUTIVE SUMMARY

- i. This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. SPW 07/2020 "Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1". Drainage Services Department (DSD) has appointed Fugro Technical Services Limited (FTS) to undertake the Environmental Team services for the project and implement the EM&A works.
- ii. This is the 2nd Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 May 2021 to 31 May 2021. As informed by the Contractor, major activities in the reporting month were:
 - Driven piling works at IW;
 - Demolition of PST no. 7 & 8 tanks;
 - Construction of temporary storage area, admin. building & workshop;
 - Excavation of trench for Zone 1 diversion;
 - Erection of bird curtain;
 - Pre-drilling work by 3 drill rigs;
 - Installation of instrumentation; and
 - Overhauling works.

Breaches of Action and Limit Levels

- iii. No Action and Limit Level exceedance was recorded for air quality monitoring and construction noise monitoring in the reporting month.
- iv. Three Action Level exceedance were recorded for water quality in the reporting month. The exceedance were recorded at M1 on 22 May 2021 and recorded at M3 on 27 and 29 May 2021. Six Limit Level exceedance were recorded for water quality in the reporting month. The exceedance were recorded at M1 and M3 on 25 and 27 May 2021. It was found that these exceedances were not project-related.
- v. No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the active ardeid night roost.
- vi. Two exceedances in Action Level were recorded for the ecological monitoring of birds on 17 May 2021, in which significant declines were found in species diversity of all avifauna species in the community; and species diversity of species of conservation importance only. However, the exceedances were not project-related.

Complaint Log

vii. No complaints were received in the reporting period.

Notifications of any Summons and Successful Prosecutions

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

Reporting Change

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

Future Key Issues

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

- Driven piling work at IW;
- Demolition of PST no. 7 & 8 tanks;
- Demolition of main store;
- Demolition of carpark cover;
- Demolition of workshop;
- Sheet piling;
- Construction of temporary storage area, admin. Building and workshop;
- Installation of sheet piles for Zone 1 diversion;
- Pre-drilling works at PST;
- Environmental drill holes inside main store and workshop;
- Trench excavation for UU diversion; and
- Breaking of existing road pavement at PST.

Contents

1. INTRODUCTION	6
1.1 Background	6
1.2 Project Organization	7
1.3 Construction Programme and Activities	7
1.4 Works undertaken during the month	7
1.5 Status of Environmental Licences, Notification and Permits	8
2. AIR QUALITY	9
2.1 Monitoring Requirement	9
2.2 Monitoring Equipment	9
2.3 Monitoring Methodology for Direct Reading Dust Meter	9
2.4 Maintenance and Calibration for Direct Reading Dust Meter	10
2.5 Monitoring Locations	10
2.6 Monitoring Results	10
2.7 Comparison of 1-hr TSP Monitoring Results with EIA Predictions	11
3. NOISE	12
3.1 Monitoring Requirement	12
3.2 Monitoring Equipment	12
3.3 Monitoring Parameters and Frequency	12
3.4 Monitoring Methodology	13
3.5 Maintenance and Calibration	13
3.6 Monitoring Locations	14
3.7 Monitoring Results	14
3.8 Comparison of Noise Monitoring data with EIA Predictions	15
4. WATER QUALITY	16
4.1 Monitoring Requirement	16
4.2 Monitoring Equipment	16
4.3 Equipment Calibration	17
4.4 Monitoring Parameters	17
4.5 Monitoring Operation	17
4.6 Laboratory Measurement / Analysis	18
4.7 Monitoring Locations	18
4.8 Monitoring Results	19
5. ECOLOGY MONITORING	20
5.1 Ardeid Night Roost Monitoring	20
5.2 Ecological Monitoring of Birds	24
6. LANDSCAPE AND VISUAL	36

6.1	Audit Requirements	36
6.2	Results and Observations	36
7.	SITE INSPECTION AND AUDIT	37
7.1	Site Inspection	37
7.2	Advice on the Solid and Liquid Waste Management Status	37
8.	ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE	38
8.1	Environmental Exceedance	38
8.2	Complaints, Notification of Summons and Prosecution	38
9.	IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE	39
9.1	Implementation Status	39
10.	FUTURE KEY ISSUES	40
10.1	Construction Programme for the Next Three Month	40
10.2	Key Issues for the Coming Month	40
10.3	Monitoring Schedules for the Next Three Month	40
11.	CONCLUSION AND RECOMMENDATION	41
11.1	Conclusions	41
11.2	Comment and Recommendations	42

Tables

[Table 1.1 Contact Information of Key Personnel](#)

[Table 1.2 Environmental Licenses, Notification and Permits Summary](#)

[Table 2.1 Air Quality Monitoring Equipment](#)

[Table 2.2 Air Quality Monitoring Location](#)

[Table 2.3 Summary of Air Quality Monitoring Results](#)

[Table 2.4 Comparison of 1-hr TSP data with EIA predictions](#)

[Table 3.1 Construction Noise Monitoring Equipment](#)

[Table 3.2 Monitoring Parameters and Frequencies of Noise Monitoring](#)

[Table 3.3 Construction Noise Monitoring Location](#)

[Table 3.4 Summary of Construction Noise Monitoring Results](#)

[Table 3.5 Comparison of Noise monitoring data with EIA predictions](#)

[Table 4.1 Water Quality Monitoring and Sampling Equipment](#)

[Table 4.2 Monitoring Parameters and Frequency](#)

[Table 4.3 Coordinates of Water Quality Monitoring Locations](#)

[Table 4.4 Summary of Water Quality Exceedance](#)

[Table 5.1 Noise Monitoring Parameters \(For Active Ardeid Night Roost Survey\)](#)

[Table 5.2 Active Ardeid Night Roost Survey Findings](#)

[Table 5.3 Noise Monitoring Results \(For Active Ardeid Night Roost Survey\)](#)

[Table 5.4 Noise Monitoring Parameters](#)

[Table 5.5 Abundance of all Avifauna Species](#)

[Table 5.6 Abundance of Species of Conservation Importance](#)

[Table 5.7 Shannon Diversity Index Value of all Avifauna Species](#)

[Table 5.8 Shannon Diversity Index Value of Species with Conservation Importance](#)

[Table 5.9 Wetland habitat utilization of all avifauna species](#)

[Table 5.10 Wetland habitat utilization of conservation importance](#)

[Table 5.11 Wetland habitat utilization of overwintering avifauna species](#)

[Table 5.12 Noise Monitoring Results \(For Ecological Monitoring of Birds\)](#)

[Table 7.1 – Waste Generated by the Construction and Disposal Ground](#)

Figures

Figure 1	General Layout of the Proposed Yuen Long Effluent Polishing Plant
Figure 2	Air Quality Monitoring Locations
Figure 3	Noise Monitoring Locations
Figure 4	Water Quality Monitoring Locations
Figure 5	Ecology Monitoring Locations

Appendices

Appendix A	Construction Programme
Appendix B	Project Organization Chart
Appendix C	Action and Limit Levels
Appendix D	Calibration Certificate of Monitoring Equipment
Appendix E	Environmental Monitoring Schedule
Appendix F	Monitoring Results
Appendix G	Wind Data
Appendix H	Event and Action Plan
Appendix I	Waste Flow Table
Appendix J	Implementation Status of Environment Mitigation Measures
Appendix K	Weather and Meteorological Conditions
Appendix L	Cumulative statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions
Appendix M	Summary of Observations and Findings in the Reporting Month
Appendix N	Outstanding Issues and Deficiencies
Appendix O	Active Night Roost Monitoring Area and Vantage Points; and Noise Monitoring Stations
Appendix P	Ecological Bird Monitoring Area with Locations of Point Count Sites and Transect Route
Appendix Q	Notification of Exceedance

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 layout for construction of Yuen Long Effluent Polishing Plant (hereinafter referred as “the Project”) 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 2nd Monthly EM&A report to document the findings of site inspection activities and EM&A programme for this project from 1 May 2021 to 31 May 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. David Hung	3565 4371

1.3 Construction Programme and Activities

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

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

1.4 Works undertaken during the month

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

- Driven piling works at IW;
- Demolition of PST no. 7 & 8 tanks;
- Construction of temporary storage area, admin. building & workshop;
- Excavation of trench for Zone 1 diversion;
- Erection of bird curtain;
- Pre-drilling work by 3 drill rigs;
- Installation of instrumentation; and
- Overhauling works.

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

1.5 Status of Environmental Licences, Notification and Permits

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

Table 1.2 – Environmental Licenses, Notification and Permits Summary

Permit/ Notification/ License	Reference No	Valid From	Valid Till
Environmental Permit	EP-565/2019	26-Apr-2019	NA
Notification of Works under APCO	461616	6-Nov-2020	NA
Construction Waste Disposal Billing Account	7038933	20-Nov-2020	NA
Registration as Chemical Waste Producer under WDO	WPN5213-528-P2796-03	4-Feb-2021	NA
Construction Noise Permit	GW-RN0218-21	26-Mar-2021	17-Oct-2021
Construction Noise Permit (Percussive Piling)	PP-RN0021-21	27-Apr-2021	30-Jun-2021
Admission Ticket for Disposal of Special Waste at Landfill	Admission Ticket No. 16121	26-Feb-2021	25-Aug-2021 (Superseded by Admission Ticket No.16225)
Admission Ticket for Disposal of Special Waste at Landfill	Admission Ticket No. 16225	3-May-2021	2-Nov-2021
Wastewater Discharge Licence	Ref. Number: 463531	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 indicate the impacts of construction dust on air quality. Impact 1-hour TSP monitoring was conducted for at least three times every 6 days.

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 Portable TSP Monitors	761105
2	AM2		Model LD-5R		882149
3		Global Water	GL500-7-2	Wind Station	2012000974

2.3 Monitoring Methodology for Direct Reading Dust Meter

2.3.1 Portable Laser Particle Photometer Monitors (Sibata Model LD-3B / 5R) 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 Yuen Long STW

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 factors 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 (µg/m ³)	Range (µg/ m ³)	Action Level (µg/ m ³)	Limit Level (µg/ m ³)
1-hour TSP				
AM1	59	48-75	291	500
AM2	62	42-107	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 May ($\mu\text{g}/\text{m}^3$)
1-hour TSP			
AM1	ASR09	205-451	75
AM2	ASR11		107

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 Manuals, 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.

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	Integrating Sound Level Meter	1488302
2	Casella	CEL-63X Series	Integrating Sound Level Meter	1488304
3	Casella	CEL-120/1	Calibrator	5230736
4	Casella	CEL-120/1	Calibrator	5230758
5	Benetech	GM816	Anemometer	N/A

3.3 Monitoring Parameters and Frequency

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

Table 3.2 – Monitoring Parameters and Frequencies of Noise Monitoring

Parameter	Frequency
LAeq (30 min) (L 10 and L90 will be recorded for reference)	At each station at 0700-1900 hours on normal weekdays at a frequency of once a week when construction activities are underway

3.4 Monitoring Methodology

3.4.1 Noise measurement should be conducted as the following procedures:

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

3.5 Maintenance and Calibration

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

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

3.6 Monitoring Locations

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

Table 3.3 – Construction Noise Monitoring Location

Monitoring Station ID	Location	Measurements
CM1	Squatter house at the north of Yuen Long STW	Free Field
CM2	Squatter house at the west of Yuen Long STW	Free Field
CM3	Squatter house at the east of Yuen Long STW	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. No effect that arose from the other factors for CM1 and CM3 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	60-63	When one documented complaint is received	75
	CM2	62-69		75
	CM3	52-64		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 May L_{eq} (30min) dB(A)
CM1	NSR1	72	63
CM2	NSR2	74	69
CM3	NSR3	75	64

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.

4. WATER QUALITY

4.1 Monitoring Requirement

4.1.1 In accordance with the EM&A Manuals, 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	Water Quality Monitoring Device	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)	19E100634
					19E100633
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: $\pm 2^{\circ}$ magnetic	5906
Water Sampling	Water Sampler	Acrylic Beta Water Bottle Kit, Horizontal, 3.2L / 4.2L	NA	NA	NA

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

4.3 Equipment Calibration

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

4.4 Monitoring Parameters

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

Table 4.2 – Monitoring Parameters and Frequency

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

4.5 Monitoring Operation

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

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

4.6 Laboratory Measurement / Analysis

Background

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

Quality Assurance / Quality Control

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

For each batch of 20 samples:

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

4.7 Monitoring Locations

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

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

Table 4.3 – Coordinates of Water Quality Monitoring Locations

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

4.8 Monitoring Results

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

Table 4.4 – Summary of Water Quality Exceedance

Sampling Location	Exceedance Level	DO		Turbidity		Suspended Solids		Total	
		Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb
M1	Action	0	0	0	0	0	1	0	1
	Limit	0	1	0	2	0	1	0	4
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	2	0	2	0
	Limit	0	0	2	0	0	0	2	0
Total	Action	0	0	0	0	2	1	3	
	Limit	0	1	2	2	0	1	6	

- 4.8.5 During the reporting period, 1 Limit Level exceedance for Dissolved Oxygen, 4 Limit Level exceedances for Turbidity, 3 Action Level and 1 Limit Level exceedances for Suspended Solids were recorded.
- 4.8.6 Based on the finding from the investigation on the recorded case of exceedances, the cause was found not related to the project. The exceedances may be caused by influences in the vicinity of the station or changes of the ambient conditions.
- 4.8.7 The details of Notification of Exceedance can be referred to **Appendix Q**.
- 4.8.8 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 18 May 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, 1997). The time of return of the ardeids to the pre-roost and the final night roost were also recorded. Direct observations were made from vantage points adjacent the Project site with clear and unobstructed view of any active roosting location (s) within the Survey Area. However, aside from the established vantage points for the focused mangrove strips along Shan Pui River, observations were also conducted throughout the whole 100 m study site to cover other areas aside from the mangrove strips.

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

5.1.2.2.2 Noise Monitoring

Monitoring Locations, Frequency, Time and Parameters

The noise monitoring locations were established at 22°28'4.25"N, 114°1'41.32"E; and 22°28'10.43"N, 114°1'42.17"E for NMS1 and NMS2 stations, respectively. Monitoring frequency was only once a month in concurrence with the construction phase monthly monitoring of the active night roosts for correlation. Monitoring time for both stations started around 18:00, the earliest final night roost period recorded during the survey, and lasted for 30 minutes. **Table 5.1 – Noise Monitoring Parameters** 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 18 May 2021 and started around 17:57 (one hour before sunset) on a low tide condition. During the pre-roost period (PRP), the period when avian individuals gather first before flying into a night roost, individuals of Great Egret *Ardea alba* were noted in pre-roost aggregate (PRA) around 18:02 on the exposed mudflat northeast of the Project boundary. Two Great Egret individuals were noted in this area while no ardeid individual was noted at the east of the Project boundary that exhibited PRA.

For the final night roost, different times were observed for the different species such that it started around as early as 18:10 for both Eastern Cattle Egret *Bubulcus coromandus* and Little Egret *Egretta garzetta*; 18:15 for Chinese Pond Heron *Ardeola bacchus*; and around 18:30 for the Great Egret. Currently, the only final night roost site within the monitoring area was located east (ANR1) of the Project boundary. This night roost was noted with 11 Eastern Cattle Egrets, nine Little Egrets, five Chinese Pond Herons and two Great Egrets in roosting behaviour. All individuals of these species utilized the canopy to emergent layers of the roosting substrate *S. apetala* and *S. caseolaris* except for the Chinese Pond Heron individuals which utilized the inner portion of the understory layer of the aforementioned roosting substrate. The other night roost (ANR2) located at the northeast of the Project boundary, as noted to be active last April 2021, was not used by the ardeids during the current monitoring period. This change was, however, not caused by the Project's construction activities as the recorded noise level ((53.0 dB(A)) (Table 5.3) near ANR2 was lower with respect to the action limit level of 65.5 dB(A) which more likely to cause behavioural responses of some kind by the ardeids (Wright et al. 2010). Furthermore, ardeid night roosts are known for their highly changeable locations and roosting population. These roosting locations can change in temporal basis and even change from day to day on a small scale. In Hong Kong, fluctuation of roosting population, abandonment or change in locations of roosting site without major nearby environmental change has been observed in roosts and locations (HKJC, 2005; Lee et al., 2004; MTRC, 2010).

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

Summary of results is presented in **Table 5.2**.

Table 5.2 – Active Ardeid Night Roost Survey Findings

Date: 18 May 2021		Sunset Time: 18:57		Tidal Condition: Low Tide	
Pre-roost Period			Final roost Period		
Time of Return:	Great Egret <i>Ardea alba</i> (18:02)		Time of Return:	Eastern Cattle Egret <i>Bubulcus coromandus</i> and Little Egret <i>Egretta garzetta</i> (18:10); Chinese Pond Heron <i>Ardeola bacchus</i> (18:15); Great Egret <i>Ardea alba</i> (18:30)	
Parameters	Location		Parameters	Location	
	ANR1	ANR2		ANR1	ANR2
Pre-roost Aggregation (Y/N):	N	Y	Substrate Species:	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>
Substrate Species:	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>	<i>Sonneratia apetala</i> and <i>S. caseolaris</i>	Substrate Height (m):	Approx. 5 m.	Approx. 3-4 m.
Substrate Height (m):	Approx. 5 m.	Approx. 3-4 m.			
Ardeid Species Composition	Abundance (individuals)		Ardeid Species Composition	Abundance (individuals)	
	ANR1	ANR2		ANR1	ANR2
Great Egret <i>Ardea alba</i>	-	2*	Eastern Cattle Egret <i>Bubulcus coromandus</i>	11	-
			Little Egret <i>Egretta garzetta</i>	9	-
			Chinese Pond Heron <i>Ardeola bacchus</i>	5	-
			Great Egret <i>Ardea alba</i>	2	-
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 contiguous to their final mangrove roosting substrate

-: not recorded

5.1.3.2 Noise Monitoring

Noise monitoring activities were conducted on 18 May 2021 in concurrence with the construction phase monthly monitoring of the pre-identified active night roosts. Noise monitoring started at 18:10 and lasted for 30 minutes, until 18:40.

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

Table 5.3 – Noise Monitoring Results

Frequency and Period	Location	Start Time	L_{Aeq} (30 min.)	Action Level	Limit Level
Monthly in concurrence with the construction phase monthly monitoring of the active night roosts	NMS1	18:10	54.0	65.5 dB(A) ¹	72.2 dB(A) ²
	NMS2	18:10	53.0		

Notes:

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

NMS2= Noise monitoring station 1 located northeast of the Project boundary

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

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

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

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

5.1.5 Summary

5.1.5.1 Status and Location of Any Active Ardeid Night Roost

One active ardeid night roost site was observed within the Survey Area during the May 2021 monitoring period. This roost was located at the mangrove strip in the east portion of the Project boundary. This was used by the different ardeid species such as the Eastern Cattle Egret, Little Egret, Chinese Pond Heron and Great 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 17 May 2021 at suitable time (early morning) which started around 06:50, when birds are most active. For the surveys overlooking the mudflats and mangroves in the Shan Pui River, monitoring activities were also conducted on the same date and time (06:50) during the low tide (generally 1.5m or below) period. 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. No night-time survey was scheduled during the current monitoring month.

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 17 May 2021 which started around 06:50 are presented in **Sections 5.2.3.1** and **5.2.3.2** while results for the surveys overlooking the mudflats and mangroves in the Shan Pui River, with monitoring activities conducted on the same date during the low tide (generally 1.5m or below) period which also started around 06:50 had results presented in **Section 5.2.3.3**.

5.2.3.1 Abundance

A total of 175 avifauna individuals (ind.) was recorded during the current monitoring period using point count (101 ind.) and transect walk (74 ind.) methods. A decrease in abundance was

noted in this period relative to the baseline May 2017 results with a total abundance of 192 ind. (point count=190 ind; transect walk=2 ind.).

5.2.3.1.1 All Avifauna Species

Point Count

A total of 101 avifauna ind. was observed within the monitoring area using the point count method. Among the different species recorded, the Spotted Dove *Spilopelia chinensis* was noted with the highest abundance (17 ind.), followed by the Chinese Pond Heron *Ardeola bacchus* (15 ind.) and Red-whiskered Bulbul *Pycnonotus jocosus*. The high abundance of Spotted Dove could be due to them being an abundant resident in Hong Kong. On the other hand, several species were noted with low abundances (only one ind.), these include the Common Kingfisher *Alcedo atthis*, Great Egret *Ardea alba* and White-breasted Waterhen *Amaurornis phoenicurus*, just to name a few.

Relative to the May 2017 baseline data (190 ind.), a decline in the current monitoring results was observed. However, the decline was not statistically significant at $\alpha = 0.05$ (two-tailed unpaired t-test for abundance).

Transect Walk

A total of 74 avifauna ind. was observed within the monitoring area using the transect walk method. Among the different species recorded, the Barn Swallow *Hirundo rustica* was noted with the highest abundance (8 ind.), followed closely by the Chinese Pond Heron (7 ind.); and Azure-winged Magpie *Cyanopica cyanus*, Eurasian Tree Sparrow *Passer montanus* and Masked Laughingthrush *Garrulax perspicillatus* with five recorded individuals each.

Increase in the abundance was noted during the current monitoring period with respect to the baseline data which only recorded 2 ind.

5.2.3.1.2 Avifauna Species of Conservation Importance

Point Count

A total of 21 avifauna ind. of conservation importance was observed within the monitoring area using the point count method. Among the different species recorded, the Chinese Pond Heron was noted with the highest abundance (15 ind.) while the remaining species such as the Little Egret *Egretta garzetta* (2 ind.); followed by the Black Kite *Milvus migrans*, Collared Crow *Corvus torquatus*, Great Egret and Little Grebe *Tachybaptus ruficollis* (each with only 1 ind.) were already noted with low abundances.

Current monitoring results (21 ind.) showed a decrease in abundance relative to the May 2017 baseline data (71 ind.). The decrease was primarily due to the current lesser abundances of the Great Egret, Black-winged Stilt *Himantopus himantopus* and Little Grebe.

However, the decrease in abundance was not statistically significant at $\alpha = 0.05$.

Transect Walk

A total of 16 avifauna ind. of conservation importance was observed within the monitoring area using the transect walk method. Among the different species recorded, the Chinese Pond Heron was noted with the highest abundance (7 ind.). The remaining species such as the Great Egret (4 ind.), Little Grebe (3 ind.) and Grey Heron (2 ind.) were noted with low abundances. Relative to the baseline data (2 ind.), an increase was noted during the current period.

5.2.3.1.3 Summary

Summary of the baseline and impact monitoring abundance results are shown in Table 5.5 and Table 5.6.

Table 5.5 – Abundance of all Avifauna Species

Abundance of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	May-17	May-21	Remarks
P1	FLW1	3	7	+
P2	FLW2	4	5	+
P3	FLW3	6	4	-
P4	FLW4	18	2	-
P5	FLW5	13	11	-
P6	FLW6	44	21	-
P7	FLW7	22	9	-
P9	SP/NSW3	26	8	-
P10	SP/NSW2	9	10	+
P11	NSW1	36	17	-
P12	SP/NSW1	9	7	-
Total		190	101	-
Mean		17.27	9.18	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	May-17	May-21	Remarks
Fung Lok Wai	FLW	1	36	+
Nam Sang Wai	NSW	1	34	+
YLIE-CW	YLIE-CW	0	4	+
Total		2	74	+
Mean		0.67	24.67	+

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	May-17	May-21	Remarks
P1	FLW1	2	0	-
P2	FLW2	0	0	
P3	FLW3	0	1	+
P4	FLW4	9	0	-
P5	FLW5	5	1	-
P6	FLW6	21	7	-
P7	FLW7	0	4	+
P9	SP/NSW3	22	0	-
P10	SP/NSW2	3	2	-
P11	NSW1	4	2	-
P12	SP/NSW1	5	4	-
Total		71	21	-
Mean		6.45	1.91	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	May-17	May-21	Remarks
Fung Lok Wai	FLW	1	12	+
Nam Sang Wai	NSW	1	2	+
YLIE-CW	YLIE-CW	0	2	+
Total		2	16	+
Mean		0.67	5.33	+

5.2.3.2 Diversity (Species Richness¹ and Shannon Diversity Index²)

A total of 31 avifauna species (species richness) was noted during the current monitoring period in the different wetland habitats using the point count (22 species) and transect walk (23 species) methods. With respect to the May 2017 baseline data, similar total number of species (31) was noted.

In terms of Shannon diversity index, increased values were noted for the transect walk method while decreased values were observed at point count method with reference to baseline values.

Two exceedances in Action Level were recorded during this period's monitoring of birds including significant declines in species diversity of all avifauna species in the community; and species diversity of species of conservation importance only. However, the exceedances were not project-related.

¹ actual number of species

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

5.2.3.2.1 All Avifauna Species

Point Count

A total of 22 avifauna species was recorded within the monitoring area using the point count method. The overall Shannon diversity index during the current period was $H' = 2.57$.

A significant current decline at $\alpha = 0.05$ in the Shannon diversity index was noted relative to the baseline results of $H' = 3.13$ at $\alpha = 0.05$. However, the significant decline was not caused by the construction works of the Project as the concurrently measured noise level data collected from the different point count locations during the ecological bird monitoring were still low with a range from 46.6 dB(A) to 61.2 dB(A) only. This decline could be due to the consistent decline in coverage of intertidal mudflat, consistent increase in coverage of mangrove and other vegetation from 2000 to 2018 (Sung Y-H et. al., 2021). Moreover, based on satellite images (2016 to 2020) the mudflat in Shan Pui River adjacent to Project site was progressively invaded most probably by the fast-growing exotic mangrove species *Sonneratia* spp. as initially reported in the EIA report. The decrease in mudflat coverage may imply a consequent decrease in foraging area for waterbirds.

Transect Walk

A total of 23 avifauna species was recorded within the monitoring area using the transect walk method. The overall Shannon diversity index during the current period was $H' = 2.99$.

Current significant increase at $\alpha = 0.05$ in the monitoring results were noted with respect to baseline values which only noted a total of 1 species and Shannon diversity index value of $H' = 0$.

5.2.3.2.2 Avifauna Species of Conservation Importance

Point Count

A total of 6 avifauna species of conservation importance was recorded within the monitoring area using the point count method. The overall Shannon diversity index value during the current period was $H' = 1.04$.

Current result showed a significant decline at $\alpha = 0.05$ in Shannon diversity index value from the baseline data. However, as mentioned above, the significant decline was noted to be caused by other factors and not project-related.

Transect Walk

A total of 4 avifauna species of conservation importance was recorded within the monitoring area using the transect walk method. The overall Shannon diversity index value during the current period was $H' = 1.28$.

However, increases in both the species richness and Shannon diversity index value relative to the baseline results were observed during this monitoring period.

5.2.3.2.3 Summary

Summary of the baseline and impact monitoring species diversity results are shown in **Table 5.7** and **Table 5.8**.

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	May-17	May-21	Remarks
P1	FLW1	1.10	1.08	-
P2	FLW2	1.04	1.05	+
P3	FLW3	1.56	1.04	-
P4	FLW4	1.90	0.69	-
P5	FLW5	2.10	1.26	-
P6	FLW6	2.23	1.36	-
P7	FLW7	1.91	1.06	-
P9	SP/NSW3	1.56	0.90	-
P10	SP/NSW2	1.68	1.19	-
P11	NSW1	2.75	1.79	-
P12	SP/NSW1	1.21	1.28	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	May-17	May-21	Remarks
Fung Lok Wai	FLW	0*	2.61	+
Nam Sang Wai	NSW	0*	2.41	+
YLIE-CW	YLIE-CW	-*	0.69	+

Notes:

0* = only one species recorded; -* no species recorded

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	May-17	May-21	Remarks
P1	FLW1	0.69	-*	-
P2	FLW2	-*	-*	
P3	FLW3	-*	0*	+
P4	FLW4	0.68	-*	-
P5	FLW5	1.33	0*	-
P6	FLW6	1.13	0*	-
P7	FLW7	-*	0*	+
P9	SP/NSW3	1.08	-*	-

Shannon Diversity Index Value of Species with Conservation Importance				
P10	SP/NSW2	1.10	0.69	-
P11	NSW1	1.39	0.69	-
P12	SP/NSW1	0.50	0.56	+
Transect Walk Method				
EIA Report ID	EM&A Manual ID	May-17	May-21	Remarks
Fung Lok Wai	FLW	0*	1.36	+
Nam Sang Wai	NSW	0*	0*	
YLIE-CW	YLIE-CW	-*	0*	+

Notes:

0* = only one species recorded; -* no species recorded

5.2.3.3 Wetland Habitat Utilization

A total of 193 avifauna individuals (ind.) was noted during the current monitoring period in the different wetland habitats (i.e. modified watercourse, ponds, mangrove and reedbed). A slight increase in abundance was noted in this period relative to the baseline April 2017 results with a total abundance of only 182 ind.

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 species as evident with the very low to low (VL; and VL-L) abundances in these areas. With regards to species richness, generally very low to low number (VL; and VL-L) of species was noted in the different wetland habitats except in the Active Ponds North to Nullah 2 (M, moderate) in Fung Lok Wai; and Active and Inactive Ponds in Nam Sang Wai (M-H, moderate to high) (**Table 5.9**).

Table 5.9 – Wetland habitat utilization of all avifauna species

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

Wetland Habitats	Area Description	Abundance ¹	Species Richness ²
	Inactive Ponds in Fung Lok Wai	VL	VL
	Active and Inactive Ponds in Nam Sang Wai	VL	M - H
Mangrove	Mangrove within Assessment Area	VL	VL
Reedbed	Reedbed in Nam Sang Wai	VL	VL

Notes:

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

5.2.3.3.2 Avifauna Species of Conservation Importance

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

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

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

Notes:

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

5.2.3.3 Overwintering Avifauna Species

The wetland habitats were noted with very low abundances of overwintering avifauna species during the current monitoring period which implied very low utilization of these areas. In terms of species richness, majority of the wetland habitats were also utilized by very low number of overwintering species (Table 5.11). The low values recorded during this period might be attributed to the moving out of the overwintering birds from their wintering grounds (including the monitoring area) to resume their migration process.

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
	Upper course of Shan Pui River along YLIE	VL	VL
Ponds	Active Ponds adjacent to Project site in Fung Lok Wai	VL	VL
	Active Ponds North to Nullah 2 in Fung Lok Wai	VL	VL
	Inactive Ponds in Fung Lok Wai	VL	VL
	Active and Inactive Ponds in Nam Sang Wai	VL	VL
Mangrove	Mangrove within Assessment Area	VL	VL
Reedbed	Reedbed in Nam Sang Wai	VL	VL

Notes:

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

5.2.3.4 Noise Levels

Noise levels L_{Aeq} (30 min) recorded on 17 May 2021 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	Start Time	L_{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1	12:00	61.2
	FLW2	12:00	55.7
	FLW3	12:00	55.1
	FLW4	11:30	54.8
	FLW5	11:00	58.5
	FLW6	10:00	46.6
	FLW7	10:00	47
	NSW1	08:00	53.2
	SP/NSW1	08:00	54.8
	SP/NSW2	07:50	58.8
	SP/NSW3	07:50	51

6. LANDSCAPE AND VISUAL

6.1 Audit Requirements

6.1.1 According to the EM&A Manual, 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.

6.2 Results and Observations

6.2.1 To monitor and audit the implementation of landscape and visual mitigation measures, four weekly landscape and visual site audits were carried out on 5, 11, 20 and 25 May 2021.

6.2.2 No outstanding issues were reported during the reporting month. Details of observations recorded during the site inspections are summarized in **Appendix M**.

7. SITE INSPECTION AND AUDIT

7.1 Site Inspection

- 7.1.1 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.
- 7.1.2 In the reporting month, four site inspections were carried out on 5, 11, 20 and 25 May 2021.
- 7.1.3 No outstanding issues were reported during the reporting month. Details of observations recorded during the site inspections are summarized in **Appendix M**.

7.2 Advice on the Solid and Liquid Waste Management Status

- 7.2.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.
- 7.2.2 The waste generated by the construction and disposal ground is presented in **Table 7.1**.

Table 7.1 – 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)

- 7.2.3 The monthly summary of waste flow table is detailed in **Appendix I**.
- 7.2.4 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.
- 7.2.5 The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.

8. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

8.1 Environmental Exceedance

- 8.1.1 No Action / Limit Level exceedance was recorded for 1-hr TSP level at AM1 and AM2 in the reporting month.
- 8.1.2 No Action / Limit Level exceedance was recorded for construction noise at CM1, CM2 and CM3 in the reporting month.
- 8.1.3 No Action and Limit Level exceedance was recorded for water quality at M2 in the reporting month.
- 8.1.4 Three Action Level exceedance were recorded for water quality in the reporting month. The exceedance were recorded at M1 on 22 May 2021 and recorded at M3 on 27 and 29 May 2021. Six Limit Level exceedance were recorded for water quality in the reporting month. The exceedance were recorded at M1 and M3 on 25 and 27 May 2021. It was found that these exceedances were not project-related.
- 8.1.5 No Action / Limit exceedance was recorded for noise levels at stations (NMS1 and NMS2) in close proximity to the active ardeid night roosts.
- 8.1.6 Two exceedances in Action Level were recorded for the ecological monitoring of birds on 17 May 2021, in which significant declines were found in species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community; and species diversity of species of conservation importance only. However, the exceedances were not project-related.

8.2 Complaints, Notification of Summons and Prosecution

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

9. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE

9.1 Implementation Status

The Contractor had implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EP and EM&A Manuals. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix J**.

10. FUTURE KEY ISSUES

10.1 Construction Programme for the Next Three Month

- Driven piling work at IW;
- Demolition of PST no. 7 & 8 tanks;
- Demolition of main store;
- Demolition of carpark cover;
- Demolition of workshop;
- Sheet piling;
- Construction of temporary storage area, admin. Building and workshop;
- Installation of sheet piles for Zone 1 diversion;
- Pre-drilling works at PST;
- Environmental drill holes inside main store and workshop;
- Trench excavation for UU diversion; and
- Breaking of existing road pavement at PST.

10.2 Key Issues for the Coming Month

10.2.1 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.

10.3 Monitoring Schedules for the Next Three Month

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

11. CONCLUSION AND RECOMMENDATION

11.1 Conclusions

- 11.1.1 1-hour TSP impact monitoring were carried out in the reporting month. No Action / Limit Level exceedance at AM1 and AM2 was recorded during the period.
- 11.1.2 Construction noise monitoring were carried out in the reporting month. No Action / Limit Level exceedance at CM1, CM2 and CM3 was recorded during the period.
- 11.1.3 Water quality monitoring at M1, M2 and M3 were carried out in the reporting month. No Action / Limit Level exceedance at M2 was recorded during the period. Three Action Level exceedance were recorded for water quality in the reporting month. The exceedance were recorded at M1 on 22 May 2021 and recorded at M3 on 27 and 29 May 2021. Six Limit Level exceedance were recorded for water quality in the reporting month. The exceedance were recorded at M1 and M3 on 25 and 27 May 2021. It was found that these exceedances were not project-related.
- 11.1.4 For the active ardeid night roost monitoring, one active night roost site (ANR1) was observed within the Survey Area, 100 m from the Project boundary. This was located in the mangrove strip east of the Project boundary. This was used by the different ardeid species such as the Eastern Cattle Egret, Little Egret, Chinese Pond Heron and Great Egret. PRA of Great Egret individuals was noted on the exposed mudflat northeast of the Project boundary while no PRA was noted at the east portion of the Project boundary. For the final night roost, different times were observed for the different species such that it started around as early as 18:10 for both Eastern Cattle Egret and Little Egret; 18:15 for Chinese Pond Heron; and around 18:30 for the Great Egret. The other night roost (ANR2) located at the northeast of the Project boundary, as noted to be active last April 2021, was not used by the ardeids during the current monitoring period. This change was, however, not caused by the Project's construction activities as the recorded noise level ((53.0 dB(A)) (Table 5.3) near ANR2 was lower with respect to the action limit level of 65.5 dB(A) which more likely to cause behavioural responses of some kind by the ardeids (Wright et al. 2010). Furthermore, ardeid night roosts are known for their highly changeable locations and roosting population. Fluctuation of roosting population, abandonment or change in locations of roosting site without major nearby environmental change has been observed in several roosts and locations in Hong Kong (HKJC, 2005; Lee et al., 2004; MTRC, 2010).

- 11.1.5 For the ecological bird monitoring, a decrease in abundance was noted in this period relative to the baseline May 2017 results of the point count method, however, the decrease was not statistically significant. In terms of Shannon diversity index, significant increase in values were noted for the transect walk method while significant decrease of values were observed in point count method with reference to baseline values. The significant decrease in species diversity in point count method was however, not project-related. The significant decrease could be due to a wide range of environmental and anthropogenic factors in the breeding grounds, stopover sites, and wintering grounds along the migratory pathway of the majority of these waterbird species (Catry et al., 2013; Howard et al., 2020; Sung Y-H et. al., 2021). For the habitat utilization of species with conservation importance, all of the wetland habitats were noted with very low abundances which then indicated subsequent very low utilization of these areas. With respect to the habitat utilization of overwintering avifauna species, the wetland habitats were also noted with very low abundances of these species which implied very low utilization of these areas. In terms of species richness (total number of species), majority of the wetland habitats were also utilized by very low number of species with conservation importance and overwintering species.
- 11.1.6 Four environmental site inspections were carried out in the reporting month. Recommendations on mitigation measures for Permit/ Licenses were given to the Contractor for remediating the deficiencies identified during the site inspections.
- 11.1.7 Four landscape and visual site audits were carried out in the reporting month.
- 11.1.8 Referring to the Contractor's information, no environmental complaint, notification of summons and successful prosecution was received in the reporting month.

11.2 Comment and Recommendations

- 11.2.1 The recommended environmental mitigation measures, as proposed in the EIA reports and EM&A Manuals 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.
- 11.2.2 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality Impact

- The contractor was reminded to properly cover the excavated material and trial trench.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Mitigation measures should be provided to intercept silty runoff from the piling area.
- Enhance mitigation by providing sandbags along inner edge of U channel to prevent inflow of silty runoff.

- Silty deposit on road and in gullies should be cleaned.
- Mitigation measures should be provided to prevent runoff from the MIC/ temporary administration building area flowing to the open channel outside.

Chemical and Waste Management

- No specific observation was identified in the reporting month.

Active Ardeid Night Roost Impact

- No specific observation was identified in the reporting month.

Ecology of Birds Impact

- No specific observation was identified in the reporting month.

Land Contamination

- No specific observation was identified in the reporting month.

Landscape and Visual Impact

- The contractor was reminded to provide protection zones for trees near the new workshop/ storage areas.

Hazard to Life

- No specific observation was identified in the reporting month.

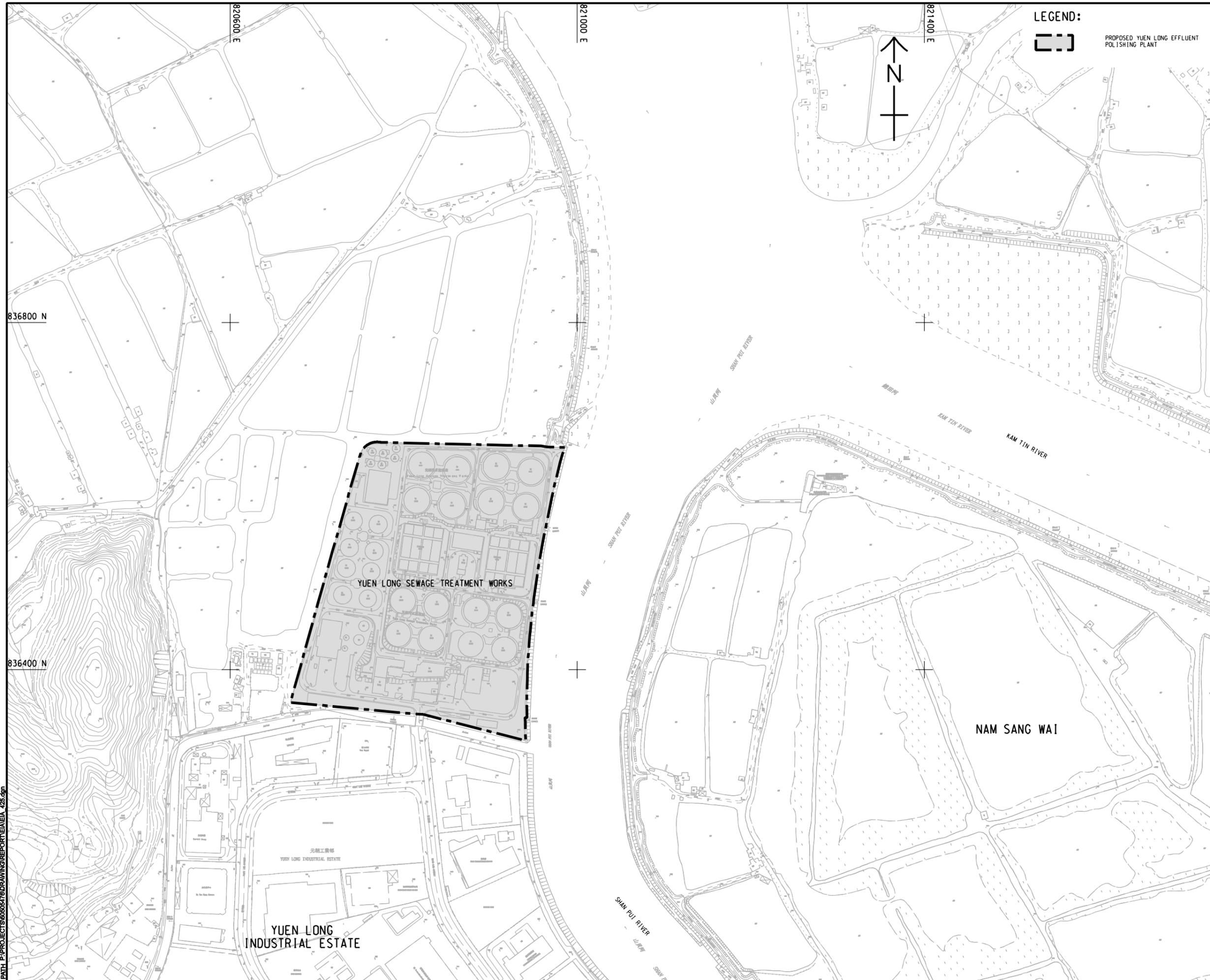
Permit/ Licenses

- No specific observation was identified in the reporting month.

Figure 1

General Layout of the Proposed Yuen Long
Effluent Polishing Plant

Plot File by: SongYN 2018/02/27
 PATH: P:\PROJECTS\6056547\DRAWING\REPORT\EA\EA_425.dgn
 Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



LEGEND:
 PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

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

CLIENT
 渠務署
 Drainage Services Department

CONSULTANT
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分判工程顧問公司

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE
 1:2000
KEY PLAN

DIMENSION UNIT
 METRES

PROJECT NO.
 60505476

CONTRACT NO.
 CE 3/2015 (DS)

SHEET TITLE
 LOCATION OF PROPOSED YUEN LONG EFFLUENT POLISHING PLANT

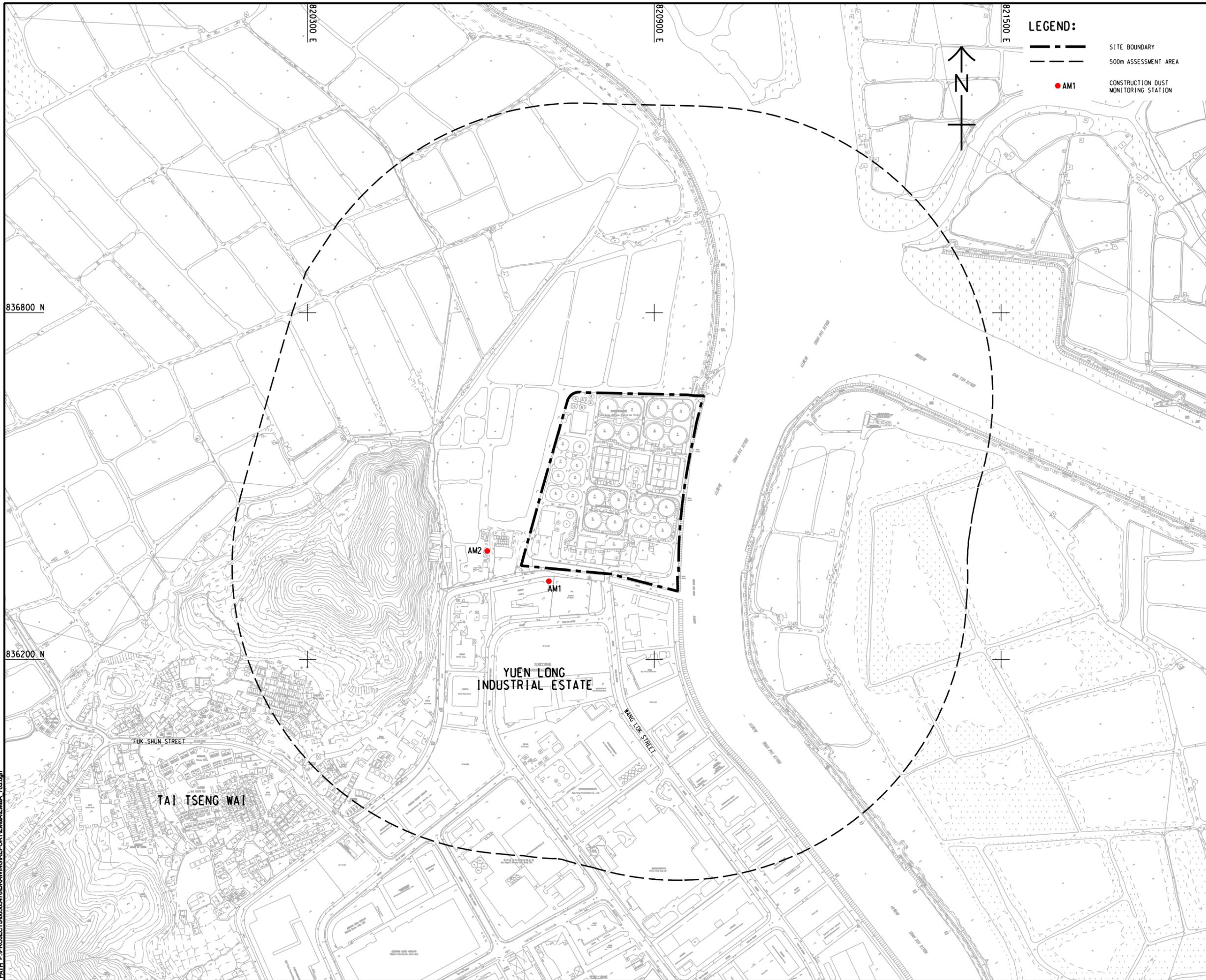
SHEET NUMBER

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM in writing. AECOM accepts no responsibility, and denies any liability whatsoever, to any party, that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the master dimensions.

Figure 2

Air Quality Monitoring Locations

ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 836800 N
 836200 N
 P:\PROJECTS\60565476\DRAWING\REPORT\EM\EA\EA_703.dgn
 11/29
 P:\PROJECTS\60565476\DRAWING\REPORT\EM\EA\EA_703.dgn



LEGEND:

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



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

CLIENT
 業主
 渠務署
 Drainage Services Department

CONSULTANT
 工程顧問公司
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分門工程顧問公司

ISSUE/REVISION
 修訂

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

STATUS
 階段

SCALE
 比例
 A1 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60505476

CONTRACT NO.
 合約編號
 CE 3/2015 (DS)

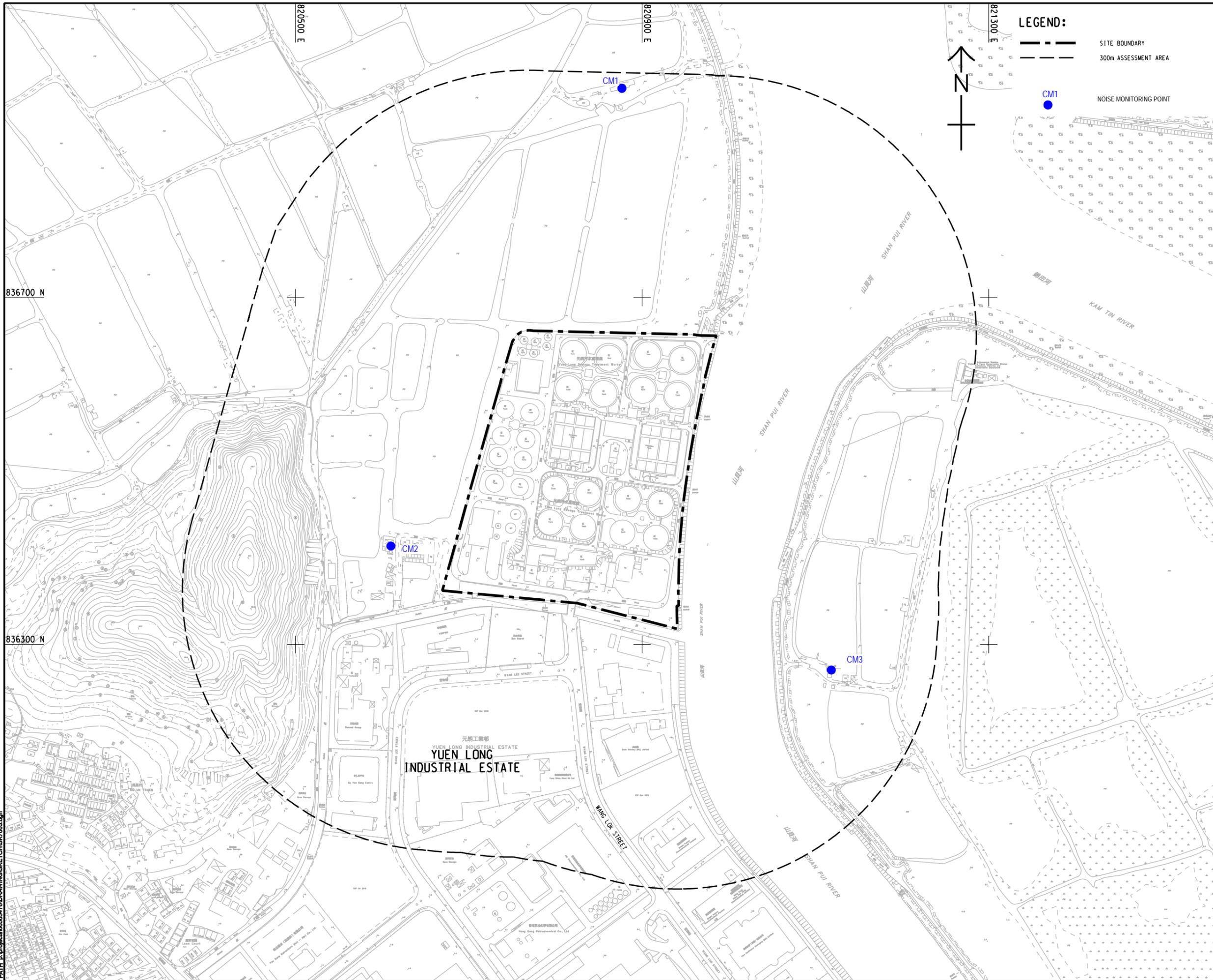
SHEET TITLE
 圖紙名稱
 LOCATION OF CONSTRUCTION DUST MONITORING STATIONS

SHEET NUMBER
 圖紙編號

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as required by law. AECOM accepts no responsibility, and disclaims any liability whatsoever, to any party, for loss or damage of any kind, including consequential, special or punitive damages, arising from the use of this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the related dimensions.

Figure 3

Noise Monitoring Locations



LEGEND:

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

AECOM

PROJECT
項目

YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

CLIENT
業主

 渠務署
Drainage Services Department

CONSULTANT
工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE
比例

A1 1:2000

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN

PROJECT NO.
項目編號

60505476

CONTRACT NO.
合約編號

CE 3/2015 (DS)

SHEET TITLE
圖紙名稱

LOCATIONS OF NOISE MONITORING POINTS

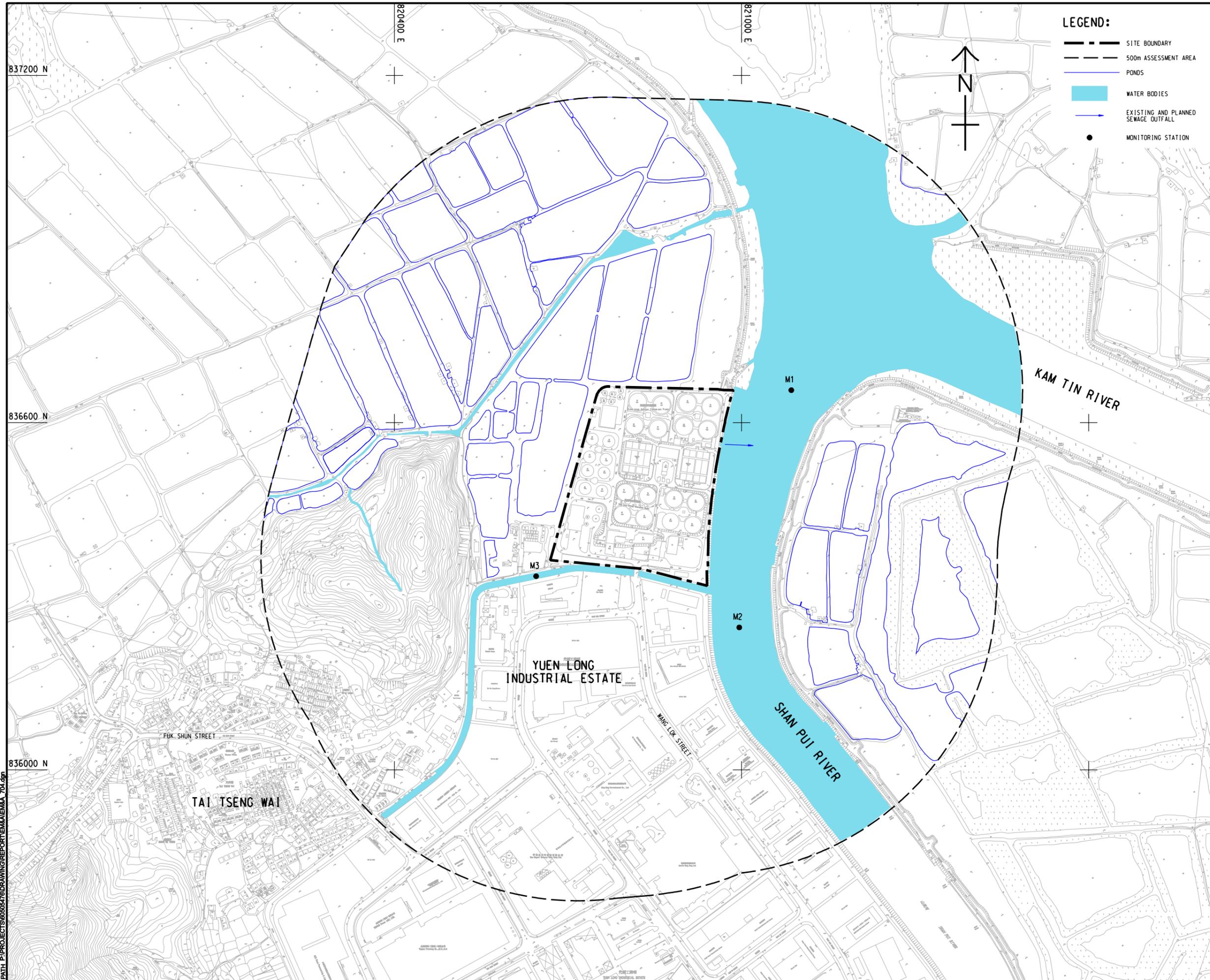
SHEET NUMBER
圖紙編號

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM in writing. AECOM accepts no responsibility, and does not warrant, for any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

Figure 4

Water Quality Monitoring Locations

Pld File by: Guo YU 12/18
 PATH: P:\PROJECTS\60505476\DRAWING\REPORT\EMBA\EMBA_704.dgn
 ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:



LEGEND:

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



AECOM

PROJECT
 項目

YUEN LONG EFFLUENT POLISHING PLANT - INVESTIGATION, DESIGN AND CONSTRUCTION

CLIENT
 業主

渠務署
 Drainage Services Department

CONSULTANT
 工程顧問公司

AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分門工程顧問公司

ISSUE/REVISION
 更改

I/R	DATE	DESCRIPTION	CHK.

STATUS
 階段

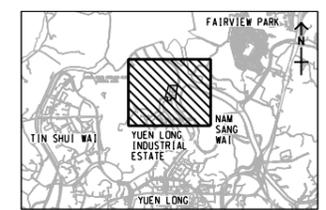
SCALE
 比例

A3 1: 8000

DIMENSION UNIT
 尺寸單位

METRES

KEY PLAN A3 1: 180000
 索引圖



PROJECT NO.
 項目編號

60505476

CONTRACT NO.
 合約編號

CE 3/2015 (DS)

SHEET TITLE
 圖名

LOCATIONS OF WATER QUALITY MONITORING STATIONS FOR CONSTRUCTION PHASE

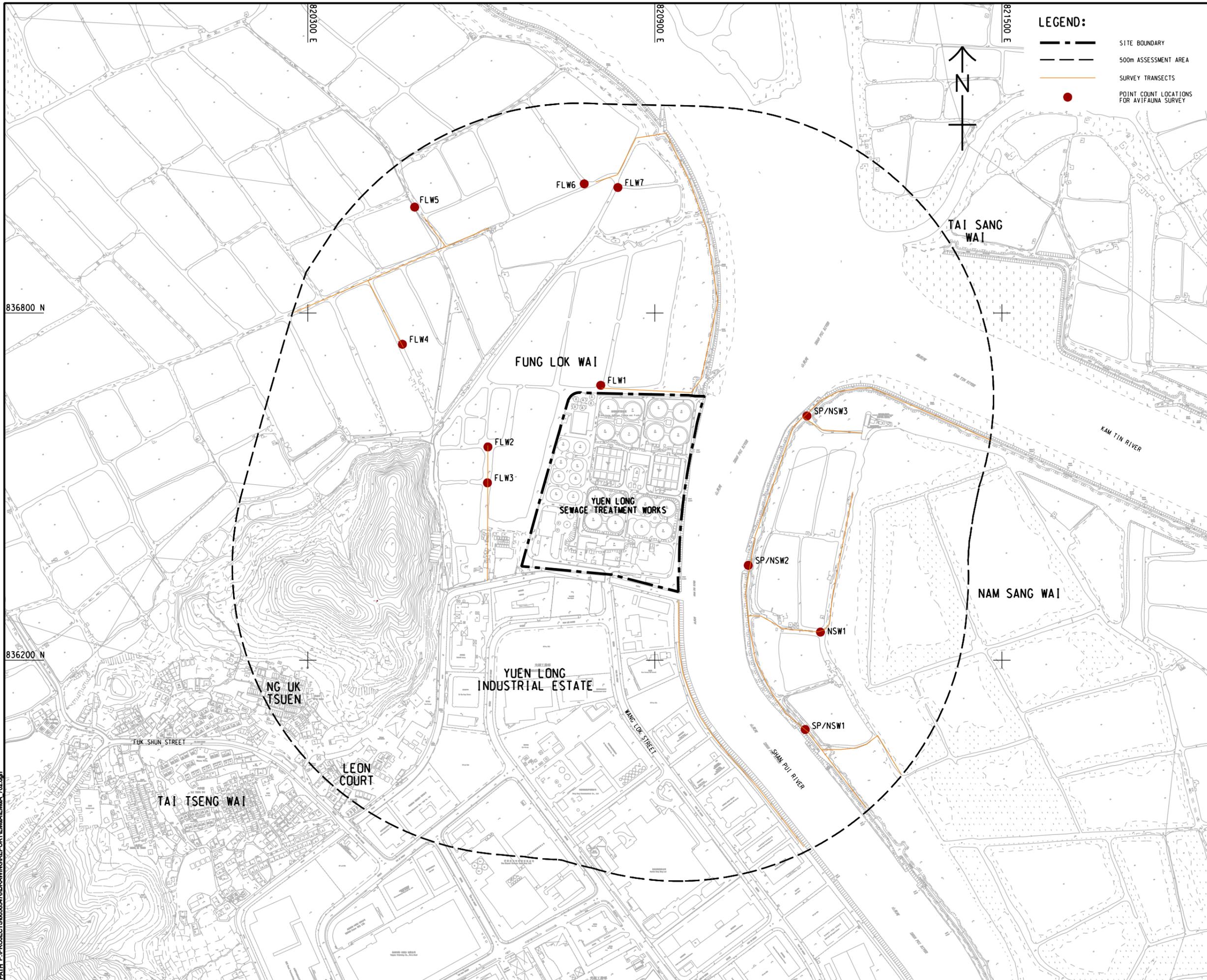
SHEET NUMBER
 圖號

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party, for loss or damage of any kind, including consequential loss, arising from the use of this drawing without AECOM's express written consent. All measurements must be obtained from the stated dimensions.

Figure 5

Ecology Monitoring Locations

ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 836800 N
 836200 N
 Pld File by: ZENGFY 2018/05/30
 PATH: P:\PROJECTS\60505476\DRAWING\REPORT\EM\EN\EA_702.dgn



LEGEND:

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



AECOM

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

CLIENT
 業主
 渠務署
 Drainage Services Department

CONSULTANT
 工程顧問公司
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分判工程顧問公司

ISSUE/REVISION
 修訂

I/R	DATE	DESCRIPTION	CHK.

STATUS
 階段

SCALE
 比例
 A1 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60505476

CONTRACT NO.
 合約編號
 CE 3/2015 (DS)

SHEET TITLE
 圖紙名稱
 ECOLOGICAL MONITORING LOCATIONS

SHEET NUMBER
 圖紙編號

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the related dimensions.

Appendix A

Construction Programme

Work ID	Activity Name	Budget	Start Date	Finish Date	Actual Date	Total Effort	Gantt Chart (Jan to Dec)																																				
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec																									
YL Effluent Polishing Plant - Main Works Stage 1 - Detailed Works Programme							2202	27-Oct-20	09-Nov-27	26-Oct-20	09-Nov-27	0																															
Contract Data Part 1							2569	27-Oct-20	09-Nov-27	26-Oct-20	09-Nov-27	0																															
Commencement Date							2569	27-Oct-20	09-Nov-27	26-Oct-20	09-Nov-27	0																															
CD1	Contract Date	0	27-Oct-20	26-Oct-20	09-Nov-27	0	◆ Contract Date																																				
CD2	Starting Date	0	09-Nov-20	09-Nov-20	09-Nov-27	0	◆ Starting Date																																				
CD3	Contract Completion	0	09-Nov-26	09-Nov-26	09-Nov-27	0	◆ Contract Completion																																				
CD4	Establishment Period (12 months)	0	09-Nov-27	09-Nov-27	09-Nov-27	0	◆ Establishment																																				
CD5	Defect Date (12 months)	0	09-Nov-27	09-Nov-27	09-Nov-27	0	◆ Defect Date																																				
Access Dates							1599	09-Nov-20	27-Mar-25	09-Nov-20	27-Mar-25	0																															
ADP1	Portion 1 (sd)	0	09-Nov-20*	09-Nov-20	09-Nov-20	0	◆ Portion 1 (sd)																																				
ADWA1	Work Area WA1 (sd)	0	09-Nov-20*	09-Nov-20	09-Nov-20	0	◆ Work Area WA1 (sd)																																				
ADWA2	Work Area WA2 (sd) (new site possession) validity for 12 months and subject to renewal	365	05-Mar-21*	04-Mar-22*	05-Mar-21	04-Mar-22	Work Area WA2 (sd) (new site possession) validity for 12 months and subject to renewal																																				
ADP2	Portion 2 (sd+211d)	0	08-Jun-21*	08-Jun-21	08-Jun-21	0	◆ Portion 2 (sd+211d)																																				
ADP5	Portion 5 (sd+944d)	0	11-Jun-23*	11-Jun-23	11-Jun-23	0	◆ Portion 5 (sd+944d)																																				
ADP3	Portion 3 (sd+1218d)	0	11-Mar-24*	10-Mar-24	10-Mar-24	0	◆ Portion 3 (sd+1218d)																																				
ADP4	Portion 4 (sd+1599d)	0	27-Mar-25*	27-Mar-25	27-Mar-25	0	◆ Portion 4 (sd+1599d)																																				
Contract Key Dates							1764	08-Apr-21	05-Feb-26	08-Apr-21	05-Feb-26	0																															
CKD1	KD1 - Completion of Noise Barriers (sd+150d) (8 Apr 21)	0	08-Apr-21*	08-Apr-21	08-Apr-21	0	◆ KD1 - 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*	06-May-21	06-May-21	0	◆ KD2 - Erection of Bird Curtain in vicinity of Mainstream Bioreactor, Ancillary facilities & Tertiary Treatment(6 May 21)																																				
CKD10	KD10 - Completion of Civil & Structural works of roof floor of sludge thickening bldg(8Jan24)	0	08-Jan-24*	08-Jan-24	08-Jan-24	0	◆ KD10 - Completion of Civil & Structural works of roof floor of sludge thickening bldg(8Jan24)																																				
CKD3	KD3 - Early Commissioning of Inlet Works100,000m3/d at ADWF,PST-54,000m3/d at ADWF, Civil, struct.,E&M & BS (11Mar 24)	0	11-Mar-24*	11-Mar-24	11-Mar-24	0	◆ KD3 - Early Commissioning of Inlet Works100,000m3/d at ADWF,PST-54,000m3/d at ADWF, Civil, struct.,E&M & BS (11Mar 24)																																				
CKD5	KD5 - Completion of Civil & Structural works of R/F of Inlet works (separate contractor to install PV Panels) (8 Jan 25)	0	08-Jan-25*	08-Jan-25	08-Jan-25	0	◆ KD5 - 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	08-Jul-25	0	◆ KD8 - 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	06-Nov-25	0	◆ KD9 - 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	08-Jan-26	0	◆ KD7 - Completion of Civil & structural works of R/F of Mainstream Bioreactor system and Ancillary facilities (8 Jan 26)																																				
CKD4	KD4 - Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at AWDF (5 Feb 26)	0	05-Feb-26*	05-Feb-26	05-Feb-26	0	◆ KD4 - Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at AWDF (5 Feb 26)																																				
CKD6	KD6 - Completion of Civil & Structural works of R/F of PST (separate contractor to install PV Panels) (5 Feb 26)	0	05-Feb-26*	05-Feb-26	05-Feb-26	0	◆ KD6 - Completion of Civil & Structural works of R/F of PST (separate contractor to install PV Panels) (5 Feb 26)																																				
Contract Section Completion							1494	06-Oct-22	08-Nov-26	06-Oct-22	08-Nov-26	0																															
CSC1	Section 1 - Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.) (sd+696d=06OCT2022)	0	06-Oct-22*	06-Oct-22	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	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	08-Nov-26	0	◆ Section 3 - Remainder of the Works, except Landscape Softworks & Establishment Works (sd+2190d=08NOV2026)																																				
Environmental Constraints							1969	09-Nov-20	31-Mar-26	09-Nov-20	31-Mar-26	0																															
NMM-2135	PS 1.105A Noise Mitigation Measures 2020-2021	143	09-Nov-20*	31-Mar-21	09-Nov-20	31-Mar-21	PS 1.105A Noise Mitigation Measures 2020-2021																																				
EBS-2145	Egrets Breeding Season 2021	184	01-Mar-21*	31-Aug-21	01-Mar-21	31-Aug-21	Egrets Breeding Season 2021																																				
NMM-2145	PS 1.105A Noise Mitigation Measures 2021-2022	151	01-Nov-21*	31-Mar-22	01-Nov-21	31-Mar-22	PS 1.105A Noise Mitigation Measures 2021-2022																																				
EBS-2155	Egrets Breeding Season 2022	184	01-Mar-22*	31-Aug-22	01-Mar-22	31-Aug-22	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	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	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	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	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	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	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	PS 1.105A Noise Mitigation Measures 2025-2026																																				
Planned Completion							2039	08-Apr-21	07-Nov-26	08-Apr-21	08-Nov-26	1																															
Planned Key Dates							1764	08-Apr-21	05-Feb-26	08-Apr-21	05-Feb-26	0																															
PKD1	KD1 - Completion of Noise Barriers (sd+150d) (8 Apr 21)	0	08-Apr-21*	08-Apr-21	08-Apr-21	0	◆ KD1 - 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	22-Apr-21*	06-May-21	06-May-21	14	◆ KD2 - 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	10-Dec-22*	08-Jan-25	08-Jan-25	760	◆ KD5 - Completion of Civil & Structural works of R/F of Inlet works (separate contractor to install PV Panels) (8 Jan 25)																																				
PKD10	KD10 - Completion of Civil & Structural works of roof floor of sludge thickening bldg(8Jan24)	0	27-Nov-23*	08-Jan-24	08-Jan-24	42	◆ KD10 - Completion of Civil & Structural works of roof floor of sludge thickening bldg(8Jan24)																																				
PPKD3	KD3 - Early Commissioning of Inlet Works100,000m3/d at ADWF,PST-54,000m3/d at ADWF, Civil, struct.,E&M & BS (11Mar 24)	0	11-Mar-24*	11-Mar-24	11-Mar-24	0	◆ KD3 - Early Commissioning of Inlet Works100,000m3/d at ADWF,PST-54,000m3/d at ADWF, Civil, struct.,E&M & BS (11Mar 24)																																				
PKD7	KD7 - Completion of Civil & structural works of R/F of Mainstream Bioreactor system and Ancillary facilities (8 Jan 26)	0	16-Apr-25*	08-Jan-26	08-Jan-26	267	◆ KD7 - 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	08-Jul-25	0	◆ KD8 - 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	28-Aug-25*	06-Nov-25	06-Nov-25	70	◆ KD9 - Completion of Civil & Structural works of Administration Building (separate contractor E&M & BS)(6 Nov 25)																																				
PKD6	KD6 - Completion of Civil & Structural works of R/F of PST (separate contractor to install PV Panels) (5 Feb 26)	0	04-Feb-26*	05-Feb-26	05-Feb-26	1	◆ KD6 - Completion of Civil & Structural works of R/F of PST (separate contractor to install PV Panels) (5 Feb 26)																																				
PPKD4	KD4 - Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at AWDF (5 Feb 26)	0	05-Feb-26*	05-Feb-26	05-Feb-26	0	◆ KD4 - Early Commissioning of Sewage & Sludge Treatment Facilities >60,000m3/d at AWDF (5 Feb 26)																																				
Planned Section Completion							1502	27-Sep-22	07-Nov-26	06-Oct-22	08-Nov-26	1																															
PSC1	Section 1 - Civil, Structural and Architectural works of CLP Substations No. 1 & 2 (for CLP install.) (sd+696d=06OCT2022)	0	27-Sep-22*	06-Oct-22	06-Oct-22	9	◆ 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	15-Sep-26*	08-Nov-26	08-Nov-26	54	◆ 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	07-Nov-26*	08-Nov-26	08-Nov-26	1	◆ Section 3 - Remainder of the Works, except Landscape Softworks & Establishment Works (sd+2190d=08NOV2026)																																				
Preliminary and Preparation Works							1443	27-Oct-20	05-Jun-25	26-Oct-20	08-Nov-27	759																															
Subletting							767	27-Oct-20	02-Dec-22	26-Oct-20	13-Jan-26	1138																															
SUB-110	Prebid - Ground Investigation Works	0	27-Oct-20*	26-Oct-20	26-Oct-20	0	◆ Prebid - Ground Investigation Works																																				
SUB-120	Prebid - Demolition of existing building and structure	0	27-Oct-20*	26-Oct-20	26-Oct-20	0	◆ Prebid - Demolition of existing building and structure																																				
SUB-130	Prebid - Design, Supply and Installation of Noise Barrier and Bird Curtain	0	27-Oct-20*	26-Oct-20	26-Oct-20	0	◆ Prebid - Design, Supply and Installation of Noise Barrier and Bird Curtain																																				
SUB-140	Prebid - Piling works for Inlet works and PST	0	27-Oct-20*	26-Oct-20	26-Oct-20	0	◆ Prebid - Piling works for Inlet works and PST																																				
SUB-150	Prebid - E&M works	0	27-Oct-20*	26-Oct-20	26-Oct-20	0	◆ Prebid - E&M works																																				
SUB-160	Submit/Approve Sub-letting Procedures	60	09-Nov-20	07-Jan-21	09-Nov-20	07-Jan-21	◆ Submit/Approve Sub-letting Procedures																																				
SUB-180	Subletting for MIC works	40	08-Jan-21	16-Feb-21	09-Jan-21	17-Feb-21	◆ Subletting for MIC works																																				
SUB-190	Subletting for Landscaping works	30	08-Jan-21	06-Feb-21	21-Jan-21	19-Feb-21	◆ Subletting for Landscaping works																																				
SUB-200	Subletting for UU detection	44	08-Jan-21	20-Feb-21	15-Feb-21	30-Mar-21	◆ Subletting for UU detection																																				
SUB-210	Subletting for Design Consultant	22	08-Jan-21	29-Jan-21	08-Jan-21	29-Jan-21	◆ Subletting for Design Consultant																																				
SUB-220	Subletting for Sheet piling works for IW, PST	150	08-Jan-21	06-Jun-21	14-Feb-21	13-Jul-21	◆ Subletting for Sheet piling works for IW, PST																																				
SUB-230	Subletting for CLP Substation No.1 & 2 Structure	100	08-Jan-21	17-Apr-21	27-Jun-21	04-Oct-21	◆ Subletting for CLP Substation No.1 & 2 Structure																																				



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

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

Project ID : DWP.DP1_210422
Layout : DC201910 Detailed Programme
Page 1 of 24

Detailed Works Programme			
Date	Revision	Checked	Approved
15-Mar-21	Rev. 0		
21-Apr-21	Rev 1		

Work ID	Activity Name	Order	Start Date	End Date	Latest	Current	Total	2019												2020												2021												2022															
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
AIP-370	Architecture - Obtain Approval	7	30-Mar-21	05-Apr-21	29-Jun-21	05-Jul-21	91	Architecture - Obtain Approval																																																			
Package 11A - Civil, Structural & Geotechnical								81	30-Jan-21	20-Apr-21	14-Feb-21	05-May-21	15																																														
AIP-380	Civil, Structural & Geotechnical - Prepare & Submission for PM's review	25	30-Jan-21	23-Feb-21	14-Feb-21	10-Mar-21	15	Civil, Structural & Geotechnical - Prepare & Submission for PM's review																																																			
AIP-390	Civil, Structural & Geotechnical - Review by PM's & ICE review (28 d + 7d)	35	24-Feb-21	30-Mar-21	11-Mar-21	14-Apr-21	15	Civil, Structural & Geotechnical - Review by PM's & ICE review (28 d + 7d)																																																			
AIP-400	Civil, Structural & Geotechnical - Resubmission for further review	14	31-Mar-21	13-Apr-21	15-Apr-21	28-Apr-21	15	Civil, Structural & Geotechnical - Resubmission for further review																																																			
AIP-410	Civil, Structural & Geotechnical - Obtain Approval	7	14-Apr-21	20-Apr-21	29-Apr-21	05-May-21	15	Civil, Structural & Geotechnical - Obtain Approval																																																			
DDA								1496	06-Apr-21	10-May-25	18-May-21	31-Mar-26	325																																														
Package 1 - General Architecture, Civil, Structural & Geotechnical								122	21-Apr-21	20-Aug-21	10-Jun-21	09-Oct-21	50																																														
DDA-100	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Prepare & Submission for PM's review	45	21-Apr-21	04-Jun-21	10-Jun-21	24-Jul-21	50	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Prepare & Submission for PM's review																																																			
DDA-110	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Review by PM's & ICE review (28 d + 7d)	35	05-Jun-21	09-Jul-21	25-Jul-21	28-Aug-21	50	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Review by PM's & ICE review (28 d + 7d)																																																			
DDA-120	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Resubmission for further review	14	10-Jul-21	23-Jul-21	29-Aug-21	11-Sep-21	50	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Resubmission for further review																																																			
DDA-1080	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Submit to GEO for comment and approval	28	24-Jul-21	20-Aug-21	12-Sep-21	09-Oct-21	50	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Submit to GEO for comment and approval																																																			
DDA-130	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Obtain Approval	7	14-Aug-21	20-Aug-21	03-Oct-21	09-Oct-21	50	Contractor's Design for General Architecture, Civil, Structural & Geotechnical - Obtain Approval																																																			
Package 2 - Tertiary Treatment System								441	07-Aug-21	21-Oct-22	10-Oct-21	19-Dec-23	424																																														
DDA-170	Civil Req. for TTS (foundation design) - Prepare(60d), Sub. & Review(45d), Comment & Resub.(14d), GEO(28d)&Approval (7d)	154	07-Aug-21	07-Jan-22	29-Jun-22	29-Jun-22	326	Civil Req. for TTS (foundation design) - Prepare(60d), Sub. & Review(45d), Comment & Resub.(14d), GEO(28d)&Approval (7d)																																																			
DDA-180	Civil Req. for TTS (Superstruct. design) - Prepare (130d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	189	07-Aug-21	11-Feb-22	02-Jul-22	06-Jan-23	329	Civil Req. for TTS (Superstruct. design) - Prepare (130d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-140	Architectural for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	21-Aug-21	24-Dec-21	10-Oct-21	12-Feb-22	50	Architectural for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-150	Foundation for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	25-Dec-21	29-Apr-22	13-Feb-22	18-Jun-22	50	Foundation for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-190	P&ID for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	12-Feb-22	17-Jun-22	12-Apr-23	15-Aug-23	424	P&ID for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-200	Mechanical for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	12-Feb-22	17-Jun-22	16-Aug-23	19-Dec-23	550	Mechanical for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-210	Electrical & Control for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	12-Feb-22	17-Jun-22	16-Aug-23	19-Dec-23	550	Electrical & Control for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-160	Civil & Structural for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	13-Feb-22	18-Jun-22	19-Jun-22	22-Oct-22	126	Civil & Structural for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-220	Building Services (BS) for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	18-Jun-22	21-Oct-22	16-Aug-23	19-Dec-23	424	Building Services (BS) for TTS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
Package 3 - Mainstream Bio-Reactor System								331	06-Apr-21	02-Mar-22	06-Jul-21	27-Oct-23	604																																														
DDA-230	Architectural for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	06-Apr-21	09-Aug-21	06-Jul-21	08-Nov-21	91	Architectural for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-240	Foundation for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d), GEO (28d) & Approval (7d)	154	06-Apr-21	06-Sep-21	06-Jul-21	06-Dec-21	91	Foundation for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d), GEO (28d) & Approval (7d)																																																			
DDA-250	Civil & Structural for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	11-May-21	13-Sep-21	18-Aug-21	21-Dec-21	99	Civil & Structural for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-260	Civil Req. for MBS (foundation design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	14-Sep-21	17-Jan-22	22-Dec-21	26-Apr-22	99	Civil Req. for MBS (foundation design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-270	Civil Req. for MBS (Superstruct. design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	14-Sep-21	17-Jan-22	14-Apr-22	17-Aug-22	212	Civil Req. for MBS (Superstruct. design) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-280	P&ID for TTS - MBS (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	28-Oct-21	02-Mar-22	24-Jun-23	27-Oct-23	604	P&ID for TTS - MBS (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-290	Mechanical for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	28-Oct-21	02-Mar-22	24-Jun-23	27-Oct-23	604	Mechanical for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-300	Electrical & Control for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	28-Oct-21	02-Mar-22	24-Jun-23	27-Oct-23	604	Electrical & Control for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-310	Building Services (BS) for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	28-Oct-21	02-Mar-22	24-Jun-23	27-Oct-23	604	Building Services (BS) for MBS - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
Package 5A - Master Water Meter Room								658	03-Mar-22	20-Dec-23	12-Jun-24	31-Mar-26	832																																														
DDA-350	Architectural for Master Water Meter Room - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	03-Mar-22	06-Jul-22	12-Jun-24	15-Oct-24	832	Architectural for Master Water Meter Room - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-360	Foundation for Master Water Meter Room - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d), GEO(28d) & Approval (7d)	154	07-Jul-22	07-Dec-22	16-Oct-24	18-Mar-25	832	Foundation for Master Water Meter Room - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d), GEO(28d) & Approval (7d)																																																			
DDA-370	Civil & Struct. for Master Water Meter Room - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	08-Dec-22	12-Apr-23	19-Mar-25	22-Jul-25	832	Civil & Struct. for Master Water Meter Room - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-380	General Arrangement & Civil Req. for MWMR - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	13-Apr-23	16-Aug-23	26-Nov-25	31-Mar-26	958	General Arrangement & Civil Req. for MWMR - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-390	P&ID for MWMR - MBS (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	13-Apr-23	16-Aug-23	23-Jul-25	25-Nov-25	832	P&ID for MWMR - MBS (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-400	Mechanical for MWMR - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	17-Aug-23	20-Dec-23	26-Nov-25	31-Mar-26	832	Mechanical for MWMR - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-410	Electrical & Control for MWMR - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	17-Aug-23	20-Dec-23	26-Nov-25	31-Mar-26	832	Electrical & Control for MWMR - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
Package 5B - Plant Service Water (PSW)								196	07-Aug-21	18-Feb-22	13-Feb-22	19-Dec-23	669																																														
DDA-1050	Civil Requirement Drawings - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	07-Aug-21	10-Dec-21	13-Feb-22	18-Jun-22	190	Civil Requirement Drawings - Prep(60d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																																																			
DDA-1040	Piping & Instrumentation Diagram (P&ID) - Prep(94d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	126	12-Sep-21	15-Jan-22	12-Apr-23	15-Aug-23	577	Piping & Instrumentation Diagram (P&ID) - Prep(94d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																																																			
DDA-1060	Electrical & Control for PSW - Prep(94d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	160	12-Sep-21	18-Feb-22	13-Jul-23	19-Dec-23	669	Electrical & Control for PSW - Prep(94d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																																																			
DDA-1070	Mechanical for PSW - Prep(94d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)	160	12-Sep-21	18-Feb-22	13-Jul-23	19-Dec-23	669	Mechanical for PSW - Prep(94d), Sub.&Review(45d), Comment&Resub (14d) & Approval (7d)																																																			
Package 6 - Sludge Thickening Chemical System								378	06-Apr-21	18-Apr-22	06-Oct-21	18-Oct-22	183																																														
DDA-420	Arch. for STCS, Waste Gas Burner & Guard Hse - Prepare (60d), Sub. & Review(45d), Com. & Resub.(14d) & Approval (7d)	126	06-Apr-21	09-Aug-21	06-Oct-21	08-Feb-22	183	Arch. for STCS, Waste Gas Burner & Guard Hse - Prepare (60d), Sub. & Review(45d), Com. & Resub.(14d) & Approval (7d)																																																			
DDA-430	Found. for STCS, Waste Gas Burner & Guard Hse - Prepare(60d), Sub.&Review(45d), Comment & Resub.(14d), GEO(28d) & Approval (7d)	126	10-Aug-21	13-Dec-21	09-Feb-22	14-Jun-22	183	Found. for STCS, Waste Gas Burner & Guard Hse - Prepare(60d), Sub.&Review(45d), Comment & Resub.(14d), GEO(28d) & Approval (7d)																																																			
DDA-440	Civil & Struct. for STCS, WGB & Guard Hse - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	14-Dec-21	18-Apr-22	15-Jun-22	18-Oct-22	183	Civil & Struct. for STCS, WGB & Guard Hse - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
Package 7 - CLP Substation and 11kV Switchgear House								335	21-Apr-21	21-Mar-22	15-May-21	20-Apr-22	30																																														
DDA-450	Found. for CLP Sub. & 11kV Switchgear Hse - Prepare (60d), Sub.&Review(45d), Comment&Resub.(14d), GEO(28d) & Approval (7d)	126	21-Apr-21	24-Aug-21	21-May-21	23-Sep-21	30	Found. for CLP Sub. & 11kV Switchgear Hse - Prepare (60d), Sub.&Review(45d), Comment&Resub.(14d), GEO(28d) & Approval (7d)																																																			
DDA-460	Civil&Struct. for CLP Sub. & 11kV Switchgear Hse - Prep. (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval(7d)	126	21-May-21	23-Sep-21	20-Jun-21	23-Oct-21	30	Civil&Struct. for CLP Sub. & 11kV Switchgear Hse - Prep. (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval(7d)																																																			
DDA-490	BS for CLP Sub. & 11kV Switchgear Hse - Prepare (152d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	218	02-Jun-21	05-Jan-22	15-Sep-21	20-Apr-22	105	BS for CLP Sub. & 11kV Switchgear Hse - Prepare (152d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-470	Electrical System for all facilities - Prepare (124d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	190	02-Jul-21	07-Jan-22	13-Oct-21	20-Apr-22	103	Electrical System for all facilities - Prepare (124d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-480	UPS System for CLP Sub. & 11kV Switchgear Hse - Prepare (135d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	201	02-Sep-21	21-Mar-22	02-Oct-21	20-Apr-22	30	UPS System for CLP Sub. & 11kV Switchgear Hse - Prepare (135d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
Package 8 - Advance Works and SCADA Relocation								51	16-May-21	05-Jul-21	18-May-21	07-Jul-21	2																																														
DDA-500	Mechanical for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	41	16-May-21	25-Jun-21	28-May-21	07-Jul-21	12	Mechanical for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-510	Electrical & Control for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	41	16-May-21	25-Jun-21	28-May-21	07-Jul-21	12	Electrical & Control for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-520	BS for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	41	16-May-21	25-Jun-21	18-May-21	27-Jun-21	2	BS for Advance Works - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-530	E&M for Advance Works - SCADA Relocation - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	21	15-Jun-21	05-Jul-21	17-Jun-21	07-Jul-21	2	E&M for Advance Works - SCADA Relocation - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
Package 9 - Miscellaneous								126	21-Apr-21	24-Aug-21	03-Mar-25	06-Jul-25	1412																																														
DDA-540	Civil & Structural for Misc. Manholes, Draw Pits, Fence Wall - Prep(60d), Sub. & Review(45d), Comment&Resub(14d) & Approval(7d)	126	21-Apr-21	24-Aug-21	03-Mar-25	06-Jul-25	1412	Civil & Structural for Misc. Manholes, Draw Pits, Fence Wall - Prep(60d), Sub. & Review(45d), Comment&Resub(14d) & Approval(7d)																																																			
Package 10 - SCADA System, CMMS, IDMS, PQEMS								219	26-Sep-21	02-May-22	03-May-23	07-Dec-23	584																																														
DDA-550	Supervisory Control & Data Application (SCADA) System - Prep(60d), Sub. & Review(45d), Comment&Resub (14d) & Approval (7d)	126	26-Sep-21	29-Jan-22	11-Jul-23	13-Nov-23	653	Supervisory Control & Data Application (SCADA) System - Prep(60d), Sub. & Review(45d), Comment&Resub (14d) & Approval (7d)																																																			
DDA-560	Computerised Maintenance Management System (CMMS) - Prep(153d), Sub. & Review(45d), Comment&Resub (14d) & Approval (7d)	219	26-Sep-21	02-May-22	03-May-23	07-Dec-23	584	Computerised Maintenance Management System (CMMS) - Prep(153d), Sub. & Review(45d), Comment&Resub (14d) & Approval (7d)																																																			
DDA-570	Information and Document management System (IDMS) - Prep(153d), Sub. & Review(45d), Comment&Resub (14d) & Approval (7d)	119	26-Sep-21	22-Jan-22	11-Aug-23	07-Dec-23	684	Information and Document management System (IDMS) - Prep(153d), Sub. & Review(45d), Comment&Resub (14d) & Approval (7d)																																																			
DDA-580	Power Quality & Energy Management System (PQEMS) - Prep(60d), Sub. & Review(45d), Comment&Resub (14d) & Approval (7d)	119	27-Oct-21	22-Feb-22	11-Aug-23	07-Dec-23	653	Power Quality & Energy Management System (PQEMS) - Prep(60d), Sub. & Review(45d), Comment&Resub (14d) & Approval (7d)																																																			
Package 11 - Building Services								497	01-Jun-21	10-Oct-22	09-Oct-21	03-Mar-23	144																																														
DDA-600	BS for Sludge Thickening Building (STB) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)	126	01-Jun-21	04-Oct-21	09-Feb-22	14-Jun-22	253	BS for Sludge Thickening Building (STB) - Prepare (60d), Sub. & Review(45d), Comment & Resub.(14d) & Approval (7d)																																																			
DDA-620	BS for Biogas Holder (BH) - Prepare (

Work ID	Activity Name	Duration	Start	Finish	Latest	Earliest	Total Effort	Gantt Chart																	
								2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030						
TS-1100	System Architecture for YLEPP SCADA System - Prep(144d), Sub.&Review(45d), Comment&Resub (14d)&Approval (7d)	210	31-Oct-21	28-May-22	12-May-23	07-Dec-23	558	[Gantt bar for TS-1100]																	
Utility Corridor and Pipe Portal								210	31-Oct-21	28-May-22	07-Aug-23	03-Mar-24	645	[Gantt bar for Utility Corridor and Pipe Portal]											
TS-1110	General Arrangement Drawing - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	210	31-Oct-21	28-May-22	07-Aug-23	03-Mar-24	645	[Gantt bar for TS-1110]																	
TS-1120	Civil Requirement Drawings (Superstructure) - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	210	31-Oct-21	28-May-22	07-Aug-23	03-Mar-24	645	[Gantt bar for TS-1120]																	
TS-1140	Equipment Loading Summary - Prep(144d), Sub.&Review(45d), Comment&resub(14d) & Approval (7d)	210	31-Oct-21	28-May-22	07-Aug-23	03-Mar-24	645	[Gantt bar for TS-1140]																	
Material Submission, Procurement, Manufacturing and Delivery								300	09-Nov-20	04-Sep-21	14-Nov-20	19-Dec-23	836	[Gantt bar for Material Submission, Procurement, Manufacturing and Delivery]											
PRE-240	Submit/Procure/Manufacture/Deliver TTS & Auxillary Facility Equip.	270	09-Nov-20	05-Aug-21	25-Mar-23	19-Dec-23	866	[Gantt bar for PRE-240]																	
PRE-230	Submit/Procure/Manufacture/Deliver Main Stream Bio-Reactor E&M Equip.	270	09-Nov-20	05-Aug-21	31-Jan-23	27-Oct-23	813	[Gantt bar for PRE-230]																	
PRE-210	Submit/Procure/Manufacture/Deliver New Inlet Works Equip.	180	09-Nov-20	07-May-21	16-May-22	11-Nov-22	553	[Gantt bar for PRE-210]																	
PRE-220	Submit/Procure/Manufacture/Deliver New Primary Sedimentation Tank Equip.	180	09-Nov-20	07-May-21	14-Apr-22	10-Oct-22	521	[Gantt bar for PRE-220]																	
PRE-250	Submit/Procure/Manufacture/Deliver Thickening System/Digestion/sludge holding Tanks	300	09-Nov-20	04-Sep-21	23-Nov-22	18-Sep-23	744	[Gantt bar for PRE-250]																	
PRE-260	Submit/Procure/Manufacture/Deliver Diversion Works	44	09-Nov-20	22-Dec-20	14-Nov-20	27-Dec-20	5	[Gantt bar for PRE-260]																	
Site Establishment Works								1432	09-Nov-20	05-Jun-25	02-Dec-20	20-Jun-26	326	[Gantt bar for Site Establishment Works]											
PG-100	Prepare/Submit Supplementary Contamination Assessment Plan (CAP)	12	21-Dec-20	06-Jan-21	07-Jan-21	20-Jan-21	12	[Gantt bar for PG-100]																	
PG-120	Procurement Asbestos Specialist	30	21-Dec-20	19-Jan-21	07-Feb-21	08-Mar-21	48	[Gantt bar for PG-120]																	
PG-110	Approved Supplementary CAP	30	07-Jan-21	05-Feb-21	21-Jan-21	19-Feb-21	14	[Gantt bar for PG-110]																	
PG-130	Submit/Approve Methos Statement for Asbestos Treatment and Removal	30	20-Jan-21	18-Feb-21	09-Mar-21	07-Apr-21	48	[Gantt bar for PG-130]																	
Portion 1 - IW Stage 1, PST, MBR, AF, TTS, STCS, Utilities Corridor, Pipe Portal								147	09-Nov-20	14-May-21	02-Dec-20	26-Jun-21	35	[Gantt bar for Portion 1 - IW Stage 1, PST, MBR, AF, TTS, STCS, Utilities Corridor, Pipe Portal]											
P1-100	Portion 1 - Initial Survey and Record, Underground Utilities Detection	60	09-Nov-20	20-Jan-21	02-Dec-20	19-Feb-21	20	[Gantt bar for P1-100]																	
P1-120	Portion 1 - Land Contamination Site Investigation	13	06-Feb-21	27-Feb-21	20-Feb-21	06-Mar-21	6	[Gantt bar for P1-120]																	
P1-110	Portion 1 - Installation of Water Barriers, Clearance, Hbal Road and Temp Facilities	48	08-Feb-21	15-Apr-21	20-Feb-21	21-Apr-21	5	[Gantt bar for P1-110]																	
P1-200	Portion 1 - Asbestos Survey	18	19-Feb-21	11-Mar-21	08-Apr-21	28-Apr-21	37	[Gantt bar for P1-200]																	
P1-130	Portion 1 - Submit/Approve CAR and RAP	18	01-Mar-21	20-Mar-21	08-Mar-21	27-Mar-21	6	[Gantt bar for P1-130]																	
P1-210	Portion 1 - Asbestos Removal	48	12-Mar-21	12-May-21	29-Apr-21	26-Jun-21	37	[Gantt bar for P1-210]																	
P1-140	Portion 1 - Carry out RAP	24	22-Mar-21	22-Apr-21	29-Mar-21	29-Apr-21	6	[Gantt bar for P1-140]																	
P1-150	Portion 1 - Submit Remediation Report	18	23-Apr-21	14-May-21	30-Apr-21	22-May-21	6	[Gantt bar for P1-150]																	
Portion 2 - IW Stage 2								46	08-Jun-21	02-Aug-21	12-Jun-21	14-Sep-21	37	[Gantt bar for Portion 2 - IW Stage 2]											
P2-100	Portion 2 - Initial Survey and Record, Underground Utilities Detection	12	08-Jun-21	22-Jun-21	12-Jun-21	26-Jun-21	4	[Gantt bar for P2-100]																	
P2-110	Portion 2 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	12	08-Jun-21	22-Jun-21	12-Jun-21	26-Jun-21	4	[Gantt bar for P2-110]																	
P2-120	Portion 2 - Land Contamination Site Investigation	14	26-Jun-21	13-Jul-21	28-Jun-21	14-Jul-21	1	[Gantt bar for P2-120]																	
P2-140	Portion 2 - Carry out RAP	24	26-Jun-21	24-Jul-21	10-Aug-21	06-Sep-21	37	[Gantt bar for P2-140]																	
P2-150	Submit Remediation Report	7	26-Jul-21	02-Aug-21	07-Sep-21	14-Sep-21	37	[Gantt bar for P2-150]																	
Portion 3 - PST, SDB, Admin. Bldg								69	26-Jan-24	27-Apr-24	27-Feb-24	29-Jul-24	75	[Gantt bar for Portion 3 - PST, SDB, Admin. Bldg]											
P3-100	Portion 3 - Initial Survey and Record, Underground Utilities Detection	12	26-Jan-24	16-Feb-24	27-Feb-24	11-Mar-24	20	[Gantt bar for P3-100]																	
P3-110	Portion 3 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	17	26-Jan-24	22-Feb-24	27-Feb-24	16-Mar-24	20	[Gantt bar for P3-110]																	
P3-120	Portion 3 - Land Contamination Site Investigation	10	22-Feb-24	05-Mar-24	18-Mar-24	28-Mar-24	20	[Gantt bar for P3-120]																	
P3-140	Portion 3 - Carry out RAP	24	05-Mar-24	06-Apr-24	08-Jun-24	08-Jul-24	75	[Gantt bar for P3-140]																	
P3-150	Portion 3 - Submit Remediation Report	18	06-Apr-24	27-Apr-24	09-Jul-24	29-Jul-24	75	[Gantt bar for P3-150]																	
Portion 4 - EVA								54	27-Mar-25	05-Jun-25	16-Apr-26	20-Jun-26	307	[Gantt bar for Portion 4 - EVA]											
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 for P4-100]																	
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 for P4-110]																	
P4-120	Portion 4 - Land Contamination Site Investigation	12	27-Mar-25	10-Apr-25	16-Apr-26	29-Apr-26	307	[Gantt bar for P4-120]																	
P4-140	Portion 4 - Carry out RAP	24	11-Apr-25	14-May-25	30-Apr-26	29-May-26	307	[Gantt bar for P4-140]																	
P4-150	Portion 4 - Submit Remediation Report	18	15-May-25	05-Jun-25	30-May-26	20-Jun-26	307	[Gantt bar for P4-150]																	
Portion 5 - Walkway								12	12-Jun-23	26-Jun-23	06-Aug-25	19-Aug-25	633	[Gantt bar for Portion 5 - Walkway]											
P5-100	Portion 5 - Initial Survey and Record, Underground Utilities Detection	12	12-Jun-23	26-Jun-23	06-Aug-25	19-Aug-25	633	[Gantt bar for P5-100]																	
P5-110	Portion 5 - Installation of Water Barriers, Clearance, Haul Road and Temp Facilities	12	12-Jun-23	26-Jun-23	06-Aug-25	19-Aug-25	633	[Gantt bar for P5-110]																	
PM and Contractor Accomodation								213	18-Feb-21	05-Nov-21	05-Mar-27	08-Nov-27	1780	[Gantt bar for PM and Contractor Accomodation]											
Project Manager's & Contractor Site Accommodation								158	18-Feb-21	30-Aug-21	05-Mar-27	08-Nov-27	1835	[Gantt bar for Project Manager's & Contractor Site Accommodation]											
PMCA-110	Design and Procurement of MiC	45	18-Feb-21	15-Apr-21	05-Mar-27	26-Apr-27	1780	[Gantt bar for PMCA-110]																	
PMCA-140	Submission and approved MS & PMAC	18	16-Apr-21	07-May-21	27-Apr-27	17-May-27	1780	[Gantt bar for PMCA-140]																	
MiC Section								95	08-May-21	30-Aug-21	21-Jul-27	08-Nov-27	1835	[Gantt bar for MiC Section]											
PMCA-150	Construction of Pad Footing	6	08-May-21	14-May-21	21-Jul-27	27-Jul-27	1835	[Gantt bar for PMCA-150]																	
PMCA-160	Construction of Sewage pipeworks and Septic Tank	17	15-May-21	04-Jun-21	28-Jul-27	16-Aug-27	1835	[Gantt bar for PMCA-160]																	
PMCA-170	Construction of G/F Structure Works	16	05-Jun-21	24-Jun-21	17-Aug-27	03-Sep-27	1835	[Gantt bar for PMCA-170]																	
PMCA-180	Construction of 1/F Structure Works	18	25-Jun-21	16-Jul-21	04-Sep-27	24-Sep-27	1835	[Gantt bar for PMCA-180]																	
PMCA-190	Installation of Green Roof	16	17-Jul-21	04-Aug-21	25-Sep-27	13-Oct-27	1835	[Gantt bar for PMCA-190]																	
PMCA-200	Construction of Covered Car Park	13	17-Jul-21	31-Jul-21	29-Sep-27	13-Oct-27	1838	[Gantt bar for PMCA-200]																	
PMCA-210	Installation of E&M and ABWF Works	12	05-Aug-21	18-Aug-21	14-Oct-27	27-Oct-27	1835	[Gantt bar for PMCA-210]																	
PMCA-220	Installation of Energy Efficient Features	12	05-Aug-21	18-Aug-21	14-Oct-27	27-Oct-27	1835	[Gantt bar for PMCA-220]																	
PMCA-230	Construction of Rain and Surface Water Drainage Works	10	19-Aug-21	30-Aug-21	28-Oct-27	08-Nov-27	1835	[Gantt bar for PMCA-230]																	
Caving System								150	08-May-21	05-Nov-21	18-May-27	08-Nov-27	1780	[Gantt bar for Caving System]											
PMCA-240	Caving System Construction	90	08-May-21	24-Aug-21	18-May-27	30-Aug-27	1780	[Gantt bar for PMCA-240]																	
PMCA-250	Caving System Installation	60	25-Aug-21	05-Nov-21	31-Aug-27	08-Nov-27	1780	[Gantt bar for PMCA-250]																	
Environmental Mitigation Measures for KD1 & 2								129	09-Nov-20	22-Apr-21	09-Nov-20	06-May-21	11	[Gantt bar for Environmental Mitigation Measures for KD1 & 2]											
Noise Barrier								117	09-Nov-20	08-Apr-21	09-Nov-20	08-Apr-21	0	[Gantt bar for Noise Barrier]											
NB Northern Side								75	09-Nov-20	06-Feb-21	09-Nov-20	06-Feb-21	0	[Gantt bar for NB Northern Side]											
NBN-00	NB North - Concrete Block Laying (474 nos.)	12	09-Nov-20	21-Nov-20	09-Nov-20	21-Nov-20	0	[Gantt bar for NBN-00]																	
NBN-10	NB North - Steel Member Installation (1,150m)	30	23-Nov-20	29-Dec-20	23-Nov-20	29-Dec-20	0	[Gantt bar for NBN-10]																	
NBN-20	NB North - Rails Installation (Horizontal and Vertical)	30	23-Nov-20	29-Dec-20	23-Nov-20	29-Dec-20	0	[Gantt bar for NBN-20]																	
NBN-30	NB North - Noise Panel Installation (7077 nos.)	33	30-Dec-20	06-Feb-21	30-Dec-20	06-Feb-21	0	[Gantt bar for NBN-30]																	
NB Eastern Side								75	30-Dec-20	08-Apr-21	30-Dec-20	08-Apr-21	0	[Gantt bar for NB Eastern Side]											
NBE-00	NB East - Concrete Block Laying (681 nos.)	12	30-Dec-20	13-Jan-21	30-Dec-20	13-Jan-21	0	[Gantt bar for NBE-00]																	
NBE-10	NB East - Steel Member Installation (1,650m)	30	14-Jan-21	24-Feb-21	14-Jan-21	24-Feb-21	0	[Gantt bar for NBE-10]																	



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

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

Detailed Works Programme

Project ID : DWP.DPr1_210422
 Layout : DC201910 Detailed Programme
 Page 6 of 24

Detailed Works Programme			
Date	Revision	Checked	Approved
15-Mar-21	Rev. 0		
21-Apr-21	Rev 1		

Activity	Activity Name	Duration	Start	Finish	Latest	Earliest	Total Float	2021												2022												2023												2024											
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NBE-20	NB East - Rails Installation (Horizontal and Vertical)	30	14-Jan-21	24-Feb-21	14-Jan-21	24-Feb-21	0	■ NB East - Rails Installation (Horizontal and Vertical)																																															
NBE-30	NB East - Noise Panel Installation (1,057 nos.)	33	25-Feb-21	08-Apr-21	25-Feb-21	08-Apr-21	0	■ NB East - Noise Panel Installation (1,057 nos.)																																															
NB Western Side																																																							
NBW-00B	NB West - Concrete Block Laying (225 nos.)	12	08-Feb-21	08-Apr-21	08-Feb-21	08-Apr-21	0	■ NB West - Concrete Block Laying (225 nos.)																																															
NBW-10	NB West - Steel Member Installation (127m)	20	01-Mar-21	23-Mar-21	01-Mar-21	23-Mar-21	0	■ NB West - Steel Member Installation (127m)																																															
NBW-20	NB West - Rails Installation (Horizontal and Vertical)	20	01-Mar-21	23-Mar-21	01-Mar-21	23-Mar-21	0	■ NB West - Rails Installation (Horizontal and Vertical)																																															
NBW-30	NB North - Noise Panel Installation (385 nos.)	10	24-Mar-21	08-Apr-21	24-Mar-21	08-Apr-21	0	■ NB North - Noise Panel Installation (385 nos.)																																															
Bird Curtain																																																							
BC-10	BC - Concrete Block Laying	24	14-Jan-21	10-Feb-21	27-Jan-21	02-Mar-21	11	■ BC - Concrete Block Laying																																															
BC-20	BC - Installation of Post	32	18-Feb-21	26-Mar-21	03-Mar-21	13-Apr-21	11	■ BC - Installation of Post																																															
BC-30	BC - Installation of Bird Curtain	19	27-Mar-21	22-Apr-21	14-Apr-21	06-May-21	11	■ BC - Installation of Bird Curtain																																															
General Advance Works																																																							
NSWSPS Sensors																																																							
ATALGA-1130	CMS - NSWSPS Sensor	51	01-Jun-21*	29-Dec-21	08-Aug-23	11-Mar-24	642	■ CMS - NSWSPS Sensor																																															
ATALGA-1160	CGS - Method Statement for Installation	101	02-Aug-21	01-Dec-21	09-Oct-23	07-Feb-24	642	■ CGS - Method Statement for Installation																																															
ATALGA-1170	Procurement & Delivery of Sensor	101	02-Aug-21	01-Dec-21	09-Oct-23	07-Feb-24	642	■ Procurement & Delivery of Sensor																																															
ATALGA-1260	Installation of pressure sensors at NSWSPS	22	01-Dec-21	29-Dec-21	08-Feb-24	11-Mar-24	642	■ Installation of pressure sensors at NSWSPS																																															
Air Blower House																																																							
ATALGA-1280	CMS - Air Blower System	127	01-Jun-22*	02-Nov-22	04-Jan-23	14-Jun-23	278	■ CMS - Air Blower System																																															
ATALGA-1290	CGS - Method Statement for Installation	49	02-Nov-22	31-Dec-22	06-Sep-23	04-Nov-23	247	■ CGS - Method Statement for Installation																																															
ATALGA-1300	Procurement & Delivery of Materials	121	02-Nov-22	03-Apr-23	15-Jun-23	08-Nov-23	178	■ Procurement & Delivery of Materials																																															
ATALGA-1020	Civil Structural modification of air blower house	90	13-Jan-23*	11-May-23	17-Nov-23	11-Mar-24	247	■ Civil Structural modification of air blower house																																															
ATALGA-1310	E&M installation	97	03-Apr-23	03-Aug-23	09-Nov-23	11-Mar-24	178	■ E&M installation																																															
Temporary CHP System																																																							
ATALGA-1230	CGS - Method Statement for Relocation	93	02-Nov-21*	01-Mar-22	10-Dec-22	12-Apr-23	326	■ CGS - Method Statement for Relocation																																															
ATALGA-1240	Procurement & Delivery of Materials	100	01-Mar-22	05-Jul-22	13-Apr-23	11-Aug-23	326	■ Procurement & Delivery of Materials																																															
ATALGA-1250	Civil Structural Construction of CHP system house c/w pipework	100	05-Jul-22*	02-Nov-22	12-Aug-23	09-Dec-23	326	■ Civil Structural Construction of CHP system house c/w pipework																																															
ATALGA-1320	E&M installation of CHP system	47	02-Nov-22	29-Dec-22	11-Dec-23	06-Feb-24	326	■ E&M installation of CHP system																																															
ATALGA-1330	T&C	23	29-Dec-22	02-Feb-23	07-Feb-24	11-Mar-24	326	■ T&C																																															
Disc Filter (DF) Pilot Plant																																																							
ATALGA-1080	CGS - Method Statement for Relocation	63	01-Apr-21*	21-Jun-21	17-Jun-22	30-Aug-22	352	■ CGS - Method Statement for Relocation																																															
ATALGA-1090	Procurement & Delivery of Materials	97	21-Jun-21	16-Oct-21	13-Aug-22	24-Dec-22	352	■ Procurement & Delivery of Materials																																															
ATALGA-1000	Civil Structural Construction of DF Pilot Plant from STSTW c/w of relevant underground pipeworks	211	16-Oct-21*	09-Jul-22	23-Mar-23	07-Dec-23	418	■ Civil Structural Construction of DF Pilot Plant from STSTW c/w of relevant underground pipeworks																																															
ATALGA-1140	E&M installation of DF Pilot Plant	51	09-Jul-22	07-Sep-22	07-Dec-23	07-Feb-24	418	■ E&M installation of DF Pilot Plant																																															
ATALGA-1190	T&C	22	07-Sep-22	06-Oct-22	08-Feb-24	11-Mar-24	418	■ T&C																																															
Dissolved Air Flotation (DAF) Pilot Plant																																																							
ATALGA-1100	CGS - Method Statement for Relocation	47	21-Jun-21	16-Aug-21	31-Aug-22	27-Oct-22	352	■ CGS - Method Statement for Relocation																																															
ATALGA-1110	Procurement & Delivery of Materials	97	16-Aug-21	10-Dec-21	28-Oct-22	28-Feb-23	352	■ Procurement & Delivery of Materials																																															
ATALGA-1070	Civil Structural Construction of DAF Pilot Plant from STSTW	97	10-Dec-21*	14-Apr-22	01-Mar-23	29-Jun-23	352	■ Civil Structural Construction of DAF Pilot Plant from STSTW																																															
ATALGA-1150	E&M installation of DAF Pilot Plant	51	14-Apr-22	20-Jun-22	30-Jun-23	29-Aug-23	352	■ E&M installation of DAF Pilot Plant																																															
ATALGA-1200	T&C	11	20-Jun-22	04-Jul-22	30-Aug-23	11-Sep-23	352	■ T&C																																															
ATALGA-1220	Post-commissioning	144	04-Jul-22	22-Dec-22	12-Sep-23	11-Mar-24	352	■ Post-commissioning																																															
Aerobic Granular Sludge (AGS) Pilot Plant																																																							
ATALGA-1030	AIP - AGS Pilot Plant	20	18-Feb-21*	12-Mar-21	21-May-22	14-Jun-22	366	■ AIP - AGS Pilot Plant																																															
ATALGA-1040	DDA - AGS Pilot Plant	21	13-Mar-21	10-Apr-21	23-Mar-23	20-Apr-23	594	■ DDA - AGS Pilot Plant																																															
ATALGA-1050	CMS - AGS Pilot Plant	48	13-Mar-21	13-May-21	15-Jun-22	10-Aug-22	366	■ CMS - AGS Pilot Plant																																															
ATALGA-1060	CGS - Method Statement for Installation	47	25-Mar-21	25-May-21	04-Apr-23	03-Jun-23	594	■ CGS - Method Statement for Installation																																															
ATALGA-1120	Procurement & Delivery of Materials	100	28-Apr-21	26-Aug-21	27-Jul-22	23-Nov-22	366	■ Procurement & Delivery of Materials																																															
ATALGA-1010	Civil Structural Construction of AGS Pilot Plant	150	27-Aug-21*	03-Mar-22	24-Nov-22	03-Jun-23	366	■ Civil Structural Construction of AGS Pilot Plant																																															
ATALGA-1180	E&M installation of AGS Pilot Plant	36	04-Mar-22	19-Apr-22	05-Jun-23	18-Jul-23	366	■ E&M installation of AGS Pilot Plant																																															
ATALGA-1210	Seeding, process start-up and T&C	52	20-Apr-22	22-Jun-22	19-Jul-23	16-Sep-23	366	■ Seeding, process start-up and T&C																																															
ATALGA-1270	Post-commissioning	139	23-Jun-22	06-Dec-22	18-Sep-23	11-Mar-24	366	■ Post-commissioning																																															
Zone 1 Construction																																																							
Demolition and Temporary Modification/Diversion Works																																																							
PST Overhaul Works																																																							
ATALPST-5130	Completion of Overhaul Works (Zone 1)	0		10-Jul-21*		31-Jul-21	18	◆ Completion of Overhaul Works (Zone 1)																																															
PST Existing Primary Sedimentation Tanks (PST)																																																							
ATALPST-1000	Method Statement / PMAC Submission and Approval for PST	55	09-Nov-20	14-Jan-21	30-Nov-20	04-Feb-21	18	■ Method Statement / PMAC Submission and Approval for PST																																															
ATALPST-1030	Procurement of Wheels, Carbon Brush, Motor/Gearbox for PST No. 1 to No. 4	60	15-Jan-21	01-Apr-21	05-Feb-21	27-Apr-21	18	■ Procurement of Wheels, Carbon Brush, Motor/Gearbox for PST No. 1 to No. 4																																															
ATALPST-1040	Procurement of Scraper Frame Robs	32	15-Jan-21	27-Feb-21	05-Feb-21	20-Mar-21	18	■ Procurement of Scraper Frame Robs																																															
PST No. 2 & 4																																																							
ATALPST-1020	Isolation and Pre-test for PST 2 & 4	14	15-Jan-21	30-Jan-21	05-Feb-21	27-Feb-21	18	■ Isolation and Pre-test for PST 2 & 4																																															
ATALPST-1070	Construction of Bamboo Scaffolding	7	01-Feb-21	08-Feb-21	01-Mar-21	08-Mar-21	18	■ Construction of Bamboo Scaffolding																																															
ATALPST-1090	Replacement of Screws for the Rotatory Bridge	11	09-Feb-21	27-Feb-21	09-Mar-21	20-Mar-21	18	■ Replacement of Screws for the Rotatory Bridge																																															
ATALPST-1120	Replacement of Scraper Frame Robs	25	01-Mar-21	29-Mar-21	22-Mar-21	23-Apr-21	18	■ Replacement of Scraper Frame Robs																																															
ATALPST-1160	Disassembly of Scraper Drive Unit / Penstock Actuators / Valves	3	30-Mar-21	01-Apr-21	24-Apr-21	27-Apr-21	18	■ Disassembly of Scraper Drive Unit / Penstock Actuators / Valves																																															
ATALPST-1170	Disassembly, Condition Checking of Scraper Drive Units	17	07-Apr-21	26-Apr-21	28-Apr-21	18-May-21	18	■ Disassembly, Condition Checking of Scraper Drive Units																																															
ATALPST-1180	Removal of Centre Bearing from PST 2	17	07-Apr-21	26-Apr-21	28-Apr-21	18-May-21	18	■ Removal of Centre Bearing from PST 2																																															
ATALPST-1190	Reconditioning and Replacement of Scraper Drive Units	17	07-Apr-21	26-Apr-21	28-Apr-21	18-May-21	18	■ Reconditioning and Replacement of Scraper Drive Units																																															
ATALPST-1230	Return of all Drive Units and Centre Bearing for Reassembly	4	27-Apr-21	30-Apr-21	30-May-21	24-May-21	18	■ Return of all Drive Units and Centre Bearing for Reassembly																																															
ATALPST-1260	Power Reconnection and Testing	3	03-May-21	05-May-21	25-May-21	27-May-21	18	■ Power Reconnection and Testing																																															
PST No. 1																																																							
ATALPST-1440	Isolation and Conduct Pre-test for PST No. 1	4	01-Mar-21	04-Mar-21	22-Mar-21	25-Mar-21	18	■ Isolation and Conduct Pre-test for PST No. 1																																															



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

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

Detailed Works Programme

Project ID : DWP.DPr1_210422
 Layout : DC201910 Detailed Programme
 Page 7 of 24

Detailed Works Programme			
Date	Revision	Checked	Approved
15-Mar-21	Rev. 0		
21-Apr-21	Rev 1		

Work ID	Activity Name	Duration	Start	Finish	Latest	Earliest	Total Res	2021												2022												2023											
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IW Foundation & ELS Stage 2		295	26-Mar-21	04-Mar-22	27-Apr-21	04-Mar-22	0																																				
IW-2400	Handover and Inspection of Temp. Workshop and Storage Facilities (advance work before P2 access)	18	08-May-21	29-May-21	05-Jun-21	26-Jun-21	23	Handover and Inspection of Temp. Workshop and Storage Facilities (advance work before P2 access)																																			
IW-2125	Complete Temporary Administration Building - Non-MIC Section	0		07-Jun-21		08-Jun-21	1	Complete Temporary Administration Building - Non-MIC Section																																			
IW-2390	Relocation of Workshop and Storage Facilities (advance work before P2 access)	15	08-Jun-21	25-Jun-21	09-Jun-21	26-Jun-21	1	Relocation of Workshop and Storage Facilities (advance work before P2 access)																																			
PP2	Portion 2 (sd+211d)	0	08-Jun-21*		08-Jun-21		0	Portion 2 (sd+211d)																																			
IW-2860	Inlet Work Stage 2 - Site establishment & investigation, RAP, submit Remediation Report (carryforward from Site establ.)	53	08-Jun-21	10-Aug-21	15-Jul-21	14-Sep-21	30	Inlet Work Stage 2 - Site establishment & investigation, RAP, submit Remediation Report (carryforward from Site establ.)																																			
IW-2861	Inlet Work Stage 2 - Temporary UU Diversion	14	08-Jun-21	24-Jun-21	15-Jul-21	30-Jul-21	30	Inlet Work Stage 2 - Temporary UU Diversion																																			
IW-2530	Inlet Work Stage 2 - Driven H-piles (80nos. @ave.1no/d/rig, 2rigs)	40	31-Jul-21	15-Sep-21	31-Jul-21	15-Sep-21	0	Inlet Work Stage 2 - Driven H-piles (80nos. @ave.1no/d/rig, 2rigs)																																			
IW-2560	Inlet Work Stage 2 - Sheetpiles Install (2,758m2 at 120m2/d)	23	16-Sep-21	15-Oct-21	16-Sep-21	15-Oct-21	0	Inlet Work Stage 2 - Sheetpiles Install (2,758m2 at 120m2/d)																																			
IW-2590	Inlet Work Stage 2 - H-piles Testing	21	16-Oct-21	09-Nov-21	16-Oct-21	09-Nov-21	0	Inlet Work Stage 2 - H-piles Testing																																			
IW-2610	Inlet Work Stage 2 - Excavation (-1.55 to -2.5mPD)	30	10-Nov-21	14-Dec-21	10-Nov-21	14-Dec-21	0	Inlet Work Stage 2 - Excavation (-1.55 to -2.5mPD)																																			
IW-2620	Inlet Work Stage 2 - Marine Sediments Treatment and Disposal	40	10-Nov-21	28-Dec-21	11-Jan-22	04-Mar-22	50	Inlet Work Stage 2 - Marine Sediments Treatment and Disposal																																			
IW-2870	Inlet Work Stage 2 - Submit piling record to GEO (28d)	28	10-Nov-21	07-Dec-21	23-Nov-21	20-Dec-21	13	Inlet Work Stage 2 - Submit piling record to GEO (28d)																																			
IW-2630	Inlet Work Stage 2 - Strut Installation S3 (-2.5mPD)	16	15-Dec-21	05-Jan-22	20-Jan-22	14-Feb-22	28	Inlet Work Stage 2 - Strut Installation S3 (-2.5mPD)																																			
IW-2640	Inlet Work Stage 2 - Excavation (-2.5 to -4.5mPD)	30	15-Dec-21	21-Jan-22	15-Dec-21	21-Jan-22	0	Inlet Work Stage 2 - Excavation (-2.5 to -4.5mPD)																																			
IW-2650	Inlet Work Stage 2 - Strut Installation S4 (-4.5mPD)	16	22-Jan-22	16-Feb-22	15-Feb-22	04-Mar-22	14	Inlet Work Stage 2 - Strut Installation S4 (-4.5mPD)																																			
IW-2660	Inlet Work Stage 2 - Excavation (-4.5 to -7.15mPD)	30	22-Jan-22	04-Mar-22	22-Jan-22	04-Mar-22	0	Inlet Work Stage 2 - Excavation (-4.5 to -7.15mPD)																																			
IW-2670	IW - Foundation & ELS Complete	0		04-Mar-22		04-Mar-22	0	IW - Foundation & ELS Complete																																			
Temporary Workshop and Storage		50	26-Mar-21	29-May-21	27-Apr-21	26-Jun-21	23																																				
IW-2120A	Design and Submission	7	26-Mar-21	07-Apr-21	27-Apr-21	05-May-21	23	Design and Submission																																			
IW-2120B	Site Formation	10	08-Apr-21	19-Apr-21	06-May-21	17-May-21	23	Site Formation																																			
IW-2120C	Foundation Work	7	20-Apr-21	27-Apr-21	18-May-21	26-May-21	23	Foundation Work																																			
IW-2120D	Erect Steel Structure, External Wall and Roof Cladding	10	28-Apr-21	10-May-21	27-May-21	07-Jun-21	23	Erect Steel Structure, External Wall and Roof Cladding																																			
IW-2120E	Erect Internal Partition and False Ceiling	6	11-May-21	17-May-21	08-Jun-21	15-Jun-21	23	Erect Internal Partition and False Ceiling																																			
IW-2120F	Electrical Work, Sanitary Work, Install A/C and Floor Finishes	10	18-May-21	29-May-21	16-Jun-21	26-Jun-21	23	Electrical Work, Sanitary Work, Install A/C and Floor Finishes																																			
IW Civil and Structural Works		286	20-Dec-21	10-Dec-22	21-Dec-21	10-Dec-22	0																																				
IW Structure Stage 1 (to G/F +4.0mPD)		135	20-Dec-21	13-Jun-22	21-Dec-21	14-Jun-22	1																																				
IW-2600	Inlet Work Stage 1 - Structure from -1.55 mPD to +1.45 mPD	90	20-Dec-21	14-Apr-22	21-Dec-21	19-Apr-22	1	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	19-Apr-22	13-Jun-22	20-Apr-22	14-Jun-22	1	Inlet Work Stage 1 - Structure from +1.45 mPD to +4.0 mPD																																			
IW Structure Stage 2 (to G/F +4.0mPD)		105	05-Mar-22	14-Jul-22	05-Mar-22	14-Jul-22	0																																				
IW-2680	Inlet Work Stage 2 - Structure from -7.15 mPD to -5.0 mPD	30	05-Mar-22	09-Apr-22	05-Mar-22	09-Apr-22	0	Inlet Work Stage 2 - Structure from -7.15 mPD to -5.0 mPD																																			
IW-2700	Inlet Work Stage 2 - Structure from -5.0 mPD to -2.0 mPD	25	11-Apr-22	14-May-22	11-Apr-22	14-May-22	0	Inlet Work Stage 2 - Structure from -5.0 mPD to -2.0 mPD																																			
IW-2710	Inlet Work Stage 2 - Structure from -2.0 mPD to +1.0 mPD	25	16-May-22	14-Jun-22	14-Jun-22	14-Jun-22	0	Inlet Work Stage 2 - Structure from -2.0 mPD to +1.0 mPD																																			
IW-2720	Inlet Work Stage 2 - Structure from +1.0 mPD to +4.0 mPD	25	15-Jun-22	14-Jul-22	15-Jun-22	14-Jul-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	15-Jul-22	10-Dec-22	15-Jul-22	10-Dec-22	0																																				
IW-2730	Inlet Work - Structure to Roof from +4.0 mPD to +7.0 mPD	25	15-Jul-22	12-Aug-22	15-Jul-22	12-Aug-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-Aug-22	12-Sep-22	13-Aug-22	12-Sep-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	13-Sep-22	13-Oct-22	13-Sep-22	13-Oct-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	14-Oct-22	11-Nov-22	14-Oct-22	11-Nov-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-Nov-22	10-Dec-22	12-Nov-22	10-Dec-22	0	Inlet Work - Structure to Roof from +16.0 mPD to +18.3 mPD																																			
IW ABWF and BS Works		300	13-Aug-22	21-Aug-23	04-Mar-23	11-Mar-24	162																																				
IW-2780	Inlet Work - BS and ABWF Works	300	13-Aug-22	21-Aug-23	04-Mar-23	11-Mar-24	162	Inlet Work - BS and ABWF Works																																			
IW Transformer House No. 1		225	15-Jul-22	03-Apr-23	20-Oct-22	11-Mar-24	294																																				
IW-2785	TX House No. 1 - Piling Works (8 nos.)	10	15-Jul-22	26-Jul-22	20-Oct-22	31-Oct-22	80	TX House No. 1 - Piling Works (8 nos.)																																			
IW-2790	TX House No. 1 - Structure Cable Trench at +2.2 mPD to +4.8 mPD	21	13-Aug-22	06-Sep-22	13-Feb-23	08-Mar-23	145	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	07-Sep-22	03-Oct-22	09-Mar-23	01-Apr-23	145	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	05-Oct-22	28-Oct-22	03-Apr-23	02-May-23	145	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	29-Oct-22	22-Nov-22	03-May-23	27-May-23	145	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	23-Nov-22	29-Dec-22	03-Nov-23	07-Dec-23	276	TX House No. 1 - BS and ABWF																																			
IW-2840	TX House No. 1 - Transformer Installation and LV Switchboard Power On	72	03-Jan-23	03-Apr-23	08-Dec-23	11-Mar-24	274	TX House No. 1 - Transformer Installation and LV Switchboard Power On																																			
IW E&M Works		184	12-Nov-22	04-Jul-23	12-Nov-22	04-Jul-23	0																																				
ATAL-1000	IW - Screening / Grit Removal / Inlet Pumping / DOU System / Penstock & Stoplogs	118	12-Nov-22	13-Apr-23	12-Nov-22	13-Apr-23	0	IW - Screening / Grit Removal / Inlet Pumping / DOU System / Penstock & Stoplogs																																			
ATAL-1010	IW - Lifting Appliance	118	12-Nov-22	13-Apr-23	12-Nov-22	13-Apr-23	0	IW - Lifting Appliance																																			
ATAL-1020	IW - Instrumentation	36	14-Apr-23	27-May-23	14-Apr-23	27-May-23	0	IW - Instrumentation																																			
ATAL-1030	IW - Electrical Works (Cabling / LCP Termination)	30	29-May-23	04-Jul-23	29-May-23	04-Jul-23	0	IW - Electrical Works (Cabling / LCP Termination)																																			
ATAL-1040	IW - BS Installation (ELV, Ventilation, FS, PD)	30	29-May-23	04-Jul-23	29-May-23	04-Jul-23	0	IW - BS Installation (ELV, Ventilation, FS, PD)																																			
IW E&M T&C		247	29-May-23	11-Mar-24	29-May-23	11-Mar-24	0																																				
ATAL-1050	IW - T&C - Equipment SAT (Mechanical Dry Check)	30	29-May-23	04-Jul-23	29-May-23	04-Jul-23	0	IW - T&C - Equipment SAT (Mechanical Dry Check)																																			
ATAL-1060	IW - T&C - Equipment SAT (Functional Dry Check)	30	05-Jul-23	08-Aug-23	05-Jul-23	08-Aug-23	0	IW - T&C - Equipment SAT (Functional Dry Check)																																			
ATAL-1070	IW - T&C - Equipment SAT (Wet / Load Performance Check)	30	09-Aug-23	12-Sep-23	09-Aug-23	12-Sep-23	0	IW - T&C - Equipment SAT (Wet / Load Performance Check)																																			
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-1090	IW - Diversion works from existing bypass chamber to IW (Penstock Installation c/w T&C)	39	13-Sep-23	31-Oct-23	13-Sep-23	31-Oct-23	0	IW - Diversion works from existing bypass chamber to IW (Penstock Installation c/w T&C)																																			
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		1364	02-Jul-21	10-Nov-25	09-Jul-21	07-Nov-26	311																																				
CLP-0900	Complete Temporary Administration Building	0		02-Jul-21		09-Jul-21	6	Complete Temporary Administration Building																																			
CLP-1000	Demolition Carpark (28) and Changing Room (27)	72	03-Jul-21	25-Sep-21	10-Jul-21	04-Oct-21	6	Demolition Carpark (28) and Changing Room (27)																																			
CLP-1010	CLP Substation No.1 - Structure	78	27-Sep-21	30-Dec-21	05-Oct-21	07-Jan-22	6	CLP Substation No.1 - Structure																																			
CLP-1020	CLP Substation No.2 - Structure	78	31-Dec-21	09-Apr-22	08-Jan-22	20-Apr-22	6	CLP Substation No.2 - Structure																																			
CLP-1040	CLP Substation No.1 - BS and ABWF Works	48	06-Jan-22	09-Mar-22	21-Apr-22	18-Jun-22	80	CLP Substation No.1 - BS and ABWF Works																																			
CLP-1070	CLP Substation No.1 - CLP Installation	90	10-Mar-22	30-Jun-22	20-Jun-22	06-Oct-22	80	CLP Substation No.1 - CLP Installation																																			
CLP-1050	CLP Substation No.2 - BS and ABWF Works	48	11-Apr-22	11-Jun-22	21-Apr-22	18-Jun-22	6	CLP Substation No.2 - BS and ABWF Works																																			
CLP-1030	DSD11KV Switchgear - Structure	78	11-Apr-22	18-Jul-22	01-Apr-23	10-Jul-23	286	DSD11KV Switchgear - Structure																																			
CLP-1080	CLP Substation No.2 - CLP Installation	90	13-Jun-22	27-Sep-22	20-Jun-22	06-Oct-22	6	CLP Substation No.2 - CLP Installation																																			
CLP-1090	CLP Substation No.1 - Energization	0		30-Jun-22		06-Oct-22	80	CLP Substation No.1 - Energization																																			



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

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

Detailed Works Programme

Project ID : DWP.DPr1_210422
 Layout : DC201910 Detailed Programme
 Page 10 of 24

Detailed Works Programme			
Date	Revision	Checked	Approved
15-Mar-21	Rev. 0		
21-Apr-21	Rev 1		

Work ID	Activity Name	Duration	Start	Finish	Latest	Earliest	Total Effort	Gantt Chart											
								2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
TTS-1000	TTS - Site Clearance	18	01-Nov-21	20-Nov-21	09-Jun-22	29-Jun-22	173	■ TTS - Site Clearance											
NMM-2125	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											
TTS-1010	TTS - Sheet Piles Install (4,639m ² @120m ² /d)	52	22-Nov-21	24-Jan-22	30-Jun-22	30-Aug-22	173	■ TTS - Sheet Piles Install (4,639m ² @120m ² /d)											
TTS-1020	TTS - ELS Excavation (+5.0 to +3.5mPD)	25	25-Jan-22	01-Mar-22	31-Aug-22	29-Sep-22	173	■ TTS - ELS Excavation (+5.0 to +3.5mPD)											
EBS-2135	Egrets Breeding Season 2022	184	01-Mar-22*	31-Aug-22	01-Mar-22	31-Aug-22	0	■ Egrets Breeding Season 2022											
TTS-1030	TTS - Strut Installation S1 (+4.5mPD)	14	02-Mar-22	17-Mar-22	28-Oct-22	12-Nov-22	195	■ TTS - Strut Installation S1 (+4.5mPD)											
TTS-1040	TTS - ELS Excavation (+3.5 to +0.5mPD)	25	02-Mar-22	30-Sep-22	30-Sep-22	31-Oct-22	173	■ TTS - ELS Excavation (+3.5 to +0.5mPD)											
TTS-1050	TTS - Strut Installation S1 (+1.5mPD)	14	31-Mar-22	20-Apr-22	14-Nov-22	29-Nov-22	184	■ TTS - Strut Installation S1 (+1.5mPD)											
TTS-1060	TTS - ELS Excavation (+0.5 to -2.4mPD)	25	31-Mar-22	04-May-22	01-Nov-22	29-Nov-22	173	■ TTS - ELS Excavation (+0.5 to -2.4mPD)											
TTS-1070	TTS - Box Raft Foundation (-2.4 to -0.80mPD)	30	05-May-22	10-Jun-22	30-Nov-22	06-Jan-23	173	■ TTS - Box Raft Foundation (-2.4 to -0.80mPD)											
Structure								280											
TTS-1080	TTS - Wall to G/F Slab (-0.8mPD to +2.7mPD)	60	11-Jun-22	20-Aug-22	07-Jan-23	24-Mar-23	173	■ TTS - Wall to G/F Slab (-0.8mPD to +2.7mPD)											
TTS-1090	TTS - Wall to G/F Slab (+2.7mPD to +6.2mPD)	60	22-Aug-22	02-Nov-22	25-Mar-23	09-Jun-23	173	■ TTS - Wall to G/F Slab (+2.7mPD to +6.2mPD)											
TTS-1100	TTS - Structure to Roof (+6.2mPD to +9.4mPD)	60	03-Nov-22	14-Jan-23	10-Jun-23	21-Aug-23	173	■ TTS - Structure to Roof (+6.2mPD to +9.4mPD)											
TTS-1110	TTS - Structure to Roof (+9.4mPD to +12.6mPD)	60	16-Jan-23	01-Apr-23	22-Aug-23	02-Nov-23	173	■ TTS - Structure to Roof (+9.4mPD to +12.6mPD)											
TTS-1120	TTS - Structure to Roof (+12.6mPD to +15.75mPD)	40	03-Apr-23	24-May-23	03-Nov-23	19-Dec-23	173	■ TTS - Structure to Roof (+12.6mPD to +15.75mPD)											
BS & ABWF Works								390											
TTS-1130	TTS - BS and ABWF Works	390	25-May-23	17-Sep-24	14-Oct-24	05-Feb-26	409	■ TTS - BS and ABWF Works											
E&M Installation Works								320											
TTS-1140	TTS - Disc Filter System, UV Disinfection System, Effluent Pumping Station & DO System	148	25-May-23	20-Nov-23	20-Dec-23	27-Jun-24	173	■ TTS - Disc Filter System, UV Disinfection System, Effluent Pumping Station & DO System											
TTS-1150	TTS - Penstocks & Stoplogs, Pipework, Valves & Accessories	148	25-May-23	20-Nov-23	20-Dec-23	27-Jun-24	173	■ TTS - Penstocks & Stoplogs, Pipework, Valves & Accessories											
TTS-1160	TTS - Instrumentation	48	21-Nov-23	18-Jan-24	28-Jun-24	23-Aug-24	173	■ TTS - Instrumentation											
TTS-1170	TTS - Electrical Works (Cabling / LCP Termination)	124	19-Jan-24	26-Jun-24	24-Aug-24	22-Jan-25	173	■ TTS - Electrical Works (Cabling / LCP Termination)											
TTS-1180	TTS - BS Installation (ELV, Ventilation, FS, PD)	124	19-Jan-24	26-Jun-24	24-Aug-24	22-Jan-25	173	■ TTS - BS Installation (ELV, Ventilation, FS, PD)											
Testing and Commissioning (T&C) - KD4								306											
TTS-1190	TTS - T&C - Equipment SAT	208	27-Jun-24	10-Mar-25	23-Jan-25	09-Oct-25	173	■ TTS - T&C - Equipment SAT											
TTS-1200	TTS - T&C - System Commissioning (60,000 m ³ /d) (KD4)	98	11-Mar-25	11-Jul-25	10-Oct-25	05-Feb-26	173	■ TTS - T&C - System Commissioning (60,000 m ³ /d) (KD4)											
TTS-1210	TTS - FS Inspection and Fire Certificate	50	13-May-25	11-Jul-25	06-Dec-25	05-Feb-26	173	■ TTS - FS Inspection and Fire Certificate											
TTS-1220	TTS - E&M Works Complete	0		11-Jul-25		05-Feb-26	173	◆ TTS - E&M Works Complete											
External Works - Tertiary Treatment System Perimeter								240											
EW-1100	TTS Perimeter - Drainage/Sewer/Watermain/Utility Installation	150	25-May-23	22-Nov-23	07-Jul-25	03-Jan-26	621	■ TTS Perimeter - Drainage/Sewer/Watermain/Utility Installation											
EW-1070	TTS Perimeter - Process Pipe Installation	120	25-May-23	17-Oct-23	07-Jul-25	26-Nov-25	621	■ TTS Perimeter - Process Pipe Installation											
EW-1120	TTS Perimeter - Road Works	90	23-Nov-23	16-Mar-24	05-Jan-26	29-Apr-26	621	■ TTS Perimeter - Road Works											
Zone 3 Construction								1878											
Stage 1 (Starting Date to July 2021)								293											
Z3S1-3000	Completion of Stage 1	0		31-Jul-21*		31-Jul-21	0	◆ Completion of Stage 1											
Advance Works								273											
Temporary Thickened Sludge / Supernatant Pumping Station								211											
ATALZ3S1-2000	CMS - Pumps	24	09-Nov-20	05-Dec-20	04-Jan-21	30-Jan-21	45	■ CMS - Pumps											
ATALZ3S1-2010	Procurement and Delivery of Materials	120	07-Dec-20	11-May-21	01-Feb-21	06-Jul-21	45	■ Procurement and Delivery of Materials											
ATALZ3S1-2060	Method Statement for Thickened Sludge / Supernatant Pumping Station	20	05-May-21	28-May-21	05-May-21	28-May-21	0	■ Method Statement for Thickened Sludge / Supernatant Pumping Station											
Z3S1-2070	Civil Structural Construction for Thickened Sludge / Supernatant Pumping Station	50	17-May-21	16-Jul-21	17-May-21	16-Jul-21	0	■ Civil Structural Construction for Thickened Sludge / Supernatant Pumping Station											
ATALZ3S1-2140	E&M installation of pumping system c/w pipework & valves & cabling	35	21-Jun-21	31-Jul-21	21-Jun-21	31-Jul-21	0	■ E&M installation of pumping system c/w pipework & valves & cabling											
Relocation of Heater Room								63											
ATALZ3S1-2080	CGS - Method Statement Submission and Approval for Relocation	30	17-May-21	22-Jun-21	17-May-21	22-Jun-21	0	■ CGS - Method Statement Submission and Approval for Relocation											
Z3S1-2090	Civil Structural Construction for Heating Room	30	17-May-21	22-Jun-21	17-May-21	22-Jun-21	0	■ Civil Structural Construction for Heating Room											
ATALZ3S1-2150	Relocation works c/w T&C	48	04-Jun-21	31-Jul-21	04-Jun-21	31-Jul-21	0	■ Relocation works c/w T&C											
Temporary Polymer Preparation & Dosing System								187											
ATALZ3S1-2020	CMS - Polymer Preparation System & Pumps	27	07-Dec-20	09-Jan-21	01-Feb-21	10-Mar-21	45	■ CMS - Polymer Preparation System & Pumps											
ATALZ3S1-2130	Procurement and Delivery of Materials	80	11-Jan-21	24-Apr-21	11-Mar-21	19-Jun-21	45	■ Procurement and Delivery of Materials											
Z3S1-2100	Civil Structural Construction for Polymer Preparation & Dosing System	50	17-May-21	16-Jul-21	17-May-21	16-Jul-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	21-Jun-21	31-Jul-21	21-Jun-21	31-Jul-21	0	■ E&M installation of polymer preparation & dosing system c/w pipework & valves & cabling											
Relocation of Ferric Chloride (FeCl₃) Dosing System								73											
ATALZ3S1-2040	CGS - Method Statement Submission and Approval for Relocation	22	05-May-21	31-May-21	24-May-21	18-Jun-21	15	■ CGS - Method Statement Submission and Approval for Relocation											
Z3S1-2110	Civil Structural Construction for FeCl ₃ Dosing System	50	17-May-21	16-Jul-21	17-May-21	16-Jul-21	0	■ Civil Structural Construction for FeCl ₃ Dosing System											
ATALZ3S1-2170	Relocation Works of FeCl ₃ Dosing System	36	19-Jun-21	31-Jul-21	19-Jun-21	31-Jul-21	0	■ Relocation Works of FeCl ₃ Dosing System											
Temporary Digested Sludge Pumping System and Forward Pumping Station								187											
ATALZ3S1-2030	CMS - Digested Sludge Pump / Forward Pump	22	07-Dec-20	04-Jan-21	24-Feb-21	20-Mar-21	59	■ CMS - Digested Sludge Pump / Forward Pump											
ATALZ3S1-2120	Procurement and Delivery of Materials	100	05-Jan-21	13-May-21	22-Mar-21	24-Jul-21	59	■ Procurement and Delivery of Materials											
Z3S1-2050	Civil Structural Construction for Digested Sludge Pumping System	60	05-May-21	16-Jul-21	05-May-21	16-Jul-21	0	■ 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	19-Jun-21	31-Jul-21	19-Jun-21	31-Jul-21	0	■ E&M installation of digested sludge pump c/w pipework & valves & cabling at Stage 1A											
Temporary Primary Sludge Pumping Station (P)								249											
Z3TD1-4010	Civil Structural Construction of Temporary Primary Sludge Pumping Station	238	07-Dec-20	30-Sep-21	28-Jan-21	20-Nov-21	42	■ Civil Structural Construction of Temporary Primary Sludge Pumping Station											
Z3TD1-4040	CMS - Primary Sludge Pump	22	01-Apr-21	30-Apr-21	27-May-21	22-Jun-21	42	■ CMS - Primary Sludge Pump											
Z3TD1-4060	Procurement and Delivery of Materials	102	03-May-21	01-Sep-21	23-Jun-21	23-Oct-21	42	■ Procurement and Delivery of Materials											
Z3TD1-4100	E&M Installation of Primary Sludge Pump for pipework & cabling	24	02-Sep-21	30-Sep-21	25-Oct-21	20-Nov-21	42	■ E&M Installation of Primary Sludge Pump for pipework & cabling											
Z3TD1-4110	T&C (Functional test for Pumping System)	11	02-Oct-21	15-Oct-21	22-Nov-21	03-Dec-21	42	■ T&C (Functional test for Pumping System)											
Overhaul Works At Existing SDT Footprint								202											
ATALZ3S1-1000	Method Statement / PMAC Submission and Approval for SDTs	40	09-Nov-20	24-Dec-20	09-Nov-20	24-Dec-20	0	■ Method Statement / PMAC Submission and Approval for SDTs											
ATALZ3S1-1010	Overhaul of Bell Valves, Air Relief Valves, Sludge Feed Valves for SDT No. 1 & 2	16	28-Dec-20*	15-Jan-21	28-Dec-20	15-Jan-21	0	■ Overhaul of Bell Valves, Air Relief Valves, Sludge Feed Valves for SDT No. 1 & 2											
ATALZ3S1-1020	Water Filling and Purging of SDT 1 & 2	17	16-Jan-21	04-Feb-21	16-Jan-21	04-Feb-21	0	■ Water Filling and Purging of SDT 1 & 2											
ATALZ3S1-1060	Recommissioning of SDT No. 1 & 2	14	05-Feb-21	27-Feb-21	05-Feb-21	27-Feb-21	0	■ Recommissioning of SDT No. 1 & 2											
Z3S1A-2040	Temporary Sludge Pipework Connection to the Methane Compressor House at Existing SDT	18	01-Mar-21	20-Mar-21	02-Mar-21	22-Mar-21	1	■ Temporary Sludge Pipework Connection to the Methane Compressor House at Existing SDT											
SDT No. 3 and 4								115											



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

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

Detailed Works Programme

Project ID : DWP.DPr1_210422
 Layout : DC201910 Detailed Programme
 Page 17 of 24

Detailed Works Programme			
Date	Revision	Checked	Approved
15-Mar-21	Rev. 0		
21-Apr-21	Rev 1		

Activity Code	Activity Name	Duration	Start	Finish	Latest	Earliest	Total Float	2023												2024																	
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec						
S4 : STB Superstructure								14	19-May-23	05-Jun-23	30-May-23	14-Jun-23	8	■ STB -Structure (+6.0 to +9.0mPD) Ground Floor@ +6.0mPD at Stage 4																							
Z3S3-3100	STB - Structure (+6.0 to +9.0mPD) Ground Floor @ +6.0mPD at Stage 4	14	19-May-23	05-Jun-23	30-May-23	14-Jun-23	8																														
S4 : Chemical Building and Reclaimed Water Building								141	03-Jan-23	30-Jun-23	11-Feb-23	10-Jul-23	7	■ Construction of Reclaimed Water Building with Underground Pipeworks at Stage 4																							
Z3S3-3080	Construction of Reclaimed Water Building with Underground Pipeworks at Stage 4	120	03-Jan-23	05-Jun-23	11-Feb-23	10-Jul-23	28																														
Z3S3-3070	Sludge Thickening Chemical System Building at Stage 4	120	03-Feb-23	30-Jun-23	11-Feb-23	10-Jul-23	7	■ Sludge Thickening Chemical System Building at Stage 4																													
Stage 4 : Biogas Holder No. 1 (Continued)								80	22-Feb-23	01-Jun-23	22-Feb-23	01-Jun-23	0																								
ATLZ3BH-1010	Biogas Holder No. 1 - Installation of pipework and instrumentation in Biogas Holder Valve Chamber No.4	56	22-Feb-23	03-May-23	22-Feb-23	03-May-23	0	■ Biogas Holder No. 1 - Installation of pipework and instrumentation in Biogas Holder Valve Chamber No.4																													
ATLZ3BH-1020	Biogas Holder No. 1 - Instrumentation	56	22-Feb-23	03-May-23	22-Feb-23	03-May-23	0	■ Biogas Holder No. 1 - Instrumentation																													
ATLZ3BH-1030	Biogas Holder No. 1 - Installation of Biogas Booster Pump No.1 & 2	56	22-Feb-23	03-May-23	22-Feb-23	03-May-23	0	■ Biogas Holder No. 1 - Installation of Biogas Booster Pump No.1 & 2																													
ATLZ3BH-1040	Biogas Holder No. 1 - Electrical works (Cable wiring, termination)	56	22-Feb-23	03-May-23	22-Feb-23	03-May-23	0	■ Biogas Holder No. 1 - Electrical works (Cable wiring, termination)																													
ATLZ3BH-1050	Biogas Holder No. 1 - System Commissioning	24	04-May-23	01-Jun-23	04-May-23	01-Jun-23	0	■ Biogas Holder No. 1 - System Commissioning																													
Stage 4 : Utility Corridor Construction (Continued)								134	14-Feb-23	19-Jul-23	02-Jun-23	31-Jul-23	10																								
Stage 4 : Utility Corridor No. 2								18	14-Feb-23	06-Mar-23	11-Jul-23	31-Jul-23	118																								
S4 : UC/PP2 E&M Installation								18	14-Feb-23	06-Mar-23	11-Jul-23	31-Jul-23	118																								
Z3S2-2380	UC/PP 2 - E&M Installation and Pipeworks at Stage 4	18	14-Feb-23	06-Mar-23	11-Jul-23	31-Jul-23	118	■ UC/PP 2 - E&M Installation and Pipeworks at Stage 4																													
Stage 4 : Utility Corridor No. 1								41	02-Jun-23	19-Jul-23	02-Jun-23	19-Jul-23	0																								
Z3S4-2000	Demolish Gas Holder (12) GH2	24	02-Jun-23	30-Jun-23	02-Jun-23	30-Jun-23	0	■ Demolish Gas Holder (12) GH2																													
S4 : UC/PP 1 Foundation and ELS Works								15	03-Jul-23	19-Jul-23	03-Jul-23	19-Jul-23	0																								
Z3S5UC1-2000	UC/PP 1 - Sheetpile Installation (2,674m2 @90m2/d)	15	03-Jul-23	19-Jul-23	03-Jul-23	19-Jul-23	0	■ UC/PP 1 - Sheetpile Installation (2,674m2 @90m2/d)																													
Stage 4 : Pipe Portal No. 1								16	03-Jul-23	20-Jul-23	13-Jul-23	31-Jul-23	9																								
Z3S4-2010	PP 1 - Structure (-6.25 to -5.0mPD, Base Slab)	16	03-Jul-23	20-Jul-23	13-Jul-23	31-Jul-23	9	■ PP 1 - Structure (-6.25 to -5.0mPD, Base Slab)																													
Stage 4 : New Sludge Digester No. 1 and 2 (Continued)								107	07-Sep-22	09-Jan-23	28-Sep-22	05-Jul-23	152																								
Stage 4 : SD 1,2 Foundation and ELS								107	07-Sep-22	09-Jan-23	28-Sep-22	05-Jul-23	152																								
Z3S3-2050	Sludge Digester No. 1-2 - Driven H-pile (44 nos @ ave.1.5no/d/riq)	30	07-Sep-22*	14-Oct-22	28-Sep-22	04-Apr-23	17	■ Sludge Digester No. 1-2 - Driven H-pile (44 nos @ ave.1.5no/d/riq)																													
Z3S3-2060	Sludge Digester No. 1-2 - Sheet Piles Install (3,128m2 @90m2/d)	26	15-Oct-22	14-Nov-22	06-Apr-23	10-May-23	138	■ Sludge Digester No. 1-2 - Sheet Piles Install (3,128m2 @90m2/d)																													
S4 : Excavation and Strut Installation								45	15-Nov-22	09-Jan-23	11-May-23	05-Jul-23	138																								
Z3S3-2110	Sludge Digester No. 1-2 - ELS Excavation (+6.0 to +4.6mPD)	12	15-Nov-22	28-Nov-22	11-May-23	24-May-23	138	■ Sludge Digester No. 1-2 - ELS Excavation (+6.0 to +4.6mPD)																													
Z3S3-2130	Sludge Digester no. 1-2 - Marine Sediments Treatment and Disposal	21	29-Nov-22	22-Dec-22	25-May-23	19-Jun-23	138	■ Sludge Digester no. 1-2 - Marine Sediments Treatment and Disposal																													
Z3S3-2140	Sludge Digester No. 1-2 - Strut Installation S1 (+4.6mPD)	7	29-Nov-22	06-Dec-22	03-Jun-23	10-Jun-23	145	■ Sludge Digester No. 1-2 - Strut Installation S1 (+4.6mPD)																													
Z3S3-2150	Sludge Digester No. 1-2 - ELS Excavation (+4.6 to +1.1mPD)	12	29-Nov-22	12-Dec-22	29-May-23	10-Jun-23	140	■ Sludge Digester No. 1-2 - ELS Excavation (+4.6 to +1.1mPD)																													
Z3S3-2190	Sludge Digester No. 1-2 - Strut Installation S2 (+1.1mPD)	7	13-Dec-22	20-Dec-22	12-Jun-23	19-Jun-23	140	■ Sludge Digester No. 1-2 - Strut Installation S2 (+1.1mPD)																													
Z3S3-2200	Sludge Digester No. 1-2 - ELS Excavation (+1.1 to -2.4mPD)	12	23-Dec-22	09-Jan-23	20-Jun-23	05-Jul-23	138	■ Sludge Digester No. 1-2 - ELS Excavation (+1.1 to -2.4mPD)																													
Stage 4 : New Sludge Digester No. 3 (Continued)								171	15-Oct-22	02-May-23	01-Jun-23	31-Jul-23	77																								
Stage 4 : SD 3 Foundation and ELS Works								171	15-Oct-22	02-May-23	01-Jun-23	31-Jul-23	77																								
Z3S3-2080	Sludge Digester No. 3 - Pre-drill (1 no. SD-PD5)	14	15-Oct-22	31-Oct-22	01-Jun-23	16-Jun-23	181	■ Sludge Digester No. 3 - Pre-drill (1 no. SD-PD5)																													
Z3S3-2100	Sludge Digester No. 3 - Project Specific Boreholes (1 no. ABH17)	14	01-Nov-22	16-Nov-22	17-Jun-23	05-Jul-23	181	■ Sludge Digester No. 3 - Project Specific Boreholes (1 no. ABH17)																													
Z3S3-2120	Sludge Digester No. 3 - Sheet Piles Install (3,128m2 @90m2/d)	18	17-Nov-22*	07-Dec-22	11-Jul-23	31-Jul-23	185	■ Sludge Digester No. 3 - Sheet Piles Install (3,128m2 @90m2/d)																													
Z3S3-2070	Sludge Digester No. 3 - Driven H-pile (22 nos @ ave.1.5no/d/riq)	22	01-Apr-23	02-May-23	06-Jul-23	31-Jul-23	74	■ Sludge Digester No. 3 - Driven H-pile (22 nos @ ave.1.5no/d/riq)																													
Stage 5 (Jun 2023 to Jan 2024)								324	23-Dec-22	31-Jan-24	15-Jun-23	07-Feb-24	6																								
Z3S5-3350	Completion of Stage 5	0		31-Jan-24*		31-Jan-24	0	◆ Completion of Stage 5																													
Stage 5 : New Sludge Thickening Building (STB) (Continued)								191	06-Jun-23	23-Jan-24	15-Jun-23	31-Jan-24	7																								
Stage 5 : STB Civil and Structural Works								190	06-Jun-23	22-Jan-24	15-Jun-23	31-Jan-24	8																								
S5 : STB Superstructure								145	06-Jun-23	27-Nov-23	15-Jun-23	08-Jan-24	33																								
Z3S3-2660	STB - Structure (+6.0 to +9.0mPD) Ground Floor @ +6.0mPD at Stage 5	25	06-Jun-23	06-Jul-23	15-Jun-23	15-Jul-23	8	■ STB -Structure (+6.0 to +9.0mPD) Ground Floor@ +6.0mPD at Stage 5																													
Z3S3-2700	STB - Structure (+9.0 to +12.0mPD)	30	07-Jul-23	10-Aug-23	17-Jul-23	19-Aug-23	8	■ STB -Structure (+9.0 to +12.0mPD)																													
Z3S3-2710	STB - Structure (+12.0 to +15.0mPD) First Floor @ +13.5mPD	30	11-Aug-23	14-Sep-23	21-Aug-23	23-Sep-23	8	■ STB - Structure (+12.0 to +15.0mPD) First Floor @ +13.5mPD																													
Z3S3-2740	STB - Structure (+15.0 to +18.3mPD) Roof Floor	30	15-Sep-23	21-Oct-23	25-Sep-23	01-Nov-23	8	■ STB - Structure (+15.0 to +18.3mPD) Roof Floor																													
Z3S3-2770	STB - Structure (+18.3 to +21.1mPD)	30	24-Oct-23	27-Nov-23*	02-Nov-23	06-Dec-23	8	■ STB - Structure (+18.3 to +21.1mPD)																													
Z3S3-2780	KD10 - STB Civil & Structural Works of Roof Floor	0		27-Nov-23*		08-Jan-24	33	◆ KD10 : STB Civil & Structural Works of Roof Floor																													
S5 : Chemical Building and Reclaimed Water Building								81	06-Jun-23	09-Sep-23	11-Jul-23	18-Sep-23	7																								
Z3S3-3180	Construction of Reclaimed Water Building with Underground Pipeworks at Stage 5	60	06-Jun-23	16-Aug-23	11-Jul-23	18-Sep-23	28	■ Construction of Reclaimed Water Building with Underground Pipeworks at Stage 5																													
Z3S3-3170	Sludge Thickening Chemical System Building at Stage 5	60	03-Jul-23	09-Sep-23	11-Jul-23	18-Sep-23	7	■ Sludge Thickening Chemical System Building at Stage 5																													
S5 : STB ABWF and BS Works								45	28-Nov-23	22-Jan-24	07-Dec-23	31-Jan-24	8																								
Z3S3-2790	STB - BS and ABWF Works at Stage 5	45	28-Nov-23	22-Jan-24	07-Dec-23	31-Jan-24	8	■ STB - BS and ABWF Works at Stage 5																													
Stage 5 : STB E&M Installation								110	11-Sep-23	23-Jan-24	19-Sep-23	31-Jan-24	7																								
Z3S3-2720	STB - Reclaimed Water System and Associated Pipeworks at Stage 5	110	11-Sep-23	23-Jan-24	19-Sep-23	31-Jan-24	7	■ STB - Reclaimed Water System and Associated Pipeworks at Stage 5																													
Z3S3-2730	STB - Sludge Thickening Chemical Dosing System and Associated Pipeworks at Stage 5	110	11-Sep-23	23-Jan-24	19-Sep-23	31-Jan-24	7	■ STB - Sludge Thickening Chemical Dosing System and Associated Pipeworks at Stage 5																													
Z3S3-2800	STB - Deodorization System at Stage 5	44	28-Nov-23	20-Jan-24	08-Dec-23	31-Jan-24	9	■ STB - Deodorization System at Stage 5																													
Z3S3-2810	STB - Sludge Thickening, Transferring and Pumping System and Associated Pipeworks at Stage 5	44	28-Nov-23	20-Jan-24	08-Dec-23	31-Jan-24	9	■ STB - Sludge Thickening, Transferring and Pumping System and Associated Pipeworks at Stage 5																													
Stage 5 : Utility Corridor Construction (Continued)								87	20-Jul-23	01-Nov-23	20-Jul-23	31-Jan-24	75																								
Stage 5 : Utility Corridor No. 1								87	20-Jul-23	01-Nov-23	20-Jul-23	31-Jan-24	75																								
S5 : UC/PP 1 Foundation and ELS Works								87	20-Jul-23	01-Nov-23	20-Jul-23	31-Jan-24	75																								
Z3S5UC1-2140	UC/PP 1 - Sheetpile Installation (2,674m2 @90m2/d)	15	20-Jul-23	05-Aug-23	20-Jul-23	05-Aug-23	0	■ UC/PP 1 - Sheetpile Installation (2,674m2 @90m2/d)																													
Z3S5UC1-2010	UC/PP 1 - ELS, Excavation (+6.0 to +4.0mPD)	18	07-Aug-23	26-Aug-23	07-Aug-23	26-Aug-23	0	■ UC/PP 1 - ELS, Excavation (+6.0 to +4.0mPD)																													
Z3S5UC1-2080	UC/PP 1 - Marine Sediments Treatment and Disposal	30	28-Aug-23	03-Oct-23	27-Dec-23	31-Jan-24	99	■ UC/PP 1 - Marine Sediments Treatment and Disposal																													
Z3S5UC1-2020	UC/PP 1 - ELS, Strut Installation S1 (+4.0mPD)	12	28-Aug-23	09-Sep-23	11-Sep-23	23-Sep-23	12	■ UC/PP 1 - ELS, Strut Installation S1 (+4.0mPD)																													
Z3S5UC1-2030	UC/PP 1 - ELS, Excavation (+4.0 to +1.5mPD)	18	28-Aug-23	16-Sep-23	28-Aug-23	16-Sep-23	0	■ UC/PP 1 - ELS, Excavation (+4.0 to +1.5mPD)																													
Z3S5UC1-2040	UC/PP 1 - ELS, Strut Installation S2 (+1.5mPD)	12	18-Sep-23	03-Oct-23	25-Sep-23	10-Oct-23	6	■ UC/PP 1 - ELS, Strut Installation S2 (+1.5mPD)																													
Z3S5UC1-2050	UC/PP 1 - ELS, Excavation (+1.5 to -1.0mPD)	18	18-Sep-23	10-Oct-23	18-Sep-23	10-Oct-23	0	■ UC/PP 1 - ELS, Excavation (+1.5 to -1.0mPD)																													
Z3S5UC1-2060	UC/PP 1 - ELS, Strut Installation S3 (-1.0mPD)	12	11-Oct-23	25-Oct-23	11-Oct-23	25-Oct-23	0	■ UC/PP 1 - ELS, Strut Installation S3 (-1.0mPD)																													
Z3S5UC1-2070	UC/PP 1 - ELS, Excavation (-1.0 to -3.75mPD)	18	11-Oct-23	01-Nov-23	11-Oct-23	01-Nov-23	0	■ UC/PP 1 - ELS, Excavation (-1.0 to -3.75mPD)																													
Stage 5 : Pipe Portal No. 1								98	21-Jul-23	15-Nov-23	03-Aug-23	28-Nov-23	11																								
Z3S4-2020	PP 1 - Structure (-5.0 to -2.0mPD) including Backfill	15	21-Jul-23	07-Aug-23	03-Aug-23	19-Aug-23	11	■ PP 1 - Structure (-5.0 to -2.0mPD) including Backfill																													
Z3S4-2030	PP 1 - Structure (-2.0 to +1.0mPD) including Backfill	16	08-Aug-23	25-Aug-23	21-Aug-23	07-Sep-23	11	■ PP 1 - Structure (-2.0 to +1.0mPD) including Backfill																													



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

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

Detailed Works Programme

Project ID : DWP.DP1_210422
 Layout : DC201910 Detailed Programme
 Page 20 of 24

Detailed Works Programme			
Date	Revision	Checked	Approved
15-Mar-21	Rev. 0		
21-Apr-21	Rev 1		

Work ID	Activity Name	Duration	Start Date	Finish Date	Latest	Earliest	Total Float	2024																	
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec						
Stage 6 : New Sludge Digester No. 3 (Continued)								87	18-Sep-23	03-Jan-24	07-Feb-24	31-May-24	116												
Stage 6 : SD 3 Civil and Structural Works								87	18-Sep-23	03-Jan-24	07-Feb-24	31-May-24	116												
S6 : SD 3 Substructure								45	18-Sep-23	11-Nov-23	07-Feb-24	10-Apr-24	116												
Z3S3-2480	Sludge Digester No. 3 - Structure (-3.8 to -0.8mPD)	15	18-Sep-23	06-Oct-23	07-Feb-24	01-Mar-24	116	■ Sludge Digester No. 3 - Structure (-3.8 to -0.8mPD)																	
Z3S3-2490	Sludge Digester No. 3 - Structure (-0.8 to 2.2mPD)	15	07-Oct-23	25-Oct-23	02-Mar-24	19-Mar-24	116	■ Sludge Digester No. 3 - Structure (-0.8 to 2.2mPD)																	
Z3S3-2530	Sludge Digester No. 3 - Structure (+2.2 to +5.2mPD)	15	26-Oct-23	11-Nov-23	20-Mar-24	10-Apr-24	116	■ Sludge Digester No. 3 - Structure (+2.2 to +5.2mPD)																	
S6 : SD 3 Superstructure								42	13-Nov-23	03-Jan-24	11-Apr-24	31-May-24	116												
Z3S3-2540	Sludge Digester No. 3 - Structure (+5.2 to +8.2mPD)	8	13-Nov-23	21-Nov-23	11-Apr-24	19-Apr-24	116	■ Sludge Digester No. 3 - Structure (+5.2 to +8.2mPD)																	
Z3S3-2560	Sludge Digester No. 3 - Structure (+8.2 to +11.2mPD)	8	22-Nov-23	30-Nov-23	20-Apr-24	29-Apr-24	116	■ Sludge Digester No. 3 - Structure (+8.2 to +11.2mPD)																	
Z3S3-2570	Sludge Digester No. 3 - Structure (+11.2 to +14.2mPD)	8	01-Dec-23	09-Dec-23	30-Apr-24	09-May-24	116	■ Sludge Digester No. 3 - Structure (+11.2 to +14.2mPD)																	
Z3S3-2590	Sludge Digester No. 3 - Structure (+14.2 to +16.83mPD)	8	11-Dec-23	19-Dec-23	10-May-24	20-May-24	116	■ Sludge Digester No. 3 - Structure (+14.2 to +16.83mPD)																	
Z3S3-2610	Sludge Digester No. 3 - Structure (+16.83 to +18.3mPD)	10	20-Dec-23	03-Jan-24	21-May-24	31-May-24	116	■ Sludge Digester No. 3 - Structure (+16.83 to +18.3mPD)																	
Stage 7 (Mar 2024 to Feb 2025)								363	01-Dec-23	27-Jan-25	20-May-24	27-Jan-25	0												
Z3S7-3370	Completion of Stage 7	0		27-Jan-25*		27-Jan-25	0	◆ Completion of Stage 7																	
Stage 7 : New Sludge Thickening Building (STB) (Continued)								185	20-May-24	20-Dec-24	24-Jun-24	27-Jan-25	32												
Stage 7 : STB ABWF and BS Works								165	21-May-24	04-Dec-24	12-Jul-24	27-Jan-25	43												
Z3S3-3090	STB - BS and ABWF Works at Stage 7	165	21-May-24	04-Dec-24	12-Jul-24	27-Jan-25	43	■ STB - BS and ABWF Works at Stage 7																	
Stage 7 : STB E&M Installation								86	20-May-24	29-Aug-24	24-Jun-24	27-Jan-25	123												
Z3S3-3260	STB - Deodorization System at Stage 7	86	20-May-24	29-Aug-24	16-Oct-24	27-Jan-25	123	■ STB - Deodorization System at Stage 7																	
Z3S3-3270	STB - Sludge Thickening, Transferring and Pumping System and Associated Pipeworks at Stage 7	86	20-May-24	29-Aug-24	24-Jun-24	04-Oct-24	29	■ STB - Sludge Thickening, Transferring and Pumping System and Associated Pipeworks at Stage 7																	
Z3S3-3220	STB - Electrical works (Cable wiring, termination) at Stage 7	56	22-May-24	27-Jul-24	20-Nov-24	27-Jan-25	151	■ STB - Electrical works (Cable wiring, termination) at Stage 7																	
Z3S3-3230	STB - BS Installation (ELV, Ventilation, FS, PD) at Stage 7	56	22-May-24	27-Jul-24	20-Nov-24	27-Jan-25	151	■ STB - BS Installation (ELV, Ventilation, FS, PD) at Stage 7																	
Z3S3-3240	STB - Reclaimed Water System and Associated Pipeworks at Stage 7	40	22-May-24	09-Jul-24	29-Jun-24	15-Aug-24	32	■ STB - Reclaimed Water System and Associated Pipeworks at Stage 7																	
Z3S3-3250	STB - Sludge Thickening Chemical Dosing System and Associated Pipeworks at Stage 7	40	22-May-24	09-Jul-24	29-Jun-24	15-Aug-24	32	■ STB - Sludge Thickening Chemical Dosing System and Associated Pipeworks at Stage 7																	
Stage 7 : STB Testing & Commissioning								141	10-Jul-24	20-Dec-24	16-Aug-24	27-Jan-25	32												
Z3S3-2910	STB - T&C - Equipment SAT (Dry Test)	39	10-Jul-24	23-Aug-24	16-Aug-24	02-Oct-24	32	■ STB - T&C - Equipment SAT (Dry Test)																	
Z3S3-2920	STB - T&C - Equipment SAT (Functional Test)	48	24-Aug-24	22-Oct-24	03-Oct-24	28-Nov-24	32	■ 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	30-Aug-24	20-Dec-24	05-Oct-24	27-Jan-25	29	■ STB - T&C - Sludge Thickening Building & Chemical System - System Commissioning																	
Z3S3-2960	STB - T&C - Equipment SAT (Wet Test)	6	23-Oct-24	29-Oct-24	29-Nov-24	05-Dec-24	32	■ STB - T&C - Equipment SAT (Wet Test)																	
Z3S3-2970	STB - FS Inspection and Fire Certificate	42	02-Nov-24	20-Dec-24	06-Dec-24	27-Jan-25	29	■ STB - FS Inspection and Fire Certificate																	
Z3S3-2980	Achieve 60,000m3/d flowrate (KD4, 5-Feb-26)	0		20-Dec-24		27-Jan-25	38	◆ Achieve 60,000m3/d flowrate (KD4, 5-Feb-26)																	
Stage 7 : UC/PP Connection								30	20-May-24	24-Jun-24	20-May-24	24-Jun-24	0												
Z3S7-2000	Permanent Sludge Pipe Connection from Sludge Thickening Building and Pipe Portal No. 1	30	20-May-24	24-Jun-24	20-May-24	24-Jun-24	0	■ Permanent Sludge Pipe Connection from Sludge Thickening Building and Pipe Portal No. 1																	
Z3S7-2010	Temporary Sludge Pipe Connection into UU Corridor	30	20-May-24	24-Jun-24	20-May-24	24-Jun-24	0	■ Temporary Sludge Pipe Connection into UU Corridor																	
Z3S7-2020	Temporary Sludge, Gas and Heating Water Pipe Connection into UU Corridor	30	20-May-24	24-Jun-24	20-May-24	24-Jun-24	0	■ Temporary Sludge, Gas and Heating Water Pipe Connection into UU Corridor																	
Stage 7 : Pipe Portal No. 3								114	17-Aug-24	03-Jan-25	10-Sep-24	27-Jan-25	20												
Z3S8PP3-2000	PP 3 - Structure (-6.25 to -5.0mPD, Base Slab)	16	17-Aug-24	04-Sep-24	10-Sep-24	28-Sep-24	20	■ PP 3 - Structure (-6.25 to -5.0mPD, Base Slab)																	
Z3S8PP3-2010	PP 3 - Structure (-5.0 to -2.0mPD) including Backfill	15	05-Sep-24	23-Sep-24	30-Sep-24	18-Oct-24	20	■ PP 3 - Structure (-5.0 to -2.0mPD) including Backfill																	
Z3S8PP3-2020	PP 3 - Structure (-2.0 to +1.0mPD) including Backfill	16	24-Sep-24	14-Oct-24	19-Oct-24	06-Nov-24	20	■ PP 3 - Structure (-2.0 to +1.0mPD) including Backfill																	
Z3S8PP3-2030	PP 3 - Structure (+1.0 to +4.0mPD) including Backfill	15	15-Oct-24	31-Oct-24	07-Nov-24	23-Nov-24	20	■ 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	16	01-Nov-24	19-Nov-24	25-Nov-24	12-Dec-24	20	■ PP 3 - Structure (+4.0 to +7.0mPD), including Backfill SFL @ +6.0mPD																	
Z3S8PP3-2050	PP 3 - Structure (+7.0 to 10.5 mPD)	12	20-Nov-24	03-Dec-24	13-Dec-24	28-Dec-24	20	■ PP 3 - Structure (+7.0 to 10.5 mPD)																	
Z3S8PP3-2060	PP 3 - Structure (+10.5 to 14.0 mPD)	12	04-Dec-24	17-Dec-24	30-Dec-24	13-Jan-25	20	■ PP 3 - Structure (+10.5 to 14.0 mPD)																	
Z3S8PP3-2070	PP 3 - Structure (+14.0 to 17.65 mPD)	12	18-Dec-24	03-Jan-25	14-Jan-25	27-Jan-25	20	■ PP 3 - Structure (+14.0 to 17.65 mPD)																	
Stage 7 : New Sludge Digester Nos. 1 and 2 (Continued)								202	01-Dec-23	12-Aug-24	28-May-24	27-Jan-25	138												
Stage 7 : E&M Installation								68	01-Dec-23	28-Feb-24	28-May-24	16-Aug-24	138												
Z3S3-3280	SDT No.1&2 - Tank Internal Pipework and Jet Nozzle Installation at Stage 7	46	01-Dec-23	26-Jan-24	28-May-24	22-Jul-24	138	■ 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	01-Dec-23	26-Jan-24	28-May-24	22-Jul-24	138	■ 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	01-Dec-23	26-Jan-24	28-May-24	22-Jul-24	138	■ SDT No.1&2 - Tank Associated Pipework at Stage 7																	
Z3S3-2750	SDT No.1&2 - Instrumentation	22	27-Jan-24	28-Feb-24	23-Jul-24	16-Aug-24	138	■ SDT No.1&2 - Instrumentation																	
Z3S3-2760	SDT No.1&2 - Electrical works (Cable wiring, termination)	22	27-Jan-24	28-Feb-24	23-Jul-24	16-Aug-24	138	■ SDT No.1&2 - Electrical works (Cable wiring, termination)																	
Stage 7 : Testing & Commissioning								134	29-Feb-24	12-Aug-24	17-Aug-24	27-Jan-25	138												
S7 : Equipment SAT								44	29-Feb-24	24-Apr-24	17-Aug-24	09-Oct-24	138												
Z3S3-2820	SDT No.1&2 - T&C - Equipment SAT (Dry Test)	44	29-Feb-24	24-Apr-24	17-Aug-24	09-Oct-24	138	■ SDT No.1&2 - T&C - Equipment SAT (Dry Test)																	
Z3S3-2830	SDT No.1&2 - T&C - Equipment SAT (Functional Test)	43	29-Feb-24	23-Apr-24	19-Aug-24	09-Oct-24	139	■ SDT No.1&2 - T&C - Equipment SAT (Functional Test)																	
Z3S3-2840	SDT No.1&2 - T&C - Equipment SAT (Wet Test)	44	29-Feb-24	24-Apr-24	17-Aug-24	09-Oct-24	138	■ SDT No.1&2 - T&C - Equipment SAT (Wet Test)																	
S7 : Process Start-Up								90	25-Apr-24	12-Aug-24	10-Oct-24	27-Jan-25	138												
Z3S3-2870	SDT No.1&2 - T&C - Purging of tank and pipeworks at Stage 7	90	25-Apr-24	12-Aug-24	10-Oct-24	27-Jan-25	138	■ SDT No.1&2 - T&C - Purging of tank and pipeworks at Stage 7																	
Z3S3-2880	SDT No.1&2 - T&C - Seeding at Stage 7	90	25-Apr-24	12-Aug-24	10-Oct-24	27-Jan-25	138	■ SDT No.1&2 - T&C - Seeding at Stage 7																	
Z3S3-2890	SDT No.1&2 - T&C - Sludge Mixing and Digestion at Stage 7	90	25-Apr-24	12-Aug-24	10-Oct-24	27-Jan-25	138	■ SDT No.1&2 - T&C - Sludge Mixing and Digestion at Stage 7																	
Stage 7 : Demolition of SDT 1-4								45	25-Jun-24	16-Aug-24	28-Jun-24	02-Sep-24	14												
Z3S7-2030	Demolish Existing SDT 2 & 4 (9)	45	25-Jun-24	16-Aug-24	28-Jun-24	20-Aug-24	3	■ Demolish Existing SDT 2 & 4 (9)																	
Z3S7-2040	Demolish Existing SDT 1 & 3 (9)	45	25-Jun-24	16-Aug-24	12-Jul-24	02-Sep-24	14	■ Demolish Existing SDT 1 & 3 (9)																	
Stage 7 : New Sludge Digester No. 4								170	25-Jun-24	08-Jan-25	25-Jun-24	18-Jan-25	9												
Stage 7 : SD 4 Foundation and ELS Works								170	25-Jun-24	08-Jan-25	25-Jun-24	18-Jan-25	9												
Z3S8SD-2000	Sludge Digester No. 4 - Pre-drill (1 no. SD-PD6)	14	25-Jun-24	11-Jul-24	25-Jun-24	11-Jul-24	0	■ Sludge Digester No. 4 - Pre-drill (1 no. SD-PD6)																	
Z3S8SD-2010	Sludge Digester No. 4 - Project Specific Boreholes (1 no. ABH15)	14	12-Jul-24	27-Jul-24	12-Jul-24	27-Jul-24	0	■ Sludge Digester No. 4 - Project Specific Boreholes (1 no. ABH15)																	
Z3S8SD-2020	Sludge Digester No. 4 - Pre-drill (1 no. SD-PD7)	14	17-Aug-24	02-Sep-24	21-Aug-24	05-Sep-24	3	■ Sludge Digester No. 4 - Pre-drill (1 no. SD-PD7)																	
Z3S8SD-2030	Sludge Digester No. 4 - Driven H-pile (22 nos @ ave.1.5no/d/rig)	22	03-Sep-24	28-Sep-24	13-Sep-24	10-Oct-24	9	■ Sludge Digester No. 4 - Driven H-pile (22 nos @ ave.1.5no/d/rig)																	
Z3S8SD-2040	Sludge Digester No. 4 - Sheet Piles Install (3,128m2,@90m2/d)	18	30-Sep-24*	22-Oct-24	12-Oct-24	01-Nov-24	9	■ Sludge Digester No. 4 - Sheet Piles Install (3,128m2,@90m2/d)																	
S7 : Excavation and Strut Installation								64	23-Oct-24	08-Jan-25	02-Nov-24	18-Jan-25	9												
Z3S8SD-2050	Sludge Digester No. 4 - ELS Excavation (+6.0 to +4.6mPD)	16	23-Oct-24*	09-Nov-24	02-Nov-24	20-Nov-24	9	■ Sludge Digester No. 4 - ELS Excavation (+6.0 to +4.6mPD)																	
Z3S8SD-2060	Sludge Digester No. 4 - Marine Sediments Treatment and Disposal	30	11-Nov-24	14-Dec-24	23-Nov-24	30-Dec-24	11	■ Sludge Digester No. 4 - Marine Sediments Treatment and Disposal																	
Z3S8SD-2070	Sludge Digester No. 4 - Strut Installation S1 (+4.6mPD)	8	11-Nov-24	19-Nov-24	10-Dec-24	18-Dec-24	25	■ Sludge Digester No. 4 - Strut Installation S1 (+4.6mPD)																	



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

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

Detailed Works Programme

Project ID : DWP.DPr1_210422
 Layout : DC201910 Detailed Programme
 Page 22 of 24

Detailed Works Programme			
Date	Revision	Checked	Approved
15-Mar-21	Rev. 0		
21-Apr-21	Rev 1		

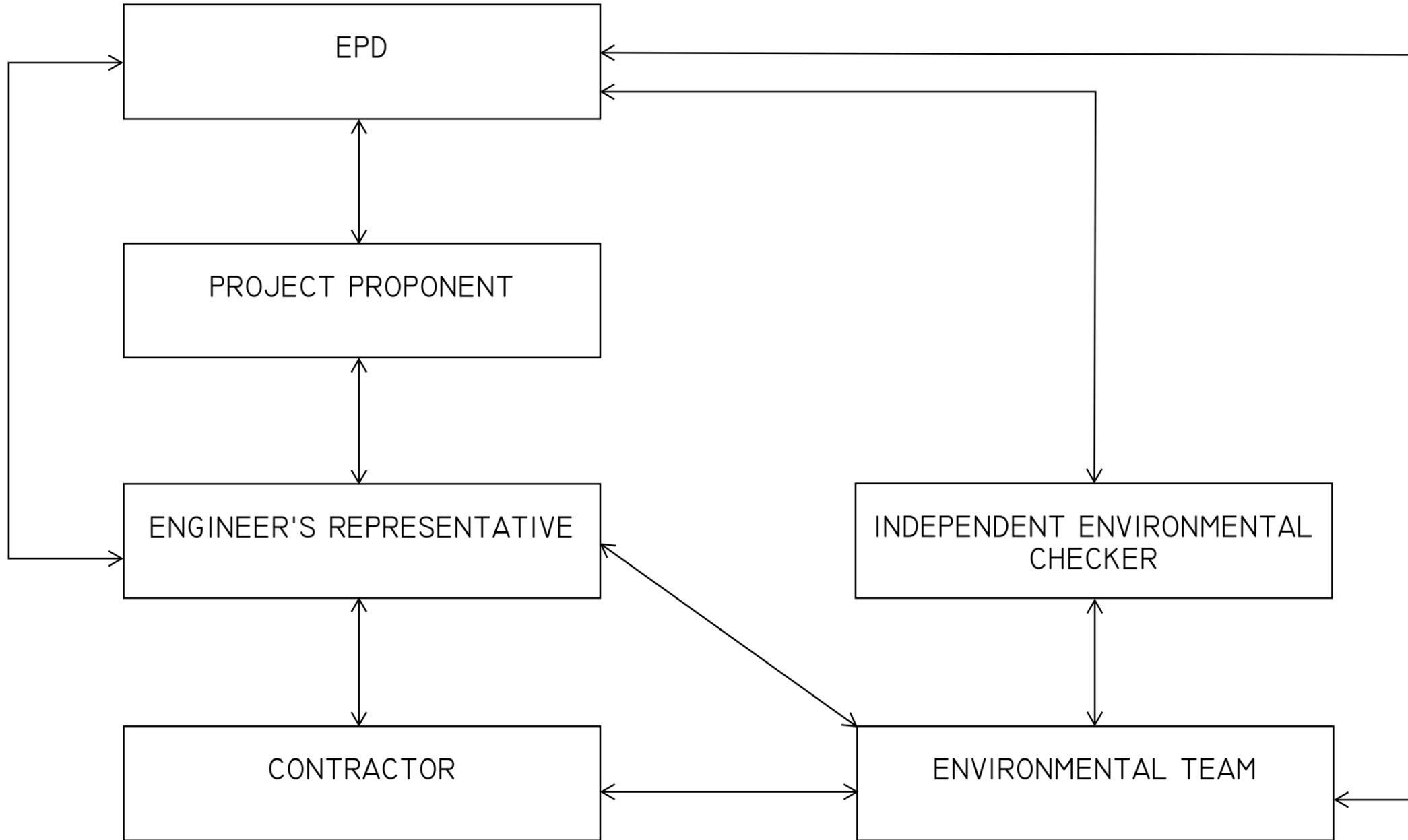
Appendix B

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

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or related upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the master dimensions.

Appendix C

Action and Limit Level

Action / Limit Levels for Air Quality

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

Notes:

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

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

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

Action and Limit Levels for Construction Noise

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

Notes:

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

Action and Limit Levels for Water Quality

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

Notes:

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

Action and Limit Levels for Ecology

Active Ardeid Night Roost Survey

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

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

Notes:

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

Ecological Monitoring of Birds

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

Notes:

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

Appendix D

Calibration Certificate of Monitoring
Equipment

Air Quality Monitoring Equipment

Report no. : 940891CA202730(1)

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

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

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
 Equipment ID. / Serial no. : 1. C-065-5 2. 4350
 Date of Calibration : 23-Nov-2020 Ambient Temperature : 25 ± 10 °C
 Calibration Location : General Chemical Laboratory of FTS and Ma Wan A1 Site Boundary
 Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m ³)	Total count for 1 hour	CPM (Count per minute)
0.0915	3647	60.78
0.0469	3027	50.45
0.1172	3861	64.35

Remarks:

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

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

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no. : 940891CA202730(6)

Page 1 of 1

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

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

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
 Equipment ID. / Serial no. : 1. C-065-5 2. 4350
 Date of Calibration : 23-Nov-2020 Ambient Temperature : 25 ± 10 °C
 Calibration Location : General Chemical Laboratory of FTS and Ma Wan A1 Site Boundary
 Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m ³)	Total count for 1 hour	CPM (Count per minute)
0.0915	3526	58.77
0.0469	2720	45.33
0.1172	3776	62.93

Remarks:

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

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

**** End of Report ****

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATIONS

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

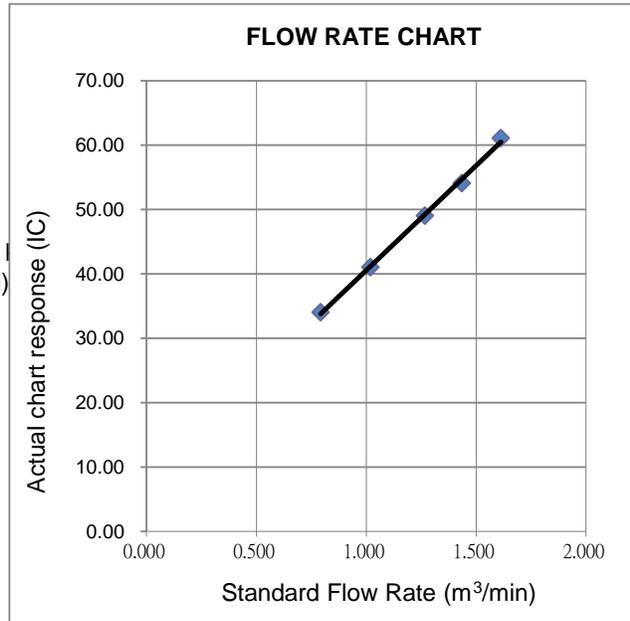
Calculations:

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

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

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

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



FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

MaterialLab

Report no. : 921436CA195379

Page 1 of 2



CALIBRATION CERTIFICATE OF SINGLE-PAN BALANCE

Client Supplied Information

Client : Fugro Technical Services Ltd.

Address : 5 Lok Yi Street, 17 M.S. Castle Peak Road, Tai Lam, Tuen Mun, N.T.

Manufacturer : Sartorius Capacity : 150 (g)

Model no. : LA130S-F Discrimination : 0.0001 (g)

Serial no. : 90104309 Operating range : 149.9999 (g)

Equipment ID. : C-065-5 Type : Without Built-in Mass

Location : General Chemical Laboratory of FTS

Next calibration due date : Full Check : 08-Apr-2021 Repeatability Check : 08-Oct-2019

Laboratory Information

Equipment ID. of weight set : R-030-29

Class of weight set : E2

Equipment ID. of psychrometer : R-067-67

Date of calibration : 09-Apr-2019

Temperature during test : 25 - 25 °C Relative humidity during test : 62 - 60 %

Method used : In house method R-C-082

COPY

Calibration results:

Departure from nominal value

Reading (g)	Correction (g)
5.0001	-0.0001
15.0000	0.0000
30.0001	-0.0001
45.0001	-0.0001
60.0003	-0.0003
75.0002	-0.0002
90.0003	-0.0003
105.0004	-0.0005
120.0003	-0.0004
135.0002	-0.0003
150.0002	-0.0003
--	--

Note:

When the sign of the correction is positive (+) the amount should be added to the balance reading to give the correct value and when negative (-) subtracted from it.

Repeatability of reading

Reading (g)	Standard deviation of reading (g)	Max. difference between successive reading (g)
5.0001	0.00010	0.0002
75.0002	0.00008	0.0002
150.0002	0.00007	0.0002

CA-R-124 (12/12/2008)

The Hong Kong Accreditation Service (HKAS) has accredited Fugro Technical Services Limited (Reg. No. HOKLAS 015) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. Such terms of accreditation stipulate that the results shall be traceable to the International System of Units (S.I.) or recognised measurement standards. The copyright of this report is owned by Fugro Technical Services Limited. It shall not be reproduced except with prior written approval from the issuing laboratory.

CAL29/0717

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

MaterialLab

Report no. : 921436CA195379

Page 2 of 2



Effect of off-centre loading

A mass of approximately 50 (g) was placed at various positions of the weighing pan. The differences in balance readings are given in the table.

Centre	Front	Rear	Left	Right	Maximum difference (g)
0.0000	0.0002	-0.0001	-0.0002	0.0005	0.0007

Hysteresis

Load (g)	Hysteresis (g)
100.0001	less than 0.0002

Tare check

Tare load (g)	Balance reading with 99.9999 (g)	Error (g)
50.0000	100.0000	0.0001

Uncertainty of weighing (correction is applied) = ± 0.0004 g at 95% confidence level, with a coverage factor of **2.09**

The uncertainty of weighing is the tolerance band within which 95% balance readings will fall after appropriate correction is applied

Limit of performance for the balance (no correction is applied) = ± 0.0010 g

The limit of performance is the tolerance band within which 95% balance readings will fall.

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The reported hysteresis value is an average from three trials. In each trial, an extra mass was added to bring the balance reading close to full capacity after the specified load was placed on the pan. Hysteresis value is the difference of the readings of the specified load, before the extra mass was added and after it has been removed.
3. The uncertainty for departure from nominal value is ± 0.0004 g

Checked by : Hung Date : 13-4-2019 Approved Signatory : E.T. Young Date : 13-4-2019
CA-R-124 (12/12/2008) Leung Kwok Tai (Assistant Manager)

** End of Report **



Report No. : 921436CA202374

Page 1 of 3

WORKSHEET FOR REPEATABILITY TEST OF BALANCE

Client Supplied Information

Client : Fugro Technical Services Limited

Calibration Item -	Description	: BALANCE
	Manufacturer	: Sartorius
	Model No.	: LA130S-F
	Serial No.	: 90104309
	Equipment ID.	: C-065-5
	Capacity	: 150 (g)
	Discrimination	: 0.0001 (g)
	Type	: [<input checked="" type="checkbox"/>] Top Loading [<input type="checkbox"/>] Analytical

COPY

Laboratory Information

Calibrating Equipment -	Description	: Masses
	Equipment ID.	: R-030-29

Data of calibration : 25-Nov-2020 / Ambient Temperature : 24 °C Relative Humidity : 57 %

Calibration Location : General Chemical Laboratory of FTS

Method Used : CSIRO Publication "The Calibration of Balances" by David B. Prowse

In-house testing procedure no. : R-C-082

1. Results of Previous Calibration (Last Full Check)

Report No. of last full check : 921436CA195379

Calibration date of last full check : 09-Apr-2019

Value of σ_1 : 0.000103 (g)

(σ_1 is the maximum standard deviation found on the repeatability tests in the last full check)



2. Repeatability test

2.1 Repeatability of reading near to zero

M, near to zero = 5.0000 (g)

No.	Pan load	Reading (g)		Difference, mi - zi (g)	No.	Pan load	Reading (g)		Difference, mi - zi (g)
1	O	z ₁ =	0.0000	5.0001	6	O	z ₆ =	0.0000	5.0000
	M	m ₁ =	5.0001			M	m ₆ =	5.0000	
2	O	z ₂ =	0.0000	5.0001	7	O	z ₇ =	0.0000	5.0000
	M	m ₂ =	5.0001			M	m ₇ =	5.0000	
3	O	z ₃ =	0.0000	5.0000	8	O	z ₈ =	0.0000	5.0001
	M	m ₃ =	5.0000			M	m ₈ =	5.0001	
4	O	z ₄ =	0.0000	5.0001	9	O	z ₉ =	0.0000	5.0000
	M	m ₄ =	5.0001			M	m ₉ =	5.0000	
5	O	z ₅ =	0.0000	5.0001	10	O	z ₁₀ =	0.0000	5.0001
	M	m ₅ =	5.0001			M	m ₁₀ =	5.0001	

2.2 Repeatability of reading at half capacity

M, at half capacity = 75.0000 (g)

No.	Pan load	Reading (g)		Difference, mi - zi (g)	No.	Pan load	Reading (g)		Difference, mi - zi (g)
1	O	z ₁ =	0.0000	75.0005	6	O	z ₆ =	0.0000	75.0005
	M	m ₁ =	75.0005			M	m ₆ =	75.0005	
2	O	z ₂ =	0.0000	75.0005	7	O	z ₇ =	0.0000	75.0005
	M	m ₂ =	75.0005			M	m ₇ =	75.0005	
3	O	z ₃ =	0.0000	75.0004	8	O	z ₈ =	0.0000	75.0004
	M	m ₃ =	75.0004			M	m ₈ =	75.0004	
4	O	z ₄ =	0.0000	75.0005	9	O	z ₉ =	0.0000	75.0004
	M	m ₄ =	75.0005			M	m ₉ =	75.0004	
5	O	z ₅ =	0.0000	75.0005	10	O	z ₁₀ =	0.0000	75.0003
	M	m ₅ =	75.0005			M	m ₁₀ =	75.0003	



Report No. : 921436CA202374

Page 3 of 3

2. Repeatability test

2.3 Repeatability of reading at full capacity

M, at full capacity = 149.9999 (g)

No.	Pan load	Reading (g)		Difference, mi - zi (g)	No.	Pan load	Reading (g)		Difference, mi - zi (g)
1	○	z ₁ =	0.0000	150.0005	6	○	z ₆ =	0.0000	150.0006
	M	m ₁ =	150.0005			M	m ₆ =	150.0006	
2	○	z ₂ =	0.0000	150.0005	7	○	z ₇ =	0.0000	150.0006
	M	m ₂ =	150.0005			M	m ₇ =	150.0006	
3	○	z ₃ =	0.0000	150.0006	8	○	z ₈ =	0.0000	150.0005
	M	m ₃ =	150.0006			M	m ₈ =	150.0005	
4	○	z ₄ =	0.0000	150.0005	9	○	z ₉ =	0.0000	150.0005
	M	m ₄ =	150.0005			M	m ₉ =	150.0005	
5	○	z ₅ =	0.0000	150.0006	10	○	z ₁₀ =	0.0000	150.0006
	M	m ₅ =	150.0006			M	m ₁₀ =	150.0006	

3. Results of repeatability test

σ of readings near to zero : 0.000052 g σ₁ in last full check : 0.000103 g

σ of readings at half capacity : 0.000071 g

σ of readings at full capacity : 0.000053 g

Maximum value of σ is greater than σ₁ : No.

Yes - carry out a full check

σ = [Σ(r_i-r)² / (n-1)]^{1/2} , where i = 1, ..., 10 , r = mean value in the column "Difference".

or minimum σ = dx/n^{1/2} , where n=10 and dx is the discrimination of balance.

Note :

A full check should be carried out at least once every three years.

A full check must be carried out if the value of σ was increased in a repeatability test.

A repeatability test was carried out once every six months.

Pass	<input checked="" type="checkbox"/>
Fail	<input type="checkbox"/>
N/A	<input type="checkbox"/>

Remarks:

1. The equipment used in this calibration has traceable accuracy to National Primary Standards.

2 Recommended next calibration date : 24-May-2021

3. The balance was recommended to carry out a full check.

Tick the appropriate.

Tested by: R. Anasco Date: 25-NOV-2020 Checked by: C. Summary Date: 1-DEC-2020

CA-W-85 (25/04/97)

Page 3 of 3



CALIBRATION REPORT OF WIND METER

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

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

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

Wind Direction Test:

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

Wan Ka Ho
Project Consultant

Report Date: 1/4/2021

Noise Monitoring Equipment

Report no.: 203258CA201298(6)

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description	: Sound Level Meter									
Manufacturer	: Casella									
Model No.	: <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td>Meter</td> <td>Microphone</td> <td>Preamplifier</td> </tr> <tr> <td>CEL-63X</td> <td>CE-251</td> <td>CEL-495</td> </tr> <tr> <td>1488302</td> <td>03348</td> <td>003036</td> </tr> </table>	Meter	Microphone	Preamplifier	CEL-63X	CE-251	CEL-495	1488302	03348	003036
Meter	Microphone	Preamplifier								
CEL-63X	CE-251	CEL-495								
1488302	03348	003036								
Serial No.	: <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td>Meter</td> <td>Microphone</td> <td>Preamplifier</td> </tr> <tr> <td>CEL-63X</td> <td>CE-251</td> <td>CEL-495</td> </tr> <tr> <td>1488302</td> <td>03348</td> <td>003036</td> </tr> </table>	Meter	Microphone	Preamplifier	CEL-63X	CE-251	CEL-495	1488302	03348	003036
Meter	Microphone	Preamplifier								
CEL-63X	CE-251	CEL-495								
1488302	03348	003036								
Equipment ID	: N/A									
Next Calibration Date	: 13-Jul-2021									
Specification Limit	: EN 61672-1: 2003 Class 1									

Laboratory Information

Details of Reference Equipment -

Description	: B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)
Equipment ID.	: R-108-1
Date of Calibration	: 14-Jul-2020
Calibration Location	: Calibration Laboratory of FTS Ambient Temperature : 20±2 °C
Method Used	: By direct comparison

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	0.9	2.6 to -0.6
	2000Hz	1.1	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.3	-1.8 to -4.6
	250Hz	-8.8	-7.2 to -10.0
	125Hz	-16.3	-14.6 to -17.6
	63Hz	-26.3	-24.7 to -27.7
	31.5Hz	-39.4	-37.4 to -41.4
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 complies with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
5. The values given in this Calibration Certificate only relate to the values at the time of the test and any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : William Date : 21-7-2020 Certified by : K.T. Leung Date : 21-7-2020
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 203258CA202302(2)

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Level Meter

Manufacturer : Casella

Model No. :

Serial No. :

Equipment ID :

Next Calibration Date :

Specification Limit :

Meter	Microphone	Preamplifier
CEL-63X	CE-251	CEL-495
1488304	03876	002752

N-62

29-Oct-2021

EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -

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

Equipment ID. : R-108-1

Date of Calibration : 30-Oct-2020

Calibration Location : Calibration Laboratory of FTS

Ambient Temperature : 20±2 °C

Method Used : By direct comparison

Relative Humidity : <80% R.H.

Calibration Results :

Parameters	Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	1.5
	2000Hz	1.3
	1000Hz	-0.1
	500Hz	-3.5
	250Hz	-8.9
	125Hz	-16.4
	63Hz	-26.4
	31.5Hz	-39.4
Differential level linearity	94dB-104dB	0.0
	104dB-114dB	0.0

Remarks :

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

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

**** End of Report ****

Report no.: 203258CA201871(1)

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Sound Calibrator
 Manufacturer : Casella (Model CEL-120/1)
 Serial No. : 5230736
 Equipment ID : N-18

Next Calibration Date : 07-Sep-2021

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

Description : Reference Sound level meter
 Equipment ID. : R-119-1

Calibration Date : 08-Sep-2020

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

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

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	0.1 dB	±0.4dB
114dB	0.2 dB	

Remarks :

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

Checked by : William Date : 10-9-2020 Certified by : K. T. Leung Date : 12-9-2020
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 203258CA201298(3)

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Calibrator
 Manufacturer : Casella (Model CEL-120/1)
 Serial No. : 5230758
 Equipment ID : N/A
 Next Calibration Date : 13-Jul-2021
 Specification Limit : EN 60942: 2003 Type 1

Laboratory Information

Description : Reference Sound level meter
 Equipment ID. : R-119-1
 Date of Calibration : 14-Jul-2020 Ambient Temperature : 20±2 °C
 Calibration Location : Calibration Laboratory of FTS
 Method Used : By direct comparison

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.3 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 equipment does comply with the specification limit.
4. The values given in this Calibration Certificate only relate to the values at the time of the test and any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : William Date : 21-7-2020 Certified by : E. J. Leung Date : 21-7-2020
 CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report No. : 183057CA200894(3)

Page 1 of 1

CALIBRATION CERTIFICATE OF ANEMOMETER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : Benetech

Model No. : GM816

Serial No. : N/A

Equipment ID : WS-08

Next Calibration Date : 14-Jun-2021

Laboratory Information

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID : R-101-4

Date of Calibration : 15-Jun-2020 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of FTS

Method Used : R-C-279

Calibration Results :

Reference Reading (m/s)	UUT Reading (m/s)	Error (m/s)
2.02	2.0	0.0
4.15	4.1	-0.1
6.27	6.0	-0.3
8.43	8.0	-0.4
10.75	10.1	-0.7

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.

Checked by : William Date : 20-6-2020 Certified by : Leung Kwok Tai Date : 20-6-2020

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

Leung Kwok Tai (Assistant Manager)

** End of Report **

Water Quality Monitoring Equipment



Report No. : 142626WA210725



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 : WA210725/1

Date sample received : 30/03/2021

Date of calibration : 19/04/2021

Next calibration date : 18/07/2021

Test method used : In-house comparison method

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

Report No. : 142626WA210725

Page 3 of 3

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
23.8	23.312

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
0	-	-	± 0.5
4	4.47	+0.47	± 0.6
8	8.36	+0.36	± 0.8
40	40.28	+0.28	± 3.0
80	79.42	-0.58	± 4.0

F. Chlorophyll calibration

Chlorophyll reading at 24.247°C for Std. solution (62.5ug/L)		
Theoretical (ug/L) (Temp.-compensated)	Measured	Deviation
62.5	63.45	+0.95

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

Date : 7-5-2017
 ** End of Report **

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

Report No. : 142626WA210725(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. 19E100633

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

Laboratory Information

Lab. sample ID : WA210725/2

Date sample received : 30/03/2021

Date of calibration : 19/04/2021

Next calibration date : 18/07/2021

Test method used : In-house comparison method

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

Report No. : 142626WA210725(1)

Page 3 of 3

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
21.5	20.979

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
0	-	-	± 0.5
4	4.41	+0.41	± 0.6
8	8.09	+0.09	± 0.8
40	40.25	+0.25	± 3.0
80	80.34	+0.34	± 4.0

Certified by

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

Date

** End of Report **

: 7-5-2021

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

CALIBRATION CERTIFICATE

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

Calibration Certificate Number:

61134

Instrument Type:

MODEL 106

Instrument Serial Number:

67738

Calibrated By:

N.PADDON

Date:

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.

50

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 (May 2021)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1 WQM Mid Flood(09:35) Mid Ebb(16:42)
2	3	4 WQM Mid Flood(12:35) Mid Ebb(08:33)	5	6 AQM, NM WQM Mid Flood(16:03) Mid Ebb(11:07)	7	8 WQM Mid Flood(06:11) Mid Ebb(12:19)
9	10	11 WQM Mid Flood(07:06) Mid Ebb(13:35)	12 AQM, NM	13 WQM Mid Flood(07:44) Mid Ebb(14:35)	14 ANRM	15 WQM Mid Flood(08:29) Mid Ebb(15:43)
16	17 EMB	18 AQM, NM WQM Mid Flood(10:05) Mid Ebb(17:48)	19	20 WQM Mid Flood(12:56) Mid Ebb(08:26)	21	22 WQM Mid Flood(16:13) Mid Ebb(10:39)
23	24 AQM, NM	25 WQM Mid Flood(06:18) Mid Ebb(12:45)	26	27 WQM Mid Flood(07:26) Mid Ebb(14:16)	28	29 AQM WQM Mid Flood(08:31) Mid Ebb(15:49)
30	31					

Remarks

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

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

Impact Monitoring Schedule (June 2021)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
		1 WQM Mid Flood(10:54) Mid Ebb(06:14)	2	3 WQM Mid Flood(13:57) Mid Ebb(09:15)	4 AQM, NM,	5 WQM Mid Flood(04:41) Mid Ebb(11:03)
6	7	8 WQM Mid Flood(05:47) Mid Ebb(12:34)	9	10 AQM, NM, WQM Mid Flood(06:34) Mid Ebb(13:43)	11	12 WQM Mid Flood(07:31) Mid Ebb(14:56)
13	14	15 WQM Mid Flood(09:18) Mid Ebb(16:51)	16 AQM, NM	17 WQM Mid Flood(11:14) Mid Ebb(06:27)	18	19 WQM Mid Flood(14:05) Mid Ebb(08:51)
20	21	22 AQM, NM WQM Mid Flood(18:28) Mid Ebb(11:31)	23	24 WQM Mid Flood(06:12) Mid Ebb(13:15)	25	26 WQM Mid Flood(07:29) Mid Ebb(14:54)
27	28 AQM, NM	29 WQM Mid Flood(09:52) Mid Ebb(17:08)	30			

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 (July 2021)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
				1	2	3 AQM
4	5	6 WQM Mid Flood(10:17) Mid Ebb(05:50)	7	8 WQM Mid Flood(06:33) Mid Ebb(12:22)	9 AQM, NM	10 WQM Mid Flood(07:28) Mid Ebb(13:22)
11	12	13 WQM Mid Flood(08:21) Mid Ebb(14:34)	14	15 AQM, NM, WQM Mid Flood(08:52) Mid Ebb(15:28)	16	17 WQM Mid Flood(09:28) Mid Ebb(16:33)
18	19	20 WQM Mid Flood(10:17) Mid Ebb(05:50)	21 AQM, NM	22 WQM Mid Flood(15:19) Mid Ebb(10:29)	23	24 WQM Mid Flood(06:04) Mid Ebb(12:00)
25	26	27 AQM, NM WQM Mid Flood(08:37) Mid Ebb(15:14)	28	29 WQM Mid Flood(09:35) Mid Ebb(16:42)	30	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 (August 2021)

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

Remarks

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

Appendix F

Monitoring Results

Air Quality Monitoring Results

1-hour TSP Monitoring Result for

Contract No. SPW 07/2020

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

AM1 - Topfine Machinery (China) Co. Ltd.

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1st Measurement	2nd Measurement	3rd Measurement		
6-May-21	Fine	11:03	75	74	63	291	500
12-May-21	Fine	09:28	60	65	57		
18-May-21	Fine	10:35	54	56	48		
24-May-21	Cloudy	10:17	50	56	51		
29-May-21	Fine	09:07	56	59	62		
		Min	48				
		Max	75				
		Average	59				

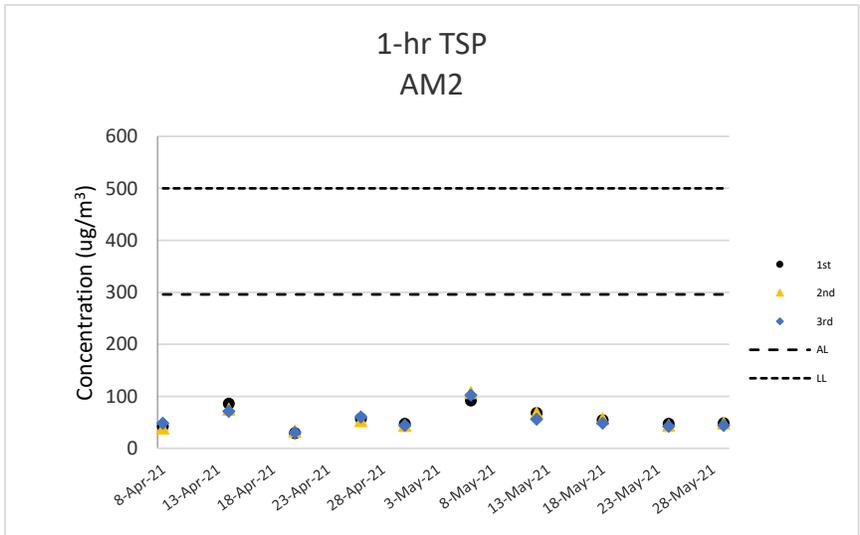
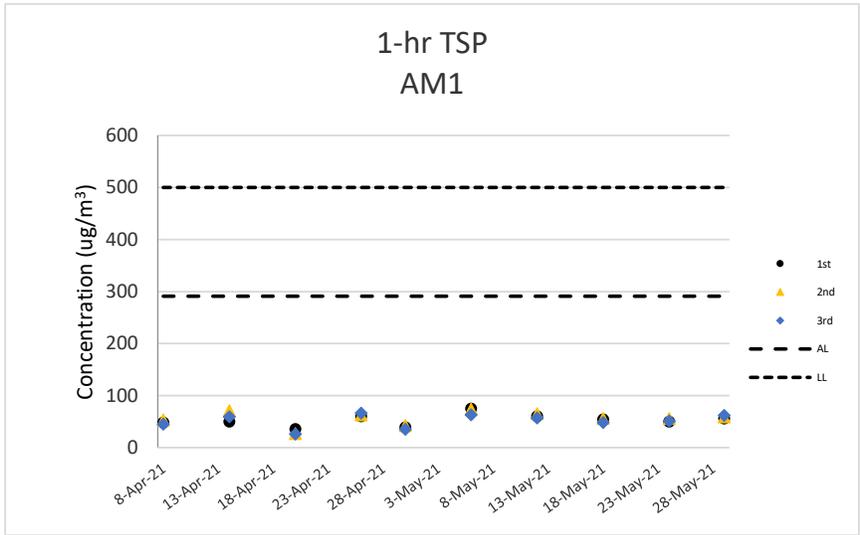
AM2 - Squatter house at the west of Yuen Long STW

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1st Measurement	2nd Measurement	3rd Measurement		
6-May-21	Fine	12:17	92	107	102	296	500
12-May-21	Fine	10:00	68	68	56		
18-May-21	Fine	10:48	54	57	48		
24-May-21	Cloudy	10:02	47	44	42		
29-May-21	Fine	09:16	48	48	44		
		Min	42				
		Max	107				
		Average	62				

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)
6-May-21	13:47	60	64	56	0.8	Fine	75
12-May-21	13:21	60	67	58	0.9	Fine	75
18-May-21	11:11	63	66	54	0.0	Fine	75
24-May-21	10:52	60	64	53	0.3	Cloudy	75
	Max	63					
	Min	60					

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)
6-May-21	12:28	62	65	59	0.6	Fine	75
12-May-21	12:31	64	70	60	0.7	Fine	75
18-May-21	10:55	66	68	59	0.2	Fine	75
24-May-21	10:08	69	72	60	0.2	Cloudy	75
	Max	69					
	Min	62					

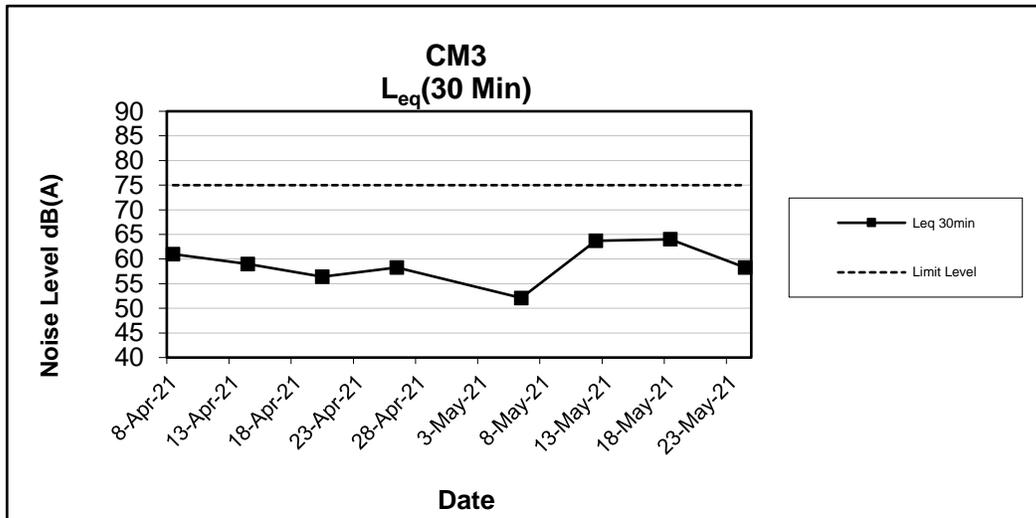
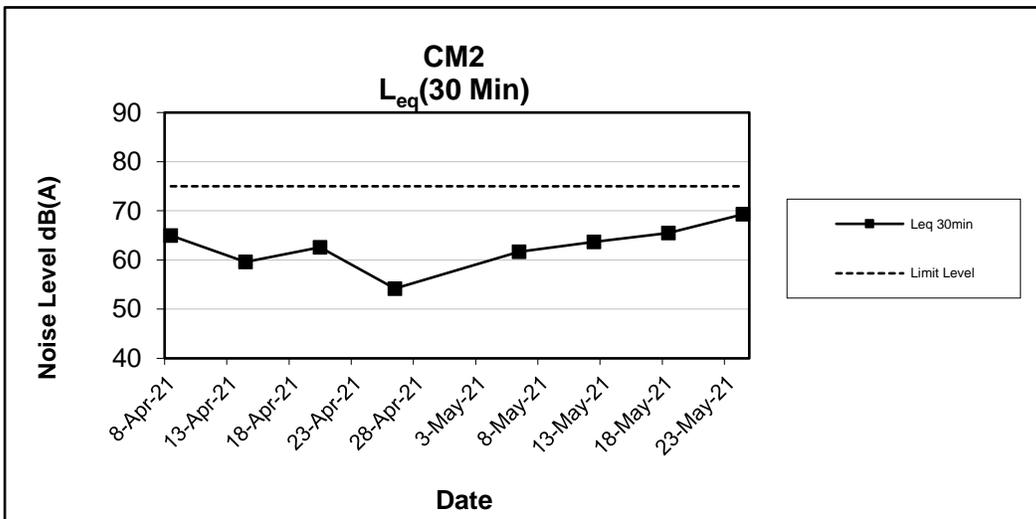
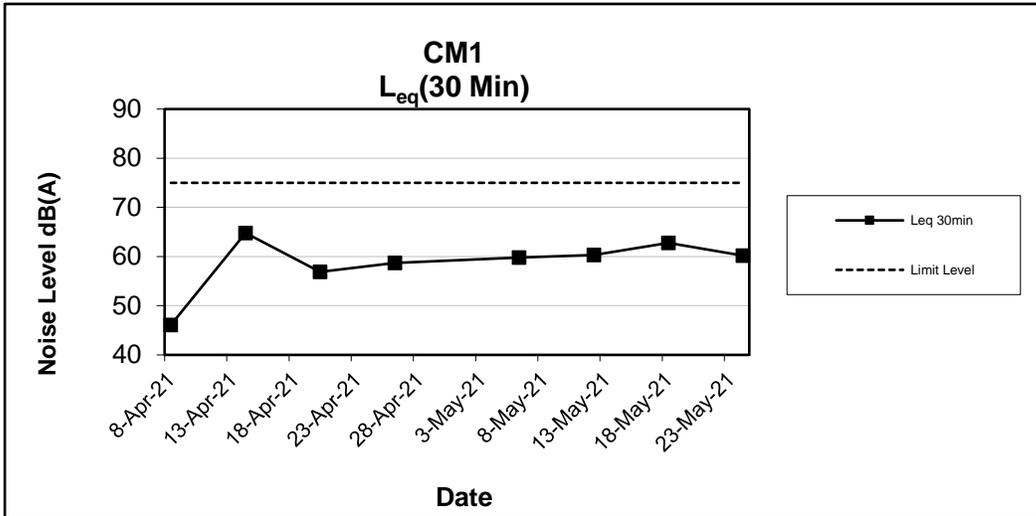
CM3 - Squatter house to the east of YLSTW

Date	Start Time	L _{eq} 30min dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
6-May-21	14:49	52	58	51	0.7	Fine	75
12-May-21	14:32	64	69	53	0.7	Fine	75
18-May-21	12:08	64	67	54	0.4	Fine	75
24-May-21	09:30	58	60	55	0.3	Cloudy	75
	Max	64					
	Min	52					

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.	Value	Ave.
M1	1/5/2021	Mid-Flood	Fine	Calm	10:14	1.2	M	0.6	1	0.046	78	7.30	7.30	13.74	13.74	25.90	25.91	57.1	56.8	4.22	4.21	113.7	113.9	150	160
M1	1/5/2021	Mid-Flood	Fine	Calm	10:14	1.2	M	0.6	2			7.29	7.30	13.74	13.74	25.92	25.91	56.4	56.8	4.20	4.21	114.0	113.9	170	160
M2	1/5/2021	Mid-Flood	Fine	Calm	09:58	1	M	0.5	1	0.039	95	7.29	7.29	13.07	13.07	26.16	26.16	58.8	58.3	4.26	4.23	92.1	93.1	120	130
M2	1/5/2021	Mid-Flood	Fine	Calm	09:58	1	M	0.5	2			7.29	7.29	13.07	13.07	26.16	26.16	57.7	58.3	4.20	4.23	94.0	93.1	140	130
M3	1/5/2021	Mid-Flood	Fine	Calm	09:40	0.6	M	0.3	1	0.122	260	6.83	6.85	7.77	7.77	25.90	25.90	51.9	51.6	4.04	4.02	84.9	84.7	160	160
M3	1/5/2021	Mid-Flood	Fine	Calm	09:40	0.6	M	0.3	2			6.86	6.85	7.77	7.77	25.90	25.90	51.3	51.6	3.99	4.02	84.5	84.7	160	160
M1	1/5/2021	Mid-Ebb	Fine	Calm	16:45	0.9	M	0.45	1	0.068	284	7.23	7.23	13.17	13.16	26.50	26.50	57.8	57.8	4.34	4.34	30.7	30.7	29	31
M1	1/5/2021	Mid-Ebb	Fine	Calm	16:45	0.9	M	0.45	2			7.23	7.23	13.15	13.16	26.50	26.50	57.8	57.8	4.34	4.34	30.6	30.7	32	31
M2	1/5/2021	Mid-Ebb	Fine	Calm	17:09	1	M	0.5	1	0.076	283	7.31	7.31	13.55	13.57	26.36	26.42	61.8	61.7	4.58	4.57	28.9	29.0	32	32
M2	1/5/2021	Mid-Ebb	Fine	Calm	17:09	1	M	0.5	2			7.31	7.31	13.58	13.57	26.47	26.42	61.6	61.7	4.56	4.57	29.1	29.0	31	32
M3	1/5/2021	Mid-Ebb	Fine	Calm	16:48	0.9	M	0.45	1	0.016	78	7.16	7.17	8.94	8.94	27.60	27.55	73.9	76.2	5.54	5.72	18.4	19.7	15	14
M3	1/5/2021	Mid-Ebb	Fine	Calm	16:48	0.9	M	0.45	2			7.17	7.17	8.93	8.94	27.50	27.55	78.4	76.2	5.89	5.72	20.9	19.7	13	14

Remark

1. Orange and Bold: Action Level Exceedance (For Impact Station Only)
2. Red and Bold: Limit Level Exceedance (For Impact Station Only)
3. Action Level for Turbidity: 95%-ile of baseline data or 120% of upstream control station's turbidity recorded on the same day.
4. Limti 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. Limti 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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	136.6	148.0	192	208
M3	3.28	3.14	136.6	148.0	192	208

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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	4/5/2021	Mid-Flood	Fine	Calm	12:50	1	M	0.5	1	0.048	288	7.21	7.21	7.93	7.93	26.87	26.87	55.6	55.6	4.24	4.24	22.1	22.1	30	30
M1	4/5/2021	Mid-Flood	Fine	Calm	12:50	1	M	0.5	2			7.20	7.20	7.92	7.92	26.87	26.87	55.5	55.6	4.23	4.24	22.1	22.1	30	30
M2	4/5/2021	Mid-Flood	Fine	Calm	12:37	1.1	M	0.55	1	0.19	24	7.12	7.12	7.29	7.29	26.97	26.98	40.6	41.0	3.12	3.15	21.4	21.4	49	52
M2	4/5/2021	Mid-Flood	Fine	Calm	12:37	1.1	M	0.55	2			7.12	7.12	7.29	7.29	26.98	26.98	41.4	41.0	3.18	3.15	21.3	21.4	54	52
M3	4/5/2021	Mid-Flood	Fine	Calm	12:45	0.3	M	0.15	1	0.009	277	6.96	6.96	5.92	5.92	28.50	28.55	56.5	56.9	4.24	4.28	33.6	31.0	38	39
M3	4/5/2021	Mid-Flood	Fine	Calm	12:45	0.3	M	0.15	2			6.95	6.95	5.91	5.92	28.60	28.55	57.3	56.9	4.31	4.28	28.4	31.0	39	39
M1	4/5/2021	Mid-Ebb	Fine	Calm	08:49	0.8	M	0.4	1	0.043	284	6.99	6.99	5.71	5.71	27.34	27.30	36.7	36.5	2.81	2.80	21.9	21.9	36	36
M1	4/5/2021	Mid-Ebb	Fine	Calm	08:49	0.8	M	0.4	2			6.99	6.99	5.71	5.71	27.26	27.30	36.3	36.5	2.79	2.80	21.8	21.9	36	36
M2	4/5/2021	Mid-Ebb	Fine	Calm	09:12	1	M	0.5	1	0.067	140	7.05	7.05	5.56	5.56	27.47	27.48	35.8	36.0	2.77	2.78	24.0	24.0	22	22
M2	4/5/2021	Mid-Ebb	Fine	Calm	09:12	1	M	0.5	2			7.05	7.05	5.56	5.56	27.48	27.48	36.2	36.0	2.78	2.78	23.9	24.0	22	22
M3	4/5/2021	Mid-Ebb	Fine	Calm	09:15	0.5	M	0.25	1	0.004	86	6.97	6.97	2.96	2.96	26.80	26.80	50.2	48.9	3.95	3.85	30.2	32.1	36	36
M3	4/5/2021	Mid-Ebb	Fine	Calm	09:15	0.5	M	0.25	2			6.96	6.96	2.96	2.96	26.80	26.80	47.6	48.9	3.74	3.85	34.0	32.1	35	36

Remark

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

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	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	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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	6/5/2021	Mid-Flood	Cloudy	Calm	16:34	1.3	M	0.65	1	0.054	251	7.27	7.27	4.85	4.86	28.66	28.67	63.5	63.5	4.79	4.79	31.8	31.9	33	35
M1	6/5/2021	Mid-Flood	Cloudy	Calm	16:34	1.3	M	0.65	2			7.27	7.27	4.86	4.86	28.67	28.67	63.4	63.5	4.78	4.79	31.9	31.9	36	35
M2	6/5/2021	Mid-Flood	Cloudy	Calm	16:23	1.3	M	0.65	1	0.09	276	7.13	7.13	5.22	5.22	27.92	27.93	44.8	44.6	3.40	3.39	29.5	29.5	38	39
M2	6/5/2021	Mid-Flood	Cloudy	Calm	16:23	1.3	M	0.65	2			7.13	7.13	5.21	5.22	27.93	27.93	44.3	44.6	3.38	3.39	29.5	29.5	39	39
M3	6/5/2021	Mid-Flood	Cloudy	Calm	16:21	0.9	M	0.45	1	0.094	66	7.01	7.02	31.16	31.17	28.83	28.84	53.6	53.5	4.04	4.03	32.1	32.1	48	49
M3	6/5/2021	Mid-Flood	Cloudy	Calm	16:21	0.9	M	0.45	2			7.02	7.02	31.18	31.17	28.84	28.84	53.4	53.5	4.01	4.03	32.0	32.1	50	49
M1	6/5/2021	Mid-Ebb	Cloudy	Calm	11:23	0.7	M	0.35	1	0.059	279	7.17	7.17	2.25	2.25	29.91	29.91	41.8	41.8	3.12	3.12	27.2	27.3	37	37
M1	6/5/2021	Mid-Ebb	Cloudy	Calm	11:23	0.7	M	0.35	2			7.17	7.17	2.25	2.25	29.90	29.91	41.7	41.8	3.11	3.12	27.3	27.3	36	37
M2	6/5/2021	Mid-Ebb	Cloudy	Calm	11:37	0.8	M	0.4	1	0.076	139	7.16	7.16	1.94	1.94	30.12	30.12	40.4	40.2	3.01	3.01	25.6	25.6	32	33
M2	6/5/2021	Mid-Ebb	Cloudy	Calm	11:37	0.8	M	0.4	2			7.16	7.16	1.93	1.94	30.11	30.12	40.0	40.2	3.00	3.01	25.5	25.6	34	33
M3	6/5/2021	Mid-Ebb	Cloudy	Calm	11:20	0.2	M	0.1	1	0.051	182	7.04	7.05	1.17	1.18	28.69	28.69	44.8	44.7	3.57	3.56	13.6	13.6	17	19
M3	6/5/2021	Mid-Ebb	Cloudy	Calm	11:20	0.2	M	0.1	2			7.05	7.05	1.18	1.18	28.68	28.68	44.6	44.7	3.54	3.56	13.5	13.6	20	19

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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	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	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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	8/5/2021	Mid-Flood	Fine	Calm	06:30	1.3	M	0.65	1	0.102	171	7.28	7.28	4.58	4.58	28.71	28.71	76.8	76.8	5.50	5.50	32.1	31.3	34	33
M1	8/5/2021	Mid-Flood	Fine	Calm	06:30	1.3	M	0.65	2			7.28	7.28	4.58	4.58	28.71	28.71	76.8	76.8	5.50	5.50	30.4	31.3	32	
M2	8/5/2021	Mid-Flood	Fine	Calm	06:43	1	M	0.5	1	0.079	185	7.33	7.33	3.80	3.80	28.72	28.73	67.6	67.3	5.10	5.06	27.6	27.6	38	37
M2	8/5/2021	Mid-Flood	Fine	Calm	06:43	1	M	0.5	2			7.32	7.33	3.80	3.80	28.73	28.73	67.0	67.3	5.02	5.06	27.6	27.6	36	
M3	8/5/2021	Mid-Flood	Fine	Calm	06:50	0.7	M	0.35	1	0.005	260	7.15	7.15	4.06	4.06	28.20	28.25	61.5	61.2	4.68	4.66	11.5	12.3	22	23
M3	8/5/2021	Mid-Flood	Fine	Calm	06:50	0.7	M	0.35	2			7.15	7.15	4.06	4.06	28.30	28.25	60.9	61.2	4.63	4.66	13.0	12.3	23	
M1	8/5/2021	Mid-Ebb	Fine	Calm	12:36	1.1	M	0.55	1	0.068	117	7.48	7.48	3.49	3.50	29.33	29.34	91.0	91.1	6.85	6.84	24.9	24.9	30	31
M1	8/5/2021	Mid-Ebb	Fine	Calm	12:36	1.1	M	0.55	2			7.47	7.48	3.50	3.50	29.35	29.34	91.2	91.1	6.82	6.84	24.9	24.9	31	
M2	8/5/2021	Mid-Ebb	Fine	Calm	12:26	0.9	M	0.45	1	0.071	244	7.25	7.25	3.58	3.58	29.00	28.95	58.5	57.6	4.39	4.33	29.9	30.0	34	36
M2	8/5/2021	Mid-Ebb	Fine	Calm	12:26	0.9	M	0.45	2			7.25	7.25	3.58	3.58	28.89	28.95	56.6	57.6	4.26	4.33	30.0	30.0	38	
M3	8/5/2021	Mid-Ebb	Fine	Calm	12:08	0.4	M	0.2	1	0.012	86	7.32	7.33	2.81	2.81	29.40	29.45	88.6	90.9	6.66	6.83	13.4	13.4	17	17
M3	8/5/2021	Mid-Ebb	Fine	Calm	12:08	0.4	M	0.2	2			7.33	7.33	2.81	2.81	29.50	29.45	93.1	90.9	6.99	6.83	13.4	13.4	17	

Remark

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

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	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	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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	11/5/2021	Mid-Flood	Fine	Calm	07:13	1.3	M	0.65	1	0.525	165	7.84	7.79	30.11	104.6	104.6	7.54	29.7	29.7	46	48				
M1	11/5/2021	Mid-Flood	Fine	Calm	07:13	1.3	M	0.65	2			7.84	7.79	30.11	104.6	104.6	7.54	29.7	29.7	46					
M2	11/5/2021	Mid-Flood	Fine	Calm	07:31	1	M	0.5	1	0.465	163	7.72	5.15	30.26	109.3	109.3	7.99	8.00	25.4	41	43				
M2	11/5/2021	Mid-Flood	Fine	Calm	07:31	1	M	0.5	2			7.72	5.13	30.26	109.3	109.3	7.99	8.00	25.2	45					
M3	11/5/2021	Mid-Flood	Fine	Calm	07:45	0.8	M	0.4	1	0.114	267	7.01	4.91	29.40	56.8	57.2	4.23	4.26	73.8	59	57				
M3	11/5/2021	Mid-Flood	Fine	Calm	07:45	0.8	M	0.4	2			7.05	4.91	29.30	57.6	57.2	4.28	4.26	69.0	55					
M1	11/5/2021	Mid-Ebb	Fine	Calm	14:06	1.1	M	0.55	1	0.082	261	7.62	5.77	30.50	107.1	107.1	7.73	7.71	32.3	43	42				
M1	11/5/2021	Mid-Ebb	Fine	Calm	14:06	1.1	M	0.55	2			7.62	5.81	30.50	107.0	107.1	7.68	7.71	32.7	41					
M2	11/5/2021	Mid-Ebb	Fine	Calm	13:56	0.9	M	0.45	1	0.073	236	7.65	5.39	30.42	113.9	114.1	8.31	8.30	26.6	43	42				
M2	11/5/2021	Mid-Ebb	Fine	Calm	13:56	0.9	M	0.45	2			7.64	5.43	30.42	114.3	114.1	8.29	8.30	26.5	40					
M3	11/5/2021	Mid-Ebb	Fine	Calm	13:45	0.4	M	0.2	1	0.031	80	6.84	4.10	29.90	78.8	78.3	5.83	5.78	37.9	42	41				
M3	11/5/2021	Mid-Ebb	Fine	Calm	13:45	0.4	M	0.2	2			6.88	4.08	30.00	77.7	78.3	5.72	5.78	36.9	39					

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. Limti 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. Limti 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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	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	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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	13/5/2021	Mid-Flood	Fine	Calm	07:49	1.4	M	0.7	1	0.096	160	7.39	7.39	9.93	9.93	29.73	29.64	66.7	66.7	4.79	4.79	25.8	25.4	42	44
M1	13/5/2021	Mid-Flood	Fine	Calm	07:49	1.4	M	0.7	2			7.39	7.39	9.93	9.93	29.55	29.64	66.6	66.7	4.79	4.79	25.0	25.4	45	44
M2	13/5/2021	Mid-Flood	Fine	Calm	08:04	1.2	M	0.6	1	0.083	126	7.48	7.48	8.50	8.64	29.93	29.93	68.8	69.1	5.11	5.11	28.5	28.5	58	54
M2	13/5/2021	Mid-Flood	Fine	Calm	08:04	1.2	M	0.6	2			7.48	7.48	8.78	8.64	29.93	29.93	69.4	69.1	5.11	5.11	28.5	28.5	50	54
M3	13/5/2021	Mid-Flood	Fine	Calm	07:58	0.4	M	0.2	1	0.095	261	7.05	7.03	5.27	5.28	29.70	29.65	49.4	54.1	3.65	3.70	58.7	61.3	50	48
M3	13/5/2021	Mid-Flood	Fine	Calm	07:58	0.4	M	0.2	2			7.00	7.03	5.28	5.28	29.60	29.65	58.8	54.1	3.75	3.70	63.9	61.3	46	48
M1	13/5/2021	Mid-Ebb	Fine	Calm	14:52	1.1	M	0.55	1	0.077	276	7.36	7.36	7.45	7.44	30.10	30.14	74.5	74.4	5.10	5.10	33.1	33.1	39	42
M1	13/5/2021	Mid-Ebb	Fine	Calm	14:52	1.1	M	0.55	2			7.36	7.36	7.43	7.44	30.17	30.14	74.3	74.4	5.10	5.10	33.0	33.1	45	42
M2	13/5/2021	Mid-Ebb	Fine	Calm	14:38	1	M	0.5	1	0.082	219	7.33	7.33	6.64	6.67	30.25	30.25	67.6	67.6	4.80	4.84	36.7	36.3	34	37
M2	13/5/2021	Mid-Ebb	Fine	Calm	14:38	1	M	0.5	2			7.33	7.33	6.69	6.67	30.25	30.25	67.5	67.6	4.87	4.84	35.9	36.3	39	37
M3	13/5/2021	Mid-Ebb	Fine	Calm	13:45	0.6	M	0.3	1	0.031	80	7.05	7.06	4.04	4.05	30.60	30.55	69.9	70.5	5.20	5.19	32.1	32.9	28	26
M3	13/5/2021	Mid-Ebb	Fine	Calm	13:45	0.6	M	0.3	2			7.06	7.06	4.05	4.05	30.50	30.55	71.1	70.5	5.18	5.19	33.6	32.9	24	26

Remark

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

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	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	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	15/5/2021	Mid-Flood	Fine	Calm	08:36	2.2	M	1.1	1	0.092	254	7.32	7.32	11.20	11.22	29.70	29.71	59.2	59.1	4.23	4.22	40.4	39.6	51	55
M1	15/5/2021	Mid-Flood	Fine	Calm	08:36	2.2	M	1.1	2			7.32	7.32	11.23	11.22	29.71	29.71	59.0	59.1	4.21	4.22	40.4	39.6	51	55
M2	15/5/2021	Mid-Flood	Fine	Calm	08:51	1.8	M	0.9	1	0.195	200	7.38	7.38	10.35	10.35	29.80	29.81	63.5	63.5	4.55	4.55	33.8	33.8	51	48
M2	15/5/2021	Mid-Flood	Fine	Calm	08:51	1.8	M	0.9	2			7.38	7.38	10.35	10.35	29.81	29.81	63.4	63.5	4.54	4.55	33.7	33.8	51	48
M3	15/5/2021	Mid-Flood	Fine	Calm	09:08	0.8	M	0.4	1	0.13	261	7.09	7.10	6.67	6.68	29.80	29.75	59.2	60.7	4.33	4.43	52.4	50.5	91	91
M3	15/5/2021	Mid-Flood	Fine	Calm	09:08	0.8	M	0.4	2			7.11	7.10	6.68	6.68	29.70	29.75	62.1	60.7	4.53	4.43	48.5	50.5	90	91
M1	15/5/2021	Mid-Ebb	Fine	Calm	16:07	1.8	M	0.9	1	0.357	47	7.38	7.38	6.45	6.45	30.91	30.92	70.6	70.9	5.07	5.09	27.6	27.6	34	34
M1	15/5/2021	Mid-Ebb	Fine	Calm	16:07	1.8	M	0.9	2			7.38	7.38	6.45	6.45	30.92	30.92	71.1	70.9	5.11	5.09	27.6	27.6	34	34
M2	15/5/2021	Mid-Ebb	Fine	Calm	15:51	1.2	M	0.6	1	0.043	341	7.36	7.36	6.10	6.11	30.97	30.98	66.5	66.1	4.78	4.75	33.7	33.8	44	44
M2	15/5/2021	Mid-Ebb	Fine	Calm	15:51	1.2	M	0.6	2			7.36	7.36	6.11	6.11	30.99	30.98	65.7	66.1	4.72	4.75	33.8	33.8	43	44
M3	15/5/2021	Mid-Ebb	Fine	Calm	16:00	0.4	M	0.2	1	0.101	76	7.00	7.00	4.43	4.44	31.80	31.40	75.8	75.6	5.42	5.40	32.6	33.2	28	28
M3	15/5/2021	Mid-Ebb	Fine	Calm	16:00	0.4	M	0.2	2			7.00	7.00	4.44	4.44	31.00	31.40	75.3	75.6	5.38	5.40	33.8	33.2	27	28

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. Limti 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. Limti 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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	47.5	52.4	81	112
M3	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	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	18/5/2021	Mid-Flood	Fine	Calm	10:20	2	M	1	1	0.243	324	7.52	7.52	8.32	8.33	30.44	30.39	69.2	69.3	4.96	4.97	29.7	29.7	37	38
M1	18/5/2021	Mid-Flood	Fine	Calm	10:20	2	M	1	2			7.52	7.52	8.33	8.33	30.34	30.39	69.3	69.3	4.97	4.97	29.7	29.7	39	38
M2	18/5/2021	Mid-Flood	Fine	Calm	10:36	1.7	M	0.85	1	0.184	166.5	5.18	5.18	7.91	7.92	30.35	30.37	72.3	72.2	5.18	5.18	32.2	32.3	34	33
M2	18/5/2021	Mid-Flood	Fine	Calm	10:36	1.7	M	0.85	2			5.17	5.17	7.92	7.92	30.39	30.37	72.1	72.2	5.17	5.17	32.3	32.3	32	33
M3	18/5/2021	Mid-Flood	Fine	Calm	10:41	0.8	M	0.4	1	0.178	255	7.09	7.10	5.24	5.24	30.90	30.85	55.3	54.9	4.00	3.97	38.3	36.4	53	52
M3	18/5/2021	Mid-Flood	Fine	Calm	10:41	0.8	M	0.4	2			7.10	7.10	5.24	5.24	30.80	30.85	54.4	54.9	3.94	3.94	34.4	36.4	51	52
M1	18/5/2021	Mid-Ebb	Fine	Calm	18:12	1.9	M	0.95	1	0.21	322	7.69	7.70	7.53	7.54	31.20	31.21	93.7	93.7	6.66	6.66	27.8	27.8	37	37
M1	18/5/2021	Mid-Ebb	Fine	Calm	18:12	1.9	M	0.95	2			7.70	7.70	7.54	7.54	31.21	31.21	93.6	93.7	6.65	6.66	27.8	27.8	36	37
M2	18/5/2021	Mid-Ebb	Fine	Calm	17:54	1.6	M	0.8	1	0.065	70	7.71	7.71	7.04	7.05	31.23	31.23	91.8	91.8	6.54	6.54	32.6	32.6	41	42
M2	18/5/2021	Mid-Ebb	Fine	Calm	17:54	1.6	M	0.8	2			7.71	7.71	7.05	7.05	31.22	31.23	91.7	91.8	6.53	6.54	32.6	32.6	43	42
M3	18/5/2021	Mid-Ebb	Fine	Calm	17:48	0.6	M	0.3	1	0.152	77	7.45	7.45	2.97	2.97	31.30	31.30	76.2	76.5	5.54	5.56	13.2	13.0	16	17
M3	18/5/2021	Mid-Ebb	Fine	Calm	17:48	0.6	M	0.3	2			7.44	7.44	2.97	2.97	31.30	31.30	76.7	76.5	5.57	5.56	12.9	13.0	18	17

Remark

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

For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	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	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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

Monitoring Location	Date	Tide Mode	Weather	Sea Condition	Time	Water Depth (m)	Monitoring Level	Monitoring Level (m)	Replicate	In-situ Measurement												Laboratory Analysis			
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total Suspended Solids (mg/L)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	20/5/2021	Mid-Flood	Fine	Calm	13:12	1	M	0.5	1	0.119	195	7.97	7.97	4.96	4.96	30.79	30.76	70.0	70.0	5.03	5.02	53.0	52.0	54	54
M1	20/5/2021	Mid-Flood	Fine	Calm	13:12	1	M	0.5	2			7.97	7.97	4.96	4.96	30.73	30.76	70.0	70.0	5.00	5.02	50.9	52.0	53	54
M2	20/5/2021	Mid-Flood	Fine	Calm	12:58	0.9	M	0.45	1	0.036	170	7.37	7.37	5.77	5.77	30.62	30.63	64.4	64.2	4.54	4.47	41.8	41.9	63	60
M2	20/5/2021	Mid-Flood	Fine	Calm	12:58	0.9	M	0.45	2			7.37	7.37	5.77	5.77	30.63	30.63	64.0	64.2	4.40	4.47	41.9	41.9	57	60
M3	20/5/2021	Mid-Flood	Fine	Calm	13:05	0.8	M	0.4	1	0.083	74	7.29	7.30	5.63	5.63	31.57	31.58	80.5	80.5	5.75	5.75	32.1	32.1	50	51
M3	20/5/2021	Mid-Flood	Fine	Calm	13:05	0.8	M	0.4	2			7.30	7.30	5.63	5.63	31.58	31.58	80.4	80.5	5.74	5.75	32.0	32.1	51	51
M1	20/5/2021	Mid-Ebb	Fine	Calm	07:52	0.9	M	0.45	1	0.069	266	7.24	7.24	4.36	4.36	30.49	30.49	48.5	48.7	3.60	3.60	32.6	32.6	54	53
M1	20/5/2021	Mid-Ebb	Fine	Calm	07:52	0.9	M	0.45	2			7.24	7.24	4.36	4.36	30.49	30.49	48.9	48.7	3.60	3.60	32.5	32.6	52	53
M2	20/5/2021	Mid-Ebb	Fine	Calm	08:08	0.8	M	0.4	1	0.024	248	7.15	7.15	3.90	3.89	30.26	30.27	36.6	36.3	2.58	2.55	38.0	38.0	34	35
M2	20/5/2021	Mid-Ebb	Fine	Calm	08:08	0.8	M	0.4	2			7.15	7.15	3.88	3.89	30.27	30.27	36.0	36.3	2.51	2.55	38.0	38.0	36	35
M3	20/5/2021	Mid-Ebb	Fine	Calm	08:47	0.4	M	0.2	1	0.133	252	6.79	6.80	3.96	3.97	29.45	29.45	48.8	49.1	3.64	3.66	25.8	25.8	33	35
M3	20/5/2021	Mid-Ebb	Fine	Calm	08:47	0.4	M	0.2	2			6.80	6.80	3.97	3.97	29.45	29.45	49.3	49.1	3.68	3.66	25.8	25.8	36	35

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. Limti 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. Limti 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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	62.3	67.5	81	112
M3	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	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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	22/5/2021	Mid-Flood	Fine	Calm	16:38	1	M	0.5	1	0.029	145	7.45	7.45	3.15	3.15	31.99	32.01	67.5	67.5	5.00	5.00	47.6	46.6	46	48
M1	22/5/2021	Mid-Flood	Fine	Calm	16:38	1	M	0.5	2			7.45	7.45	3.15	3.15	32.02	32.01	67.4	67.5	5.00	5.00	45.6	46.6	49	48
M2	22/5/2021	Mid-Flood	Fine	Calm	16:20	0.9	M	0.45	1	0.036	165	7.46	7.46	3.03	3.03	32.18	32.20	84.2	84.2	5.63	5.63	44.0	44.6	73	74
M2	22/5/2021	Mid-Flood	Fine	Calm	16:20	0.9	M	0.45	2			7.46	7.46	3.03	3.03	32.22	32.20	84.1	84.2	5.63	5.63	45.1	44.6	75	74
M3	22/5/2021	Mid-Flood	Fine	Calm	16:18	0.5	M	0.25	1	0.049	82	7.44	7.44	3.22	3.22	33.04	33.04	96.1	96.1	6.79	6.79	54.3	53.8	67	66
M3	22/5/2021	Mid-Flood	Fine	Calm	16:18	0.5	M	0.25	2			7.43	7.43	3.22	3.22	33.04	33.04	96.0	96.1	6.78	6.79	53.3	53.8	64	66
M1	22/5/2021	Mid-Ebb	Fine	Calm	10:47	0.9	M	0.45	1	0.029	287	7.52	7.52	3.21	3.21	32.07	32.07	88.0	88.7	6.35	6.38	45.5	44.7	63	62
M1	22/5/2021	Mid-Ebb	Fine	Calm	10:47	0.9	M	0.45	2			7.52	7.52	3.20	3.21	32.07	32.07	89.4	88.7	6.41	6.38	44.0	44.7	61	62
M2	22/5/2021	Mid-Ebb	Fine	Calm	11:02	0.8	M	0.4	1	0.082	269	7.48	7.48	3.17	3.17	32.11	32.23	76.6	76.8	5.52	5.53	46.0	45.8	54	57
M2	22/5/2021	Mid-Ebb	Fine	Calm	11:02	0.8	M	0.4	2			7.48	7.48	3.17	3.17	32.34	32.23	76.9	76.8	5.54	5.53	45.5	45.8	59	57
M3	22/5/2021	Mid-Ebb	Fine	Calm	10:43	0.2	M	0.1	1	0.029	258	7.25	7.26	2.44	2.44	30.76	30.77	78.1	78.0	5.76	5.76	36.8	36.7	33	32
M3	22/5/2021	Mid-Ebb	Fine	Calm	10:43	0.2	M	0.1	2			7.26	7.26	2.44	2.44	30.77	30.77	77.9	78.0	5.75	5.76	36.5	36.7	30	32

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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	55.9	60.6	81	112
M3	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	2.25	1.91	49.4	53.6	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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	25/5/2021	Mid-Flood	Rainy	Calm	06:30	1.1	M	0.55	1	0.119	195	7.20	7.21	2.82	2.83	30.08	30.09	41.2	41.1	3.04	3.04	42.4	42.4	40	44
M1	25/5/2021	Mid-Flood	Rainy	Calm	06:30	1.1	M	0.55	2			7.21	7.21	2.83	2.83	30.08	30.09	41.2	41.1	3.04	3.04	42.4	42.4	40	44
M2	25/5/2021	Mid-Flood	Rainy	Calm	06:50	0.9	M	0.45	1	0.036	170	7.16	7.16	2.99	2.99	29.72	29.79	29.0	28.9	2.11	2.10	30.0	29.9	39	39
M2	25/5/2021	Mid-Flood	Rainy	Calm	06:50	0.9	M	0.45	2			7.16	7.16	2.99	2.99	29.72	29.79	29.0	28.9	2.11	2.10	30.0	29.9	39	39
M3	25/5/2021	Mid-Flood	Rainy	Calm	07:00	0.8	M	0.4	1	0.083	74	7.39	7.39	0.26	0.25	27.00	27.10	85.5	85.8	6.80	6.83	92.1	89.8	57	59
M3	25/5/2021	Mid-Flood	Rainy	Calm	07:00	0.8	M	0.4	2			7.38	7.38	0.24	0.25	27.20	27.10	86.1	85.8	6.85	6.83	87.4	89.8	61	59
M1	25/5/2021	Mid-Ebb	Rainy	Calm	12:57	1	M	0.5	1	0.069	266	7.13	7.13	2.84	2.84	30.21	30.23	25.6	25.5	1.87	1.87	115.7	117.6	32	33
M1	25/5/2021	Mid-Ebb	Rainy	Calm	12:57	1	M	0.5	2			7.13	7.13	2.84	2.84	30.25	30.23	25.4	25.5	1.86	1.87	119.4	117.6	34	33
M2	25/5/2021	Mid-Ebb	Rainy	Calm	12:45	0.8	M	0.4	1	0.024	248	7.12	7.12	2.75	2.75	30.36	30.34	23.7	23.8	1.80	1.81	72.9	72.5	85	86
M2	25/5/2021	Mid-Ebb	Rainy	Calm	12:45	0.8	M	0.4	2			7.12	7.12	2.74	2.75	30.32	30.34	23.9	23.8	1.82	1.81	72.0	72.5	86	86
M3	25/5/2021	Mid-Ebb	Rainy	Calm	12:48	0.4	M	0.2	1	0.133	252	7.16	7.16	0.28	0.28	27.50	27.45	71.0	71.3	5.60	5.62	48.0	50.4	26	28
M3	25/5/2021	Mid-Ebb	Rainy	Calm	12:48	0.4	M	0.2	2			7.16	7.16	0.28	0.28	27.40	27.45	71.6	71.3	5.64	5.62	52.7	50.4	29	28

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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	50.8	55.1	81	112
M3	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	2.25	1.91	73.7	79.8	67.8	73.45
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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	27/5/2021	Mid-Flood	Fine	Calm	07:45	1.6	M	0.8	1	0.174	322	7.38	7.38	5.55	5.55	31.35	31.37	55.9	56.2	3.99	4.02	29.4	29.4	38	39
M1	27/5/2021	Mid-Flood	Fine	Calm	07:45	1.6	M	0.8	2			7.38	7.38	5.54	5.55	31.39	31.37	56.5	56.2	4.05	4.02	29.4	29.4	40	39
M2	27/5/2021	Mid-Flood	Fine	Calm	08:03	1.5	M	0.75	1	0.169	171	7.46	7.46	4.43	4.44	31.35	31.37	61.4	61.6	4.43	4.44	28.7	28.8	48	48
M2	27/5/2021	Mid-Flood	Fine	Calm	08:03	1.5	M	0.75	2			7.45	7.45	4.44	4.44	31.39	31.37	61.8	61.6	4.45	4.44	28.8	28.8	48	48
M3	27/5/2021	Mid-Flood	Fine	Calm	08:12	1	M	0.5	1	0.082	268	7.08	7.08	2.23	2.23	30.10	30.10	46.8	46.3	3.49	3.46	131.8	138.2	110	115
M3	27/5/2021	Mid-Flood	Fine	Calm	08:12	1	M	0.5	2			7.07	7.07	2.23	2.23	30.10	30.10	45.8	46.3	3.42	3.46	144.5	138.2	120	115
M1	27/5/2021	Mid-Ebb	Fine	Calm	14:50	1.5	M	0.75	1	0.197	330	7.26	7.26	2.86	2.87	31.37	31.38	43.7	43.8	3.18	3.18	92.1	92.2	120	125
M1	27/5/2021	Mid-Ebb	Fine	Calm	14:50	1.5	M	0.75	2			7.25	7.25	2.87	2.87	31.39	31.38	43.9	43.8	3.18	3.18	92.2	92.2	130	125
M2	27/5/2021	Mid-Ebb	Fine	Calm	14:24	1.3	M	0.65	1	0.089	80	7.46	7.47	2.75	2.75	32.13	32.16	74.7	74.5	5.36	5.35	40.8	40.8	51	51
M2	27/5/2021	Mid-Ebb	Fine	Calm	14:24	1.3	M	0.65	2			7.47	7.47	2.75	2.75	32.19	32.16	74.3	74.5	5.34	5.35	40.7	40.8	50	51
M3	27/5/2021	Mid-Ebb	Fine	Calm	14:30	0.5	M	0.25	1	0.152	75	7.52	7.52	2.00	2.01	32.50	32.50	89.8	90.2	6.44	6.47	38.5	37.6	42	45
M3	27/5/2021	Mid-Ebb	Fine	Calm	14:30	0.5	M	0.25	2			7.52	7.52	2.01	2.01	32.50	32.50	90.5	90.2	6.49	6.47	36.6	37.6	47	45

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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	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	2.25	1.91	48.4	50.9	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

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	29/5/2021	Mid-Flood	Fine	Calm	08:44	1.3	M	0.65	1	0.11	231	7.42	7.43	7.96	7.97	30.62	30.64	59.4	59.5	4.26	4.28	82.4	82.4	64	64
M1	29/5/2021	Mid-Flood	Fine	Calm	08:44	1.3	M	0.65	2			7.44	7.43	7.98	7.97	30.66	30.64	59.6	59.5	4.30	4.28	82.4	82.4	64	64
M2	29/5/2021	Mid-Flood	Fine	Calm	09:10	1.1	M	0.55	1	0.085	255	7.54	7.52	6.89	6.89	30.68	30.80	69.2	68.6	4.96	4.91	39.9	39.6	48	49
M2	29/5/2021	Mid-Flood	Fine	Calm	09:10	1.1	M	0.55	2			7.50	7.52	6.89	6.89	30.91	30.80	68.0	68.6	4.85	4.91	39.2	39.6	50	49
M3	29/5/2021	Mid-Flood	Fine	Calm	08:36	0.3	M	0.15	1	0.199	261	6.90	6.91	2.85	2.86	30.70	30.70	47.2	44.8	3.47	3.30	95.6	96.6	100	110
M3	29/5/2021	Mid-Flood	Fine	Calm	08:36	0.3	M	0.15	2			6.92	6.91	2.86	2.86	30.70	30.70	42.4	44.8	3.12	3.30	97.7	96.6	120	110
M1	29/5/2021	Mid-Ebb	Fine	Calm	16:17	1.2	M	0.6	1	0.065	128	7.61	7.62	6.47	6.48	31.40	31.42	79.1	79.4	5.64	5.65	24.5	24.6	29	30
M1	29/5/2021	Mid-Ebb	Fine	Calm	16:17	1.2	M	0.6	2			7.62	7.62	6.49	6.48	31.43	31.42	79.6	79.4	5.66	5.65	24.6	24.6	31	30
M2	29/5/2021	Mid-Ebb	Fine	Calm	15:58	0.9	M	0.45	1	0.06	136	7.56	7.56	7.56	7.55	31.51	31.51	76.5	76.5	5.43	5.42	28.1	28.1	26	28
M2	29/5/2021	Mid-Ebb	Fine	Calm	15:58	0.9	M	0.45	2			7.56	7.56	7.54	7.55	31.51	31.51	76.4	76.5	5.41	5.42	28.0	28.1	29	28
M3	29/5/2021	Mid-Ebb	Fine	Calm	16:02	0.8	M	0.4	1	0.151	80	7.47	7.48	2.94	2.95	32.30	32.30	101.6	102.0	7.26	7.29	22.7	22.0	22	23
M3	29/5/2021	Mid-Ebb	Fine	Calm	16:02	0.8	M	0.4	2			7.48	7.48	2.95	2.95	32.30	32.30	102.4	102.0	7.31	7.29	21.2	22.0	23	23

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.

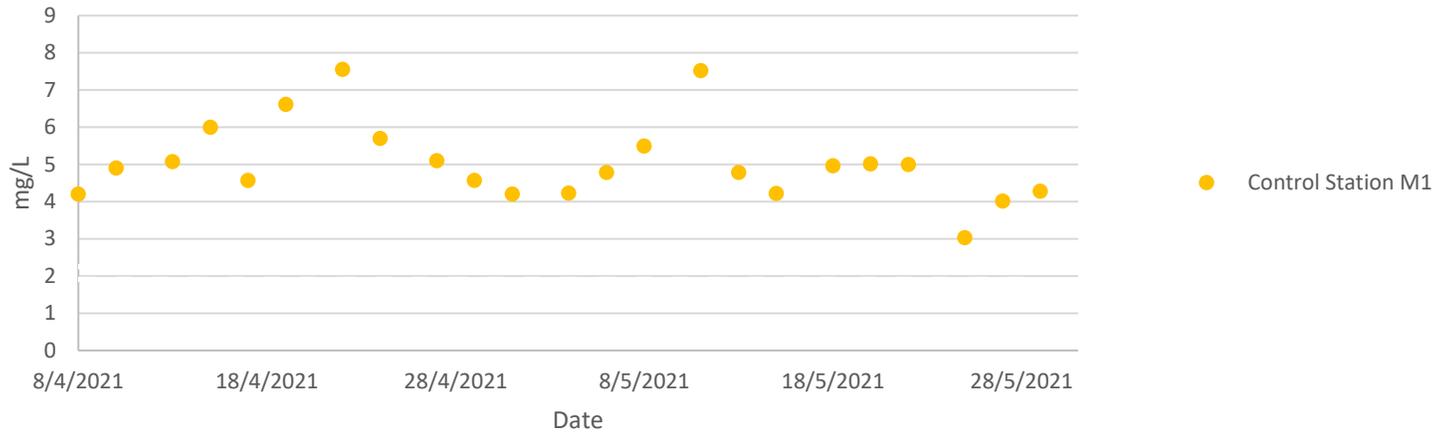
For Flood Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	98.9	107.1	81	112
M3	3.28	3.14	98.9	107.1	104	167

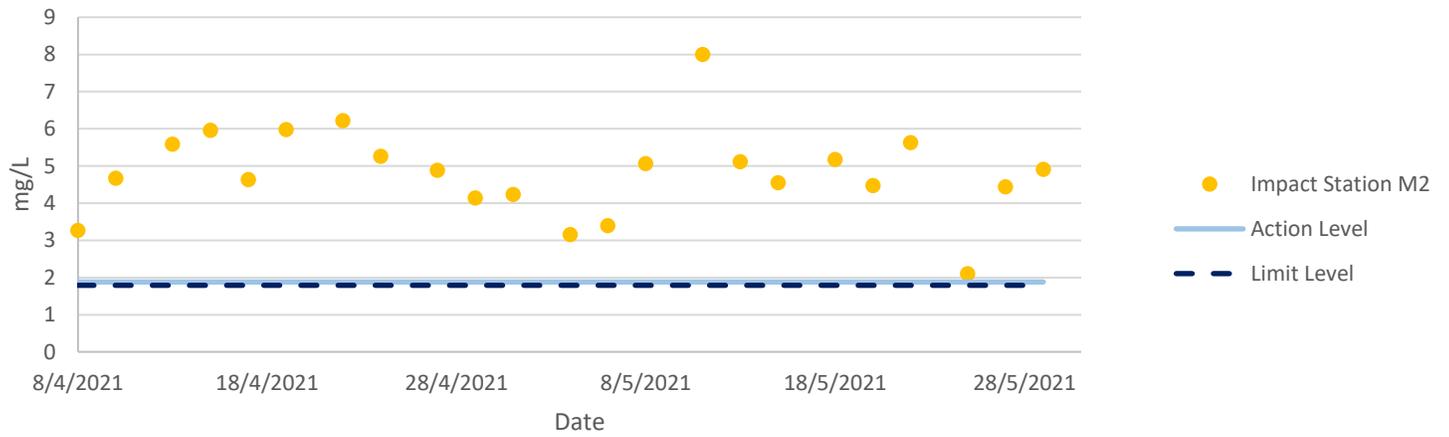
For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

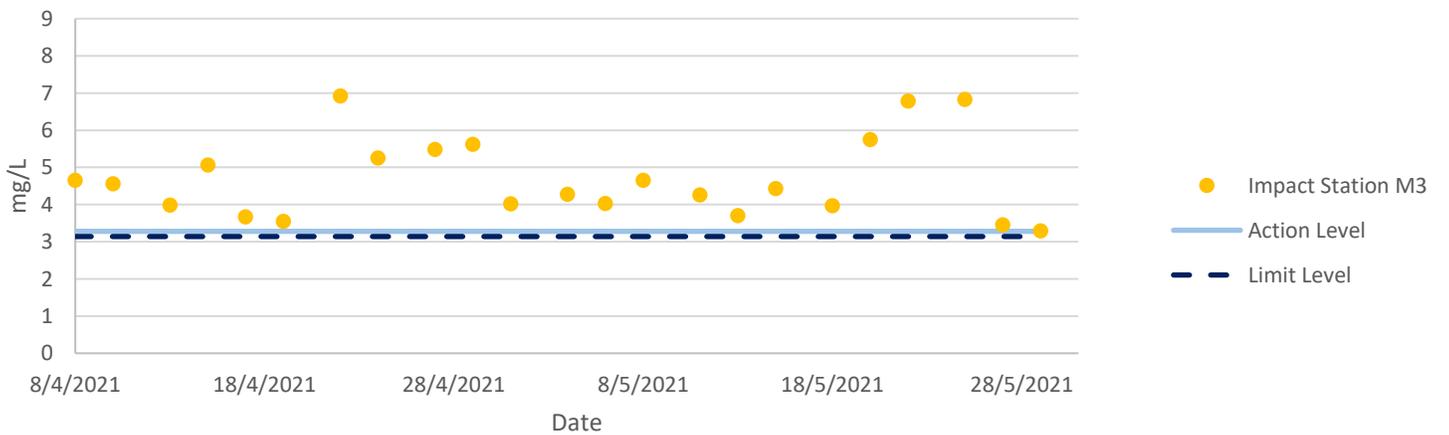
Dissolved Oxygen at Mid-Flood Tide



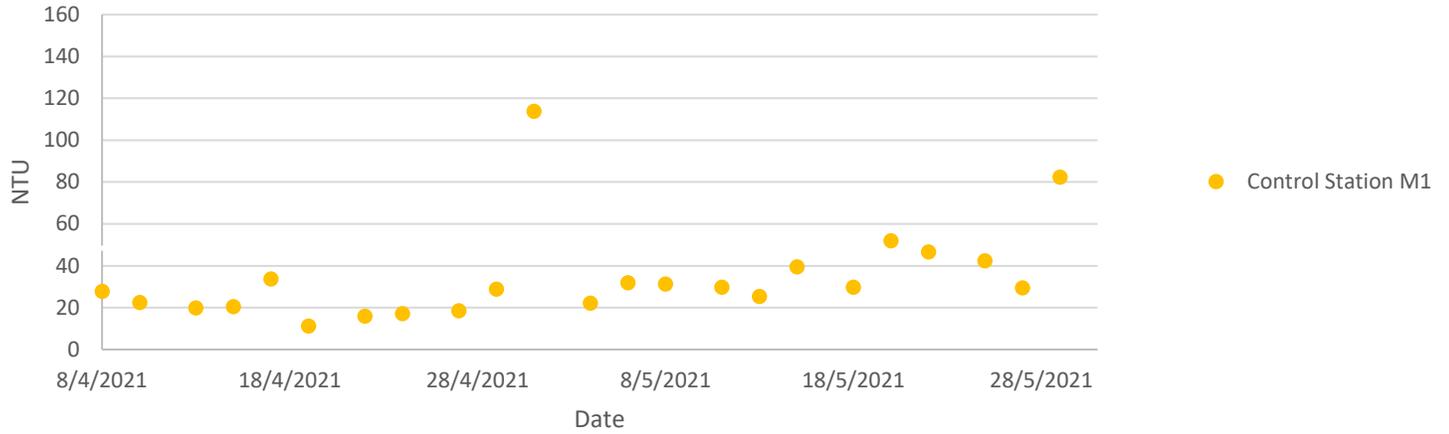
Dissolved Oxygen at Mid-Flood Tide



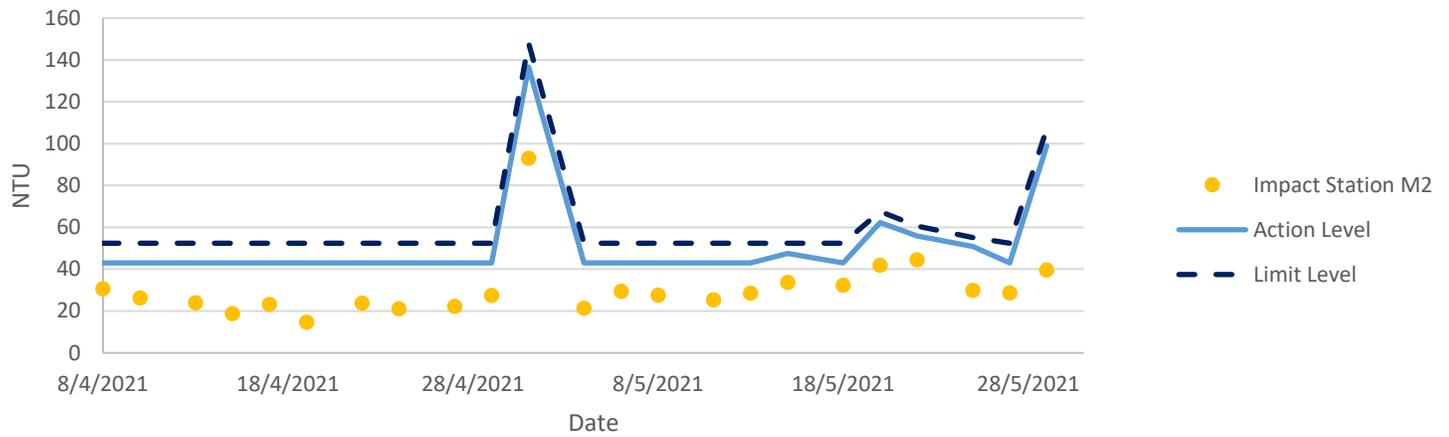
Dissolved Oxygen at Mid-Flood Tide



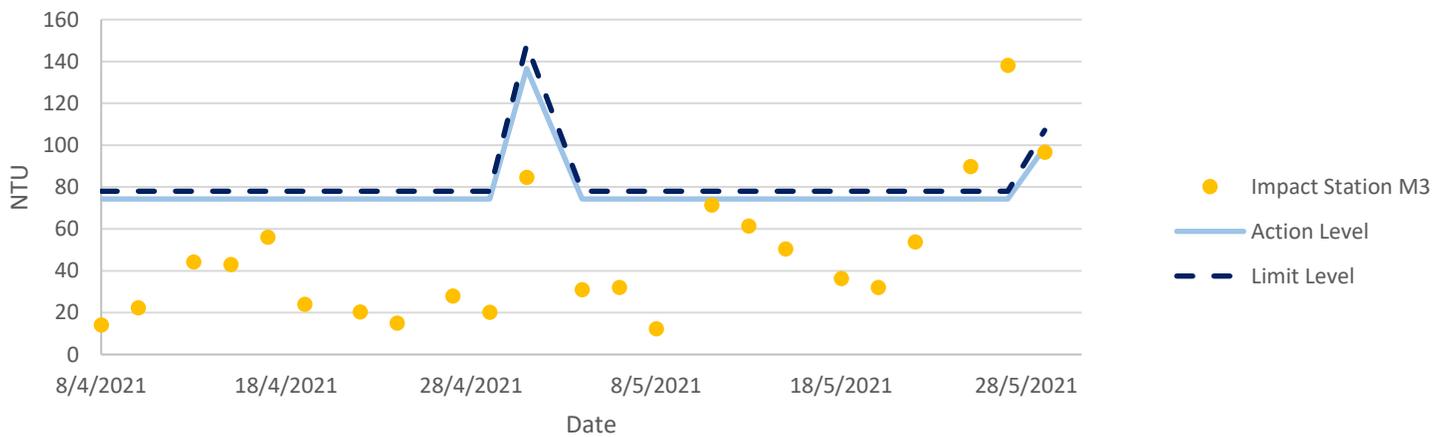
Turbidity at Mid-Flood Tide



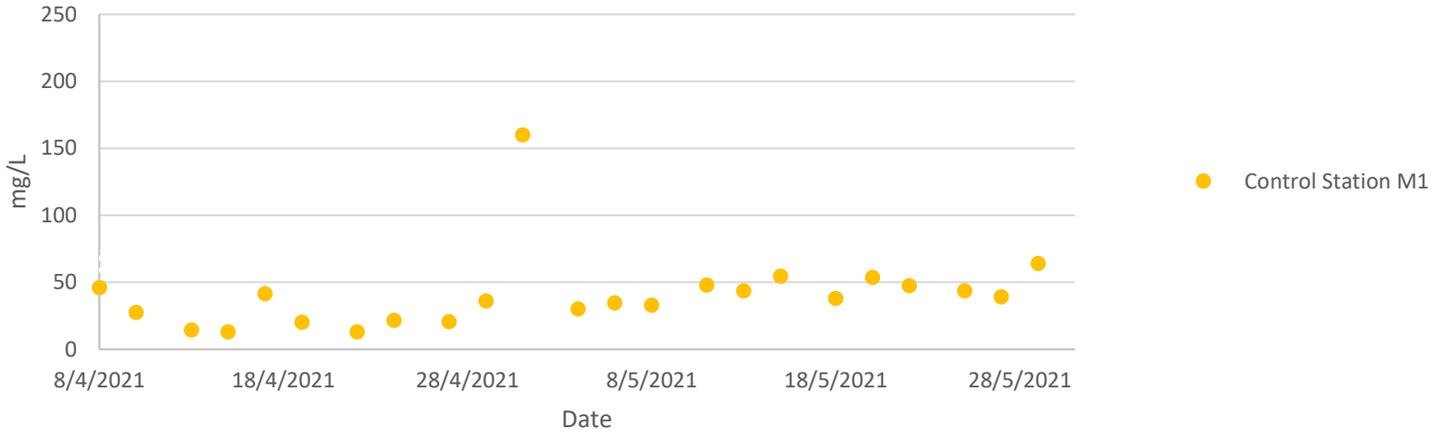
Turbidity at Mid-Flood Tide



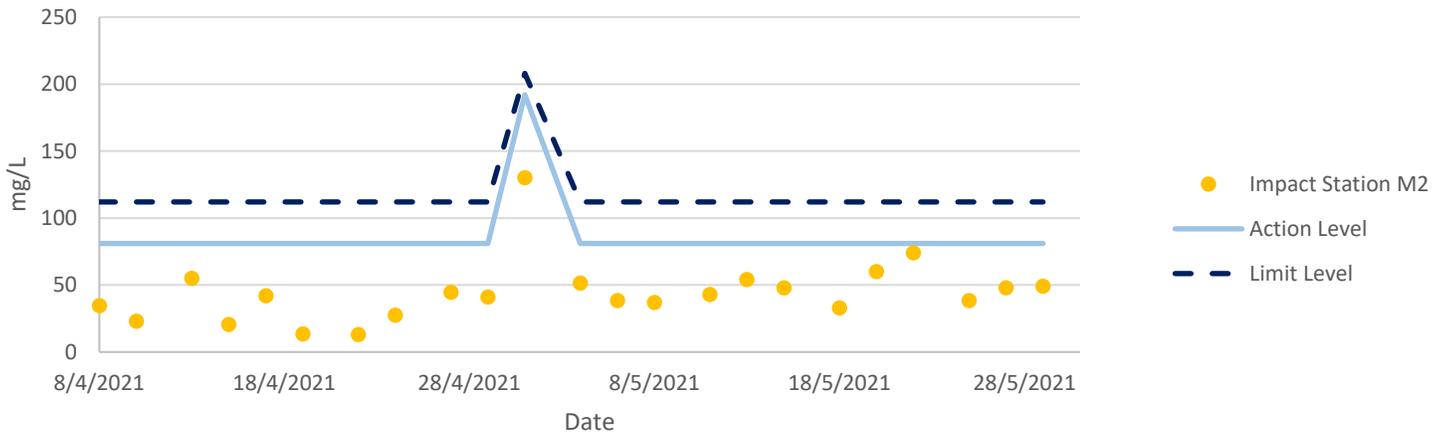
Turbidity at Mid-Flood Tide



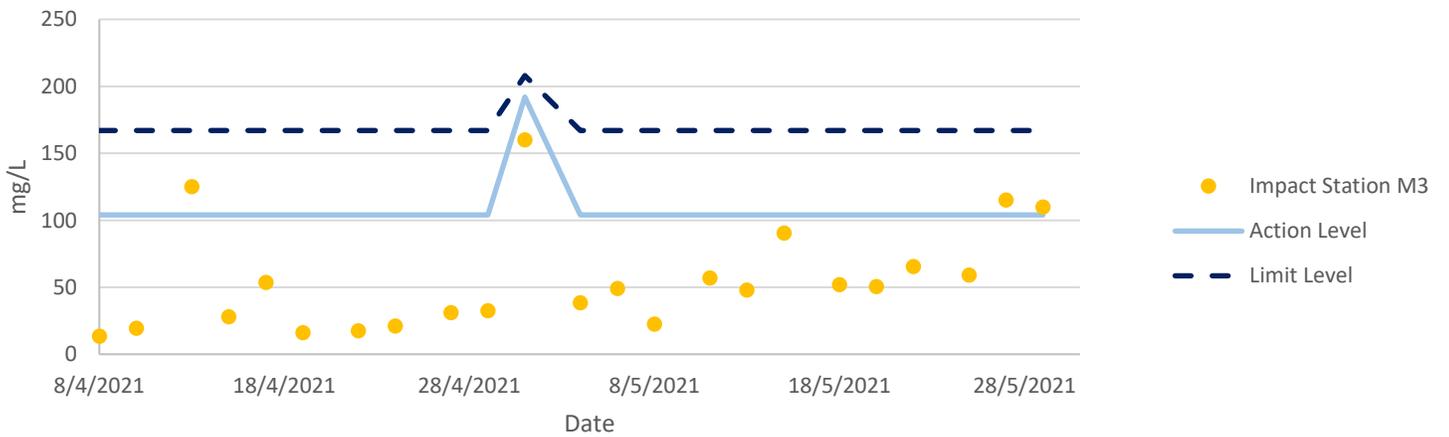
Total Suspended Solids at Mid-Flood Tide



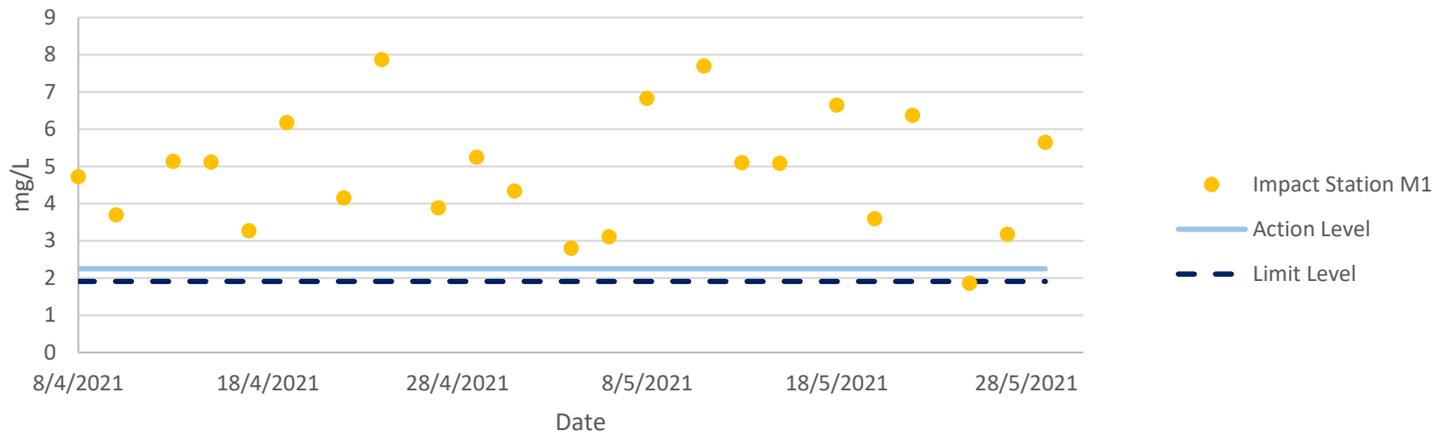
Total Suspended Solids at Mid-Flood Tide



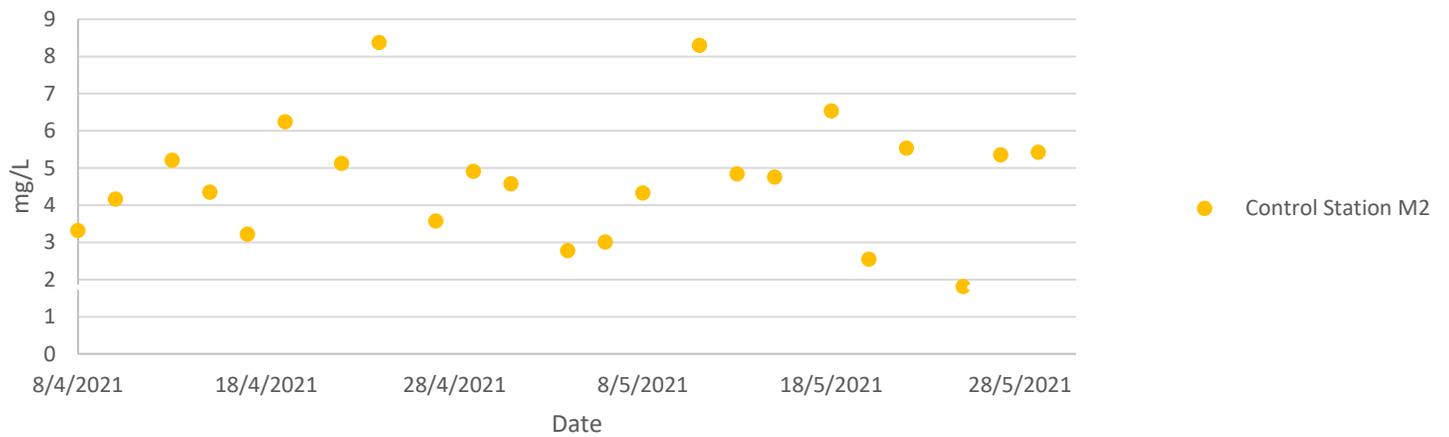
Total Suspended Solids at Mid-Flood Tide



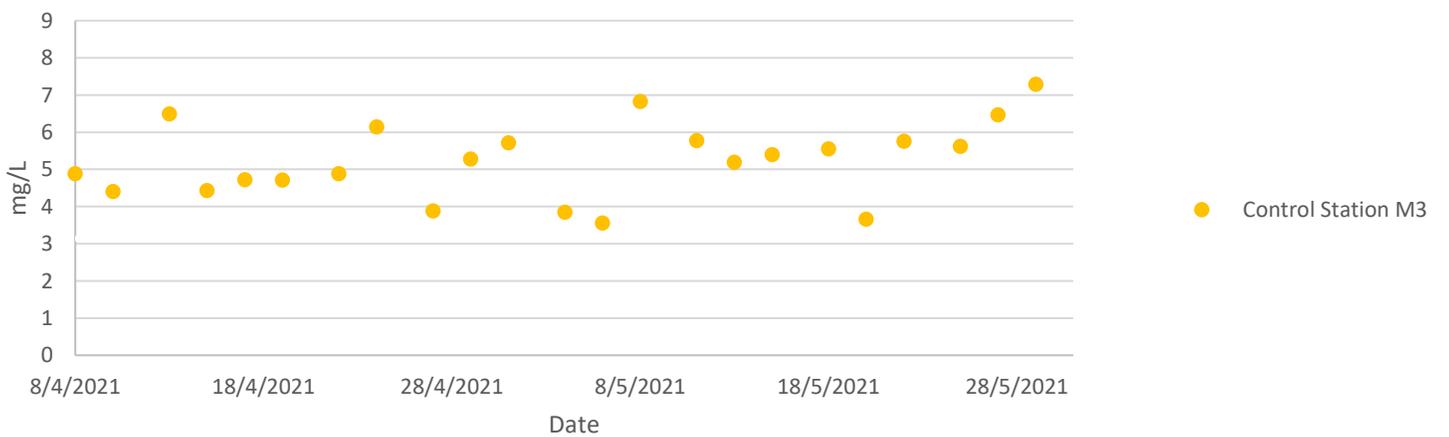
Dissolved Oxygen at Mid-Ebb Tide



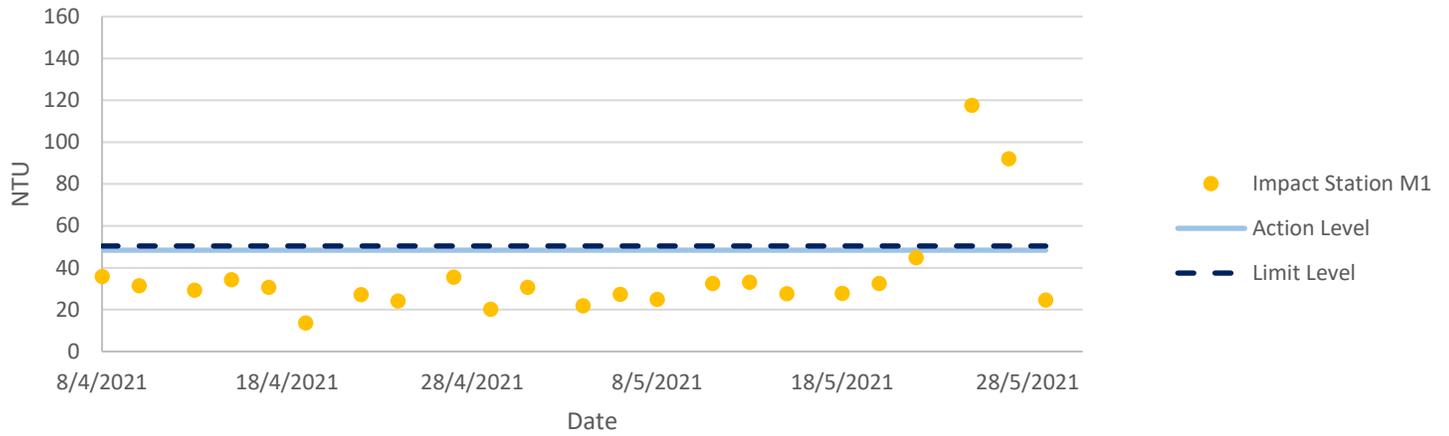
Dissolved Oxygen at Mid-Ebb Tide



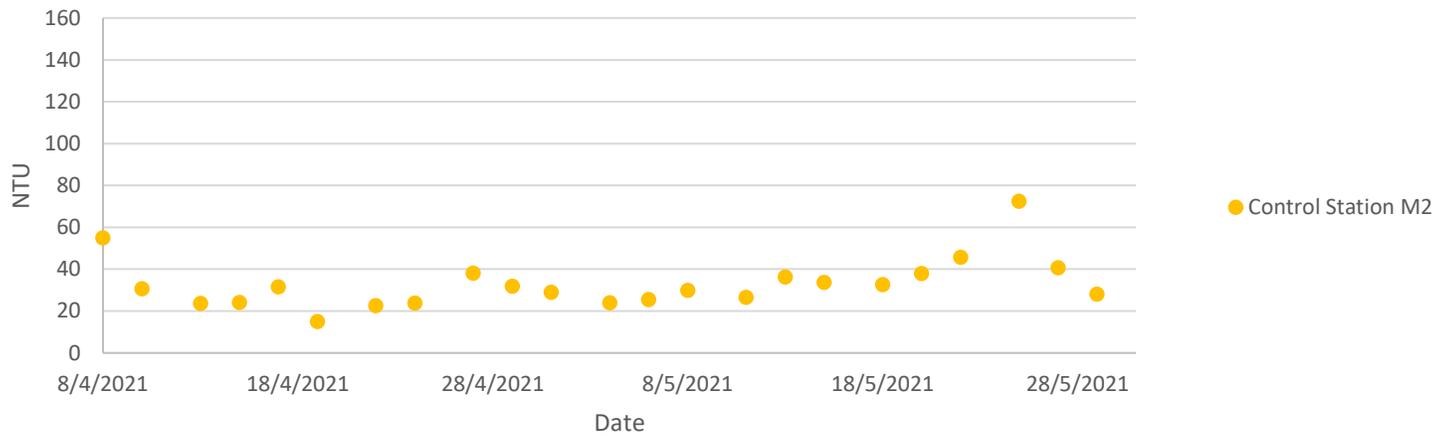
Dissolved Oxygen at Mid-Ebb Tide



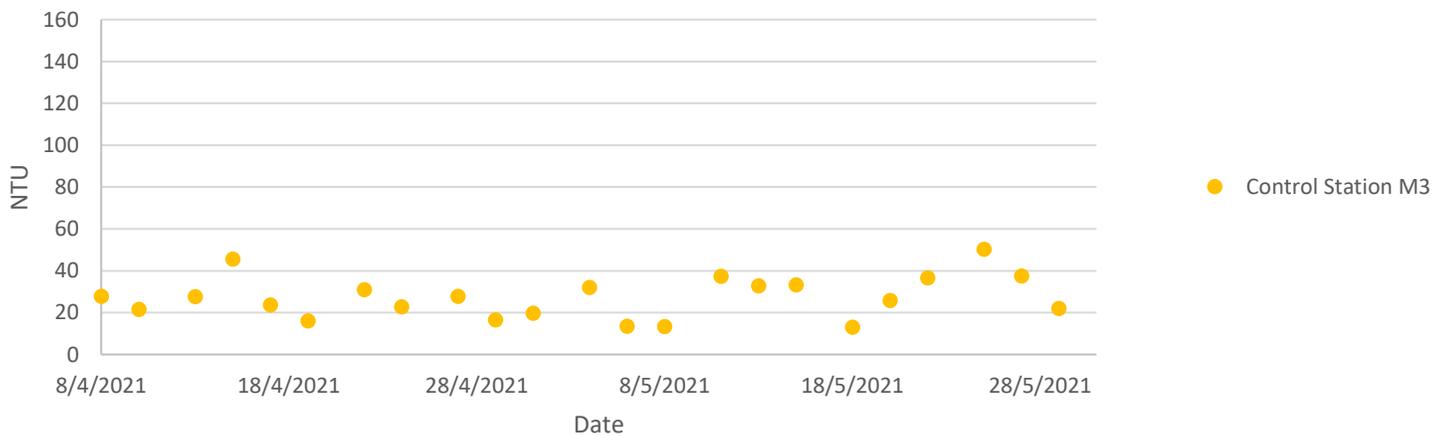
Turbidity at Mid-Ebb Tide



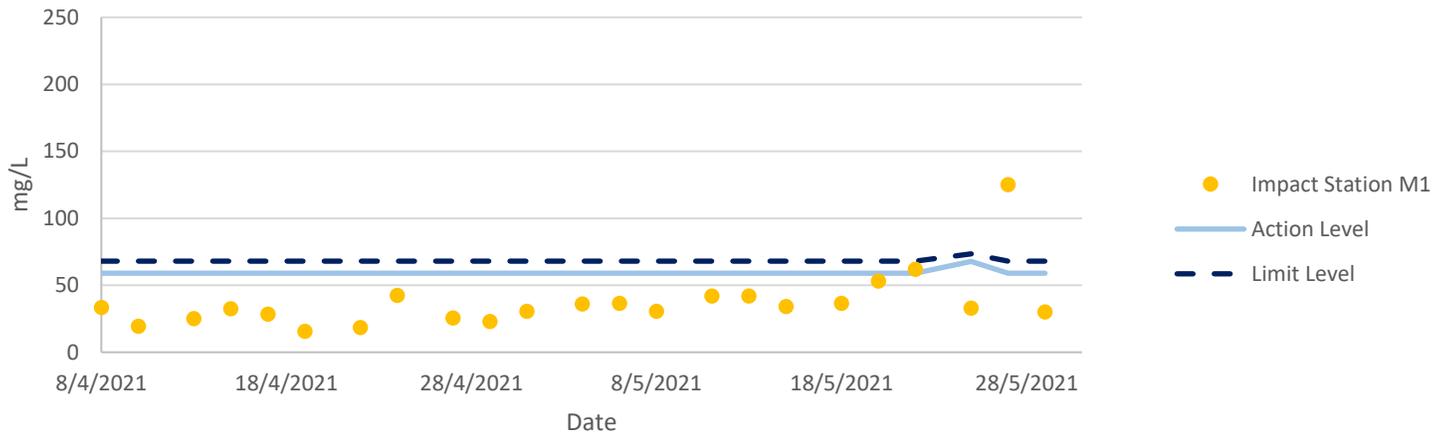
Turbidity at Mid-Ebb Tide



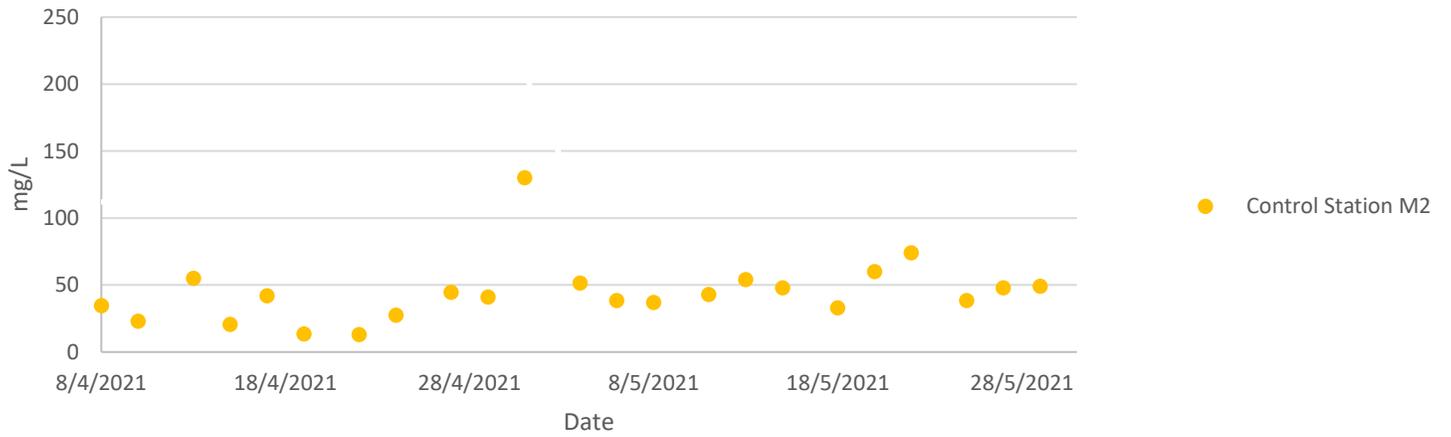
Turbidity at Mid-Ebb Tide



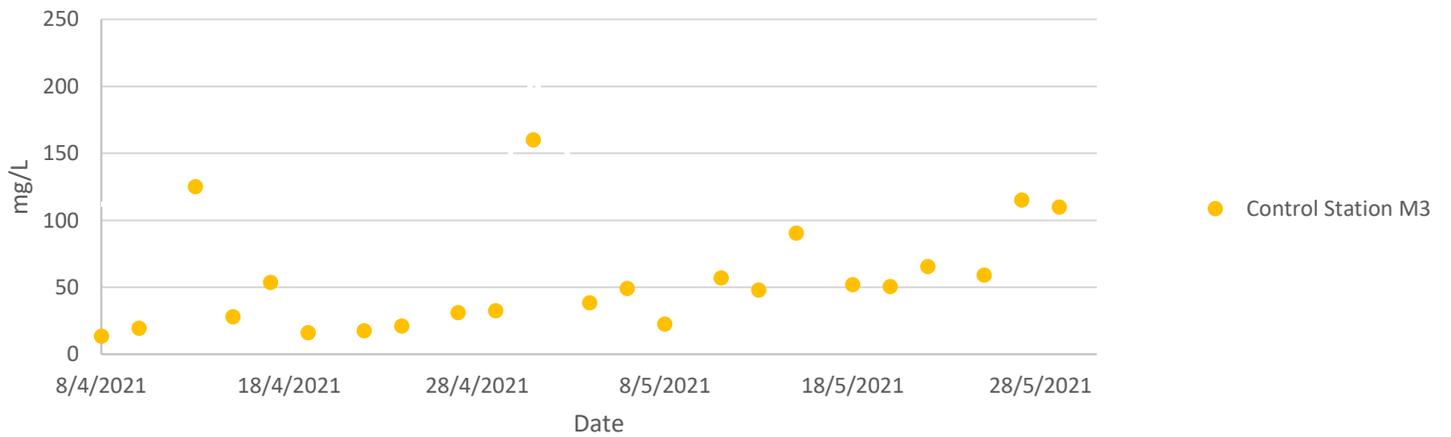
Total Suspended Solids at Mid-Ebb Tide



Total Suspended Solids at Mid-Ebb Tide



Total Suspended Solids at Mid-Ebb Tide



Ecology Monitoring Results

Ecological Monitoring of Birds results for
 Contract No. SPW 07/2020
 Environmental Team for Construction of Yuen long Effluent Polishing Plant Stage 1

Appendix F.1 Ecological Bird Monitoring Results (17 May 2021)

Daytime/Night time	Season	Area	Transect/Point Count	Point Count (Location)/Transect Impact	Common Name	Scientific Name	Abundance	Habitat	Distribution in Hong Kong ²	Principal Status ³	Level of Concern ⁴	Protection Status in China ⁵	China Red Data Book ⁶	Red List of China's Vertebrates ¹⁰	IUCN Red List ⁷ (v.2020-3)	Specis of Conservation Importance	Wetland Dependent
Daytime	Wet	FLW	Point Count	FLW6	Azure-winged Magpie	<i>Cyanopica cyanus</i>	7	Pond-FLW	Introduced	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Transect	FLW-Transect	Azure-winged Magpie	<i>Cyanopica cyanus</i>	5	Plantation-FLW	Introduced	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Transect	FLW-Transect	Barn Swallow	<i>Hirundo rustica</i>	3	Pond-FLW	Abundant	PM,SV	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Barn Swallow	<i>Hirundo rustica</i>	5	Pond-NSW	Abundant	PM,SV	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	SP/NSW1	Barn Swallow	<i>Hirundo rustica</i>	2	Pond-NSW	Abundant	PM,SV	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	SP/NSW2	Barn Swallow	<i>Hirundo rustica</i>	4	WC-NSW	Abundant	PM,SV	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW4	Black Drongo	<i>Dicrurus macrocercus</i>	1	Pond-FLW	Common	SV	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW6	Black Drongo	<i>Dicrurus macrocercus</i>	1	Pond-FLW	Common	SV	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW3	Black Kite	<i>Milvus migrans</i>	1	Pond-FLW	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
Daytime	Wet	FLW	Transect	FLW-Transect	Black-collared Starling	<i>Gracupica nigricollis</i>	2	Plantation-FLW	Common	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	SP/NSW3	Black-collared Starling	<i>Gracupica nigricollis</i>	1	Plantation-NSW	Common	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Transect	FLW-Transect	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW6	Chinese Pond Heron	<i>Ardeola bacchus</i>	7	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	FLW	Point Count	FLW7	Chinese Pond Heron	<i>Ardeola bacchus</i>	4	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	FLW	Transect	FLW-Transect	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Pond-FLW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	NSW	Transect	NSW-Transect	Chinese Pond Heron	<i>Ardeola bacchus</i>	2	Pond-NSW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	NSW	Point Count	SP/NSW1	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Pond-NSW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	NSW	Point Count	SP/NSW2	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	WC-NSW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	YLIE	Transect	YLIE-CW	Chinese Pond Heron	<i>Ardeola bacchus</i>	2	YLIE-WC	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	NSW	Point Count	NSW1	Collared Crow	<i>Corvus torquatus</i>	1	Pond-NSW	Uncommon	R	LC	-	-	NT	VU	Y	Y
Daytime	Wet	NSW	Point Count	NSW1	Common Kingfisher	<i>Alcedo atthis</i>	1	Pond-NSW	Common	PM,WV	-	-	-	LC	LC	N	Y
Daytime	Wet	FLW	Transect	FLW-Transect	Common Koel	<i>Eudynamys scolopaceus</i>	1	Plantation	Common	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Common Koel	<i>Eudynamys scolopaceus</i>	1	Plantation-NSW	Common	R	-	-	-	LC	LC	N	N

Daytime	Wet	NSW	Point Count	SP/NSW1	Common Moorhen	<i>Gallinula chloropus</i>	1	Pond-NSW	Common	R	-	-	-	LC	LC	N	Y
Daytime	Wet	YLIE	Transect	YLIE-CW	Common Moorhen	<i>Gallinula chloropus</i>	2	YLIE-WC	Common	R	-	-	-	LC	LC	N	Y
Daytime	Wet	FLW	Transect	FLW-Transect	Common Tailorbird	<i>Orthotomus sutorius</i>	2	Plantation-FLW	Common	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Common Tailorbird	<i>Orthotomus sutorius</i>	1	Plantation-NSW	Common	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Common Tailorbird	<i>Orthotomus sutorius</i>	1	Pond-NSW	Common	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Transect	FLW-Transect	Dusky Warbler	<i>Phylloscopus fuscatus</i>	1	Pond-FLW	Common	PM,WV	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Dusky Warbler	<i>Phylloscopus fuscatus</i>	1	Reedbed	Common	PM,WV	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Transect	FLW-Transect	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	2	Pond-FLW	Common	R,PM	-	-	-	LC	LC	N	Y
Daytime	Wet	FLW	Point Count	FLW6	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	1	Pond-FLW	Common	PM,WV	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW5	Eurasian Tree Sparrow	<i>Passer montanus</i>	4	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Eurasian Tree Sparrow	<i>Passer montanus</i>	5	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Transect	FLW-Transect	Great Egret	<i>Ardea alba</i>	4	Pond-FLW	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	NSW	Point Count	NSW1	Great Egret	<i>Ardea alba</i>	1	Pond-NSW	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	FLW	Transect	FLW-Transect	Grey Heron	<i>Ardea cinerea</i>	2	Pond-FLW	Common	WV	PRC	-	-	LC	LC	Y	Y
Daytime	Wet	NSW	Transect	NSW-Transect	Hair-crested Drongo	<i>Dicrurus hottentottus</i>	2	Plantation-NSW	Common	PM,SV	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Transect	FLW-Transect	Japanese White-eye	<i>Zosterops japonicus</i>	2	Plantation-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Japanese White-eye	<i>Zosterops japonicus</i>	1	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Japanese White-eye	<i>Zosterops japonicus</i>	1	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	SP/NSW1	Little Egret	<i>Egretta garzetta</i>	1	Pond-NSW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	NSW	Point Count	SP/NSW2	Little Egret	<i>Egretta garzetta</i>	1	WC-NSW	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
Daytime	Wet	FLW	Point Count	FLW5	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Pond-FLW	Common	R	LC	-	-	LC	LC	Y	Y
Daytime	Wet	FLW	Transect	FLW-Transect	Little Grebe	<i>Tachybaptus ruficollis</i>	3	Pond-FLW	Common	R	LC	-	-	LC	LC	Y	Y
Daytime	Wet	NSW	Transect	NSW-Transect	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	4	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	1	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	SP/NSW3	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	5	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	NSW1	Oriental Magpie Robin	<i>Copsychus saularis</i>	2	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Oriental Magpie Robin	<i>Copsychus saularis</i>	2	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N

Daytime	Wet	NSW	Transect	NSW-Transect	Oriental Magpie Robin	<i>Copsychus saularis</i>	2	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	NSW1	Pied Kingfisher	<i>Ceryle rudis</i>	1	Pond-NSW	Uncommon	R	-	-	-	LC	LC	N	Y
Daytime	Wet	FLW	Point Count	FLW1	Plain Prinia	<i>Prinia inornata</i>	2	Pond-FLW	Common	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	NSW1	Plain Prinia	<i>Prinia inornata</i>	2	Pond-NSW	Common	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW1	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	3	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW2	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW6	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	5	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW7	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	3	Plantation-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Transect	FLW-Transect	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	3	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	NSW1	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW1	Spotted Dove	<i>Spilopelia chinensis</i>	2	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW3	Spotted Dove	<i>Spilopelia chinensis</i>	1	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW4	Spotted Dove	<i>Spilopelia chinensis</i>	1	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW5	Spotted Dove	<i>Spilopelia chinensis</i>	2	Pond-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW7	Spotted Dove	<i>Spilopelia chinensis</i>	2	Plantation-FLW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	NSW1	Spotted Dove	<i>Spilopelia chinensis</i>	7	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	Spotted Dove	<i>Spilopelia chinensis</i>	2	Pond-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	SP/NSW3	Spotted Dove	<i>Spilopelia chinensis</i>	2	Plantation-NSW	Abundant	R	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW2	White Wagtail	<i>Motacilla alba</i>	2	Pond-FLW	Common	PM,WV	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW3	White Wagtail	<i>Motacilla alba</i>	2	Pond-FLW	Common	PM,WV	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW5	White Wagtail	<i>Motacilla alba</i>	4	Pond-FLW	Common	PM,WV	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Transect	NSW-Transect	White Wagtail	<i>Motacilla alba</i>	2	Pond-NSW	Common	PM,WV	-	-	-	LC	LC	N	N
Daytime	Wet	NSW	Point Count	SP/NSW2	White Wagtail	<i>Motacilla alba</i>	4	WC-NSW	Common	PM,WV	-	-	-	LC	LC	N	N
Daytime	Wet	FLW	Point Count	FLW2	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	1	Pond-FLW	Common	R	-	-	-	LC	LC	N	Y
Daytime	Wet	FLW	Transect	FLW-Transect	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	1	Pond-FLW	Common	R	-	-	-	LC	LC	N	Y
Daytime	Wet	NSW	Transect	NSW-Transect	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	1	Reedbed	Common	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

Species of conservation importance is in bold type face

Appendix F.2a Ecological Bird Monitoring Diversity (All avifauna species in Point Count Method) in All Habitats (17 May 2021)

Common Name	Abundance	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
Azure-winged Magpie	7	0.069307	-2.66921	-0.18499	0.49379
Barn Swallow	6	0.059406	-2.82336	-0.16772	0.473547
Black Drongo	2	0.019802	-3.92197	-0.07766	0.304592
Black Kite	1	0.009901	-4.61512	-0.04569	0.210885
Black-collared Starling	1	0.009901	-4.61512	-0.04569	0.210885
Chinese Pond Heron	15	0.148515	-1.90707	-0.28323	0.540136
Collared Crow	1	0.009901	-4.61512	-0.04569	0.210885
Common Kingfisher	1	0.009901	-4.61512	-0.04569	0.210885
Common Moorhen	1	0.009901	-4.61512	-0.04569	0.210885
Eastern Yellow Wagtail	1	0.009901	-4.61512	-0.04569	0.210885
Eurasian Tree Sparrow	4	0.039604	-3.22883	-0.12787	0.412884
Great Egret	1	0.009901	-4.61512	-0.04569	0.210885
Little Egret	2	0.019802	-3.92197	-0.07766	0.304592
Little Grebe	1	0.009901	-4.61512	-0.04569	0.210885
Masked Laughingthrush	5	0.049505	-3.00568	-0.1488	0.447234
Oriental Magpie Robin	2	0.019802	-3.92197	-0.07766	0.304592
Pied Kingfisher	1	0.009901	-4.61512	-0.04569	0.210885
Plain Prinia	4	0.039604	-3.22883	-0.12787	0.412884
Red-whiskered Bulbul	15	0.148515	-1.90707	-0.28323	0.540136
Spotted Dove	17	0.168317	-1.78191	-0.29992	0.534438
White Wagtail	12	0.118812	-2.13021	-0.25309	0.539146
White-breasted Waterhen	1	0.009901	-4.61512	-0.04569	0.210885
Total	101				
Richness	22				
SS	7.416815				
SQ	6.587802				
H	2.566671				
S²_H	0.009237				

Appendix F.2b Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Point Count Method) in All Habitats (17 May 2021)

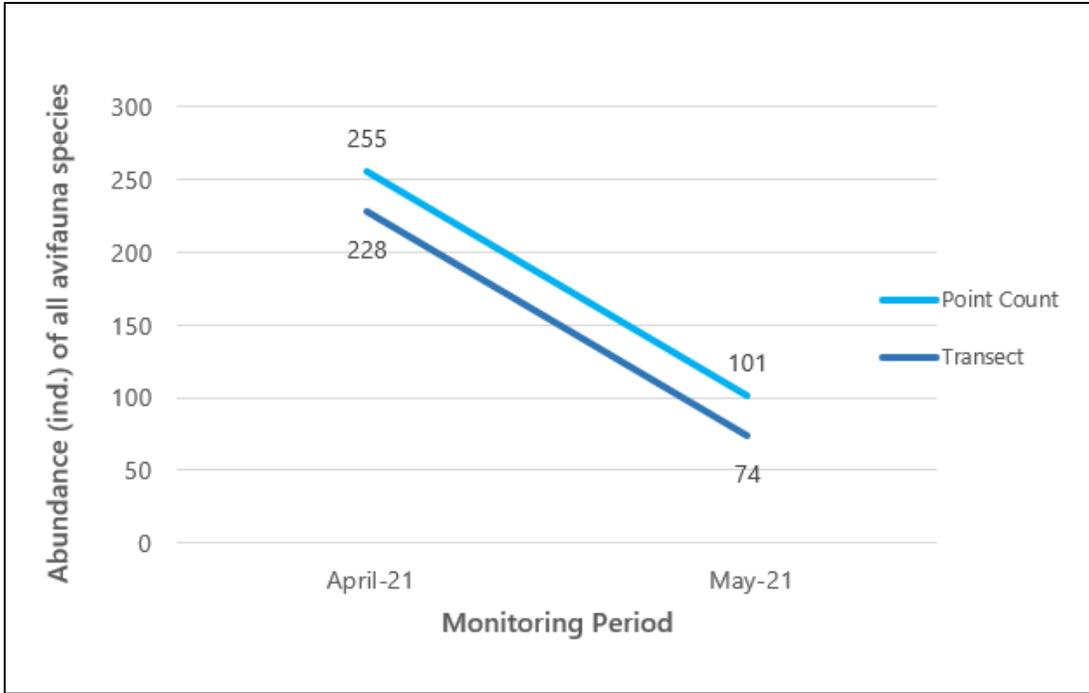
Common Name	Abundance	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
Black Kite	1	0.047619	-3.04452	-0.14498	0.441387
Chinese Pond Heron	15	0.714286	-0.33647	-0.24034	0.080867
Collared Crow	1	0.047619	-3.04452	-0.14498	0.441387
Great Egret	1	0.047619	-3.04452	-0.14498	0.441387
Little Egret	2	0.095238	-2.35138	-0.22394	0.526568
Little Grebe	1	0.047619	-3.04452	-0.14498	0.441387
Total	21				
Richness	6				
SS	2.372981				
SQ	1.090326				
H	1.044187				
S²_H	0.066748				

Appendix F.2c Ecological Bird Monitoring Diversity (All avifauna species in Transect Walk Method) in All Habitats (17 May 2021)

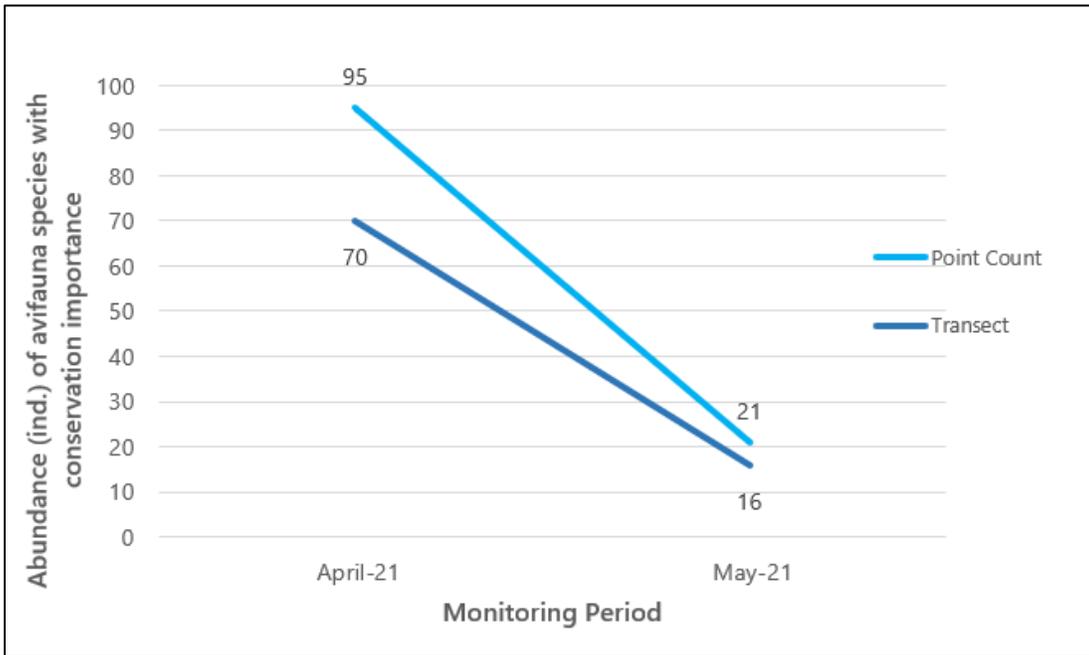
Common Name	Abundance	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
Azure-winged Magpie	5	0.067568	-2.69463	-0.18207	0.490609
Barn Swallow	8	0.108108	-2.22462	-0.2405	0.535022
Black-collared Starling	2	0.027027	-3.61092	-0.09759	0.352398
Chinese Bulbul	2	0.027027	-3.61092	-0.09759	0.352398
Chinese Pond Heron	7	0.094595	-2.35815	-0.22307	0.526031
Common Koel	2	0.027027	-3.61092	-0.09759	0.352398
Common Moorhen	2	0.027027	-3.61092	-0.09759	0.352398
Common Tailorbird	4	0.054054	-2.91777	-0.15772	0.460183
Dusky Warbler	2	0.027027	-3.61092	-0.09759	0.352398
Eastern Cattle Egret	2	0.027027	-3.61092	-0.09759	0.352398
Eurasian Tree Sparrow	5	0.067568	-2.69463	-0.18207	0.490609
Great Egret	4	0.054054	-2.91777	-0.15772	0.460183
Grey Heron	2	0.027027	-3.61092	-0.09759	0.352398
Hair-crested Drongo	2	0.027027	-3.61092	-0.09759	0.352398
Japanese White-eye	4	0.054054	-2.91777	-0.15772	0.460183
Little Grebe	3	0.040541	-3.20545	-0.12995	0.416551
Masked Laughingthrush	5	0.067568	-2.69463	-0.18207	0.490609
Oriental Magpie Robin	4	0.054054	-2.91777	-0.15772	0.460183
Red-whiskered Bulbul	3	0.040541	-3.20545	-0.12995	0.416551
Spotted Dove	2	0.027027	-3.61092	-0.09759	0.352398
White Wagtail	2	0.027027	-3.61092	-0.09759	0.352398
White-breasted Waterhen	1	0.013514	-4.30407	-0.05816	0.250338
Yellow-bellied Prinia	1	0.013514	-4.30407	-0.05816	0.250338
Total	74				
Richness	23				
SS	9.23137				
SQ	8.956837				
H	2.992798				
S²_H	0.005719				

Appendix F.2d Ecological Bird Monitoring Diversity (Avifauna species of conservation importance in Transect Walk Method) in All Habitats (17 May 2021)

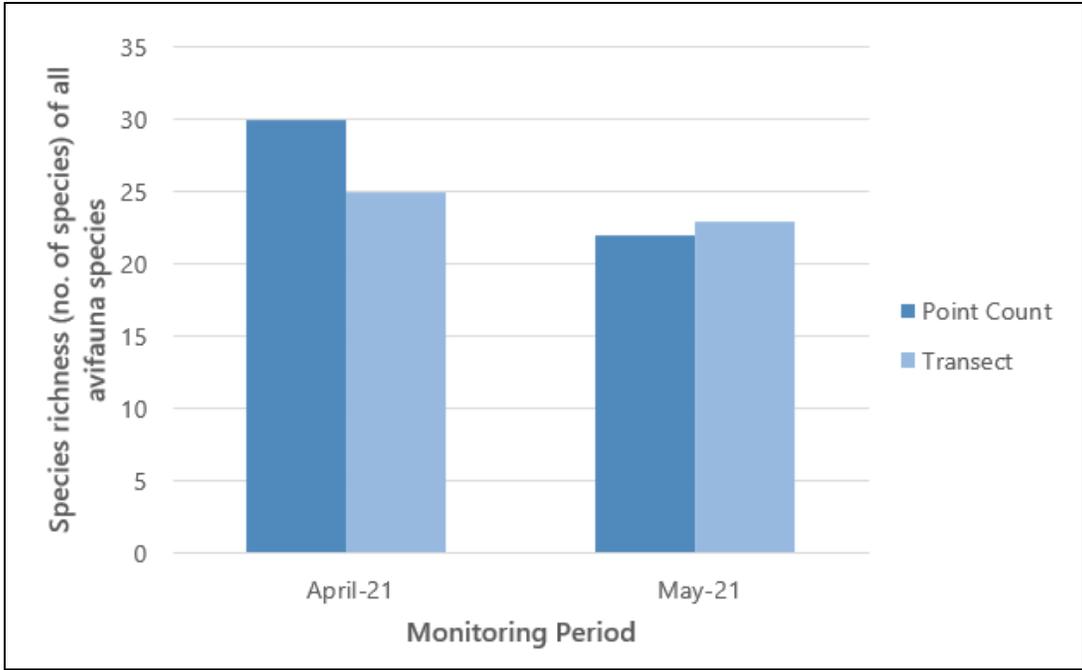
Taxon	Abundance	P	Ln(P)	P*Ln(P)	P*Ln(P) ²
Chinese Pond Heron	7	0.4375	-0.82668	-0.36167	0.298986
Great Egret	4	0.25	-1.38629	-0.34657	0.480453
Grey Heron	2	0.125	-2.07944	-0.25993	0.54051
Little Grebe	3	0.1875	-1.67398	-0.31387	0.525412
Total	16				
Richness	4				
SS	1.845361				
SQ	1.643643				
H	1.282046				
S²_H	0.018467				



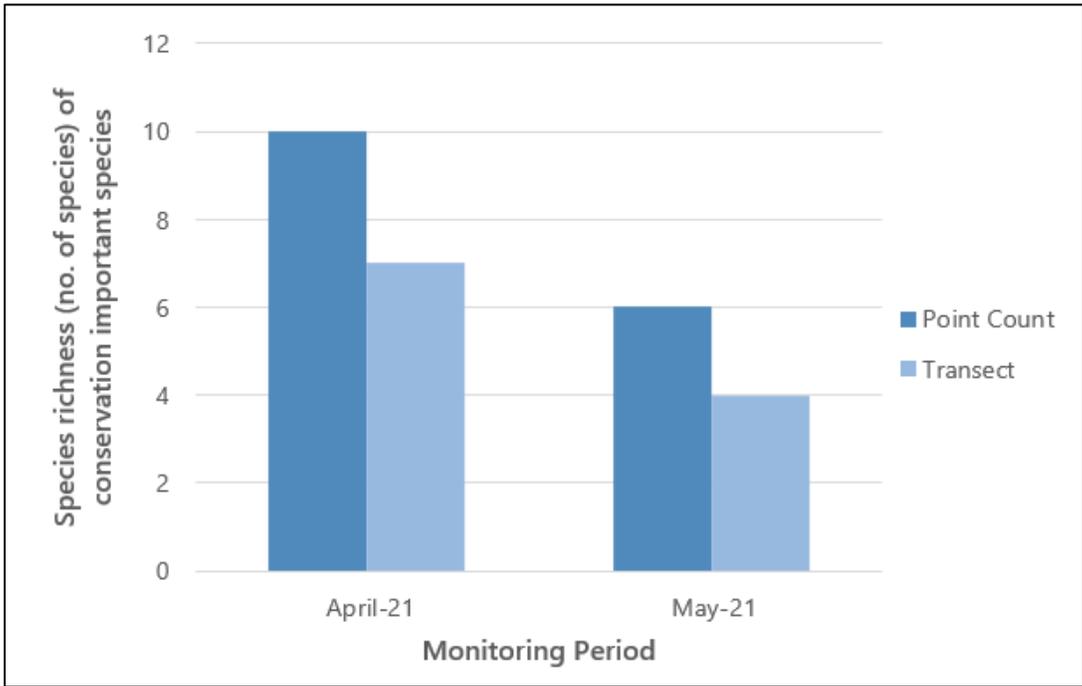
Appendix F.3a Abundance of all avifauna species throughout the monitoring period



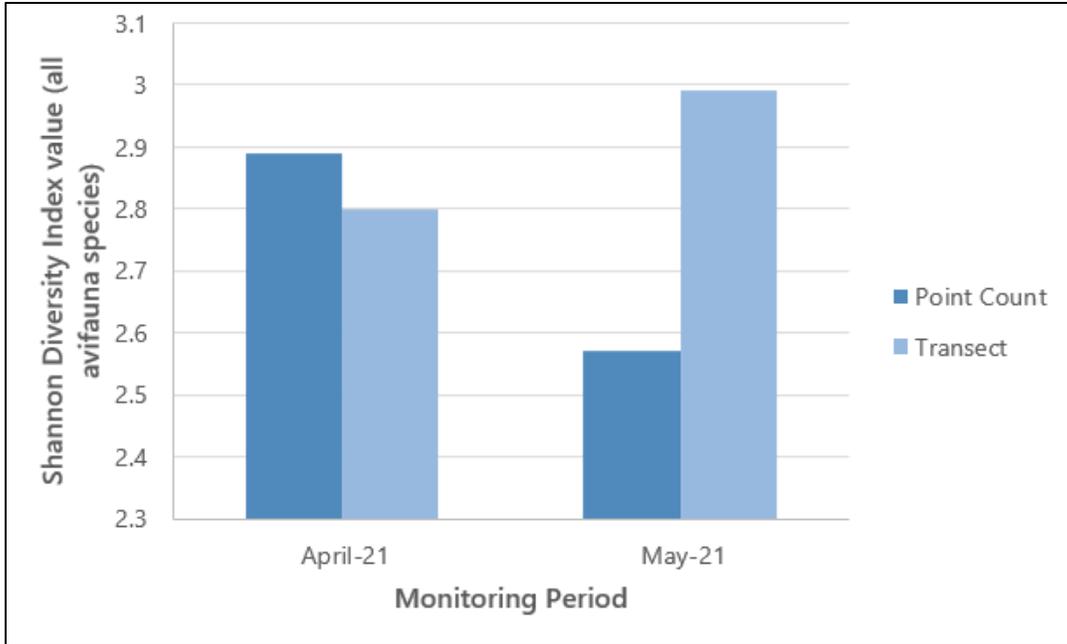
Appendix F.3b Abundance of avifauna species with conservation importance throughout the monitoring period



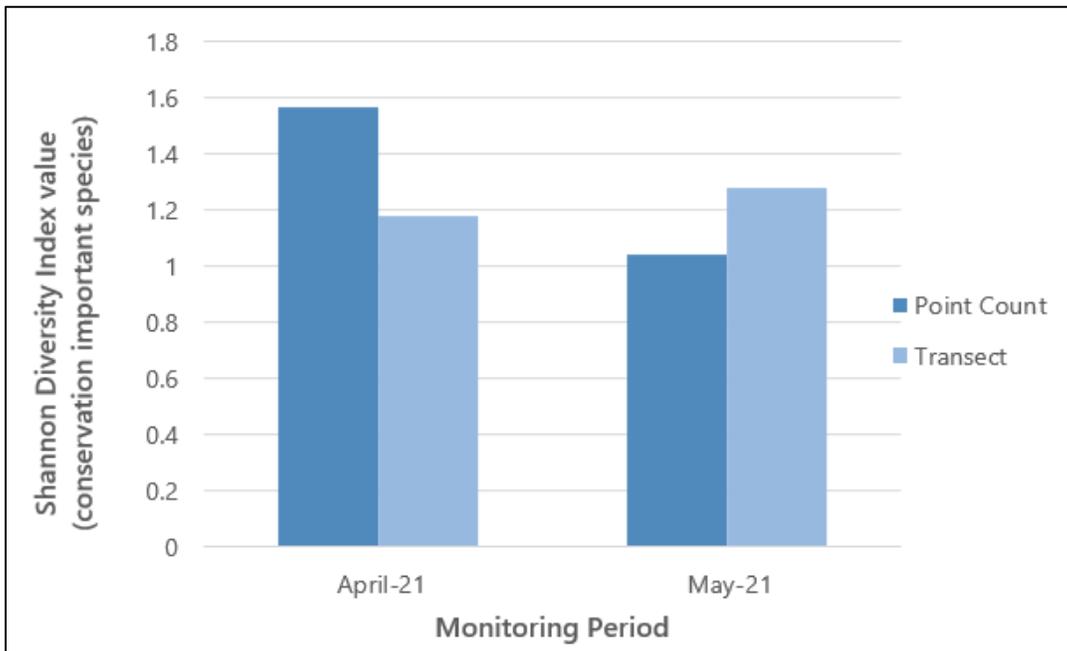
Appendix F.3c Species richness of all avifauna species throughout the monitoring period



Appendix F.3d Species richness of avifauna species with conservation importance throughout the monitoring period



Appendix F.3e Shannon Diversity Index values of all avifauna species throughout the monitoring period



Appendix F.3f Shannon Diversity Index values of avifauna species with conservation importance throughout the monitoring period

Appendix F.4a Baseline data (May 2017) per point count location

Point count location	Common Name	Abundance
FLW1	Black-collared Starling	1
	Chinese Pond Heron	1
	Greater Coucal	1
FLW2	Crested Myna	1
	Eurasian Collared Dove	1
	Yellow-bellied Prinia	2
FLW3	Eurasian Collared Dove	1
	Red-whiskered Bulbul	2
	Spotted Dove	1
	White Wagtail	1
	Yellow-bellied Prinia	1
FLW4	Barn Swallow	1
	Black Drongo	1
	Chinese Pond Heron	1
	Eurasian Collared Dove	2
	Great Egret	1
	Little Grebe	7
	Pied Kingfisher	2
	Spotted Dove	1
	Yellow-bellied Prinia	2
FLW5	Black Drongo	3
	Chinese Pond Heron	1
	Eastern Yellow Wagtail	1
	Great Egret	1
	Little Egret	1
	Little Grebe	2
	Plain Prinia	1
	Spotted Dove	2
	Yellow-bellied Prinia	1
FLW6	Azure-winged Magpie	2

	Black Kite	1
	Black-collared Starling	3
	Black-crowned Night Heron	8
	Chinese Bulbul	2
	Chinese Pond Heron	2
	Crested Myna	1
	Great Egret	13
	Little Egret	4
	Little Grebe	1
	Oriental Magpie Robin	1
	Spotted Dove	4
	White Wagtail	1
	White-breasted Waterhen	1
FLW7	Azure-winged Magpie	5
	Black Drongo	1
	Chinese Bulbul	3
	Common Kingfisher	1
	Crested Myna	5
	Masked Laughingthrush	3
	Red-whiskered Bulbul	3
	Spotted Dove	1
NSW1	Barn Swallow	3
	Black Kite	1
	Black-collared Starling	1
	Chinese Pond Heron	1
	Common Moorhen	1
	Common Tailorbird	2
	Crested Myna	2
	Eurasian Tree Sparrow	2
	Greater Coucal	1
	Japanese White-eye	1
	Little Egret	1

	Masked Laughingthrush	1
	Oriental Magpie Robin	1
	Plain Prinia	3
	Red-whiskered Bulbul	5
	Spotted Dove	4
	White Wagtail	1
	Yellow Bittern	1
	Yellow-bellied Prinia	4
SP/NSW1	Barn Swallow	3
	Chinese Pond Heron	4
	Great Egret	1
	Spotted Dove	1
SP/NSW2	Barn Swallow	2
	Chinese Pond Heron	1
	Eurasian Tree Sparrow	3
	Great Egret	1
	Japanese White-eye	1
	Little Egret	1
SP/NSW3	Black-winged Stilt	13
	Chinese Pond Heron	2
	Common Tailorbird	1
	Crested Myna	1
	Great Egret	5
	Japanese White-eye	1
	Little Egret	2
	Spotted Dove	1
Total		190

Appendix F.4b Impact data (May 2021) per point count location

Point count location	Common Name	Abundance
FLW1	Plain Prinia	2
	Red-whiskered Bulbul	3
	Spotted Dove	2

FLW2	Red-whiskered Bulbul	2
	White Wagtail	2
	White-breasted Waterhen	1
FLW3	Black Kite	1
	Spotted Dove	1
	White Wagtail	2
FLW4	Black Drongo	1
	Spotted Dove	1
FLW5	Eurasian Tree Sparrow	4
	Little Grebe	1
	Spotted Dove	2
	White Wagtail	4
FLW6	Azure-winged Magpie	7
	Black Drongo	1
	Chinese Pond Heron	7
	Eastern Yellow Wagtail	1
	Red-whiskered Bulbul	5
FLW7	Chinese Pond Heron	4
	Red-whiskered Bulbul	3
	Spotted Dove	2
NSW1	Collared Crow	1
	Common Kingfisher	1
	Great Egret	1
	Oriental Magpie Robin	2
	Pied Kingfisher	1
	Plain Prinia	2
	Red-whiskered Bulbul	2
	Spotted Dove	7
SP/NSW1	Barn Swallow	2
	Chinese Pond Heron	3
	Common Moorhen	1
	Little Egret	1
SP/NSW2	Barn Swallow	4
	Chinese Pond Heron	1
	Little Egret	1
	White Wagtail	4
SP/NSW3	Black-collared Starling	1
	Masked Laughingthrush	5
	Spotted Dove	2
Total		101

Appendix F.4c Testing method and output

Testing method: Two-tailed Unpaired t-test at $\alpha = 0.05$

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

Output:

Treatment 1 (Baseline Data)

N1: 98

df₁ = 97

M₁: 1.94

SS₁: 397.63

s²₁ = 4.1

Treatment 2 (Impact Data)

N2: 42

df₂ = 41

M₂: 2.4

SS₂: 126.12

s²₂ = 3.08

t-value: -1.29695

p-value: 0.196812

The result is not significant at $p < .05$.

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

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

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

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
04/05/2021 09:00	0.2	SE
04/05/2021 10:00	0.1	SE
04/05/2021 11:00	0.1	S
04/05/2021 12:00	0.0	SES
04/05/2021 13:00	0.6	SE
04/05/2021 14:00	0.5	SW
04/05/2021 15:00	0.9	SES
04/05/2021 16:00	0.2	S
04/05/2021 17:00	0.2	SWS
04/05/2021 18:00	0.1	SES
04/05/2021 19:00	0.1	NE
04/05/2021 20:00	0.1	SEE
04/05/2021 21:00	0.4	S
04/05/2021 22:00	0.0	SES
04/05/2021 23:00	0.0	SES
04/05/2021 00:00	0.0	SES
05/05/2021 01:00	0.0	N
05/05/2021 02:00	0.0	N
05/05/2021 03:00	0.0	NEE
05/05/2021 04:00	0.0	NEE
05/05/2021 05:00	0.0	NEE
05/05/2021 06:00	0.0	E
05/05/2021 07:00	0.0	E
05/05/2021 08:00	0.0	NE
05/05/2021 09:00	0.0	N
05/05/2021 10:00	0.0	NWW
05/05/2021 11:00	0.1	N
05/05/2021 12:00	0.1	NWW
05/05/2021 13:00	0.3	SWW
05/05/2021 14:00	0.3	W
05/05/2021 15:00	0.4	SES
05/05/2021 16:00	0.2	SE
05/05/2021 17:00	0.2	SWS
05/05/2021 18:00	0.1	SES
05/05/2021 19:00	0.0	S
05/05/2021 20:00	0.1	SES
05/05/2021 21:00	0.0	SES
05/05/2021 22:00	0.1	NEE
05/05/2021 23:00	0.1	SE
06/05/2021 00:00	0.1	SE
06/05/2021 01:00	0.0	NEN

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

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

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

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

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

Date	Wind Speed	Wind Direction
09/05/2021 12:00	0.4	SW
09/05/2021 13:00	0.2	SE
09/05/2021 14:00	0.1	S
09/05/2021 15:00	0.6	SE
09/05/2021 16:00	0.2	SES
09/05/2021 17:00	0.3	S
09/05/2021 18:00	0.1	SE
09/05/2021 19:00	0.0	SES
09/05/2021 20:00	0.1	S
09/05/2021 21:00	0.6	S
09/05/2021 22:00	0.1	SES
09/05/2021 23:00	0.3	SE
10/05/2021 00:00	0.0	NE
10/05/2021 01:00	0.0	SE
10/05/2021 02:00	0.0	SES
10/05/2021 03:00	0.0	S
10/05/2021 04:00	0.0	SE
10/05/2021 05:00	0.0	SES
10/05/2021 06:00	0.0	SES
10/05/2021 07:00	0.8	S
10/05/2021 08:00	0.0	E
10/05/2021 09:00	0.1	SES
10/05/2021 10:00	0.0	SES
10/05/2021 11:00	0.1	SEE
10/05/2021 12:00	0.1	SES
10/05/2021 13:00	0.1	SES
10/05/2021 14:00	0.4	SES
10/05/2021 15:00	0.3	SWS
10/05/2021 16:00	1.0	S
10/05/2021 17:00	0.1	SES
10/05/2021 18:00	0.1	S
10/05/2021 19:00	0.1	S
10/05/2021 20:00	0.0	SE
10/05/2021 21:00	0.3	SE
10/05/2021 22:00	0.3	SES
10/05/2021 23:00	0.0	SEE
11/05/2021 00:00	0.1	SE
11/05/2021 01:00	0.0	SES
11/05/2021 02:00	0.1	SE
11/05/2021 03:00	0.0	SES
11/05/2021 04:00	0.0	S

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
11/05/2021 05:00	0.0	SEE
11/05/2021 06:00	0.1	SES
11/05/2021 07:00	0.2	SES
11/05/2021 08:00	0.2	S
11/05/2021 09:00	0.1	S
11/05/2021 10:00	0.1	SES
11/05/2021 11:00	0.6	SWS
11/05/2021 12:00	0.0	S
11/05/2021 13:00	0.6	SES
11/05/2021 14:00	0.9	S
11/05/2021 15:00	0.1	SWS
11/05/2021 16:00	0.4	SWW
11/05/2021 17:00	0.1	S
11/05/2021 18:00	0.1	SES
11/05/2021 19:00	0.0	SWS
11/05/2021 20:00	0.0	SW
11/05/2021 21:00	0.1	SE
11/05/2021 22:00	0.1	S
11/05/2021 23:00	0.0	SES
12/05/2021 00:00	0.0	SE
12/05/2021 01:00	0.0	SES
12/05/2021 02:00	0.0	S
12/05/2021 03:00	0.0	SE
12/05/2021 04:00	0.1	SES
12/05/2021 05:00	0.0	S
12/05/2021 06:00	0.1	SES
12/05/2021 07:00	0.3	SWS
12/05/2021 08:00	0.1	SES
12/05/2021 09:00	0.0	SWS
12/05/2021 10:00	0.1	SE
12/05/2021 11:00	0.1	SE
12/05/2021 12:00	0.1	SES
12/05/2021 13:00	0.3	SE
12/05/2021 14:00	0.7	SE
12/05/2021 15:00	0.1	SES
12/05/2021 16:00	0.3	SE
12/05/2021 17:00	0.1	S
12/05/2021 18:00	0.1	SEE
12/05/2021 19:00	0.1	SE
12/05/2021 20:00	0.4	SES
12/05/2021 21:00	0.3	SES

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

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

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

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

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

Date	Wind Speed	Wind Direction
16/05/2021 08:00	0.2	SES
16/05/2021 09:00	0.5	S
16/05/2021 10:00	0.0	SES
16/05/2021 11:00	0.3	SW
16/05/2021 12:00	0.3	SE
16/05/2021 13:00	0.3	SWS
16/05/2021 14:00	0.2	SES
16/05/2021 15:00	0.9	S
16/05/2021 16:00	0.1	S
16/05/2021 17:00	1.0	SES
16/05/2021 18:00	0.2	SES
16/05/2021 19:00	0.0	SES
16/05/2021 20:00	0.4	SE
16/05/2021 21:00	0.0	SEE
16/05/2021 22:00	0.1	SE
16/05/2021 23:00	0.1	SES
17/05/2021 00:00	0.1	S
17/05/2021 01:00	0.2	SES
17/05/2021 02:00	0.1	S
17/05/2021 03:00	0.1	SES
17/05/2021 04:00	0.0	SES
17/05/2021 05:00	0.1	SES
17/05/2021 06:00	0.0	SES
17/05/2021 07:00	0.0	SE
17/05/2021 08:00	0.0	SES
17/05/2021 09:00	0.7	SE
17/05/2021 10:00	0.4	SES
17/05/2021 11:00	0.2	S
17/05/2021 12:00	0.6	SWS
17/05/2021 13:00	1.3	SW
17/05/2021 14:00	0.1	SE
17/05/2021 15:00	0.2	SW
17/05/2021 16:00	0.2	SES
17/05/2021 17:00	0.3	SE
17/05/2021 18:00	0.0	SE
17/05/2021 19:00	0.1	SES
17/05/2021 20:00	0.1	SE
17/05/2021 21:00	0.1	SE
17/05/2021 22:00	0.0	S
17/05/2021 23:00	0.1	SE
18/05/2021 00:00	0.1	SES

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

Date	Wind Speed	Wind Direction
18/05/2021 01:00	0.1	SE
18/05/2021 02:00	0.0	S
18/05/2021 03:00	0.0	S
18/05/2021 04:00	0.3	SES
18/05/2021 05:00	0.4	SES
18/05/2021 06:00	0.2	SE
18/05/2021 07:00	0.3	SEE
18/05/2021 08:00	0.6	SE
18/05/2021 09:00	0.9	S
18/05/2021 10:00	0.9	SES
18/05/2021 11:00	0.3	SE
18/05/2021 12:00	0.8	SWS
18/05/2021 13:00	0.3	W
18/05/2021 14:00	0.8	W
18/05/2021 15:00	0.7	SWS
18/05/2021 16:00	0.3	SWS
18/05/2021 17:00	0.2	SW
18/05/2021 18:00	0.6	S
18/05/2021 19:00	0.1	SE
18/05/2021 20:00	0.0	SEE
18/05/2021 21:00	0.1	SE
18/05/2021 22:00	0.0	S
18/05/2021 23:00	0.2	SES
19/05/2021 00:00	0.5	SES
19/05/2021 01:00	0.4	SE
19/05/2021 02:00	0.1	SES
19/05/2021 03:00	0.0	S
19/05/2021 04:00	0.1	SES
19/05/2021 05:00	0.1	SES
19/05/2021 06:00	0.0	SES
19/05/2021 07:00	0.1	SEE
19/05/2021 08:00	0.7	SWS
19/05/2021 09:00	0.3	SEE
19/05/2021 10:00	0.1	SE
19/05/2021 11:00	0.7	SES
19/05/2021 12:00	0.7	SE
19/05/2021 13:00	0.8	SE
19/05/2021 14:00	0.3	S
19/05/2021 15:00	1.1	S
19/05/2021 16:00	0.1	SES
19/05/2021 17:00	0.5	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
19/05/2021 18:00	0.1	SW
19/05/2021 19:00	0.1	SE
19/05/2021 20:00	0.0	SE
19/05/2021 21:00	0.2	SE
19/05/2021 22:00	0.1	SES
19/05/2021 23:00	0.0	SES
20/05/2021 00:00	0.1	SES
20/05/2021 01:00	0.1	S
20/05/2021 02:00	0.0	SES
20/05/2021 03:00	0.0	SWS
20/05/2021 04:00	0.0	SES
20/05/2021 05:00	0.1	SES
20/05/2021 06:00	0.0	SES
20/05/2021 07:00	0.4	S
20/05/2021 08:00	1.3	SW
20/05/2021 09:00	0.1	SWS
20/05/2021 10:00	0.2	SW
20/05/2021 11:00	0.6	SWW
20/05/2021 12:00	0.7	SWS
20/05/2021 13:00	0.9	SW
20/05/2021 14:00	0.3	SWS
20/05/2021 15:00	0.3	SWS
20/05/2021 16:00	0.6	SW
20/05/2021 17:00	0.6	SES
20/05/2021 18:00	0.0	SEE
20/05/2021 19:00	0.0	SW
20/05/2021 20:00	0.0	SWS
20/05/2021 21:00	0.1	S
20/05/2021 22:00	0.1	SES
20/05/2021 23:00	0.0	SE
21/05/2021 00:00	0.3	SW
21/05/2021 01:00	0.0	SES
21/05/2021 02:00	0.4	S
21/05/2021 03:00	0.0	S
21/05/2021 04:00	0.0	SES
21/05/2021 05:00	0.0	E
21/05/2021 06:00	0.0	SES
21/05/2021 07:00	0.1	SEE
21/05/2021 08:00	0.2	SES
21/05/2021 09:00	0.4	SWW
21/05/2021 10:00	0.4	SES

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

Date	Wind Speed	Wind Direction
21/05/2021 11:00	0.1	SES
21/05/2021 12:00	0.6	SWS
21/05/2021 13:00	0.0	SW
21/05/2021 14:00	0.1	SWS
21/05/2021 15:00	0.1	SE
21/05/2021 16:00	0.3	SES
21/05/2021 17:00	0.0	S
21/05/2021 18:00	0.2	SE
21/05/2021 19:00	0.0	S
21/05/2021 20:00	0.0	SES
21/05/2021 21:00	0.1	SES
21/05/2021 22:00	0.0	SES
21/05/2021 23:00	0.0	SES
22/05/2021 00:00	0.2	SES
22/05/2021 01:00	0.0	S
22/05/2021 02:00	0.0	SWS
22/05/2021 03:00	0.0	SES
22/05/2021 04:00	0.0	SES
22/05/2021 05:00	0.0	SES
22/05/2021 06:00	0.0	SES
22/05/2021 07:00	0.0	SEE
22/05/2021 08:00	0.1	SES
22/05/2021 09:00	0.3	SES
22/05/2021 10:00	1.1	SES
22/05/2021 11:00	0.4	SE
22/05/2021 12:00	0.2	SE
22/05/2021 13:00	0.1	SES
22/05/2021 14:00	0.7	SES
22/05/2021 15:00	0.4	SE
22/05/2021 16:00	0.1	SEE
22/05/2021 17:00	0.9	SE
22/05/2021 18:00	0.1	S
22/05/2021 19:00	0.1	SEE
22/05/2021 20:00	0.0	SES
22/05/2021 21:00	0.1	SE
22/05/2021 22:00	0.0	SE
22/05/2021 23:00	0.0	SEE
23/05/2021 00:00	0.0	S
23/05/2021 01:00	0.1	SE
23/05/2021 02:00	0.1	SES
23/05/2021 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
23/05/2021 04:00	0.1	SE
23/05/2021 05:00	0.0	SE
23/05/2021 06:00	0.0	SE
23/05/2021 07:00	0.3	SES
23/05/2021 08:00	0.1	SES
23/05/2021 09:00	0.4	SE
23/05/2021 10:00	0.3	S
23/05/2021 11:00	0.3	S
23/05/2021 12:00	0.3	SE
23/05/2021 13:00	0.9	SE
23/05/2021 14:00	0.3	SES
23/05/2021 15:00	0.6	SE
23/05/2021 16:00	0.4	SES
23/05/2021 17:00	0.4	S
23/05/2021 18:00	0.5	SES
23/05/2021 19:00	0.1	SEE
23/05/2021 20:00	0.6	SES
23/05/2021 21:00	0.1	SE
23/05/2021 22:00	0.2	SES
23/05/2021 23:00	0.1	SE
24/05/2021 00:00	0.0	SE
24/05/2021 01:00	0.0	SWS
24/05/2021 02:00	0.0	SE
24/05/2021 03:00	0.0	SES
24/05/2021 04:00	0.0	SEE
24/05/2021 05:00	0.0	SES
24/05/2021 06:00	0.0	SES
24/05/2021 07:00	0.1	SEE
24/05/2021 08:00	0.0	SEE
24/05/2021 09:00	0.1	N
24/05/2021 10:00	0.0	SW
24/05/2021 11:00	0.0	N
24/05/2021 12:00	0.0	S
24/05/2021 13:00	0.1	SW
24/05/2021 14:00	0.1	N
24/05/2021 15:00	0.1	N
24/05/2021 16:00	0.0	N
24/05/2021 17:00	0.0	NWW
24/05/2021 18:00	0.0	S
24/05/2021 19:00	0.1	SES
24/05/2021 20:00	0.1	S

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

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

Date	Wind Speed	Wind Direction
26/05/2021 13:00	0.2	S
26/05/2021 14:00	0.1	SEE
26/05/2021 15:00	0.3	SE
26/05/2021 16:00	0.2	SEE
26/05/2021 17:00	1.0	SES
26/05/2021 18:00	0.2	SES
26/05/2021 19:00	0.1	SES
26/05/2021 20:00	0.1	SES
26/05/2021 21:00	0.0	SE
26/05/2021 22:00	0.0	SES
26/05/2021 23:00	0.0	SES
27/05/2021 00:00	0.0	S
27/05/2021 01:00	0.0	SES
27/05/2021 02:00	0.0	SWS
27/05/2021 03:00	0.0	E
27/05/2021 04:00	0.0	E
27/05/2021 05:00	0.0	E
27/05/2021 06:00	0.0	E
27/05/2021 07:00	0.1	SW
27/05/2021 08:00	0.1	SW
27/05/2021 09:00	0.1	SWS
27/05/2021 10:00	0.3	SWS
27/05/2021 11:00	0.1	S
27/05/2021 12:00	0.4	SW
27/05/2021 13:00	0.4	SE
27/05/2021 14:00	0.3	W
27/05/2021 15:00	0.7	SES
27/05/2021 16:00	1.5	S
27/05/2021 17:00	0.3	SW
27/05/2021 18:00	0.1	SWS
27/05/2021 19:00	0.2	SWS
27/05/2021 20:00	0.0	S
27/05/2021 21:00	0.0	SES
27/05/2021 22:00	0.0	SES
27/05/2021 23:00	0.0	S
28/05/2021 00:00	0.0	SWS
28/05/2021 01:00	0.1	SWS
28/05/2021 02:00	0.0	SW
28/05/2021 03:00	0.0	SW
28/05/2021 04:00	0.0	SES
28/05/2021 05:00	0.0	SW

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

Date	Wind Speed	Wind Direction
28/05/2021 06:00	0.1	SW
28/05/2021 07:00	0.0	SW
28/05/2021 08:00	0.0	SWW
28/05/2021 09:00	0.0	SES
28/05/2021 10:00	0.2	NW
28/05/2021 11:00	0.2	SWW
28/05/2021 12:00	0.0	SWS
28/05/2021 13:00	0.5	S
28/05/2021 14:00	1.0	S
28/05/2021 15:00	0.3	S
28/05/2021 16:00	1.2	SWW
28/05/2021 17:00	0.4	S
28/05/2021 18:00	0.1	SWS
28/05/2021 19:00	0.2	SWS
28/05/2021 20:00	0.1	SWS
28/05/2021 21:00	0.0	SEE
28/05/2021 22:00	0.0	SE
28/05/2021 23:00	0.0	SW
29/05/2021 00:00	0.0	SWS
29/05/2021 01:00	0.2	SW
29/05/2021 02:00	0.1	SWS
29/05/2021 03:00	0.1	S
29/05/2021 04:00	0.0	SWS
29/05/2021 05:00	0.1	SES
29/05/2021 06:00	0.2	SWS
29/05/2021 07:00	0.1	SWS
29/05/2021 08:00	0.3	SWS
29/05/2021 09:00	0.2	SWS
29/05/2021 10:00	0.6	SWS
29/05/2021 11:00	0.3	SW
29/05/2021 12:00	1.4	SES
29/05/2021 13:00	0.5	SW
29/05/2021 14:00	2.1	SWS
29/05/2021 15:00	0.1	SW
29/05/2021 16:00	0.4	SWS
29/05/2021 17:00	0.7	SE
29/05/2021 18:00	0.8	SWW
29/05/2021 19:00	0.3	SWW
29/05/2021 20:00	0.0	SW
29/05/2021 21:00	0.1	S
29/05/2021 22:00	0.1	SW

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

Date	Wind Speed	Wind Direction
29/05/2021 23:00	0.0	S
31/05/2021 00:00	0.1	SW
31/05/2021 01:00	0.1	SWS
31/05/2021 02:00	0.1	SWS
31/05/2021 03:00	0.4	SWS
31/05/2021 04:00	0.3	SW
31/05/2021 05:00	0.1	SWS
31/05/2021 06:00	0.3	SW
31/05/2021 07:00	0.1	SES
31/05/2021 08:00	0.2	SES
31/05/2021 09:00	0.6	SW
31/05/2021 10:00	0.8	S
31/05/2021 11:00	1.1	SW
31/05/2021 12:00	1.1	SE
31/05/2021 13:00	0.7	S
31/05/2021 14:00	0.1	S
31/05/2021 15:00	0.6	SW
31/05/2021 16:00	0.9	SWW
31/05/2021 17:00	0.3	SW
31/05/2021 18:00	0.6	SES
31/05/2021 19:00	0.0	SE
31/05/2021 20:00	0.1	SE
31/05/2021 21:00	0.0	SE
31/05/2021 22:00	0.0	SES
31/05/2021 23:00	0.0	SE
31/05/2021 00:00	0.0	SWW
31/05/2021 01:00	0.1	SES
31/05/2021 02:00	0.1	SE
31/05/2021 03:00	0.1	SWS
31/05/2021 04:00	0.3	SWS
31/05/2021 05:00	0.1	S
31/05/2021 06:00	0.1	SW
31/05/2021 07:00	0.1	SES
31/05/2021 08:00	0.1	S
31/05/2021 09:00	0.3	SW
31/05/2021 10:00	1.0	SWS
31/05/2021 11:00	0.2	SW
31/05/2021 12:00	0.9	SW
31/05/2021 13:00	0.1	E
31/05/2021 14:00	0.3	SES
31/05/2021 15:00	0.2	SE

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

Date	Wind Speed	Wind Direction
31/05/2021 16:00	0.3	SES
31/05/2021 17:00	0.1	SE
31/05/2021 18:00	0.0	W
31/05/2021 19:00	0.0	NE
31/05/2021 20:00	0.0	NEE
31/05/2021 21:00	0.0	NEE
31/05/2021 22:00	0.0	E
31/05/2021 23:00	0.0	N
1/06/2021 00:00	0.1	NE

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											
2021 Jul											
2021 Aug											
2021 Sep											
2021 Oct											
2021 Nov											
2021 Dec											
Total	494.66	0	0	0	420.94	0	0	0.11	0	0	72.69

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	N/A
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. • 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. 	Construction Sites	Implemented
Operation Phase			
3.5.2.4	Biogas generated will be stored in the biogas holders. The stored biogas will go through the sulphur absorption vessels to remove the hydrogen sulphide (H ₂ S) before passing to the combined heat and power (CHP) generator.	YLEPP / Operation Phase	N/A
3.6.3.2 – 3.6.3.5	Install selective catalytic reduction (SCR) to control Nitrogen Dioxide (NO ₂) emission at the exhausts of the CHP, boiler and ammonia stripping unit.	YLEPP / Operation Phase	N/A
3.6.2.9 and 3.7.2.1	Install an activated carbon filter with odour (ammonia) removal efficiency of at least 70% at the ammonia stripping unit exhaust.	YLEPP / Operation Phase	N/A
3.7.2.1	All the odour sources in YLEPP should be covered and all odourous gas should be treated at the deodourizers (DOs) with 90% - 95% odour removal efficiency before venting to the atmosphere.	YLEPP / Operation 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
Noise Impact			
Construction Phase			
4.8.1	<p>Movable noise barriers are recommended for hydraulic breakers mounted on excavators to be adopted during construction. 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	N/A
Operation Phase			
4.8.2	Fixed plant noise sources (except extraction fans) should be located within plantroom with silencers at air inlet and outlet and a sound proof door. Ventilation fans should be installed with silencers. Commissioning test should be conducted to ensure fixed plant noise impact would comply with the relevant noise standards	YLEPP / Operation Phase	N/A
Water Quality Impact			
Construction Phase			
5.8.1.2	Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities	Construction Sites / Construction Phase	Implemented
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	N/A
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	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
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	Partially 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	N/A
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 caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary	Construction Sites / Construction Phase	N/A
5.8.1.10	Measures should be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in the wet season is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Construction Sites / Construction Phase	Implemented
5.8.1.11	Construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms	Construction Sites / Construction Phase	Implemented
5.8.1.12	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Construction Sites / Construction Phase	N/A
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	N/A
5.8.1.16	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The WDO (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes.	Construction Sites / Construction Phase	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
5.8.1.17	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Construction Sites / Construction Phase	N/A
5.8.1.18	Disposal of chemical wastes should be carried out in compliance with the WDO. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the WDO should be followed to avoid leakage or spillage of chemicals.	Construction Sites / Construction Phase	N/A
5.8.1.19	All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS).	Construction Sites / Construction Phase	N/A
Design and Operation Phases			
5.8.2	<p>Best Management Practices (BMPs) to reduce storm water and non-point source pollution are also proposed as follows:</p> <p><u>Design Measures</u></p> <ul style="list-style-type: none"> •Exposed surface shall be avoided within the the proposed development to minimise soil erosion. Development site shall be either hard paved or covered by landscaping area where appropriate to reduce soil erosion. •The existing watercourses in adjacent to the Project site will be retained to maintain the original flow path. The drainage system will be designed to avoid flooding. <p><u>Devices/ Facilities to Control Pollution</u></p> <ul style="list-style-type: none"> •Screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening off large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system. •Road gullies with standard design and silt traps should be provided to remove particles present in stormwater runoff, where appropriate. <p><u>Administrative Measures</u></p> <ul style="list-style-type: none"> •Good management measures such as regular cleaning and sweeping of road surface/ open areas are suggested. The road surface/open area cleaning should also be carried out prior to occurrence rainstorm. •Manholes, as well as stormwater gullies, ditches provided at the Project site should be regularly inspected and cleaned (e.g. monthly). Additional inspection and cleansing should be carried out before forecast heavy rainfall. 	Project site / Design and Operation Phase	Partially Implemented
5.8.2.11	Chemical should be stored on site at bunded area and separate drainage system as appropriate should be provided to avoid any spilled chemicals from entering the storm drain in case of accidental spillage. Also, adequate tools for cleanup of spilled chemicals should be stored on site and appropriate training shall be provided to staffs to further prevent potential adverse water quality impacts from happening.	Project site / Design and Operation Phase	Implemented
Waste Management Implication Construction Phase			

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.3	<p><u>Good Site Practices</u></p> <p>Recommendations for good site practices during the construction phase include:</p> <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; • Training of site personnel in proper waste management and chemical waste handling procedures; • Provision of sufficient waste reception/ disposal points, of a suitable vermin-proof design that minimises windblown litter; • Arrangement for regular collection of waste for transport off-site and final disposal; • 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; • A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed; and • 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. 	Construction Sites	Implemented
6.6.1.5	<p><u>Waste Reduction Measures</u></p> <p>Recommendations to achieve waste reduction include:</p> <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; • 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; • Any unused chemicals or those with remaining functional capacity shall be recycled; • Maximising the use of reusable steel formwork to reduce the amount of C&D material; • 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; • Adopt proper storage and site practices to minimise the potential for damage to, or contamination of, construction materials; • Plan the delivery and stock of construction materials carefully to minimise the amount of surplus waste generated; • Adopt pre-cast construction method instead of cast-in-situ method for construction of concrete structures as much as possible; and • Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering. 	Construction Sites	Implemented
6.6.1.7	<p><u>Storage of Waste</u></p> <p>Recommendations to minimise the impacts include:</p> <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; • Maintain and clean storage areas routinely; • Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and • Different locations should be designated to stockpile each material to enhance reuse. 	Construction Sites	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.8	<p><u>Collection of Waste</u></p> <p>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	Implemented
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
6.6.1.12	<p><u>Construction and Demolition Material</u></p> <p>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	Implemented
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	Implemented

Construction of Yuen Long Effluent Polishing Plant Stage 1

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

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
6.6.1.27	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
Operation Phase			
6.6.2.2	<p>The below good housekeeping practices for the proposed YLEPP should be followed to further ameliorate any odour impact from handling, collection, transportation and disposal of screenings, grits and sludge:</p> <ul style="list-style-type: none"> • Screens should be cleaned regularly to remove any accumulated organic debris; • Screening and grit transfer systems should be flushed regularly with water to remove organic debris and grit; • Grit and screened materials should be transferred to closed containers; • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics; • Skim and remove floating solids and grease from primary clarifiers regularly; • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases; • Organic waste should be transported to YLEPP by fully enclosed pipes or trucks to avoid odour nuisance; • Sludge should be transported to the STF by water-tight containers to avoid H₂S/odour emission and ingress of water into the containers which would lower the sludge dryness during transportation; • Sludge cake should be transferred to closed containers ; • Sludge containers should be flushed with water regularly; and • Sludge trucks and containers should be washed thoroughly before leaving the YLEPP to avoid any odour nuisance during transportation. 	Operation Phase	N/A
Land Contamination			

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
7.8.1.2 - 7.8.1.3; 7.8.2.1	<p>Prior to the commencement of the SI works, a review of the Contamination Assessment Plan (CAP) should be conducted to confirm whether the proposed SI works (e.g. sampling locations, testing parameters etc.) are still valid. Supplementary CAP(s), presenting findings of the review, the latest site conditions and updated sampling strategy and testing protocol, should be submitted to EPD for endorsement. The SI works should be carried out according to EPD's agreed supplementary CAP(s).</p> <p>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.</p> <p>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.</p> <p>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)	N/A
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; • 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. 	Project Site / Construction Phase	N/A
Ecological Impact (Terrestrial and Aquatic)			
Construction Phase			
8.10.2.1	<p><u>Avoidance of Recognised Site of Conservation Importance</u></p> <p>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.</p>	Project site / 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
8.10.2.3 – 8.10.2.4	<p><u>Avoidance of Demolition Works Using Breakers Mounted on Excavators and Percussive Piling during Dry Season</u></p> <p>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).</p>	Construction sites / Construction Phase	N/A
8.10.2.5	<p><u>Restriction of Construction Hours</u></p> <p>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.</p>	Construction sites / Construction Phase	N/A
8.10.3.2 – 8.10.3.3	<p><u>Minimising Construction Noise Disturbance Impacts through Consideration of Alternative Construction Methods</u></p> <p>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.</p>	Construction sites / Construction Phase	N/A
8.10.3.4 – 8.10.3.5	<p><u>Minimising Construction Noise Disturbance Impacts Through Careful Phasing of Construction Activities</u></p> <p>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	N/A
8.10.3.6 – 8.10.3.8	<p><u>Minimising Construction Noise Disturbance Impacts through Use of Noise Barriers</u></p> <p>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
8.10.3.9	<p><u>Use of Quality Powered Mechanical Equipment</u></p> <p>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	N/A
Ecology & Fisheries Impact			

Construction of Yuen Long Effluent Polishing Plant Stage 1

EIA Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Status
8.12.1.4, 9.7	Groundwater observation wells and recharge wells will be provided at the northern and western side of the site. Groundwater table will be closely monitored at the observation well. In case of any unlikely events of abnormal drawdown of groundwater table near the excavation area, groundwater dewatering will stop and water will be pumped into the recharge wells to recover the normal groundwater table as necessary.	Construction Phase	N/A
Fisheries Impact			
9.7	The implementation of good site practices during construction could minimise the potential water quality impacts from the land-based construction works. Mitigation measures recommended in the Water Quality Impact Assessment (Section 5) for controlling water quality impact would also serve to protect fisheries resources and activities from indirect impacts.	Construction and Operation Phase	N/A
Landscape and Visual Impact			
Table 10.11	<u>Preservation of Existing Vegetation (CM1)</u> All the existing Trees to be retained and not to be affected by the Project shall be carefully protected during construction accordance with DEVB TCW No. 7/2015 - Tree Preservation and the latest Guidelines on Tree Preservation during Development issued by GLTM Section of DevB. Any existing vegetation in landscaped areas and natural terrain not to be affected by the Project shall be carefully preserved.	Project site / Construction Phase	Implemented
Table 10.11	<u>Transplanting of Affected Trees (CM2)</u> Trees unavoidably affected by the works shall be transplanted as far as possible in accordance with DEVB TCW No. 7/2015 - Tree Preservation and the latest Guidelines on Tree Transplanting issued by GLTM Section of DevB.	Project site / Construction Phase	Implemented
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	N/A
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	N/A
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	N/A
Table 10.12	<u>Roadside and Amenity Planting (OM1)</u> Roadside amenity trees and understory planting to be planted along EVA and access roads within YLEPP	YLEPP / Operational Phase	N/A
Table 10.12	<u>Infill Planting Proposals (OM2)</u> Infill planting of trees, shrubs and/ or groundcovers shall be incorporated into the YLEPP layout where space is available.	YLEPP / Operational Phase	N/A
Table 10.12	<u>Enhancement of Landscape Buffer (OM3)</u> With the retained existing trees surrounding the YLSTW perimeter, thickening of understory plantings and/ or moundings in YLEPP will be created as landscape buffer to the surroundings as much as possible.	YLEPP / Operational 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
Table 10.12	<p><u>Control of Night-time Lighting Glare (OM4)</u> All the night time lighting shall be avoided except for safety purpose. No light glare shall illuminate directly outside the YLEPP.</p>	YLEPP / Operational Phase	N/A
Table 10.12	<p>Responsive Design of Building (OM5) Aesthetically pleasing design as regard to the form, material and finishes shall be incorporated to all buildings, engineering structures and associated infrastructure facilities so as to blend in the buildings and structures to the adjacent landscape and visual context.</p>	YLEPP	N/A
Hazard to Life			
Construction Phase			
11.5.6.9-11.5.6.12	<ul style="list-style-type: none"> • Implementation of those major construction works and movement of plants and vehicles would be stringently controlled to have a setback of at least 15m clear distance, or physical barrier with an empty digester / gas holder from the digesters / gas holders in operation; • For those construction works to be carried out in close proximity to the 15m zone from digesters / gas holders in operation, the height of plants for those major construction shall be limited to 15m such that the plants would not damage digesters /gas holders in such incident as plant collapse or overturning; • Whenever practicable, the construction sequence shall be arranged with empty unit(s) for separating the major construction works from these digesters / gas holders in use; and • 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. 	Project site / Construction Phase	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 • All work procedures shall be complied with the operating plant procedures or guidelines and regulatory requirements; • Work permit system, on-site pre-work risk assessment and emergency response procedure shall be in place before commencement of work; • All construction workers shall equip with appropriate personal protective equipment (PPE) when working at the Project Site; • Safety training and briefings shall be provided to all construction workers; • Regular site safety inspections shall be conducted during the construction phase of the Project; 	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
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; • Conduct speed checks to ensure enforcement of speed limits and to ensure adequate site access control ; • A lifting plan, with detailed risk assessment, should be prepared and endorsed for heavy lifting of large equipment; • Vehicle crash barriers should be provided between the construction site and the operating biogas facilities; • 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; • 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; • Ensure effective communication system / protocol is in place between the contractors and the operation staff; • 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; • 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; • 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. Potential risks of the construction activities shall be assessed, and risk precautionary measures shall be implemented in Contractor's works procedures. 	Project site / Construction Phase	Implemented
Operation Phase			
11.9.1.1	<ul style="list-style-type: none"> • Process plant building should be provided with adequate number of gas detectors distributed over various areas of potential leak sources to provide adequate coverage. • All electrical equipment inside the building should be classified in accordance with the electrical area classification requirements. No unclassified electrical equipment should be used during operations or maintenance. • All safety valves should be designed to discharge the released fluid to a safe location and stop misdirection of fluid flows in order to avoid hazardous outcome. • Safety markings and crash barriers should be provided to the aboveground piping, digesters and gas holders near the entrance. • Fixed crash barriers should be provided in areas where process equipment is adjacent to the internal roadway to protect against vehicle collision. Adequate warning signage and lighting should also be provided and maximum speed limit should also be in place. • Lightning protection installations should be installed following IEC 62305, BS EN 62305, AS/NZS 1768, NFPA 780 or equivalent standards. • Suitable fire extinguishers should be provided within the site. An External Water Spray System (EWSS) should be installed in appropriate areas, such as around the gasholders, digester and sulphur removal vessels. The facilities should also be equipped with fire and gas detection system and fire suppression system. • Stringent procedures should be implemented to prohibit smoking or naked flames to be used on-site. 	YLEPP / Operational Phase	N/A

Note:

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

Appendix K

Weather and Meteorological
Conditions

April 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)		
April 2021						
01	1007.5	31.1	26.3	23.4	83	0.0
02	1009.8	31.6#	26.2	22.8#	84	0.0
03	1011.3	31.4#	26.1	21.7#	80	0.0
04	1013.8	27.0	24.5	22.1	86	0.0
05	1017.6	23.9	22.1	20.7	88	1.5
06	1017.2	28.5	23.8	20.5	80	0.0
07	1015.9	27.5	23.1	20.7	76	0.0
08	1014.2	26.7	23.1	20.4	75	0.0
09	1017.2	20.6	19.3	17.9	91	12.5
10	1018.7	27.8#	22.6	19.1#	67	0.0
11	1018.6	29.0	23.4	19.4	71	0.0
12	1016.1	29.3	24.0	19.3	82	0.0
13	1013.6	30.0	25.2	20.9	82	0.0
14	1013.0	30.8#	25.0	21.0#	82	0.0
15	1012.8	25.6#	22.9	21.8#	88	1.0
16	1013.4	28.0	23.8	22.0	85	0.0
17	1015.9	25.6	23.1	22.0	90	1.5
18	1015.2	27.7	23.9	22.3	61	0.0
19	1013.3	27.1	23.0	21.1	62	0.0
20	1012.9	27.4#	23.6	21.1#	68	0.0
21	1012.4	30.4	24.6	20.1	72	0.0
22	1010.0	30.6#	24.9	19.7#	76	0.0
23	1007.8	31.7	26.6	21.6	79	0.0
24	1010.5	30.8	26.5	23.2	76	0.0
25	1011.8	29.4	25.3	22.0	83	3.5
26	1013.7	25.7#	23.3	21.8#	79	0.5
27	1014.4	26.4	23.3	21.6	91	5.5
28	1014.6	28.5	24.7	22.1	86	3.0
29	1013.6	29.5#	23.7	20.5#	78	0.5
30	1012.5	31.2	24.7	19.3	79	0.0

Note (From Hong Kong Observatory):

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

Source: Hong Kong Observatory

May 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)		
May 2021						
01	1012.2	30.0	26.3	23.8	76	0.0
02	1013.0	30.8	26.5	24.5	82	1.2
03	1012.5	25.4	24.3	23.5	89	8.8
04	1011.1	31.3	26.6	23.1	84	12.5
05	1012.9	31.7	26.6	23.3	79	0.5
06	1015.4	28.6	25.2	23.4	79	Trace
07	1013.2	30.5	26.6	24.0	77	0.0
08	1009.8	30.9	27.7	25.4	79	0.0
09	1009.0	31.7	28.3	26.8	79	0.0
10	1008.8	31.8	28.4	26.4	76	0.0
11	1008.4	31.4	29.2	27.7	77	Trace
12	1008.3	32.1	29.6	28.2	78	Trace
13	1008.5	32.0	29.5	28.0	79	3.9
14	1009.0	34.0	30.0	28.1	77	0.0
15	1009.0	33.8	29.9	27.9	74	0.0
16	1009.1	33.5	30.2	28.2	74	Trace
17	1009.8	33.3	30.4	28.8	75	0.0
18	1009.2	32.5	30.2	28.3	76	1.3
19	1007.9	33.5	30.3	28.8	75	0.0
20	1008.1	33.3	30.5	29.2	75	0.0
21	1007.8	34.0	30.7	29.5	75	Trace
22	1007.0	34.3	30.5	27.8	77	2.6
23	1007.8	36.1	31.4	28.9	74	Trace
24	1009.6	31.5	29.8	27.6	81	15.7
25	1010.2	30.1	28.8	27.5	83	4.8
26	1009.4	33.5	30.1	27.8	77	4.0
27	1009.6	33.2	30.3	28.2	76	1.0
28	1009.6	33.6	30.6	28.5	77	0.0
29	1007.1	32.8	30.2	28.8	79	0.0
30	1005.1	32.3	30.3	29.2	81	Trace
31	1004.3	32.4	29.6	26.7	84	8.7

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

Summary of Observations and Findings in the
Report Month

Summary of Observations and Findings in the Reporting Month

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality		NA	
Noise		NA	
Water Quality	5 May 2021	Reminder: The contractor was reminded to properly cover the excavated material and trial trench. (Portion 1 YLSTW)	NA
	20 May 2021	Observation 1: Mitigation measures should be provided to intercept silty runoff from the piling area. (Portion 1 YLSTW)	24 May 2021
	20 May 2021	Observation 2: Enhance mitigation by providing sandbags long inner edge of U channel to prevent inflow of silty runoff. (Portion 1 YLSTW)	24 May 2021
	20 May 2021	Observation 3: Silty deposit on road and in gullies should be cleaned. (Portion 1 YLSTW)	24 May 2021
	25 May 2021	Reminder: Mitigation measures should be provided to prevent runoff from the MIC / temporary administration building area flowing to the open channel outside. (Portion 1 YLSTW)	NA
Chemical and Waste Management		NA	
Land Contamination		NA	
Landscape and Visual Impact	11 May 2021	Reminder: The contractor was reminded to provide protection zones for trees near the workshop / storage areas. (Portion 1 YLSTW)	NA
Permit / Licenses		NA	
Others		NA	

Appendix N

Outstanding Issues and Deficiencies

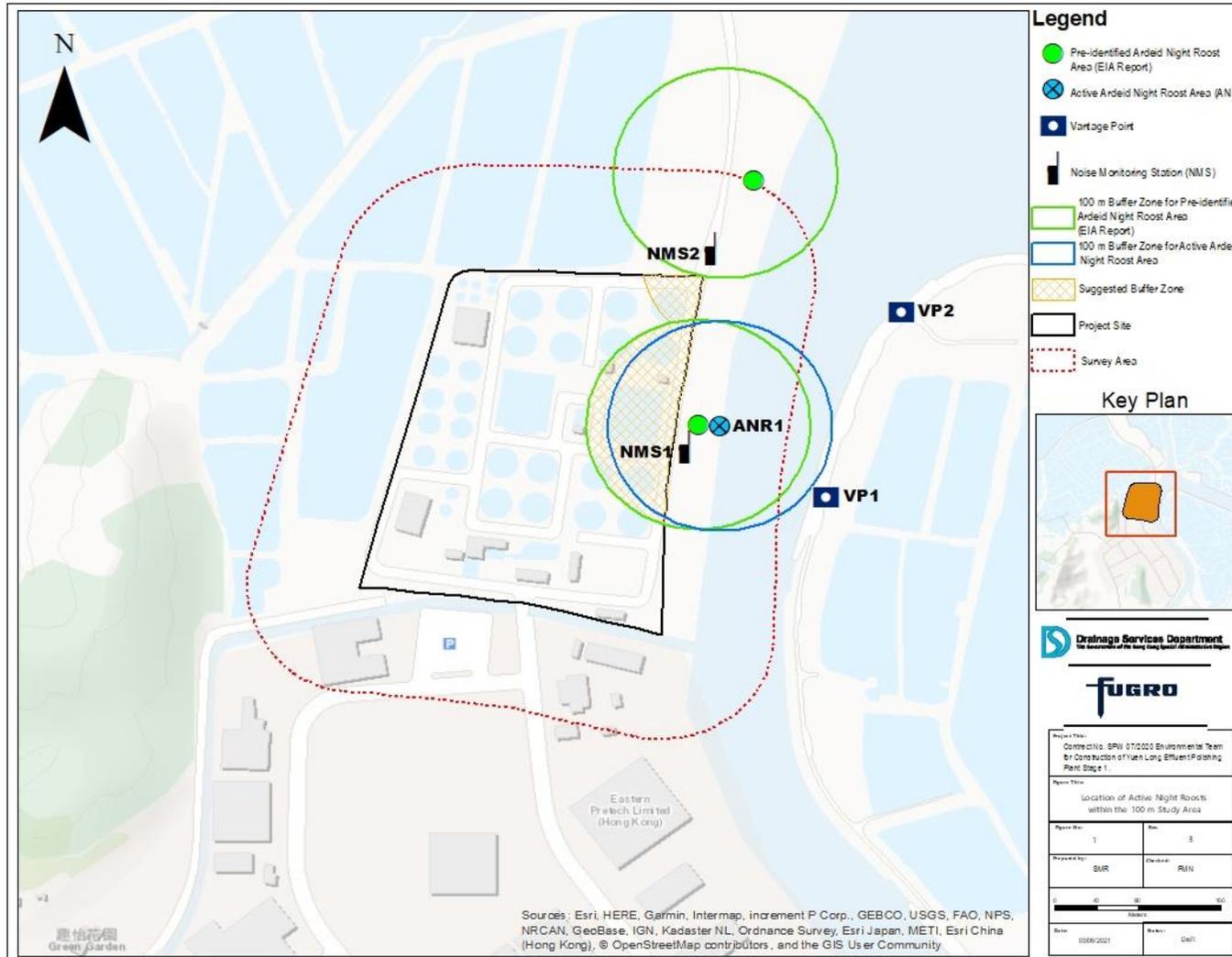
Summary of Outstanding Issues and Deficiencies in the Reporting Month

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

Appendix O

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

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



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

O.2 Survey Photos

O.2.1 Pre-roosting Aggregate



Appendix O.2.1: Pre-roost aggregate of the Great Egret

O.2.2 Active Night Roosting Site and Roosting Substrates



Appendix O.2.2: Active night roost on *Sonneratia apetala* and *S. caseolaris* mangrove roosting substrate located east of the Project boundary observed on 18 May 2021 around 18:10

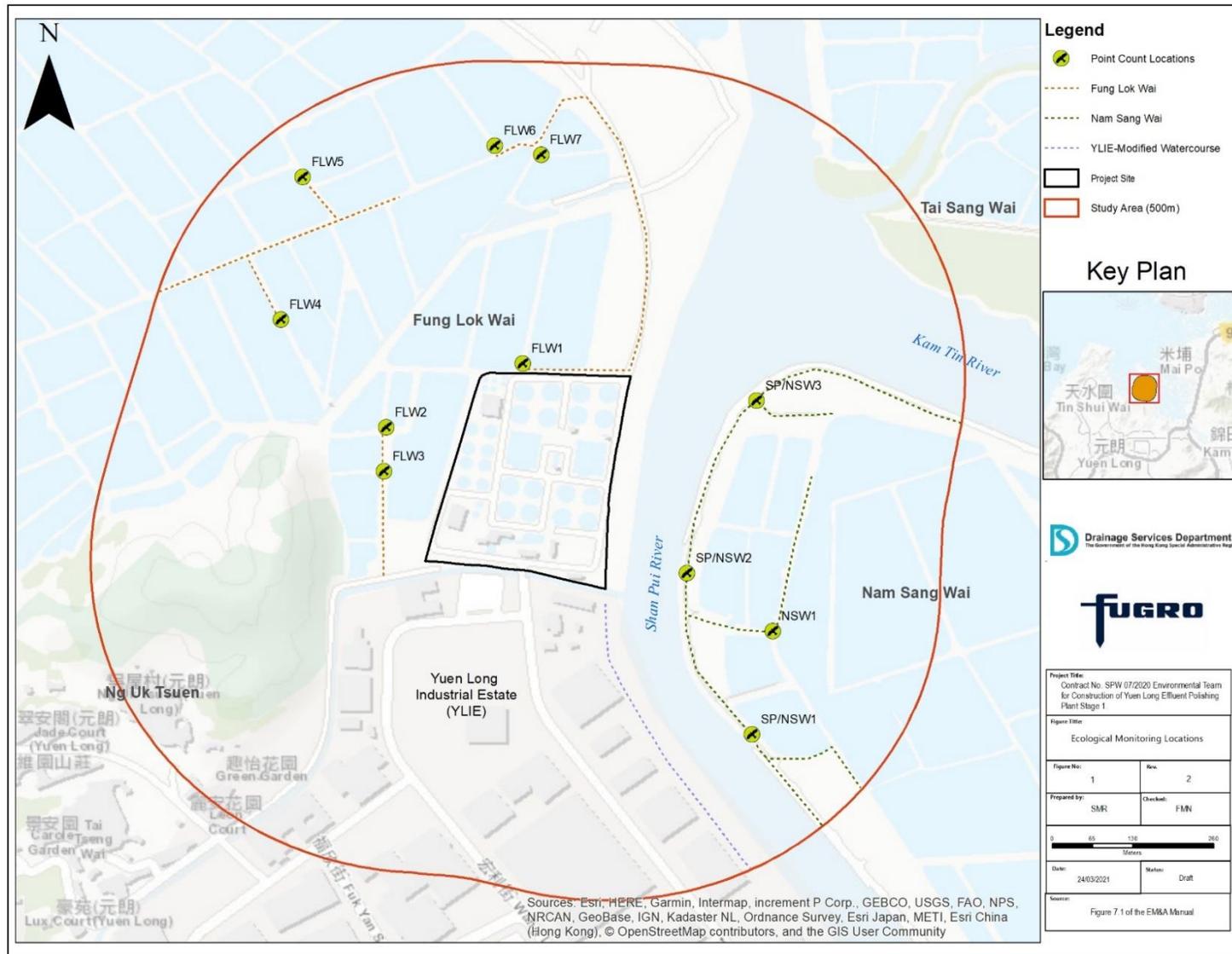
O.2.3 Indicator of Presence of Night Roost



Appendix O.2.3: Bird droppings on leaf litter and roots within the vicinity of the mangrove strip east of the Project boundary observed on 18 May 2021 around 18:10

Appendix P

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



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

Appendix Q

Notification of Exceedance

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210522_M1_SS						
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1						
Date:	2021/05/22						
Time: (hh:mm)	(Ebb Tide) M1: 10:47 (Impact Station) M2: M3:						
Action level / Limit level: (For Ebb Tide)		DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
		AL	LL	AL	LL	AL	LL
	M1	2.25	1.91	49.4	53.6	59	68
	M2	1.88	1.79	43.0	52.4	81	112
	M3	3.28	3.14	74.3	78.0	104	167
Measured level of exceeded parameter: (fill in / circle as appropriate)	M1	DO (AL / LL) : _____		M3	DO (AL / LL) : _____		
		NTU (AL / LL) : _____			NTU (AL / LL) : _____		
		SS (AL / LL) : <u>62</u>			SS (AL / LL) : _____		
	M2	DO (AL / LL) : _____					
		NTU (AL / LL) : _____					
		SS (AL / LL) : _____					
Action taken / to be taken: (tick / circle / fill in as appropriate)	Inspection : <input checked="" type="checkbox"/> ER / IEC / Contractor is/are informed. <input checked="" type="checkbox"/> Monitoring equipment & monitoring data are checked and confirmed without problem. <input type="checkbox"/> In-situ measurement is repeated. <input type="checkbox"/> Other _____ _____ _____						
			DO	Turbidity	SS		
Possible reason for action or Limit level Non-compliance: (tick / fill in as appropriate)	Finding / Evidences						
	<input type="checkbox"/> Upstream Control Station exceeded AL/LL						
	<input type="checkbox"/> Station was polluted by the inflow of other construction site						
	<input type="checkbox"/> Station was polluted by the inflow of residential discharge						
	<input type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage						
	<input checked="" type="checkbox"/> No construction activities were carried out in the vicinity of station						M1
<input type="checkbox"/> Other _____							

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210522_M1_SS			
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1			
Date:	2021/05/22			
Conclusion:	<input checked="" type="checkbox"/>	DO	Turbidity	SS
	Due to change or/and influences of ambient condition in the vicinity, not Project related			M1
Mitigation Measures:	<input type="checkbox"/>			
	Due to influences of construction activities under this project in the vicinity, considered to be Project related			
Mitigation Measures:	The following mitigation measures have been taken: 1. Channels, earth bunds or sand bag barriers were provided on site to properly direct stormwater to silt removal facilities; 2. The surfaces of construction site areas near the drainages were paved; 3. Manholes were adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and; 4. Channels and manholes were maintained and the deposited silt and grit were removed after rainstorm to prevent overflows and localised flooding.			
Remarks: (tick / fill in as appropriate)	<input checked="" type="checkbox"/> Repeat in-situ measurement was done.			
	M1	DO : _____ NTU : _____	M3	DO : _____ NTU : _____
	M2	DO : _____ NTU : _____		
Attachment	<input checked="" type="checkbox"/> No major observation of upstream area was found			
	Annex A – Location of Water Quality Monitoring Stations Annex B – Water Quality Monitoring Results Annex C – Photo of Investigation Annex D – Site Inspection			

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

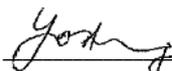
Prepared by: Toby Wan

Signature: 

Date (dd/mm/yyyy): 28/5/2021

Certified by: David Hung

Designation: Environmental Team Leader

Signature: 

Date (dd/mm/yyyy): 28/5/2021

Notes:

- Abbreviation:

DO – Dissolved Oxygen

NTU - Turbidity

SS – Suspended Solids

AL – Action Level

LL – Limit Level

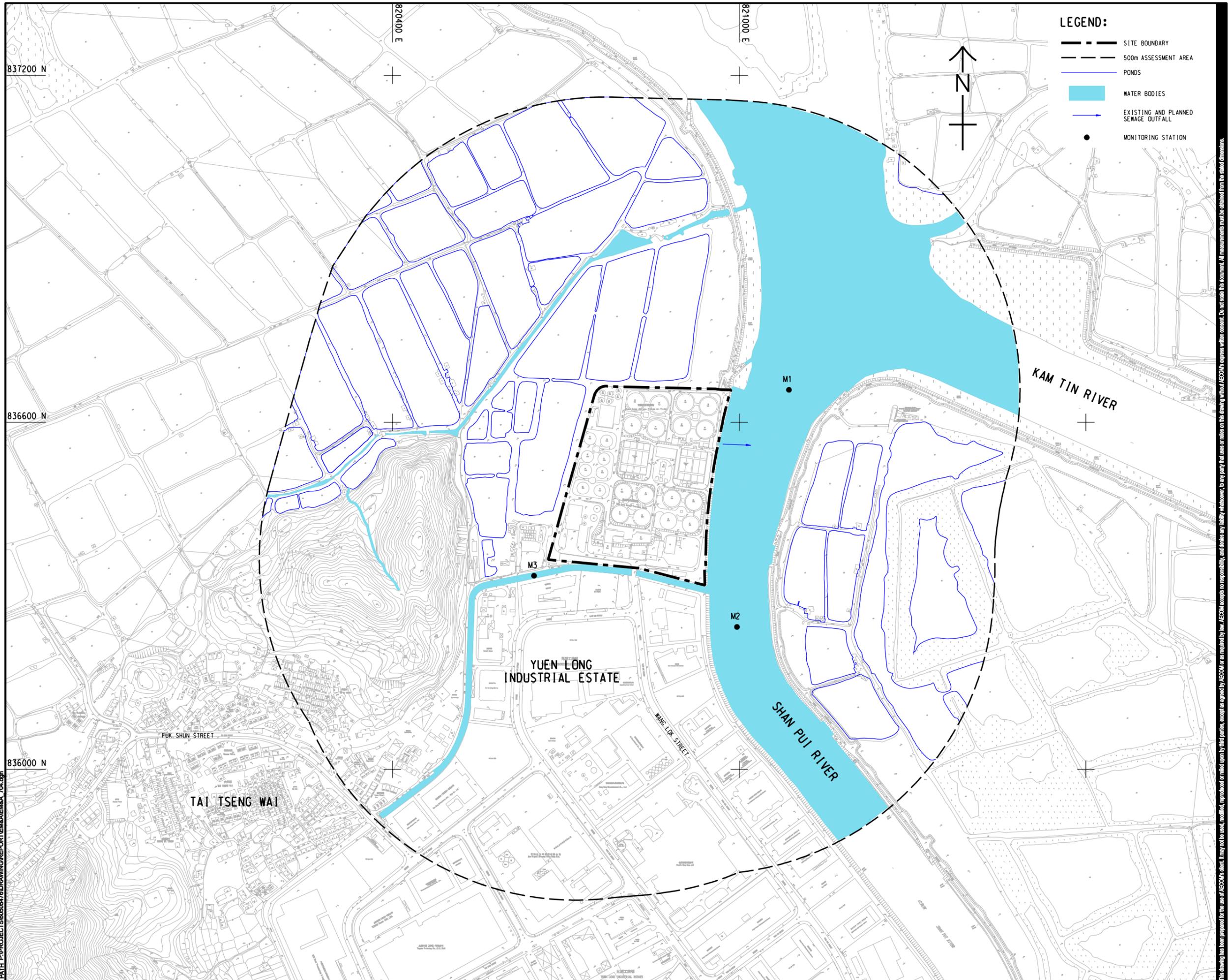
ER – Engineer's Representative

IEC – Independent Checker



Annex A – Location of Water Quality Monitoring Stations

Plot File by: GaoYU 12/18
PATH: P:\PROJECTS\050578\DRAINING\REPORT\EM&A\EM&A_T04.dgn
Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



- LEGEND:**
- SITE BOUNDARY
 - 500m ASSESSMENT AREA
 - PONDS
 - Water Bodies
 - EXISTING AND PLANNED SEWAGE OUTFALL
 - MONITORING STATION

CLIENT
渠務署
Drainage Services Department

SHEET TITLE
LOCATIONS OF WATER QUALITY MONITORING STATIONS FOR CONSTRUCTION PHASE

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the noted dimensions.

Annex B – 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	22/5/2021	Mid-Flood	Fine	Calm	16:38	1	M	0.5	1	0.029	145	7.45	7.45	3.15	3.15	31.99	32.01	67.5	67.5	5.00	5.00	47.6	46.6	46	48
M1	22/5/2021	Mid-Flood	Fine	Calm	16:38	1	M	0.5	2			7.45	7.45	3.15	3.15	32.02	32.01	67.4	67.5	5.00	5.00	45.6	46.6	49	48
M2	22/5/2021	Mid-Flood	Fine	Calm	16:20	0.9	M	0.45	1	0.036	165	7.46	7.46	3.03	3.03	32.18	32.20	84.2	84.2	5.63	5.63	44.0	44.6	73	74
M2	22/5/2021	Mid-Flood	Fine	Calm	16:20	0.9	M	0.45	2			7.46	7.46	3.03	3.03	32.22	32.20	84.1	84.2	5.63	5.63	45.1	44.6	75	74
M3	22/5/2021	Mid-Flood	Fine	Calm	16:18	0.5	M	0.25	1	0.049	82	7.44	7.44	3.22	3.22	33.04	33.04	96.1	96.1	6.79	6.79	54.3	53.8	67	66
M3	22/5/2021	Mid-Flood	Fine	Calm	16:18	0.5	M	0.25	2			7.43	7.43	3.22	3.22	33.04	33.04	96.0	96.1	6.78	6.79	53.3	53.8	64	66
M1	22/5/2021	Mid-Ebb	Fine	Calm	10:47	0.9	M	0.45	1	0.029	287	7.52	7.52	3.21	3.21	32.07	32.07	88.0	88.7	6.35	6.38	45.5	44.7	63	62
M1	22/5/2021	Mid-Ebb	Fine	Calm	10:47	0.9	M	0.45	2			7.52	7.52	3.20	3.21	32.07	32.07	89.4	88.7	6.41	6.38	44.0	44.7	61	62
M2	22/5/2021	Mid-Ebb	Fine	Calm	11:02	0.8	M	0.4	1	0.082	269	7.48	7.48	3.17	3.17	32.11	32.23	76.6	76.8	5.52	5.53	46.0	45.8	54	57
M2	22/5/2021	Mid-Ebb	Fine	Calm	11:02	0.8	M	0.4	2			7.48	7.48	3.17	3.17	32.34	32.23	76.9	76.8	5.54	5.53	45.5	45.8	59	57
M3	22/5/2021	Mid-Ebb	Fine	Calm	10:43	0.2	M	0.1	1	0.029	258	7.25	7.26	2.44	2.44	30.76	30.77	78.1	78.0	5.76	5.76	36.8	36.7	33	32
M3	22/5/2021	Mid-Ebb	Fine	Calm	10:43	0.2	M	0.1	2			7.26	7.26	2.44	2.44	30.77	30.77	77.9	78.0	5.75	5.76	36.5	36.7	30	32

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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	55.9	60.6	81	112
M3	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	2.25	1.91	49.4	53.6	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

Annex C – Photo of investigation

Date of investigation: 22 May 2021 (**Ebb Tide**)
Monitoring Station: M1



Annex D – Site Inspection



Date of site inspection: 25 May 2021
Gullies were bunded by sand bags to prevent surface runoff.



Date of site inspection: 25 May 2021
The surrounding of gullies near the construction site areas were temporarily sealed.



Date of site inspection: 25 May 2021

Manholes were maintained to remove the deposited silt after the rainstorm to prevent overflows.

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210525_M1_DO_NTU																																				
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1																																				
Date:	2021/05/25																																				
Time: (hh:mm)	(Ebb Tide) M1: 12:57 (Impact Station) M2: M3:																																				
Action level / Limit level: (For Ebb Tide)		DO (mg/L)		Turbidity (NTU)		SS (mg/L)																															
		AL	LL	AL	LL	AL	LL																														
	M1	2.25	1.91	73.7	79.8	59.0	68.0																														
	M2	1.88	1.79	43.0	52.4	81.0	112.0																														
	M3	3.28	3.14	74.3	78.0	104.0	167.0																														
Measured level of exceeded parameter: (fill in / circle as appropriate)	M1	DO (AL / LL) : <u>1.87</u>		M3	DO (AL / LL) : _____																																
		NTU (AL / LL) : <u>117.6</u>			NTU (AL / LL) : _____																																
		SS (AL / LL) : _____			SS (AL / LL) : _____																																
	M2	DO (AL / LL) : _____																																			
		NTU (AL / LL) : _____																																			
		SS (AL / LL) : _____																																			
Action taken / to be taken: (tick / circle / fill in as appropriate)	Inspection : <input checked="" type="checkbox"/> ER / IEC / Contractor is/are informed. <input checked="" type="checkbox"/> Monitoring equipment & monitoring data are checked and confirmed without problem. <input checked="" type="checkbox"/> In-situ measurement is repeated. <input type="checkbox"/> Other _____																																				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">DO</th> <th style="width: 15%; text-align: center;">Turbidity</th> <th style="width: 15%; text-align: center;">SS</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;">Finding / Evidences</td> </tr> <tr> <td><input checked="" type="checkbox"/> Upstream Control Station exceeded AL/LL</td> <td style="text-align: center;">M2 (1.81 mg/L)</td> <td style="text-align: center;">M2 (72.5 NTU)</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Station was polluted by the inflow of other construction site</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Station was polluted by the inflow of residential discharge</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage</td> <td style="text-align: center;">M1</td> <td style="text-align: center;">M1</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> No construction activities were carried out in the vicinity of station</td> <td style="text-align: center;">M1</td> <td style="text-align: center;">M1</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other _____</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>							DO	Turbidity	SS	Finding / Evidences				<input checked="" type="checkbox"/> Upstream Control Station exceeded AL/LL	M2 (1.81 mg/L)	M2 (72.5 NTU)		<input type="checkbox"/> Station was polluted by the inflow of other construction site				<input type="checkbox"/> Station was polluted by the inflow of residential discharge				<input checked="" type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage	M1	M1		<input checked="" type="checkbox"/> No construction activities were carried out in the vicinity of station	M1	M1		<input type="checkbox"/> Other _____		
	DO	Turbidity	SS																																		
Finding / Evidences																																					
<input checked="" type="checkbox"/> Upstream Control Station exceeded AL/LL	M2 (1.81 mg/L)	M2 (72.5 NTU)																																			
<input type="checkbox"/> Station was polluted by the inflow of other construction site																																					
<input type="checkbox"/> Station was polluted by the inflow of residential discharge																																					
<input checked="" type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage	M1	M1																																			
<input checked="" type="checkbox"/> No construction activities were carried out in the vicinity of station	M1	M1																																			
<input type="checkbox"/> Other _____																																					
Possible reason for action or Limit level Non-compliance: (tick / fill in as appropriate)																																					

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210525_M1_DO_NTU			
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1			
Date:	2021/05/25			
Conclusion:		DO	Turbidity	SS
	<input checked="" type="checkbox"/> Due to change or/and influences of ambient condition in the vicinity, not Project related	M1	M1	
	<input type="checkbox"/> Due to influences of construction activities under this project in the vicinity, considered to be Project related			
Mitigation Measures:	The following mitigation measures have been taken: 1. Channels, earth bunds or sand bag barriers were provided on site to properly direct stormwater to silt removal facilities; 2. The surfaces of construction site areas near the drainages were paved; 3. Manholes were adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and; 4. Channels and manholes were maintained and the deposited silt and grit were removed after rainstorm to prevent overflows and localised flooding.			
Remarks: (tick / fill in as appropriate)	<input checked="" type="checkbox"/> Repeat in-situ measurement was done.			
	M1	DO : <u>1.82</u> NTU : <u>112.7</u>	M3	DO : _____ NTU : _____
	M2	DO : _____ NTU : _____		
Attachment	<input checked="" type="checkbox"/> No major observation of upstream area was found			
	Annex A – Location of Water Quality Monitoring Stations Annex B – Water Quality Monitoring Results Annex C – Photo of Investigation Annex D – Site Inspection			

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

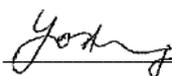
Prepared by: Toby Wan

Signature: 

Date (dd/mm/yyyy): 25/5/2021

Certified by: David Hung

Designation: Environmental Team Leader

Signature: 

Date (dd/mm/yyyy): 25/5/2021

Notes:

- Abbreviation:

DO – Dissolved Oxygen

NTU - Turbidity

SS – Suspended Solids

AL – Action Level

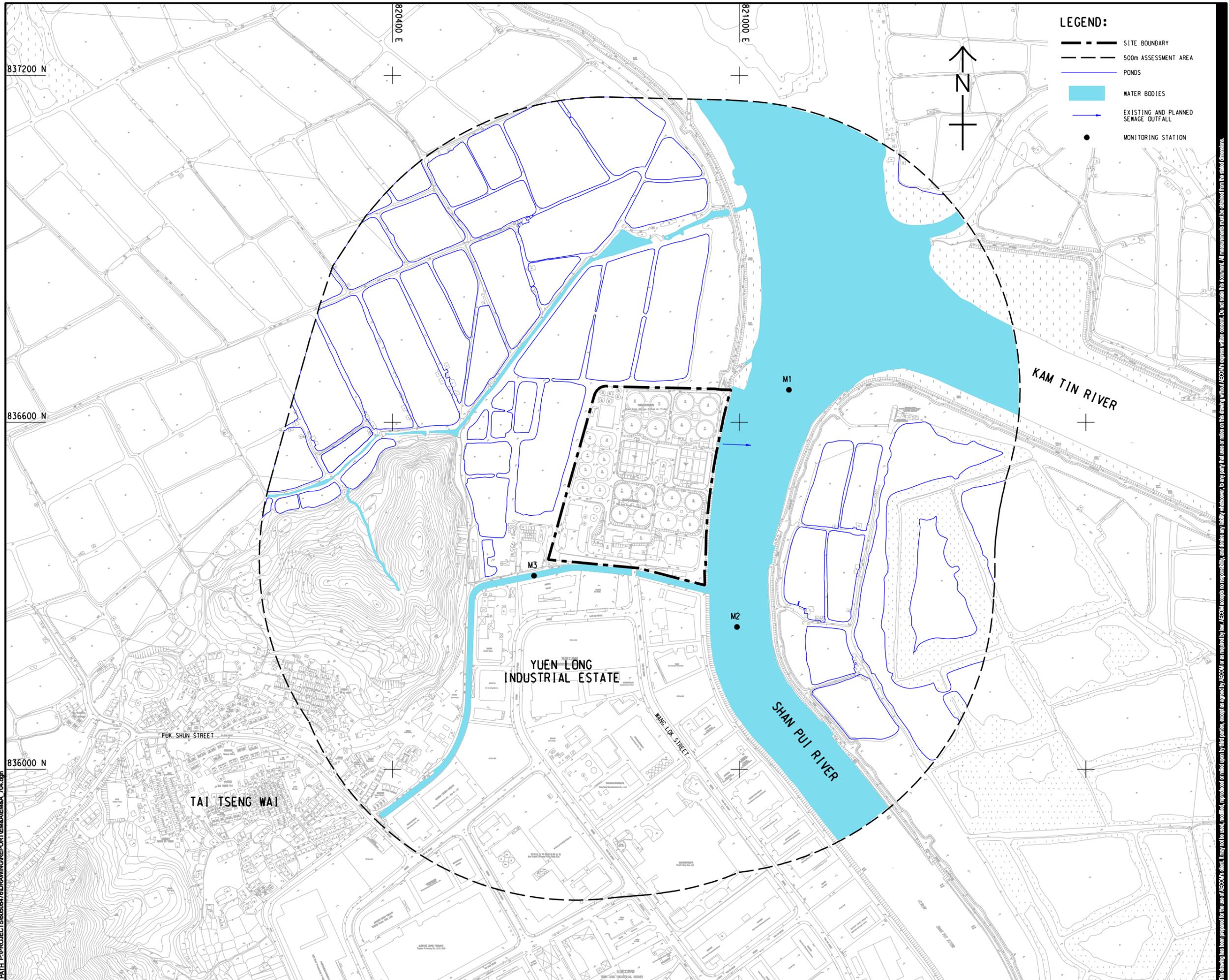
LL – Limit Level

ER – Engineer's Representative

IEC – Independent Checker

Annex A – Location of Water Quality Monitoring Stations

Plot File by: GaoYU 12/18
PATH: P:\PROJECTS\6050578\DRAINING\REPORT\EM&A\EM&A_T04.dgn
Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



CLIENT
渠務署
Drainage Services Department

SHEET TITLE
LOCATIONS OF WATER QUALITY
MONITORING STATIONS FOR
CONSTRUCTION PHASE

Annex B – 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													
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	25/5/2021	Mid-Flood	Rainy	Calm	06:30	1.1	M	0.55	1	0.119	195	7.20	7.21	2.82	2.83	30.08	30.09	41.2	41.1	3.04	3.04	42.4	42.4
M1	25/5/2021	Mid-Flood	Rainy	Calm	06:30	1.1	M	0.55	2			7.21		2.83		30.09		41.0		3.03		42.3	
M2	25/5/2021	Mid-Flood	Rainy	Calm	06:50	0.9	M	0.45	1	0.036	170	7.16	7.16	2.99	2.99	29.72	29.76	29.0	28.9	2.11	2.10	30.0	29.9
M2	25/5/2021	Mid-Flood	Rainy	Calm	06:50	0.9	M	0.45	2			7.16		2.99		29.79		28.8		2.09		29.8	
M3	25/5/2021	Mid-Flood	Rainy	Calm	07:00	0.8	M	0.4	1	0.083	74	7.39	7.39	0.26	0.25	27.00	27.10	85.5	85.8	6.80	6.83	92.1	89.8
M3	25/5/2021	Mid-Flood	Rainy	Calm	07:00	0.8	M	0.4	2			7.38		0.24		27.20		86.1		6.85		87.4	
M1	25/5/2021	Mid-Ebb	Rainy	Calm	12:57	1	M	0.5	1	0.069	266	7.13	7.13	2.84	2.84	30.21	30.23	25.6	25.5	1.87	1.87	115.7	117.6
M1	25/5/2021	Mid-Ebb	Rainy	Calm	12:57	1	M	0.5	2			7.13		2.84		30.25		25.4		1.86		119.4	
M2	25/5/2021	Mid-Ebb	Rainy	Calm	12:45	0.8	M	0.4	1	0.024	248	7.12	7.12	2.75	2.75	30.36	30.34	23.7	23.8	1.80	1.81	72.9	72.5
M2	25/5/2021	Mid-Ebb	Rainy	Calm	12:45	0.8	M	0.4	2			7.12		2.74		30.32		23.9		1.82		72.0	
M3	25/5/2021	Mid-Ebb	Rainy	Calm	12:48	0.4	M	0.2	1	0.133	252	7.16	7.16	0.28	0.28	27.50	27.45	71.0	71.3	5.60	5.62	48.0	50.4
M3	25/5/2021	Mid-Ebb	Rainy	Calm	12:48	0.4	M	0.2	2			7.16		0.28		27.40		71.6		5.64		52.7	

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. Limti 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. Limti 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	
	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4
M2	1.88	1.79	50.8	55.1
M3	3.28	3.14	74.3	78.0

For Ebb Tide

Monitoring Location	DO		NTU	
	AL	LL	AL	LL
M1	2.25	1.91	73.7	79.8
M2	1.88	1.79	43.0	52.4
M3	3.28	3.14	74.3	78.0

Annex C – Photo of investigation

Date of investigation: 25 May 2021 (**Ebb Tide**)
Monitoring Station: M1



Date of investigation: 25 May 2021 (**Ebb Tide**)

Monitoring Station: M2



Annex D – Site Inspection



Date of site inspection: 25 May 2021
Gullies were bunded by sand bags to prevent surface runoff.



Date of site inspection: 25 May 2021
The surrounding of gullies near the construction site areas were temporarily sealed.



Date of site inspection: 25 May 2021

Manholes were maintained to remove the deposited silt after the rainstorm to prevent overflows.

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210525_M3_NTU						
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1						
Date:	2021/05/25						
Time: (hh:mm)	(Flood Tide) M1: M2: M3: <u>7:00</u>						
Action level / Limit level: (For Flood Tide)		DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
		AL	LL	AL	LL	AL	LL
	M1	2.25	1.91	48.4	50.4	59.0	68.0
	M2	1.88	1.79	50.8	55.1	81.0	112.0
	M3	3.28	3.14	74.3	78.0	104.0	167.0
Measured level of exceeded parameter: (fill in / circle as appropriate)	M1	DO (AL / LL) : _____		M3	DO (AL / LL) : _____		
		NTU (AL / LL) : _____			NTU (AL / LL) : <u>89.8</u>		
		SS (AL / LL) : _____			SS (AL / LL) : _____		
	M2	DO (AL / LL) : _____					
		NTU (AL / LL) : _____					
		SS (AL / LL) : _____					
Action taken / to be taken: (tick / circle / fill in as appropriate)	Inspection :						
	<input checked="" type="checkbox"/> ER / IEC / Contractor is/are informed. <input checked="" type="checkbox"/> Monitoring equipment & monitoring data are checked and confirmed without problem. <input checked="" type="checkbox"/> In-situ measurement is repeated. <input type="checkbox"/> Other _____						
Possible reason for action or Limit level Non-compliance: (tick / fill in as appropriate)			DO	Turbidity	SS		
	Finding / Evidences						
	<input type="checkbox"/> Upstream Control Station exceeded AL/LL						
	<input type="checkbox"/> Station was polluted by the inflow of other construction site						
	<input type="checkbox"/> Station was polluted by the inflow of residential discharge						
	<input checked="" type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage			M3			
	<input checked="" type="checkbox"/> No construction activities were carried out in the vicinity of station			M3			
<input type="checkbox"/> Other _____							

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210525_M3_NTU			
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1			
Date:	2021/05/25			
Conclusion:		DO	Turbidity	SS
	<input checked="" type="checkbox"/> Due to change or/and influences of ambient condition in the vicinity, not Project related		M3	
	<input type="checkbox"/> Due to influences of construction activities under this project in the vicinity, considered to be Project related			
Mitigation Measures:	<p>The following mitigation measures have been taken:</p> <ol style="list-style-type: none"> 1. Channels, earth bunds or sand bag barriers were provided on site to properly direct stormwater to silt removal facilities; 2. The surfaces of construction site areas near the drainages were paved; 3. Manholes were adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and; 4. Channels and manholes were maintained and the deposited silt and grit were removed after rainstorm to prevent overflows and localised flooding. 			
Remarks: (tick / fill in as appropriate)	<input checked="" type="checkbox"/> Repeat in-situ measurement was done.			
	M1	DO : _____ NTU : _____	M3	DO : _____ NTU : <u>90.7</u>
	M2	DO : _____ NTU : _____		
Attachment	<input checked="" type="checkbox"/> No major observation of upstream area was found			
	Annex A – Location of Water Quality Monitoring Stations Annex B – Water Quality Monitoring Results Annex C – Photo of Investigation Annex D – Site Inspection			

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

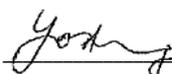
Prepared by: Toby Wan

Signature: 

Date (dd/mm/yyyy): 25/5/2021

Certified by: David Hung

Designation: Environmental Team Leader

Signature: 

Date (dd/mm/yyyy): 25/5/2021

Notes:

- Abbreviation:

DO – Dissolved Oxygen

NTU - Turbidity

SS – Suspended Solids

AL – Action Level

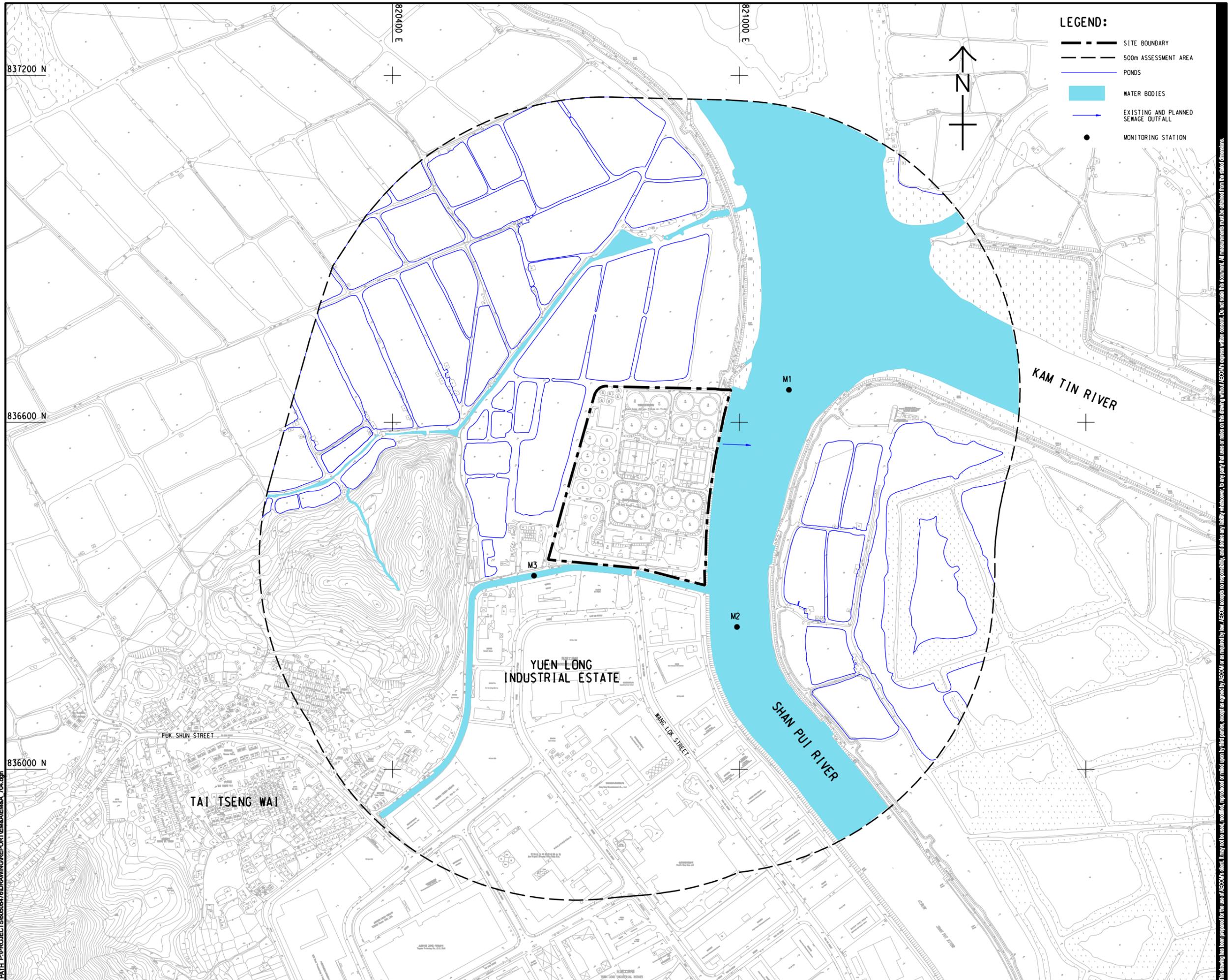
LL – Limit Level

ER – Engineer's Representative

IEC – Independent Checker

Annex A – Location of Water Quality Monitoring Stations

Plot File by: GaoYU 12/18
PATH: P:\PROJECTS\6050578\DRAINING\REPORT\EM&A\EM&A_T04.dgn
Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



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

CLIENT
渠務署
Drainage Services Department

SHEET TITLE
LOCATIONS OF WATER QUALITY MONITORING STATIONS FOR CONSTRUCTION PHASE

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the noted dimensions.

Annex B – 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													
										Current Speed (m/s)	Current Direction (°)	pH		Salinity (ppt)		Temperature (degree C)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)	
										Value	Value	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.
M1	25/5/2021	Mid-Flood	Rainy	Calm	06:30	1.1	M	0.55	1	0.119	195	7.20	7.21	2.82	2.83	30.08	30.09	41.2	41.1	3.04	3.04	42.4	42.4
M1	25/5/2021	Mid-Flood	Rainy	Calm	06:30	1.1	M	0.55	2			7.21		2.83		30.09		41.0		3.03		42.3	
M2	25/5/2021	Mid-Flood	Rainy	Calm	06:50	0.9	M	0.45	1	0.036	170	7.16	7.16	2.99	2.99	29.72	29.76	29.0	28.9	2.11	2.10	30.0	29.9
M2	25/5/2021	Mid-Flood	Rainy	Calm	06:50	0.9	M	0.45	2			7.16		2.99		29.79		28.8		2.09		29.8	
M3	25/5/2021	Mid-Flood	Rainy	Calm	07:00	0.8	M	0.4	1	0.083	74	7.39	7.39	0.26	0.25	27.00	27.10	85.5	85.8	6.80	6.83	92.1	89.8
M3	25/5/2021	Mid-Flood	Rainy	Calm	07:00	0.8	M	0.4	2			7.38		0.24		27.20		86.1		6.85		87.4	
M1	25/5/2021	Mid-Ebb	Rainy	Calm	12:57	1	M	0.5	1	0.069	266	7.13	7.13	2.84	2.84	30.21	30.23	25.6	25.5	1.87	1.87	115.7	117.6
M1	25/5/2021	Mid-Ebb	Rainy	Calm	12:57	1	M	0.5	2			7.13		2.84		30.25		25.4		1.86		119.4	
M2	25/5/2021	Mid-Ebb	Rainy	Calm	12:45	0.8	M	0.4	1	0.024	248	7.12	7.12	2.75	2.75	30.36	30.34	23.7	23.8	1.80	1.81	72.9	72.5
M2	25/5/2021	Mid-Ebb	Rainy	Calm	12:45	0.8	M	0.4	2			7.12		2.74		30.32		23.9		1.82		72.0	
M3	25/5/2021	Mid-Ebb	Rainy	Calm	12:48	0.4	M	0.2	1	0.133	252	7.16	7.16	0.28	0.28	27.50	27.45	71.0	71.3	5.60	5.62	48.0	50.4
M3	25/5/2021	Mid-Ebb	Rainy	Calm	12:48	0.4	M	0.2	2			7.16		0.28		27.40		71.6		5.64		52.7	

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. Limti 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. Limti 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	
	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4
M2	1.88	1.79	50.8	55.1
M3	3.28	3.14	74.3	78.0

For Ebb Tide

Monitoring Location	DO		NTU	
	AL	LL	AL	LL
M1	2.25	1.91	73.7	79.8
M2	1.88	1.79	43.0	52.4
M3	3.28	3.14	74.3	78.0

Annex C – Photo of investigation

Date of investigation: 25 May 2021 (**Flood Tide**)

Monitoring Station: M3



Annex D – Site Inspection



Date of site inspection: 25 May 2021
Gullies were banded by sand bags to prevent surface runoff.



Date of site inspection: 25 May 2021
The surrounding of gullies near the construction site areas were temporarily sealed.



Date of site inspection: 25 May 2021

Manholes were maintained to remove the deposited silt after the rainstorm to prevent overflows.

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210527_M1_NTU_SS																																				
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1																																				
Date:	2021/05/27																																				
Time: (hh:mm)	(Ebb Tide) M1: <u>14:50</u> M2: M3:																																				
Action level / Limit level: (For Ebb Tide)		DO (mg/L)		Turbidity (NTU)		SS (mg/L)																															
		AL	LL	AL	LL	AL	LL																														
	M1	2.25	1.91	48.4	50.9	59.0	68.0																														
	M2	1.88	1.79	43.0	52.4	81.0	112.0																														
	M3	3.28	3.14	74.3	78.0	104.0	167.0																														
Measured level of exceeded parameter: (fill in / circle as appropriate)	M1	DO (AL / LL) : _____		M3	DO (AL / LL) : _____																																
		NTU (AL / LL) : <u>92.2</u>			NTU (AL / LL) : _____																																
		SS (AL / LL) : <u>125</u>			SS (AL / LL) : _____																																
	M2	DO (AL / LL) : _____																																			
		NTU (AL / LL) : _____																																			
		SS (AL / LL) : _____																																			
Action taken / to be taken: (tick / circle / fill in as appropriate)	Inspection : <input checked="" type="checkbox"/> ER / IEC / Contractor is/are informed. <input checked="" type="checkbox"/> Monitoring equipment & monitoring data are checked and confirmed without problem. <input checked="" type="checkbox"/> In-situ measurement is repeated. <input type="checkbox"/> Other _____																																				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">DO</th> <th style="width: 15%; text-align: center;">Turbidity</th> <th style="width: 15%; text-align: center;">SS</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;">Finding / Evidences</td> </tr> <tr> <td><input type="checkbox"/> Upstream Control Station exceeded AL/LL</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Station was polluted by the inflow of other construction site</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Station was polluted by the inflow of residential discharge</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> No construction activities were carried out in the vicinity of station</td> <td></td> <td style="text-align: center;">M1</td> <td style="text-align: center;">M1</td> </tr> <tr> <td><input type="checkbox"/> Other _____</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>							DO	Turbidity	SS	Finding / Evidences				<input type="checkbox"/> Upstream Control Station exceeded AL/LL				<input type="checkbox"/> Station was polluted by the inflow of other construction site				<input type="checkbox"/> Station was polluted by the inflow of residential discharge				<input type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage				<input checked="" type="checkbox"/> No construction activities were carried out in the vicinity of station		M1	M1	<input type="checkbox"/> Other _____		
	DO	Turbidity	SS																																		
Finding / Evidences																																					
<input type="checkbox"/> Upstream Control Station exceeded AL/LL																																					
<input type="checkbox"/> Station was polluted by the inflow of other construction site																																					
<input type="checkbox"/> Station was polluted by the inflow of residential discharge																																					
<input type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage																																					
<input checked="" type="checkbox"/> No construction activities were carried out in the vicinity of station		M1	M1																																		
<input type="checkbox"/> Other _____																																					
Possible reason for action or Limit level Non-compliance: (tick / fill in as appropriate)																																					

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210527_M1_NTU_SS		
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1		
Date:	2021/05/27		
Conclusion:	<input checked="" type="checkbox"/>	DO	Turbidity
	Due to change or/and influences of ambient condition in the vicinity, not Project related		M1
Mitigation Measures:	<input type="checkbox"/>		SS
	Due to influences of construction activities under this project in the vicinity, considered to be Project related		M1
Mitigation Measures:	The following mitigation measures have been taken: 1. Channels, earth bunds or sand bag barriers were provided on site to properly direct stormwater to silt removal facilities; 2. The surfaces of construction site areas near the drainages were paved; 3. Manholes were adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and; 4. Channels and manholes were maintained and the deposited silt and grit were removed after rainstorm to prevent overflows and localised flooding.		
Remarks: (tick / fill in as appropriate)	<input checked="" type="checkbox"/> Repeat in-situ measurement was done.		
	M1	DO : _____ NTU : <u>89.8</u>	M3
Attachment	M2	DO : _____ NTU : _____	DO : _____ NTU : _____
	<input checked="" type="checkbox"/> No major observation of upstream area was found Annex A – Location of Water Quality Monitoring Stations Annex B – Water Quality Monitoring Results Annex C – Photo of Investigation Annex D – Site Inspection		

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

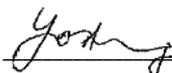
Prepared by: Toby Wan

Signature: 

Date (dd/mm/yyyy): 3/6/2021

Certified by: David Hung

Designation: Environmental Team Leader

Signature: 

Date (dd/mm/yyyy): 3/6/2021

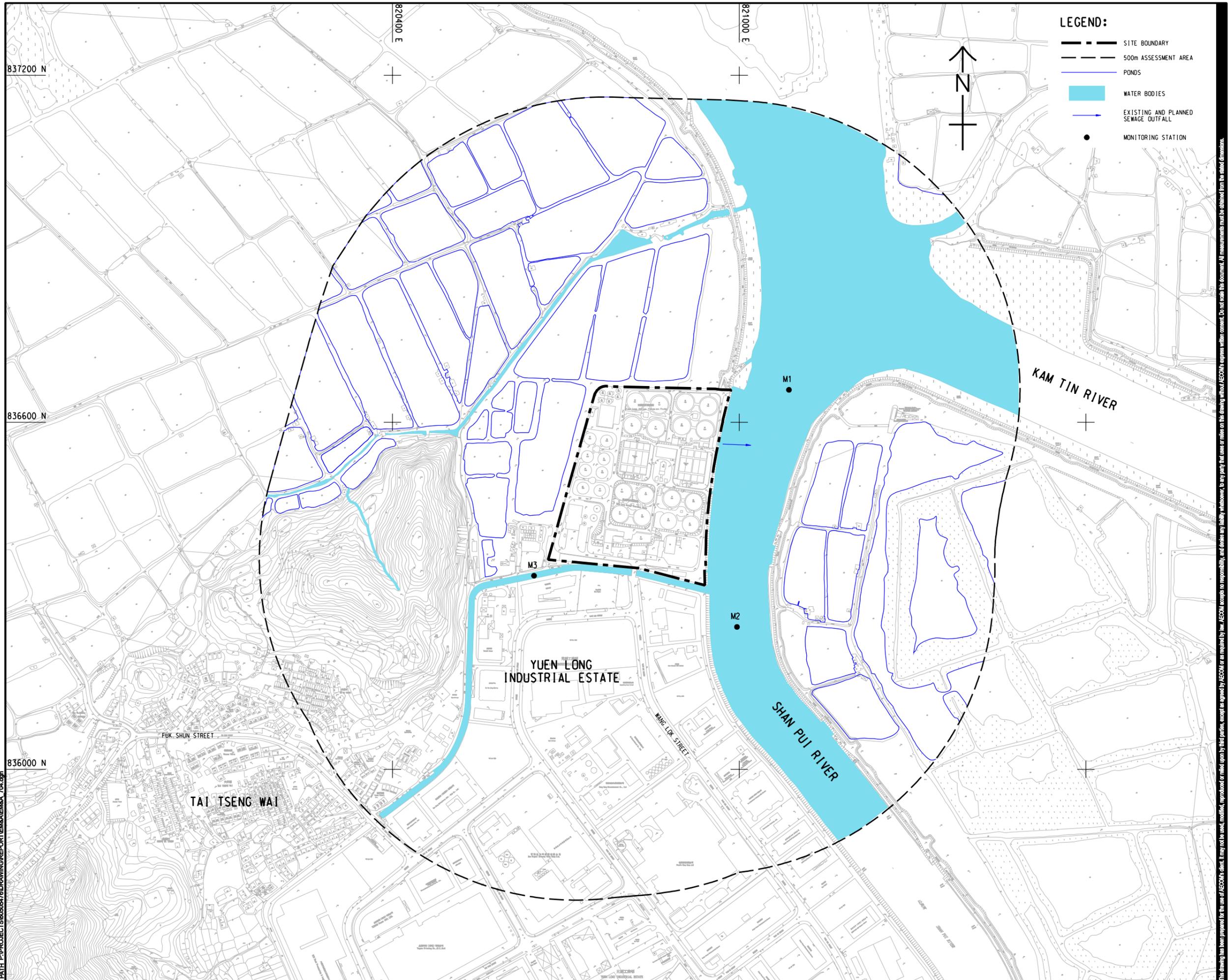
Notes:

- Abbreviation:
- DO – Dissolved Oxygen
- NTU - Turbidity
- SS – Suspended Solids
- AL – Action Level
- LL – Limit Level
- ER – Engineer's Representative
- IEC – Independent Checker



Annex A – Location of Water Quality Monitoring Stations

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



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

CLIENT
渠務署
Drainage Services Department

SHEET TITLE
LOCATIONS OF WATER QUALITY MONITORING STATIONS FOR CONSTRUCTION PHASE

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

Plot File by: GaoYU
12/18
PATH: P:\PROJECTS\6050578\DRAINING\REPORT\EM&A\EM&A_T04.dgn

Annex B – 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	27/5/2021	Mid-Flood	Fine	Calm	07:45	1.6	M	0.8	1	0.174	322	7.38	7.38	5.55	5.55	31.35	31.37	55.9	56.2	3.99	4.02	29.4	29.4	38	39
M1	27/5/2021	Mid-Flood	Fine	Calm	07:45	1.6	M	0.8	2			7.38	7.38	5.54	5.55	31.39	31.37	56.5	56.2	4.05	4.02	29.4	29.4	40	39
M2	27/5/2021	Mid-Flood	Fine	Calm	08:03	1.5	M	0.75	1	0.169	171	7.46	7.46	4.43	4.44	31.35	31.37	61.4	61.6	4.43	4.44	28.7	28.8	48	48
M2	27/5/2021	Mid-Flood	Fine	Calm	08:03	1.5	M	0.75	2			7.45	7.46	4.44	4.44	31.39	31.37	61.8	61.6	4.45	4.44	28.8	28.8	48	48
M3	27/5/2021	Mid-Flood	Fine	Calm	08:12	1	M	0.5	1	0.082	268	7.08	7.08	2.23	2.23	30.10	30.10	46.8	46.3	3.49	3.46	131.8	138.2	110	115
M3	27/5/2021	Mid-Flood	Fine	Calm	08:12	1	M	0.5	2			7.07	7.08	2.23	2.23	30.10	30.10	45.8	46.3	3.42	3.46	144.5	138.2	120	115
M1	27/5/2021	Mid-Ebb	Fine	Calm	14:50	1.5	M	0.75	1	0.197	330	7.26	7.26	2.86	2.87	31.37	31.38	43.7	43.8	3.18	3.18	92.1	92.2	120	125
M1	27/5/2021	Mid-Ebb	Fine	Calm	14:50	1.5	M	0.75	2			7.25	7.26	2.87	2.87	31.39	31.38	43.9	43.8	3.18	3.18	92.2	92.2	130	125
M2	27/5/2021	Mid-Ebb	Fine	Calm	14:24	1.3	M	0.65	1	0.089	80	7.46	7.47	2.75	2.75	32.13	32.16	74.7	74.7	5.36	5.35	40.8	40.8	51	51
M2	27/5/2021	Mid-Ebb	Fine	Calm	14:24	1.3	M	0.65	2			7.47	7.47	2.75	2.75	32.19	32.16	74.3	74.5	5.34	5.35	40.7	40.8	50	51
M3	27/5/2021	Mid-Ebb	Fine	Calm	14:30	0.5	M	0.25	1	0.152	75	7.52	7.52	2.00	2.01	32.50	32.50	89.8	90.2	6.44	6.47	38.5	37.6	42	45
M3	27/5/2021	Mid-Ebb	Fine	Calm	14:30	0.5	M	0.25	2			7.52	7.52	2.01	2.01	32.50	32.50	90.5	90.2	6.49	6.47	36.6	37.6	47	45

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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	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	2.25	1.91	48.4	50.9	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

Annex C – Photo of investigation

Date of investigation: 27 May 2021 (**Ebb Tide**)
Monitoring Station: M1



Annex D – Site Inspection



Date of site inspection: 25 May 2021
Gullies were bunded by sand bags to prevent surface runoff.



Date of site inspection: 25 May 2021
The surrounding of gullies near the construction site areas were temporarily sealed.



Date of site inspection: 25 May 2021

Manholes were maintained to remove the deposited silt after the rainstorm to prevent overflows.

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210527_M3_NTU_SS						
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1						
Date:	2021/05/27						
Time: (hh:mm)	(Flood Tide) M1: M2: M3: <u>8:12</u>						
Action level / Limit level: (For Flood Tide)		DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
		AL	LL	AL	LL	AL	LL
	M1	2.25	1.91	48.4	50.4	59.0	68.0
	M2	1.88	1.79	43.0	52.4	81.0	112.0
	M3	3.28	3.14	74.3	78.0	104.0	167.0
Measured level of exceeded parameter: (fill in / circle as appropriate)	M1	DO (AL / LL) : _____		M3	DO (AL / LL) : _____		
		NTU (AL / LL) : _____			NTU (AL / LL) : <u>138.2</u>		
		SS (AL / LL) : _____			SS (AL / LL) : <u>115</u>		
	M2	DO (AL / LL) : _____					
		NTU (AL / LL) : _____					
		SS (AL / LL) : _____					
Action taken / to be taken: (tick / circle / fill in as appropriate)	Inspection : <input checked="" type="checkbox"/> ER / IEC / Contractor is/are informed. <input checked="" type="checkbox"/> Monitoring equipment & monitoring data are checked and confirmed without problem. <input checked="" type="checkbox"/> In-situ measurement is repeated. <input type="checkbox"/> Other _____ _____ _____						
			DO	Turbidity	SS		
Possible reason for action or Limit level Non-compliance: (tick / fill in as appropriate)	Finding / Evidences						
	<input type="checkbox"/> Upstream Control Station exceeded AL/LL						
	<input type="checkbox"/> Station was polluted by the inflow of other construction site						
	<input type="checkbox"/> Station was polluted by the inflow of residential discharge						
	<input type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage						
	<input checked="" type="checkbox"/> No construction activities were carried out in the vicinity of station			M3	M3		
<input type="checkbox"/> Other _____ _____							

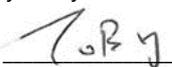
Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210527_M3_NTU_SS			
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1			
Date:	2021/05/27			
Conclusion:	<input checked="" type="checkbox"/>	DO	Turbidity	SS
	Due to change or/and influences of ambient condition in the vicinity, not Project related		M3	M3
	<input type="checkbox"/>			
	Due to influences of construction activities under this project in the vicinity, considered to be Project related			
Mitigation Measures:	<p>The following mitigation measures have been taken:</p> <ol style="list-style-type: none"> 1. Channels, earth bunds or sand bag barriers were provided on site to properly direct stormwater to silt removal facilities; 2. The surfaces of construction site areas near the drainages were paved; 3. Manholes were adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and; 4. Channels and manholes were maintained and the deposited silt and grit were removed after rainstorm to prevent overflows and localised flooding. 			
Remarks: (tick / fill in as appropriate)	<input checked="" type="checkbox"/> Repeat in-situ measurement was done.			
	M1	DO : _____ NTU : _____	M3	DO : _____ NTU : <u>126.4</u>
	M2	DO : _____ NTU : _____		
Attachment	<input checked="" type="checkbox"/> No major observation of upstream area was found			
	Annex A – Location of Water Quality Monitoring Stations Annex B – Water Quality Monitoring Results Annex C – Photo of Investigation Annex D – Site Inspection			

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

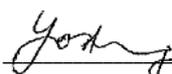
Prepared by: Toby Wan

Signature: 

Date (dd/mm/yyyy): 3/6/2021

Certified by: David Hung

Designation: Environmental Team Leader

Signature: 

Date (dd/mm/yyyy): 3/6/2021

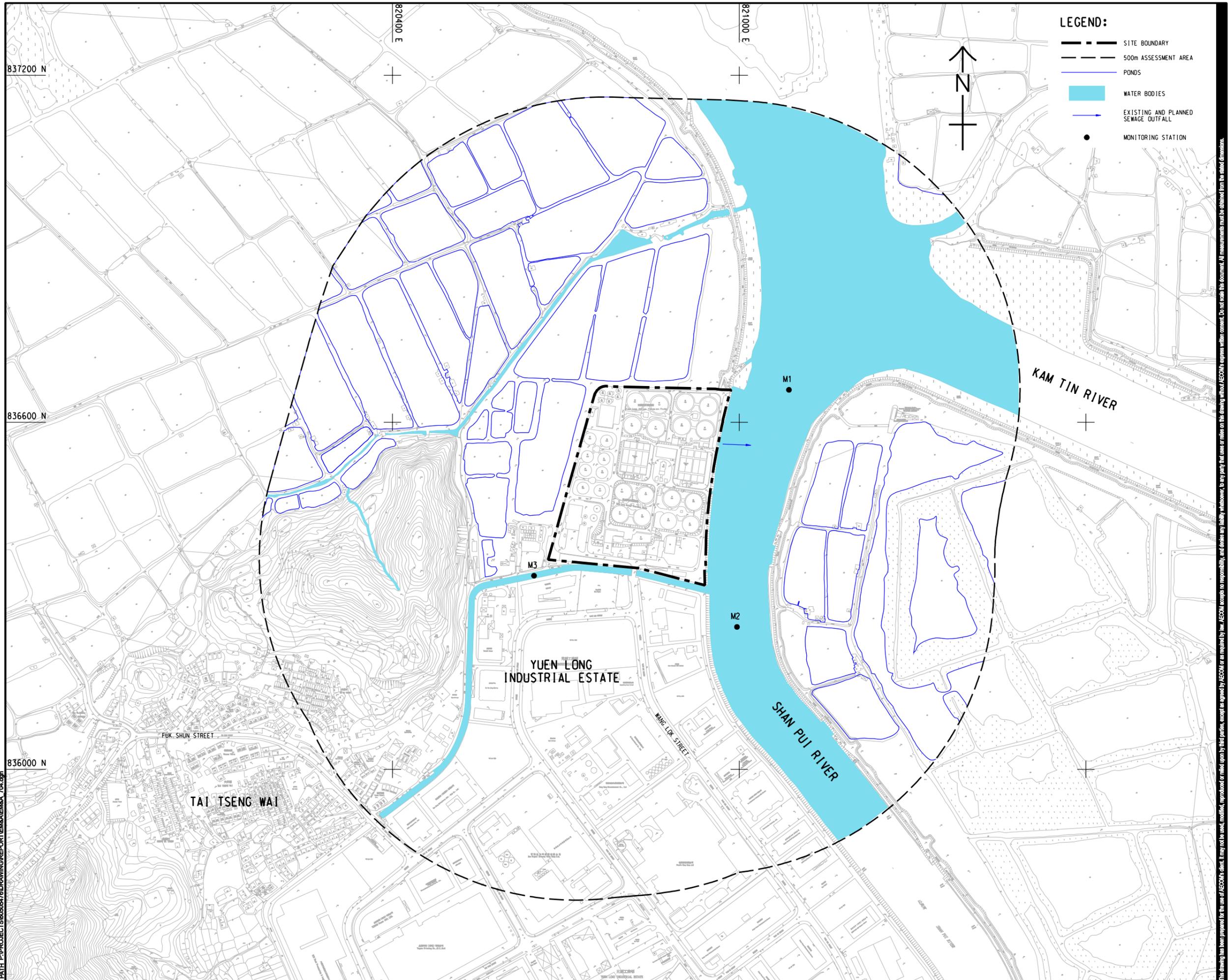
Notes:

- Abbreviation:
- DO – Dissolved Oxygen
- NTU - Turbidity
- SS – Suspended Solids
- AL – Action Level
- LL – Limit Level
- ER – Engineer's Representative
- IEC – Independent Checker



Annex A – Location of Water Quality Monitoring Stations

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



CLIENT
渠務署
Drainage Services Department

SHEET TITLE
LOCATIONS OF WATER QUALITY MONITORING STATIONS FOR CONSTRUCTION PHASE

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the original dimensions.

Plot File by: GaoYU
12/18
PATH: P:\PROJECTS\6050578\DRAINING\REPORT\EM&A\EM&A_T04.dgn

Annex B – 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	27/5/2021	Mid-Flood	Fine	Calm	07:45	1.6	M	0.8	1	0.174	322	7.38	7.38	5.55	5.55	31.35	31.37	55.9	56.2	3.99	4.02	29.4	29.4	38	39
M1	27/5/2021	Mid-Flood	Fine	Calm	07:45	1.6	M	0.8	2			7.38	7.38	5.54	5.55	31.39	31.37	56.5	56.2	4.05	4.02	29.4	29.4	40	39
M2	27/5/2021	Mid-Flood	Fine	Calm	08:03	1.5	M	0.75	1	0.169	171	7.46	7.46	4.43	4.44	31.35	31.37	61.4	61.6	4.43	4.44	28.7	28.8	48	48
M2	27/5/2021	Mid-Flood	Fine	Calm	08:03	1.5	M	0.75	2			7.45	7.46	4.44	4.44	31.39	31.37	61.8	61.6	4.45	4.44	28.8	28.8	48	48
M3	27/5/2021	Mid-Flood	Fine	Calm	08:12	1	M	0.5	1	0.082	268	7.08	7.08	2.23	2.23	30.10	30.10	46.8	46.3	3.49	3.46	131.8	138.2	110	115
M3	27/5/2021	Mid-Flood	Fine	Calm	08:12	1	M	0.5	2			7.07	7.08	2.23	2.23	30.10	30.10	45.8	46.3	3.42	3.46	144.5	138.2	120	115
M1	27/5/2021	Mid-Ebb	Fine	Calm	14:50	1.5	M	0.75	1	0.197	330	7.26	7.26	2.86	2.87	31.37	31.38	43.7	43.8	3.18	3.18	92.1	92.2	120	125
M1	27/5/2021	Mid-Ebb	Fine	Calm	14:50	1.5	M	0.75	2			7.25	7.26	2.87	2.87	31.39	31.38	43.9	43.8	3.18	3.18	92.2	92.2	130	125
M2	27/5/2021	Mid-Ebb	Fine	Calm	14:24	1.3	M	0.65	1	0.089	80	7.46	7.47	2.75	2.75	32.13	32.16	74.7	74.7	5.36	5.35	40.8	40.8	51	51
M2	27/5/2021	Mid-Ebb	Fine	Calm	14:24	1.3	M	0.65	2			7.47	7.47	2.75	2.75	32.19	32.16	74.3	74.5	5.34	5.35	40.7	40.8	50	51
M3	27/5/2021	Mid-Ebb	Fine	Calm	14:30	0.5	M	0.25	1	0.152	75	7.52	7.52	2.00	2.01	32.50	32.50	89.8	90.2	6.44	6.47	38.5	37.6	42	45
M3	27/5/2021	Mid-Ebb	Fine	Calm	14:30	0.5	M	0.25	2			7.52	7.52	2.01	2.01	32.50	32.50	90.5	90.2	6.49	6.47	36.6	37.6	47	45

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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	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	2.25	1.91	48.4	50.9	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

Annex C – Photo of investigation

Date of investigation: 27 May 2021 (**Flood Tide**)
Monitoring Station: M3



Annex D – Site Inspection



Date of site inspection: 25 May 2021
Gullies were banded by sand bags to prevent surface runoff.



Date of site inspection: 25 May 2021
The surrounding of gullies near the construction site areas were temporarily sealed.



Date of site inspection: 25 May 2021

Manholes were maintained to remove the deposited silt after the rainstorm to prevent overflows.

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210529_M3_SS						
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1						
Date:	2021/05/29						
Time: (hh:mm)	(Flood Tide) M1: M2: M3: <u>8:36</u>						
Action level / Limit level: (For Flood Tide)		DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
		AL	LL	AL	LL	AL	LL
	M1	2.25	1.91	48.4	50.4	59.0	68.0
	M2	1.88	1.79	43.0	52.4	81.0	112.0
	M3	3.28	3.14	74.3	78.0	104.0	167.0
Measured level of exceeded parameter: (fill in / circle as appropriate)	M1	DO (AL / LL) : _____		M3	DO (AL / LL) : _____		
		NTU (AL / LL) : _____			NTU (AL / LL) : _____		
		SS (AL / LL) : _____			SS (AL / LL) : <u>110</u>		
	M2	DO (AL / LL) : _____					
		NTU (AL / LL) : _____					
		SS (AL / LL) : _____					
Action taken / to be taken: (tick / circle / fill in as appropriate)	Inspection : <input checked="" type="checkbox"/> ER / IEC / Contractor is/are informed. <input checked="" type="checkbox"/> Monitoring equipment & monitoring data are checked and confirmed without problem. <input type="checkbox"/> In-situ measurement is repeated. <input type="checkbox"/> Other _____ _____ _____						
			DO	Turbidity	SS		
Possible reason for action or Limit level Non-compliance: (tick / fill in as appropriate)	Finding / Evidences						
	<input checked="" type="checkbox"/> Upstream Control Station exceeded AL/LL					M1 (64 mg/L)	
	<input type="checkbox"/> Station was polluted by the inflow of other construction site						
	<input type="checkbox"/> Station was polluted by the inflow of residential discharge						
	<input type="checkbox"/> Station was polluted by the inflow of surface runoff from rainstorm and storm water drainage						
	<input type="checkbox"/> No construction activities were carried out in the vicinity of station						
<input type="checkbox"/> Other _____ _____							

Notification of Water Quality Monitoring Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20210529_M3_SS			
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1			
Date:	2021/05/29			
Conclusion:		DO	Turbidity	SS
	<input checked="" type="checkbox"/> Due to change or/and influences of ambient condition in the vicinity, not Project related			M3
	<input type="checkbox"/> Due to influences of construction activities under this project in the vicinity, considered to be Project related			
Mitigation Measures:	The following mitigation measures have been taken: 1. Channels, earth bunds or sand bag barriers were provided on site to properly direct stormwater to silt removal facilities; 2. The surfaces of construction site areas near the drainages were paved; 3. Manholes were adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and; 4. Channels and manholes were maintained and the deposited silt and grit were removed after rainstorm to prevent overflows and localised flooding.			
Remarks: (tick / fill in as appropriate)	<input type="checkbox"/> Repeat in-situ measurement was done.			
	M1	DO : _____ NTU : _____	M3	DO : _____ NTU : _____
	M2	DO : _____ NTU : _____		
Attachment	<input checked="" type="checkbox"/> No major observation of upstream area was found Annex A – Location of Water Quality Monitoring Stations Annex B – Water Quality Monitoring Results Annex C – Photo of Investigation			

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

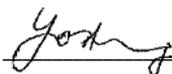
Prepared by: Toby Wan

Signature: 

Date (dd/mm/yyyy): 4/6/2021

Certified by: David Hung

Designation: Environmental Team Leader

Signature: 

Date (dd/mm/yyyy): 4/6/2021

Notes:

- Abbreviation:

DO – Dissolved Oxygen

NTU - Turbidity

SS – Suspended Solids

AL – Action Level

LL – Limit Level

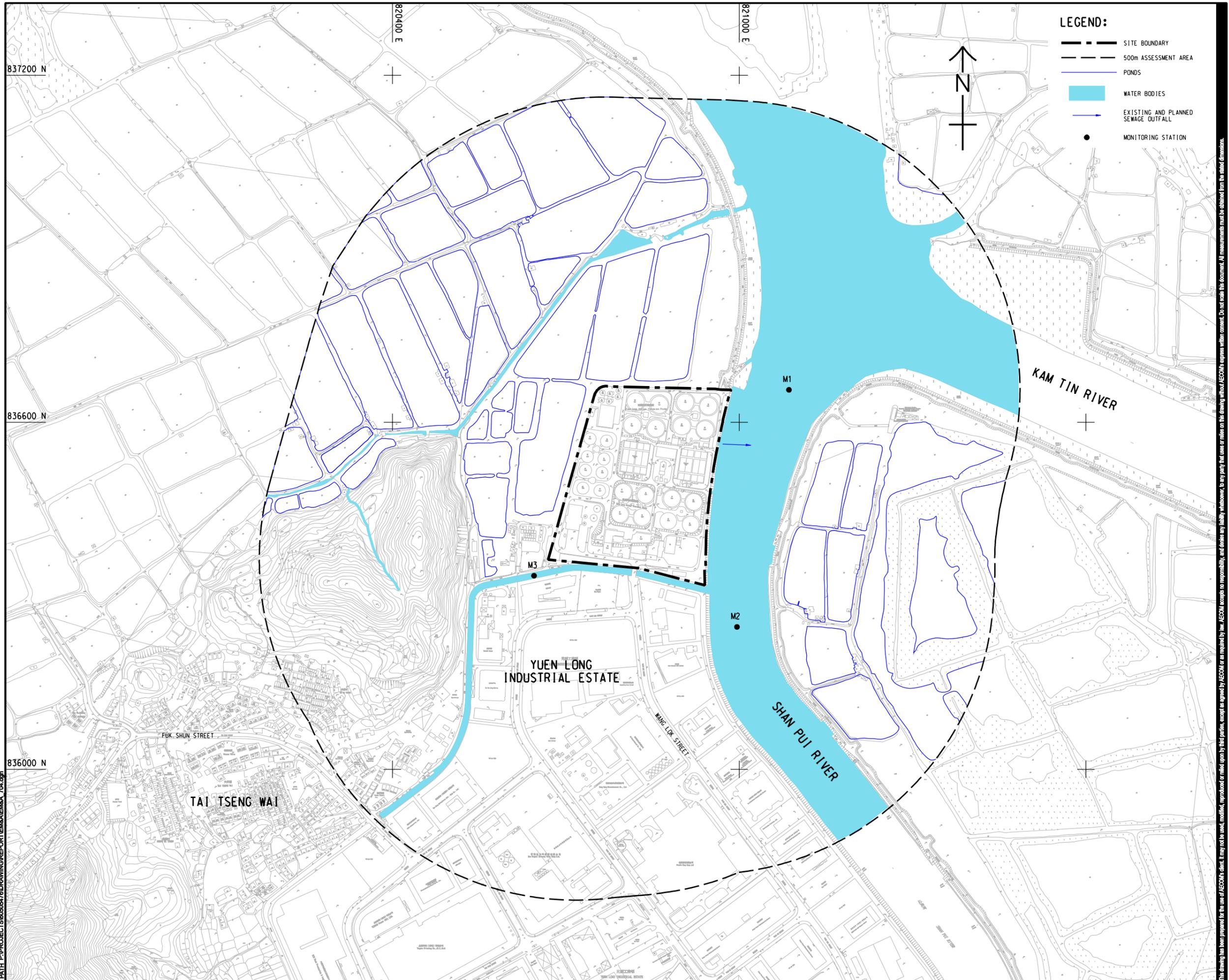
ER – Engineer's Representative

IEC – Independent Checker



Annex A – Location of Water Quality Monitoring Stations

Plot File by: GaoYU 12/18
PATH: P:\PROJECTS\050578\DRAINING\REPORT\EM&A\EM&A_T04.dgn
Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm



This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the noted dimensions.

CLIENT
渠務署
Drainage Services Department

SHEET TITLE
LOCATIONS OF WATER QUALITY
MONITORING STATIONS FOR
CONSTRUCTION PHASE

Annex B – 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	29/5/2021	Mid-Flood	Fine	Calm	08:44	1.3	M	0.65	1	0.11	231	7.42	7.43	7.96	7.97	30.62	30.64	59.4	59.5	4.26	4.28	82.4	82.4	64	64
M1	29/5/2021	Mid-Flood	Fine	Calm	08:44	1.3	M	0.65	2			7.44	7.43	7.98	7.97	30.66	30.64	59.6	59.5	4.30	4.28	82.4	82.4	64	64
M2	29/5/2021	Mid-Flood	Fine	Calm	09:10	1.1	M	0.55	1	0.085	255	7.54	7.52	6.89	6.89	30.68	30.80	69.2	68.6	4.96	4.91	39.9	39.6	48	49
M2	29/5/2021	Mid-Flood	Fine	Calm	09:10	1.1	M	0.55	2			7.50	7.52	6.89	6.89	30.91	30.80	68.0	68.6	4.85	4.91	39.2	39.6	50	49
M3	29/5/2021	Mid-Flood	Fine	Calm	08:36	0.3	M	0.15	1	0.199	261	6.90	6.91	2.85	2.86	30.70	30.70	47.2	44.8	3.47	3.30	95.6	96.6	100	110
M3	29/5/2021	Mid-Flood	Fine	Calm	08:36	0.3	M	0.15	2			6.92	6.91	2.86	2.86	30.70	30.70	42.4	44.8	3.12	3.30	97.7	96.6	120	110
M1	29/5/2021	Mid-Ebb	Fine	Calm	16:17	1.2	M	0.6	1	0.065	128	7.61	7.62	6.47	6.48	31.40	31.42	79.1	79.4	5.64	5.65	24.5	24.6	29	30
M1	29/5/2021	Mid-Ebb	Fine	Calm	16:17	1.2	M	0.6	2			7.62	7.62	6.49	6.48	31.43	31.42	79.6	79.4	5.66	5.65	24.6	24.6	31	30
M2	29/5/2021	Mid-Ebb	Fine	Calm	15:58	0.9	M	0.45	1	0.06	136	7.56	7.56	7.56	7.55	31.51	31.51	76.5	76.5	5.43	5.42	28.1	28.1	26	28
M2	29/5/2021	Mid-Ebb	Fine	Calm	15:58	0.9	M	0.45	2			7.56	7.56	7.54	7.55	31.51	31.51	76.4	76.5	5.41	5.42	28.0	28.1	29	28
M3	29/5/2021	Mid-Ebb	Fine	Calm	16:02	0.8	M	0.4	1	0.151	80	7.47	7.48	2.94	2.95	32.30	32.30	101.6	102.0	7.26	7.29	22.7	22.0	22	23
M3	29/5/2021	Mid-Ebb	Fine	Calm	16:02	0.8	M	0.4	2			7.48	7.48	2.95	2.95	32.30	32.30	102.4	102.0	7.31	7.29	21.2	22.0	23	23

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
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	98.9	107.1	81	112
M3	3.28	3.14	98.9	107.1	104	167

For Ebb Tide

Monitoring Location	DO		NTU		SS	
	AL	LL	AL	LL	AL	LL
M1	2.25	1.91	48.4	50.4	59	68
M2	1.88	1.79	43.0	52.4	81	112
M3	3.28	3.14	74.3	78.0	104	167

Annex C – Photo of investigation

Date of investigation: 29 May 2021 (**Flood Tide**)

Monitoring Station: M1



Date of investigation: 29 May 2021 (**Flood Tide**)

Monitoring Station: M3

