Drainage Services Department

Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes

Monthly Environmental Monitoring and Audit Report for February 2024

(Version 1.0)

Certified by: 

(Environmental Team Leader: Mr. KS Lee)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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CINOTECH CONSULTANTS LIMITED
Room 1710, Technology Park
18 On Lai Street
Shatin, NT, Hong Kong
Tel: (852) 2151 2083 Fax: (852) 3107 1388
Email: info@cinotech.com.hk

MEINHARDT
Consulting Engineers . Planners . Managers
工程設計 . 策劃 . 統籌

Meinhardt Infrastructure and Environment Ltd
邁進基建環保工程顧問有限公司

10/F Genesis
33-35 Wong Chuk Hang Road
Hong Kong
香港黃竹坑道33-35號
創協坊10樓

Tel 電話: +852 2858 0738
Fax 傳真: +852 2540 1580

mail@meinhardt.com.hk
www.meinhardt-china.com
www.meinhardtgroup.com

Our Ref.: CL/YML/ST/61124/91955/mw
Date: 13 March 2024

By Email

Drainage Services Department
Project Management Division
42/F, Revenue Tower
5 Gloucester Road
Wan Chai, Hong Kong

Attn.: Mr. Lee Chak-cho, Joe

Dear Sir

Re: Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes
Monthly Environmental Monitoring and Audit Report (No.3) – February 2024

I refer to Condition 4.3 under Environmental Permit No. EP-604/2021 and Condition 6.3 under Environmental Permit No. EP-578/2007, regarding the submission of a monthly Environmental Monitoring and Audit report. I hereby verify the captioned "Monthly Environmental Monitoring and Audit Report (No.3) – February 2024" dated 13 March 2024.

Should you have any queries, please do not hesitate to contact the undersigned at 2859 5443.

Yours faithfully
MEINHARDT INFRASTRUCTURE AND ENVIRONMENT LTD

Adi Lee
Independent Environmental Checker

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EXECUTIVE SUMMARY

1. This is the 3rd Monthly Environmental Monitoring and Audit (EM&A) Report prepared by the Environmental Team (ET), Cinotech Consultants Ltd., for Contract No. DC/2022/03 "Yuen Long Barrage and Nullah Improvement Schemes". This report documents the findings of EM&A Works conducted in February 2024 in according with the requirement specified in the Updated EM&A Manual under EP No. EP-604/2022 & EP-578/2020 respectively.

2. The major site activities undertaken in Yuen Long Barrage and Nullah Improvement Schemes in the reporting month included:
   - UU Detection
   - Tree Transplant
   - Predrilling Works (Land & Nullah)
   - Complete Temporary MiC Office and Fitting out Works
   - Erect Temporary Dam at Downstream
   - Condition survey (Land)
   - Sediment Removal
   - Trial pits
   - Sheet Piling Cofferdam Construction
   - Pre-bored Socket H-pile Construction

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the Updated EM&A Manual and the monitoring results were checked and reviewed. Joint weekly site inspections with the representative of ET, Engineer Representative and the Contractor were conducted on 6, 15, 20, and 27 February 2024 whereas joint site inspection with the representative of IEC was conducted on 6 February 2024. The implementation of the environmental mitigation measures, Event and Action Plans and environmental complaint handling procedures were also checked.

4. A summary of the non-compliance (exceedance) during the reporting month (February 2024) and the investigation results and/or follow-up actions is provided in **Table I** below:

Table I Non-compliance (exceedance) Record in the Reporting Month

Environmental Monitoring	No. of Non-compliance (Exceedance)		No. of Non-compliance (Exceedance) due to Construction Activities of this Project	
	Action Level	Limit Level	Action Level	Limit Level
Air Quality (Odour)	--	--	--	--
Air Quality (Dust)	0	0	0	0
Noise	0	0	0	0
Water Quality	3	40	0	0
Ecological	0	0	0	0
Cultural Heritage	--	--	--	--

Air Quality (Odour) Monitoring

- No odour monitoring was conducted in the reporting month.

Air Quality (Dust) Monitoring

- No Action/Limit Level exceedance for 1-hour TSP was recorded.

Construction Noise Monitoring

- No Action Level exceedance was recorded due to documented complaints in the reporting month. No project-related Limit Level exceedance was recorded due to monitoring results in this reporting month.

Water Quality Monitoring

- All water quality monitoring was conducted as scheduled in the reporting month and there were Three (3) Action Level and Forty (40) Limit Level exceedances recorded at the impact stations. However, both exceedances are non-project related. During this reporting month, no obvious discharge from the construction site was observed during the water quality monitoring and site audits. In addition, considering the high suspended solids (SS) and turbidity levels in the original water quality of Shan Pui River and Kam Tin River, there is no direct evidence linking the exceedances to the construction works of the Project. Details of this investigation are presented in **Section 5**.

Ecological Monitoring

- No exceedance for ecological monitoring was recorded.

Fisheries Monitoring

- No fisheries monitoring is required according to the Updated EM&A Manual.

Cultural Heritage Monitoring

- No vibration monitoring was conducted in the reporting month.

Landscape and Visual Monitoring

- No non-conformity for landscape and visual was recorded.

Complaint Handling, Prosecution and Public Engagement

5. Summary of complaint/summons/prosecution in the reporting month is tabulated in **Table II**.

Table II Summary of Complaint/Summons/Prosecution in the Reporting Month

Event	Event Details		Follow-up/ Remedial Actions	Status/ Remarks
	Number	Brief Description		
Complaints Received	0	-	N/A	N/A
Notification of Summons and Prosecutions Received	0	-	N/A	N/A

Reporting Changes

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

Future Key Issues

7. The key works or activities will be anticipated in the coming months are as follows:
   - Tree Transplant
   - Predrilling Works (Land & Nullah)
   - Sheet Piling Cofferdam Construction
   - Pre-bored Socket H-pile Construction
   - Condition survey (Land)
   - Sediment Removal
   - Erect temporary platform in nullah

1. INTRODUCTION

1.1 Cinotech Consultants Limited (Cinotech) was commissioned by Drainage Services Department (DSD) as the Environmental Team (ET) to undertake environmental monitoring and auditing services for the implementation of Yuen Long Barrage and Nullah Improvement Schemes to ensure that the environmental performance of the works comply with the requirements specified in the Environmental Permits (EP), the Updated Environmental Monitoring & Audit (EM&A) Manual, Environmental Impact Assessment (EIA) Reports and other relevant statutory requirements. This is the 3rd Monthly EM&A report summarizing the EM&A works for the Project in February 2024.

Purpose of the Report

1.2 This is the 3rd Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period in February 2024.

Structure of the Report

1.3 The structure of the report is as follows:

Section 1: **Introduction** – purpose and structure of the report.

Section 2: **Project Information** – summarises background and scope of the Project, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting month.

Section 3: **Air Quality Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 4: **Noise Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 5: **Water Quality Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 6: **Ecological Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations and Action and Limit Levels, monitoring results and Event / Action Plans.

Section 7: **Fisheries Monitoring** – summarises the requirements of fisheries monitoring and site audit.

Section 8: **Cultural Heritage** –summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, mitigation measures, monitoring locations and monitoring results.

Section 9: **Landscape and Visual Monitoring Requirements** – summarises the requirements of landscape and visual monitoring

Section 10: **Waste Management** – summarises the audit findings of the weekly site inspections undertaken within the reporting month.

Section 11: **Environmental Audit** – summarises the waste management data in the reporting month.

Section 12: **Environmental Non-conformance** – summarises any monitoring exceedance, environmental complaints, environmental summons and successful prosecutions within the reporting month.

Section 13: **Future Key Issues** – summarises the impact forecast and monitoring schedule for the next month.

Section 14: **Conclusions and Recommendation**

2. PROJECT INFORMATION

2.1 Background

2.1.1 Drainage Services Department (DSD) proposed Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes to 1) enhance the flood protection level of Yuen Long Nullah to the required standards, 2) resolve odour problem and enhance the local environment of the town centre section of Yuen Long Nullah, and 3) revitalise Yuen Long Nullah. A site location plan of the Project is shown in **Figure 1.1**.

2.1.2 The major works to be executed under the contract shall include but not limited to the followings:

- Construction of a barrage, and ancillary pumping and electrical & mechanical (E&M) facilities at Yuen Long Nullah;
- Modification works at the intersection of Yuen Long Nullah and Yuen Long Bypass Floodway;
- Provision of a dry weather flow interception system, including the construction of a dry weather flow interceptor, a stormwater pumping station and laying of twin rising mains for conveyance of the dry weather flow;
- Construction and modification of parapet walls along Yuen Long Nullah, Sham Chung River and Kam Tin River;
- Enhancement works of existing Yuen Long Nullah between Shap Pat Heung Road and the proposed location of the barrage; and
- Other associated works.

2.1.3 The proposed works are considered as designated projects under the Environmental Impact Assessment Ordinance (EIAO). Two separate Environmental Impact Assessments (EIAs) were carried out for Yuen Long Barrage Scheme (YLBS) (Register No.: AEIAR-228/2021) and Improvement of Yuen Long Town Nullah (YLTN) (Register No.: AEIAR-223/2020). Their respective Environmental Permits are EP-604/2022 (issued on 21 January 2022) and EP-578/2020 (issued on 17 September 2020). DSD is the permit holder of both permits.

2.1.4 According to Condition 2.11 of EP-604/2022 and Condition 2.5 of EP-578/2020, an updated Environmental Monitoring and Audit (EM&A) Manual shall be prepared to include the latest EM&A requirements in accordance with the information and recommendations described in the respective EIA Reports and by taking into account any specific site conditions that may be changed before construction of the Project. The updated EM&A Manual shall include but not limited to:

- EP-578/2020: a water quality monitoring plan (WQMP) to detect potential adverse water quality impacts at the Project and downstream area directly affected by the construction of the Project. With reference to the excavation works in the nullah as mentioned in Condition 3.1 of this Permit, the WQMP shall include details of the monitoring locations, monitoring frequency, parameters to be monitored, and additional measures to be taken in the event of heavy rainfall during dry season to ensure that the water quality is not adversely affected; and an Event/Action Plan for water quality monitoring.

2.1.5 EP-604/2022: a construction dust monitoring plan (CDMP) to monitor dust emission during construction of the Project. The CDMP shall include details of the monitoring locations, monitoring frequency, and parameters to be monitored; and an Event/Action Plan for construction dust monitoring.

2.2 Project Organizations

2.2.1 Different Parties with different levels of involvement in the project organization include:

- Project Proponent – Drainage Services Department (DSD)
- Engineer Representative (ER) – Binnies Hong Kong Limited (Binnies)
- Environmental Team (ET) – Cinotech Consultants Limited (Cinotech)
- Independent Environmental Checker (IEC) – Meinhardt Hong Kong Limited (Meinhardt)
- Contractor – China State – Alchmex Joint Venture (CSAJV)

2.2.2 The key contacts of the Project are shown in **Table 2-1**.

Table 2-1 Key Project Contacts

Party	Role	Contact Person	Phone No.
Binnies	Chief Resident Engineer	Mr. Clive Cheng	6603 9633
	Resident Engineer	Mr. Alvin YU	5223 6155
Cinotech	Environmental Team Leader	Mr. KS. Lee	2151 2091
Meinhardt	Independent Environmental Checker	Mr. Adi Lee	2859 5443
CSAJV	Contractor	Mr. Brian KAM	9456 9541

2.3 Construction Activities undertaken during the Reporting Month

2.3.1 The construction programme is presented in **Appendix O.**

2.3.2 The major site activities undertaken in the reporting month included:

- UU Detection
- Tree Transplant
- Predrilling Works (Land & Nullah)
- Complete Temporary MiC Office and Fitting out Works
- Erect Temporary Dam at Downstream
- Condition survey (Land)
- Sediment Removal
- Trial pits
- Sheet Piling Cofferdam Construction
- Pre-bored Socket H-pile Construction

2.4 Summary of EM&A Requirements

2.4.1 The EM&A programme requires construction noise monitoring, air quality monitoring, water quality monitoring, ecological monitoring, environmental site audit, etc. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental mitigation measures, as recommended in the Project EIA Report.

2.4.2 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in **Section 11** of this report.

2.4.3 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the monitoring parameters of the required environmental monitoring works and audit works for the Project in the reporting month.

2.5 Statues of Environmental Licensing and Permitting

2.5.1 All permits/licenses obtained for the Project are summarized in **Table 2-2**.

Table 2-2 Summary of Environmental Licensing and Permit Status

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-578/2020	17 Sep 2020	N/A	Valid
EP-604/2022	Jan 2022	N/A	Valid
Effluent Discharge License			
Ref No. 495456	N/A	N/A	N/A
Ref No. 501000	N/A	N/A	N/A
Registration of Chemical Waste Producer			
496065	11 Nov 23	N/A	Valid
Billing Account for Construction Waste Disposal			
A/C No. 7047639	06 Jun 23	N/A	Valid
Construction Noise Permit (CNP)			
GW-RN0909-23	21 Aug 23	01 Feb 24	Valid
GW-RN0060-24	02 Feb 24	01 Jun 24	Valid
Marine Dumping Permit			
N/A	N/A	N/A	N/A
Others (e.g. Specified Process (SP) License, etc.)			
N/A	N/A	N/A	N/A

3. AIR QUALITY

Construction Dust

3.1 Monitoring Requirement

3.1.1 According to Updated EM&A Manual under the EP-604/2022, 1-hour TSP monitoring were conducted to monitor the air quality for this Project. The sampling frequency of at least three times in every six days shall be undertaken when the highest dust impact occurs. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

3.2 Monitoring Locations

3.2.1 Air quality monitoring was conducted at four (4) monitoring stations, as shown in **Figure 2**. **Table 3-1** describes the locations of the air quality monitoring stations.

Table 3-1 Air Quality Monitoring Locations

Monitoring Stations	Location	Floor Level
AM1	Fortune Pharmacal Co. Ltd	Rooftop (4/F)
AM2	Shan Pui Chung Hau Tsuen	Ground (G/F)
AM3	Nin Jiom Medicine Manufactory Limited	Ground (G/F)
AM4	HK School of Motoring Safety Centre	Ground (G/F)

3.3 Monitoring Equipment

3.3.1 Direct reading dust meter was used to measure the 1-hour average TSP levels. The 1-hour sampling was determined by High Volume Samplers (HVS) to check the validity and accuracy of the results measured by direct reading method.

3.3.2 Wind data monitoring equipment was set at rooftop (about 4/F) of Fortune Pharmacal Co. Ltd for logging wind speed and wind direction such that the wind sensors are clear of obstructions or turbulence caused by building. The wind data monitoring equipment is re-calibrated at least once every six months and the wind directions are divided into 16 sectors of 22.5 degrees each. The location is shown in **Figure 2**.

3.3.3 **Table 3-2** summarizes the equipment used in the impact air quality monitoring. Copies of calibration certificates are attached in **Appendix B**.

Table 3-2 Air Quality Monitoring Equipment

Equipment	Model and Make	Serial No.	Quantity
1-hour TSP Dust Meter	Sibata Model No.: LD-3B / LD-5R	972777	2
		972781	
HVS Sampler	GMW Model: GS2310	10379	1
Calibrator	TISCH Model: TE-5025A	3864	1

3.4 Monitoring Parameters and Frequency

3.4.1 **Table 3-3** summarizes the monitoring parameters, monitoring period and frequencies of baseline air quality monitoring.

Table 3-3 Frequency and Parameters of Air Quality Monitoring

Monitoring Stations	Parameter	Period	Frequency
AM1 – AM4	1-hour TSP	0700 – 1900 hrs	3 times/day, once every 6 days throughout the construction phase

3.5 Monitoring Methodology

1-hour TSP Monitoring

Measuring Procedures

3.5.1 The measuring procedures of the 1-hour TSP portable dust meter in accordance with the Manufacturer's Instruction Manual as follows:

(Sibata Model No.: LD-5R)

- The 1-hour dust meter was placed at least 1.3 meters above ground.
- Set POWER to "ON" and make sure that the battery level was not flash or in low level.
- Allow the instrument to stand for about 3 minutes and then the cap of the air sampling inlet had been released.
- Push the knob at MEASURE position.
- Set time/mode setting to [BG] by pushing the time setting switch. Then, start the background measurement by pushing the start/stop switch once. It would take 6 sec. to complete the background measurement.
- Push the time setting switch to change the time setting display to [MANUAL] at the bottom left of the liquid crystal display. Finally, push the start/stop switch to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, count value and site condition were recorded during the monitoring period.

Maintenance/Calibration

3.5.2 The following maintenance/calibration is required for the 1-hour dust meter:

- Check and calibrate the meter by HVS to check the validity and accuracy of the results measured by direct reading method at 2-month intervals throughout all stages of the air quality monitoring.

3.6 Results and Observations

3.6.1 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

3.6.2 The results of air quality monitoring in this reporting month are summarized in **Table 3-4**. The detailed monitoring data and graphical presentations of 1-hour TSP monitoring results are shown in **Appendix E**.

Table 3-4 Summary of 1-hour TSP Monitoring Results

Monitoring Station	Average (µg/m3)	Range (µg/m3)	Action Level (µg/m3)	Limit Level (µg/m3)
AM1	49.7	12.0 – 102.0	263	500
AM2	55.5	48.6 – 70.2	268	
AM3	76.3	15.2 – 207.1	288	
AM4	44.6	11.4 – 84.6	286	

3.6.3 No exceedance was recorded for the 1-hour TSP monitoring. The summary of exceedance record in the reporting month is shown in **Appendix J**.

3.6.4 The air temperature, precipitation and the relative humidity data was obtained from Hong Kong Observatory where the wind speed and wind direction were recorded by the installed Wind Anemometer. The weather information for the reporting month is summarized in **Appendix C**.

3.6.5 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of air quality mitigation measures within the site boundaries of this Project. The summary of site audits is shown in **Table 11-1** of this report.

3.6.6 The major dust source identified at the designated air quality monitoring stations are road traffic dust, exposed site area and open stockpiles, site vehicle movements and non-project related construction activities.

Odour Patrol

3.7 Monitoring Requirements

3.7.1 According to Updated EM&A Manual under the EP-578/2020, odour patrol is required to monitor the air quality for this Project. Odour patrol is proposed to be carried out during the construction phase of the Nullah Improvement Work. As no nullah construction works were conducted in this reporting month, no odour patrol was conducted in February 2024.

3.7.2 The trained personnel/competent persons used their nose (olfactory sensors) to sniff odours along the patrol route. The main odour emission sources and the areas affected by the odour nuisance should be identified, **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

3.7.3 The parameter, location and frequency of odour patrol are summarized in **Table 3-5**.

Table 3-5 Parameter, Location and Frequency for Odour Patrol

Odour Patrol Checking Point	Descriptions	Patrol Frequency	Parameters
OP1	The Spectra	Monthly. A total of two times on the monitoring day, in the morning and afternoon, respectively.	Odour Intensity **(Table 3-5)**
OP2	Wang Fu Court		
OP3	Twin Regency		
OP4	Yuk Yat Garden		
OP5	Yuen Long Long Ping Estate Wai Chow School		
OP6	Sol City		
OP7	Healey Building		
OP8	Tse King House		
OP9	Ma Tin Tsuen - Kung Um Road		
OP10	Caritas Yuen Long Chan Chun Ha Secondary School		
OP11	CCC Chun Kwong Primary School		
OP12	Tai Kiu Tsuen		

3.7.4 The odour patrol route is shown in **Figure 3**. The odour patrol schedule is presented at **Appendix D**.

3.7.5 Copies of calibration certificate of the anemometer, and certificates for the qualified field odour patrol panellist are attached in **Appendix B**.

3.7.6 The odour intensities detected should be categorised as in **Table 3-6**.

Table 3-6 Odour Intensity Level

Class	Odour Intensity	Description
0	Not Detected	No odour perceived or an odour so weak that it cannot be easily characterized or described.
1	Slight	Identified odour, slight
2	Moderate	Identified odour, moderate
3	Strong	Identified odour, strong
4	Extreme	Severe odour

3.8 Monitoring Methodology

3.8.1 Odour patrol was conducted by trained personnel / competent persons (at least 2 odour patrol members). The odour patrol members should:

- Have their individual odour threshold of n-butanol in nitrogen gas in the range of 20 to 80 ppb/v required by the European Standard Method (EN 13725);
- Be free from any respiratory diseases;
- Not be allowed to smoke, eat, drink (except water) or use chewing gum or sweets 30 minutes before and during the odour patrol; and
- Take great care not to cause any interference with their own perception or that of others by lack of personal hygiene or the use of perfumes, deodorants, body lotions or cosmetics.

3.8.2 The trained personnel/competent persons should use their nose (olfactory sensors) to sniff odours along the patrol route. The main odour emission sources and the areas affected by the odour nuisance should be identified.

3.9 Results and On-Site Observation

3.9.1 No odour patrol was conducted in the reporting month as no nullah construction works were conducted in the reporting month. No Action/Limit Level exceedance was recorded.

3.9.2 The odour patrol will be carried out at 12 designed locations along the boundary of the Project Site. The detailed monitoring data is given in **Appendix F**.

3.9.3 The wind flow, wind direction, temperature and humidity were recorded. Detailed weather condition is shown in **Appendix C**.

3.9.4 No exceedance was recorded for the odour patrol. The summary of exceedance record in reporting month is shown in **Appendix J**.

4. NOISE

4.1 Monitoring Requirements

4.1.1 According to the Updated EM&A Manuals under the EP-578/2020 and EP-604/2022, construction noise monitoring was conducted to monitor the construction noise arising from the construction activities. The regular monitoring frequency for each monitoring station shall be on a weekly basis and conduct one set of measurements between 0700 and 1900 hours on normal weekdays. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

4.2 Monitoring Locations

4.2.1 The location of the monitoring station is tabulated in **Table 4-1** and illustrated in **Figure 4.**

Table 4-1 Noise Monitoring Stations

Monitoring Stations	Location	Floor Levels
CM1	Shan Pui Chung Hau Tsuen	Ground (G/F)
CM2	Caritas Yuen Long Chan Chun Ha Secondary School	Rooftop (6/F)
CM3	Ma Tin Tsuen	Ground (G/F)
CM4	Tung Tau Wai San Tsuen	Ground (G/F)
CM5	Twin Regency	Rooftop (27/F)
CM6	Tai Kiu Tsuen	Ground (G/F)
CM7	CCC Chun Kwong Primary School	Ground (G/F)

4.3 Monitoring Equipment

4.3.1 Integrating Sound Level Meter was used for impact noise monitoring. The meters were Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (Leq) and percentile sound pressure level (Lx) that also complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. **Table 4-2** summarizes the noise monitoring equipment being used. Copies of calibration certificates are attached in **Appendix B**.

Table 4-2 Noise Monitoring Equipment

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	BSWA 308	3
Calibrator	ST-120	1

4.4 Monitoring Parameters, Frequency and Duration

4.4.1 **Table 4-3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**. Leq(30min) was used as the monitoring parameter for the time period between 0700-1900 hours on any day not being a general holiday (including Sunday) and Leq(5min) was used as the monitoring parameter for the time period between 0700-1900 hours on general holidays (including Sundays) and 1900-0700 hours for all days. Supplementary information for data auditing, statistical results such as L10 and L90 were also obtained for reference.

Table 4-3 Frequency and Parameters of Noise Monitoring

Monitoring Stations	Time Period	Duration	Frequency	Parameter
CM1, CM2, CM3, CM4, CM5, CM6, CM7	Daytime (0700-1900 hrs)	30 minutes (Daytime)	Once per week	L_{eq} L_{10} L_{90}

4.5 Monitoring Methodology and QA/QC Procedure

4.5.1 **Table 4-4** summarizes the types of measurement undertaken in the monitoring stations.

Table 4-4 Type of Measurement

Monitoring Stations	Measurement
CM1	Free Field Measurement
CM2	Façade Measurement
CM3	Free Field Measurement
CM4	Free Field Measurement
CM5	Façade Measurement
CM6	Free Field Measurement
CM7	Façade Measurement

Note: Due to the environment condition of the monitoring location, free field measurement instead of façade measurement was adopted as the measurement method at the monitoring locations.

4.5.2 The air temperature, precipitation and the relative humidity data was obtained from Hong Kong Observatory and presented in **Appendix C**.

4.5.3 The monitoring procedures are as follows:

- The monitoring station was normally be at a point 1m from the exterior of the sensitive receivers building façade and be at a position 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - Frequency weighting: A
  - Time weighting: Fast
  - Time measurement: 30 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.

- Noise monitoring would be cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s. Supplementary monitoring would be provided to ensure sufficient data would be obtained.

4.6 Maintenance and Calibration

4.6.1 The sound level meter and calibrator were checked and calibrated at yearly intervals.

4.6.2 Immediately prior to and following each noise measurement the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements were accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

4.7 Results and Observations

4.7.1 All construction noise monitoring was conducted as scheduled in the reporting month.

4.7.2 All the Construction Noise Levels (CNLs) reported in this report were adjusted with the corresponding baseline level (i.e. Measured Leq – Baseline Leq = CNL), in order to facilitate the interpretation of the noise exceedance. The baseline noise level and the Noise Limit Level at each designated noise monitoring station are presented in **Table 4-5**.

Table 4-5 Baseline Noise Level and Noise Limit Level for Monitoring Stations

Stations	Mean Baseline Noise Level, dB (A) (at 0700 – 1900 hrs on normal weekdays, $L_{eq\ (30\ min)}$)	Noise Limit Level, dB (A) (at 0700 – 1900 hrs on normal weekdays)
CM1	59.1	75
CM2	62.7	70*
CM3	61.1	75
CM4	67.2	75
CM5	62.7	75
CM6	63.0	75
CM7	60.4	70*
(*) Noise Limit Level is 65 dB(A) during school examination periods.		

4.7.1 The major noise sources identified at the noise monitoring stations are shown in **Table 4-6**.

Table 4-6 Major Noise Sources identified at Noise Monitoring Stations

Monitoring Station	**Major Noise Sources**
CM1	Road Traffic along Shan Pui Ho East Road, Non-project related construction activity
CM2	Road Traffic along Ma Tin Road and Ma Tong Road
CM3	Road Traffic along Kung Um Road and Tai Shu Ha Road East
CM4	Road Traffic Wang Lok Street
CM5	Road Traffic along Shan Pui Ho East Road and Lau Yip Street
CM6	Vehicle Movement along the footpath beside Tai Kiu Tsuen
CM7	Noise nuisance along Chung Sing Path and Chung Sing Path Playground

4.7.2 The results of impact noise monitoring in this reporting month are summarized in **Table 4-7**. Detailed noise monitoring results and graphical presentations are shown in **Appendix G.**

Table 4-7 Summary of Impact Noise Monitoring Results

Parameter	Monitoring Station	Range (dB(A))	Action Level	Limit Level
Leq(30min) in dB(A)	CM1*	55.5 – 74.8	• When one documented complaint is received	• 75 dB(A) for residential • 70dB(A) for schools • 65 dB(A) during school examination periods
	CM2	55.1 – 62.5		
	CM3*	56.9 – 59.5		
	CM4*	65.1 – 72.5		
	CM5	56.2 – 61.3		
	CM6	61 – 74.8		
	CM7*	58.8 – 63.6		

*Remark: Free field noise levels were adjusted with a correlation of +3 dB(A)

4.7.3 No Action Level exceedance was recorded due to documented complaints in the reporting month. No project-related Limit Level exceedance during daytime was recorded due to monitoring results in this reporting month.

4.7.4 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of construction noise mitigation measures within the site boundaries of this Project. The summary of site audits is shown in **Table 11-1** of this report.

5. WATER QUALITY MONITORING

5.1 Monitoring Requirements

5.1.1 According to the Updated EM&A Manuals under the EP-578/2020 and EP-604/2022, water quality monitoring was conducted to ensure that unacceptable water quality impacts do not occur at the downstream Water Sensitive Receivers (WSRs) as a result of the construction works. The Impact monitoring should be undertaken three (3) times per week during the course of construction works. For monitoring stations affected by tidal condition, monitoring should be carried out at mid-flood and mid-ebb. The interval between two consecutive sets of monitoring should not be less than 36 hours except when there are exceedances of Action and/or Limit Level, in which case monitoring frequency should be increased. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

5.2 Monitoring Locations

5.2.1 The monitoring stations have been established to identify potential water quality impacts to WSRs. Locations of the monitoring stations are shown in **Figure 5** with the co-ordinates presented in **Table 5-1**. These monitoring stations are chosen as they are at reasonable distance from the works area and confirmed as the only location capable for water quality monitoring. Descriptions of the monitoring stations are as follows:

- W1 is Impact Station while W2 is Impact Station or Control Station depending on tidal condition. These stations are downstream of the boundary of the Project Site. W1 is located at the Shan Pui River and is approximately 250 m from the boundary of barrage and nullah works, while W2 is located near the Mai Po Inner Deep Bay Ramsar Site and is approximately 2 km from the boundary. Water quality monitoring at these two Stations will help to determine any adverse water quality impacts to the nearest Water Sensitive Receivers which may be caused by the Project's construction activities.

- C1 and C2 are Control Stations which are approximately 2km upstream of the Project Site, covering all the nullah construction works and the proposed flow diversion works & flood walls for the barrage scheme. The control stations are not supposed to be influenced by the construction works. These stations are not affected by tidal condition of Shan Pui River. Water quality monitoring data collected at C1 and C2 will be used to compare with the Impact Stations' data to determine any adverse water quality impacts as a result of the construction works of the Project.

- Mobile Stations should also be monitored for which the location will be determined in accordance with the boundary and number of the active works area during the time of impact monitoring. The Upstream Mobile Station should be located about 50 m upstream of the active works area while the Downstream Mobile Station should be located about 50 m downstream of the active works area.

Table 5-1 Location for Water Quality Monitoring Stations

Station	Description	Station Nature		Easting	Northing
		Mid-ebb	Mid-flood		
W1	Shan Pui River#	Impact Station		821405	835653
W2	Shan Pui River near Mai Po Inner Deep Bay Ramsar Site	Impact Station	Control Station	820935	837158
C1	Kung Um Road Nullah#	Control Station*		820720	832119
C2	San Hui Nullah#	Control Station*		821297	832771
UM	Yuen Long Town Nullah	Upstream Mobile Station (Control)*		Located 50 m upstream of the active works area. Location to be determined on-site.	
DM	Yuen Long Town Nullah	Downstream Mobile Station* (Impact)		Located 50 m downstream of the active works area. Location to be determined on-site.	

Notes:
* Not affected by tidal condition. The coordinates of the monitoring stations are for reference only.
# W1 from YLBS was chosen to be the proposed W1 of this Project since the W1 from YLN was located inside the site boundary of YLBS. The control points are for the fulfilment of both YLN & YLBS EM&A manuals. In the original EM&A manuals, both C1 are located at the same stream between Kung Um Rd and Kiu Hing Rd, both C2 are located at the same stream between Tai Shu Ha Rd West and Tai Shu Ha Rd East. Considering there are construction works of parapets wall for YLBS, the proposed control points can cover all the nullah, flow diversion and flood wall works area. Since the original locations do not have valid access to the nullah, C1 and C2 were relocated so that samples can be collected from bridge running across the nullah.

5.2.2 The monitoring location of UM and DM were presented in **Table 5-3** with co-ordinates below.

Table 5-2 Location for Water Quality Monitoring Stations (UM & DM)

Station	Description	Date	Easting	Northing
UM	Yuen Long Town Nullah	1 Feb 2024 – 29 Feb 2024	834510	821165
DM*	Yuen Long Town Nullah	--	--	--

Notes:
*As the mobile stations should not be located at the location that affected by tidal condition, the mobile stations (especially DM) were proposed to establish at Yuen Long Town Nullah only.

5.3 Monitoring Equipment

5.3.1 The equipment used in the water quality monitoring programme are listed in **Table 5-3**. The copies of the calibration certificates of water quality monitoring equipment are shown in **Appendix B**. The adopted equipment fulfils the requirements specified in the EM&A Programme as detailed in the following paragraphs.

Table 5-3 Water Quality Monitoring Equipment

Equipment	Model	Qty.
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	1
Multi-parameter Water Quality System	YSI EXO1 Multi-parameter Sonde	1

Monitoring Position Equipment	"Magellan" Handheld GPS Model GPS-320	1
Water Depth Detector	Fishfinder 140	1
Flow Meter	Flo-Mate 2000	1

Dissolved Oxygen, Temperature and Salinity Measuring Equipment

5.3.2 The instrument should be a portable, weatherproof measuring instrument complete with cable, sensor, comprehensive operation manuals, and should be operable from a DC power source. It should be capable of measuring: dissolved oxygen levels in the range of 0–20 mg L-1 and 0- 200% saturation; a temperature of 0-45 °C; and a salinity of 0-35 ppt.

5.3.3 It should have a membrane electrode with automatic temperature compensation complete with a cable of not less than 35 m in length. Sufficient stocks of spare electrodes and cable should be available for replacement where necessary (for example, YSI model 59 meter, YSI 5739 probe, YSI 5795A submersible stirrer with reel and cable or an approved similar instrument).

Turbidity Measuring Equipment

5.3.4 Turbidity should be measured in situ by the nephelometric method using an instrument that is portable and weatherproof using a DC power source with cable, sensor, and comprehensive operation manuals. This instrument should have a photometric sensor capable of measuring turbidity between 0 - 1000 NTU (e.g. Hach model 2100P or other approved instrument of similar type). The meter should be calibrated in order to establish the relationship between NTU units and the levels of SS. The turbidity measurement should be carried out on a split water sample from the same water sample collected for suspended solids analysis.

pH Measuring Equipment

5.3.5 A portable pH meter capable of measuring a range between 0.0 and 14.0 should be provided to measure pH under the specified conditions (e.g. Orion Model 250A or an approved similar instrument).

Electromagnetic Flow Meter

5.3.6 A hand-held digital electromagnetic flow meter (e.g. model Flo-mate 2000 or other approved similar instrument) should be provided and used to measure water flow rate during water quality monitoring. The measurement should be conducted at fixed sampling points and water depth throughout the monitoring programme.

Positioning Device

5.3.7 The locations of water quality monitoring stations should be located using a hand-held Global Positioning System (GPS) with way point bearing indication or other equivalent instrument of similar accuracy. This is to ensure that the water sampling locations are accurate and consistent before taking measurements.

Water Sampling Equipment

5.3.8 A water sampler is required. It should comprise a transparent PVC cylinder, with a capacity at least 500ml, which can be effectively sealed with latex cups at both ends. The sampler should have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (for example, Kahlsico Water Sampler or an approved similar instrument). If the water sampler cannot be applied due to shallow water depth, smaller sample container should be submerged into mid-water column before collecting water sample.

Water Depth Detector

5.3.9 A portable, battery-operated echo sounder would be used for the determination of water depth at each designated monitoring station. If echo sounder is not applicable due to low water depth, various sized stainless steel rulers would be used to determine the water depth.

Back-up Equipment

5.3.10 Sufficient stocks of spare parts should be maintained for replacements when necessary. Back-up monitoring equipment should also be available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, etc.

5.3.11 **Table 5-4** summarizes the type of sampling bottles and preservation method for laboratory testing.

Table 5-4 Types of Sampling Bottles and Preservation Methods

Parameters to be Tested	Preservation	Type of Sample Container
Total Suspended Solids (SS)	Refrigerate	1 liter high density polythene bottle

5.4 Monitoring Parameters, Period & Frequency

5.4.1 The water quality parameters to be measured are shown in **Table 5-5**.

5.4.2 The predicted tides at Tsim Bei Tsui provided by Hong Kong Observatory is used as reference for the selection of tides and shown in **Appendix C**.

Table 5-5 Water Quality Monitoring Parameters and Frequency

Monitoring Stations	Parameters, unit	Depth	Frequency
W1 W2 C1 C2 UM DM	*In-situ*: • Temperature(°C) • pH (pH units) • Turbidity (NTU) • Water depth (cm) • Salinity (ppt) • Dissolved oxygen (DO) (mg/L and % of saturation) Laboratory Testing: • Suspended solids (SS) (mg/L)	Mid-depth	Impact monitoring: 3 days per week throughout the construction period

5.5 Calibration of In-situ Instruments

5.5.1 All in-situ monitoring instruments should be checked and calibrated before use. They were certified by High Precision Chemical Testing Ltd. (HOKLAS Registration No.296).

5.5.2 Sufficient stocks of spare parts, i.e.: spare cables and sensors, have been maintained for replacements when necessary. Backup monitoring equipment was also available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, etc.

5.6 Monitoring Methodology

5.6.1 Multi-parameter meter (YSI EXO-01) was used to measure dissolved oxygen (DO) concentration, DO saturation (DO %), pH, salinity, temperature and turbidity. At each monitoring location, three consecutive measurements were taken for water samples being collected on site. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. When the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the second reading was discarded and further readings were taken.

5.6.2 For SS, water samples at middle layer were collected. Water samples of adequate volume specified by laboratory were collected and stored in high density polythene bottles provided by laboratory. Water samples were packed in ice and cooled to 4°C (without being frozen), delivered to a HOKLAS accredited laboratory, High Precision Chemical Testing Ltd., for the laboratory analysis of water samples.

5.7 Laboratory Analytical Methods

5.7.1 The testing of all parameters was conducted by High Precision Chemical Testing Ltd. (HOKLAS Registration No.296). and comprehensive quality assurance and control procedures in place in order to ensure quality and consistency in results. The testing method and limit of reporting are provided in **Table 5-6**.

Table 5-6 Analytical Methods for Laboratory Analysis for Water Samples

Parameters	Proposed Method	Detection Limit
Suspended Solids (SS)	APHA 2540D [1]	0.5 mg/L

Note:
[1] APHA - American Public Health Association Standard Methods for the Examination of Water and Wastewater.

5.8 QA/QC Procedures

Decontamination Procedures

5.8.1 Water sampling equipment used during the course of the monitoring programme was decontaminated by manual washing and rinsing with clean river water or bottled water after each sampling event.

Sampling Management and Supervision

5.8.2 Water samples were dispatched to the testing laboratory for analysis as soon as possible after the sampling. All samples were stored in a cool box and kept at or lower than 4°C but without being frozen. All water samples were relinquished to the laboratory representatives at locations specified by the laboratory.

5.9 Results and Observations

5.9.1 All water quality monitoring was conducted as scheduled in the reporting month. The monitoring results and graphical presentations are shown in **Appendix H**. Other relevant data was also recorded, such as monitoring location / position, time, sampling depth, weather conditions and any special phenomena or work underway nearby.

5.9.2 There were **Three (3) Action Level and Forty (40) Limit Level** of exceedance recorded in the reporting month. None of these exceedances were project-related. The summary of exceedances is shown in **Appendix J**.

5.9.3 During the impact water monitoring, it was observed that the water in the Shan Pui River (W1 and W2) was very muddy and turbid, and contained various type of materials, e.g.: debris of plant, soil and general rubbish. The water body of the river was mostly greyish to yellowish and the river bed was invisible throughout the impact monitoring period. The river water was similar to the water observed in the baseline monitoring, there was no significant changes on the river condition during the construction compared to the baseline water quality monitoring result and impact water quality result. As expected from the site observations, exceedances of turbidity and suspended solid were recorded almost every monitoring. In addition, DO exceedances were recorded during the reporting period. Rock and soil filling inside the river were conducted at the period of DO exceedances, none of these works were likely to cause decrease of DO value.

5.9.4 During this reporting month, no obvious discharge from the construction site was observed during the water quality monitoring and site audits. There was only rock dam installation conducted inside the river, silt curtain was applied for mitigation measures to minimize the adverse impacts in the river. In addition, considering the high suspended solids (SS) and turbidity levels in the original water quality of Shan Pui River and Kam Tin River, there is no direct evidence linking the exceedances to the construction works of the Project.

5.9.5 The Contractor is reminded to strictly follow the drainage plan and clear drainage regularly. In particular, all drainage shall be checked and cleared after heavy rainstorm as sediments may accumulate along pipes and culverts. Further details can be found in **Appendix J**.

6. ECOLOGY

6.1 Monitoring Requirements

6.1.1 Monthly ecological monitoring, focusing on avifauna species of conservation importance, and overwintering waterbirds utilising wetland habitats along Shan Pui River and Kam Tin River within 500m from the Project boundary should be conducted during construction phase. For the surveys overlooking the tidal mudflats and mangroves in the Shan Pui River and Kam Tin River, the tidal level at the time of the survey should be taken into consideration and the surveys should be taken when the tidal level is generally 1.5m or below.

6.1.2 Avifaunal communities should be surveyed quantitatively along transects and at selected point count locations. All birds heard or seen along the transects should be identified to species level and counted. Noise level should also be recorded. Any changes in site condition or disturbances detected or observed at the monitoring locations, including both construction and non-construction related activities, during each impact monitoring visit should also be recorded.

6.1.3 The area within 100m from the Project boundary should be monitored monthly during the construction phase to check the location and status of any active night roost.

6.1.4 The ecological monitoring should be undertaken by experienced ecologist(s) with relevant working experience. Should any unpredicted indirect ecological impacts arising from the proposed Project be detected, remedial measures should be developed and implemented by the Contractor.

6.1.5 The monitoring results should be compared to pre-construction baseline condition during the dry and wet seasons as summarized in the Baseline Bird Survey Report in **Appendix I**.

6.2 Monitoring Locations

6.2.1 Transect and point count surveys were proposed within the 500m boundary of Shan Pui River and Old Kam Tin River. The detailed locations of point count and transect count is provided in the Ecological Monitoring of Bird Report in **Appendix I**.

6.3 Monitoring Parameters, Frequency and Duration

6.3.1 Monitoring surveys were conducted once per month when the tidal level is generally 1.5m or below. The ecological monitoring schedule is shown in **Appendix D** and the detailed monitoring parameters, frequency and duration are provided in **Appendix I**.

6.4 Monitoring Methodology

6.4.1 For detailed monitoring methodology, please check the Ecological Monitoring of Bird Report in **Appendix I**.

6.5 Analytical Methodology

6.5.1 For detailed analytical methodology, please check the Ecological Monitoring of Bird Report in **Appendix I**.

6.6 Results and Analysis

6.5.2 As no construction work within the Kam Tin River, no ecological bird monitoring was conducted in Kam Tin River during the reporting period.

6.5.3 As no active night roost within 100m from the Project boundary, no monitoring was conducted during the reporting period.

6.6.1 No Action / Limit exceedance was recorded for the abundance of water bird species for the transect walk method.

6.6.2 No Action / Limit exceedance was recorded for the abundance of avifauna species with conservation importance only for the transect walk method.

6.6.3 No Action / Limit exceedance was recorded for the species diversity of waterbird species in the transect walk method.

6.6.4 No Action / Limit exceedance was recorded for the species diversity of avifauna species with conservation importance in the transect walk method.

6.6.5 The detailed analytical process, results, Action and Limit Levels and Event / Action Plans are presented in the Ecological Monitoring of Bird Report in **Appendix I**.

7. FISHERIES

7.1 Monitoring Requirements

7.1.1 According to the Updated EM&A Manual, no fisheries monitoring is required for the Project.

7.1.2 Site audit was carried out on a weekly basis to monitor and audit the timely implementation of fisheries mitigation measures within the site boundaries of this Project. The summaries of site audits are attached in **Appendix K**.

8. CULTURAL HERITAGE

8.1 Monitoring Requirements

8.1.1 According to the cultural heritage impact assessment on the EIA Report (Yuen Long Barrage Scheme), indirect impacts such as vibration, contact with equipment, access issues may arise, mitigation and audit during construction phase is required for four heritage structures.

8.1.2 Vibration monitoring should be audit during the construction phase at least once a month. In the event of exceedance, the event / action plan according to the Condition Survey Report should be followed.

8.2 Monitoring Locations

8.2.1 Four vibration monitoring point were proposed for monitoring of the cultural heritage, they are Village house (HB-17), Village house (HB-18), Village God Shrine (HB-30) and Buddhist Stone Tablet (HB-31). No vibration monitoring was conducted within the reporting period.

8.3 Monitoring Equipment

8.3.1 As no excavation work conducted within 50m from the identified building during the reporting period, no vibration monitoring was conducted. No monitoring equipment was used.

8.4 Monitoring Methodology

8.4.1 Vibrograph (velocity seismograph) was deployed at each monitoring station to measure and record the PPV and amplitude of ground motion in three mutually perpendicular directions. Vibration monitoring equipment fulfils the requirements stated in the Government guidelines and is calibrated to HOKLAS standards. Each monitoring would not be more than 10 minutes. Settlement monitoring should be conducted by surveyors manually.

8.4.2 The Alert, Alarm and Action (AAA) Levels are given in **Table 8-1**.

Table 8-1 AAA Levels for Monitoring for Cultural Heritage

Parameter	Alert Level	Alarm Level	Action Level
Vibration	ppv: 5 mm/s	ppv: 6 mm/s	ppv: 7.5mm/s Maximum Allowable Vibration Amplitude: 0.1mm

8.5 Results

8.5.1 As no excavation work conducted within 50m from the identified building during the reporting period, no vibration monitoring was conducted.

8.6 Mitigation Measures for Cultural Heritage

8.6.1 According to Section 9.2 of the Updated EM&A Manual, beside vibration monitoring, a buffer zone shall be provided by the Contractor to separate the building or structure from the construction works. The buffer zone shall be clearly marked out by temporary fencing, if temporary fencing is not appropriate signage may be used to identify the heritage item to be

avoided. The buffer zone shall be made at least 1m from the proposed works or if this is not possible as large as the site restrictions allow.

8.6.2 Any proposed works in close proximity to buildings or structures used by the public have the potential to create an unsafe environment for members of the public. The Contractor shall ensure that safe public access if possible, through provision of clearly marked paths separated from the construction works areas is provided for any such affected cultural heritage structure.

9. LANDSCAPE AND VISUAL

9.1 Audit Requirements

9.1.1 According to the Updated EM&A Manual, site audits would be undertaken during the construction phase of the Project to check that the proposed landscape and visual mitigation measures are properly implemented and maintained as per their intended objectives. Site inspections should be undertaken at least once every two weeks throughout the construction period.

9.1.2 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of landscape and visual mitigation measures within the site boundaries of this Project. The summaries of site audits are attached in **Appendix K**.

9.1.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

10. WASTE MANAGEMENT

10.1 Monitoring Requirements

10.1.1 Waste generated during construction works includes construction and demolition materials, sediment, chemical waste, general refuse and floating refuse. Waste types, quantities and timing have been estimated and mitigation measures have been proposed in terms of avoidance-minimisation-reuse-recycling-disposal hierarchy.

10.1.2 The total quality generated by the major site activities of this Project was 116170 kg. Details Waste Flow Table within the reporting month is shown in **Appendix N**.

10.1.3 The general site inspections including waste management issues was undertaken weekly by ET to check all construction activities for compliance with all appropriate environmental protection and pollution control measures, including those set up in the EMP. The summary of site audits is shown in **Table 11-1** of this report. The implementation status of the waste/chemical management measures in the reporting period are summarized in **Appendix K**.

11. ENVIRONMENTAL AUDIT

11.1 Site Audits

11.1.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix K**.

11.1.2 Site audits were conducted on 6, 15, 20, and 27 February 2024 in the reporting month, whereas joint site inspection with the representative of IEC was conducted on 6 February 2024. No non-compliance was observed during the site audit.

11.2 Implementation Status of Environmental Mitigation Measures

11.2.1 According to Environmental Permit, the approved EIA Report (Register No.: AEIAR-223/2020 and AEIAR-228/2021), and the Updated EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix K**.

11.2.2 The ET weekly site inspections were carried out during the reporting month and the observations and follow-up actions are summarized in **Table 11-1** below.

Table 11-1 Observations and Recommendations of Site Inspections

Parameters	Date	Observations	Follow-up Actions
Water Quality	N/A	No environmental deficiency was identified in the reporting period.	N/A
	N/A	No environmental deficiency was identified in the reporting period.	
Air Quality	N/A	No environmental deficiency was identified in the reporting period.	N/A
Noise	N/A	No environmental deficiency was identified in the reporting period.	N/A
Waste / Chemical Management	6 Feb 24	Drip tray should be provided under the chemical container to avoid oil leakage.	The item was rectified on 6 Feb 24.
Landscape and Visual	N/A	No environmental deficiency was identified in the reporting period.	N/A
Ecology	N/A	No environmental deficiency was identified in the reporting period.	N/A
Cultural Heritage	N/A	No environmental deficiency was identified in the reporting period.	N/A
Permits /Licences	6 Feb 24	Proper NRMM label should be displayed on the drilling machine.	The item was rectified on 6 Feb 24.

12. ENVIRONMENTAL NON-CONFORMANCE

12.1 Summary of Environmental Complaint

12.1.1 No environmental complaint was received in the reporting month. The Cumulative Complaint Log is presented in **Appendix M**. The investigation status and result are also reported in **Appendix M**.

12.2 Summary of Environmental Summon and Successful Prosecution

12.2.1 No notification of summon or successful environmental prosecution was received in this reporting period. The Cumulative Log for environmental summon and successful prosecution since the commencement of the Project is presented in **Appendix M**.

13. FUTURE KEY ISSUES

13.1 Major Site Activities and Key Environmental Issues in Coming Months

13.1.1 Tentative construction programmes for the next three months are provided in **Appendix O**.

13.1.2 Major site activities to be undertaken for the next reporting period include:

- Tree Transplant
- Predrilling Works (Land & Nullah)
- Sheet Piling Cofferdam Construction
- Pre-bored Socket H-pile Construction
- Condition survey (Land)
- Sediment Removal
- Erect temporary platform in nullah

13.1.3 Key environmental issues in the coming month (March 2024) include:

- Stockpile accumulation on-site;
- Water spraying for dust generating activities and on haul road;
- Wastewater and runoff discharge from site;
- Coverage of open manholes to avoid dirty runoff to drainage system;
- Noise from operation of the equipment, especially for excavation works and machinery onsite;
- Accumulation of general refuse and construction waste on-site;
- Proper storage of construction materials on-site; and
- Storage of chemicals/fuel and chemical waste/waste oil on-site.

14. CONCLUSIONS AND RECOMMENDATIONS

14.1 Conclusions

14.1.1 This is the 3rd Monthly EM&A Report which presents the EM&A works undertaken in Yuen Long Barrage and Nullah Improvement Schemes during the reporting month (February 2024) in accordance with the Updated EM&A Manual and the requirements under the EP-604/2022 and EP-578/2020 respectively.

Air Quality Monitoring for Construction Dust

14.1.2 No Action/Limit Level exceedance was recorded for 1-hour TSP monitoring.

Air Quality Monitoring for Odour Patrol

14.1.3 No Action/Limit Level exceedance was recorded as no monitoring was conducted during the reporting period.

Construction Noise Monitoring

14.1.4 No Action Level exceedance was recorded for documented complaints.

14.1.5 No project-related Limit Level exceedance was recorded due to the monitoring results.

Water Quality Monitoring

14.1.6 Three (3) Action Level and Forty (40) Limit Level exceedances were recorded in the reporting period. None of these exceedances were project-related.

Ecological Monitoring

14.1.7 No exceedance was recorded for ecological monitoring.

Fisheries

14.1.8 No fisheries monitoring is required according to the Updated EM&A Manual.

Cultural Heritage

14.1.9 No exceedance for cultural heritage monitoring was recorded.

Landscape and Visual

14.1.10 No non-conformity for landscape and visual was recorded during site inspection.

Site Audit

14.1.11 Four (4) ET joint weekly environmental site inspections were conducted on 6, 15, 20, and 27 February 2024 with the representative of Engineer and the Contractor, whereas joint site inspection with the representative of IEC was conducted on 6 February 2024. The environmental deficiency observed during the reporting month are shown in **Appendix K**.

Complaint, Notification of Summons and Successful Prosecution

14.1.12 No environmental complaint and no notifications of summons and successful prosecutions were received in the reporting month.

14.2 Recommendations

14.2.1 The following recommendations were made to the Contractor for the reporting and following months:

Air Quality Impact

- To regularly apply watering on dry surface should be applied to minimize erosion.
- To water materials before loading/unloading.
- To turn off idle equipment.

Construction Noise

- To provide sufficient noise barriers for noisy PMEs.
- To place compatible noise barrier close to the breaking point for effective noise screening.

Water Quality Impact

- To clear the oil slick and check for any damage of the silt curtain.
- To repair damaged or missing silt curtain.
- To check whether the curtain has been set to the nullah.
- To ensure that the pumping rate of bored pile is sufficient to avoid discharging waste water into the nullah.
- To clear floating refuse between the cofferdam and silt curtain.
- To clear oil slick within and outside cofferdam.
- To control the amount of loading materials in the barge to avoiding spillage.
- To cover stockpile near nullah.
- To remove wastewater and oil in drip tray.
- To remove pond/still water.

Ecology

- To avoid construction process near the nullah for minimizing the impact to the water birds.

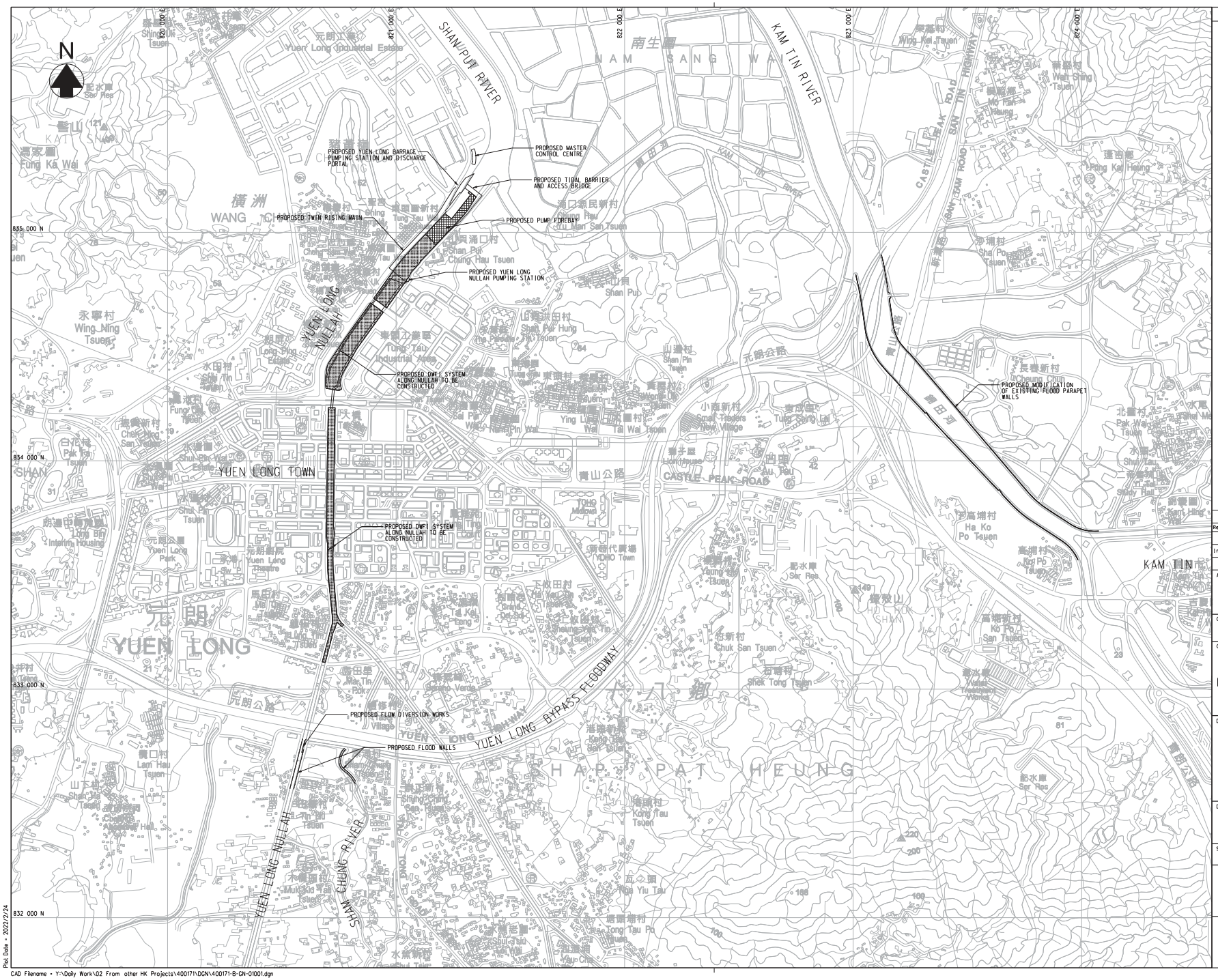
Waste/Chemical Management

- To bund or lock the chemical storage area.
- To clear dripping oil from bored piling machine.
- To clear oil slick on nullah.
- To clear oil on the floor.

Landscape and Visual

- To avoid placing any construction materials in the tree protection zone.

FIGURES



NOTES:

1. ALL LEVELS ARE IN METRES ABOVE HONG KONG PRINCIPAL DATUM.
2. ALL DEMNSIONS ARE IN METRES.
3. GRID LINES ARE HONG KONG GRID 1980.

LEGEND:

PROPOSED NULLAH MODIFICATION WORKS

PROPOSED PUMP FOREBAY

Revision	Date	Description			Initial
-	02/22	ISSUE FOR TENDER			SC
	Designed	Checked	Drawn	Checked	
Initial	YSW	CHT	SZ	SC	
Date	NOV2021	NOV2021	NOV2021	NOV2021	

Approved

Contract no.

DC/2022/03

Contract title

YUEN LONG BARRAGE AND NULLAH IMPROVEMENT SCHEMES

Drawing title

Figure 1.1

LOCATION PLAN

Drawing no.	Revision
400171/B/GN/01001	-

Scale

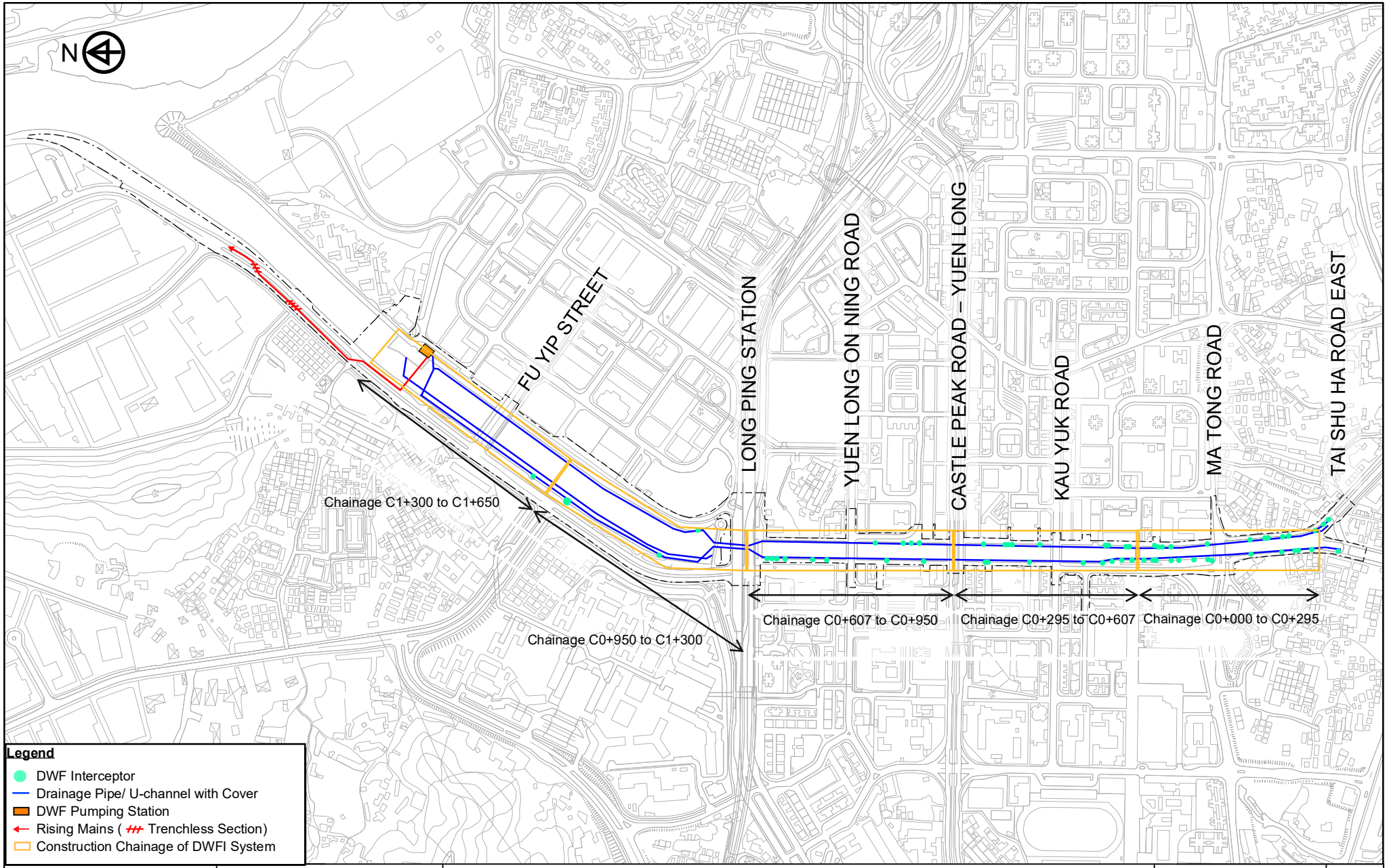
A1 1:7500
A3 1:15000

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date = 2022/2/24

CAD Filename = Y:\Daily Work\02 From other HK Projects\400171\DGN\400171-B-GN-01001.dgn



Drainage Services Department 渠務署

BLACK & VEATCH Building a world of difference.

IMPROVEMENT OF YUEN LONG TOWN NULLAH (TOWN CENTRE SECTION)

GENERAL LAYOUT PLAN

DRAWING NO.	REVISION
Figure 1.2	
SCALE: NOT TO SCALE	DATE:
DESIGNED	CHECKED

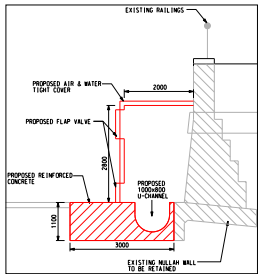
Kung Um Road 13,100 m³/day

West Nullah 3,600 m³/day

Town Centre Section 600 m³/day

San Hui Nullah 1,000 m³/day

East Nullah 16,300 m³/day



DWF Interceptor

17,900 m³/day

Proposed DWF Pumping Station

Excess Flow

Existing Low Flow Pumping Station

Shan Pui River

after treatment

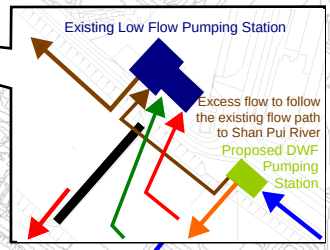
18,000 m³/day

Existing Sewer Manhole at Wang Lok Street

Yuen Long Sewage Treatment Works (YLSTW) for treatment

To Shan Pui River

To YLSTW 18,000 m³/day



East Nullah 16,300 m³/day

ON LOK ROAD

YUEN LONG ON NING ROAD

CASTLE PEAK ROAD

KAU YUK ROAD

MA TONG ROAD

Town Centre Section 600 m³/day

San Hui Nullah 1,000 m³/day

Yuen Long Town Nullah

Kung Um Road 13,100 m³/day

DWF from Long Ping Station to Fu Yip Street will be intercepted and treated

West Nullah 3,600 m³/day

DWF from Town Centre Section and San Hui Nullah will be intercepted and treated

Legend

- Intercepted and Treated DWF
- Intercepted but not Treated DWF
- DWF maintained on the nullah
- Existing Low Flow Pumping Station
- Proposed DWF Pumping Station
- DWF conveyed to YLSTW
- Excess flow to follow the existing flow path to Shan Pui River
- Existing Inflatable Dam

Drainage Services Department 渠務署

BLACK & VEATCH Building a world of difference.

IMPROVEMENT OF YUEN LONG TOWN NULLAH (TOWN CENTRE SECTION)

SCHEMATIC DIAGRAM FOR DRY WEATHER FLOW INTERCEPTION SYSTEM

DRAWING NO. Figure 1.3

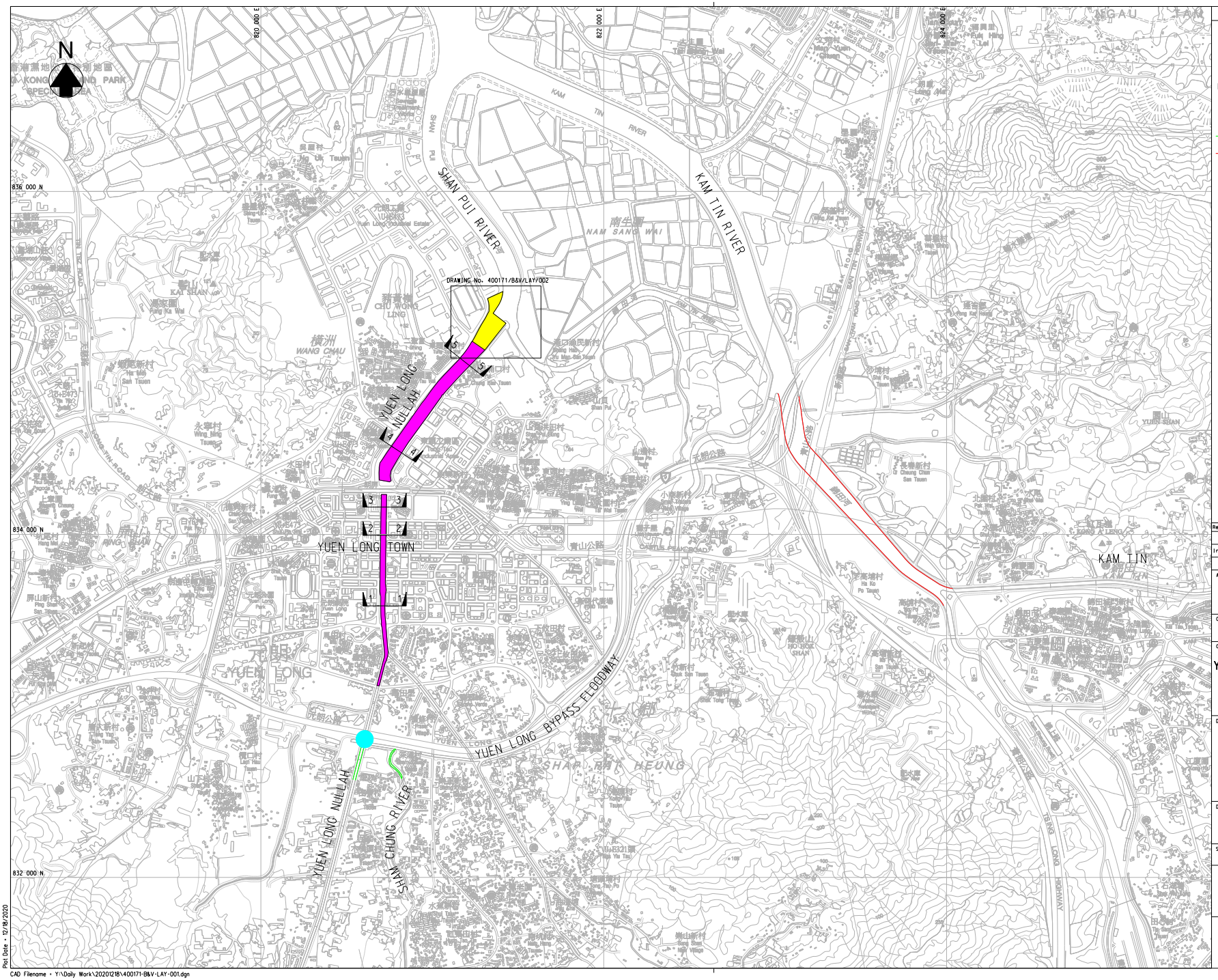
REVISION

SCALE: NOT TO SCALE

DATE:

DESIGNED

CHECKED



NOTE:

1. REFER TO DRAWING NO. 400171/B&V/LAY/501 & 502 FOR SECTIONS OF REVITALISATION WORKS IN YUEN LONG NULLAH

LEGEND:

- CONSTRUCTION OF BARRAGE
- REVITALIZATION OF EXISTING NULLAH
- CONSTRUCTION OF PARAPET WALLS
- MODIFICATION OF EXISTING PARAPET WALLS
- PROPOSED DRAINAGE WORKS

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial	SNG	CKW	SZ	CKW	
Date	FEB2020	FEB2020	FEB2020	FEB2020	

Approved

Contract no.

CE 93/2017 (DS)

Contract title

YUEN LONG BARRAGE SCHEME – INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing title

LOCATION PLAN

Drawing no.

FIGURE 1.4

Revision

–

Scale

A3 1 : 20 000

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT

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博威工程顧問有限公司

Plot Date = 12/18/2020

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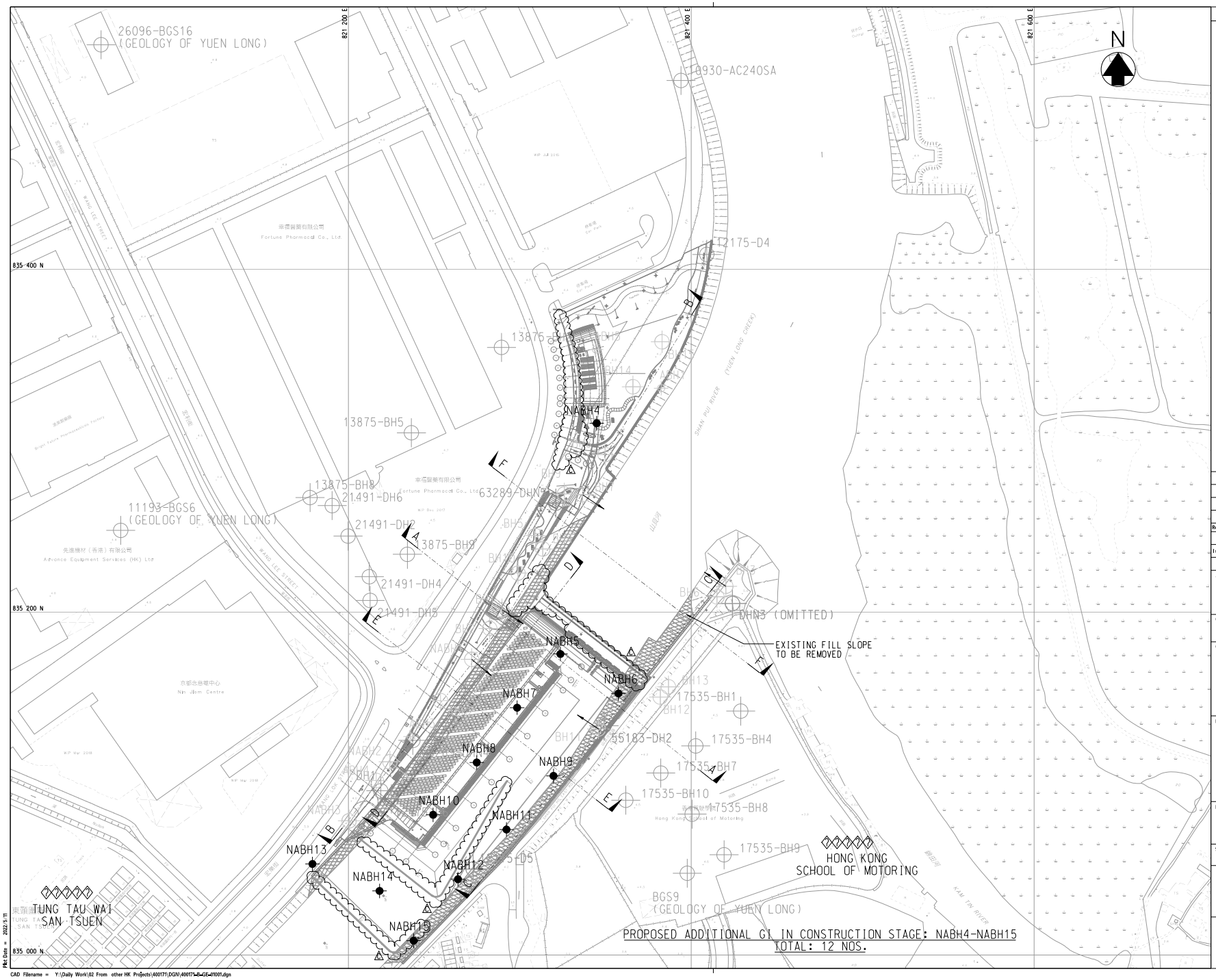

PROPOSED ADDITIONAL GI IN CONSTRUCTION STAGE: NABH4-NABH15
TOTAL: 12 NOS.

LEGEND:

- EXISTING BOREHOLES
- INCLINED BOREHOLES
- PROPOSED NEW ADDITIONAL BOREHOLES IN CONSTRUCTION STAGE
- PROPOSED RETAINING WALL
- FILL SLOPE TO BE REMOVED
- PROPOSED PUMPING FOREBAY PILE CAP
- BACKFILL

Revision	Date	Description	Initial
C	05/22	TENDER ADDENDUM NO. 3	SC
B	04/22	TENDER ADDENDUM NO. 2	SC
A	03/22	TENDER ADDENDUM NO. 1	SC
-	02/22	ISSUE FOR TENDER	SC

	Designed	Checked	Drawn	Checked
Initial	TA	LKM	SZ	SC
Date	JAN2022	JAN2022	JAN2022	JAN2022

Approved

Contract no.
DC/2022/03

Contract title
YUEN LONG BARRAGE AND NULLAH IMPROVEMENT SCHEMES

Drawing title
SITE SPECIFIC GROUND INVESTIGATION LAYOUT & PROPOSED ADDITIONAL GI IN CONSTRUCTION STAGE

Drawing no.
Figure 1.5

Revision
C

Scale
A1 1 : 1000 A3 1 : 2000

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date = 2022.5.11

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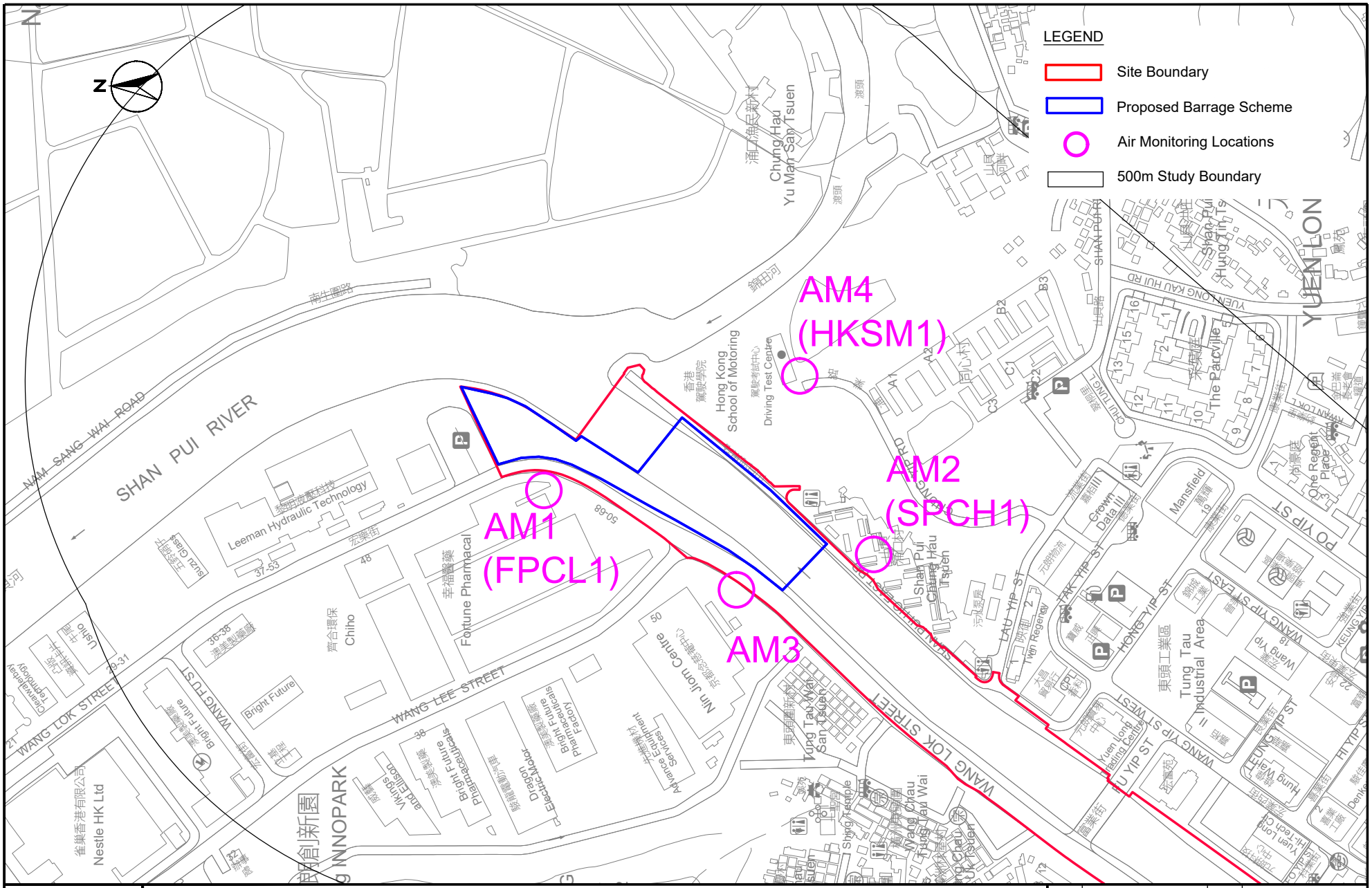
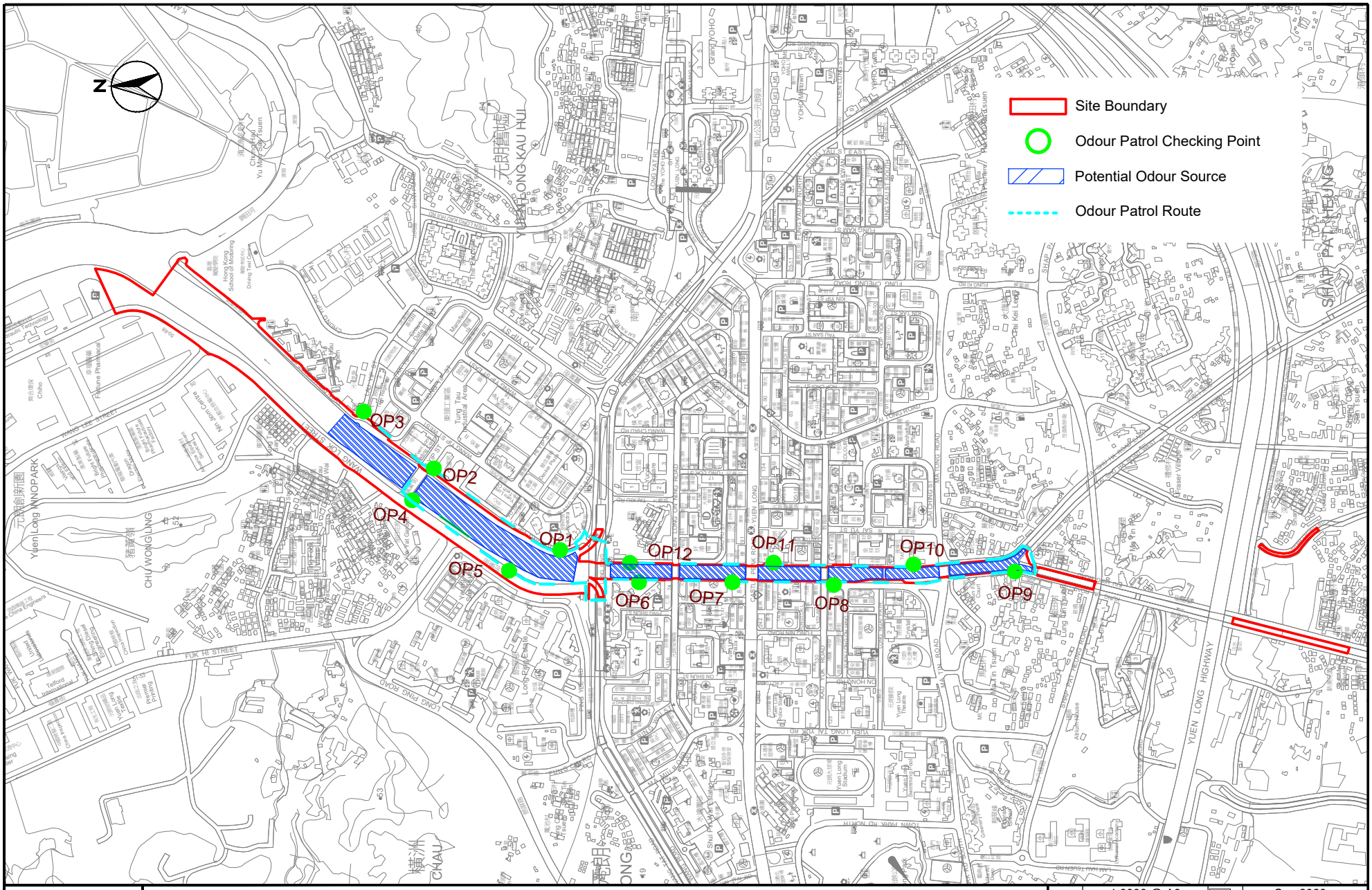


CINOTECH
Cinotech Consultants Limited

Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes

Air Quality Monitoring Locations

SCALE	1:4000 @ A3	DATE	Oct 2023
CHECK	BC	DRAWN	WY
JOB No.	MA23101	DRAWING No.	2
		REV	-

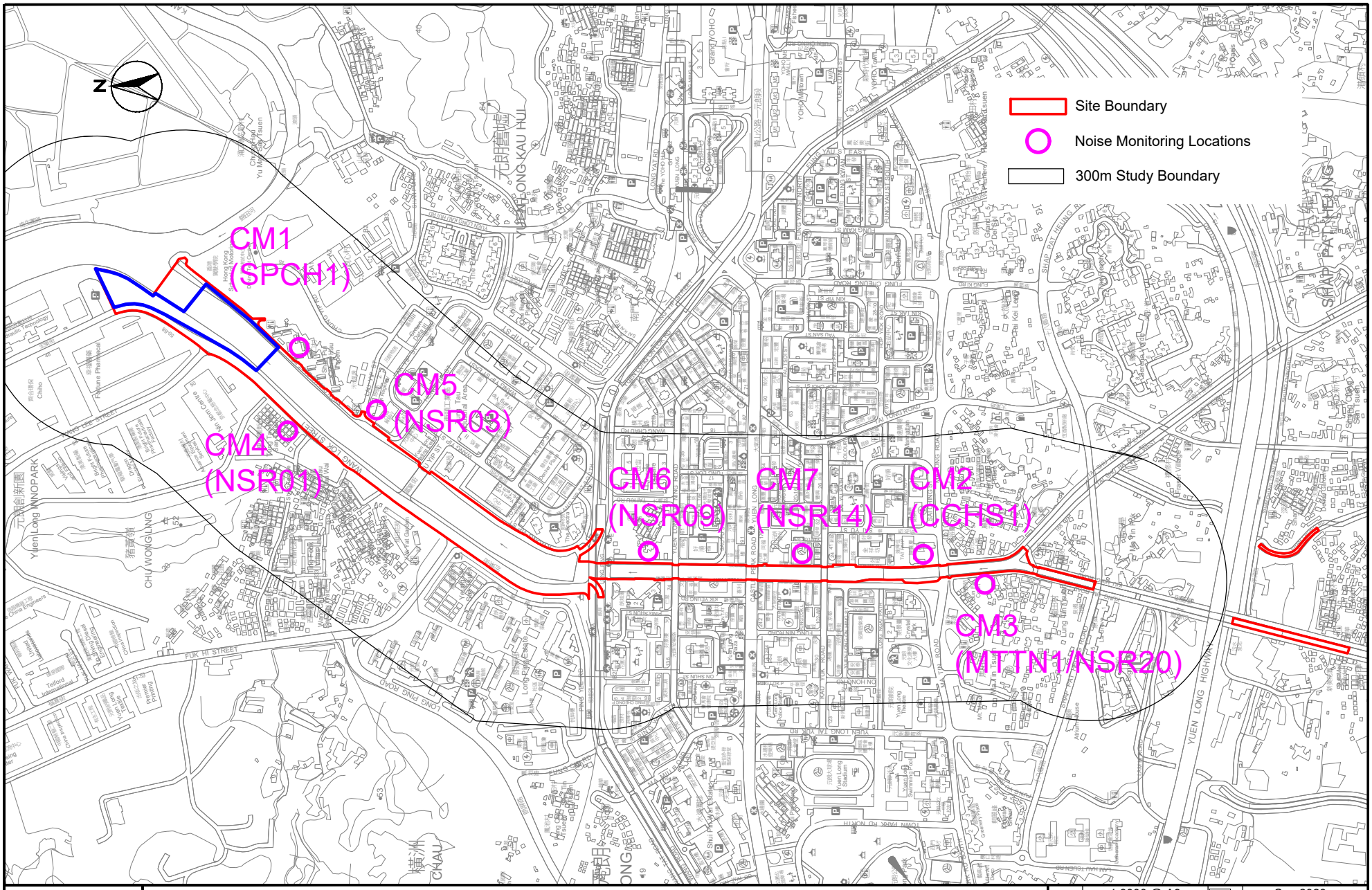


CINOTECH
Cinotech Consultants Limited

Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes

Odour Patrol Route

SCALE	1:8000 @ A3	DATE	Sep 2023
CHECK	BC	DRAWN	CF
JOB No.	MA23101	DRAWING No.	3
		REV	-

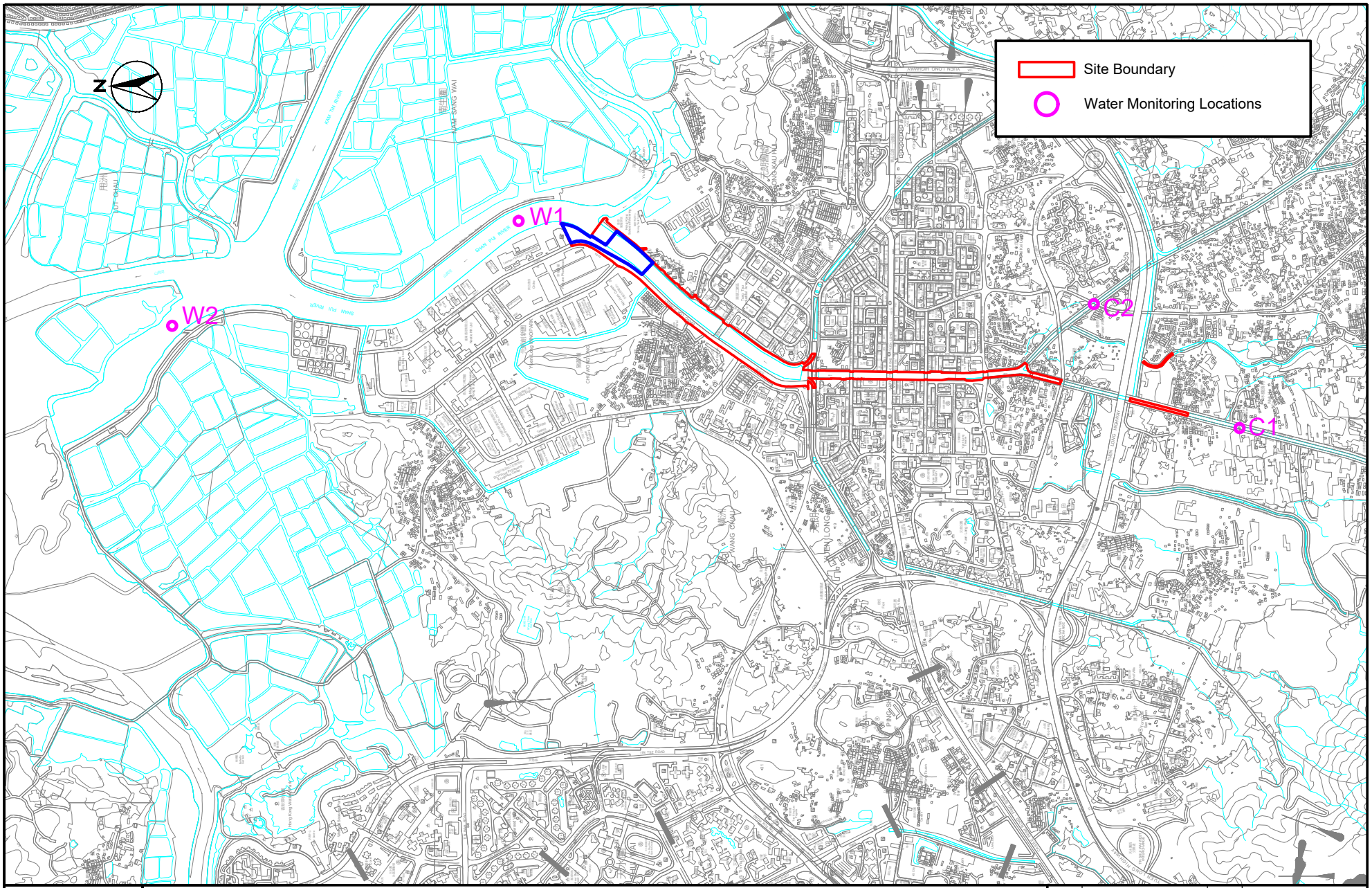


CINOTECH
Cinotech Consultants Limited

Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes

Noise Monitoring Stations

SCALE	1:8000 @ A3	DATE	Sep 2023
CHECK	BC	DRAWN	WY
JOB No.	MA23101	DRAWING No.	4
		REV	-



CINOTECH
Cinotech Consultants Limited

Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Locations

SCALE	1:16000 @ A3	DATE	Sep 2023
CHECK	BC	DRAWN	WY
JOB No.	MA23101	DRAWING No. 5	REV -

APPENDIX A
ACTION AND LIMIT LEVELS

Appendix A – Action and Limit Levels

Air Quality

1-hr TSP

Monitoring Stations	Action Level, µg/m^3	Limit Level, µg/m^3
AM1	263	500
AM2	268	
AM3	288	
AM4	286	

Odour Patrol

Monitoring Stations	Action Level	Limit Level
ALL	• Odour intensity ≥ baseline odour intensity recorded on 1 patrol; or • One documented complaint received	• Odour intensity ≥ baseline odour intensity recorded on 2 consecutive patrols (a)

Note:

(a) Limit level is triggered even if exceedance of odour intensity is recorded at a different Odour Patrol Checking Point on the second patrol.

Noise

Monitoring Stations	Action Level	Limit Level
M-N3	• When one documented complaint is received	• 75 dB(A) for residential • 70dB(A) for schools • 65 dB(A) during school examination periods

Water Quality

Parameters	Action Level	Limit Level
pH	N/A	<6.5 or >8.5
DO in mg/L	**Station W1**	
	≤ 2.1	≤ 2.1
	Station W2 (Ebb Tide) (Impact)	
	≤ 3.3	≤ 3.3
Turbidity in NTU	**Station W1**	
	≥ 42.6 or 120% of upstream control station.	≥ 45.5 or 130% of upstream control station.
	Station W2 (Ebb Tide) (Impact)	
	≥ 97.2 or 120% of upstream control station.	≥ 111.3 or 130% of upstream control station.
SS in mg/L	**Station W1**	
	≥ 44.2 or 120% of upstream control station.	≥ 44.4 or 130% of upstream control station.
	Station W2 (Ebb Tide) (Impact)	
	≥ 126.3 or 120% of upstream control station.	≥ 132.9 or 130% of upstream control station.

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. Average concentrations with duplicates have been adopted in the calculation.
4. The calculated action/limit levels of DO are the same after correcting to the nearest 0.1mg/L.

Ecology

Event	Action Level	Limit Level
Abundance of Waterbirds in the Concerned River	Significant decrease when compared to the baseline data in the same month for one time	Significant decrease when compared to the baseline data in the same month three times in a row
Species Diversity of Waterbirds in the Concerned River		
Abundance of Avifauna Species of Conservation Importance in the Concerned River		
Species Diversity of Avifauna Species of Conservation Importance in the Concerned River		

Alert, Alarm, Action Levels for Cultural Heritage Monitoring

Parameter	Alert Level	Alarm Level	Action Level
Vibration	ppv: 5 mm/s	ppv: 6 mm/s	ppv: 7.5 mm/s Maximum Allowable Vibration Amplitude: 0.1mm

APPENDIX B
COPIES OF CALIBRATION CERTIFICATES

TISCH Environmental

RECALIBRATION DUE DATE:
January 15, 2025

Certificate of Calibration

Calibration Certification Information					
Cal. Date:	January 15, 2024	**Rootsmeter S/N:** 438320	**Ta:** 294	°K	
Operator:	Jim Tisch		**Pa:** 755.4	mm Hg	
Calibration Model #:	TE-5025A	**Calibrator S/N:** **3864**			

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4380	3.3	2.00
2	3	4	1	1.0270	6.4	4.00
3	5	6	1	0.9180	8.0	5.00
4	7	8	1	0.8750	8.9	5.50
5	9	10	1	0.7230	12.9	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H(Ta/Pa)}$ (y-axis)
1.0031	0.6975	1.4195	0.9956	0.6924	0.8823
0.9989	0.9727	2.0075	0.9915	0.9655	1.2477
0.9968	1.0858	2.2444	0.9894	1.0778	1.3950
0.9956	1.1378	2.3539	0.9882	1.1294	1.4631
0.9903	1.3697	2.8390	0.9829	1.3595	1.7645
QSTD	**m=**	**2.11196**	**QA**	**m=**	**1.32248**
	b=	**-0.05043**		**b=**	**-0.03134**
	r=	**0.99998**		**r=**	**0.99998**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H(Ta/Pa)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key
ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric pressure (mm Hg)
b: intercept
m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/03/0045

Project No. AM3 - Yau Lai Estate, Bik Lai House

Date: 12-Dec-23 Next Due Date: 12-Feb-24 Operator: SK

Equipment No.: A-01-03 Model No.: GS2310 Serial No. 10379

Ambient Condition			
Temperature, Ta (K)	297.7	Pressure, Pa (mmHg)	762.2

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05928	Intercept, bc	-0.03491
Last Calibration Date:	16-Jan-23	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	16-Jan-24	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

.

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	12.9	3.60	61.30	8.5	2.92
2	10.6	3.26	55.62	6.5	2.55
3	7.8	2.80	47.79	4.6	2.15
4	5.0	2.24	38.38	2.9	1.71
5	3.0	1.74	29.86	1.7	1.31

By Linear Regression of Y on X

Slope , mw = **0.0507** **Intercept, bw =** **-0.2329**

Correlation coefficient* = **0.9983**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **3.77**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 12-Dec-23

Checked by: Henry Leung Signature: Date: 12-Dec-23

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/03/0046

Project No. AM3 - Yau Lai Estate, Bik Lai House

Date: 14-Feb-24 Next Due Date: 14-Apr-24 Operator: SK

Equipment No.: A-01-03 Model No.: GS2310 Serial No. 10379

Ambient Condition			
Temperature, Ta (K)	294	Pressure, Pa (mmHg)	765.2

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05976	Intercept, bc	-0.05018
Last Calibration Date:	15-Jan-24	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	14-Jan-25	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

.

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	12.8	3.61	61.32	8.4	2.93
2	10.5	3.27	55.62	6.4	2.56
3	7.7	2.80	47.75	4.5	2.14
4	4.9	2.24	38.26	2.8	1.69
5	3.0	1.75	30.12	1.6	1.28

By Linear Regression of Y on X

Slope , mw = **0.0520** **Intercept, bw =** **-0.3053**

Correlation coefficient* = **0.9987**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **3.65**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 14-Feb-24

Checked by: Henry Leung Signature: Date: 14-Feb-24

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 30-Jan-24

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 30-Mar-24

Model No.: LD-5R

Serial No.: 972777

Equipment No.: SA-01-06 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 645

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 645

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	76.0	140.0
2	66.0	121.0
3	55.0	101.0
Average	**65.7**	**120.7**

By Linear Regression of Y on X

Slope , mw = **1.8565** **Intercept, bw =** **-1.2432**

Correlation coefficient* = **0.9999**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	120.7
Particaulate Concentration by Dust Meter (µg/m^3)	65.7
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.8**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 30-Jan-24

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 30-Mar-24

Model No.: LD-5R

Serial No.: 972781

Equipment No.: SA-01-10 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 734 CPM

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 734 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	82.0	134.0
2	72.0	116.0
3	62.0	100.0
Average	**72.0**	**116.7**

By Linear Regression of Y on X

Slope , mw = **1.7000** **Intercept, bw =** **-5.7333**

Correlation coefficient* = **0.9994**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	116.7
Particaulate Concentration by Dust Meter (µg/m^3)	72.0
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.6**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____ Approved by: _____

Technical Officer (Wong Shing Kwai) Project Manager (Henry Leung)

Certificate of Calibration - Wind Monitoring Station

Description:	AM1 - Fortune Pharmacal Co. Ltd
Model No.:	C-OC-9200-wind
Serial No.:	OC20210316224103
Equipment No.:	A-06-05
Date of Calibration	8-Sep-2023
Next Due Date	8-Mar-2024

1. Performance check of Wind Speed

Wind Speed, m/s		Difference D (m/s)
Wind Speed Reading (V1)	Anemometer Value (V2)	D = V1 – V2
0.0	0.0	0.0
1.3	1.4	-0.1
2.5	2.5	0.0
3.5	3.6	-0.1

2. Performance check of Wind Direction

Wind Direction (°)		Difference D (°)
Wind Direction Reading (W1)	Marine Compass Value (W2)	D = W1 - W2
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

Test Specification:

1. Performance Wind Speed Test - The wind meter was on-site calibrated against the anemometer

2. Performance Wind Direction Test - The wind meter was on-site calibrated against the marine compass at four direction

Calibrated by: _____ Wong Shing Kwai

Approved by: _____ Henry Leung

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00393 Issue Date : 02 Aug 2023
Application No. : HP00275

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Sound Level Calibrator.

Equipment No.: : N-13-01

Manufacturer: : SOUNDTEK

Other information :

Model No.	ST-120
Serial No.	181001608

Date Received : 28 Jul 2023

Test Period : 31 Jul 2023 to 31 Jul 2023

Test Requested : Performance checking for Sound Level Calibrator

Test Method : The Sound Level Meter and Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00393 Issue Date : 02 Aug 2023
Application No. : HP00275

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Description	Sound Meter
Manufacturer	SVANTEK
Model No.	SVAN 977
Serial No.	92677
Microphone No.	10352
Equipment No.	N-14-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.1	+ 0.1	± 0.3
114.0	114.2	+ 0.2	± 0.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00371 Issue Date : 02 May 2023
Application No. : HP00245

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-01

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	570183
Microphone No.	590073

Date Received : 02 May 2023

Test Period : 02 May 2023 to 02 May 2023

Test Requested : Performance checking for Sound Level Meter

Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00371 Issue Date : 02 May 2023
Application No. : HP00245

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.0	± 0.0	± 1.5
114.0	114.0	± 0.0	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
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18 On Lai Street, Shatin
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Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00372 Issue Date : 02 May 2023
Application No. : HP00246

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-03

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	570188
Microphone No.	570608

Date Received : 02 May 2023

Test Period : 02 May 2023 to 02 May 2023

Test Requested : Performance checking for Sound Level Meter

Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00372 Issue Date : 02 May 2023
Application No. : HP00246

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.1	+ 0.1	± 1.5
114.0	114.2	+ 0.2	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00364 Issue Date : 03 Apr 2023
Application No. : HP00240

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-05

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	580287
Microphone No.	570610

Date Received : 03 Apr 2023

Test Period : 03 Apr 2023 to 03 Apr 2023

Test Requested : Performance checking for Sound Level Meter

Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00364 Issue Date : 03 Apr 2023
Application No. : HP00240

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.2	+ 0.2	± 1.5
114.0	114.2	+ 0.2	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00523 Issue Date : 9 Jan 2024
Application No. : HP00398

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be YSI EXO1 Multi-parameter Sonde.

Equipment No.: : SW-08-139

Manufacturer: : YSI Incorporated, a Xylem brand

Other information :

Description:	Serial No.
- EXO Optical DO Sensor, Ti	17B102226
- EXO conductivity/Temperature Sensor, Ti	17B102022
- EXO Turbidity Sensor, Ti	17B102269
- EXO pH Sensor Assembly, Guarded, Ti	17B100260

Date Received : 2 Jan 2024

Test Period : 3 Jan 2024 to 9 Jan 2024

Test Requested : Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.) and Turbidity

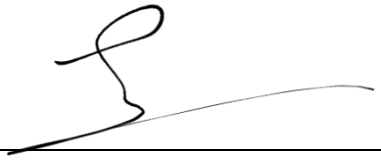
Test Method : According to manufacturer instruction manual, APHA 23rd Ed 4500-O H

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The results relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED



Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00523 Issue Date : 9 Jan 2024
Application No. : HP00398

Certificate of Calibration

Test Result :

Conductivity performance checking

Expected Reading (mS/cm)	Instrument Readings (mS/cm)	Acceptance Criteria	Comment
146.9	147.6	140-154	Pass
1412	1406	1341-1483	Pass
6667	6712	6334-7000	Pass
12890	12960	12246-13535	Pass
58670	58890	55737-61604	Pass

Temperature performance checking

Expected Reading (℃)	Instrument Readings (℃)	Acceptance Criteria	Comment
10.0	10.295	10.0 ± 2.0	Pass
25.0	25.470	25.0 ± 2.0	Pass
35.0	35.323	35.0 ± 2.0	Pass

pH performance checking

Expected Reading (pH unit)	Instrument Readings (pH unit)	Acceptance Criteria	Comment
4.01	4.00	4.01 ± 0.2	Pass
7.00	7.01	7.00 ± 0.2	Pass
10.01	10.03	10.01 ± 0.2	Pass

D.O. performance checking

Expected Reading	Instrument Readings (mg/L)	Acceptance Criteria	Comment
0.00	0.69	--	--
8.26	8.18	±0.20	Pass

Turbidity performance checking

Expected Reading(NTU)	Instrument Readings (NTU)	Acceptance Criteria	Comment
0	0.06	--	--
5	4.95	4.5-5.5	Pass
50	48.96	45-55	Pass
100	98.50	90-110	Pass

Note : "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00565 Issue Date : 9 Feb 2024
Application No. : HP00435

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be YSI EXO1 Multi-parameter Sonde.

Equipment No.: : SW-08-30

Manufacturer: : YSI Incorporated, a Xylem brand

Other information :

Description:	Serial No.
- EXO Optical DO Sensor, Ti	16J100947
- EXO conductivity/Temperature Sensor, Ti	16H100189
- EXO Turbidity Sensor, Ti	16J101107
- EXO pH Sensor Assembly, Guarded, Ti	17A105261

Date Received : 2 Feb 2024

Test Period : 2 Feb 2024 to 8 Feb 2024

Test Requested : Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.) and Turbidity

Test Method : According to manufacturer instruction manual, APHA 23rd Ed 4500-O G

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The results relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00565 Issue Date : 9 Feb 2024
Application No. : HP00435

Certificate of Calibration

Test Result :

Conductivity performance checking

Expected Reading (mS/cm)	Instrument Readings (mS/cm)	Acceptance Criteria	Comment
146.9	149.2	140-154	Pass
1412	1395	1341-1483	Pass
6667	6725	6334-7000	Pass
12890	12860	12246-13535	Pass
58670	58825	55737-61604	Pass

Temperature performance checking

Expected Reading (℃)	Instrument Readings (℃)	Acceptance Criteria	Comment
10.0	10.320	10.0 ± 2.0	Pass
25.0	25.235	25.0 ± 2.0	Pass
35.0	34.936	35.0 ± 2.0	Pass

pH performance checking

Expected Reading (pH unit)	Instrument Readings (pH unit)	Acceptance Criteria	Comment
4.01	4.00	4.01 ± 0.2	Pass
7.00	7.01	7.00 ± 0.2	Pass
10.01	9.99	10.01 ± 0.2	Pass

D.O. performance checking

Expected Reading	Instrument Readings (mg/L)	Acceptance Criteria	Comment
0.00	0.68	--	--
8.26	8.12	±0.20	Pass

Turbidity performance checking

Expected Reading(NTU)	Instrument Readings (NTU)	Acceptance Criteria	Comment
0	0.05	--	--
5	5.15	4.5-5.5	Pass
50	50.28	45-55	Pass
100	102.65	90-110	Pass

Note : "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

- End of report -

APPENDIX C
WEATHER INFORMATION

Appendix C - Weather Conditions During Impact Monitoring Period

February 2024				
Table I				
Day	Mean Pressure (hPa)	Air Temperature Mean(°C)	Mean Relative Humidity (%)	Total Rainfall (mm)
01-Feb-24	1018.0	21.1	92.0	0.2
02-Feb-24	1017.6	21.7	88.0	Trace
03-Feb-24	1018.8	19.6	85.0	Trace
04-Feb-24	1017.3	19.8	92.0	Trace
05-Feb-24	1018.8	20.4	86.0	Trace
06-Feb-24	1019.6	19.1	86.0	0.6
07-Feb-24	1017.3	16.8	90.0	Trace
08-Feb-24	1018.8	13.0	84.0	2.2
09-Feb-24	1023.5	12.7	77.0	0.6
10-Feb-24	1026.5	14.4	72.0	0.5
11-Feb-24	1026.9	17.4	60.0	0.0
12-Feb-24	1025.8	18.1	55.0	0.0
13-Feb-24	1023.2	19.2	71.0	0.0
14-Feb-24	1020.2	21.0	78.0	0.0
15-Feb-24	1019.0	22.3	70.0	0.0
16-Feb-24	1019.7	20.4	77.0	Trace
17-Feb-24	1017.4	19.5	82.0	Trace
18-Feb-24	1015.2	21.6	87.0	0.0
19-Feb-24	1015.1	22.7	88.0	0.0
20-Feb-24	1014.7	23.9	87.0	0.0
21-Feb-24	1014.5	24.5	82.0	0.0
22-Feb-24	1016.6	23.6	87.0	0.0
23-Feb-24	1019.9	20.4	85.0	Trace
24-Feb-24	1021.1	18.8	73.0	Trace
25-Feb-24	1020.7	17.1	71.0	0.0
26-Feb-24	1021.1	18.2	76.0	Trace
27-Feb-24	1020.9	17.6	73.0	Trace
28-Feb-24	1018.0	18.3	85.0	Trace
29-Feb-24	1017.6	18.7	85.0	Trace

(Reporting Month: February 2024)

Remarks:

* Meterological data from Hong Kong Observatory Manned Weather Station was adopted.

Source - Hong Kong Observatory

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
1 Feb 2024	12:00 AM	W	1.3
1 Feb 2024	1:00 AM	SSE	0.7
1 Feb 2024	2:00 AM	SE	0.4
1 Feb 2024	3:00 AM	SSE	0.7
1 Feb 2024	4:00 AM	SSE	0.4
1 Feb 2024	5:00 AM	SSW	0.8
1 Feb 2024	6:00 AM	ESE	0.3
1 Feb 2024	7:00 AM	SSE	0.4
1 Feb 2024	8:00 AM	SE	0.6
1 Feb 2024	9:00 AM	SSE	0.5
1 Feb 2024	10:00 AM	SSE	0.8
1 Feb 2024	11:00 AM	ESE	1.5
1 Feb 2024	12:00 PM	ESE	1.5
1 Feb 2024	1:00 PM	E	1.6
1 Feb 2024	2:00 PM	SSE	1.7
1 Feb 2024	3:00 PM	SE	1.6
1 Feb 2024	4:00 PM	SSE	1.3
1 Feb 2024	5:00 PM	SE	0.9
1 Feb 2024	6:00 PM	SE	0.5
1 Feb 2024	7:00 PM	SSE	0.4
1 Feb 2024	8:00 PM	SSE	0.8
1 Feb 2024	9:00 PM	SE	0.8
1 Feb 2024	10:00 PM	SE	0.6
1 Feb 2024	11:00 PM	SW	0.5
2 Feb 2024	12:00 AM	SE	0.7
2 Feb 2024	1:00 AM	SSE	0.4
2 Feb 2024	2:00 AM	S	1.0
2 Feb 2024	3:00 AM	S	0.4
2 Feb 2024	4:00 AM	SSE	0.6
2 Feb 2024	5:00 AM	SSE	0.6
2 Feb 2024	6:00 AM	SSE	0.7
2 Feb 2024	7:00 AM	SSE	0.7
2 Feb 2024	8:00 AM	SSE	0.3
2 Feb 2024	9:00 AM	ESE	0.6
2 Feb 2024	10:00 AM	SE	0.8
2 Feb 2024	11:00 AM	S	1.3
2 Feb 2024	12:00 PM	SW	0.9
2 Feb 2024	1:00 PM	SW	1.2
2 Feb 2024	2:00 PM	SW	1.7
2 Feb 2024	3:00 PM	SW	1.7
2 Feb 2024	4:00 PM	W	2.6
2 Feb 2024	5:00 PM	W	2.9
2 Feb 2024	6:00 PM	W	2.3
2 Feb 2024	7:00 PM	WSW	1.3
2 Feb 2024	8:00 PM	SSW	1.2
2 Feb 2024	9:00 PM	WSW	2.2
2 Feb 2024	10:00 PM	WNW	2.4
2 Feb 2024	11:00 PM	W	2.2
3 Feb 2024	12:00 AM	WSW	1.1
3 Feb 2024	1:00 AM	SW	1.8
3 Feb 2024	2:00 AM	SW	1.7
3 Feb 2024	3:00 AM	S	1.1
3 Feb 2024	4:00 AM	S	0.7
3 Feb 2024	5:00 AM	S	0.7
3 Feb 2024	6:00 AM	SSW	1.1

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
3 Feb 2024	7:00 AM	S	0.9
3 Feb 2024	8:00 AM	S	0.4
3 Feb 2024	9:00 AM	S	1.1
3 Feb 2024	10:00 AM	SSE	1.0
3 Feb 2024	11:00 AM	SE	1.3
3 Feb 2024	12:00 PM	SSW	1.6
3 Feb 2024	1:00 PM	SSE	1.4
3 Feb 2024	2:00 PM	ESE	1.1
3 Feb 2024	3:00 PM	ESE	1.6
3 Feb 2024	4:00 PM	ESE	1.4
3 Feb 2024	5:00 PM	SSE	1.1
3 Feb 2024	6:00 PM	SSE	1.0
3 Feb 2024	7:00 PM	SSE	0.5
3 Feb 2024	8:00 PM	W	1.2
3 Feb 2024	9:00 PM	WSW	1.5
3 Feb 2024	10:00 PM	SE	0.6
3 Feb 2024	11:00 PM	SSW	0.8
4 Feb 2024	12:00 AM	WNW	1.4
4 Feb 2024	1:00 AM	SSW	0.6
4 Feb 2024	2:00 AM	S	1.1
4 Feb 2024	3:00 AM	S	1.1
4 Feb 2024	4:00 AM	SSW	1.1
4 Feb 2024	5:00 AM	SSW	0.6
4 Feb 2024	6:00 AM	SSE	0.8
4 Feb 2024	7:00 AM	S	1.6
4 Feb 2024	8:00 AM	WNW	2.0
4 Feb 2024	9:00 AM	SSW	1.0
4 Feb 2024	10:00 AM	SW	1.4
4 Feb 2024	11:00 AM	SSE	1.2
4 Feb 2024	12:00 PM	SSE	1.1
4 Feb 2024	1:00 PM	SE	1.1
4 Feb 2024	2:00 PM	SSE	0.6
4 Feb 2024	3:00 PM	SE	0.8
4 Feb 2024	4:00 PM	E	1.1
4 Feb 2024	5:00 PM	ESE	1.0
4 Feb 2024	6:00 PM	SE	0.8
4 Feb 2024	7:00 PM	SSW	0.8
4 Feb 2024	8:00 PM	SE	0.5
4 Feb 2024	9:00 PM	SSE	0.7
4 Feb 2024	10:00 PM	SE	0.8
4 Feb 2024	11:00 PM	S	1.4
5 Feb 2024	12:00 AM	S	0.8
5 Feb 2024	1:00 AM	S	1.1
5 Feb 2024	2:00 AM	S	0.7
5 Feb 2024	3:00 AM	SSE	0.6
5 Feb 2024	4:00 AM	SSE	0.6
5 Feb 2024	5:00 AM	S	0.8
5 Feb 2024	6:00 AM	S	0.7
5 Feb 2024	7:00 AM	S	1.1
5 Feb 2024	8:00 AM	SSW	1.9
5 Feb 2024	9:00 AM	S	1.3
5 Feb 2024	10:00 AM	SE	0.7
5 Feb 2024	11:00 AM	SE	1.1
5 Feb 2024	12:00 PM	SSE	1.5
5 Feb 2024	1:00 PM	S	0.6

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
5 Feb 2024	2:00 PM	SSW	0.7
5 Feb 2024	3:00 PM	W	1.1
5 Feb 2024	4:00 PM	SSW	1.2
5 Feb 2024	5:00 PM	SSE	0.7
5 Feb 2024	6:00 PM	S	0.9
5 Feb 2024	7:00 PM	SE	0.5
5 Feb 2024	8:00 PM	SSW	0.9
5 Feb 2024	9:00 PM	SSW	0.5
5 Feb 2024	10:00 PM	SSE	0.4
5 Feb 2024	11:00 PM	WNW	0.8
6 Feb 2024	12:00 AM	WSW	0.5
6 Feb 2024	1:00 AM	SSW	1.2
6 Feb 2024	2:00 AM	SW	1.1
6 Feb 2024	3:00 AM	SW	0.7
6 Feb 2024	4:00 AM	S	1.0
6 Feb 2024	5:00 AM	SSW	1.6
6 Feb 2024	6:00 AM	SW	1.4
6 Feb 2024	7:00 AM	SSE	0.7
6 Feb 2024	8:00 AM	SSE	0.6
6 Feb 2024	9:00 AM	S	0.7
6 Feb 2024	10:00 AM	WSW	1.6
6 Feb 2024	11:00 AM	S	1.2
6 Feb 2024	12:00 PM	SW	1.9
6 Feb 2024	1:00 PM	SE	1.8
6 Feb 2024	2:00 PM	SE	1.7
6 Feb 2024	3:00 PM	S	1.4
6 Feb 2024	4:00 PM	W	2.2
6 Feb 2024	5:00 PM	W	2.0
6 Feb 2024	6:00 PM	WNW	1.9
6 Feb 2024	7:00 PM	NW	2.1
6 Feb 2024	8:00 PM	W	1.2
6 Feb 2024	9:00 PM	SSW	0.9
6 Feb 2024	10:00 PM	SSW	1.2
6 Feb 2024	11:00 PM	S	0.9
7 Feb 2024	12:00 AM	SSW	1.2
7 Feb 2024	1:00 AM	SSE	1.1
7 Feb 2024	2:00 AM	S	1.5
7 Feb 2024	3:00 AM	SSW	0.9
7 Feb 2024	4:00 AM	SSW	0.9
7 Feb 2024	5:00 AM	SSE	0.6
7 Feb 2024	6:00 AM	SE	0.8
7 Feb 2024	7:00 AM	SSE	0.9
7 Feb 2024	8:00 AM	SE	0.4
7 Feb 2024	9:00 AM	S	0.5
7 Feb 2024	10:00 AM	SE	0.6
7 Feb 2024	11:00 AM	SE	0.6
7 Feb 2024	12:00 PM	SSE	0.9
7 Feb 2024	1:00 PM	S	0.9
7 Feb 2024	2:00 PM	S	1.5
7 Feb 2024	3:00 PM	S	2.1
7 Feb 2024	4:00 PM	SSE	2.3
7 Feb 2024	5:00 PM	S	2.5
7 Feb 2024	6:00 PM	S	1.8
7 Feb 2024	7:00 PM	SSE	1.9
7 Feb 2024	8:00 PM	SSE	2.3

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
7 Feb 2024	9:00 PM	S	2.1
7 Feb 2024	10:00 PM	S	2.1
7 Feb 2024	11:00 PM	S	2.2
8 Feb 2024	12:00 AM	SW	2.3
8 Feb 2024	1:00 AM	S	2.5
8 Feb 2024	2:00 AM	S	2.2
8 Feb 2024	3:00 AM	SSW	2.6
8 Feb 2024	4:00 AM	S	1.7
8 Feb 2024	5:00 AM	S	2.3
8 Feb 2024	6:00 AM	SSW	2.3
8 Feb 2024	7:00 AM	SSW	1.7
8 Feb 2024	8:00 AM	S	1.7
8 Feb 2024	9:00 AM	SSW	1.9
8 Feb 2024	10:00 AM	SSW	1.8
8 Feb 2024	11:00 AM	SSW	1.6
8 Feb 2024	12:00 PM	S	2.0
8 Feb 2024	1:00 PM	SSW	2.0
8 Feb 2024	2:00 PM	SSW	2.0
8 Feb 2024	3:00 PM	SSE	1.8
8 Feb 2024	4:00 PM	S	2.0
8 Feb 2024	5:00 PM	S	1.7
8 Feb 2024	6:00 PM	SSW	1.7
8 Feb 2024	7:00 PM	SSW	2.3
8 Feb 2024	8:00 PM	SSW	2.1
8 Feb 2024	9:00 PM	S	2.2
8 Feb 2024	10:00 PM	SSW	2.6
8 Feb 2024	11:00 PM	S	2.1
9 Feb 2024	12:00 AM	SSW	2.2
9 Feb 2024	1:00 AM	S	2.2
9 Feb 2024	2:00 AM	SSW	2.2
9 Feb 2024	3:00 AM	S	2.1
9 Feb 2024	4:00 AM	S	2.0
9 Feb 2024	5:00 AM	SSW	2.2
9 Feb 2024	6:00 AM	S	2.1
9 Feb 2024	7:00 AM	SSW	2.4
9 Feb 2024	8:00 AM	SW	2.3
9 Feb 2024	9:00 AM	SSW	2.4
9 Feb 2024	10:00 AM	SSW	2.3
9 Feb 2024	11:00 AM	SSE	2.1
9 Feb 2024	12:00 PM	S	2.3
9 Feb 2024	1:00 PM	S	2.3
9 Feb 2024	2:00 PM	S	1.7
9 Feb 2024	3:00 PM	SSE	1.8
9 Feb 2024	4:00 PM	S	2.7
9 Feb 2024	5:00 PM	S	2.8
9 Feb 2024	6:00 PM	SSE	2.4
9 Feb 2024	7:00 PM	SSE	1.5
9 Feb 2024	8:00 PM	SSE	2.1
9 Feb 2024	9:00 PM	SSE	1.6
9 Feb 2024	10:00 PM	S	2.3
9 Feb 2024	11:00 PM	SSE	2.4
10 Feb 2024	12:00 AM	S	2.0
10 Feb 2024	1:00 AM	SSE	1.5
10 Feb 2024	2:00 AM	S	1.6
10 Feb 2024	3:00 AM	SSE	2.1

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
10 Feb 2024	4:00 AM	SSE	1.9
10 Feb 2024	5:00 AM	S	1.5
10 Feb 2024	6:00 AM	S	1.7
10 Feb 2024	7:00 AM	S	2.1
10 Feb 2024	8:00 AM	S	2.3
10 Feb 2024	9:00 AM	S	2.3
10 Feb 2024	10:00 AM	SSW	1.9
10 Feb 2024	11:00 AM	S	1.8
10 Feb 2024	12:00 PM	SSW	2.1
10 Feb 2024	1:00 PM	SSW	2.0
10 Feb 2024	2:00 PM	S	1.7
10 Feb 2024	3:00 PM	S	1.2
10 Feb 2024	4:00 PM	S	1.1
10 Feb 2024	5:00 PM	ESE	0.9
10 Feb 2024	6:00 PM	SE	0.2
10 Feb 2024	7:00 PM	SE	0.3
10 Feb 2024	8:00 PM	SE	0.3
10 Feb 2024	9:00 PM	SSE	0.3
10 Feb 2024	10:00 PM	SSE	0.4
10 Feb 2024	11:00 PM	S	0.5
11 Feb 2024	12:00 AM	SSE	0.2
11 Feb 2024	1:00 AM	SSE	0.3
11 Feb 2024	2:00 AM	SSE	0.9
11 Feb 2024	3:00 AM	S	0.2
11 Feb 2024	4:00 AM	ESE	0.2
11 Feb 2024	5:00 AM	SW	0.8
11 Feb 2024	6:00 AM	SSW	0.4
11 Feb 2024	7:00 AM	E	0.2
11 Feb 2024	8:00 AM	SE	0.7
11 Feb 2024	9:00 AM	S	1.6
11 Feb 2024	10:00 AM	SSE	2.0
11 Feb 2024	11:00 AM	S	2.0
11 Feb 2024	12:00 PM	SSE	2.2
11 Feb 2024	1:00 PM	SSE	1.9
11 Feb 2024	2:00 PM	WSW	1.5
11 Feb 2024	3:00 PM	S	0.7
11 Feb 2024	4:00 PM	S	0.8
11 Feb 2024	5:00 PM	ESE	0.6
11 Feb 2024	6:00 PM	S	0.2
11 Feb 2024	7:00 PM	SE	0.2
11 Feb 2024	8:00 PM	SE	0.2
11 Feb 2024	9:00 PM	SE	0.2
11 Feb 2024	10:00 PM	SE	0.2
11 Feb 2024	11:00 PM	SSW	0.2
12 Feb 2024	12:00 AM	SE	0.2
12 Feb 2024	1:00 AM	S	0.2
12 Feb 2024	2:00 AM	SSE	0.3
12 Feb 2024	3:00 AM	S	0.2
12 Feb 2024	4:00 AM	S	0.4
12 Feb 2024	5:00 AM	S	0.4
12 Feb 2024	6:00 AM	SSW	0.2
12 Feb 2024	7:00 AM	S	0.2
12 Feb 2024	8:00 AM	SSE	0.2
12 Feb 2024	9:00 AM	SSW	1.8
12 Feb 2024	10:00 AM	S	1.9

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
12 Feb 2024	11:00 AM	W	2.4
12 Feb 2024	12:00 PM	NW	2.4
12 Feb 2024	1:00 PM	SSW	2.8
12 Feb 2024	2:00 PM	ESE	1.8
12 Feb 2024	3:00 PM	ESE	2.0
12 Feb 2024	4:00 PM	SE	1.5
12 Feb 2024	5:00 PM	SSW	1.4
12 Feb 2024	6:00 PM	S	0.8
12 Feb 2024	7:00 PM	SSW	0.5
12 Feb 2024	8:00 PM	SSW	0.7
12 Feb 2024	9:00 PM	WSW	2.0
12 Feb 2024	10:00 PM	WSW	1.7
12 Feb 2024	11:00 PM	S	0.8
13 Feb 2024	12:00 AM	SSE	0.7
13 Feb 2024	1:00 AM	SSW	0.6
13 Feb 2024	2:00 AM	S	0.7
13 Feb 2024	3:00 AM	S	0.2
13 Feb 2024	4:00 AM	S	0.2
13 Feb 2024	5:00 AM	SSE	0.2
13 Feb 2024	6:00 AM	S	0.3
13 Feb 2024	7:00 AM	SE	0.4
13 Feb 2024	8:00 AM	SSE	1.0
13 Feb 2024	9:00 AM	S	1.1
13 Feb 2024	10:00 AM	S	0.8
13 Feb 2024	11:00 AM	S	0.6
13 Feb 2024	12:00 PM	SSE	1.1
13 Feb 2024	1:00 PM	ESE	1.1
13 Feb 2024	2:00 PM	ESE	1.4
13 Feb 2024	3:00 PM	SSW	1.4
13 Feb 2024	4:00 PM	SW	1.5
13 Feb 2024	5:00 PM	WNW	2.0
13 Feb 2024	6:00 PM	ESE	0.6
13 Feb 2024	7:00 PM	SE	0.4
13 Feb 2024	8:00 PM	ESE	0.2
13 Feb 2024	9:00 PM	SW	0.2
13 Feb 2024	10:00 PM	SSE	0.3
13 Feb 2024	11:00 PM	SE	0.2
14 Feb 2024	12:00 AM	SSW	0.6
14 Feb 2024	1:00 AM	SSE	0.3
14 Feb 2024	2:00 AM	S	0.2
14 Feb 2024	3:00 AM	S	0.2
14 Feb 2024	4:00 AM	S	0.4
14 Feb 2024	5:00 AM	SSE	0.3
14 Feb 2024	6:00 AM	SSE	0.4
14 Feb 2024	7:00 AM	ESE	0.2
14 Feb 2024	8:00 AM	SSW	0.9
14 Feb 2024	9:00 AM	S	1.3
14 Feb 2024	10:00 AM	SSW	1.2
14 Feb 2024	11:00 AM	SSE	0.6
14 Feb 2024	12:00 PM	SE	0.7
14 Feb 2024	1:00 PM	SE	1.9
14 Feb 2024	2:00 PM	SE	1.1
14 Feb 2024	3:00 PM	WSW	1.4
14 Feb 2024	4:00 PM	S	1.0
14 Feb 2024	5:00 PM	SSW	0.8

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
14 Feb 2024	6:00 PM	S	0.7
14 Feb 2024	7:00 PM	SSE	0.5
14 Feb 2024	8:00 PM	SE	0.3
14 Feb 2024	9:00 PM	S	0.2
14 Feb 2024	10:00 PM	S	0.2
14 Feb 2024	11:00 PM	S	0.2
15 Feb 2024	12:00 AM	SSW	0.4
15 Feb 2024	1:00 AM	SSE	0.3
15 Feb 2024	2:00 AM	S	0.7
15 Feb 2024	3:00 AM	SSE	0.5
15 Feb 2024	4:00 AM	SSE	0.8
15 Feb 2024	5:00 AM	S	0.6
15 Feb 2024	6:00 AM	SSE	0.6
15 Feb 2024	7:00 AM	SSE	0.4
15 Feb 2024	8:00 AM	S	1.0
15 Feb 2024	9:00 AM	S	1.4
15 Feb 2024	10:00 AM	SSW	1.5
15 Feb 2024	11:00 AM	SE	0.7
15 Feb 2024	12:00 PM	SSE	0.8
15 Feb 2024	1:00 PM	SE	1.2
15 Feb 2024	2:00 PM	S	1.1
15 Feb 2024	3:00 PM	SSE	0.8
15 Feb 2024	4:00 PM	SE	1.3
15 Feb 2024	5:00 PM	SSE	0.6
15 Feb 2024	6:00 PM	SE	0.3
15 Feb 2024	7:00 PM	SSE	0.2
15 Feb 2024	8:00 PM	S	0.3
15 Feb 2024	9:00 PM	S	0.4
15 Feb 2024	10:00 PM	SSE	0.4
15 Feb 2024	11:00 PM	SSE	0.3
16 Feb 2024	12:00 AM	ESE	0.2
16 Feb 2024	1:00 AM	SSE	0.4
16 Feb 2024	2:00 AM	SSW	0.7
16 Feb 2024	3:00 AM	S	0.5
16 Feb 2024	4:00 AM	ESE	0.8
16 Feb 2024	5:00 AM	S	1.4
16 Feb 2024	6:00 AM	S	2.2
16 Feb 2024	7:00 AM	S	2.1
16 Feb 2024	8:00 AM	SSE	2.1
16 Feb 2024	9:00 AM	S	2.3
16 Feb 2024	10:00 AM	SSW	1.6
16 Feb 2024	11:00 AM	SSE	1.3
16 Feb 2024	12:00 PM	ESE	2.0
16 Feb 2024	1:00 PM	SE	1.4
16 Feb 2024	2:00 PM	ESE	1.3
16 Feb 2024	3:00 PM	S	1.5
16 Feb 2024	4:00 PM	W	2.5
16 Feb 2024	5:00 PM	WSW	2.2
16 Feb 2024	6:00 PM	W	2.5
16 Feb 2024	7:00 PM	SW	1.8
16 Feb 2024	8:00 PM	SW	1.8
16 Feb 2024	9:00 PM	SW	1.2
16 Feb 2024	10:00 PM	S	0.8
16 Feb 2024	11:00 PM	SW	1.1
17 Feb 2024	12:00 AM	SSW	0.9

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
17 Feb 2024	1:00 AM	SW	0.9
17 Feb 2024	2:00 AM	SW	1.3
17 Feb 2024	3:00 AM	SW	2.0
17 Feb 2024	4:00 AM	W	1.0
17 Feb 2024	5:00 AM	S	0.7
17 Feb 2024	6:00 AM	SSW	1.3
17 Feb 2024	7:00 AM	S	0.7
17 Feb 2024	8:00 AM	S	0.7
17 Feb 2024	9:00 AM	W	2.3
17 Feb 2024	10:00 AM	WSW	2.0
17 Feb 2024	11:00 AM	WSW	2.0
17 Feb 2024	12:00 PM	WSW	1.3
17 Feb 2024	1:00 PM	SSW	1.4
17 Feb 2024	2:00 PM	WNW	1.7
17 Feb 2024	3:00 PM	WSW	1.6
17 Feb 2024	4:00 PM	WSW	1.8
17 Feb 2024	5:00 PM	SSE	1.0
17 Feb 2024	6:00 PM	SSW	2.9
17 Feb 2024	7:00 PM	W	3.5
17 Feb 2024	8:00 PM	NW	4.1
17 Feb 2024	9:00 PM	SSW	1.1
17 Feb 2024	10:00 PM	SW	0.8
17 Feb 2024	11:00 PM	SE	0.5
18 Feb 2024	12:00 AM	ESE	0.4
18 Feb 2024	1:00 AM	SE	0.3
18 Feb 2024	2:00 AM	SE	0.4
18 Feb 2024	3:00 AM	SSW	0.4
18 Feb 2024	4:00 AM	WSW	0.2
18 Feb 2024	5:00 AM	SE	0.2
18 Feb 2024	6:00 AM	SSW	0.4
18 Feb 2024	7:00 AM	SSW	0.3
18 Feb 2024	8:00 AM	SE	0.4
18 Feb 2024	9:00 AM	SE	0.6
18 Feb 2024	10:00 AM	S	1.2
18 Feb 2024	11:00 AM	SSW	1.6
18 Feb 2024	12:00 PM	SW	1.7
18 Feb 2024	1:00 PM	SSE	1.3
18 Feb 2024	2:00 PM	SW	1.3
18 Feb 2024	3:00 PM	S	1.2
18 Feb 2024	4:00 PM	SW	1.3
18 Feb 2024	5:00 PM	SSW	1.7
18 Feb 2024	6:00 PM	SSW	1.0
18 Feb 2024	7:00 PM	SSW	0.9
18 Feb 2024	8:00 PM	SSW	0.5
18 Feb 2024	9:00 PM	WSW	0.3
18 Feb 2024	10:00 PM	SSW	0.3
18 Feb 2024	11:00 PM	E	0.4
19 Feb 2024	12:00 AM	SSW	0.4
19 Feb 2024	1:00 AM	SE	0.2
19 Feb 2024	2:00 AM	S	0.2
19 Feb 2024	3:00 AM	S	0.2
19 Feb 2024	4:00 AM	SSE	0.2
19 Feb 2024	5:00 AM	SE	0.2
19 Feb 2024	6:00 AM	SE	0.3
19 Feb 2024	7:00 AM	SE	0.4

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
19 Feb 2024	8:00 AM	SE	0.5
19 Feb 2024	9:00 AM	SE	1.0
19 Feb 2024	10:00 AM	E	0.9
19 Feb 2024	11:00 AM	E	1.0
19 Feb 2024	12:00 PM	SSE	1.1
19 Feb 2024	1:00 PM	SE	0.9
19 Feb 2024	2:00 PM	SE	1.1
19 Feb 2024	3:00 PM	E	1.0
19 Feb 2024	4:00 PM	SSE	0.9
19 Feb 2024	5:00 PM	WSW	1.2
19 Feb 2024	6:00 PM	SSW	0.9
19 Feb 2024	7:00 PM	SSE	1.0
19 Feb 2024	8:00 PM	SW	0.8
19 Feb 2024	9:00 PM	SSE	0.9
19 Feb 2024	10:00 PM	S	0.8
19 Feb 2024	11:00 PM	S	1.1
20 Feb 2024	12:00 AM	SW	1.2
20 Feb 2024	1:00 AM	S	0.8
20 Feb 2024	2:00 AM	S	0.4
20 Feb 2024	3:00 AM	SSE	0.5
20 Feb 2024	4:00 AM	SE	0.5
20 Feb 2024	5:00 AM	SSE	0.4
20 Feb 2024	6:00 AM	SE	0.8
20 Feb 2024	7:00 AM	S	0.5
20 Feb 2024	8:00 AM	S	1.2
20 Feb 2024	9:00 AM	SW	1.2
20 Feb 2024	10:00 AM	SSW	2.1
20 Feb 2024	11:00 AM	SSW	1.7
20 Feb 2024	12:00 PM	S	1.3
20 Feb 2024	1:00 PM	SSE	1.3
20 Feb 2024	2:00 PM	S	1.4
20 Feb 2024	3:00 PM	S	1.3
20 Feb 2024	4:00 PM	SSW	1.8
20 Feb 2024	5:00 PM	SW	1.6
20 Feb 2024	6:00 PM	SSE	1.0
20 Feb 2024	7:00 PM	SSW	1.1
20 Feb 2024	8:00 PM	S	0.6
20 Feb 2024	9:00 PM	SSE	1.1
20 Feb 2024	10:00 PM	SSE	1.3
20 Feb 2024	11:00 PM	S	1.0
21 Feb 2024	12:00 AM	SSE	1.2
21 Feb 2024	1:00 AM	ESE	1.3
21 Feb 2024	2:00 AM	SE	1.1
21 Feb 2024	3:00 AM	SE	0.8
21 Feb 2024	4:00 AM	SSE	0.4
21 Feb 2024	5:00 AM	S	0.4
21 Feb 2024	6:00 AM	S	0.4
21 Feb 2024	7:00 AM	S	0.8
21 Feb 2024	8:00 AM	SSE	0.6
21 Feb 2024	9:00 AM	SW	1.5
21 Feb 2024	10:00 AM	SSE	1.1
21 Feb 2024	11:00 AM	SW	2.0
21 Feb 2024	12:00 PM	SW	2.4
21 Feb 2024	1:00 PM	SSE	1.6
21 Feb 2024	2:00 PM	SW	1.5

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
21 Feb 2024	3:00 PM	S	1.3
21 Feb 2024	4:00 PM	SE	1.4
21 Feb 2024	5:00 PM	SSE	1.0
21 Feb 2024	6:00 PM	W	1.8
21 Feb 2024	7:00 PM	WNW	1.8
21 Feb 2024	8:00 PM	WSW	1.5
21 Feb 2024	9:00 PM	ESE	0.5
21 Feb 2024	10:00 PM	SE	0.3
21 Feb 2024	11:00 PM	SSE	0.3
22 Feb 2024	12:00 AM	S	0.4
22 Feb 2024	1:00 AM	SSE	0.4
22 Feb 2024	2:00 AM	SSE	0.2
22 Feb 2024	3:00 AM	S	0.2
22 Feb 2024	4:00 AM	S	0.3
22 Feb 2024	5:00 AM	SSE	0.3
22 Feb 2024	6:00 AM	S	0.3
22 Feb 2024	7:00 AM	S	0.4
22 Feb 2024	8:00 AM	SSW	0.5
22 Feb 2024	9:00 AM	SSE	0.8
22 Feb 2024	10:00 AM	SSW	1.2
22 Feb 2024	11:00 AM	S	1.2
22 Feb 2024	12:00 PM	SSW	1.3
22 Feb 2024	1:00 PM	SSE	1.8
22 Feb 2024	2:00 PM	S	1.5
22 Feb 2024	3:00 PM	S	1.0
22 Feb 2024	4:00 PM	SSW	0.9
22 Feb 2024	5:00 PM	S	0.8
22 Feb 2024	6:00 PM	SE	0.9
22 Feb 2024	7:00 PM	SSE	0.8
22 Feb 2024	8:00 PM	ESE	0.8
22 Feb 2024	9:00 PM	SE	1.1
22 Feb 2024	10:00 PM	ESE	0.9
22 Feb 2024	11:00 PM	SSE	0.7
23 Feb 2024	12:00 AM	SSE	0.6
23 Feb 2024	1:00 AM	SSW	0.8
23 Feb 2024	2:00 AM	SSE	0.8
23 Feb 2024	3:00 AM	E	0.8
23 Feb 2024	4:00 AM	SSE	1.1
23 Feb 2024	5:00 AM	SSE	0.8
23 Feb 2024	6:00 AM	SSW	1.3
23 Feb 2024	7:00 AM	S	1.8
23 Feb 2024	8:00 AM	SSW	1.9
23 Feb 2024	9:00 AM	S	2.3
23 Feb 2024	10:00 AM	SSW	2.1
23 Feb 2024	11:00 AM	S	1.6
23 Feb 2024	12:00 PM	S	1.8
23 Feb 2024	1:00 PM	SSE	1.8
23 Feb 2024	2:00 PM	S	1.5
23 Feb 2024	3:00 PM	S	2.4
23 Feb 2024	4:00 PM	SW	1.6
23 Feb 2024	5:00 PM	SW	0.9
23 Feb 2024	6:00 PM	S	2.0
23 Feb 2024	7:00 PM	SW	1.2
23 Feb 2024	8:00 PM	SW	0.7
23 Feb 2024	9:00 PM	S	1.0

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
23 Feb 2024	10:00 PM	SSW	1.5
23 Feb 2024	11:00 PM	SSE	2.6
24 Feb 2024	12:00 AM	SSE	3.4
24 Feb 2024	1:00 AM	S	2.2
24 Feb 2024	2:00 AM	S	2.1
24 Feb 2024	3:00 AM	SSW	1.5
24 Feb 2024	4:00 AM	SSW	1.9
24 Feb 2024	5:00 AM	SSW	2.0
24 Feb 2024	6:00 AM	SSW	2.1
24 Feb 2024	7:00 AM	S	2.2
24 Feb 2024	8:00 AM	SSW	1.9
24 Feb 2024	9:00 AM	SSE	2.0
24 Feb 2024	10:00 AM	S	1.8
24 Feb 2024	11:00 AM	S	1.8
24 Feb 2024	12:00 PM	SSE	2.4
24 Feb 2024	1:00 PM	SSW	2.0
24 Feb 2024	2:00 PM	SSE	2.4
24 Feb 2024	3:00 PM	SSE	2.9
24 Feb 2024	4:00 PM	SSE	3.2
24 Feb 2024	5:00 PM	SSE	2.7
24 Feb 2024	6:00 PM	SSE	3.1
24 Feb 2024	7:00 PM	SSE	2.7
24 Feb 2024	8:00 PM	SSE	2.8
24 Feb 2024	9:00 PM	S	1.8
24 Feb 2024	10:00 PM	S	2.2
24 Feb 2024	11:00 PM	SE	2.2
25 Feb 2024	12:00 AM	SSW	2.2
25 Feb 2024	1:00 AM	SSW	2.1
25 Feb 2024	2:00 AM	SSW	1.5
25 Feb 2024	3:00 AM	SSE	3.2
25 Feb 2024	4:00 AM	SSE	3.1
25 Feb 2024	5:00 AM	S	3.0
25 Feb 2024	6:00 AM	S	2.5
25 Feb 2024	7:00 AM	SSW	2.1
25 Feb 2024	8:00 AM	S	1.7
25 Feb 2024	9:00 AM	S	2.3
25 Feb 2024	10:00 AM	S	2.2
25 Feb 2024	11:00 AM	S	2.2
25 Feb 2024	12:00 PM	S	2.1
25 Feb 2024	1:00 PM	SSE	2.4
25 Feb 2024	2:00 PM	SSE	2.5
25 Feb 2024	3:00 PM	S	2.4
25 Feb 2024	4:00 PM	S	1.9
25 Feb 2024	5:00 PM	S	2.0
25 Feb 2024	6:00 PM	S	2.2
25 Feb 2024	7:00 PM	SSE	1.9
25 Feb 2024	8:00 PM	SSE	1.8
25 Feb 2024	9:00 PM	S	1.1
25 Feb 2024	10:00 PM	SSE	0.9
25 Feb 2024	11:00 PM	SSE	1.2
26 Feb 2024	12:00 AM	S	1.0
26 Feb 2024	1:00 AM	S	1.6
26 Feb 2024	2:00 AM	S	1.4
26 Feb 2024	3:00 AM	S	1.4
26 Feb 2024	4:00 AM	SSW	1.4

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
26 Feb 2024	5:00 AM	S	2.1
26 Feb 2024	6:00 AM	SSW	2.2
26 Feb 2024	7:00 AM	SW	1.7
26 Feb 2024	8:00 AM	S	1.4
26 Feb 2024	9:00 AM	S	1.7
26 Feb 2024	10:00 AM	SSW	1.7
26 Feb 2024	11:00 AM	S	1.8
26 Feb 2024	12:00 PM	SSW	1.6
26 Feb 2024	1:00 PM	SSE	1.3
26 Feb 2024	2:00 PM	S	1.4
26 Feb 2024	3:00 PM	SE	1.1
26 Feb 2024	4:00 PM	S	1.3
26 Feb 2024	5:00 PM	ESE	1.2
26 Feb 2024	6:00 PM	SSE	0.7
26 Feb 2024	7:00 PM	SSE	0.7
26 Feb 2024	8:00 PM	ESE	0.6
26 Feb 2024	9:00 PM	SSE	0.7
26 Feb 2024	10:00 PM	S	0.9
26 Feb 2024	11:00 PM	SSW	1.2
27 Feb 2024	12:00 AM	SSW	1.0
27 Feb 2024	1:00 AM	S	1.7
27 Feb 2024	2:00 AM	S	1.9
27 Feb 2024	3:00 AM	S	2.1
27 Feb 2024	4:00 AM	SSE	2.5
27 Feb 2024	5:00 AM	SSW	2.2
27 Feb 2024	6:00 AM	SSW	2.7
27 Feb 2024	7:00 AM	S	2.6
27 Feb 2024	8:00 AM	S	2.3
27 Feb 2024	9:00 AM	SSW	2.2
27 Feb 2024	10:00 AM	SW	1.8
27 Feb 2024	11:00 AM	S	1.6
27 Feb 2024	12:00 PM	S	1.5
27 Feb 2024	1:00 PM	S	1.5
27 Feb 2024	2:00 PM	SE	1.2
27 Feb 2024	3:00 PM	SSE	1.1
27 Feb 2024	4:00 PM	SSE	1.1
27 Feb 2024	5:00 PM	ESE	0.9
27 Feb 2024	6:00 PM	SE	1.0
27 Feb 2024	7:00 PM	SE	0.9
27 Feb 2024	8:00 PM	S	1.1
27 Feb 2024	9:00 PM	S	0.7
27 Feb 2024	10:00 PM	SSW	0.5
27 Feb 2024	11:00 PM	SE	0.4
28 Feb 2024	12:00 AM	SSE	0.4
28 Feb 2024	1:00 AM	SSW	0.5
28 Feb 2024	2:00 AM	SW	0.7
28 Feb 2024	3:00 AM	SSE	0.6
28 Feb 2024	4:00 AM	SSE	0.4
28 Feb 2024	5:00 AM	SSW	0.9
28 Feb 2024	6:00 AM	S	0.8
28 Feb 2024	7:00 AM	S	0.7
28 Feb 2024	8:00 AM	SE	0.2
28 Feb 2024	9:00 AM	SW	0.7
28 Feb 2024	10:00 AM	SSW	1.2
28 Feb 2024	11:00 AM	SW	1.0

February 2024			
Table II: Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m^{-s}**
28 Feb 2024	12:00 PM	SSE	0.9
28 Feb 2024	1:00 PM	SW	1.4
28 Feb 2024	2:00 PM	S	1.1
28 Feb 2024	3:00 PM	S	1.5
28 Feb 2024	4:00 PM	SSE	1.1
28 Feb 2024	5:00 PM	S	0.7
28 Feb 2024	6:00 PM	SSE	1.1
28 Feb 2024	7:00 PM	S	0.9
28 Feb 2024	8:00 PM	SW	0.7
28 Feb 2024	9:00 PM	SSW	0.3
28 Feb 2024	10:00 PM	S	0.2
28 Feb 2024	11:00 PM	S	0.2
29 Feb 2024	12:00 AM	SSE	0.2
29 Feb 2024	1:00 AM	SSW	0.2
29 Feb 2024	2:00 AM	SSE	0.3
29 Feb 2024	3:00 AM	SSE	0.6
29 Feb 2024	4:00 AM	SSW	0.5
29 Feb 2024	5:00 AM	SSE	0.3
29 Feb 2024	6:00 AM	SSW	0.2
29 Feb 2024	7:00 AM	SSW	0.4
29 Feb 2024	8:00 AM	SSE	0.3
29 Feb 2024	9:00 AM	SSE	0.3
29 Feb 2024	10:00 AM	SSE	0.4
29 Feb 2024	11:00 AM	SSW	0.7
29 Feb 2024	12:00 PM	SSE	1.1
29 Feb 2024	1:00 PM	SSE	1.3
29 Feb 2024	2:00 PM	S	1.1
29 Feb 2024	3:00 PM	SSE	1.1
29 Feb 2024	4:00 PM	SSE	1.7
29 Feb 2024	5:00 PM	S	2.9
29 Feb 2024	6:00 PM	S	2.7
29 Feb 2024	7:00 PM	S	2.3
29 Feb 2024	8:00 PM	SSE	2.9
29 Feb 2024	9:00 PM	SSW	2.2
29 Feb 2024	10:00 PM	S	3.3
29 Feb 2024	11:00 PM	S	3.3

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes
Tentative Impact Air Quality and Noise Monitoring Schedule (February 2024)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Feb	2-Feb	3-Feb
					1 TSP (AM1-AM4)	
4-Feb	5-Feb	6-Feb	7-Feb	8-Feb	9-Feb	**10-Feb**
				1 TSP (AM1-AM4) **Noise** (CM1-CM7)		
11-Feb	**12-Feb**	**13-Feb**	14-Feb	15-Feb	16-Feb	17-Feb
			1 TSP (AM1-AM4) **Noise** (CM1-CM7)		Waterbird Survey	
18-Feb	19-Feb	20-Feb	21-Feb	22-Feb	23-Feb	24-Feb
	1 TSP (AM1-AM4) **Noise** (CM1-CM7)				**1 TSP** (AM1-AM4)	
25-Feb	26-Feb	27-Feb	28-Feb	29-Feb		
				1 TSP (AM1-AM4) **Noise** (CM1-CM7)		

The schedule may be changed due to unforeseen circumstances (adverse weather, safety concerns, etc.)

Air Quality Monitoring Station

AM1	Fortune Pharmacal Co. Ltd
AM2	Shan Pui Chung Hau Tsuen
AM3	Nin Jiom Medicine Manufactory Limited
AM4	HK School of Motoring Road Safety Centre

Noise Monitoring Station

CM1	Shan Pui Chung Hau Tsuen
CM2	Caritas Yuen Long Chan Chun Ha Secondary School
CM3	Ma Tin Tsuen
CM4	Tung Tau Wai San Tsuen
CM5	Twin Regency
CM6	Tai Kiu Tsuen
CM7	CCC Chun Kwong Primary School

Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes
Tentative Impact Water Quality Monitoring Schedule (February 2024)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Feb	2-Feb	3-Feb
					Mid-Ebb N/A Mid-Flood 12:05	
4-Feb	5-Feb	6-Feb	7-Feb	8-Feb	9-Feb	10-Feb
	Mid-Ebb N/A Mid-Flood 09:20		Mid-Ebb 12:25 Mid-Flood 16:52		Mid-Ebb 13:46 Mid-Flood 08:44	
11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	16-Feb	17-Feb
			Mid-Ebb 17:06 Mid-Flood 11:03		Mid-Ebb N/A Mid-Flood 11:50	
18-Feb	19-Feb	20-Feb	21-Feb	22-Feb	23-Feb	24-Feb
	Mid-Ebb N/A Mid-Flood 09:56		Mid-Ebb 12:31 Mid-Flood 17:10		Mid-Ebb 13:38 Mid-Flood 08:27	
25-Feb	26-Feb	27-Feb	28-Feb	29-Feb		
	Mid-Ebb 15:00 Mid-Flood 09:27		Mid-Ebb 15:57 Mid-Flood 10:01			

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

N/A: Not Applicable as mid-ebb or mid-flood falls outside feasible monitoring time.

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix E - 1-hour TSP Monitoring Results

Location AM1 - Fortune Pharmacal Co. Ltd.			
Date	Time	Weather	Particulate Concentration (µg/m^3)
2-Feb-24	14:00	Fine	12.0
2-Feb-24	15:00	Fine	39.0
2-Feb-24	16:00	Fine	57.0
8-Feb-24	14:00	Fine	45.0
8-Feb-24	15:00	Fine	54.0
8-Feb-24	16:00	Fine	45.0
14-Feb-24	14:00	Fine	51.0
14-Feb-24	15:00	Fine	48.0
14-Feb-24	16:00	Fine	48.0
19-Feb-24	14:00	Cloudy	39.0
19-Feb-24	15:00	Cloudy	51.0
19-Feb-24	16:00	Cloudy	45.0
23-Feb-24	14:00	Fine	33.0
23-Feb-24	15:00	Fine	36.0
23-Feb-24	16:00	Fine	51.0
29-Feb-24	14:00	Fine	66.0
29-Feb-24	15:00	Fine	72.0
29-Feb-24	16:00	Fine	102.0
		Average	49.7
		Maximum	102.0
		Minimum	12.0

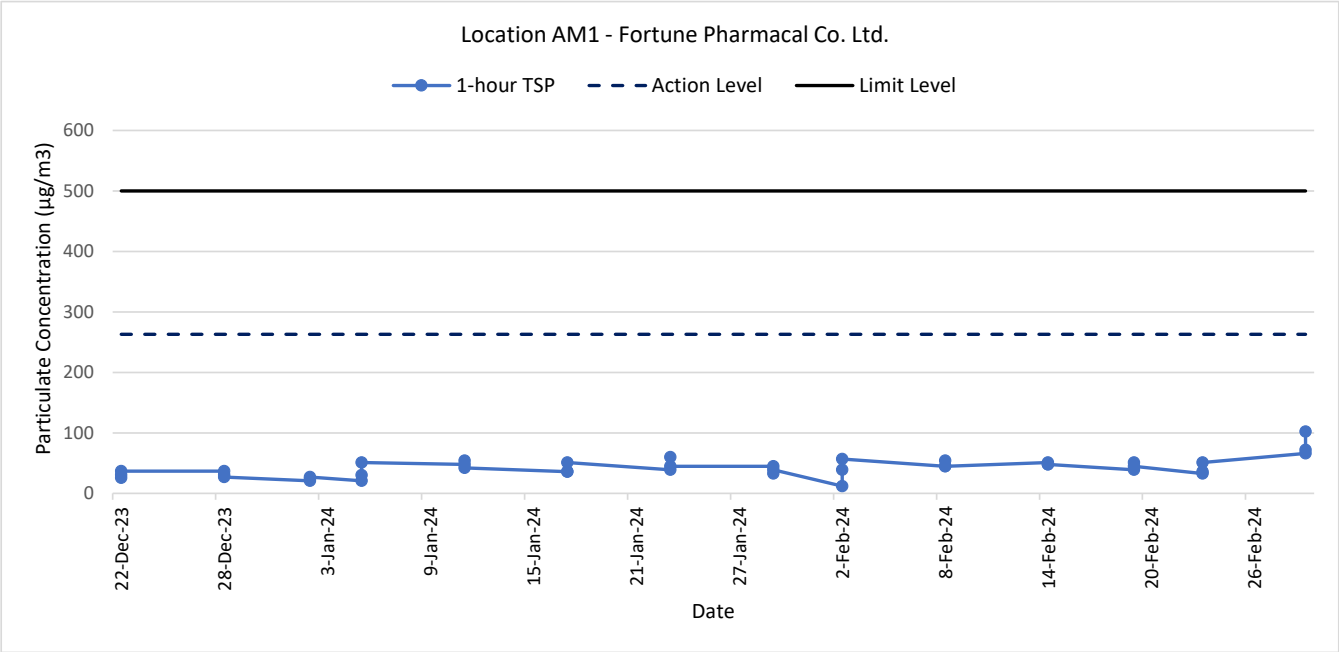
Location AM2 - Shan Pui Chung Hau Tsuen			
Date	Time	Weather	***Particulate Concentration (µg/m^3)***
2-Feb-24	12:50	Fine	48.6
2-Feb-24	13:50	Fine	48.6
2-Feb-24	14:50	Fine	54.0
8-Feb-24	9:30	Fine	52.2
8-Feb-24	10:30	Fine	59.4
8-Feb-24	11:30	Fine	70.2
14-Feb-24	15:25	Fine	72.0
14-Feb-24	16:25	Fine	61.2
14-Feb-24	17:25	Fine	59.4
19-Feb-24	15:42	Cloudy	3.8
19-Feb-24	16:42	Cloudy	7.6
19-Feb-24	17:42	Cloudy	7.6
23-Feb-24	11:45	Fine	54.0
23-Feb-24	12:45	Fine	52.2
23-Feb-24	13:45	Fine	46.8
29-Feb-24	12:50	Fine	22.8
29-Feb-24	13:50	Fine	20.9
29-Feb-24	14:50	Fine	26.6
		Average	55.5
		Maximum	70.2
		Minimum	48.6

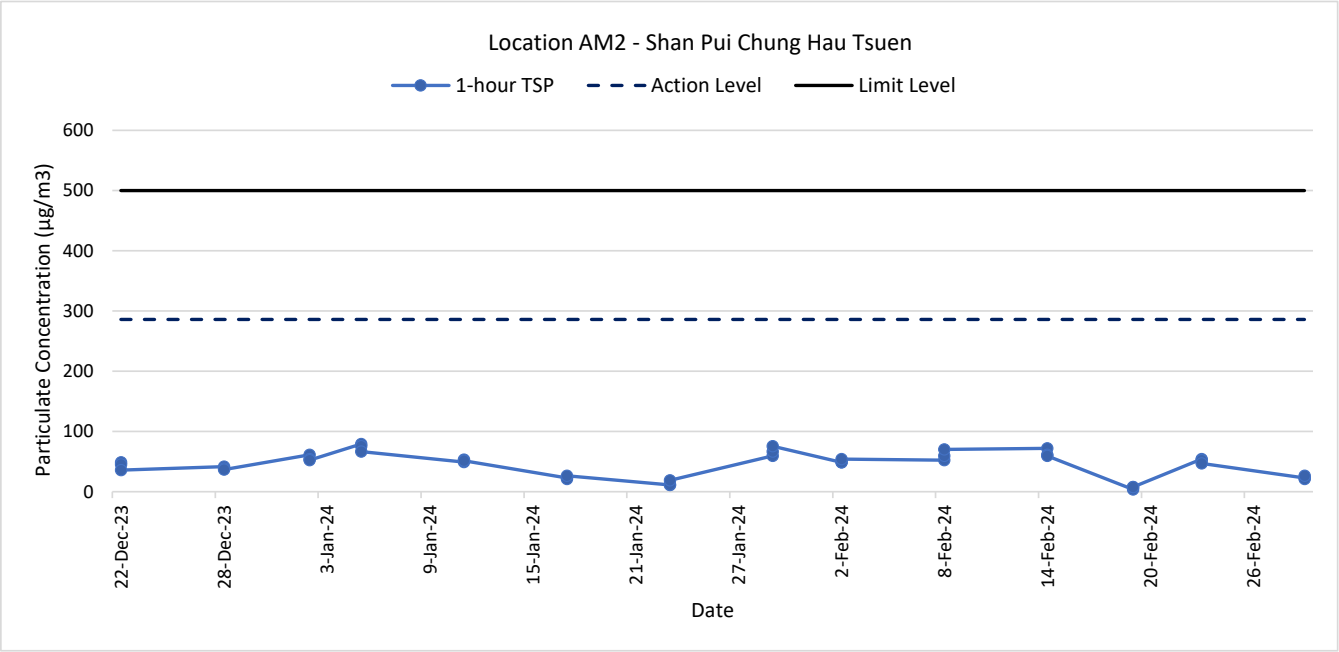
Appendix E - 1-hour TSP Monitoring Results

Location AM3 - Nin Jiom Medicine Manufactory Limited			
Date	Time	Weather	***Particulate Concentration (µg/m^3)***
2-Feb-24	12:20	Fine	64.8
2-Feb-24	13:20	Fine	61.2
2-Feb-24	14:20	Fine	73.8
8-Feb-24	16:00	Cloudy	17.1
8-Feb-24	17:00	Cloudy	20.9
8-Feb-24	18:00	Cloudy	15.2
14-Feb-24	9:00	Fine	47.5
14-Feb-24	10:00	Fine	58.9
14-Feb-24	11:00	Fine	51.3
19-Feb-24	9:10	Fine	64.8
19-Feb-24	10:10	Fine	70.2
19-Feb-24	11:10	Fine	72.0
23-Feb-24	14:30	Fine	37.8
23-Feb-24	15:30	Fine	52.2
23-Feb-24	16:30	Fine	52.2
29-Feb-24	13:39	Fine	203.3
29-Feb-24	14:39	Fine	207.1
29-Feb-24	15:39	Fine	203.3
		Average	76.3
		Maximum	207.1
		Minimum	15.2

Location AM4 - HK School of Motoring Road Safety Centre			
Date	Time	Weather	***Particulate Concentration (µg/m^3)***
2-Feb-24	9:05	Fine	64.8
2-Feb-24	10:05	Fine	72.0
2-Feb-24	11:05	Fine	84.6
8-Feb-24	13:34	Cloudy	13.3
8-Feb-24	14:34	Cloudy	15.2
8-Feb-24	15:34	Cloudy	11.4
14-Feb-24	11:33	Sunny	49.4
14-Feb-24	12:33	Sunny	39.9
14-Feb-24	13:33	Sunny	43.7
19-Feb-24	15:30	Fine	52.2
19-Feb-24	16:30	Fine	61.2
19-Feb-24	17:30	Fine	55.8
23-Feb-24	9:10	Fine	41.4
23-Feb-24	10:10	Fine	52.2
23-Feb-24	11:10	Fine	57.6
29-Feb-24	14:39	Fine	28.5
29-Feb-24	15:39	Fine	30.4
29-Feb-24	16:39	Fine	28.5
		Average	44.6
		Maximum	84.6
		Minimum	11.4

1-hr TSP Concentration Levels

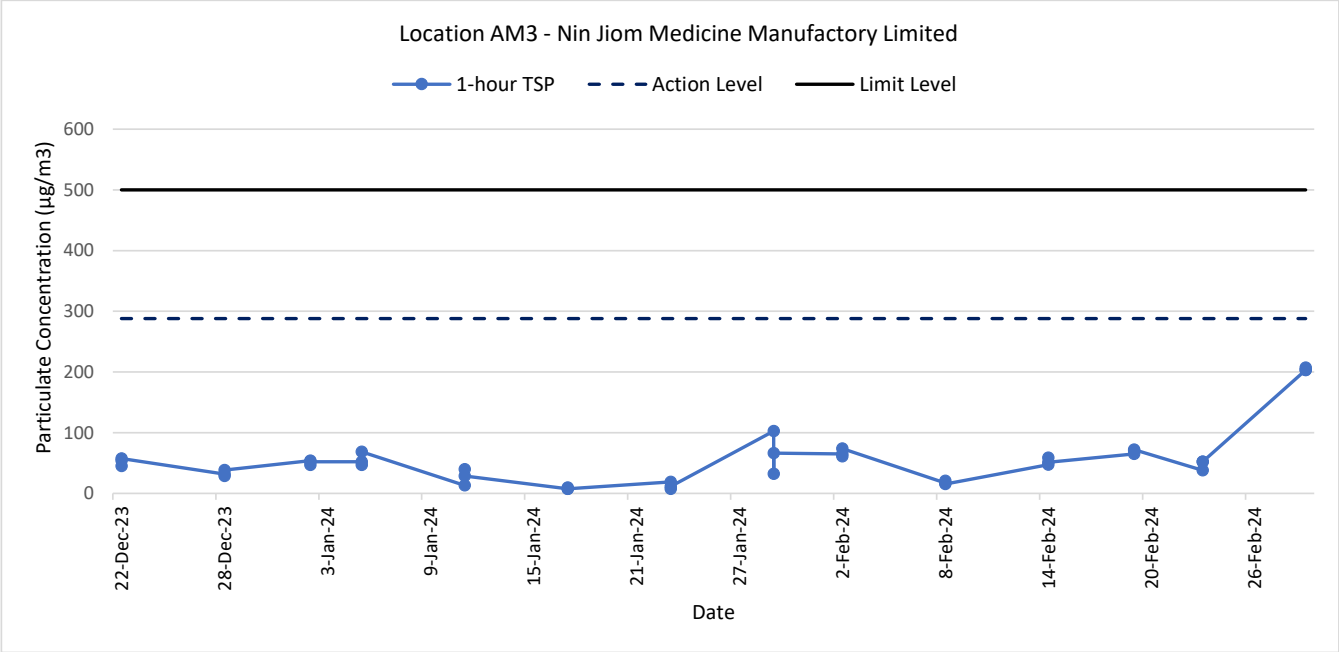


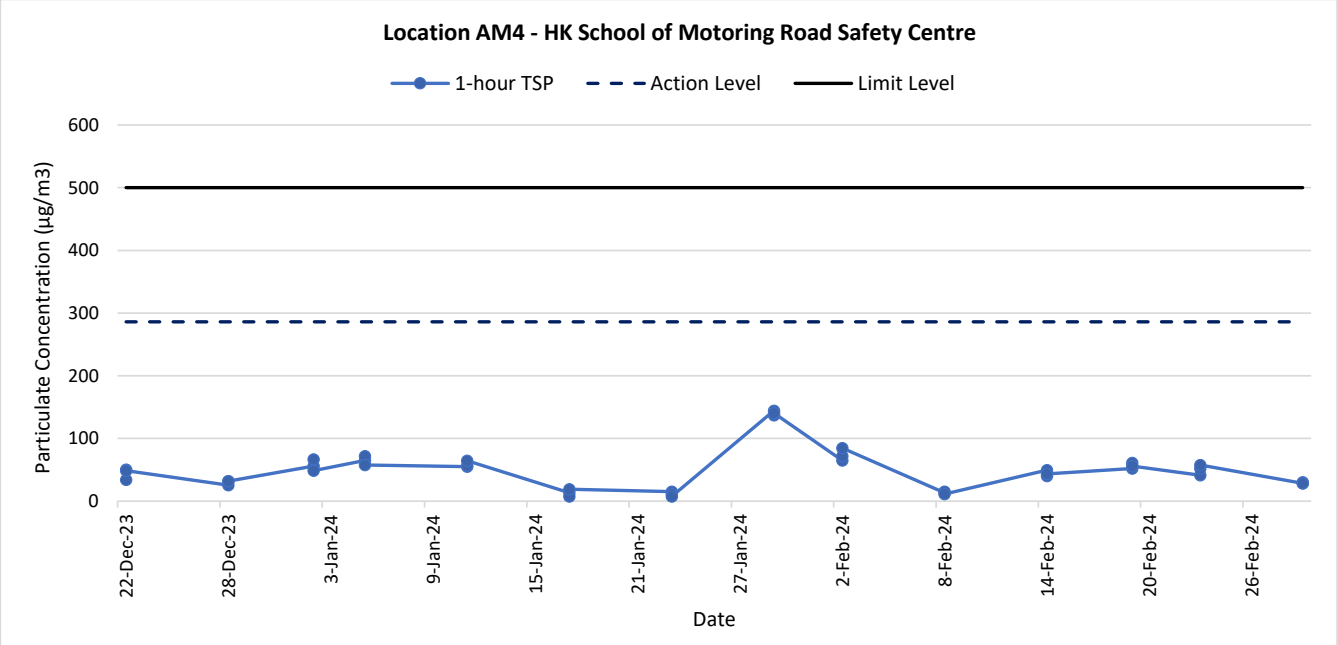


Title	Date	Project No.
Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes	Feb 2024	MA23101
Graphical Presentation of 1-hour TSP Monitoring Results		Appendix E

CINOTECH

1-hr TSP Concentration Levels





Title	Date	Project No.	
Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of 1-hour TSP Monitoring Results	Feb 2024	MA23101	CINOTECH
		Appendix E	

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix G - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

Location CM1 -Shan Pui Chung Hau Tsuen							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level*			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
8-Feb-24	15:31	Cloudy	62.4	62.7	56.7	59.1	59.7
14-Feb-24	11:16	Sunny	55.5	57.2	52.2	59.1	55.5 Measured ≦ Baseline
19-Feb-24	11:21	Fine	74.7	78.6	57.6	59.1	74.6
29-Feb-24	14:58	Fine	74.9	78.9	60.4	59.1	74.8

Location CM2 - Caritas Yuen Long Chan Chun Ha Secondary School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
8-Feb-24	12:34	Cloudy	63.4	65.5	60.1	62.7	55.1
14-Feb-24	13:33	Sunny	58.3	60.6	54.8	62.7	58.3 Measured ≦ Baseline
19-Feb-24	14:53	Fine	62.5	64.1	60.3	62.7	62.5 Measured ≦ Baseline
29-Feb-24	12:19	Fine	60.9	63.0	57.9	62.7	60.9 Measured ≦ Baseline

Location CM3 - Ma Tin Tsuen							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level*			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
8-Feb-24	11:32	Cloudy	62.6	65.0	56.1	61.1	57.3
14-Feb-24	12:45	Sunny	58.0	59.8	51.3	61.1	58 Measured ≦ Baseline
19-Feb-24	14:08	Fine	62.5	62.8	55.3	61.1	56.9
29-Feb-24	12:53	Fine	63.4	65.7	54.9	61.1	59.5

Location CM4 - Tung Tau Wai San Tsuen							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level*			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
8-Feb-24	16:24	Cloudy	71.5	75.7	62.6	67.2	69.5
14-Feb-24	10:06	Fine	73.6	76.4	67.2	67.2	72.5
19-Feb-24	10:35	Fine	70.4	72.2	59.5	67.2	67.6
29-Feb-24	14:08	Fine	69.3	72.2	59.4	67.2	65.1

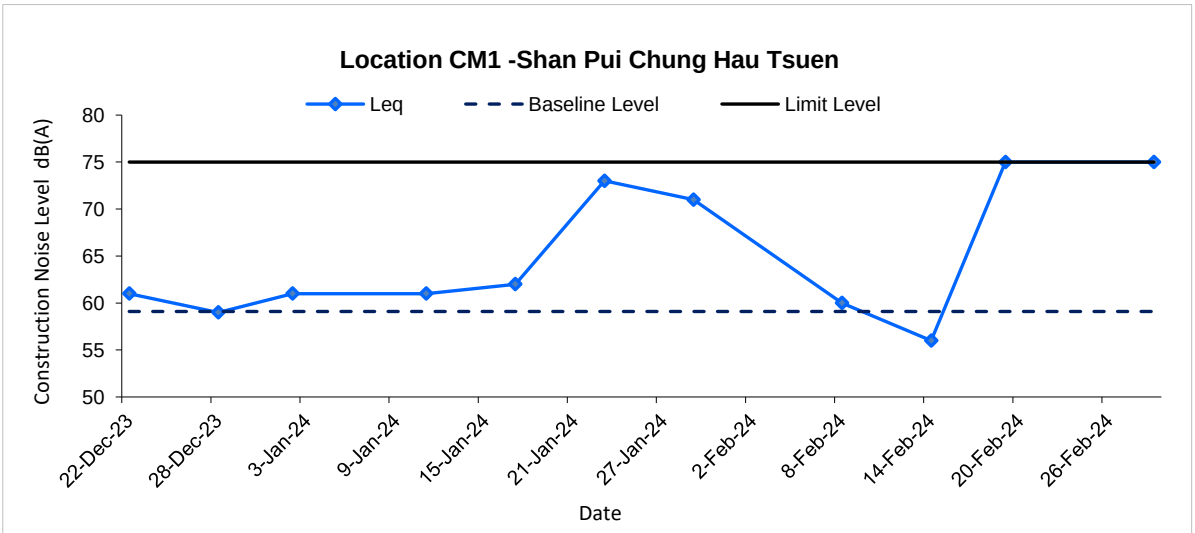
Location CM5 - Twin Regency							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
8-Feb-24	14:40	Cloudy	61.3	63.6	56.1	62.7	61.3 Measured ≦ Baseline
14-Feb-24	14:48	Sunny	56.2	58.1	53.8	62.7	56.2 Measured ≦ Baseline
19-Feb-24	13:02	Fine	59.5	61.6	55.2	62.7	59.5 Measured ≦ Baseline
29-Feb-24	16:06	Fine	64.1	66.2	60.9	62.7	58.5

Location CM6 - Tai Kiu Tsuen							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
8-Feb-24	10:02	Windy	75.1	76.5	73.0	63.0	74.8
14-Feb-24	16:27	Sunny	62.0	64.2	57.4	63.0	62 Measured ≦ Baseline
19-Feb-24	17:10	Fine	61.0	63.7	59.0	63.0	61 Measured ≦ Baseline
29-Feb-24	10:38	Fine	62.1	64.0	59.2	63.0	62.1 Measured ≦ Baseline

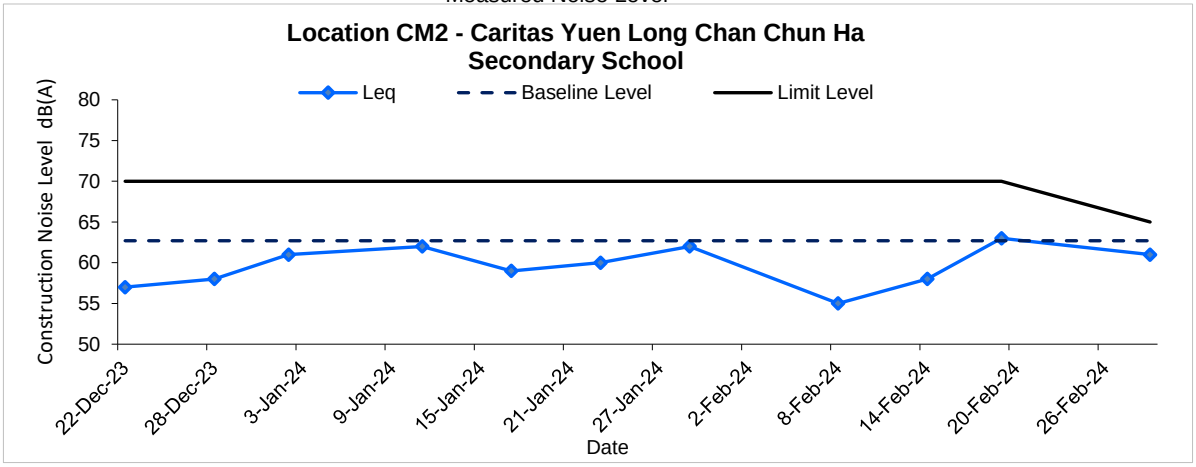
Location CM7 - CCC Chun Kwong Primary School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level*			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
8-Feb-24	10:51	Cloudy	62.7	64.4	57.2	60.4	58.8
14-Feb-24	15:50	Sunny	59.7	61.7	57.0	60.4	59.7 Measured ≦ Baseline
19-Feb-24	16:34	Fine	65.3	69.1	57.4	60.4	63.6
29-Feb-24	11:19	Fine	60.1	62.2	56.6	60.4	60.1 Measured ≦ Baseline

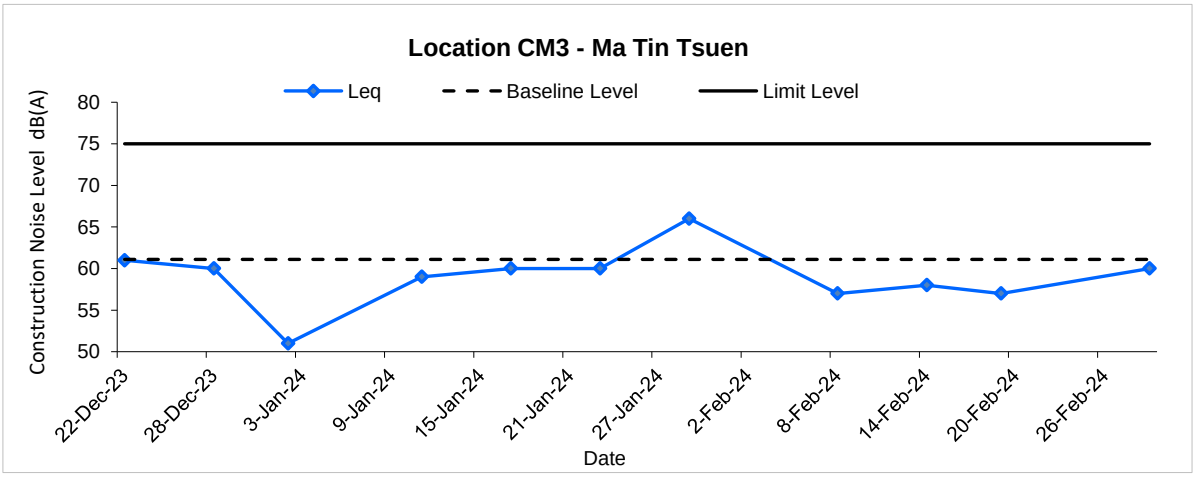
*Remark: Free field noise levels were adjusted with a correlation of +3 dB(A)

Noise Levels



Measured Noise Level

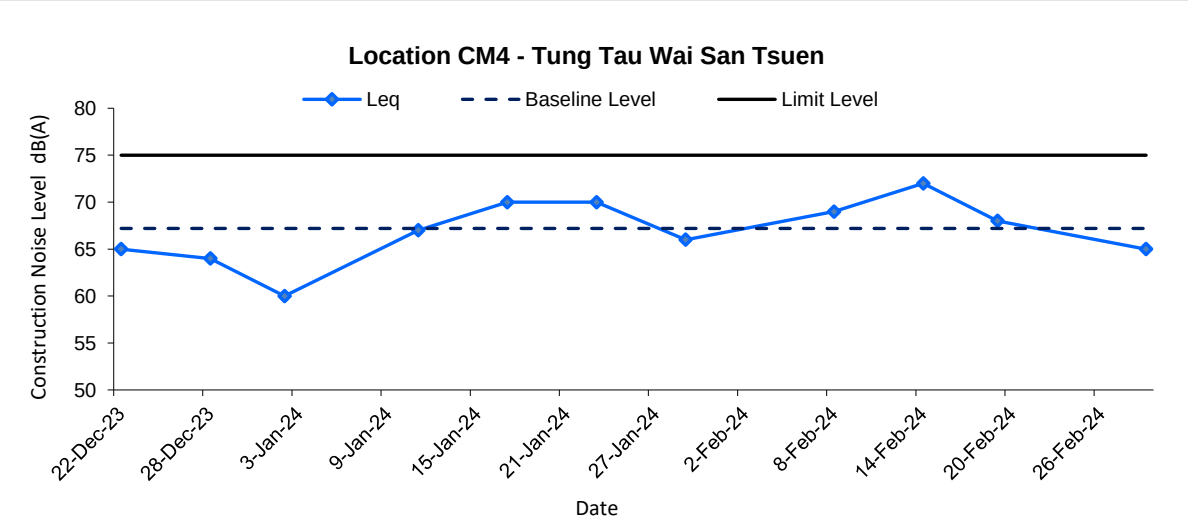


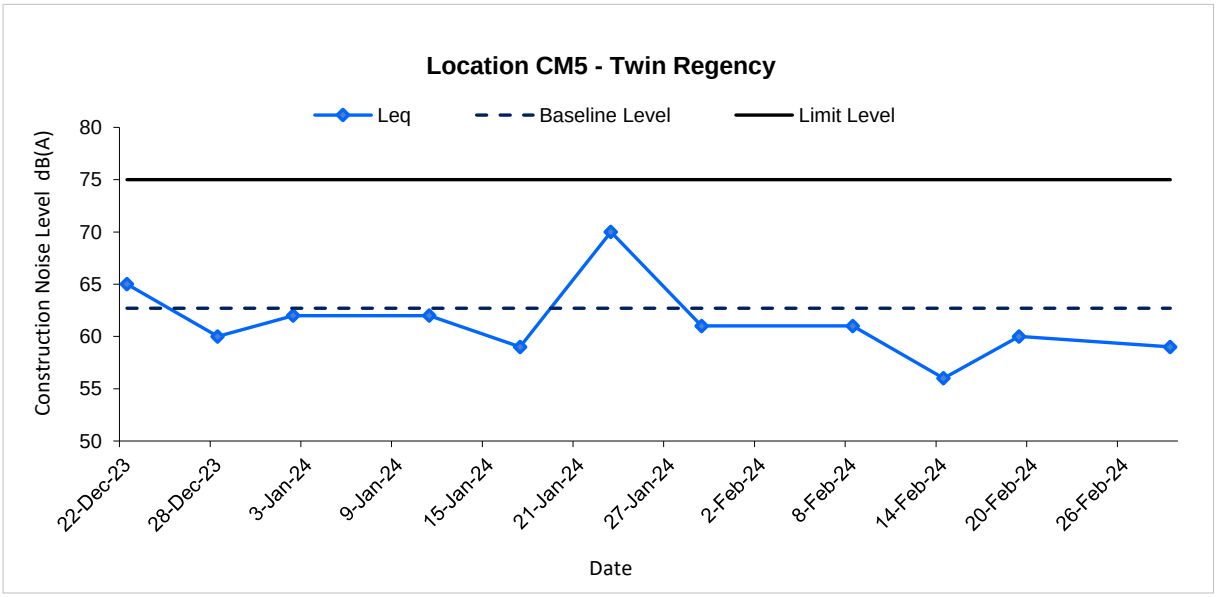


Title		Date	Project
Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Construction Noise Monitoring Results		Feb 2023	No. MA23101
		Page 1 of 3	Appendix G

CINOTECH

Noise Levels





Title		Date	Project	
Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Construction Noise Monitoring Results		Feb 2023	No. MA23101	CINOTECH
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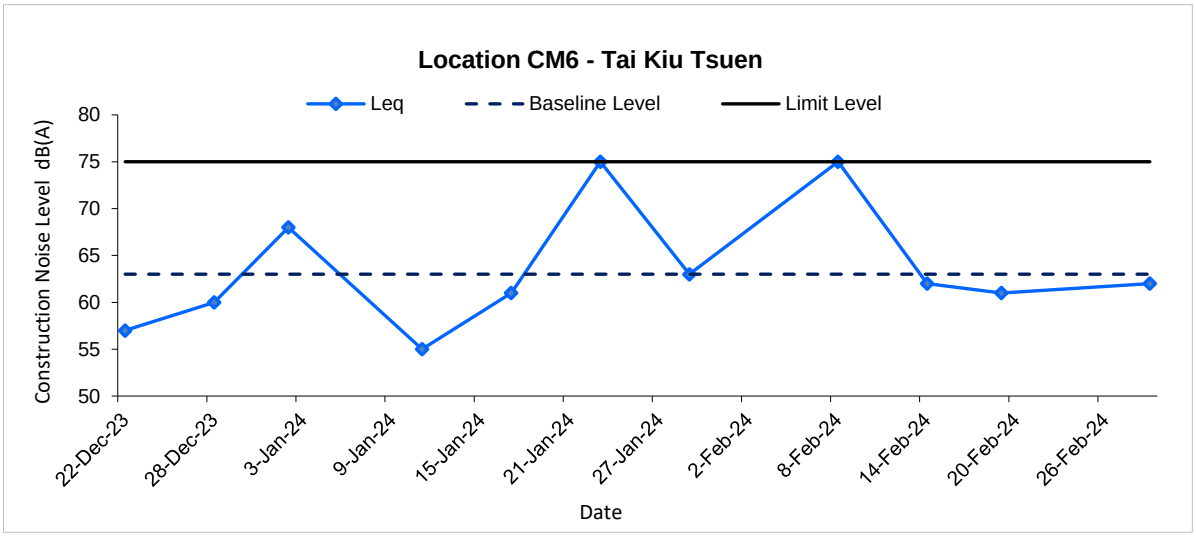
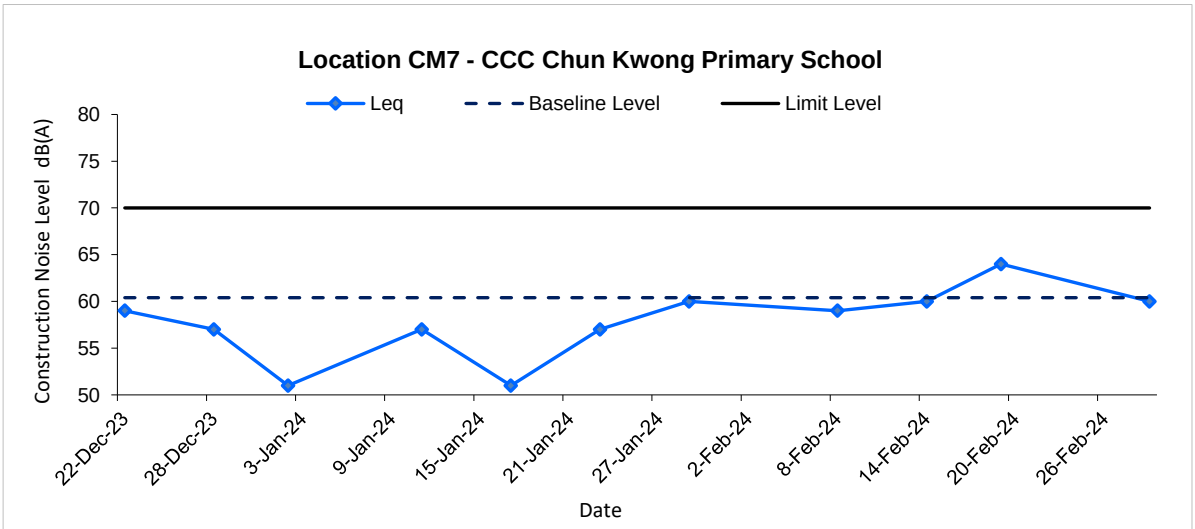
Noise Levels





Title	Date	Project
Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Construction Noise Monitoring Results	Feb 2023	No. MA23101
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CINOTECH

APPENDIX H
WATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 02 February 2024

Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
2/2/2024	C1	-	Fine	Calm	11:52	0.27	0.1	22.94	23.0	7.69	7.6	0.24	0.2	35.70	30.4	3.07	2.6	11.23	11.2	53.6	51.1
								23.03		7.60		0.23		28.20		2.42		11.10		54	
								23.04		7.59		0.23		27.30		2.33		11.19		45.8	
	C2				12:08	0.18	0.1	25.01	25.0	7.77	7.8	0.74	0.7	82.70	82.5	6.81	6.8	13.03	13.0	28.6	29.5
								25.01		7.77		0.74		82.60		6.79		13.03		31.4	
								25.00		7.77		0.74		82.30		6.78		13.07		28.6	
	UM		Fine	Calm	12:55	0.51	0.3	22.59	22.4	8.05	7.9	1.12	1.1	49.50	40.9	4.26	3.5	16.93	17.0	39.2	37.4
								22.37		7.81		1.10		36.70		3.17		17.11		40.8	
								22.36		7.80		1.10		36.50		3.15		16.95		32.2	
	W1	Flood	Fine	Calm	13:52	2.24	1.1	21.71	21.7	7.46	7.5	9.99	10.0	47.30	46.1	3.92	3.8	19.18	19.2	25.6	25.6
								21.71		7.45		9.99		46.00		3.82		19.25		27	
								21.69		7.45		9.99		45.10		3.74		19.18		24.1	
	W2				13:59	1.33	0.7	21.99	22.0	7.34	7.3	10.99	11.0	44.60	44.3	3.66	3.6	21.97	22.0	32.3	34.4
								21.99		7.33		11.00		44.30		3.63		21.95		39.1	
								21.99		7.33		11.00		44.00		3.61		22.11		31.7	

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 05 February 2024

Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
5/2/2024	C1	-	Fine	Calm	12:27	0.31	0.2	21.32	21.3	7.79	7.8	0.18	0.2	35.00	34.2	3.10	3.0	10.05	10.0	25.8	24.2
								21.32		7.77		0.18		34.10		3.02		10.00		15.6	
								21.31		7.76		0.18		33.50		2.97		9.97		31.2	
	C2				12:50	0.16	0.1	21.71	21.7	7.70	7.7	0.63	0.6	62.60	59.0	5.49	5.2	16.67	16.6	13.6	26.7
								21.71		7.69		0.63		58.10		5.09		16.65		30.2	
								21.71		7.69		0.63		56.30		4.94		16.62		36.2	
	UM		Fine	Calm	13:23	0.53	0.3	21.51	21.1	7.53	7.5	1.07	1.1	76.80	57.1	6.74	5.0	15.65	16.1	44.6	39.7
								20.97		7.49		1.08		47.70		4.23		16.34		33.6	
								20.95		7.48		1.08		46.70		4.14		16.20		40.8	
	W1	Flood	Fine	Calm	10:49	1.93	1.0	21.43	21.4	7.13	7.1	5.88	5.9	14.10	13.6	1.20	1.2	23.99	24.1	21.3	21.8
								21.44		7.12		5.87		13.50		1.16		24.15		21.8	
								21.46		7.12		5.82		13.10		1.12		24.23		22.3	
	W2				11:05	1.73	0.9	22.04	22.0	7.31	7.3	9.37	9.4	44.20	36.7	3.66	3.0	11.98	12.0	14.3	16.0
								22.02		7.29		9.37		35.60		2.95		11.96		15.9	
								22.01		7.29		9.37		30.30		2.51		11.96		17.8	

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 07 February 2024

Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
7/2/2024	W1	Ebb	Dizzle	Calm	11:50	2.25	1.1	20.68	20.7	7.38	7.4	8.78	8.8	14.20	13.9	1.21	1.2	24.01	24.0	22.9	24.4
								20.67		7.38		8.76		13.90		1.18		24.04		24.4	
								20.67		7.38		8.74		13.60		1.16		24.04		26	
	W2				11:58	0.89	0.4	20.97	21.0	7.09	7.1	12.33	12.3	20.90	20.9	1.74	1.7	10.51	10.5	18.6	17.8
								20.96		7.09		12.31		20.90		1.73		10.49		20.4	
								20.96		7.09		12.31		20.80		1.73		10.51		14.5	
	C1	-	Dizzle	Calm	13:20	0.35	0.2	19.83	19.7	7.96	7.9	0.31	0.3	47.20	44.3	4.30	4.0	12.19	12.2	10.4	11.5
								19.70		7.82		0.28		42.90		3.92		12.07		12.2	
								19.71		7.81		0.28		42.70		3.90		12.19		12	
	C2				13:40	0.18	0.1	20.22	20.2	7.67	7.6	0.83	0.8	54.50	51.5	4.91	4.6	20.00	20.0	10.4	9.8
								20.22		7.65		0.83		50.70		4.57		19.93		9.6	
								20.24		7.62		0.83		49.20		4.43		20.01		9.4	
	UM		Dizzle	Calm	14:13	0.55	0.3	19.25	19.3	7.62	7.6	2.33	2.3	41.20	41.1	3.75	3.7	22.01	22.0	39.8	39.9
								19.26		7.62		2.33		41.10		3.74		22.05		38.4	
								19.27		7.61		2.33		41.00		3.73		21.99		41.6	
	W1	Flood	Dizzle	Calm	14:38	1.22	0.6	20.42	20.4	7.35	7.4	7.64	7.6	13.60	13.3	1.17	1.2	23.23	23.3	22.6	22.3
								20.41		7.35		7.62		13.30		1.15		23.30		21	
								20.40		7.35		7.60		13.10		1.13		23.41		23.2	
	W2				14:51	0.68	0.3	20.52	20.5	7.13	7.1	12.44	12.4	30.00	29.9	2.51	2.5	22.03	22.1	66.2	47.1
								20.52		7.13		12.45		29.90		2.51		22.06		34	
								20.51		7.13		12.45		29.90		2.50		22.10		41.1	

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 09 February 2024

Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
9/2/2024	W1	Ebb	Fine	Calm	13:49	2.32	1.2	16.74	16.7	7.22	7.2	8.20	8.3	25.90	25.5	2.39	2.4	18.50	18.6	31.4	32.1
								16.75		7.21		8.25		25.50		2.36		18.59		35.3	
								16.75		7.20		8.32		25.10		2.32		18.69		29.7	
	W2				13:58	0.87	0.4	16.81	16.8	7.34	7.3	11.75	11.8	44.10	42.4	3.98	3.8	26.14	26.0	41.9	37.8
								16.81		7.33		11.76		43.40		3.92		26.10		42.2	
								16.90		7.28		11.76		39.60		3.57		25.89		29.3	
	C1	-	Fine	Calm	12:21	0.31	0.2	16.20	16.2	7.98	8.0	0.31	0.3	59.60	59.0	5.85	5.8	11.76	11.7	17.8	13.1
								16.19		7.97		0.31		58.90		5.78		11.69		9.2	
								16.19		7.96		0.30		58.40		5.73		11.72		12.2	
	C2				12:44	0.23	0.1	16.98	17.0	7.77	7.8	0.59	0.6	68.20	68.0	6.57	6.6	16.50	16.4	11.4	9.3
								16.99		7.77		0.59		68.00		6.56		16.44		8.8	
								17.00		7.76		0.59		67.90		6.54		16.38		7.8	
	UM		Fine	Calm	13:18	0.51	0.3	16.93	16.9	7.40	7.4	1.05	1.1	40.40	40.3	3.89	3.9	19.46	19.4	16.6	18.7
								16.92		7.40		1.05		40.30		3.88		19.40		14.8	
								16.88		7.39		1.06		40.10		3.86		19.41		24.8	
	W1	Flood	Fine	Calm	10:40	2.29	1.1	16.31	16.4	7.49	7.4	10.65	10.6	75.50	56.7	6.94	5.2	22.03	22.1	55.9	43.3
								16.39		7.42		10.64		50.60		4.65		22.17		32.8	
								16.40		7.40		10.64		44.00		4.04		22.12		41.1	
	W2				10:48	2.02	1.0	16.13	16.2	7.25	7.2	12.57	12.6	29.20	27.6	2.66	2.5	25.57	24.9	95.1	60.9
								16.19		7.19		12.55		27.20		2.48		24.49		40.3	
								16.27		7.16		12.58		26.40		2.40		24.59		47.4	

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 14 February 2024

Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
14/2/2024	W1	Ebb	Fine	Calm	15:20	2.23	1.1	19.94	19.9	6.92	6.9	10.67	10.8	38.40	38.2	3.29	3.3	20.34	20.2	19.2	20.1
								19.89		6.93		10.81		38.20		3.27		20.28		22.6	
								19.88		6.94		10.91		38.00		3.25		19.90		18.4	
	W2				15:32	1.59	0.8	19.93	19.9	7.11	7.1	11.64	11.7	57.20	56.1	4.86	4.8	20.78	21.6	28.1	39.5
								19.91		7.11		11.65		55.90		4.75		21.07		58.8	
								19.92		7.10		11.69		55.20		4.69		22.88		31.6	
	C1	-	Fine	Calm	12:43	1.62	0.8	21.80	21.8	7.63	7.6	0.12	0.1	42.80	42.0	3.75	3.7	13.19	12.9	18.6	18.4
								21.79		7.61		0.12		41.80		3.66		13.02		15.4	
								21.80		7.60		0.12		41.30		3.63		12.48		21.2	
	C2				13:08	1.83	0.9	23.08	23.1	7.64	7.6	0.71	0.7	74.00	73.6	6.32	6.3	18.49	18.1	12	10.9
								23.10		7.62		0.71		73.50		6.27		18.12		11	
								23.12		7.61		0.71		73.20		6.24		17.77		9.6	
	UM		Fine	Calm	14:39	1.72	0.9	21.00	21.0	7.45	7.4	1.06	1.1	51.20	49.2	4.54	4.4	21.99	23.2	45.2	47.3
								21.01		7.43		1.06		50.20		4.45		23.00		38.8	
								21.01		7.39		1.06		46.30		4.10		24.74		57.8	
	W1	Flood	Fine	Calm	11:16	1.56	0.8	19.78	19.8	7.08	7.1	8.58	8.6	38.50	37.5	3.35	3.3	67.07	77.1	82.4	77.1
								19.80		7.07		8.57		37.60		3.26		86.26		82.9	
								19.83		7.06		8.57		36.40		3.15		77.90		65.9	
	W2				11:33	1.28	0.6	19.19	19.2	7.43	7.4	11.41	11.4	48.80	45.1	4.21	3.9	58.57	62.8	88.1	73.0
								19.21		7.37		11.36		45.80		3.95		63.82		65.7	
								19.19		7.33		11.39		40.70		3.51		65.89		65.2	

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 16 February 2024

Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
16/2/2024	C1	-	Fine	Calm	13:20	0.33	0.2	22.34	22.3	7.96	8.0	0.28	0.3	58.90	58.6	5.10	5.1	8.87	8.8	19	21.5
								22.33		7.95		0.28		58.60		5.09		8.83		27.6	
								22.32		7.94		0.28		58.40		5.07		8.84		17.8	
	C2				13:37	0.17	0.1	23.37	23.4	7.91	7.9	0.47	0.5	78.70	78.3	6.69	6.7	8.18	8.2	9.8	7.1
								23.38		7.90		0.47		78.40		6.66		8.22		7.8	
								23.38		7.89		0.47		77.70		6.60		8.17		3.6	
	UM		Fine	Calm	14:19	0.51	0.3	21.65	21.6	7.81	7.8	1.12	1.1	46.20	45.5	4.05	4.0	15.22	15.1	47.8	49.3
								21.64		7.80		1.12		45.80		4.01		14.94		37.4	
								21.63		7.77		1.12		44.50		3.90		15.08		62.8	
	W1	Flood	Fine	Calm	11:46	1.73	0.9	22.51	22.5	7.46	7.5	5.40	5.4	63.30	62.3	5.31	5.2	19.69	19.6	44.8	45.4
								22.52		7.45		5.41		62.20		5.22		19.66		57.4	
								22.52		7.44		5.41		61.40		5.16		19.57		34.1	
	W2				12:03	3.21	1.6	22.37	22.3	7.33	7.3	7.77	7.8	57.80	57.8	4.80	4.8	19.06	19.1	22.5	23.3
								22.37		7.33		7.75		58.00		4.81		19.20		24.1	
								22.30		7.33		7.84		57.70		4.79		19.11		23.3	

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 19 February 2024

Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
19/2/2024	C1	-	Fine	Calm	12:51	0.31	0.2	22.91	22.9	7.55	7.5	0.20	0.2	29.00	28.8	2.49	2.5	22.44	22.5	43.4	42.3
								22.84		7.53		0.19		28.80		2.47		22.58		58.8	
								22.84		7.53		0.19		28.70		2.47		22.52		24.8	
	C2				13:15	0.16	0.1	25.03	24.9	7.89	7.9	0.57	0.6	88.70	85.1	7.30	7.0	12.68	12.6	15.8	13.5
								24.89		7.87		0.57		83.80		6.92		12.63		12.2	
								24.89		7.87		0.57		82.90		6.85		12.61		12.4	
	UM		Fine	Calm	13:44	0.55	0.3	23.02	23.0	7.59	7.6	1.25	1.3	39.70	39.5	3.38	3.4	18.71	18.7	95.8	73.3
								23.01		7.59		1.25		39.50		3.36		18.75		77.4	
								23.01		7.59		1.25		39.20		3.34		18.77		46.8	
	W1	Flood	Fine	Calm	11:39	0.75	0.4	22.68	22.7	7.38	7.4	4.80	4.8	20.00	18.8	1.68	1.6	23.93	24.0	35.9	32.5
								22.69		7.36		4.83		18.70		1.57		23.95		32.4	
								22.69		7.35		4.84		17.80		1.49		23.97		29.2	
	W2				11:46	2.65	1.3	22.87	22.9	7.34	7.3	7.96	8.0	60.30	60.1	4.96	4.9	19.91	20.0	46.2	36.4
								22.87		7.34		7.96		60.10		4.93		19.94		31.2	
								22.87		7.34		7.96		59.80		4.92		20.04		31.8	

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 21 February 2024

Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
21/2/2024	W1	Ebb	Fine	Calm	15:04	1.74	0.9	25.97	26.2	7.41	7.6	4.86	6.2	28.00	62.4	2.21	4.8	28.23	28.3	38.1	45.5
								25.96		7.41		4.84		28.20		2.23		28.48		50.4	
								26.56		8.02		8.93		130.90		10.00		28.24		48.1	
	W2				15:18	1.55	0.8	26.57	26.5	8.04	8.1	8.90	8.9	133.00	133.2	10.16	10.2	29.22	29.2	48.1	43.5
								26.52		8.08		8.94		133.60		10.21		29.11		43.3	
								26.48		8.08		8.97		132.90		10.17		29.13		39.2	
	C1	-	Fine	Calm	12:45	0.31	0.2	26.33	26.4	8.17	8.2	0.82	0.8	93.80	93.0	7.53	7.5	12.80	12.8	90.6	96.3
								26.37		8.17		0.82		93.00		7.46		12.71		105.6	
								26.39		8.16		0.82		92.30		7.41		12.77		92.8	
	C2				13:02	0.14	0.1	25.10	25.1	7.65	7.6	0.21	0.2	23.50	23.1	1.94	1.9	12.36	12.4	14.6	19.1
								25.09		7.64		0.21		23.20		1.91		12.45		20.6	
								25.09		7.62		0.21		22.70		1.87		12.45		22	
	UM		Fine	Calm	14:31	0.48	0.2	24.90	24.9	8.31	8.3	1.11	1.1	50.90	50.0	4.18	4.1	16.47	16.5	56.8	52.9
								24.91		8.32		1.11		50.00		4.11		16.50		47.2	
								24.91		8.33		1.11		49.00		4.03		16.44		54.6	
	W1	Flood	Fine	Calm	11:29	1.93	1.0	24.85	24.8	7.34	7.3	5.69	5.7	29.70	28.5	2.39	2.3	26.28	26.4	32.8	33.6
								24.85		7.32		5.70		28.20		2.26		26.34		33.7	
								24.85		7.32		5.71		27.70		2.22		26.47		34.2	
	W2				11:43	1.34	0.7	24.83	24.8	7.41	7.4	10.78	10.8	50.90	49.4	3.97	3.9	22.23	22.3	51.5	56.3
								24.80		7.41		10.78		49.90		3.89		22.33		59.7	
								24.76		7.41		10.70		47.30		3.69		22.24		57.7	

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 23 February 2024

Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
23/2/2024	W1	Ebb	Fine	Calm	12:40	1.69	0.8	23.57	23.6	7.63	7.6	7.38	6.4	64.70	59.7	5.26	4.9	18.88	18.7	47.3	52.9
								23.58		7.62		6.21		58.90		4.83		18.72		39.4	
								23.53		7.53		5.64		55.50		4.57		18.59		72.1	
	W2				12:55	0.50	0.3	23.96	24.0	7.31	7.3	10.78	10.8	39.60	39.2	3.14	3.1	40.07	40.0	76.6	74.5
								23.95		7.30		10.78		39.20		3.11		40.08		76.1	
								23.95		7.30		10.79		38.90		3.08		39.93		70.8	
	C1	-	Fine	Calm	11:07	0.31	0.2	21.47	21.5	7.87	7.8	0.41	0.4	43.10	38.5	3.80	3.4	22.36	22.0	39	39.5
								21.47		7.81		0.41		39.20		3.46		22.32		45.4	
								21.44		7.69		0.38		33.20		2.93		21.41		34	
	C2				11:31	0.60	0.3	22.70	22.7	7.81	7.8	0.83	0.8	87.70	87.1	7.53	7.5	11.10	11.1	8.4	7.2
								22.71		7.79		0.83		87.00		7.47		11.07		4.6	
								22.69		7.78		0.83		86.70		7.45		11.11		8.6	
	UM		Fine	Calm	12:01	0.51	0.3	21.55	21.6	9.42	9.5	1.18	1.2	47.90	45.9	4.20	4.0	21.32	21.4	41.4	37.0
								21.56		9.47		1.18		45.10		3.95		21.48		36.8	
								21.56		9.48		1.18		44.80		3.92		21.25		32.8	
	W1	Flood	Fine	Calm	9:20	1.71	0.9	23.24	23.3	7.40	7.3	6.51	6.5	49.00	31.5	4.03	2.6	13.73	13.9	34.8	48.5
								23.29		7.32		6.47		24.00		1.97		13.90		64	
								23.33		7.29		6.47		21.60		1.78		14.03		46.6	
	W2				9:37	1.61	0.8	23.99	24.0	7.28	7.3	9.30	9.3	30.50	30.4	2.44	2.4	14.75	14.8	25.8	21.1
								23.99		7.27		9.30		30.50		2.44		14.63		21.4	
								24.00		7.26		9.32		30.30		2.42		15.01		16.2	

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 26 February 2024

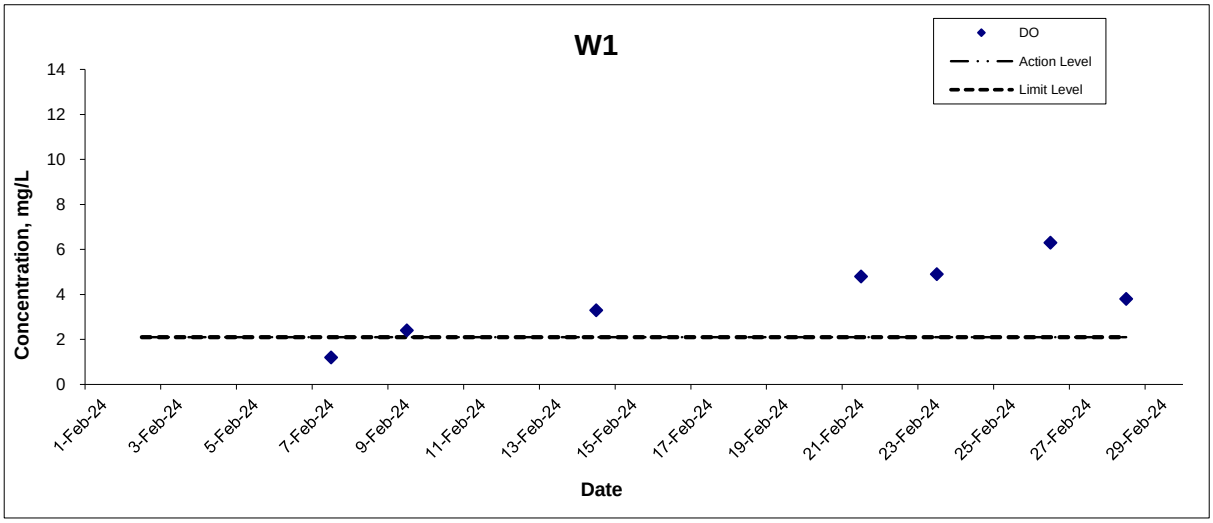
Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
26/2/2024	W1	Ebb	Fine	Calm	15:12	2.25	1.1	21.05	21.9	7.74	7.7	6.31	6.3	74.10	73.2	6.36	6.3	25.41	25.4	43.2	46.2
								22.53		7.59		6.31		73.10		6.30		25.32		48.3	
								22.08		7.73		6.31		72.50		6.28		25.33		47.2	
	W2				15:12	2.47	1.2	22.53	22.9	7.59	7.7	9.04	9.0	89.90	85.6	7.39	7.3	28.32	28.5	62.5	50.7
								22.08		7.73		9.04		84.10		7.34		28.33		38.5	
								23.97		7.72		9.04		82.80		7.21		28.87		51.1	
	C1	-	Fine	Calm	12:15	0.33	0.2	22.06	22.1	8.06	8.0	2.65	2.6	98.10	97.5	8.43	8.4	16.17	16.2	12.4	12.7
								22.07		7.93		2.64		97.30		8.37		16.18		11.8	
								22.08		7.91		2.64		97.10		8.35		16.14		13.8	
	C2				12:31	0.15	0.1	20.98	21.0	8.04	8.0	0.27	0.3	62.80	62.6	5.60	5.6	12.31	12.3	11	13.4
								20.97		8.02		0.27		62.60		5.58		12.28		12.8	
								20.97		8.01		0.26		62.40		5.56		12.30		16.4	
	UM		Fine	Calm	13:21	0.53	0.3	21.37	21.4	7.80	7.8	1.24	1.2	49.30	48.7	4.33	4.3	18.30	18.2	28.4	26.2
								21.37		7.80		1.24		48.80		4.29		18.20		20.6	
								21.36		7.79		1.24		47.90		4.21		18.18		29.6	
	W1	Flood	Fine	Calm	11:00	1.71	0.9	19.51	19.5	7.40	7.4	7.66	7.7	36.50	36.2	3.20	3.2	27.03	27.0	58.4	59.7
								19.51		7.39		7.67		36.10		3.17		27.02		60.5	
								19.50		7.38		7.67		35.90		3.15		26.93		60.2	
	W2				11:16	1.23	0.6	19.33	19.3	7.31	7.3	9.41	9.4	42.70	42.7	3.72	3.7	31.66	31.6	91.9	88.9
								19.33		7.31		9.41		42.70		3.72		31.68		73.3	
								19.33		7.31		9.41		42.60		3.71		31.54		101.5	

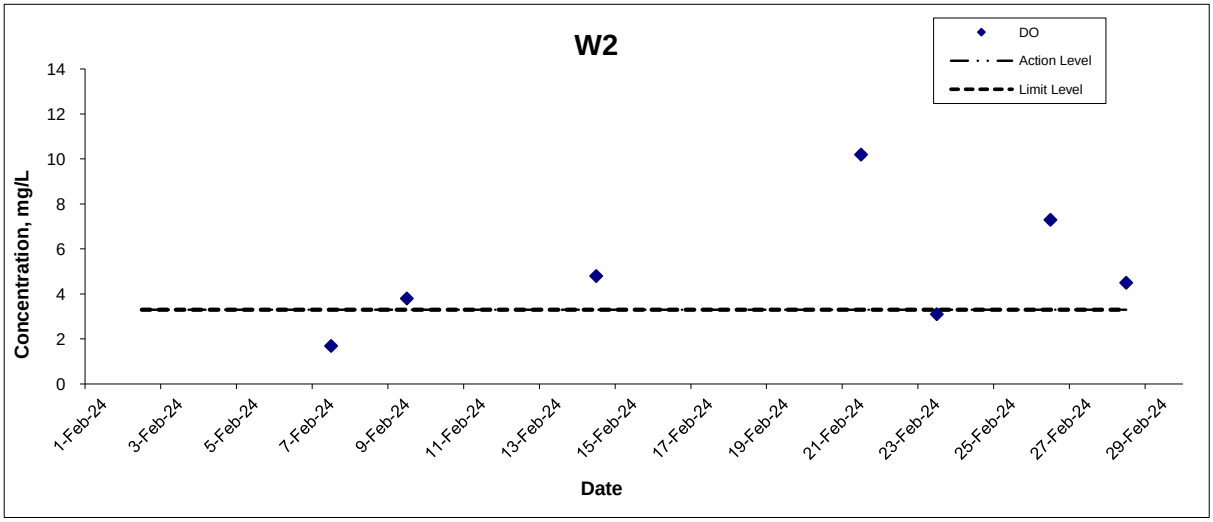
Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

Water Quality Monitoring Results on 28 February 2024

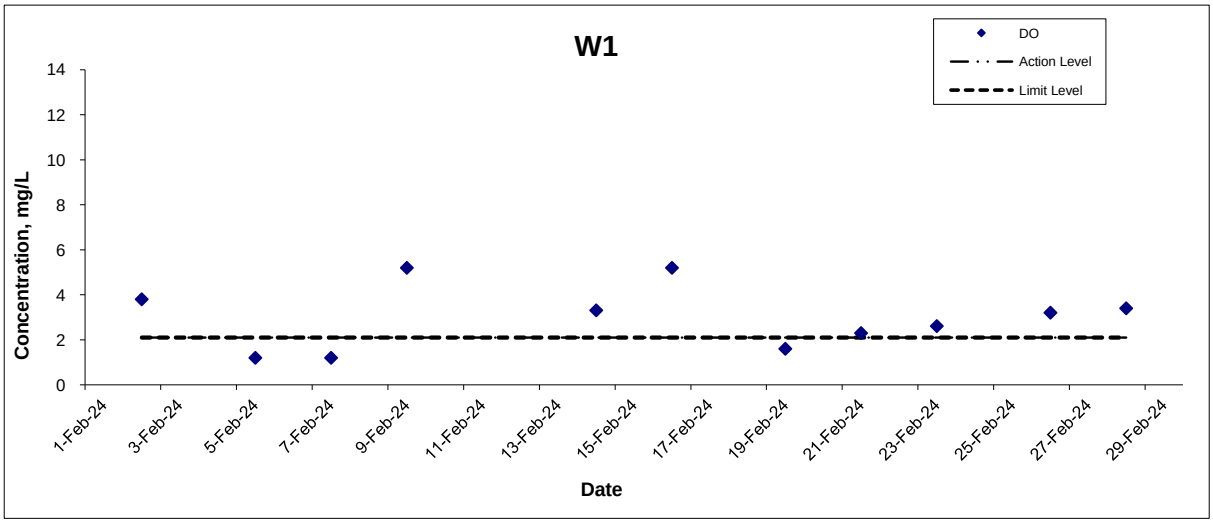
Date	Location	Tide	Weather Condition	Wind Condition*	Sampling Time	Water Depth(M)	Sampling Depth(M)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
28/2/2024	W1	Ebb	Fine	Calm	15:02	1.63	0.8	19.79	19.8	7.30	7.3	7.28	7.3	43.80	43.6	3.83	3.8	23.70	23.7	35.1	34.1
								19.79		7.29		7.28		43.60		3.81		23.69		32.9	
								19.79		7.29		7.28		43.50		3.80		23.69		34.4	
	W2				15:16	1.56	0.8	19.48	19.5	7.32	7.3	9.57	9.6	52.10	52.0	4.52	4.5	29.97	29.9	55.1	59.5
								19.48		7.32		9.57		52.00		4.52		29.82		62.1	
								19.48		7.31		9.57		52.00		4.51		29.95		61.4	
	C1	-	Fine	Calm	13:05	0.30	0.2	21.41	21.4	7.78	7.8	0.29	0.3	48.00	47.8	4.24	4.2	15.53	15.6	17.4	17.6
								21.41		7.77		0.29		47.80		4.22		15.56		9.6	
								21.41		7.77		0.29		47.50		4.19		15.58		25.8	
	C2				12:46	0.15	0.1	21.39	21.4	7.41	7.4	0.62	0.6	84.50	84.4	7.45	7.4	12.13	12.1	8.4	10.1
								21.38		7.40		0.62		84.40		7.45		12.06		14.2	
								21.38		7.39		0.62		84.40		7.44		12.02		7.6	
	UM		Fine	Calm	14:32	0.51	0.3	20.74	20.7	7.51	7.5	1.12	1.1	38.90	38.8	3.46	3.5	18.22	18.3	75	51.1
								20.74		7.51		1.12		38.80		3.45		18.31		38.8	
								20.74		7.50		1.12		38.70		3.44		18.25		39.4	
	W1	Flood	Fine	Calm	11:35	2.61	1.3	19.72	19.7	7.21	7.2	6.98	7.0	39.10	39.0	3.43	3.4	29.31	29.3	59.5	43.6
								19.72		7.21		6.98		39.00		3.42		29.32		23.3	
								19.72		7.21		6.96		39.00		3.42		29.36		48	
	W2				11:49	1.22	0.6	19.12	19.1	7.44	7.4	10.46	10.4	62.20	61.6	5.41	5.4	35.99	36.4	60.2	63.6
								19.12		7.42		10.43		61.60		5.36		36.24		57.9	
								19.13		7.41		10.40		61.10		5.32		36.98		72.6	

Dissolved Oxygen (Depth-Averaged) at Mid-Ebb Tide





Dissolved Oxygen (Depth-Averaged) at Mid-Flood Tide



Title	Scale	Project No.
Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Water Quality Monitoring Results	N.T.S	MA23101
	Date: Feb-24	Appendix: H

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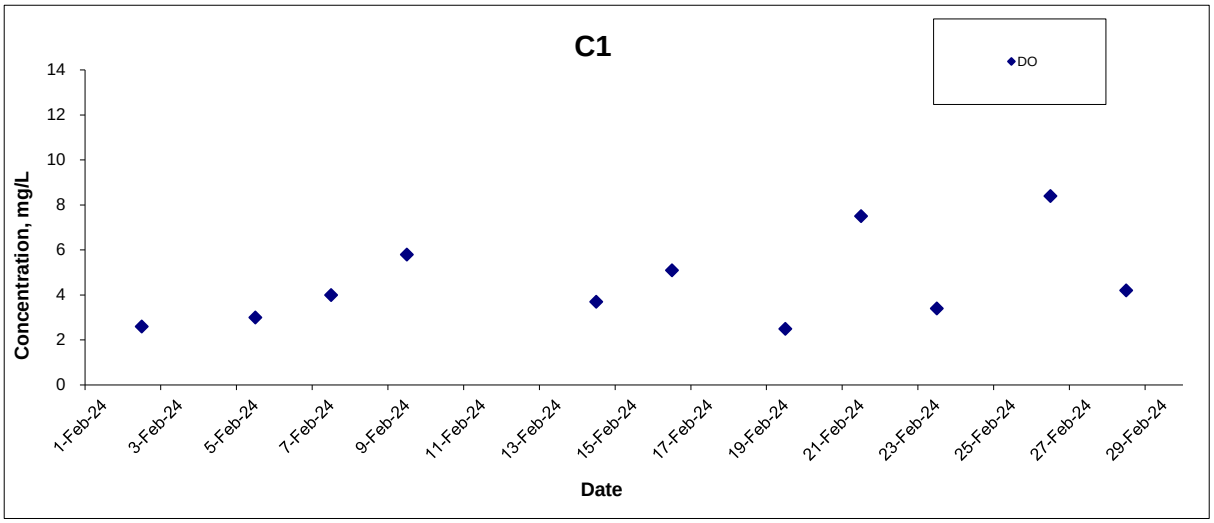
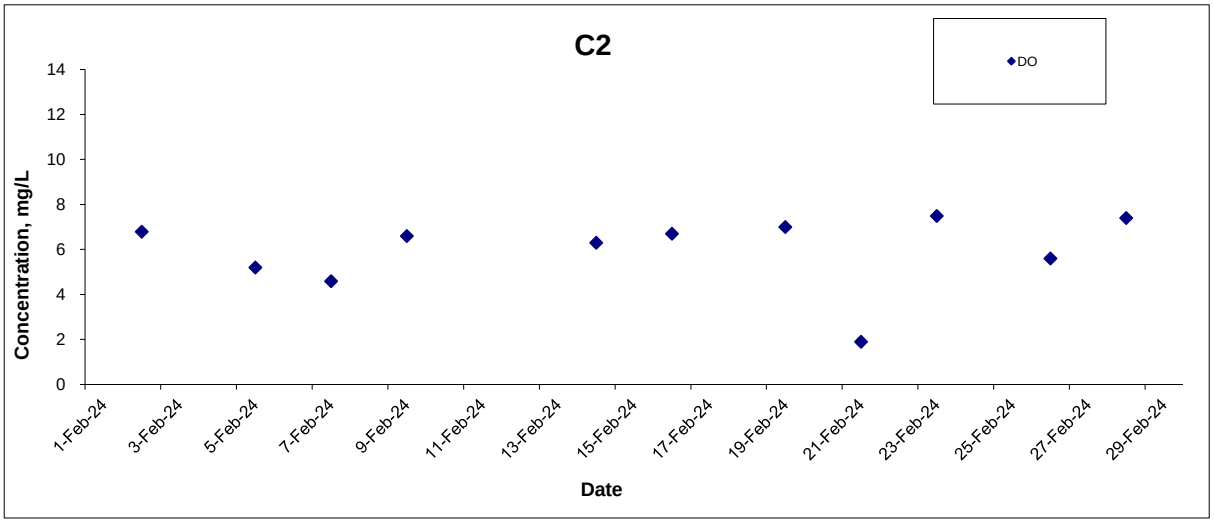
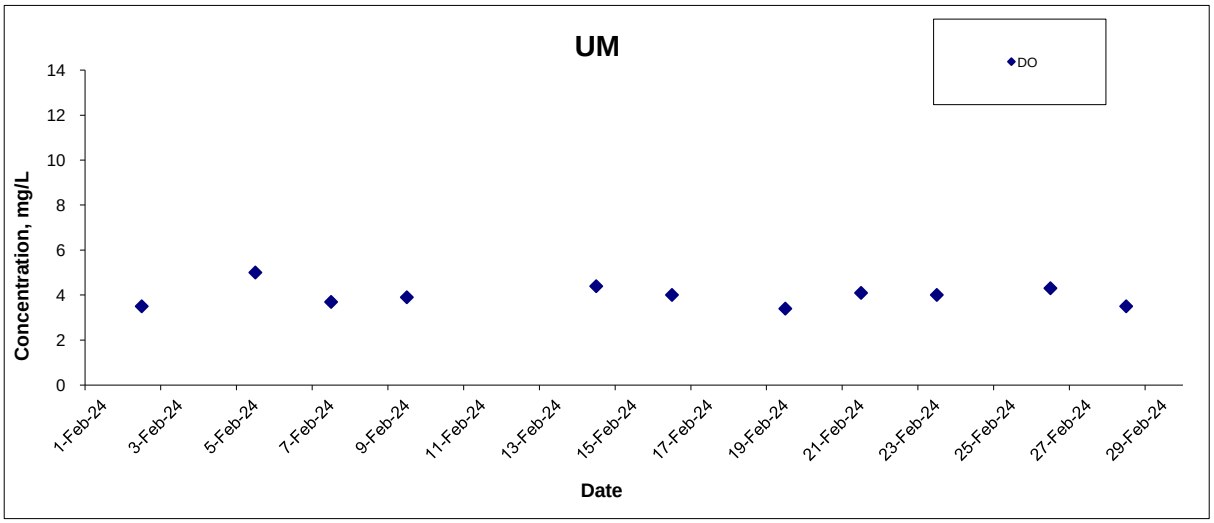
Dissolved Oxygen (Depth-Averaged) at Control Stations



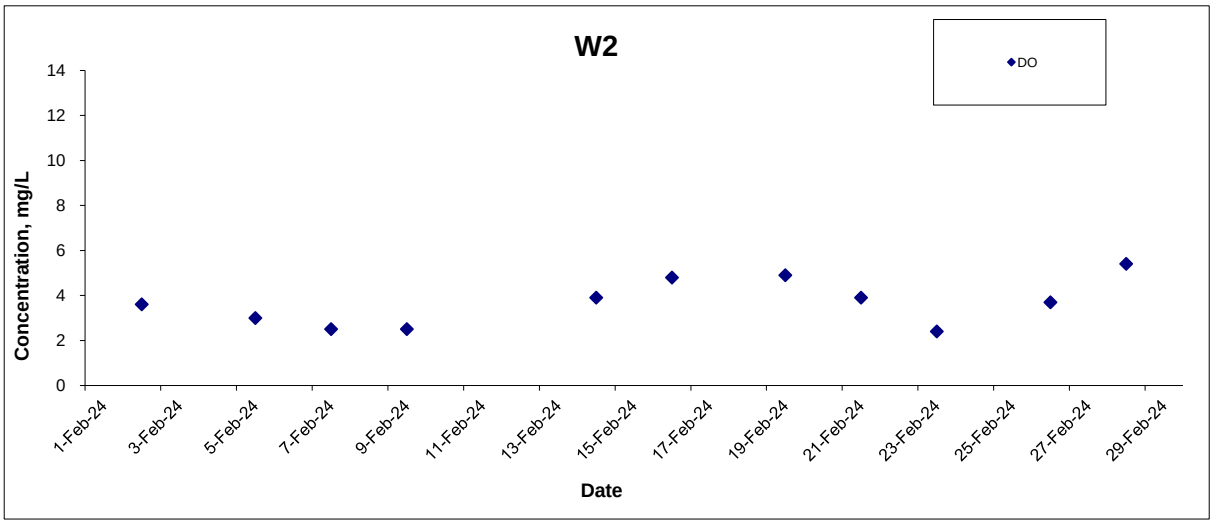




Title		Scale	Project No.
Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes		N.T.S	MA23101
Graphical Presentation of Water Quality Monitoring Results		Date: Feb-24	Appendix: H

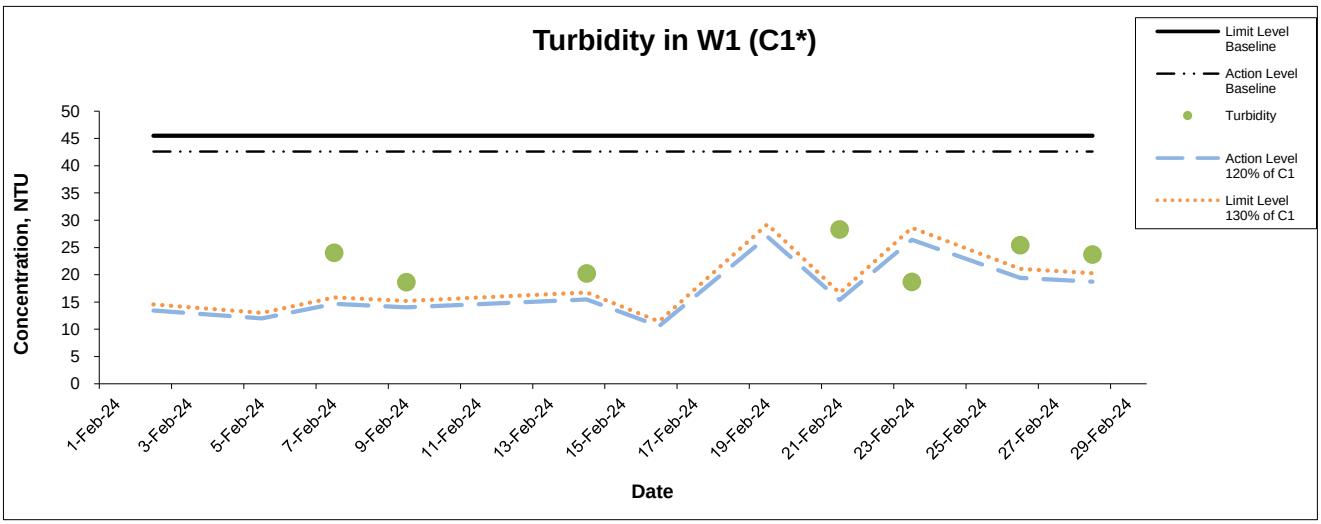
CINOTECH

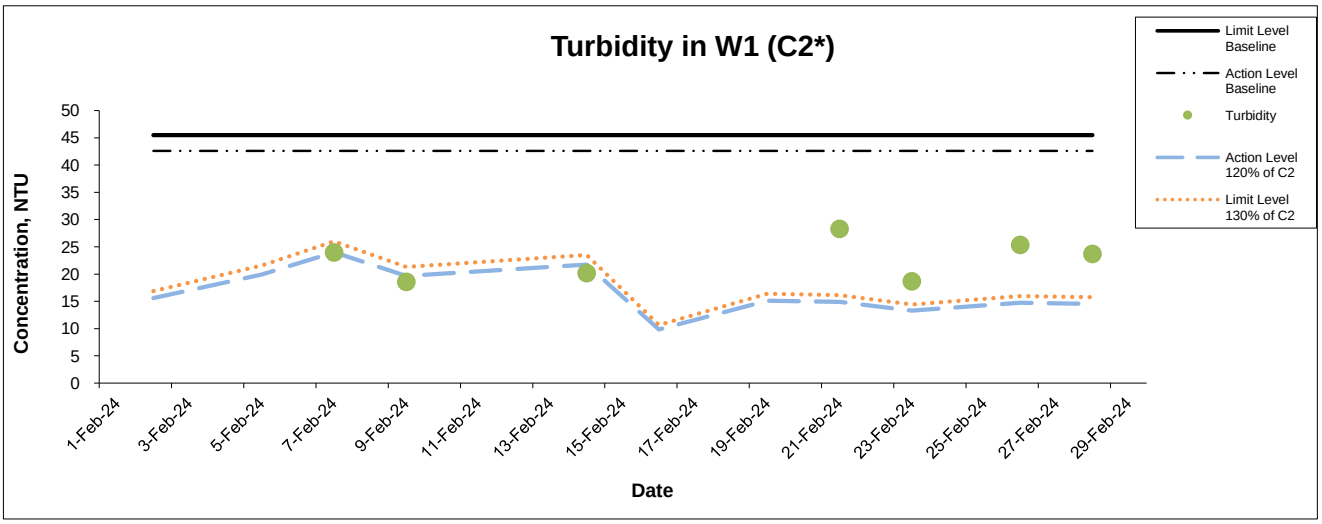
Dissolved Oxygen (Depth-Averaged) at Control Stations

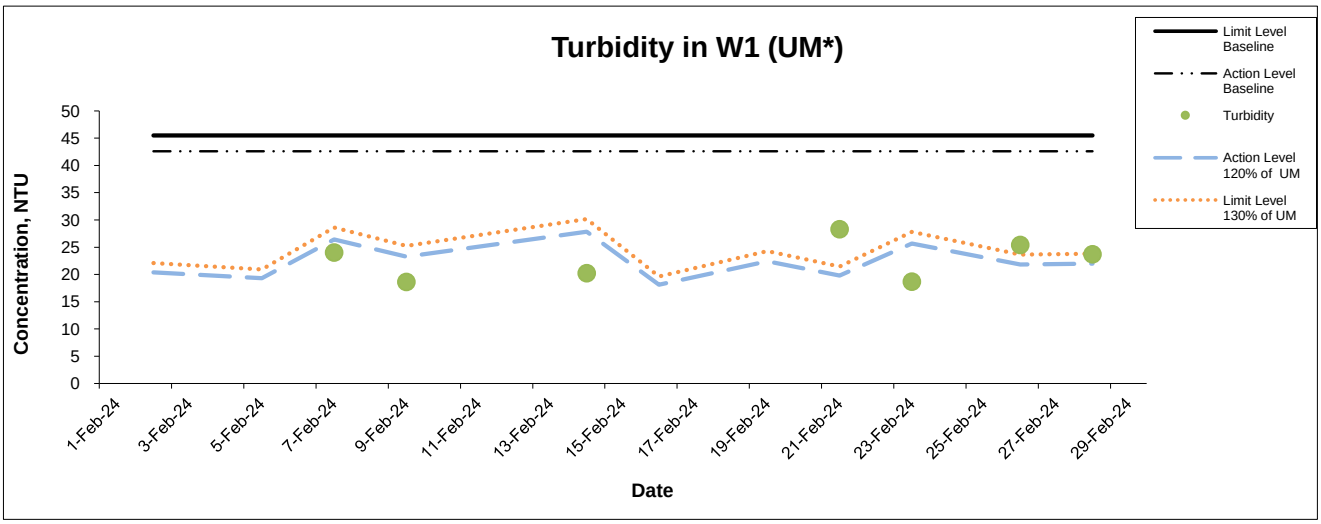


Title: Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Feb-24	Project No.: MA23101 Appendix: H	CINOTECH

Turbidity (Depth-Averaged) at Mid-Ebb Tide



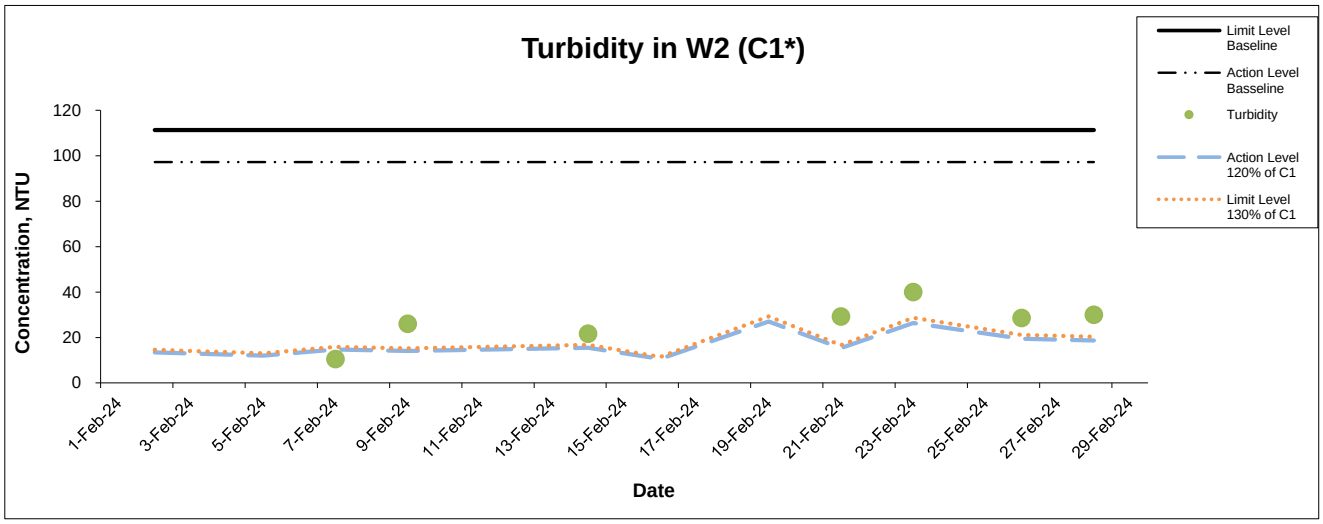


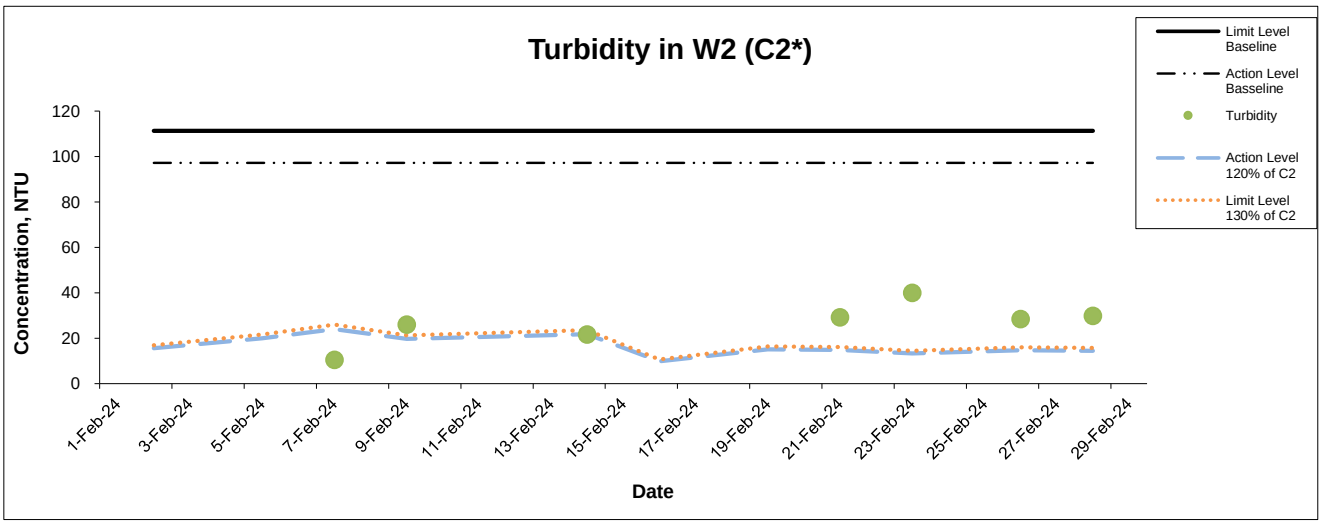


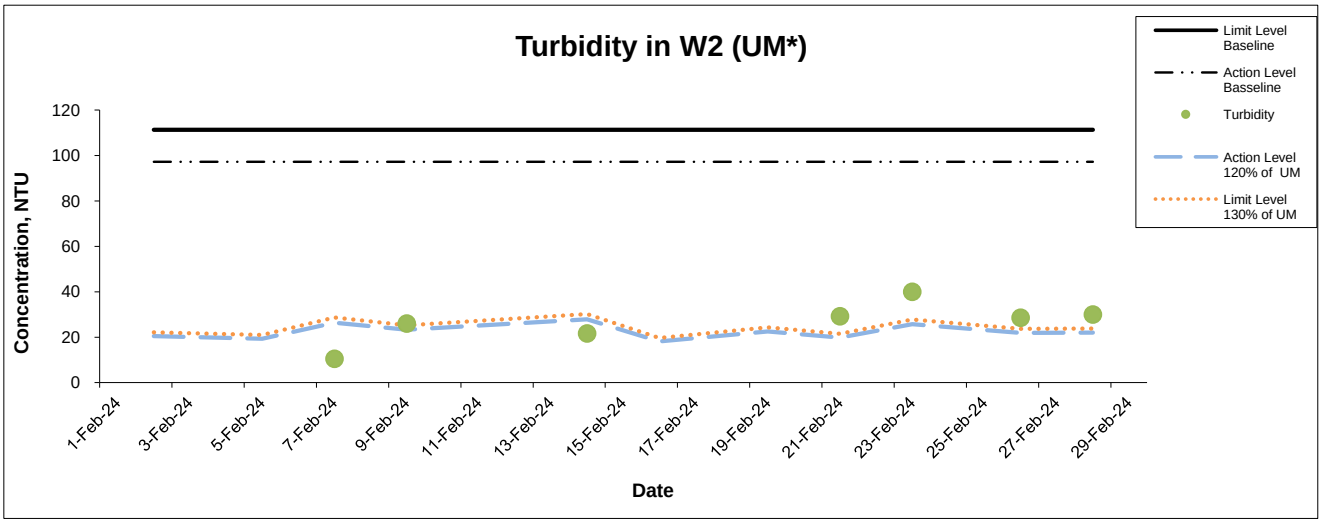
*Remark: Monitoring Station C1, C2, UM inside () are Control Stations.

Title: Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Feb-24	Project No.: MA23101 Appendix: H	CINOTECH

Turbidity (Depth-Averaged) at Mid-Ebb Tide







*Remark: Monitoring Station C1, C2, UM inside () are Control Stations.

Title: Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA23101	CINOTECH
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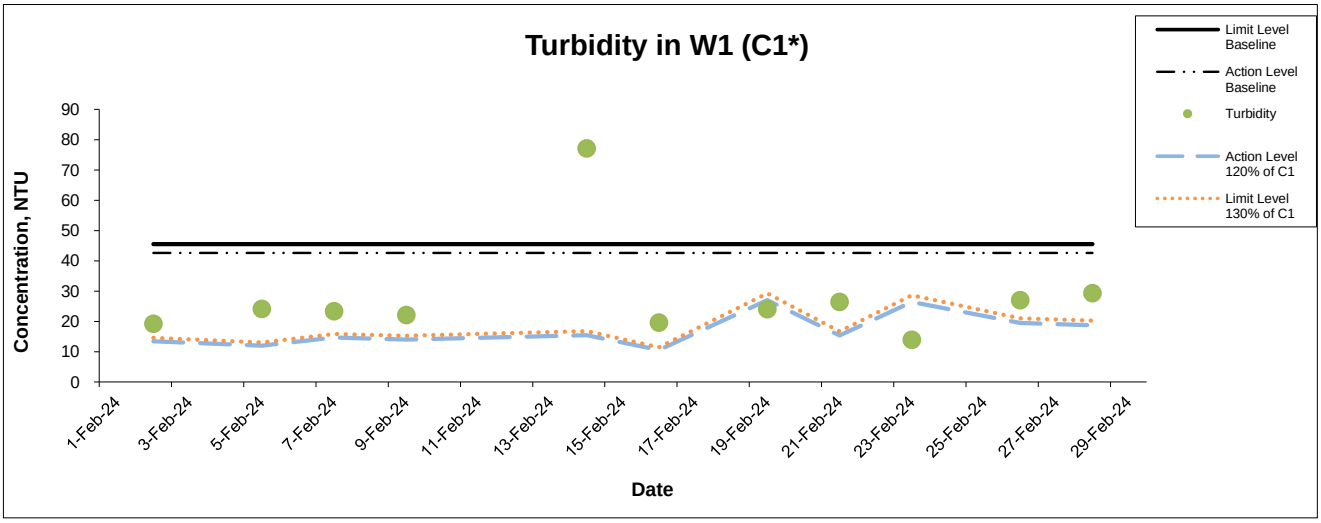
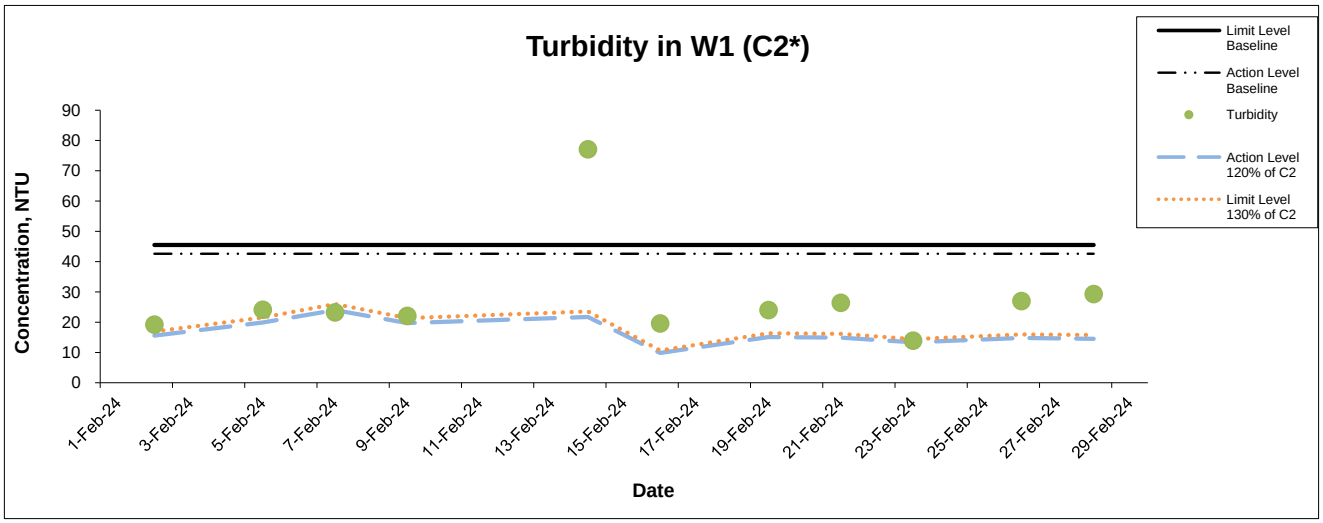
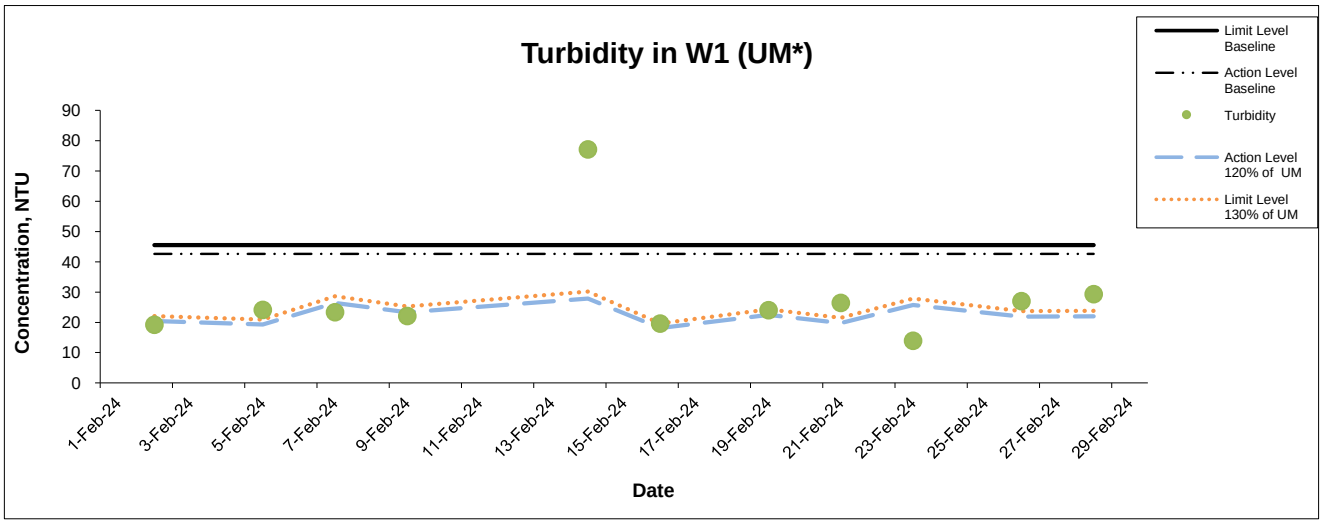
Turbidity (Depth-Averaged) at Mid-Flood Tide



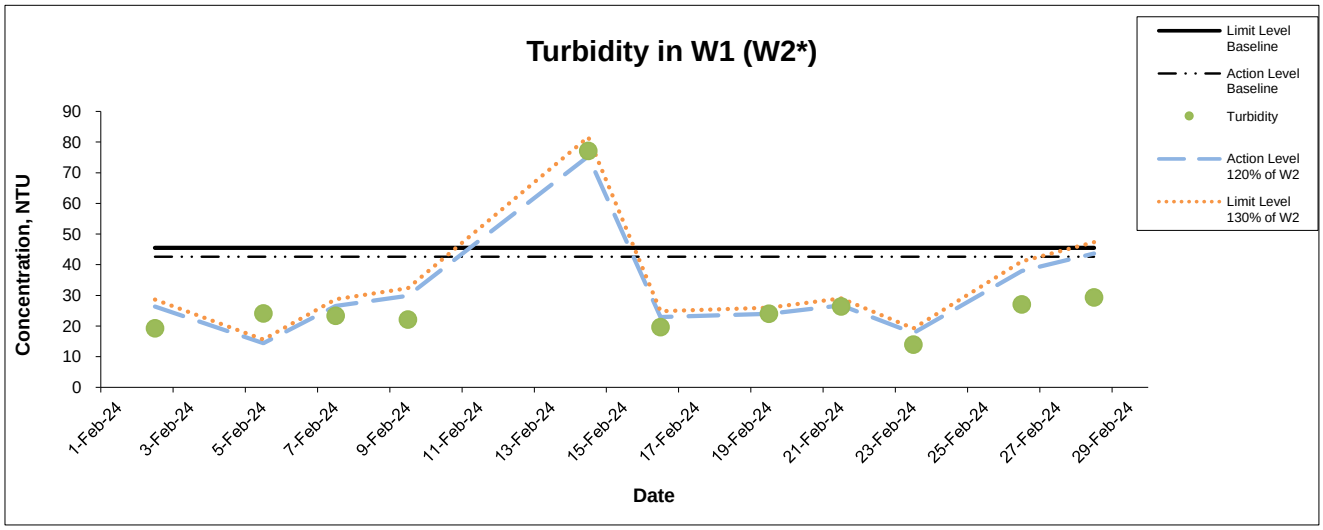




*Remark: Monitoring Station C1, C2, UM inside () are Control Stations.

Title: Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Feb-24	Project No.: MA23101 Appendix: H	CINOTECH

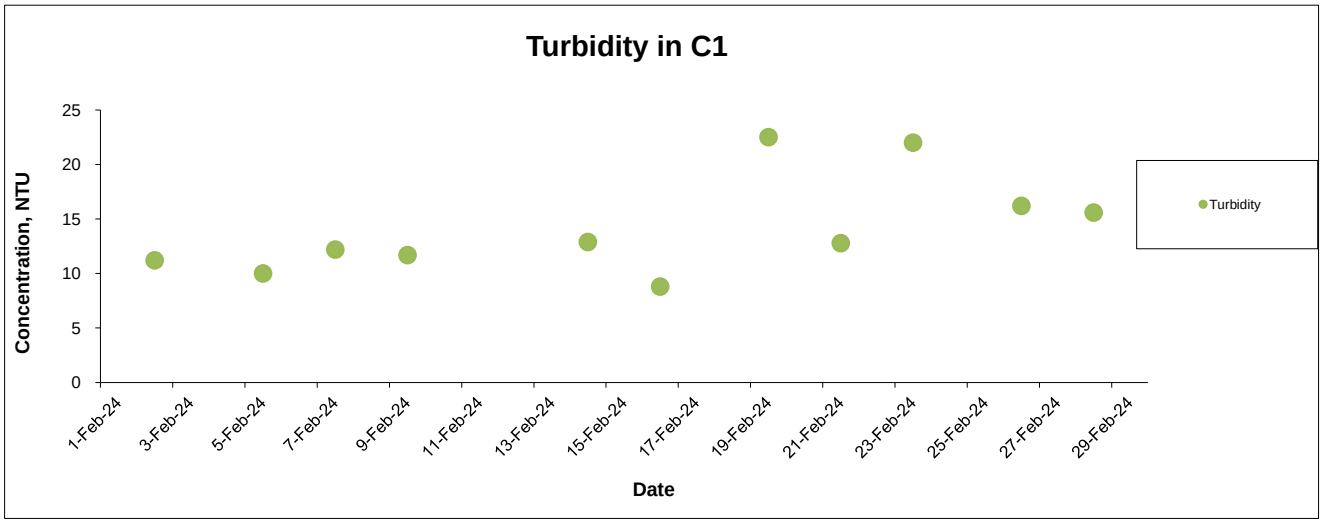
Turbidity (Depth-Averaged) at Mid-Flood Tide

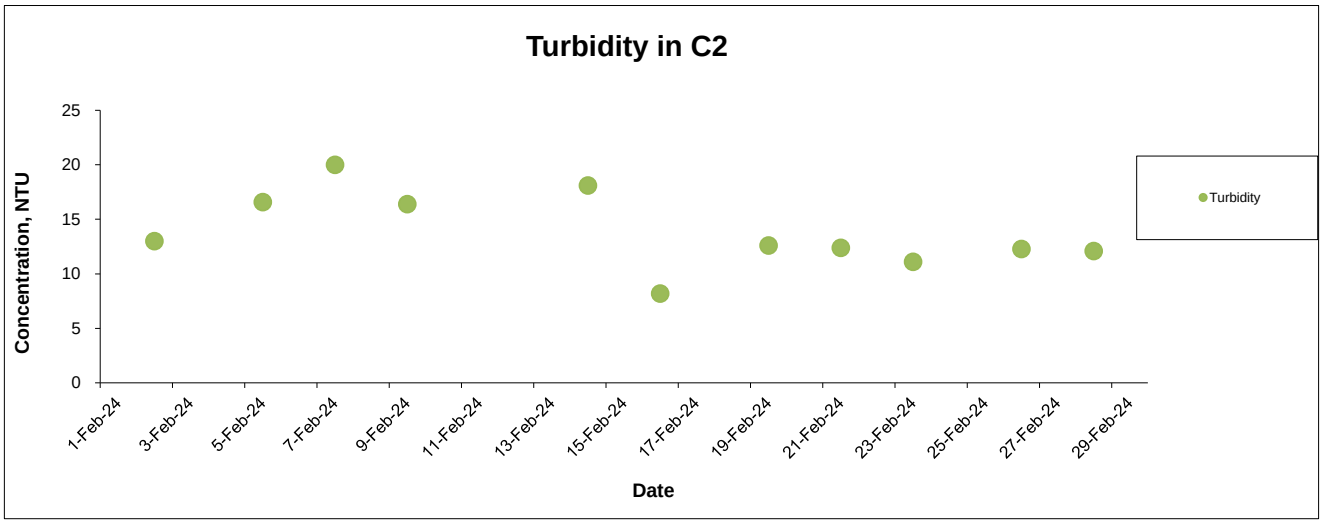


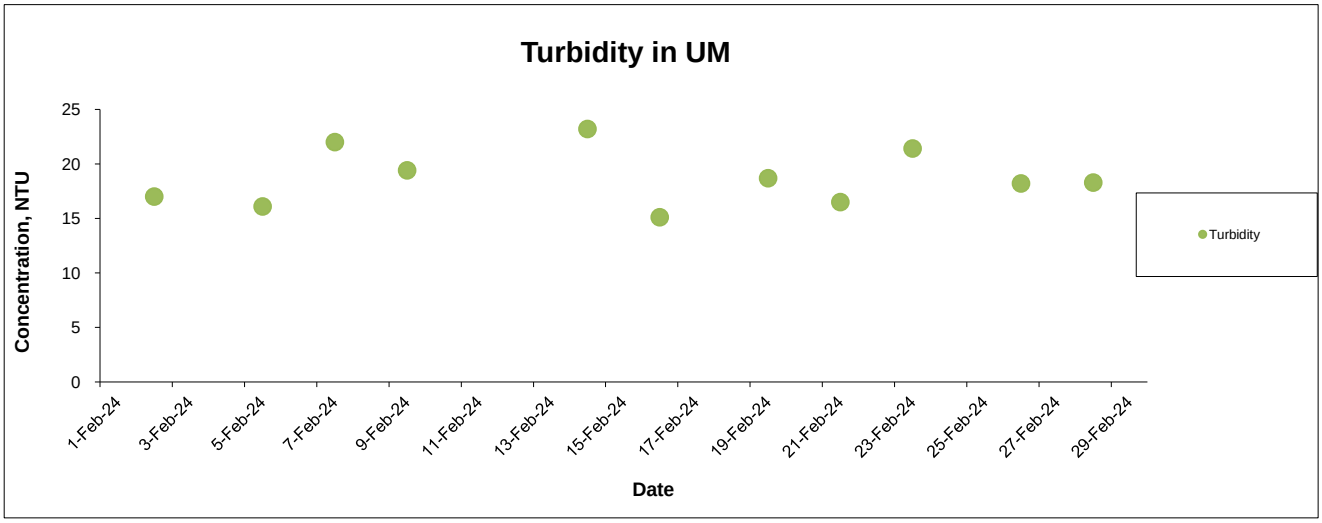
*Remark: Monitoring Station C1, C2, UM inside () are Control Stations.

Title: Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Feb-24	Project No.: MA23101 Appendix: H	CINOTECH

Turbidity (Depth-Averaged) at Control Stations

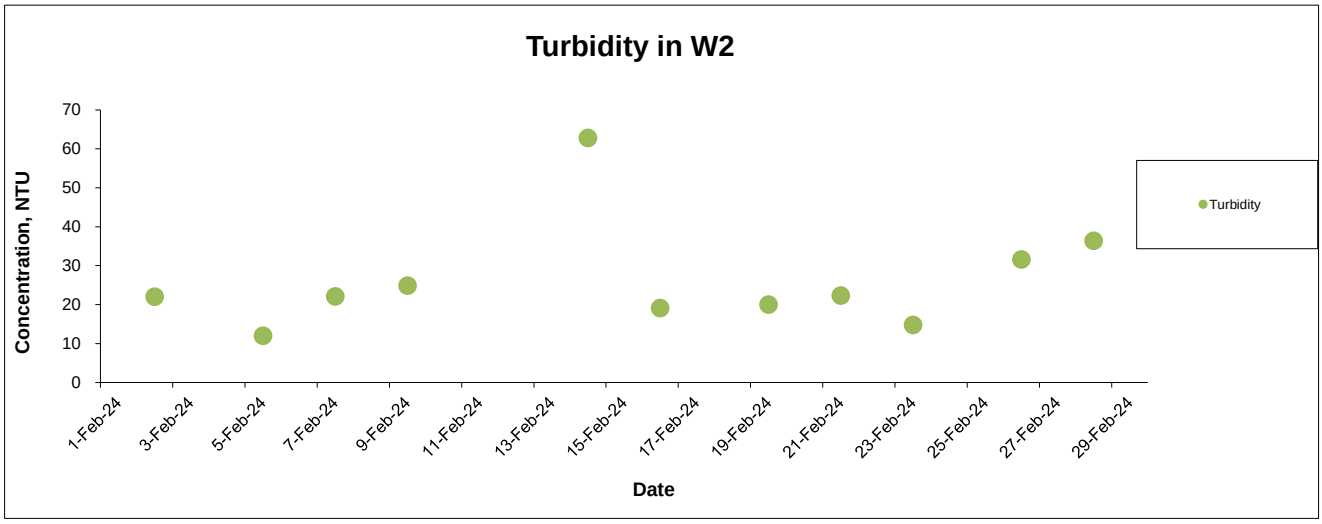






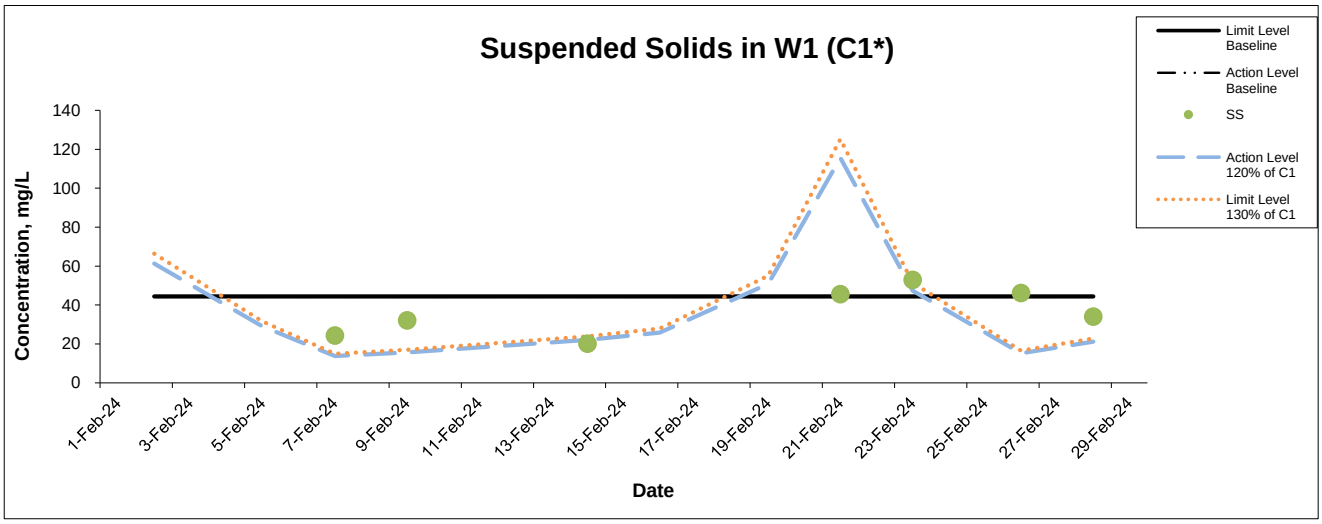
Title: Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA23101	CINOTECH
	Date: Feb-24	Appendix: H	

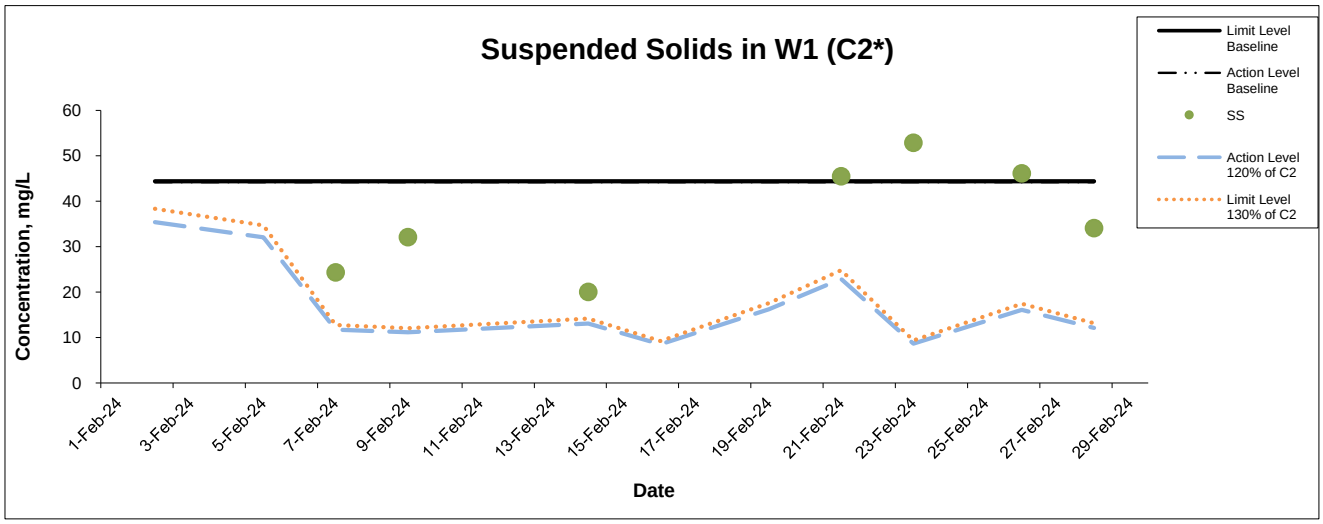
Turbidity (Depth-Averaged) at Control Stations

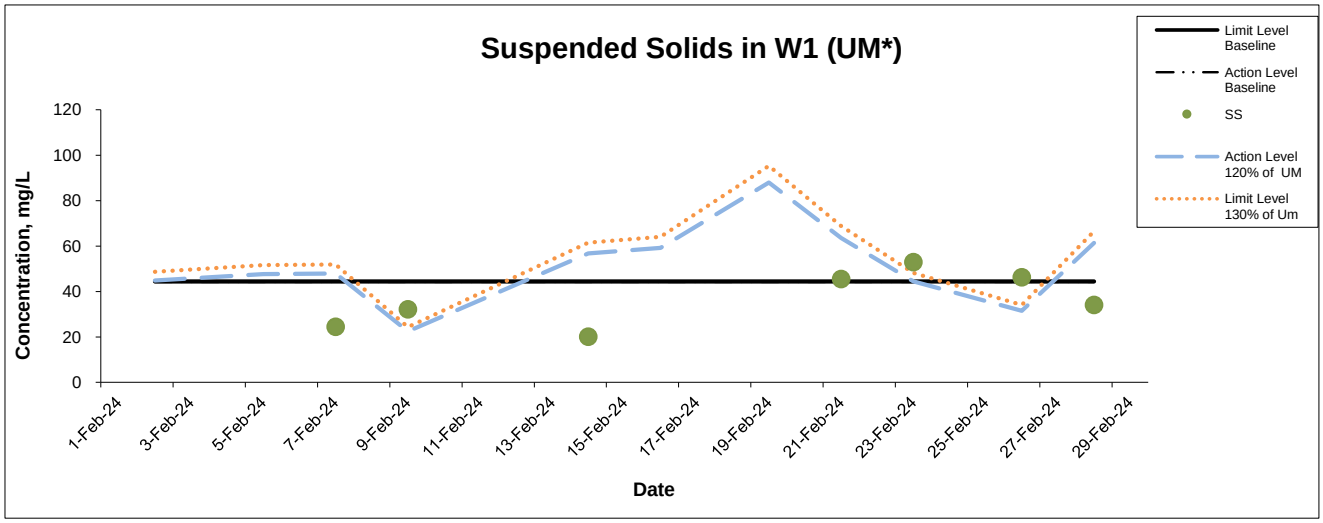


Title: Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Feb-24	Project No. MA23101 Appendix: H	CINOTECH

Suspended Solids (SS) (mg/L) at Mid-Ebb Tide







*Remark: Monitoring Station C1, C2, UM inside () are Control Stations.

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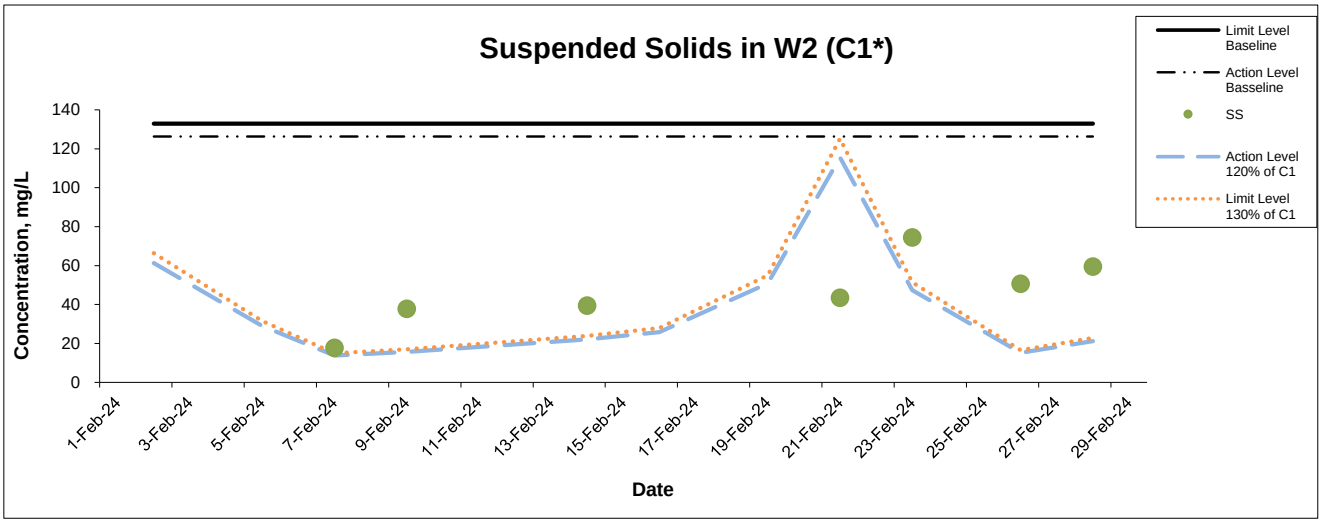
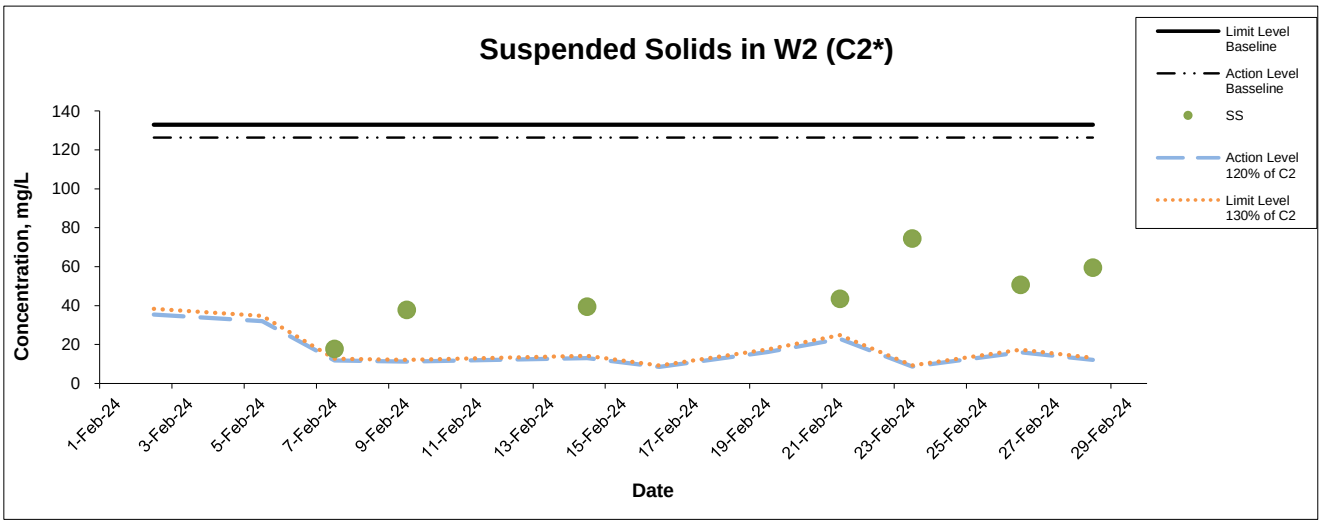
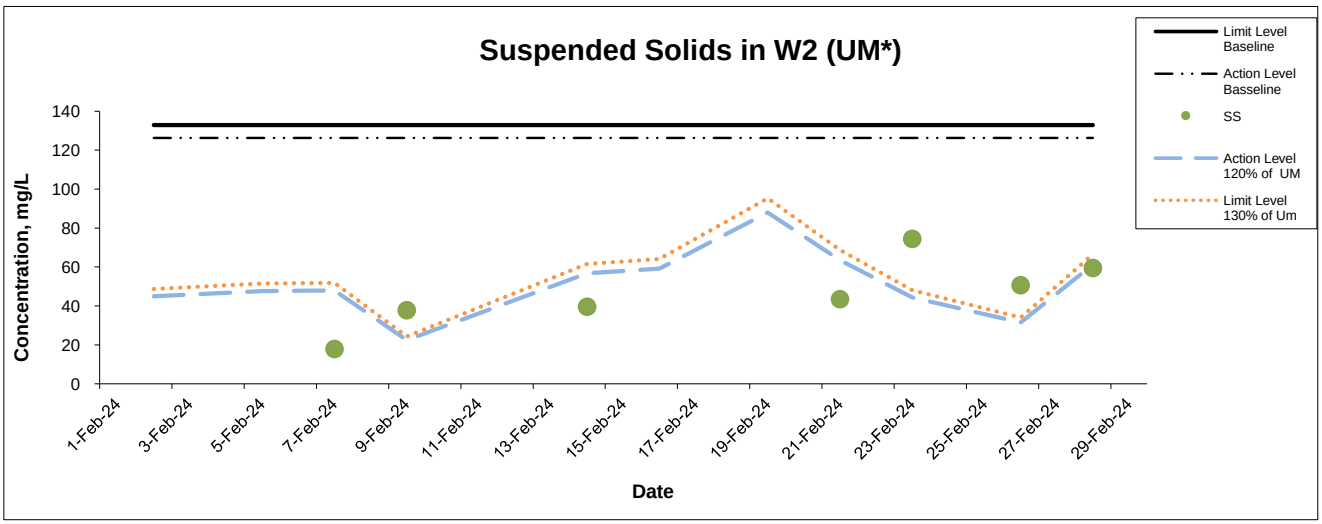


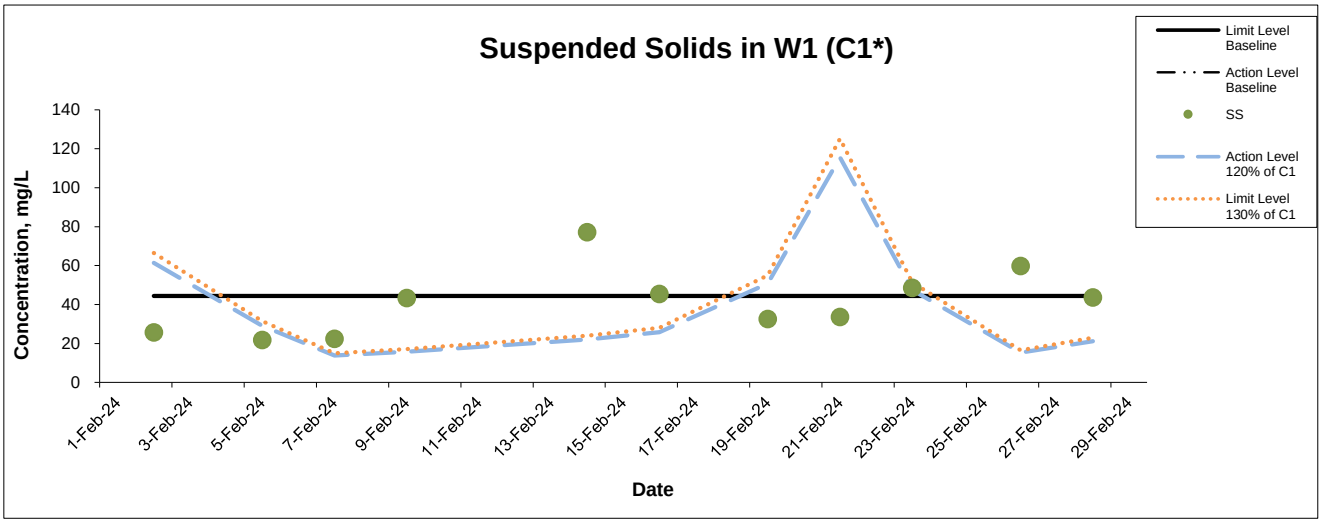


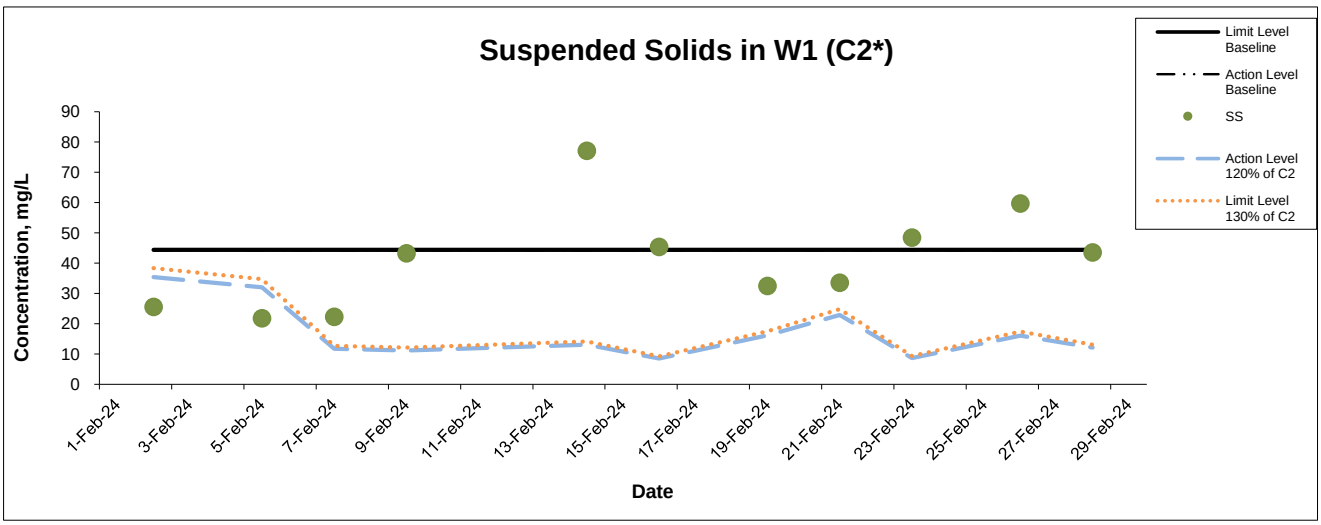


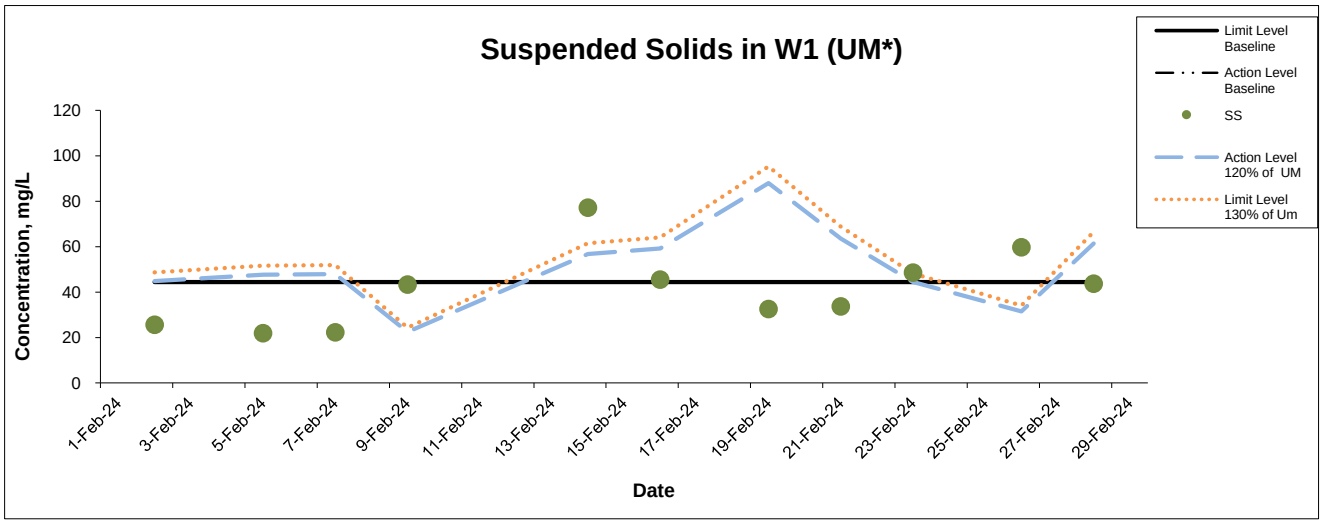
*Remark: Monitoring Station C1, C2, UM inside () are Control Stations.

Title: Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Feb-24	Project No.: MA23101 Appendix: H	CINOTECH

Suspended Solids (SS) (mg/L) at Mid-Flood Tide







*Remark: Monitoring Station C1, C2, UM inside () are Control Stations.

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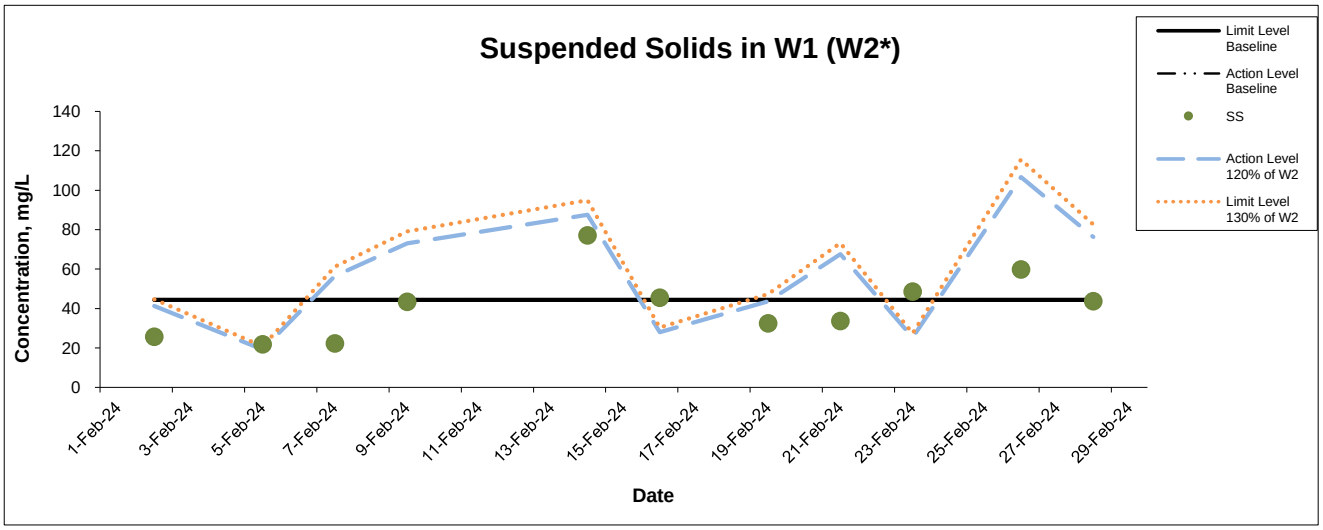

*Remark: Monitoring Station C1, C2, UM inside () are Control Stations.

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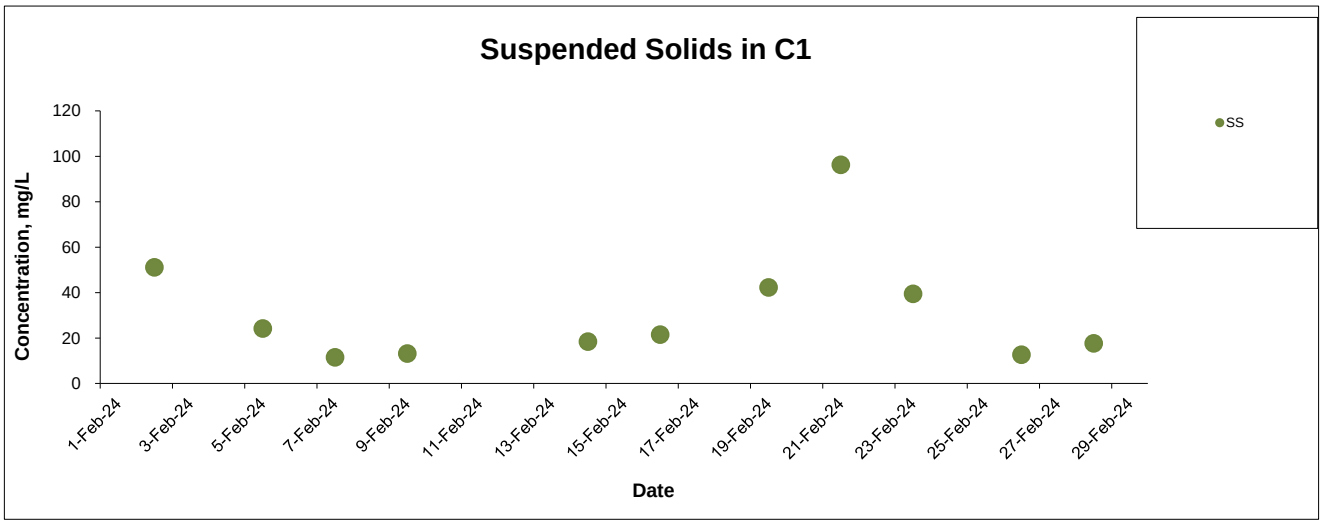
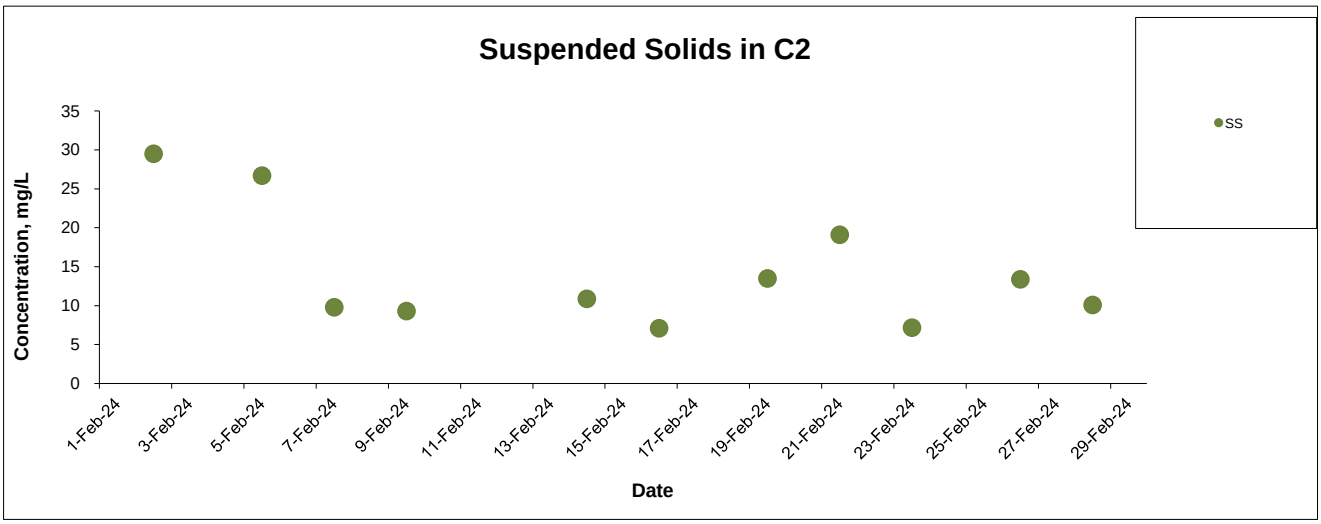
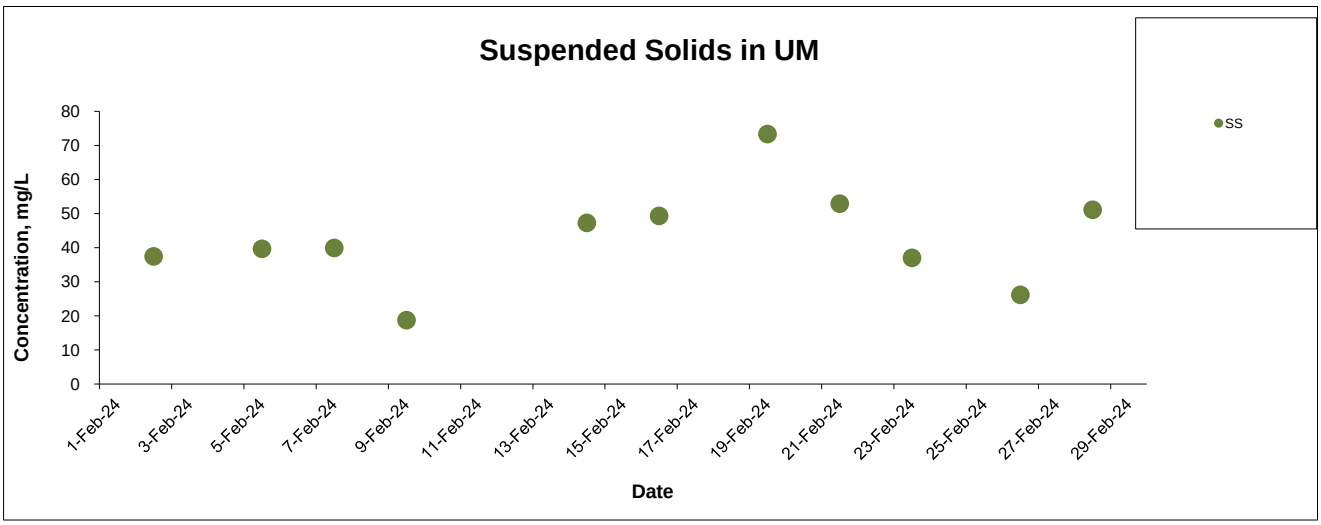


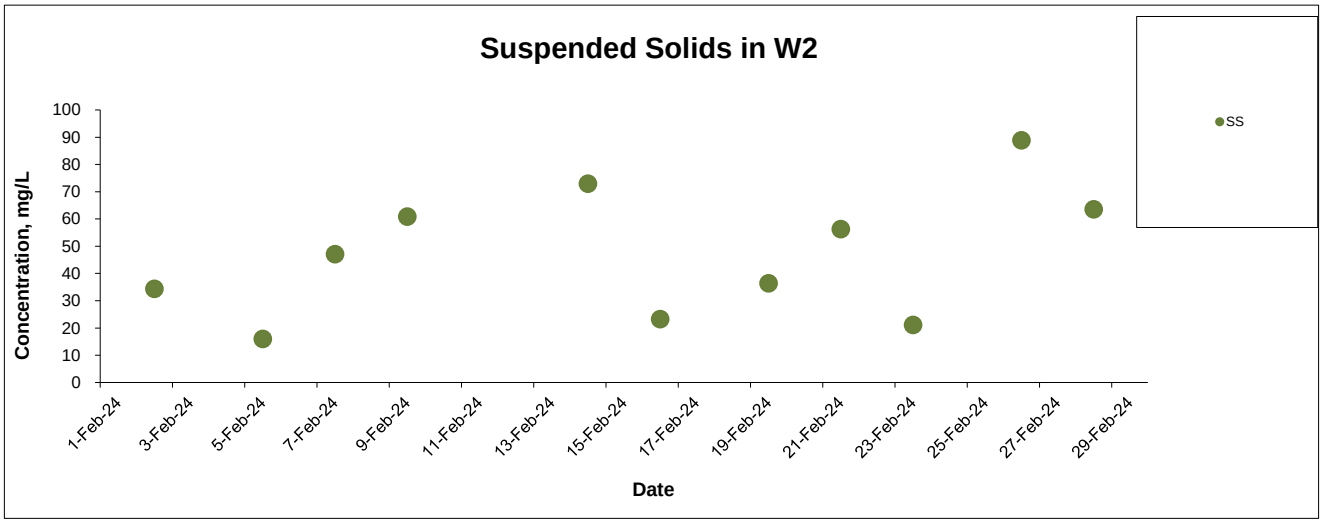




Title		Scale	Project No.
Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes		N.T.S	MA23101
Graphical Presentation of Water Quality Monitoring Results		Date: Feb-24	Appendix: H

CINOTECH

Suspended Solids (SS) (mg/L) at Control Stations



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APPENDIX I
ECOLOGICAL MONITORING OF BIRD SURVEY REPORT

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1 INTRODUCTION

1.1 Background

1.1.1 The Drainage Services Department (DSD) proposes Yuen Long Barrage Scheme at the mouth of Yuen Long Nullah (YLN) near the Shan Pui River. The objective is this project is to enhance the flood protection level of the existing Yuen Long Nullah and Kam Tin River to the required standard. Also, resolve odour problem and enhance the local environment of the town centre section of Yuen Long Nullah, and revitalise Yuen Long Nullah.

1.1.2 The barrage scheme in Yuen Long would conduct a construction of an automatic flood barrier of about 60 meters (m), a stormwater pumping station, a master control center and the associated electrical and mechanical facilities in the Yuen Long Nullah. Besides, flood walls along the Kam Tin River and the Yuen Long Nullah would also be improved in this scheme. The site location is shown in **Appendix A**.

1.1.3 The proposed works for Barrage Scheme is a designated project under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499), for which Environmental Impact Assessment (EIA) Report and Environmental Monitoring and Audit (EM&A) Manual were approved by the Environmental Protection Department (EPD) (Register No.: AEIAR-228/2021) on 24 May 2021. The Environmental Permit (EP) (EP No. EP-604/2022) was issued by EPD on 21 January 2022.

1.1.4 Cinotech Consultants Limited has been appointed by the Contractor China State - Alchmex JV as the Environmental Team (ET) to prepare a baseline bird survey report for the monthly EM&A works, focusing on avifauna species along Shan Pui River and Kam Tin River within 500m from the Project boundary during construction phase.

1.2 Purpose and the scope of the project

1.2.1 To conduct ecological monitoring of birds during the construction phase of the project, this Ecological Monitoring of Birds Survey Report for the project of Yuen Long Barrage Scheme is prepared in compliance with the requirements of Section 7.3.6 – 7.3.9 of the EM&A Manual.

1.2.2 This report presents the requirements, methodology and results of the construction phase ecological monitoring of birds survey in accordance with the requirements of the approved EM&A Manual.

2 REVIEW OF MONITORING REQUIREMENTS

2.1 Requirements in EM&A Manual

2.1.1 Monitoring requirements of birds in the EM&A Manual include:

- Baseline Ecological Monitoring of Birds
  - Section 7.3.3: The result of the ecological field surveys conducted for the EIA study, which were conducted monthly over a 12-month period between July 2019 and July 2020, will be adopted as the baseline for the evaluation of utilization of the wetland habitats by birds nearby the Project Site and effectiveness of the proposed mitigation measures during the ecological monitoring. The ET should review the applicability of the results of baseline surveys conducted for the EIA and conduct verification surveys as necessary.
- Ecological Monitoring of Birds
  - Section 7.3.6: Monthly ecological monitoring, focusing on avifauna species of conservation importance, and overwintering waterbirds utilising wetland habitats along Shan Pui River and Kam Tin River within 500m from the Project boundary should be conducted during construction phase. For the surveys overlooking the tidal mudflats and mangroves in the Shan Pui River and Kam Tin River, the tidal level at the time of the survey should be taken into consideration and the surveys should be taken when the tidal level is generally 1.5m or below.
  - Section 7.3.7: Avifaunal communities should be surveyed quantitatively along transects and at selected point count locations. All birds heard or seen along the transects should be identified to species level and counted. Noise level should also be recorded. Any changes in site condition or disturbances detected or observed at the monitoring locations, including both construction and non-construction related activities, during each impact monitoring visit should also be recorded.
  - Section 7.3.8: The monitoring results should be compared to pre-construction baseline condition during the dry and wet seasons as summarized in the Baseline Bird Survey Report.
  - Section 7.3.9: The ecological monitoring should be undertaken by experienced ecologist(s) with relevant working experience. Should any unpredicted indirect ecological impacts arising from the proposed Project be detected, remedial measures should be developed and implemented by the Contractor. The monitoring results with comparison to pre-construction baseline condition should be reported in the monthly EM&A Reports.

2.1.2 The assessment area for avifauna survey includes areas within a 500 m distance from the boundary of the Project site at the Yuen Long Nullah. The locations of the transect routes adopted in the EIA are illustrated in **Appendix A** respectively.

3 METHODOLOGY

3.1 Monitoring Area

3.1.1 The monitoring area included wetland habitats along the 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 A**.

3.1.2 As the construction phase of the project at the Kam Tin River has not begun yet, no ecological monitoring was required for that project area. This report will only present results of the ecological monitoring of birds conducted along the Yuen Long Nullah.

3.2 Survey Methodology

3.2.1 Avifauna surveys on the different wetland habitats using the transect count and point count methods were conducted on 16 February 2024 which started at around 08:30. For the surveys overlooking the tidal mudflats and mangroves in the Shan Pui River, the surveys were conducted when the tidal level was 1.5m or below.

3.2.2 The presence and abundance of avifauna species at various wetland habitats were recorded for the transect count and point count methods. In addition to recording the bird count, any disturbances that may affect bird behaviour were recorded, both coming from the project construction activity or other sources.

3.2.3 Avifauna species were detected either by direct sighting or by their call. Species recorded were identified and quantified, with special reference to behaviours such as feeding, roosting and breeding.

3.2.4 For evaluation of waterbird, wetland dependent species defined in the Monthly Waterbird Monitoring Biannual Report prepared by the Hong Kong Bird Watching Society are considered.

3.2.5 Avifauna species of conservation importance refers to the species that is listed in Threatened categories of IUCN Red List (vulnerable, endangered and critically endangered) or those of the South China region (e.g. China Red Data Book), have conservation concern rated by Fellowes et al (2002) and protected under the legislation of Hong Kong. This report will screen out species with important conservation significance from the original data of the EIA study for analysis.

3.2.6 As the impact monitoring should focus on wetland habitats similar to the baseline monitoring, data collected from terrestrial habitats far away from wetland habitats are excluded just like the baseline monitoring. Transects within and near wetland habitats where the data are analysed are shown in **Appendix A** for Yuen Long Area which will adopted for data analysis.

3.2.7 Noise levels were recorded concurrently with the ecological monitoring of birds at the proposed noise monitoring stations **Table 5**.

- The monitoring station was set at a position 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces.
- Parameters such as frequency weighting, the time weighting and the measurement time was set as follows:

  - frequency weighting: A

- time weighting: Fast
- measurement time: 5 minutes

- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement will be more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- At the end of the monitoring period, the Leq, L90 and L10 was recorded. In addition, noise sources were recorded on a standard record sheet.

  Noise monitoring will be cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

3.3 Data analysis

3.3.1 The monitoring results of the construction phase were compared to the pre-construction baseline condition, which focus on avifauna species of conservation importance and wetland dependent (waterbird) species. The bird data collected monthly during the construction phase were compared to the results of the corresponding month of the baseline data.

3.3.2 The data for point count method and transect walk method were presented separately to account for the lack of point count method in the baseline data. For each method, abundance and species diversity of the avifauna communities during the monitoring month were summarized.

3.3.3 To evaluate the variation in bird abundance between baseline and monitoring data, two-tailed t-test would be adopted to compare the bird abundance. If a p-value reported from a t-test is less than 0.05, the result should be statistically significant. If a p-value is greater than 0.05, the result is insignificant.

3.3.4 To evaluate the variation in bird species diversity between baseline and monitoring data, the two-sided Hutcheson t-test will be used for data comparison. The two-sided Hutcheson t-test was developed as a method to compare the diversity of two community samples using the Shannon diversity index. Shannon diversity index will be computed using the formula,

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

where, H' = Shannon Diversity Index; Pi = 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).

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

4 RESULTS AND ANALYSIS

4.1 Monitoring Results

4.1.1 The avifauna survey was conducted last 16 February 2024 and started around 08:30. The survey was conducted using the transect count and point count methods in the different habitats within the monitoring area. Results are presented in **Sections 4.2** and the data analysed are shown in **Appendix C.**

4.1.2 In the current monitoring period, the following activities were observed (see **Appendix D** for photo record):

Project-related activities

- Construction of temporary dam at Section 4 of Yuen Long Nullah

Non-project-related activities

- Construction works along and near Section 1 of Yuen Long Nullah (south of Yuen Long Highway)
- Construction works along Section 2 of Yuen Long Nullah

4.2 Result and Analysis of the Yuen Long Area

Abundance

Waterbirds

4.2.1 A total of 318 waterbird individuals (ind.) was recorded during the current monitoring period using point count (26 ind.) and transect walk (292 ind.) methods. Relative to the February 2020 baseline data (transect walk = 259), increase in abundance was observed. Current result showed no significant difference (p-value =0.87; $\alpha = 0.05$) in comparison to the baseline data.

4.2.2 Details of these findings are summarized in **Table 1**.

Table 1 Abundance of All Waterbirds

Abundance of Waterbirds Recorded in Yuen Long Nullah			
Locations	**Feb-20**	**Feb-24**	**Remarks**
Transect Walk Method			
Minor-channelised Watercourse	1	4	+
NSW	32	13	-
Old KTR	23	44	+
SCR	3	14	+
SPR	169	191	+
YLBF - Upper	4	7	+
STST	0	0	=
YLTN - S1	1	1	=

Abundance of Waterbirds Recorded in Yuen Long Nullah			
Locations	**Feb-20**	**Feb-24**	**Remarks**
YLTN - S2	0	0	=
YLTN - S3	7	4	-
YLTN - S4	19	14	-
Total	**259**	**292**	**+**
Mean	**23.6**	**26.5**	**+**
Point Count Method			
Locations			**Remarks**
P1	-	24	
P2	-	2	
P3	-	0	
P4	-	0	
P5	-	0	
Total	-	**26**	
Mean	-	**5.2**	

4.2.3 No Action / Limit exceedance was recorded for the abundance of waterbird species for the transect walk method.

Species of Conservation Importance

4.2.4 A total of 315 ind. of species of conservation importance was recorded during the current monitoring period using point count (26 ind.) and transect walk (289 ind.) methods. With reference to the February 2020 data (transect walk = 254), an increase in abundance was noted in this period for the transect walk method. Current result in showed no significant difference (p-value =0.93; $\alpha = 0.05$) in comparison to the baseline data.

4.2.5 Details of these findings are summarized in **Table 2**.

Table 2 Abundance of All Bird Species of Conservation Importance

Abundance of Avifauna Species of Conservation Importance Recorded in Yuen Long Nullah			
Locations	**Feb-20**	**Feb-24**	**Remarks**
Transect Walk Method			
Minor-channelised Watercourse	1	4	+
NSW	30	14	-
Old KTR	23	44	+
SCR	0	13	+
SPR	169	188	+
YLBF - Upper	4	7	+
STST	0	0	=
YLTN - S1	1	1	=
YLTN - S2	0	0	=
YLTN - S3	7	4	-
YLTN - S4	9	14	+
Total	**254**	**289**	+
Mean	**23**	**26.3**	+
Point Count Method			
Locations			
P1	-	24	
P2	-	2	
P3	-	0	
P4	-	0	
P5	-	0	
Total	-	**26**	
Mean	-	**5.2**	

4.2.6 No Action / Limit exceedance was recorded for the abundance of avifauna species with conservation importance only for the transect walk method.

Diversity

Waterbirds

4.2.7 A total of 18 waterbird species (species richness) was noted during the current monitoring period in the different wetland habitats using the point count (6 species) and transect walk (18 species) methods. Relative to the baseline data (transect walk method = 23 species), decrease in total species richness for the transect walk method was noted. In terms of Shannon diversity index (H') values, current result in transect walk method showed no significant difference (t-value = 0.53; t-crit = 1.96; p-value = 0.59; $\alpha = 0.05$) relative to the baseline reference value.

4.2.8 Details of these findings are summarized in **Table 3**.

Table 3 Shannon Diversity Index Value of All Waterbirds

Shannon Diversity Index Value of Waterbirds Recorded in Yuen Long Nullah			
Locations	**Feb-20**	**Feb-24**	**Remarks**
Transect Walk Method			
Minor-channelised Watercourse	0.00	1.04	+
NSW	1.95	1.52	-
Old KTR	1.45	2.11	+
SCR	0.64	1.51	+
SPR	1.47	1.92	+
YLBF - Upper	0.56	0.00	-
STST	0.00	0.00	=
YLTN - S1	0.00	0.00	=
YLTN - S2	0.00	0.00	=
YLTN - S3	0.96	1.04	+
YLTN - S4	1.97	0.76	-
Overall H'	**2.28**	**2.33**	**+**
Species Richness	**23**	**18**	**-**
Point Count Method			
Locations			
P1	-	0.88	
P2	-	0.69	

Shannon Diversity Index Value of Waterbirds Recorded in Yuen Long Nullah			
Locations	**Feb-20**	**Feb-24**	**Remarks**
P3	-	0.00	
P4	-	0.00	
P5	-	0.00	
Overall H'	-	**1.14**	
Species Richness	-	**6**	

4.2.9 No Action / Limit exceedance was recorded for the species diversity of waterbird species in the transect walk method.

Species of Conservation Importance

4.2.10 A total of 17 species of conservation importance (species richness) was noted during the current monitoring period in the different wetland habitats using the point count (6 species) and transect walk (17 species) methods. Relative to the baseline data (transect walk method = 20 species), decrease in total species richness for the transect walk method was noted. In terms of Shannon diversity index (H') values, current result in transect walk method showed no significant difference (t-value = 1.38; t-crit = 1.96; p-value = 0.17; $\alpha = 0.05$) relative to the baseline reference value.

Details of these findings are summarized in **Table 4**.

Table 4 Shannon Diversity Index Value of All Bird Species of Conservation Importance

Shannon Diversity Index Value of Bird Species of Conservation Importance Recorded in Yuen Long Nullah			
Locations	**Feb-20**	**Feb-24**	**Remarks**
Transect Walk Method			
Minor-channelised Watercourse	0.00	1.04	+
NSW	1.55	1.67	+
Old KTR	1.45	2.11	+
SCR	0.00	1.35	+
SPR	1.47	1.87	+
YLBF - Upper	0.56	0.00	-
STST	0.00	0.00	=
YLTN - S1	0.00	0.00	=
YLTN - S2	0.00	0.00	=
YLTN - S3	0.96	1.04	+

Shannon Diversity Index Value of Bird Species of Conservation Importance Recorded in Yuen Long Nullah			
Locations	**Feb-20**	**Feb-24**	**Remarks**
YLTN - S4	1.97	0.76	-
Overall H'	**2.18**	**2.30**	**+**
Species Richness	**20**	**17**	**-**
Point Count Method			
Locations			
P1	-	0.88	
P2	-	0.69	
P3	-	0.00	
P4	-	0.00	
P5	-	0.00	
Overall H'	-	**1.14**	
Species Richness	-	**6**	

4.2.11 No Action / Limit exceedance was recorded for the species diversity of avifauna species with conservation importance in the transect walk method.

Noise Levels

4.2.12 Noise levels LAeq (5 min) recorded on 16 February 2024 from each of the locations during the ecological bird monitoring are shown in **Table 5**.

Table 5 Noise Monitoring Results (For Ecological Monitoring of Birds)

Frequency and Period	Location	Start Time	LAeq (5 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	P1	9:45	49.5
	P2	10:45	57.0
	P3	12:00	64.0
	P4	13:00	67.9
	P5	14:00	56.5

5 CONCLUSION

5.1 Exceedance

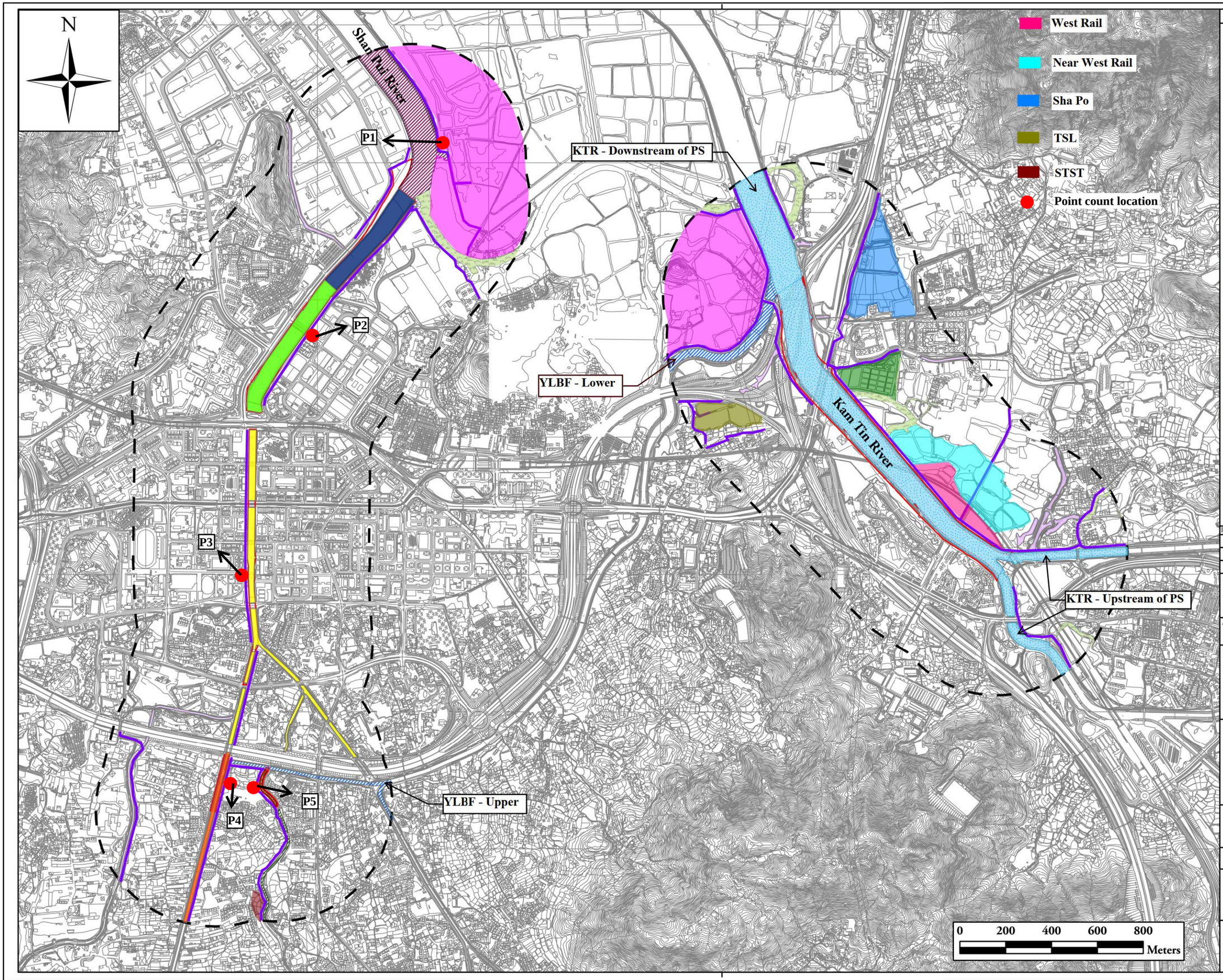
5.1.1 No Action / Limit exceedance was recorded for the abundance of waterbird species for the transect walk method.

5.1.2 No Action / Limit exceedance was recorded for the abundance of avifauna species with conservation importance only for the transect walk method.

5.1.3 No Action / Limit exceedance was recorded for the species diversity of waterbird species in the transect walk method.

5.1.4 No Action / Limit exceedance was recorded for the species diversity of avifauna species with conservation importance in the transect walk method.

APPENDIX A
MAP OF THE PROJECT AREA



Legend

- Project Site
- 500m Assessment Area
- Kam Tin River (KTR) - Channelised Sections
- Old KTR
- Minor Channelised Watercourse
- Minor Semi-natural Watercourse
- Sham Chung River (SCR)
- Shan Pui River (SPR)
- Yuen Long Bypass Floodway (YLBF)
- Yuen Long Town Nullah (YLTN) - Section 1
- Yuen Long Town Nullah (YLTN) - Section 2
- Yuen Long Town Nullah (YLTN) - Section 3
- Yuen Long Town Nullah (YLTN) - Section 4
- Transect line
- NSW
- Au Tau Fisheries Office
- West Rail
- Near West Rail
- Sha Po
- TSL
- STST
- Point count location

Revision	Date	Description			Initial
	Designed	Checked	Drawn		Checked
Initial					
Date					

Approved

Agreement No.
CE 93/2017 (DS)

Contract Title
YUEN LONG BARRAGE SCHEME - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title
Major Watercourses within the 500m assessment area

Drawing No.
Figure A3

Revision
-

Scale
1 : 15000 on A3

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THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

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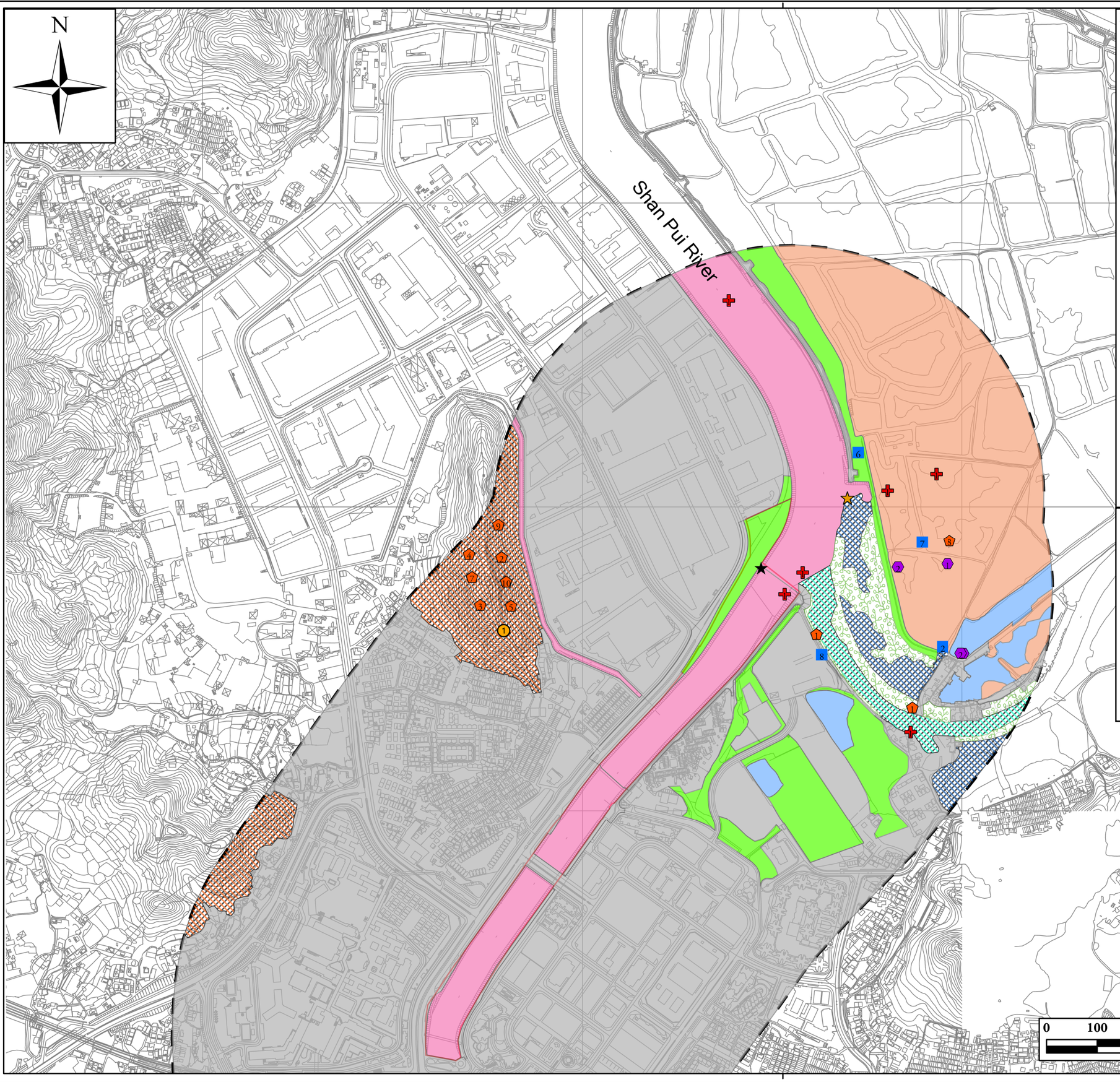
APPENDIX B
HABITAT MAP OF YUEN LONG



Legend

Species of Conservation Importance *

- 1 Aquilaria sinensis
- 2 Phymatodes longissima
- Black-winged Stilt (High-tide Roost)
- Great Cormorant (Day Roost)
- Gobiopterus macrolepis
- 1 Common Awl
- 2 Danaid Egg-fly
- 3 Forget-me-not
- 4 Lesser Band Dart
- 5 Malayan
- 6 Metallic Cerulean
- 7 Pale Palm Dart
- 8 Ruby Darter
- 9 Swallowtail
- 10 Tiny Grass Blue
- 1 Coastal Glider
- 2 Scarlet Basker
- 1 Buff-striped Keelback
- 2 Chinese Soft-shelled Turtle
- 3 Common Rat Snake
- 4 Common Wolf Snake
- 5 Spotted Narrow-mouthed Frog
- 6 Leopard Cat
- 7 Small Indian Civet
- 8 Japanese Pipistrelle

Note:
** 51 bird species of conservation importance were recorded, please refer to Table 8 of Appendix 7.1*

 # Channelised Watercourse is divided into different sections with different ecological values evaluated, please refer to Figure A3 and Tables 18-20 of Appendix 7.1

Legend

- Project Site
- 500m Assessment Area

Habitat

- Agricultural Land
- Channelised Watercourse #
- Developed Area
- Abandoned Wet Agricultural Land/ Freshwater Marsh
- Grassland/Shrubland
- Mangrove
- Mitigation Wetland
- Mixed Woodland
- Plantation
- Pond
- Reedbed
- Semi-natural Watercourse
- Tidal Marsh
- Waste Ground

Revision	Date	Description			Initial
	Designed	Checked	Drawn		Checked
Initial					
Date					

Approved

Agreement No.
CE 93/2017 (DS)

Contract Title
YUEN LONG BARRAGE SCHEME - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title
Habitat Map with Indicative Locations of Non-bird Species of Conservation Importance
(1 of 2 Yuen Long)

Drawing No.
Figure A4b

Revision
-

Scale
1 : 7500 on A3

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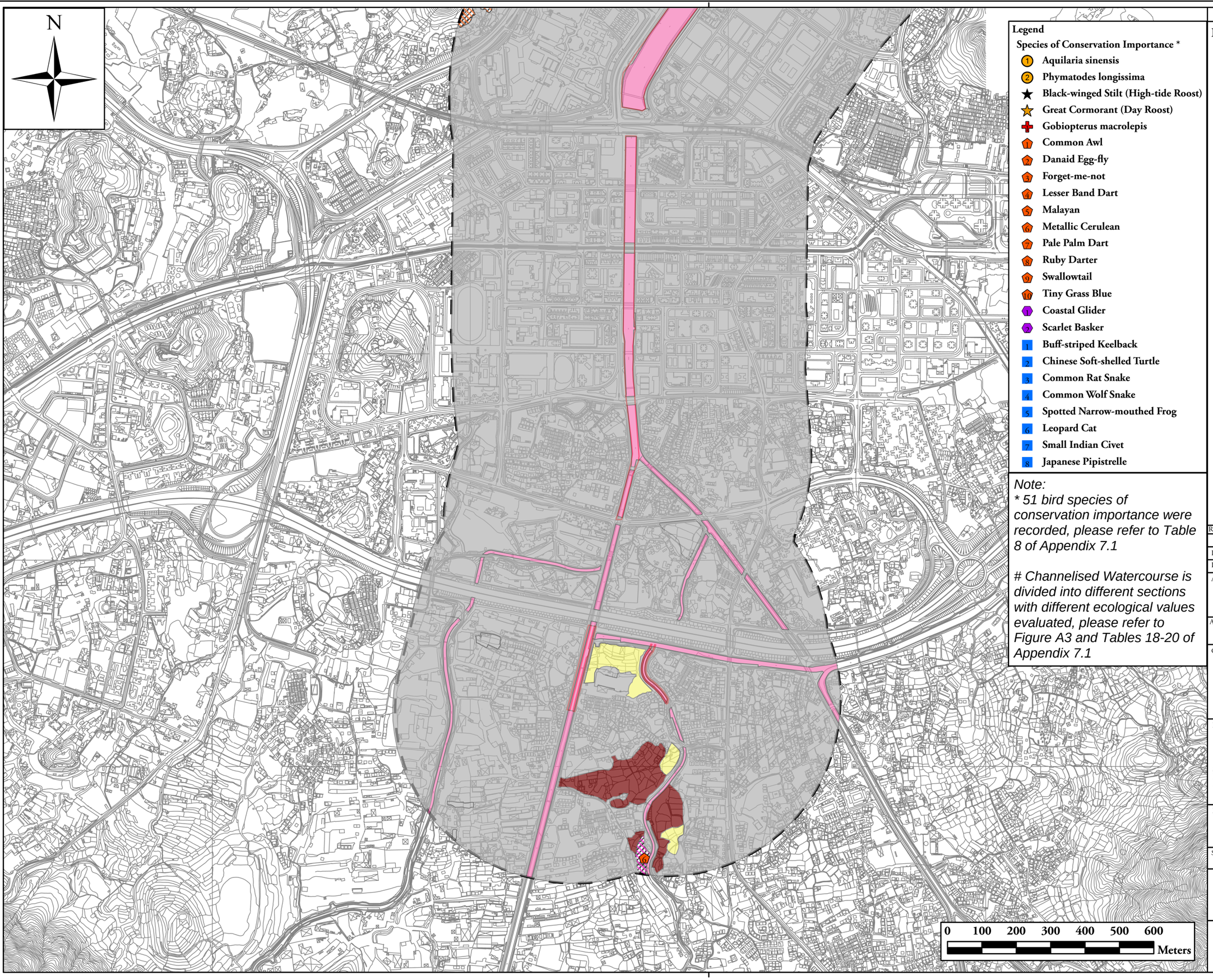

Legend

Species of Conservation Importance *

- 1 Aquilaria sinensis
- 2 Phymatodes longissima
- Black-winged Stilt (High-tide Roost)
- Great Cormorant (Day Roost)
- Gobiopterus macrolepis
- 1 Common Awl
- 2 Danaid Egg-fly
- 3 Forget-me-not
- 4 Lesser Band Dart
- 5 Malayan
- 6 Metallic Cerulean
- 7 Pale Palm Dart
- 8 Ruby Darter
- 9 Swallowtail
- 10 Tiny Grass Blue
- 1 Coastal Glider
- 2 Scarlet Basker
- 1 Buff-striped Keelback
- 2 Chinese Soft-shelled Turtle
- 3 Common Rat Snake
- 4 Common Wolf Snake
- 5 Spotted Narrow-mouthed Frog
- 6 Leopard Cat
- 7 Small Indian Civet
- 8 Japanese Pipistrelle

Note:
** 51 bird species of conservation importance were recorded, please refer to Table 8 of Appendix 7.1*

 # Channelised Watercourse is divided into different sections with different ecological values evaluated, please refer to Figure A3 and Tables 18-20 of Appendix 7.1

Legend

- Project Site
- 500m Assessment Area

Habitat

- Agricultural Land
- Channelised Watercourse #
- Developed Area
- Abandoned Wet Agricultural Land/ Freshwater Marsh
- Grassland/Shrubland
- Mangrove
- Mitigation Wetland
- Mixed Woodland
- Plantation
- Pond
- Reedbed
- Semi-natural Watercourse
- Tidal Marsh
- Waste Ground

Revision	Date	Description			Initial
	Designed	Checked	Drawn		Checked
Initial					
Date					

Approved

Agreement No.
CE 93/2017 (DS)

Contract Title
YUEN LONG BARRAGE SCHEME - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title
Habitat Map with Indicative Locations of Non-bird Species of Conservation Importance (2 of 2 Yuen Long)

Drawing No.
Figure A4c

Revision
-

Scale
1 : 10000 on A3

香港特別行政區政府渠務署
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博威工程顧問有限公司

APPENDIX C1
AVIFAUNA RECORD IN YUEN LONG

Date	Area	Habitat	Location	Point Count / Transect	Common Name	Scientific Name	Abundance	Species of Conservation Importance	Winter Visitor	Waterbird
Feb-24	YL	Channelised Watercourse	MCW	Transect	Chinese Pond Heron	*Ardeola bacchus*	2	Y		Y
Feb-24	YL	Channelised Watercourse	MCW	Transect	Great Egret	*Ardea alba*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	MCW	Transect	Little Egret	*Egretta garzetta*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	MCW	Transect	White Wagtail	*Motacilla alba*	4		Y	
Feb-24	YL	Reed bed	NSW	Transect	Black Kite	*Milvus migrans*	2	Y	Y	Y
Feb-24	YL	Pond	NSW	Transect	Great Cormorant	*Phalacrocorax carbo*	1	Y	Y	Y
Feb-24	YL	Pond	NSW	Transect	Great Egret	*Ardea alba*	3	Y	Y	Y
Feb-24	YL	Reed bed	NSW	Transect	Greater Coucal	*Centropus sinensis*	1	Y		
Feb-24	YL	Pond	NSW	Transect	Grey Heron	*Ardea cinerea*	3	Y	Y	Y
Feb-24	YL	Pond	NSW	Transect	Northern Shoveler	*Spatula clypeata*	4	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Black Kite	*Milvus migrans*	1	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Black-headed Gull	*Chroicocephalus ridibundus*	15	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Black-winged Stilt	*Himantopus himantopus*	3	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Chinese Pond Heron	*Ardeola bacchus*	4	Y		Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Common Greenshank	*Tringa nebularia*	2	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Common Redshank	*Tringa totanus*	3	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Common Sandpiper	*Actitis hypoleucos*	1	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Eurasian Teal	*Anas crecca*	2	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Grey Heron	*Ardea cinerea*	2	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Large-billed Crow	*Corvus macrorhynchos*	1			
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Masked Laughingthrush	*Garrulax perspicillatus*	4			
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Northern Pintail	*Anas acuta*	1	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Northern Shoveler	*Spatula clypeata*	3	Y	Y	Y
Feb-24	YL	Semi natural watercourse	Old KTR	Transect	Pied Avocet	*Recurvirostra avosetta*	7	Y	Y	Y
Feb-24	YL	Channelised Watercourse	S1	Transect	Great Egret	*Ardea alba*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	S1	Transect	White Wagtail	*Motacilla alba*	4		Y	
Feb-24	YL	Channelised Watercourse	S2	Transect	Eurasian Tree Sparrow	*Passer montanus*	28			
Feb-24	YL	Channelised Watercourse	S2	Transect	Rock Dove	*Columba livia*	200			
Feb-24	YL	Channelised Watercourse	S2	Transect	White Wagtail	*Motacilla alba*	2		Y	
Feb-24	YL	Channelised Watercourse	S3	Transect	Chinese Pond Heron	*Ardeola bacchus*	1	Y		Y
Feb-24	YL	Channelised Watercourse	S3	Transect	Eurasian Tree Sparrow	*Passer montanus*	7			
Feb-24	YL	Channelised Watercourse	S3	Transect	Great Egret	*Ardea alba*	2	Y	Y	Y
Feb-24	YL	Channelised Watercourse	S3	Transect	Grey Heron	*Ardea cinerea*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	S3	Transect	Spotted Dove	*Spilopelia chinensis*	26			
Feb-24	YL	Channelised Watercourse	S4	Transect	Black-headed Gull	*Chroicocephalus ridibundus*	10	Y	Y	Y
Feb-24	YL	Channelised Watercourse	S4	Transect	Black-winged Stilt	*Himantopus himantopus*	3	Y	Y	Y
Feb-24	YL	Channelised Watercourse	S4	Transect	Little Egret	*Egretta garzetta*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	S4	Transect	White Wagtail	*Motacilla alba*	1		Y	
Feb-24	YL	Channelised Watercourse	SCR	Transect	Chinese Pond Heron	*Ardeola bacchus*	4	Y		Y
Feb-24	YL	Channelised Watercourse	SCR	Transect	Common Sandpiper	*Actitis hypoleucos*	2	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SCR	Transect	Great Egret	*Ardea alba*	3	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SCR	Transect	Little Egret	*Egretta garzetta*	4	Y	Y	Y
Feb-24	YL	Developed Area	SCR	Transect	White Wagtail	*Motacilla alba*	2		Y	
Feb-24	YL	Channelised Watercourse	SCR	Transect	White-breasted Waterhen	*Amaurornis phoenicurus*	1			Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Black-headed Gull	*Chroicocephalus ridibundus*	5	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Black-winged Stilt	*Himantopus himantopus*	30	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Chinese Pond Heron	*Ardeola bacchus*	11	Y		Y

Date	Area	Habitat	Location	Point Count / Transect	Common Name	Scientific Name	Abundance	Species of Conservation Importance	Winter Visitor	Waterbird
Feb-24	YL	Channelised Watercourse	SPR	Transect	Common Greenshank	*Tringa nebularia*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Common Moorhen	*Gallinula chloropus*	3		Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Common Redshank	*Tringa totanus*	8	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Eurasian Teal	*Anas crecca*	17	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Great Cormorant	*Phalacrocorax carbo*	15	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Great Egret	*Ardea alba*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Grey Heron	*Ardea cinerea*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Little Egret	*Egretta garzetta*	2	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Marsh Sandpiper	*Tringa stagnatilis*	2	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Northern Shoveler	*Spatula clypeata*	17	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Pied Avocet	*Recurvirostra avosetta*	78	Y	Y	Y
Feb-24	YL	Channelised Watercourse	SPR	Transect	Plain Prinia	*Prinia inornata*	2			
Feb-24	YL	Marsh	STST	Transect	Crested Myna	*Acridotheres cristatellus*	2			
Feb-24	YL	Channelised Watercourse	YLBF - Upper	Transect	Great Egret	*Ardea alba*	7	Y	Y	Y
Feb-24	YL	Channelised Watercourse	P1	Point Count	Black-headed Gull	*Chroicocephalus ridibundus*	2	Y	Y	Y
Feb-24	YL	Channelised Watercourse	P1	Point Count	Black-winged Stilt	*Himantopus himantopus*	4	Y	Y	Y
Feb-24	YL	Channelised Watercourse	P1	Point Count	Common Redshank	*Tringa totanus*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	P1	Point Count	Pied Avocet	*Recurvirostra avosetta*	17	Y	Y	Y
Feb-24	YL	Channelised Watercourse	P2	Point Count	Chinese Pond Heron	*Ardeola bacchus*	1	Y		Y
Feb-24	YL	Channelised Watercourse	P2	Point Count	Grey Heron	*Ardea cinerea*	1	Y	Y	Y
Feb-24	YL	Channelised Watercourse	P2	Point Count	White Wagtail	*Motacilla alba*	1		Y	
Feb-24	YL	Channelised Watercourse	P3	Point Count	Crested Myna	*Acridotheres cristatellus*	2			
Feb-24	YL	Channelised Watercourse	P3	Point Count	Eurasian Tree Sparrow	*Passer montanus*	20			
Feb-24	YL	Channelised Watercourse	P3	Point Count	Rock Dove	*Columba livia*	50			
Feb-24	YL	Channelised Watercourse	P3	Point Count	Spotted Dove	*Spilopelia chinensis*	2			
Feb-24	YL	Channelised Watercourse	P4	Point Count	Eurasian Tree Sparrow	*Passer montanus*	5			
Feb-24	YL	Channelised Watercourse	P5	Point Count	Spotted Dove	*Spilopelia chinensis*	3			

APPENDIX C2-3
AVIFAUNA DATA ANALYSIS

Appendix C.2.1 Ecological Monitoring of Birds Diversity (Waterbird Species in Transect Walk Method) (February 2024)

Common Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Black Kite	3	0.010274	-4.57814	-0.04704	0.215336
Black-headed Gull	30	0.10274	-2.27556	-0.23379	0.532002
Black-winged Stilt	36	0.123288	-2.09323	-0.25807	0.540201
Chinese Pond Heron	22	0.075342	-2.58571	-0.19481	0.503732
Common Greenshank	3	0.010274	-4.57814	-0.04704	0.215336
Common Moorhen	3	0.010274	-4.57814	-0.04704	0.215336
Common Redshank	11	0.037671	-3.27886	-0.12352	0.405
Common Sandpiper	3	0.010274	-4.57814	-0.04704	0.215336
Eurasian Teal	19	0.065068	-2.73231	-0.17779	0.485772
Great Cormorant	16	0.054795	-2.90417	-0.15913	0.462147
Great Egret	18	0.061644	-2.78638	-0.17176	0.478598
Grey Heron	7	0.023973	-3.73084	-0.08944	0.333679
Little Egret	8	0.027397	-3.59731	-0.09856	0.354539
Marsh Sandpiper	2	0.006849	-4.98361	-0.03413	0.170112
Northern Pintail	1	0.003425	-5.67675	-0.01944	0.110361
Northern Shoveler	24	0.082192	-2.4987	-0.20537	0.513165
Pied Avocet	85	0.291096	-1.2341	-0.35924	0.443342
White-breasted Waterhen	1	0.003425	-5.67675	-0.01944	0.110361
Total	292	1	-64.3669	-2.33264	6.304356
Richness	18				
SS	6.304356				
SQ	5.441229				
H	2.332644				
S^2_H	0.003056				

Appendix C.2.2 Ecological Monitoring of Birds Diversity (Waterbird Species in Point Count Method) (February 2024)

Common Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Black-headed Gull	2	0.076923	-2.56495	-0.1973	0.506074
Black-winged Stilt	4	0.153846	-1.8718	-0.28797	0.539022
Chinese Pond Heron	1	0.038462	-3.2581	-0.12531	0.408277
Common Redshank	1	0.038462	-3.2581	-0.12531	0.408277
Grey Heron	1	0.038462	-3.2581	-0.12531	0.408277
Pied Avocet	17	0.653846	-0.42488	-0.27781	0.118036
Total	26	1	-14.6359	-1.13902	3.387962
Richness	6				
SS	3.387962				
SQ	1.297357				
H	1.139016				
S^2_H	0.084106				

Appendix C.2.3 Ecological Monitoring of Birds Diversity (Species of Conservation Importance in Transect Walk Method) (February 2024)

Common Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Black Kite	3	0.010381	-4.56781	-0.04742	0.216591
Black-headed Gull	30	0.103806	-2.26523	-0.23514	0.532657
Black-winged Stilt	36	0.124567	-2.08291	-0.25946	0.540437
Chinese Pond Heron	22	0.076125	-2.57538	-0.19605	0.504904
Common Greenshank	3	0.010381	-4.56781	-0.04742	0.216591
Common Redshank	11	0.038062	-3.26853	-0.12441	0.406631
Common Sandpiper	3	0.010381	-4.56781	-0.04742	0.216591
Eurasian Teal	19	0.065744	-2.72199	-0.17895	0.487111
Great Cormorant	16	0.055363	-2.89384	-0.16021	0.463629
Great Egret	18	0.062284	-2.77605	-0.1729	0.479988
Greater Coucal	1	0.00346	-5.66643	-0.01961	0.111102
Grey Heron	7	0.024221	-3.72052	-0.09012	0.335279
Little Egret	8	0.027682	-3.58699	-0.09929	0.356165
Marsh Sandpiper	2	0.00692	-4.97328	-0.03442	0.171166
Northern Pintail	1	0.00346	-5.66643	-0.01961	0.111102
Northern Shoveler	24	0.083045	-2.48837	-0.20665	0.514214
Pied Avocet	85	0.294118	-1.22378	-0.35993	0.440478
Total	289	1	-59.6132	-2.29901	6.104637
Richness	17				
SS	6.104637				
SQ	5.285435				
H	2.299007				
S^2_H	0.00293				

Appendix C.2.4 Ecological Monitoring of Birds Diversity (Species of Conservation Importance in Point Count Method) (February 2024)

Common Name	Count	P	Ln(P)	P*Ln(P)	$P*Ln(P)^2$
Black-headed Gull	2	0.076923	-2.56495	-0.1973	0.506074
Black-winged Stilt	4	0.153846	-1.8718	-0.28797	0.539022
Chinese Pond Heron	1	0.038462	-3.2581	-0.12531	0.408277
Common Redshank	1	0.038462	-3.2581	-0.12531	0.408277
Grey Heron	1	0.038462	-3.2581	-0.12531	0.408277
Pied Avocet	17	0.653846	-0.42488	-0.27781	0.118036
Total	26	1	-14.6359	-1.13902	2.387962
Richness	6				
SS	2.387962				
SQ	1.297357				
H	1.139016				
S^2_H	0.045645				

Appendix C.3.1 Species Diversity of Waterbird Species - Transect Walk Method

Months	February 2020	February 2024
Total	259	292
Richness	23	18
H	2.28371455	2.332644107
S^2_H	0.005357852	0.003055606
t	0.533438092	
df	496	
Crit	1.964767992	
p	0.593969786	
CI	0.146394704	0.110555064

Appendix C.3.2 Species Diversity of Bird Species of Conservation importance - Transect Walk Method

Months	February 2020	February 2024
Total	254	289
Richness	20	17
H	2.177677472	2.299007331
S^2_H	0.004812841	0.002930393
t	1.378816578	
df	496	
Crit	1.964767992	
p	0.168574053	
CI	0.138749288	0.108266208

APPENDIX D
PHOTOGRAPHIC RECORD OF VERIFICTION SURVEY

Appendix D – Photographical Record of Bird Survey

Photo 1: Photo record of birds – Black-winged Stilt (*Himantopus himantopus*)

Photo 2: Photo record of birds – Black Kite (*Milvus migrans*)

Photo 3: Photo record of birds – Northern Shoveler (*Spatula clypeata*)

Photo 4: Photo record of birds – Black-headed Gull (*Chroicocephalus ridibundus*)

Appendix D – Photographical Record of Bird Survey

Photo 5: Photo record of birds – Common Greenshank (*Tringa nebularia*)

Photo 6: Photo record of birds – Northern Pintail (*Anas acuta*)

Photo 7: Photo record of birds – Little Egret (*Egretta garzetta*)

Photo 8: Photo record of birds – Grey Heron (*Ardea cinerea*)

Appendix D – Photographical Record of Bird Survey

Photo 9: Preparation works for installing the inflatable dam

Photo 10: Platforms in Yuen Long Town Nullah - Section 4

Photo 11: Construction works inside Yuen Long Town Nullah (Section 2) by the other Contractor

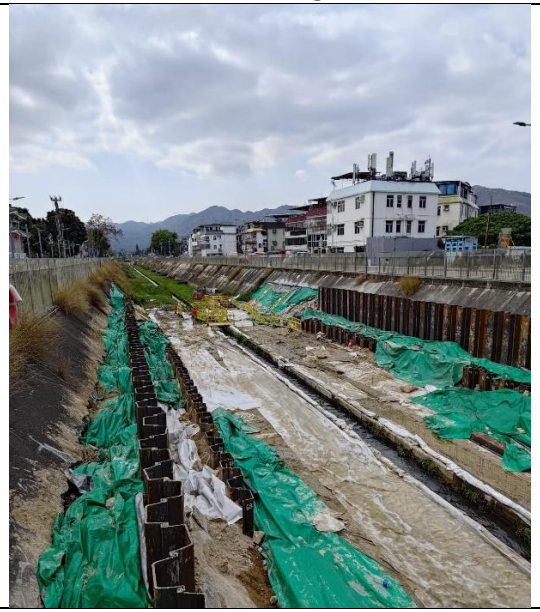

Photo 12: Construction works inside Yuen Long Town Nullah (Section 1) by the other Contractor

APPENDIX E
PROPOSED ACTION AND LIMIT LEVELS AND ACTION PLAN

Proposed Action and Limit Levels

Event	Action Level	Limit Level
Abundance of Waterbirds in the Concerned River	Significant decrease when compared to the baseline data in the same month for one time	Significant decrease when compared to the baseline data in the same month three times in a row
Species Diversity of Waterbirds in the Concerned River		
Abundance of Avifauna Species of Conservation Importance in the Concerned River		
Species Diversity of Avifauna Species of Conservation Importance in the Concerned River		

Proposed Action and Limit Levels Event and Action Plan

Event	Action			
	ET	IEC	ER	Contractor
When Action Level is triggered	1. Notify IEC, DSD, EPD, AFCD, ER and Contractor; 2. Check monitoring data; 3. Identify source and carry out investigation; 4. Discuss with the Contractor and formulate remedial measures	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures	1. Discuss with DSD, IEC, ET and Contractor on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Review construction method; 3. Rectify unacceptable practice; 4. Check all plant and equipment; 5. Consider changes of working methods; 6. Submit mitigation proposals to ER, ET and IEC; 7. Implement mitigation proposals
When Limit Level is triggered	1. Notify IEC, DSD, EPD, AFCD, ER and Contractor; 2. Check monitoring data; 3. Identify source and carry out investigation; 4. Discuss with the Contractor and formulate remedial measures	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures	1. Discuss with DSD, IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Review construction method; 3. Rectify unacceptable practice; 4. Check all plant and equipment; 5. Consider changes of working methods; 6. Submit mitigation proposals to ER, ET and IEC within 3 working days; 7. Implement mitigation proposals

APPENDIX J
SUMMARY OF EXCEEDANCE

Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes

Appendix J – Summary of Exceedance

Reporting Period: February 2024

(A) Exceedance Report for Air Quality

Construction Dust
No Action/Limit Level exceedance was recorded for 1-hour TSP monitoring in the reporting month.

Odour
No Action/Limit Level exceedance was recorded as no monitoring was conducted during the reporting period.

(B) Exceedance Report for Construction Noise

Action Level for Construction Noise
No action level exceedances were recorded due to the documented complaints received in this reporting month.

Limit Level for Construction Noise
No limit level exceedance for daytime construction noise monitoring was recorded in the reporting month.

(C) Exceedance Report for Water Quality
Three (3) Action Level and Forty (40) Limit Level exceedances were recorded in the reporting month.

(D) Exceedance Report for Ecology
No exceedance was recorded for ecological monitoring in the reporting month.

(E) Exceedance Report for Fisheries
(NIL in the reporting month)

(F) Exceedance Report for Cultural Heritage
No exceedance for cultural heritage monitoring was recorded in the reporting month.

(G) Exceedance Report for Landscape and Visual
No non-conformity for landscape and visual was recorded during site inspection.

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 05 February 2024

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	W2	DA	16.0	W1	10:49	44.2	44.4	19.2	20.8	**21.8**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 05 February 2024

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Mid-Flood	UM	DA	16.1	W1	10:49	42.6	45.5	19.3	20.9	**24.1**
Mid-Flood	W2	DA	12.0	W1	10:49	42.6	45.5	14.4	15.6	**24.1**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***
*DA: Depth-Averaged

Date of Water Quality Monitoring: **05 February 2024**

Part A – Exceedance Summary Tables

Table III: Parameter(s) – Dissolved Oxygen (DO) ~~/ Turbidity (TURB) / Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	UM	DA	5.0	W1	10:49	2.1	2.1	***1.2***
Mid-Flood	W2	DA	12.0	W1	10:49	2.1	2.1	***1.2***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged (Surface, Middle)

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 07 February 2024

Part A – Exceedance Summary Tables

Table III: Parameter(s) – Dissolved Oxygen (DO) ~~/ Turbidity (TURB) / Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	UM	DA	3.7	W1	11:50	2.1	2.1	***1.2***
Mid-Ebb	UM	DA	3.7	W2	11:58	3.3	3.3	***1.7***
Mid-Flood	UM	DA	3.7	W1	14:38	2.1	2.1	***1.2***
Mid-Flood	W2	DA	22.0	W1	14:38	2.1	2.1	***1.2***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged (Surface, Middle)

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 09 February 2024

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	UM	DA	18.7	W1	13:49	44.2	44.4	22.5	24.4	**32.1**
Mid-Ebb	UM	DA	18.7	W2	13:58	126.3	132.9	22.5	24.4	**37.8**
Mid-Flood	UM	DA	18.7	W1	10:40	44.2	44.4	22.5	24.4	**43.3**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 09 February 2024

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Mid-Ebb	UM	DA	19.4	W2	13:58	97.2	111.3	23.3	25.3	**26.0**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 14 February 2024

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	UM	DA	47.3	W1	11:16	44.2	44.4	56.7	61.4	***77.1***
Mid-Flood	W2	DA	73.0	W1	11:16	44.2	44.4	87.6	94.9	***77.1***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- <u>Notification of Exceedance</u>

Date of Water Quality Monitoring: <u>14 February 2024</u>

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Mid-Flood	UM	DA	23.2	W1	11:16	42.6	45.5	27.9	30.2	***<u>77.1</u>***
Mid-Flood	W2	DA	62.8	W1	11:16	42.6	45.5	75.3	81.6	***<u>77.1</u>***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
<u>Bold with underline</u> means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 16 February 2024

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	UM	DA	49.3	W1	11:46	44.2	44.4	59.2	64.1	***45.4***
Mid-Flood	W2	DA	23.3	W1	11:46	44.2	44.4	28.0	30.3	***45.4***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 16 February 2024

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Mid-Flood	UM	DA	15.1	W1	11:46	42.6	45.5	18.1	19.6	**19.6**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 19 February 2024

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Mid-Flood	UM	DA	18.7	W1	11:39	42.6	45.5	22.5	24.4	**24.0**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 19 February 2024

Part A – Exceedance Summary Tables

Table III: Parameter(s) – Dissolved Oxygen (DO) ~~/ Turbidity (TURB) / Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	UM	DA	3.4	W1	11:39	2.1	2.1	***1.6***
Mid-Flood	W2	DA	19.9	W1	11:39	2.1	2.1	***1.6***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged (Surface, Middle)

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 21 February 2024

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	UM	DA	52.9	W1	15:04	44.2	44.4	63.4	68.7	***45.5***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 21 February 2024

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Mid-Ebb	UM	DA	16.5	W1	15:04	42.6	45.5	19.8	21.4	**28.3**
Mid-Ebb	UM	DA	16.5	W2	15:18	97.2	111.3	19.8	21.4	**29.2**
Mid-Flood	UM	DA	16.5	W1	11:29	42.6	45.5	19.8	21.4	**26.4**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 23 February 2024

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB) /~~ Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	UM	DA	37.0	W1	12:40	44.2	44.4	44.4	48.1	***52.9***
Mid-Ebb	UM	DA	37.0	W2	12:55	126.3	132.9	44.4	48.1	**74.5**
Mid-Flood	UM	DA	37.0	W1	9:20	44.2	44.4	44.4	48.1	***48.5***
Mid-Flood	W2	DA	21.1	W1	9:20	44.2	44.4	25.4	27.5	***48.5***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 23 February 2024

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Mid-Ebb	UM	DA	21.4	W2	12:55	97.2	111.3	25.6	27.8	**40.0**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Date of Water Quality Monitoring: **23 February 2024**

Part A – Exceedance Summary Tables

Table III: Parameter(s) – Dissolved Oxygen (DO) ~~/ Turbidity (TURB) / Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	UM	DA	4.0	W2	12:55	3.3	3.3	***3.1***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged (Surface, Middle)

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: 26 February 2024

Part A – Exceedance Summary Tables

Table I: Parameter(s) – ~~Dissolved Oxygen (DO) / Turbidity (TURB)~~ / Suspended Solids (SS)

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	UM	DA	26.2	W1	15:12	44.2	44.4	31.4	34.1	***46.2***
Mid-Ebb	UM	DA	26.2	W2	15:12	126.3	132.9	31.4	34.1	**50.7**
Mid-Flood	UM	DA	26.2	W1	11:00	44.2	44.4	31.4	34.1	***59.7***
Mid-Flood	W2	DA	88.9	W1	11:00	44.2	44.4	106.7	115.6	***59.7***

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Date of Water Quality Monitoring: **26 February 2024**

Part A – Exceedance Summary Tables

Table II: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~

Tide	Control Station(s)	Depth	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Mid-Ebb	UM	DA	18.2	W1	15:12	42.6	45.5	21.9	23.7	**25.4**
Mid-Ebb	UM	DA	18.2	W2	15:12	97.2	111.3	21.9	23.7	**28.5**
Mid-Flood	UM	DA	18.2	W1	11:00	42.6	45.5	21.9	23.7	**27.0**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (**Italic**)
Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (**Italic)**
*DA: Depth-Averaged

Contract No. DC/2022/03 Yuen Long Barrage and Nullah Improvement Schemes

- Notification of Exceedance

Date of Water Quality Monitoring: **28 February 2024**

Part A – Exceedance Summary Tables

Table II: **Parameter(s) – ~~Dissolved Oxygen (DO)~~ / Turbidity (TURB) / ~~Suspended Solids (SS)~~**

Tide	Control Station(s)	Depth	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Mid-Ebb	UM	DA	18.3	W1	15:02	42.6	45.5	21.9	23.7	**23.7**
Mid-Ebb	UM	DA	18.3	W2	15:16	97.2	111.3	21.9	23.7	**29.9**
Mid-Flood	UM	DA	18.3	W1	11:35	42.6	45.5	21.9	23.7	**29.3**

Note: **Bold** means Action Level exceedance of Control (**Regular**) & Baseline (***Italic***)

Bold with underline means Limit Level exceedance of Control (**Regular**) & Baseline (***Italic)***

*DA: Depth-Averaged

APPENDIX K
EMIS AND SITE AUDIT SUMMARY

Appendix K2 - Implementation Schedule and Recommended Mitigation Measures

EIA & EM&A Ref.(1)	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
3. Air Quality Measures								
S3.8	Relevant dust control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, and good site practices will be incorporated as the Contract Specifications for implementation throughout the construction period. These include: • The works area for site clearance and excavation should be sprayed with water before, during and after the operation so as to maintain the entire surface wet. • Restricting heights from which materials are to be dropped, as far as practicable to reduce the fugitive dust arising from unloading/ loading. • Immediately before leaving a construction site, all vehicles should be washed to remove any dusty materials from the bodies and wheels. However, all spraying of materials and surfaces should avoid excessive water usage. • Where a vehicle leaving a construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials will not leak from the vehicle. • Erection of hoarding along the site boundary, where appropriate. • Any stockpile of dusty materials should be covered entirely by impervious sheeting; and/or placed in an area sheltered on the top and three sides. • All dusty materials should be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet. • Reduce the traffic induced dust dispersion and re-suspension, the travelling speed of vehicles within the site should be controlled.	Whole Site / Construction Phase	Contractor(s)		✓			Air Pollution Control (Construction Dust) Regulation

(1) Unless otherwise stated, the reference refers to the relevant section of the EIA Report.

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	• Regular maintenance of construction equipment deployed on-site will be conducted to prevent black smoke emission.							
S3.8	Excavated river bed materials that are placed on trucks for disposal should be properly covered with tarpaulin sheets during transportation to minimise the release of any potential odour. The odorous excavated material should be placed as far away from the sensitive receivers as possible. Odorous river bed material excavated during construction phase should be removed off-site as soon as practicable within 24 hours to avoid any odour nuisance.	Whole Site / Construction Phase	Contractor(s)		✓			-
S3.8	During operation phase, mitigation measures are considered necessary when materials generated from the maintenance works are found to be odorous, and the following measures should be implemented by the Contractor. • Temporarily stockpile odorous material as far away from ASRs as possible; • Temporary stockpiles of odorous material will be properly covered with tarpaulin and should be removed off-site as soon as practically possible within 24 hours to avoid any odour nuisance arising; and • Regular inspection at inlet chamber of existing pumping facilities to prevent accumulation of debris/materials at the inlet screens causing odour nuisance.	Whole Site / Operation Phase	Project Proponent				✓	-
4. Noise								
S4.8	*Good Construction Site Practice* Good construction site practice and noise management can considerably reduce the potential noise impact of the construction activities on nearby NSRs. The noise benefits of these practices can vary according to specific site conditions and operations. Since the effect of the good construction site practices could not be quantified, the mitigated noise levels calculated in the subsequent sections have not taken account of this effect. The following site practices should be followed during	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	the construction of the Project: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase; • Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction phase; • Mobile plant, if any, should be sited as far away from 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; and • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.							
S4.8	*Use of Quiet PME* The use of quiet PME is considered to be a practicable means to mitigate the construction noise impact. Quiet PME is defined as a PME having actual SWL lower than the value specified in the GW-TM. The total SWL of all plant items to be used on-site at each works area will be specified so that flexibility is allowed for the Contractor to select plant items to suit the construction needs.	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM GW-TM
S4.8	*Adoption of Movable Noise Barriers* The use of noise barriers will be an effective means to mitigate the noise impact arising from the construction works, particularly for low-rise NSRs. With reference to EIAO Guidance Note No. 9/2010 Preparation of Construction Noise Assessment Under the Environmental Impact Assessment Ordinance (EIAO GN No. 9/2010), the use of movable barrier for certain PME could generally provide a 5 dB(A) reduction for movable PME and 10 dB(A) for stationary PME.	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM EIAO Guidance Note No. 9/2010

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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S4.8	*Use of Noise Insulation Sheet* Noise insulating sheet would be adopted for PME such as drill rig. The noise insulating sheet should be deployed such that there would be no opening or gaps on the joints. With reference to the approved EIA Report for West Island Line (WIL) (Register No.: AEIAR-126/2008 approved on 23 Dec 2008) and MTRC Contract C4420 Tsim Sha Tsui Modification Noise Assessment Report for VEP (July 2003), a reduction of over 10 dB(A) could be achieved with the use of the noise insulating sheet. For a conservative assessment, a noise reduction of 10 dB(A) for the PME with deployment of noise insulating sheet was assumed in this assessment.	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM
S4.8	*Adoption of Fixed Temporary Noise Barriers* In view of the close proximity between NSRs and the works areas for revitalisation works inside nullah, fixed temporary noise barriers will be deployed at the working section as far as practicable. Fixed temporary noise barriers of 3m in height with skid footing should be used and located within a few metres of stationary plant and mobile plant such that the line of sight to the NSR is blocked by the barriers. The length of the barrier should be at least five times greater than its height. The noise barrier material should have a sufficient surface density of at least 7 kg/m2 and have no openings or gaps. Reference has been made to EIAO GN No. 9/2010; it is anticipated that the major noise source of movable PMEs, such as breaker, water pump, concrete lorry mixer and excavator, will be located within the nullah at a level lower than the top of the proposed fixed temporary noise barrier, and therefore these barriers could produce at least a 5 dB(A) noise reduction.	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM
S4.8	*Scheduling of PME / Construction Activities* *The maximum predicted construction noise level at the nearest secondary school is 69 dB(A). This comply with the noise criteria of 70dB(A) during normal school days*	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	but exceed the criteria of 65 dB(A) during examination period. However, this potential exceedance can be avoided with following arrangement: • The contractor could liaise with the school management about the arrangements during examination weeks; and • PMEs shall not be used at the closest works areas (i.e. near CCHS1) during the examination period;							
S4.8	*Quieter Methods* Handheld or excavator mounted concrete breaker is a traditional mechanical equipment for concrete breaking and removal. Using such equipment will generate loud noise, with sound power levels generally range from 108 dB(A) to 122 dB(A). The adoption of quieter equipment or methods for concrete breaking or removal could be less noisy or could reduce the noise propagation when necessary. These include high pressure water jet system, handheld concrete crusher, medium duty breaker, blade saw, wire saw and noise enclosure. These measures shall be adopted if the use of quiet PME is not sufficient in reducing the construction noise level.	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM
S4.8	While no unacceptable noise impact is expected due to the operation of fixed plant items, it is still recommended that the following measures be implemented as far as practicable to minimise the potential impact: • Quieter plant should be chosen as far as practical; • Include noise levels specification when ordering new plant items; • All openings, including louvres for ventilation and machine room doors should be oriented away from the NSRs as far as practicable; • Silencers, acoustic louvres or acoustic doors should be used where necessary; and • Develop and implement a regularly scheduled plant maintenance programme so that plant items are properly operated and serviced. The programme should be implemented by properly trained personnel	YLBS / Detailed Design Phase and Operation Phase	Detailed Design Engineer / Project Proponent	✓			✓	EIAO-TM Noise Control Ordinance (NCO)

EIA & EM&A Ref.(1)	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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S4.8	Testing and commissioning of the proposed pumping stations would be carried out prior to operation. Noise monitoring would be carried out by the Contractor to ensure fixed noise sources impact would comply with the relevant noise standards.	YLBS / Prior to Operation	Contractor(s)				✓	EIAO-TM NCO
5. Water Quality								
S5.8	<u>*General Construction Site Practice*</u> The Contractor should observe and comply with the *Water Pollution Control Ordinance* and its subsidiary regulations and obtain a discharge license under the Ordinance. The Contractor should carry out the Project works in such a manner as to minimize adverse impacts on the water quality during execution of the works. In particular, the Contractor should arrange the working method to minimize the effects on the water quality within and outside the Project Site and on the transport routes. In addition, the management of construction site drainage from the Project will follow guidelines provided *in ProPECC PN 1/94*.	Whole Site / Construction Phase	Contractor(s)		✓			Water Pollution Control Ordinance (WPCO) EIAO-TM ProPECC PN 1/94
S5.8	<u>*Concreting Works*</u> Runoff should be carefully channelled to prevent concrete-contaminated water from entering watercourses. Adjustment of pH can be achieved by adding a suitable neutralising reagent to wastewater prior to discharge. Re-use of the supernatant from the sediment pits for washing out of concrete lorries should be practised. Any exceedance of acceptable range of pH levels in the nearby water bodies caused by inadvertent release of site runoff containing concrete should be monitored and rectified under the EM&A programme for this Project.	Whole Site / Construction Phase	Contractor(s)		✓			WPCO EIAO-TM ProPECC PN 1/94
S5.8	<u>*Construction Site Runoff and Drainage*</u> Proper site management measures should be implemented to control site runoff and drainage, and thereby prevent high sediment loadings from reaching downstream	Whole Site / Construction Phase	Contractor(s)		✓			WPCO EIAO-TM ProPECC PN 1/94

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	sections of the river/stream. The Contractor should follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures. The design of the mitigation measures should be submitted by the Contractor to the Engineer for approval. These mitigation measures shall include the following practices to minimize site surface runoff and the chance of erosion, and also to retain and reduce any suspended solids prior to discharge: • Before commencing any work, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains. • Provision of perimeter channels to intercept storm-runoff from outside the site. These should be constructed in advance of the construction works. • Temporary ditches such as channels, earth bunds or sand bag barriers should be included to facilitate runoff discharge into the stormwater drain, via a sand/silt basin/trap. • Works programme should be designed to minimize works areas at any one time, thus minimizing exposed soil areas and reducing the potential for increased siltation and runoff. • Sand/silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove the sand/silt particles from run-off where necessary. These facilities should be properly and regularly cleaned and maintained. These facilities should be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site. • Careful programming of the works to avoid excavation works during the rainy season. • Temporary access roads (if any) should be protected by crushed gravel and exposed slope surfaces shall be protected when rainstorms are likely; and • Open stockpiles of construction materials on-site should be covered with tarpaulin or similar fabric during rainstorms to prevent erosion.							
S5.8	<u>*Use of Containment Structures and Diversion Channels*</u> The use of containment structures and diversion channels is recommended wherever	Whole Site / Construction Phase	Contractor(s)		✓			WPCO EIAO-TM

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	practicable to facilitate a dry or at least confined excavation within the nullah. For example, nullah water should be contained within the works area before the commencement of excavation by the use of concrete blocks or sand bag barriers. Water within the contained area should be discharged to the nullah before excavation commences to create the dry conditions. Dredging/sediment removal works shall not be carried out in open waters. Nullah water should also be diverted from the works area through the use of diversion channel constructed by materials such as concrete blocks. Indicative details of the containment structures and diversion channels are provided in ***Drawing No. 400171/B&V/EIA/503*** and would be provided by the Contractor to the Engineer for approval before commencement of construction works for the Project. By limiting or confining the works areas the extent of disturbance to the surrounding water bodies will be significantly reduced, and thus resulting impacts on water quality from sediment re-suspension will be reduced. These measures will be implemented to ensure compliance with the Water Pollution Control Ordinance and its subsidiary regulations.							
S5.8	*Sewage and Wastewater Discharge* All discharges during the construction phase of the Project are required to comply with the *Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-ICW)* issued under *Section 21* of the *WPCO*. Domestic sewage/wastewater generated by workforce on-site should be collected in a suitable storage facility such as portable chemical toilets. An adequate number of portable toilets will be provided during the construction phase. These toilets should be maintained in a state that will not deter the workers from using them. The collected sewage/wastewater will be discharged into the foul sewer or transferred to the Government sewage treatment works by a licensed collector.	Whole Site / Construction Phase	Contractor(s)		✓			WPCO EIAO-TM Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-ICW)
S5.8	*Storage and Handling of Oil, Other Petroleum Products and Chemicals* The following mitigation measures should be implemented for the storage and handling of oil, other petroleum products and chemicals: • Waste streams classifiable as chemical wastes should be properly stored,	Whole Site / Construction Phase	Contractor(s)		✓			Waste Disposal Ordinance (WDO) Waste Disposal (Chemical Waste)

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	collected and treated for compliance with *Waste Disposal Ordinance or Disposal (Chemical Waste) (General) Regulation requirements*. • All fuel tanks and chemical storage areas should be provided with locks and be sited on paved areas. • The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil, fuel and chemicals from reaching the receiving waters. • Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance. • Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should, as far as possible, be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor.							(General) Regulation
S5.8	<u>*Handling of Spillage / Leakage*</u> In the event that accidental spillage or leakage of hazardous substances / chemical wastes occur, the response procedures as listed below should be followed. It should be noted that the procedures below are not exhaustive and the contractor should propose other response procedures in the emergency contingency plan based on the particular types and quantities of chemicals or hazardous substances used, handled and stored on-site. • Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the *Waste Disposal Ordinance*. • Instruct untrained personnel to keep at a safe distance well away from the spillage area. • If the spillage / leakage involves highly toxic, volatile or hazardous waste, initiate emergency evacuation and call the emergency service. • Only trained persons equipped with suitable protective clothing and equipment should be allowed to enter and clean up the waste spillage / leakage area. • Where the spillage/ leakage is contained in the enclosed storage area, the waste can be transferred back into suitable containers by suitable handheld	Whole Site / Construction Phase	Contractor(s)		✓			WDO

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	equipment, such as hand operated pumps, scoops or shovels. If the spillage / leakage quantity is small, it can be covered and mixed with suitable absorbing materials such as tissue paper, dry soft sand or vermiculite. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. • For spillage / leakage in other areas, immediate action is required to contain the spillage / leakage. Suitable liquid absorbing materials such as tissue paper, dry soft sand or vermiculite should be used to cover the spill. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. • Areas that have been contaminated by chemical waste spillage / leakage should be cleaned. While water is a soluble solvent for aqueous chemical wastes and water soluble organic waste, kerosene or turpentine should be used for organic chemical wastes that are not soluble in water. The waste from the cleanup operation should be treated and disposed of as chemical waste. • In incidents where the spillage/ leakage may result in significant contamination of an area or risk of pollution, the EPD should be informed immediately.							
S5.8	<u>*Maintenance Works*</u> Maintenance may be necessary for the revitalised YLTN at regular intervals to remove excessive silts, vegetation, debris and obstruction. The following considerations should be included in planning for the maintenance works during operation: (a) Maintenance of the channels should be restricted to annual silt removal when the accumulated silt will adversely affect the hydraulic capacity of the channel, except during emergency situations where flooding risk is imminent. Desilting should be carried out by hand or light machinery during the dry season (October to March) when water flow is low. (b) Phasing of the works should be considered to better control and reduce any impacts caused. Where possible, works should be carried out along half	Whole Site / Operation Phase	Project Proponent				✓	-

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	width of the drainage channel in short sections. A free passage along the drainage channel is necessary to avoid forming stagnant water in any phase of the works. (c) Containment structures (such as sand bags barrier) should be provided for the desilting works area to facilitate a dry or at least confined working area within the drainage channel. (d) The locations for the disposal of the removed materials should be identified and agreement sought with the relevant departments before commencement of the maintenance works. Temporary stockpile of waste materials should be located away from the channel and properly covered. These waste materials should be disposed of in a timely and appropriate manner. (e) Effective temporary flow diversion scheme should be implemented and the generated wastes should be collected and disposed off-site properly to avoid adversely affecting the water quality of the drainage system.							
S5.8	Practicable designs including energy dissipators or orientation of the pump outlets will be optimised in the detail design stage to dissipate excess energy of flowing water downstream such that the hydraulic performance of the downstream will be similar to the existing condition.		Contractor(s)	✓				
S5.11 of EIA and S5.2 of EM&A Manual	Baseline monitoring should be undertaken for three times per week for a period of four weeks before commencement of the construction works to establish baseline water quality conditions of the area. Impact monitoring should be undertaken for three times per week during the construction period to obtain water quality data of the area throughout the construction period for comparison with the baseline water quality data and hence determine any water quality impacts from the construction activities. Post Project monitoring should also be undertaken three times per week for four weeks after the completion of construction works. The following parameters will be monitored under the water quality monitoring	Upstream and downstream of the Work Area / Before, During and After Construction	ET and IEC	✓	✓	✓		EIAO-TM

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	programme: • pH (in situ measurement); • Water temperature (ºC) (in situ measurement); • Salinity (ppt) (in situ measurement); • Dissolved Oxygen (DO) (% saturation and mg/L) (in situ measurement); • Turbidity (NTU) (in situ measurement); and • Suspended Solids (SS) (mg/L) (laboratory analysis).							
S5.11	Weekly site inspections and audits will be conducted to ensure that the recommended mitigation measures are properly implemented during the construction stage.	Whole Site / Construction Phase	ET and IEC		✓			EIAO-TM
6. Waste Management								
S6.6	*General* The HKSAR Government's construction and demolition waste management policy follows the same hierarchy as for other wastes i.e. in order of desirability: avoidance, minimisation, recycling, treatment and safe disposal of waste. Training of construction staff should be undertaken by the contractor about the concept of site cleanliness and appropriate waste management procedures. The contractor should develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. Requirements for staff training should be included in the contractor's Environmental Management Plan (EMP). Good planning and site management practice should be employed to eliminate over ordering or mixing of construction materials to reduce wastage. Proper storage and site practices will minimise the damage or contamination of construction materials. Where waste generation is unavoidable, the potential for recycling or reuse should be rigorously explored. If waste cannot be recycled, disposal routes described in the	Whole Site / Detailed Design and Construction Phase	Detailed Design Engineer / Contractor(s)	✓	✓			WDO DEVB TC(W) No 6/2010 ETWB TC(W) No. 19/2005

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	EMP should be followed. A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be implemented. In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included. One may make reference to *DEVB TC(W) No. 6/2010* for details. Regular cleaning and maintenance of the waste storage area should be provided. Control measures for temporary stockpiles on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact. These measures include: • Surface of stockpiled soil should be regularly wetted with water especially during dry season; • Disturbance of stockpiled soil should be minimized; • Stockpiled soil should be properly covered with tarpaulin especially when heavy rain storms are predicted; • Stockpiling areas should be enclosed where space is available; • Stockpiling areas should be located away from the water bodies; and • An independent surface water drainage system equipped with silt traps should be installed at the stockpiling area. The identification of final disposal sites for C&D materials generated by the construction works will be considered during the detailed design stage of the Project when the volume and types of C&D materials can be more accurately estimated. The Public Fill Committee of CEDD should be consulted on designated outlets (e.g. public filling area) for public fill, whilst EPD should be consulted on landfills for C&D waste. Disposal of C&D waste to landfill must not have more than 50% (by weight) inert material. The C&D waste delivered for landfill disposal should contain no free water and the liquid content should not exceed 70% by weight. In order to avoid dust or odour impacts, any vehicle leaving a works area carrying C&D waste or public fill should have their load covered up before leaving the							

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	construction site. C&D materials should be disposed of at designated public fill reception facilities or landfills. Disposal of these materials for the use at other construction projects is subject to the approval of the Engineer and/or other relevant reception authorities. Furthermore, unauthorized disposal of C&D materials in particular on private agricultural land is prohibited and may be subject to relevant enforcement and regulating actions. The disposal of public fill and C&D waste will be controlled through trip-ticket system in accordance with DEVB TC(W) No. 6/2010.							
S6.6	*On-site Sorting, Reuse and Recycling* All waste materials should be segregated into categories covering: • Inert C&D materials suitable for reuse on-site; • Inert C&D materials suitable for public fill reception facilities; • Recyclable C&D waste for recycling; • Remaining C&D waste for landfill; • Chemical waste; and • General refuse for landfill. Proper segregation and disposal of construction waste should be implemented. Separate containers should be provided for inert and non-inert wastes. Sorting is important to recover materials for reuse and recycling. Specific area should be allocated for on-site sorting of C&D materials and to provide a temporary storage area for those sorted materials. If area is limited, all C&D materials should at least be sorted on-site into inert and non-inert components. Non-inert materials (C&D waste) such as bamboo, timber, vegetation, packaging waste and other organic materials should be reused and recycled wherever possible and disposed of to designated landfill only as a last resort. Inert materials (public fill) such as concrete, stone, clay, brick, soil, asphalt and the like should be separated and reused in this or other projects (subject to approval by the relevant parties in accordance with the *DEVB TC(W) No. 6/2010*) before disposed of at a public filling facility	Whole Site / Construction Phase	Contractor(s)		✓			WDO WBTC Nos. 6/2002 and 6/2002A DEVB TC(W) No. 6/2010 ETWB TC(W) No. 19/2005

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	operated by CEDD. Steel and other metals should be recovered from demolition waste stream and recycled. The reuse of inert materials such as soil, rock and broken concrete should be maximised. Waste should be separated into fine, soft and hard materials. With the use of a crusher coarse material can be crushed to make it suitable for use as fill material where fill is required in the works. This minimises the use of imported material and maximises use of the C&D material produced.							
S6.6	*Excavated Sediments* The sediment should be excavated, handled, transported and disposed of in a manner that would minimize adverse environmental impacts. Requirements of the Air Pollution Control (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation and disposal of the sediment. In order to minimize the exposure to contaminated materials, workers shall, if necessary, wear appropriate personal protective equipment (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site. For off-site disposal, the basic requirements and procedures specified under ETWB TC(W) No. 34/2002 shall be followed. Marine Fill Committee (MFC) of CEDD is managing the disposal facilities in Hong Kong for the excavated sediment, while EPD is the authority of issuing marine dumping permit under the Dumping at Sea Ordinance (DASO). To ensure disposal space is allocated for the Project, the Project Proponent should be responsible for obtaining agreement from MFC on the rationale for sediment removal and the allocation of the disposal site. The contractor(s), on the other hand, should be responsible for the application of the marine dumping permit under DASO	Works Site requiring sediment excavation / Construction Phase	Contractor(s)		✓			Air Pollution Control (Construction Dust) Regulation ETWB TC(W) No. 34/2002 Dumping at Sea Ordinance (DASO) WPCO WDO

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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	from EPD for the sediment disposal. The excavated sediments are expected to be loaded onto the barge at public barging point of which the exact location will be determined by the contractor(s) and agreed by EPD/CEDD and transported to the designated disposal sites allocated by MFC. The excavated sediment would be disposed of according to its determined disposal options and ETWB TC(W) No. 34/2002. 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 stockpiling areas for contaminated sediments should be paved with impermeable linings 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). In order to minimize 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. 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.							

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
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S6.6	*Chemical Waste* Where the construction processes produce chemical waste, the contractor must register with EPD as a chemical waste producer. Wastes classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation. These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be registered with EPD. An updated list of licensed chemical waste collector can be obtained from EPD. Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD, and should be collected by a licensed chemical waste collector. Chemical waste should be stored away from channels or water bodies. Suitable containers should be used for specific types of chemical wastes. The containers should be properly labelled (in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations), resistance to corrosion, stored safely and closely secured. Stored volume should not be kept more than 450 liters unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition of fence that is at least 2 m height or height of tallest container with adequate ventilation and space. Hard standing, impermeable surfaces draining via oil interceptors should be provided in works area compounds. Interceptors should be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunding should be of sufficient capacity to accommodate 110% of the	Whole Site / Construction Phase	Contractor(s)		✓			Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes DEVB TC(W) No. 6/2010

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	volume of the largest container or 20% of the total volume of waste, whichever is largest. Waste collected from any grease traps should be collected and disposed of by a licensed contractor. Lubricants, waste oils and other chemical wastes are likely to be generated during construction. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. If possible, such waste should be sent to oil recycling companies, and the empty oil drums collected by appropriate companies for reuse or refill. The registered chemical waste producer (i.e. the contractor) has to arrange for the chemical waste to be collected by licensed collectors. The licensed collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the Chemical Waste Treatment Centre in Tsing Yi). A trip ticket system operates to control the movement of chemical wastes. No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.							
S6.6	*General Works Waste* **Concrete Waste** Dry concrete waste (considered as public fill) should be sorted out from the other wastes and recycled for reuse or sorted out for disposal at designated public filling facilities. **Wooden Materials** All wooden materials used on-site should be kept separate from other wastes to avoid damage and to facilitate reuse. Timber which cannot be reused should be sorted out from other waste and stored separately from all inert waste before being	Whole Site / Construction Phase	Contractor(s)		✓			WDO WBTC No. 19/2001

EIA & EM&A Ref.(1)	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	disposed of to landfill. Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork. Only waste material need be taken to a landfill. It should be separated from recyclable wood and steel materials. As for all waste types these materials should be reused on-site or other approved sites before disposal is considered as an option. Disposal to landfill should only be considered as a final option. Contractors are responsible for storage of re-useable materials on-site. **General Refuse** General refuse generated on-site should be stored in enclosed bins or skips and collected separately from other construction and chemical wastes and disposed of at designated landfill. A temporary refuse collection point should be set up by the contractor to facilitate the collection of refuse by licensed contractors. The removal of waste from the site should be arranged on a daily or at least on every second day by the contractor to minimise any potential odour impacts, minimise the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste. The recyclable component of the general waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the contractor. The contractor should also be responsible for arranging recycling companies to collect these materials. **Floating Refuse**							

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	Any floating refuse trapped within the Project Area shall be collected by contractor and disposed to landfill.							
S6.6	The screenings, silt materials and debris collected during operation and maintenance should be properly packed and transported to the designated landfill for disposal as soon as possible. All chemical waste should be properly stored, labelled and removed by licensed waste collectors in accordance with Waste Disposal (Chemical Waste) (General) Regulation.	Whole Site / Operation Phase	Project Proponent				✓	Waste Disposal (Chemical Waste) (General) Regulation
S6.9	To facilitate monitoring and control over the contractors' performance on waste management, a waste monitoring and audit programme will be implemented throughout the construction phase and a Waste Management Plan (WMP) will be prepared and implemented by the contractor in accordance with ETWB TC(W) No. 19/2005. The aims of the monitoring and audit programme are: • To review the WMP, which will form part of the EMP in accordance with ETWB TC(W) No. 19/2005, including the quantities and types of C&D materials generated, reused and disposed of off-site; the amount of fill materials exported from/imported to the site and the quantity of timber used in temporary works construction for each process/activity; • To monitor the implementation and achievement of the WMP on site to assess its effectiveness; and • To monitor the follow-up actions on deficiencies identified. Site inspections will be undertaken each week. Particular attention will be given to the contractor's provision of sufficient spaces, adequacy of resources and facilities for on-site sorting and temporary storage of C&D materials. The C&D materials to be disposed of from the site will be visually inspected to ensure the absence of non-inert materials (e.g. general refuse, timber, etc.). The waste to be disposed of at landfills will as practicable contain no observable inert or reusable/recyclable C&D materials (e.g. soil, broken rock, metal, and paper/cardboard packaging, etc.). Any irregularities observed during the site inspections will be raised promptly to the	Whole Site / Construction Phase	Contractor(s)		✓			WDO ETWB TC(W) No. 19/2005

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	contractor for rectification. The findings of the waste inspections will be reported in the monthly Environmental Monitoring and Audit Report.							
7. Ecological								
	Avoidance							
S7.8	While the Project Site is situated within the WBA, the site and construction works are designed to be confined to the Yuen Long Town Nullah that direct impacts on all other recognized sites of conservation importance including Ramsar Site, Priority Site, WCA, WBA (outside the Project Site), SSSI and CA would be avoided.	Whole Site / Detailed Design Phase	Detailed Design Engineer	✓				EIAO-TM
S7.8	According to the ecological survey data from present study, Shan Pui River recorded a relatively higher abundance of waterbirds in dry season. In order to minimize the construction noise disturbance on the nearby wetland habitats and the associated disturbance-sensitive overwintering/migratory waterbirds, which are most abundant during the dry season months, the comparatively disturbing construction works i.e. 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).	Whole Site / Construction Phase	Contractor(s)		✓			EIAO-TM
	Minimisation							
S7.8	<u>*Consideration of alternative construction methods*</u> – Concrete crusher would be used for demolition works to be undertaken during dry season months and demolition using breakers mounted on excavators should only be undertaken during wet season when the wetland habitats nearby the Project Site are less sensitive outside the peak overwintering.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	Due to ground conditions and programme constraints, percussive piling works would likely be unavoidable. In considering the construction noise, ecological impact and other environmental constraints, the quieter foundation methods,	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	including bored piling by reverse circulation drill, raft foundation and shallow foundation, would be adopted as far as possible.							
S7.8	*Careful phasing of construction activities* – The programme and phasing of the construction activities have been carefully planned to localise the construction disturbance within and to reduce the duration of high level of disturbances on sensitive wetland habitats and associated waterbirds. The proposed works will be conducted in 3 primary phases stated in Chapter 2 of EIA report. For example, excavation works within watercourse will be conducted in dry season to minimize the impacts to water quality and release of contaminants to aquatic habitats. Besides, the pumping stations and tidal barriers will not be constructed simultaneously, but will be constructed by 2 sections (one pumping station and half of tidal barriers at a time), to maintain the ecological connectivity.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	*Use of noise barriers/acoustic screens* – In order to further minimise the overall impacts on the nearby wetland habitats and associated waterbirds, particularly to the wetland habitats adjacent to the Project Site, noise barriers with absorptive materials of about 2-3m high will be erected along the sensitive sides of the Project Site, throughout the construction phase. The purpose is to screen the construction noise and human disturbance from the waterbirds during construction phase.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	Adequate noise barriers should also be provided for the demolition 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 breakers mounted on excavator used for demolition works and acoustic mat should be provided to the piling plants around the rig. The contractor should provide enclosure for construction equipment, especially static plants (e.g. generator), as appropriate to minimise the noise disturbance as far as practicable.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	As ardeid night roost was recorded beside the Project Site of Kam Tin River, noise barriers with absorptive materials of about 2-3m high should be erected along the side close to the night roost location, that would screen human disturbance and noise	Works Site of Kam Tin River within	Contractor(s) – ecologists		✓			EIAO-TM

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	disturbance to the night roost. As night roost may change from time to time, a pre-construction survey is recommended for areas within 100m from the Project boundary to confirm the location and status of the night roost. No construction works should be undertaken within 100m from any night roost confirmed by the pre-construction survey after 17:00 from February to September and 16:30 from October to January to avoid disturbance to avoid disturbance.	100m of ardeid night roost / Construction Phase						
S7.8	*Use of quality powered mechanical equipment* – The Quality Powered Mechanical Equipment (QPME) system was developed by EPD to benchmark construction equipment items that are new, notably quieter, more environmentally friendly and efficient by QPME Labels. 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.	YLBS / Construction Phase	Contractor(s)		✓			EIAO-TM
S7.8	*Operation of tidal barrier to allow brackish waters flushing in* – In order to mitigate the impacts of fragmentation in particular the water connectivity between the YLTN Section 4 and Shan Pui River, as well as the loss of brackish water habitat at YLTN Section 4, measures are being explored to retain the habitat between the existing inflatable dam and the proposed barrage as far as practicable. The operation of tidal barrier will be closed during high tide above 0.5mPD and will be opened below 0.5mPD (**Appendix 2.4 of EIA report**). The situation now is the waters from Deep Bay start flushing in above ~0.2mPD during high tide. Hence, the waters with sediment from Deep Bay can still be flushed into YLTN Section 4 from ~0.2-0.5mPD during high tide before closure of tidal barriers. The operation would facilitate an exchange of water, similar to the existing conditions, according to tidal fluctuations and enhance ecological connectivity through periodic opening of the tidal barriers. Additionally, the feasibility of a proposed 300mm x 300mm ecological trench underneath the soffit of the tidal barriers is being investigated to serve a similar purpose when the barriers are closed. The necessary operation modes would be further explored in the Detailed Design Stage.	YLBS / Detailed Design Phase and Operation Phase	Detailed Design Engineer / Project Proponent	✓			✓	EIAO-TM

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
S7.8	<u>*Discharge design to minimize the scouring effect to tidal mudflat*</u> – The performance of the discharge system would be assessed against the YLBS' maximum discharge (i.e. under 200-year rainstorm event) and the configuration of the pumping stations is being optimised. Apart from under design weather events, no significant increase in discharge is anticipated as a result of the barrage. The orientation of the outlet and angle of discharge will be designed to prevent localized turbulent flows which could lead to scouring of the river bed and bank, thereby minimising significant changes to the existing sedimentation pattern / mudflats in Shan Pui River and Old Kam Tin River. Energy dissipators could be designed at the outlet to protect the downstream Shan Pui River from erosion by further reducing the flow velocity.	YLBS / Detailed Design Phase and Operation Phase	Detailed Design Engineer / Project Proponent	✓			✓	EIAO-TM
S7.8	<u>*Reducing glare/lighting*</u> – No night-time construction works would be required under this Project (construction hours: 07:00 – 19:00) while the operations of the pumping stations and E&M room will be unmanned, only safety light will be turned on. In light of the presence of light sensitive mammal species of conservation importance, Great Cormorants that roost on trees at Nam Sang Wai and Bent-winged Firefly, the overall reduction of glare during both construction and operation phases should also be considered. A balance between lighting for safety, and avoiding excessive lighting can be achieved through the use of directional lighting to avoid light spill into sensitive areas, and control/timing of lighting periods of some facilities. Major construction site lighting should point inward and downward to minimize glare disturbance to wildlife at night. The intensity of light should also be controlled to the lowest possible level. To avoid the potential disturbance impact on the Bent-winged Firefly, any outdoor lighting associated with the construction works of the barrage after 1800 should be avoided during May to September.	YLBS / Detailed Design Phase, Construction Phase and Operation Phase	Detailed Design Engineer / Contractor(s) / Project Proponent	✓	✓		✓	EIAO-TM
	Mitigation							
S7.8	<u>*Translocation of Gobiopterus macrolepis*</u> – Within YLTN Section 4 of the Project Site, fish species of conservation importance i.e. *Gobiopterus macrolepis* was recorded. Direct impact to this species is likely in the works area of the tidal barrier during construction phase, and translocation of this species is recommended. Capture-and-translocation of this fish species will be implemented in the works area	YLTN Section 4 / Before construction	Contractor(s) – ecologists		✓			EIAO-TM

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	of the tidal barrier and pumping station prior to construction works to minimize the impacts on this species of conservation importance.							
S7.8	The capture-and-translocation exercise should be undertaken by ecologists with relevant experience. Besides the primary target of *Gobiopterus macrolepis*, other aquatic species of conservation importance should also be translocated if encountered during the capture exercise. Captured individuals will be released to suitable habitats with records of the species during the exercises. As the works area of the tidal barrier subjects to tidal influence, it is recommended the capture exercise should be conducted during low tide, to allow the fish or other aquatic fauna evacuate with the tide. Measures to prevent recolonization of aquatic fauna in the works area should be formulated.	YLTN Section 4 / Before construction	Contractor(s) – ecologists		✓			EIAO-TM
S7.8	*Gobiopterus macrolepis* were recorded along the Shan Pui River, Kam Tin River, the confluence of Shan Pui River and Kam Tin River, and the reedbed in Nam Sang Wai, all these locations can be considered as potential receptor sites for fish translocation. As the abundance of this species was higher in the reedbed of Nam Snag Wai, it is considered a more favourable habitat for this species and hence the priority of the receptor site would be there.	YLTN Section 4 / Before construction	Contractor(s) – ecologists		✓			EIAO-TM
S7.8	The detailed fish translocation plan and ecologists involved in the translocation should be submitted to relevant authorities including AFCD for approval prior to commencement of the fish translocation. The plan should include brief description on pre-translocation fish survey, translocation methodology, identification of fish receptor site, post-translocation monitoring methodology, and measures to prevent recolonization of aquatic fauna in the works area of the tidal barrier.	YLTN Section 4 / Before construction	Contractor(s) – ecologists					
8. Fisheries								
S8.8	The proposed works are confined within the Proposed Project Boundary. Fishponds within the assessment area have been avoided.	Whole Site / Construction Phase	Contractor(s)		✓			-

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
S8.8	Controlling Site Runoff In order to minimize the potential indirect fisheries impacts due to deterioration of water quality on the adjacent ponds as much as possible, guidelines for handling and disposal of construction discharges as well as appropriate mitigation measures and good site practices as detailed in Water Quality Chapter to control runoff from the construction site and prevent runoff and drainage water with high levels of suspended solids and oil / grease from directly entering the nearby fishponds. In particular, measures and good site practices stipulated in the ProPECC PN 1/94 "Construction Site Drainage" and in ETWB TC (Works) No. 5/2005 "Protection of Natural Streams / Rivers from Adverse Impacts Arising from Construction Works" to minimise surface runoff and the chance of erosion should be followed to minimise potential impacts to nearby fisheries resources. Relevant mitigation measures include: • Construction works should be programmed to minimize 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; • Construction works close to the inland waters should be carried out in the dry season as far as practicable where the flow in the surface channel or stream is low; • Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric. Intercepting channels should be provided (e.g. along the crest / edge of excavation) to prevent storm run-off from washing across exposed soil surfaces. Arrangements should always be in place in such a way that adequate surface protection measures can be safely carried out well before the arrival of rainstorm; • 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; • 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	Whole Site / Construction Phase	Contractor(s)		✓			ProPECC PN 1/94 ETWB TC(W) No. 5/2005 WPCO

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	drainage like intercepting channels should be provided where necessary. • 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. • 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 localized flooding.							
S8.8	Minimizing Chance of Accidental Spillage and Potential Contamination of Surface Water and Groundwater The Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (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. 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 leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges. Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes to avoid accidents. • Storage area should be selected at a safe location on site and adequate space	Whole Site / Construction Phase	Contractor(s)		✓			WDO Waste Disposal (Chemical Waste) (General) Regulation The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance

EIA & EM&A Ref.(1)	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	should be allocated to the storage area.							
S8.11 of EIA and S8.1 of EM&A Manual	As no unacceptable adverse fisheries impacts are anticipated during construction or operational phases, no specific monitoring programme for fisheries is required. Regular audits should be undertaken to ensure the effectiveness of the mitigation measures and good site practices recommended during construction phase for further controlling the water quality impacts, as these measures also serve to protect fisheries resources.	Whole Site / Construction Phase	ET and IEC		✓			EIAO-TM
9. Built Heritage								
S9.6	A condition survey will be carried out by qualified building surveyor or engineer in advance of works for identified buildings that may be affected by ground-borne vibration. The Condition Survey Report should contain descriptions of the structure, identification of fragile elements, an appraisal of the condition and working methods for any proposed monitoring and precautionary measures that are recommended.	Heritage structures HB-17, HB-18, HB-30 / Before Construction	Contractor(s)		✓			-
S9.6	Vibration monitoring should be undertaken during the construction works to ensure that safe levels of vibration are not exceeded. An Alert, Alarm and Action (AAA) vibration limit set at 5 / 6 / 7.5 mm/s for heritage buildings (PNAP APP-137-Appendix A) should be adopted. The AAA vibration limit for the buildings to be graded by AAB should be determined by the future grading. The condition survey report should highlight if the limit should be lowered after the detailed study of the condition of the buildings and structures. A monitoring schedule, the location of monitoring equipment, the frequency of monitoring, reporting requirements and action plan should be included in the condition survey report. The location of any monitoring equipment in the building must be approved by the owner and AMO before installation. Reinstatement to all affected areas is required.	Heritage structures HB-17, HB-18, HB-30 / Construction Phase	Contractor(s)		✓			PNAP APP-137-Appendix A
S9.6	A buffer zone should be provided to separate the building or structure from the construction works. The buffer zone should be clearly marked out by temporary	Heritage structures	Contractor(s)		✓			-

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	fencing, if temporary fencing is not appropriate signage may be used to identify the heritage item to be avoided. The buffer zone should be made at least 1m from the proposed works or if this is not possible as large as the site restrictions allow.	HB-17, HB-18, HB-30, HB-31 / Construction Phase						
S9.6	Any proposed works in close proximity to buildings or structures used by the public have the potential to create an unsafe environment for members of the public. The contractor should ensure that safe public access if possible, through provision of clearly marked paths separated from the construction works areas is provided for any such affected cultural heritage structure.	Heritage structures HB-17, HB-18, HB-30, HB-31 / Construction Phase	Contractor(s)		✓			-
10. Landscape and Visual								
S10.7.4	CM1 - The construction area and contractor's temporary works areas should be minimised to reduce visual impacts and avoid impacts on adjacent landscape. CM2 - Reduction of construction period to practical minimum. CM3 - Phasing of the construction stage to reduce visual impacts during the construction phase. CM4 - Construction traffic kept to a practical minimum. CM5 - Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours. CM6 - Avoidance of excessive height and bulk of site buildings and structures. CM7 - Control of night-time lighting by hooding all lights and through minimisation of night working periods. CM8 - All existing trees shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Documents. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. CM9 - Trees unavoidably affected by the works shall be transplanted where practical. A detailed Tree Transplanting Specification shall be provided in the	Whole Site / Construction Phase	Contractor(s)		✓			DEVB TC(W) No. 4/2020

EIA & EM&A Ref.[1]	Environmental Protection Measures	Location / Timing of the Measures	Implementation Agent	Implementation Stage*				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.							
S10.7.4	OM1 - Enhanced nullah bed with replacement of concrete lining with natural substrates and planting. OM2 - Enhanced nullah sides with appropriate hard and soft finishes and parapet treatments. OM3 - Enhanced adjacent streetscape with paving, planting and furniture in a manner that responds to the existing and planned urban context. OM4 - Additional viewpoints, seating areas and open space within or adjacent to nullah. OM5 - Enhanced nullah crossings including vehicular, pedestrian and utility bridges with upgraded finishes and treatments. OM6 - Sensitively designed barrage and structures in terms of scale, height and bulk (visual weight). OM7 - Barrage and drainage works visually integrated with their surroundings through use of appropriate building materials and finishes. OM8 - Barrage lighting units to be directional and minimise unnecessary light spill and glare. For further details, see "Charter on External Lighting" and "Guidelines on Industry Best Practices for External Lighting Installations" promulgated by the Environmental Bureau. OM9 - Compensatory tree planting for all felled trees in accordance with relevant Government tree protection requirements. (Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under the relevant technical circulars during the detailed design phase). OM10 - Green roofs and vertical greening on barrage pumping stations and E&M control building.	Whole Site including Barrage / Detailed Design and Operation Phase	Detailed Design Engineer / Project Proponent	✓			✓	-

* Des = Design; C = Construction; Post-C = Post Construction / Before Operation; O = Operation

EIA &EM&A Ref.[1]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
1. Air Quality Measures								
S4.8	Relevant dust control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, and good site practices will be incorporated as the Contract Specifications for implementation throughout the construction period. These include: • The works area for site clearance and excavation should be sprayed with water before, during and after the operation so as to maintain the entire surface wet. • Restricting heights from which materials are to be dropped, as far as practicable to reduce the fugitive dust arising from unloading/ loading. • Immediately before leaving a construction site, all vehicles should be washed to remove any dusty materials from the bodies and wheels. However, all spraying of materials and surfaces should avoid excessive water usage. • Where a vehicle leaving a construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials will not leak from the vehicle. • Erection of hoarding along the site boundary, where appropriate. • Any stockpile of dusty materials should be covered entirely by impervious sheeting; and/or placed in an area sheltered on the top and three sides. • All dusty materials should be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet. • Reduce the traffic induced dust dispersion and re-suspension, the travelling speed of vehicles within the site should be controlled. • Regular maintenance of construction equipment deployed on-site will be	Whole Site	Contractor(s)		✓			Air Pollution Control (Construction Dust) Regulation

(1) Unless otherwise stated, the reference refers to the relevant section of the EIA Report.

EIA &EM&A Ref.[1)]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	conducted to prevent black smoke emission.							
S4.8	Excavated nullah bed materials that are placed on trucks for disposal should be properly covered with tarpaulin sheets during transportation to minimise the release of any potential odour. The odorous excavated material should be placed as far away from the sensitive receivers as possible. Odorous river bed material excavated during construction phase should be removed off-site as soon as practicable within 24 hours to avoid any odour nuisance.	Whole Site	Contractor(s)		✓		✓	-
S4.8	During operation phase, mitigation measures are considered necessary when materials generated from the maintenance works are found to be odorous, and the following measures should be implemented by the Contractor. • Temporarily stockpile odorous material as far away from ASRs as possible; and • Temporary stockpiles of odorous material will be properly covered with tarpaulin and should be removed off-site as soon as practically possible within 24 hours to avoid any odour nuisance arising.	Whole Site	Contractor(s)				✓	
S4.8	To reduce odour impacts from the DWF pumping station, the following measures should be implemented. • The DWF pumping station should be enclosed inside building structure and maintained with negative pressure; • The DWF pumping station should be equipped with deodourization unit using activated carbon or other equivalent odour removal techniques with odour removal efficiency of 99.5%; • The exhaust outlet of the deodourization unit should be located in a direction away from the nearby ASRs, with a view to maximizing the separation distance between the exhaust outlet and the nearest ASR; and • Regular maintenance of the deodourization unit should be conducted to ensure its effectiveness.	DWF pumping station	Contractor(s)				✓	

EIA &EM&A Ref.(1)	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
S4.11 of EIA Report, S3.3 and S3.4 of EM&A Manual	Weekly site inspection and monthly odour patrol measurement.	Whole Site	ET & IEC	✓	✓			
2. Noise								
S5.8	The following good site practices should be followed during the construction of the Project: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase; • Silencers or mufflers on construction equipment should be utilized where required and should be properly maintained during the construction phase; • Mobile plant, if any, should be sited as far from 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; and • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.	Whole Site	Contractor(s)		✓			-
S5.8	Use quiet PME as far as practicable to mitigate the construction noise impact.	Whole Site	Contractor(s)		✓			-
S5.8	Noise insulating sheet would be adopted for PME such as drill rig. The noise insulating sheet should be deployed such that there would be no opening or gaps on the joints.	Whole Site	Contractor(s)		✓			-

EIA &EM&A Ref.[1]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
S5.8	In view of the close proximity between NSRs and the works areas for construction of DWFI system, fixed temporary noise barriers shall be deployed at the working section as far as practicable. Fixed temporary noise barriers of 3m in height with skid footing should be used and located within a few metres of stationary plant and mobile plant such that the line of sight to the NSR is blocked by the barriers. The length of the barrier should be at least five times greater than its height. The noise barrier material should have a sufficient surface density of at least 7 kg/m2 and have no openings or gaps.	Works Areas for DWFI System	Contractor(s)		✓			A Practical Guide for the Reduction of Noise from Construction Works
S5.8	Scheduling of construction activities with identified grouping of PMEs. Only one group of PME would be operated at any one time for each construction activity for reducing the construction noise impact.	Whole Site	Contractor(s)		✓			-
S5.8	<u>Special arrangement during examination period</u> • The contractor shall liaise with the school management about the arrangements during examination weeks. • PMEs shall not be used at the closest works areas (i.e. Section B1 for NSR14 and Section A3 for NSR18) during the examination period.	Relevant Works Areas for Construction of DWFI System	Contractor(s)		✓			
S5.8	During operation phase, the following measures shall be implemented as far as practicable to minimise the potential impact: • Quieter plant should be chosen as far as practical; • Include noise levels specification when ordering new plant items; • All openings, including louvres for ventilation and machine room doors should be oriented away from the NSRs as far as practicable; • Silencers, acoustic louvres or acoustic doors should be used where necessary;	DWF pumping station	Contractor(s)				✓	

EIA &EM&A Ref.[1]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	and • Develop and implement a regularly scheduled plant maintenance programme so that plant items are properly operated and serviced. The programme should be implemented by properly trained personnel.							
S5.7	The specified SWLs presented in **Annex 5C-3** of the EIA Report should be included in the tender specification.	DWF pumping station	Contractor(s)				✓	
S5.11 of EIA and S4.4 of EM&A Manual	Weekly noise monitoring at five monitoring stations and weekly site inspection and audit of construction activities.	Whole Site	ET & IEC	✓	✓			Environmental Impact Assessment Ordinance
3. Water Quality								
S6.7	<u>*General Construction Site Practice*</u> The Contractor should observe and comply with the *Water Pollution Control Ordinance* and its subsidiary regulations and obtain a discharge license under the Ordinance. The Contractor should carry out the Project works in such a manner as to minimize adverse impacts on the water quality during execution of the works. In particular he should arrange his method of working to minimize the effects on the water quality within and outside the Project Site and on the transport routes. In addition, the management of construction site drainage from the Project will follow guidelines provided in *ProPECC PN 1/94.*	Excavation Site	Contractor(s)		✓			-
S6.7	<u>*Construction Site Runoff and Drainage*</u> Proper site management measures should be implemented to control site runoff and drainage, and thereby prevent high sediment loadings from reaching downstream	Whole Site	Contractor(s)		✓			ProPECC PN 1/94 "Construction Site Drainage"

EIA &EM&A Ref.[1)]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	sections of the river/stream and adjacent agricultural land, if any. The Contractor should follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures. The design of the mitigation measures should be submitted by the Contractor to the Engineer for approval. These mitigation measures shall include the following practices to minimize site surface runoff and the chance of erosion, and also to retain and reduce any suspended solids prior to discharge: • Before commencing any work, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains. • Provision of perimeter channels to intercept storm-runoff from outside the site. These should be constructed in advance of the construction works. • Temporary ditches such as channels, earth bunds or sand bag barriers should be included to facilitate runoff discharge into the stormwater drain, via a sand/silt basin/trap. • Works programme should be designed to minimize works areas at any one time, thus minimizing exposed soil areas and reducing the potential for increased siltation and runoff. • Sand/silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove the sand/silt particles from run-off where necessary. These facilities should be properly and regularly cleaned and maintained. These facilities should be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site. • Careful programming of the works to avoid excavation works during the rainy season. • Temporary access roads (if any) should be protected by crushed gravel and exposed slope surfaces shall be protected when rainstorms are likely; and • Open stockpiles of construction materials on-site should be covered with tarpaulin or similar fabric during rainstorms to prevent erosion.							

EIA &EM&A Ref.[1)]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
S6.7	<u>*Use of Containment Structures and Diversion Channels*</u> The use of containment structures and diversion channels is recommended wherever practicable to facilitate a dry or at least confined excavation within the nullah. For example, nullah water should be contained within the works area before the commencement of excavation by the use of sand bag barriers. Water within the contained area should be discharged to the nullah before excavation commences to create the dry conditions. Nullah water should also be diverted from the works area through the use of diversion channel constructed by materials such as concrete blocks. Details of the containment structures and diversion channels should be provided by the Contractor to the Engineer for approval before commencement of construction works for the Project. By limiting or confining the works areas the extent of disturbance to the surrounding water bodies will be significantly reduced, and thus resulting impacts on water quality from sediment re-suspension will be reduced. Furthermore, excavation works in the nullah should be carried out during periods of low flow (dry season from November to March) as far as practicably to reduce impacts on downstream water quality and sensitive receivers. These measures will be implemented to ensure compliance with the *Water Pollution Control Ordinance* and its subsidiary regulations.	Whole Site	Contractor(s)		✓			-
S6.7	<u>*Sewage and Wastewater Discharge*</u> All discharges during the construction phase of the Project are required to comply with the *Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-ICW)* issued under *Section 21* of the *WPCO*. Domestic sewage/wastewater generated by workforce on-site should be collected in a suitable storage facility such as portable chemical toilets. An adequate number of portable toilets will be provided during the construction phase. These toilets should be maintained in a state that will not deter the workers from using them. The collected sewage/wastewater will be discharged into the foul	Whole Site	Contractor(s)		✓			Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-ICW) issued under Section 21 of the WPCO

EIA &EM&A Ref.[1)]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
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	sewer or transferred to the Government sewage treatment works by a licensed collector.							
S6.7	*Storage and Handling of Oil, Other Petroleum Products and Chemicals* The following mitigation measures should be implemented for the storage and handling of oil, other petroleum products and chemicals: • Waste streams classifiable as chemical wastes should be properly stored, collected and treated for compliance with Waste Disposal Ordinance or Disposal (Chemical Waste) (General) Regulation requirements. • All fuel tanks and chemical storage areas should be provided with locks and be sited on paved areas. • The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil, fuel and chemicals from reaching the receiving waters. • Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance. • Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should, as far as possible, be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor.	Whole Site	Contractor(s)		✓			Waste Disposal Ordinance or Disposal (Chemical Waste) (General) Regulation
S6.7	*Handling of Spillage / Leakage* In the event that accidental spillage or leakage of hazardous substances / chemical wastes occur, the response procedures as listed below should be followed. It should be noted that the procedures below are not exhaustive and the contractor should propose other response procedures in the emergency contingency plan based on the particular types and quantities of chemicals or hazardous substances used, handled and stored on-site. • Oil leakage or spillage should be contained and cleaned up immediately. Waste	Whole Site	Contractor(s)		✓			Waste Disposal Ordinance

EIA &EM&A Ref.[1)]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance. • Instruct untrained personnel to keep at a safe distance well away from the spillage area. • If the spillage / leakage involves highly toxic, volatile or hazardous waste, initiate emergency evacuation and call the emergency service. • Only trained persons equipped with suitable protective clothing and equipment should be allowed to enter and clean up the waste spillage / leakage area. • Where the spillage/ leakage is contained in the enclosed storage area, the waste can be transferred back into suitable containers by suitable handheld equipment, such as hand operated pumps, scoops or shovels. If the spillage / leakage quantity is small, it can be covered and mixed with suitable absorbing materials such as tissue paper, dry soft sand or vermiculite. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. • For spillage / leakage in other areas, immediate action is required to contain the spillage / leakage. Suitable liquid absorbing materials such as tissue paper, dry soft sand or vermiculite should be used to cover the spill. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. • Areas that have been contaminated by chemical waste spillage / leakage should be cleaned. While water is a soluble solvent for aqueous chemical wastes and water soluble organic waste, kerosene or turpentine should be used for organic chemical wastes that are not soluble in water. The waste from the cleanup operation should be treated and disposed of as chemical waste. • In incidents where the spillage / leakage may result in significant contamination of an area or risk of pollution, the EPD should be informed immediately.							

EIA &EM&A Ref.[1]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
S6.7	*Maintenance Works* The following considerations should be included in planning for the maintenance works during operation: (a) Maintenance of the channels should be restricted to annual silt removal when the accumulated silt will adversely affect the hydraulic capacity of the channel, except during emergency situations where flooding risk is imminent. Desilting should be carried out by hand or light machinery during the dry season when water flow is low. (b) Vegetation removal should be limited to manual cutting to be carried out during dry season and only when growth of vegetation is very likely to impede channel flow. (c) Phasing of the works should be considered to better control and reduce any impacts caused. Where possible, works should be carried out along half width of the drainage channel in short sections. A free passage along the drainage channel is necessary to avoid forming stagnant water in any phase of the works. (d) Containment structures (such as sand bags barrier) should be provided for the desilting works area to facilitate a dry or at least confined working area within the drainage channel. (e) The locations for the disposal of the removed materials should be identified and agreement sought with the relevant departments before commencement of the maintenance works. Temporary stockpile of waste materials should be located away from the channel and properly covered. These waste materials should be disposed of in a timely and appropriate manner. (f) Effective temporary flow diversion scheme should be implemented and the generated wastes should be collected and disposed off-site properly to avoid adversely affecting the water quality of the drainage system.	Maintenance works area	Contractor(s)				✓	-
S6.7	*Emergency Response Plan*	Project Site	DSD				✓	-

EIA &EM&A Ref.[1]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	An Emergency Response Plan should be developed before the commencement of the Project's operation in order to provide details on the emergency arrangement in case of breakdown of the DWFI system. The proposed system includes overflowing pipes with outlets on both sides of the nullah. When water rises to a certain level, stormwater within the underground system will be released and directly discharged into the nullah. This prevents further back-up into the upstream system and the side branches. The discharge of stormwater directly into the nullah is consistent with the existing drainage pattern.							
S6.10 of EIA and S5.2 of EM&A Manual	Baseline monitoring should be undertaken for three times per week for a period of four weeks before commencement of the construction works to establish baseline water quality conditions of the area. Impact monitoring should be undertaken for three times per week during the construction period to obtain water quality data of the area throughout the construction period for comparison with the baseline water quality data and hence determine any water quality impacts from the construction activities. Post Project monitoring should also be undertaken three times per week for four weeks after the completion of construction works.	Upstream and downstream of the Work Area	Contractor(s)	✓	✓	✓		-
4. Waste Management								
S7.6	*General* The HKSAR Government's construction and demolition waste management policy follows the same hierarchy as for other wastes i.e. in order of desirability: avoidance, minimisation, recycling, treatment and safe disposal of waste.	Contract mobilisation	Contractor(s)	✓	✓			Waste Disposal Ordinance DEVB TC(W) No 6/2010, Trip Ticket

EIA &EM&A Ref.(1)	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	Training of construction staff should be undertaken by the contractor about the concept of site cleanliness and appropriate waste management procedures. The contractor should develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. Requirements for staff training should be included in the contractor's Environmental Management Plan (EMP). Good planning and site management practice should be employed to eliminate over ordering or mixing of construction materials to reduce wastage. Proper storage and site practices will minimise the damage or contamination of construction materials. Where waste generation is unavoidable, the potential for recycling or reuse should be rigorously explored. If waste cannot be recycled, disposal routes described in the EMP should be followed. A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be implemented. In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included. One may make reference to DEVB TC(W) No. 6/2010 for details. Regular cleaning and maintenance of the waste storage area should be provided.							System for Disposal of Construction & Demolition Materials
S7.6	*On-site Sorting, Reuse and Recycling* All waste materials should be segregated into categories covering: • Inert C&D materials suitable for reuse on-site; • Inert C&D materials suitable for public fill reception facilities; • Recyclable C&D waste for recycling; • Remaining C&D waste for landfill; • Chemical waste; and • General refuse for landfill.	Contract mobilisation	Contractor(s)		✓			Waste Disposal Ordinance WBTC Nos. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and

EIA &EM&A Ref.(1)	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	Proper segregation and disposal of construction waste should be implemented. Separate containers should be provided for inert and non-inert wastes. Sorting is important to recover materials for reuse and recycling. Specific area should be allocated for on-site sorting of C&D materials and to provide a temporary storage area for those sorted materials. If area is limited, all C&D materials should at least be sorted on-site into inert and non-inert components. Non-inert materials (C&D waste) such as bamboo, timber, vegetation, packaging waste and other organic materials should be reused and recycled wherever possible and disposed of to designated landfill only as a last resort. Inert materials (public fill) such as concrete, stone, clay, brick, soil, asphalt and the like should be separated and reused in this or other projects (subject to approval by the relevant parties in accordance with the *DEVB TC(W) No. 6/2010*) before disposed of at a public filling facility operated by CEDD. Steel and other metals should be recovered from demolition waste stream and recycled. The reuse of inert materials such as soil, rock and broken concrete should be maximised. Waste should be separated into fine, soft and hard materials. With the use of a crusher coarse material can be crushed to make it suitable for use as fill material where fill is required in the works. This minimises the use of imported material and maximises use of the C&D material produced.							Tidiness. DEVB TC(W) No. 6/2010
S7.6	*Excavated Materials* Control measures for temporary stockpiles on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact. These measures include: • Surface of stockpiled soil should be regularly wetted with water especially during dry season; • Disturbance of stockpiled soil should be minimized;	Contract mobilisation	Contractor(s)	✓	✓			Waste Disposal Ordinance DEVB TC(W) No. 6/2010

EIA &EM&A Ref.[1)]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	• Stockpiled soil should be properly covered with tarpaulin especially when heavy rain storms are predicted; • Stockpiling areas should be enclosed where space is available; • Stockpiling location should be away from the water bodies; and • An independent surface water drainage system equipped with silt traps should be installed at the stockpiling area. The identification of final disposal sites for C&D materials generated by the construction works will be considered during the detailed design stage of the Project when the volume and types of C&D materials can be more accurately estimated. The Public Fill Committee of CEDD should be consulted on designated outlets (e.g. public filling area) for public fill, whilst EPD should be consulted on landfills for C&D waste. Disposal of C&D waste to landfill must not have more than 50% (by weight) inert material. The C&D waste delivered for landfill disposal should contain no free water and the liquid content should not exceed 70% by weight: In order to avoid dust or odour impacts, any vehicle leaving a works area carrying C&D waste or public fill should have their load covered up before leaving the construction site. C&D materials should be disposed of at designated public fill reception facilities or landfills. Disposal of these materials for use at other construction projects is subject to the approval of the Engineer and/or other relevant reception authorities. Furthermore, unauthorized disposal of C&D materials in particular on private agricultural land is prohibited and may be subject to relevant enforcement and regulating actions. The disposal of public fill and C&D waste will be controlled through trip-ticket system in accordance with *DEVB TC(W) No. 6/2010*.							
S7.6	*Chemical Waste* Where the construction processes produce chemical waste, the contractor must	Whole Site	Contractor(s)		✓			Waste Disposal (Chemical Waste)

EIA &EM&A Ref.[1)]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	register with EPD as a chemical waste producer. Wastes classified as chemical wastes are listed in the *Waste Disposal (Chemical Waste) (General) Regulation*. These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be registered with EPD. An updated list of licensed chemical waste collector can be obtained from EPD. Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* published by EPD, and should be collected by a licensed chemical waste collector. Suitable containers should be used for specific types of chemical wastes, containers should be properly labelled (English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations), resistance to corrosion, stored safely and closely secure. Stored volume should not be kept more than 450 liters unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition of fence that is at least 2 m height or height of tallest container with adequate ventilation and space. Hard standing, impermeable surfaces draining via oil interceptors should be provided in works area compounds. Interceptors should be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunding should be of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste, whichever is largest. Waste collected from any grease traps should be collected and disposed of by a licensed contractor.							(General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes DEVB TC(W) No. 6/2010

EIA &EM&A Ref.(1)	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	Lubricants, waste oils and other chemical wastes are likely to be generated during the maintenance of vehicles and mechanical equipment. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. If possible, such waste should be sent to oil recycling companies, and the empty oil drums collected by appropriate companies for reuse or refill. The registered chemical waste producer (i.e. the contractor) has to arrange for the chemical waste to be collected by licensed collectors. The licensed collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the Chemical Waste Treatment Centre in Tsing Yi). A trip ticket system operates to control the movement of chemical wastes. No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.							
S7.6	*General Works Waste* **Concrete Waste** Dry concrete waste (considered as public fill) should be sorted out from the other wastes and recycled for reuse or sorted out for disposal at designated public filling facilities. **Wooden Materials** All wooden materials used on-site should be kept separate from other wastes to avoid damage and to facilitate reuse. Timber which cannot be reused should be sorted out from other waste and stored separately from all inert waste before being	Whole Site	Contractor(s)		✓			Waste Disposal (Chemical Waste) (General) Regulation WBTC No. 19/2001 - Metallic Site Hoardings and Signboards

EIA &EM&A Ref.(1)	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	disposed of to landfill. Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork. Only waste material need be taken to a landfill. It should be separated from recyclable wood and steel materials. As for all waste types these materials should be reused on-site or other approved sites before disposal is considered as an option. Disposal to landfill should only be considered as a final option. Contractors are responsible for storage of re-useable materials on-site. **General Refuse** General refuse generated on-site should be stored in enclosed bins or skips and collected separately from other construction and chemical wastes and disposed of at designated landfill. A temporary refuse collection point should be set up by the contractor to facilitate the collection of refuse by licensed contractors. The removal of waste from the site should be arranged on a daily or at least on every second day by the contractor to minimise any potential odour impacts, minimise the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste. The recyclable component of the general waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the contractor. The contractor should also be responsible for arranging recycling companies to collect these materials.							

EIA &EM&A Ref.(1)	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	Floating Refuse Any floating refuse trapped within the Project Area shall be collected by contractor and disposed to landfill.							
S7.6	During operation phase, the silt materials and debris collected during maintenance should be properly packed and transported to designated landfill for disposal as soon as possible. All chemical waste should be properly stored, labelled and removed by licensed waste collectors in accordance with Waste Disposal (Chemical Waste) (General) Regulation.	Whole Site	Contractor(s)				✓	Waste Disposal (Chemical Waste) (General) Regulation
S7.9	To facilitate monitoring and control over the contractors' performance on waste management, a waste monitoring and audit programme will be implemented throughout the construction phase and a Waste Management Plan (WMP) will be prepared and implemented by the contractor in accordance with ETWB TC(W) No. 19/2005. The aims of the monitoring and audit programme are. • To review the WMP, which will form part of the EMP in accordance with ETWB TC(W) No. 19/2005, including the quantities and types of C&D materials generated, reused and disposed of off-site; the amount of fill materials exported from/imported to the site and the quantity of timber used in temporary works construction for each process/activity; • To monitor the implementation and achievement of the WMP on site to assess its effectiveness; and • To monitor the follow-up actions on deficiencies identified. Site inspections will be undertaken each week. Particular attention will be given to the contractor's provision of sufficient spaces, adequacy of resources and facilities for on-site sorting and temporary storage of C&D materials. The C&D materials to be disposed of from the site will be visually inspected to ensure the absence of non-	All facilities	Contractor(s)		✓			ETWB TC(W) No. 19/2005

EIA &EM&A Ref.[1)]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	inert materials (e.g. general refuse, timber, etc). The waste to be disposed of at landfills will as practicable contain no observable inert or reusable/recyclable C&D materials (e.g. soil, broken rock, metal, and paper/cardboard packaging, etc). Any irregularities observed during the site inspections will be raised promptly to the contractor for rectification. The findings of the waste inspections will be reported in the monthly Environmental Monitoring and Audit Report.							
5. Ecology								
S8.9	The construction of rising main shall be conducted outside dry season (i.e. November to March) as an avoidance measure.	Site within WBA (i.e. rising mains)	Contractor(s)		✓			-
S8.9	With implementation of mitigation measures for air quality, noise and water quality stipulated in Sections 4.8, 5.8 and 6.7, no unacceptable adverse ecological impact arising from the Project during construction phase is anticipated.	Whole Site	Contractor(s)		✓			-
6. Landscape & Visual								
S9.6	<u>Good site practice</u> Construction site should be kept clean and tidy and construction material should be stored in order. Canvas sheets should be used to cover the exposed earth. Unused construction and demolition (C&D) debris should be removed as soon as the reinstatement works are completed.	Whole Site	Contractor(s)		✓			-
S9.6	<u>Erection of decorative screen hoarding</u> Each site should be provided with decorative screen hoarding compatible with surrounding setting.	Whole Site	Contractor(s)	✓	✓			-
S9.6	<u>Tree preservation</u> The existing trees shall be preserved as far as possible. The retained existing trees on	Whole Site	Contractor(s)	✓	✓			

EIA &EM&A Ref.[1]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
	site shall be protected carefully during construction. The requirement specified in "Guidelines on Tree Preservation during Development" issued by Development Bureau shall be followed. Tree preservation should include protection measures for existing trees and greenery.							
S9.6	Tree transplanting / compensatory tree planting According to the latest design, all trees will be preserved and no tree felling is expected. In case of trees unavoidably affected by the Project during construction, tree transplanting shall be conducted as far as possible. Any unavoidable tree felling shall be mitigated by compensatory tree planting.	Whole Site	Contractor(s)	✓	✓	✓		
S9.6	A minimum lighting will be maintained at night time as general lighting provision for security reason.	DWF Pumping Station	Contractor(s)				✓	
S9.6	Green roof and shrub planting will be provided for the DWF pumping station. The roof structure will be planted with trees and groundcovers to reduce glaring effect and give a green appearance of the roof structure. Shrub planting is proposed to be planted within the site boundary to further enhance the development with lush greenery.	DWF Pumping Station	Contractor(s)		✓	✓	✓	
S9.6	Vertical greening will be provided on the external walls without the coverage of architectural elements.	DWF Pumping Station	Contractor(s)		✓	✓	✓	
S9.6	The proposed architectural design of the DWF pumping station will utilize the surrounding landscape to blend the buildings with the surrounding environment. The building will maintain a low profile to reduce the visual impact.	DWF Pumping Station	Contractor(s)	✓	✓	✓	✓	
S7.3 of EM&A Manual	A photographic record of the Project Site at the time of the Contractor's possession should be prepared by the Contractor and approved by the Engineer Representative (ER).	Whole Site	Contractor(s)	✓				
S7.4 of EM&A Manual	A specialist Landscape Sub-Contractor should be employed by the Contractor for the implementation of landscape construction works and subsequent maintenance operations during the 12-month establishment period.	Whole Site	Contractor(s)		✓	✓		

EIA &EM&A Ref.[1)]	Environmental Protection Measures	Location of the Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Pre-C	C	Post-C	O	
S7.4 of EM&A Manual	All measures undertaken by both the Contractor and the specialist Landscape Sub-Contractor during the construction phase and first year of the operation phase should be audited by a Registered Landscape Architect, as a member of the Environmental Team (ET), on a regular basis to ensure compliance with the intended aims of the measures.	Whole Site	ET		✓	✓		
S7.4 of EM&A Manual	Site audits should be undertaken at least once every two weeks during the construction phase of the Project and once every two months during the operation phase to ensure that the proposed mitigation measures and good site practices proposed to manage and mitigate landscape and visual impacts, are implemented.	Whole Site	ET		✓	✓		

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	240206
Date	6 February 2024 (Tuesday)
Time	14:30-16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Ecology / Fisheries	
	• No environmental deficiency was identified during site inspection.	
	D. Built Heritage	
	• No environmental deficiency was identified during site inspection.	
	E. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	F. Construction Noise	
	• No environmental deficiency was identified during site inspection.	
	G. Waste / Chemical Management	
	• Observation 2: Drip tray should be provided under the chemical container to avoid oil leakage.	2
	H. Landscape and Visual	
	• No environmental deficiency was identified during site inspection.	
	I. Permits / Licences	
	• Observation 1: Proper NRMM label should be displayed on the drilling machine.	1
	J. Others	
	• N/A	

	Name	Signature	Date
Recorded by	Angela Heung		6 February 2024
Checked by	William Yeung		6 February 2024

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	240215
Date	15 February 2024 (Thursday)
Time	14:30-16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Ecology / Fisheries	
	• No environmental deficiency was identified during site inspection.	
	D. Built Heritage	
	• No environmental deficiency was identified during site inspection.	
	E. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	F. Construction Noise	
	• No environmental deficiency was identified during site inspection.	
	G. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	H. Landscape and Visual	
	• No environmental deficiency was identified during site inspection.	
	I. Permits / Licences	
	• No environmental deficiency was identified during site inspection.	
	J. Others	
	• N/A	

	Name	Signature	Date
Recorded by	Angela Heung		15 February 2024
Checked by	William Yeung		15 February 2024

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	240220
Date	20 February 2024 (Tuesday)
Time	14:30-16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Ecology / Fisheries	
	• No environmental deficiency was identified during site inspection.	
	D. Built Heritage	
	• No environmental deficiency was identified during site inspection.	
	E. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	F. Construction Noise	
	• No environmental deficiency was identified during site inspection.	
	G. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	H. Landscape and Visual	
	• No environmental deficiency was identified during site inspection.	
	I. Permits / Licences	
	• No environmental deficiency was identified during site inspection.	
	J. Others	
	• N/A	

	Name	Signature	Date
Recorded by	Angela Heung		20 February 2024
Checked by	William Yeung		20 February 2024

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	240227
Date	27 February 2024 (Tuesday)
Time	14:30-16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Ecology / Fisheries	
	• No environmental deficiency was identified during site inspection.	
	D. Built Heritage	
	• No environmental deficiency was identified during site inspection.	
	E. Air Quality	
	• Reminder: The Contractor are reminded to keep spraying water on site to avoid dust impact.	/
	F. Construction Noise	
	• No environmental deficiency was identified during site inspection.	
	G. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	H. Landscape and Visual	
	• No environmental deficiency was identified during site inspection.	
	I. Permits / Licences	
	• No environmental deficiency was identified during site inspection.	
	J. Others	
	• N/A	

	Name	Signature	Date
Recorded by	Angela Heung		27 February 2024
Checked by	William Yeung		27 February 2024

APPENDIX L
EVENT AND ACTION PLANS

Event and Action Plan for Air Quality (Odour)

Event	Action			
	ET	IEC	ER	Contractor
Exceedance of Action Level	• Identify source/ reason of exceedance or complaint • Prepare the odour complaint form or the Notification of Exceedance within 24 hours • Inform DSD, EPD, IEC, ER and Contractor whether the cause of exceedance is due to the Project • Discuss remedial actions with the IEC and the Contractor • Assess effectiveness of Contractor's remedial actions and keep the IEC and Contractor informed of the results	• Review the analyzed results submitted by the ET • Review the proposed remedial measures by the Contractor and advise the ER accordingly • Supervise the implementation of remedial measures	• Discuss with DSD, IEC, ET and Contractor on the proposed mitigation measures; • Make agreement on the mitigation measures to be implemented	• Rectify any unacceptable practice • Amend working methods as required • Implement amended working methods, if necessary

Event	Action			
	ET	IEC	ER	Contractor
Exceedance of Limit Level	• Identify source(s)/ reason of exceedance or complaint • Prepare the odour complaint form or the Notification of Exceedance within 24 hours • Inform DSD, EPD, IEC, ER and Contractor whether the cause of exceedance is due to the Project • Assess effectiveness of Contractor's remedial actions and keep the IEC and Contractor informed of the results	• Review the analyzed results submitted by the ET • Review the proposed remedial measures by the Contractor and advise the ER accordingly • Supervise the implementation of remedial measures	• Discuss with DSD, IEC, ET and Contractor on the proposed mitigation measures • Request Contractor to critically review the working methods • Make agreement on the mitigation measures to be implemented • Assess the effectiveness of the implemented mitigation measures	• Rectify any unacceptable practice • Submit proposals for remedial actions to IEC within 3 working days of notification • Implement the agreed proposal or amend working methods as required • Re-submit proposals if problem still not under control

Event and Action Plan for Air Quality (Dust)

Event	Action			
	ET	IEC	ER	Contractor
Action level being exceeded by one sampling	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform Contractor, IEC and ER; 3. Repeat measurement to confirm finding; and 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; and 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Notify Contractor.	1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; and 3. Amend working methods agreed with the ER as appropriate.
Action level being exceeded by two or more consecutive sampling	1. Identify source; 2. Inform Contractor, IEC and ER; 3. Advise the Contractor and ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with Contractor, IEC and ER; and 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Advise the ET and ER on the effectiveness of the proposed remedial measures; and 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal as appropriate.

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

Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	ER	Contractor
When Action Level is reached/exceeded	• Notify IEC, DSD, EPD, ER and Contractor; • Carry out investigation; • Report the results of investigation to the IEC, DSD, EPD, ER and Contractor; • Discuss with the Contractor and formulate remedial measures; • Increase monitoring frequency to check mitigation effectiveness	• Review the analyzed results submitted by the ET; • Review the proposed remedial measures by the Contractor and advise the ER accordingly; • Supervise the implementation of remedial measures	• Discuss with DSD, IEC, ET and Contractor on the proposed mitigation measures; • Make agreement on the mitigation measures to be implemented	• Submit noise mitigation proposals to IEC; • Implement noise mitigation proposals
When Limit Level is reached/exceeded	• Notify IEC, DSD, EPD, ER and Contractor; • Identify source; • Carry out investigation; • Report the results of investigation to the IEC, DSD, EPD, ER and Contractor; • Discuss with the Contractor and formulate remedial measures; • Increase monitoring frequency to check mitigation effectiveness	• Review the analyzed results submitted by the ET; • Review the proposed remedial measures by the Contractor and advise the ER accordingly; • Supervise the implementation of remedial measures	• Discuss with DSD, IEC, ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods; • Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures	• Submit noise mitigation proposals to IEC; • Implement noise mitigation proposals

Event and Action Plan for Water Quality

Event	Action			
	ET	IEC	ER	Contractor
Action Level being exceeded	• Repeat measurement to confirm findings; • Identify source(s) of impact; • Inform DSD, IEC, Contractor, ER and EPD; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with DSD, IEC, Contractor and ER; • Repeat measurement on next day of exceedance	• Discuss with DSD, ET, ER and Contractor on the mitigation measures; • Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures	• Discuss with DSD, IEC, ET and Contractor on the proposed mitigation measures; • Make agreement on the mitigation measures to be implemented.	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment • Consider changes of working methods; • Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER; • Implement the agreed mitigation measures
Limit Level being exceeded	• Repeat measurement to confirm findings; • Identify source(s) of impact; • Inform DSD, IEC, Contractor, ER and EPD; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with DSD, IEC, ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level	• Discuss with DSD, ET, ER and Contractor on the mitigation measures; • Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures	• Discuss with DSD, IEC, ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods; • Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment; • Consider changes of working methods; • Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; • Implement the agreed mitigation measures

Event and Action Plan for Landscape and Visual (YLTN)

Action Level	ET Leader	IEC	ER	Contractor
Non-conformity Identified	1. Inform Contractor, IEC and ER 2. Discuss remedial measures with IEC, ER and Contractor 3. Monitor remedial measures until rectification has been completed	1. Check the Contractor's working method 2. Discuss with ETL and Contractor on possible remedial measures 3. Advise ER on effectiveness of proposed remedial measures. 4. Check implementation of remedial measures.	1. Ensure remedial measures are properly implemented	1. Amend working methods 2. Propose remedial measures 3. Rectify non-conformity and undertake any necessary remedial measures.

Event and Action Plan for Landscape and Visual (YLBS)

Action Level	Action			
	ET	IEC	ER	Contractor
Design Check	• Check final design conforms to the requirements of EP and prepare report	• Check report. • Recommend remedial design if necessary	• Undertake remedial design if necessary	• --
Non-conformity on one occasion	• Identify source • Inform IEC and DSD / ER • Discuss remedial actions with IEC, DSD / ER and Contractor • Monitor remedial actions until rectification has been completed	• Check report • Check Contractor's working method • Discuss with ET and Contractor on possible remedial measures • Advise DSD / ER on effectiveness of proposed remedial measures • Check implementation of remedial measures	• Notify Contractor • Ensure remedial measures are properly implemented	• Amend working methods to prevent recurrence of non-conformity • Propose remedial measures • Rectify damage and undertake additional action necessary
Repeated non-conformity	• Identify source • Inform IEC and DSD / ER • Increase monitoring frequency • Discuss remedial actions with IEC, DSD / ER and Contractor • Monitor remedial actions until rectification has been completed • If non-conformity stops, cease additional monitoring.	• Check monitoring report • Check Contractor's working method • Discuss with ET and Contractor on possible remedial measures • Advise DSD / ER on effectiveness of proposed remedial measures • Supervise implementation of remedial measures	• Notify Contractor • Ensure remedial measures area properly implemented	• Amend working methods to prevent recurrence of non-conformity • Rectify damage and undertake additional action necessary

APPENDIX M
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Contract No. DC/2022/03
Yuen Long Barrage and Nullah Improvement Schemes

Appendix M – Summary of Environmental Complaint, Warning, Summon and Notification of Successful Prosecution

Reporting Month: February 2024

Table M-1 Environmental Complaint Records

Log Ref.	Complaint No.	ICC Case No.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Remarks: No environmental complaint was received in the reporting period.

Appendix M – Summary of Environmental Complaint, Warning, Summon and Notification of Successful Prosecution

Table M-2 Environmental Warning Records

Log Ref.	Location	Received Date	Details of Warning	Status
N/A	N/A	N/A	N/A	N/A

Remarks: No environmental warning was received in the reporting period.

Table M-3 Environmental Summon and Prosecution Records

Log Ref.	Location	Received Date	Details of Summon and Prosecution	Status
N/A	N/A	N/A	N/A	N/A

Remarks: No environmental summon and prosecution was received in the reporting period.

Appendix M – Summary of Environmental Complaint, Warning, Summon and Notification of Successful Prosecution

Table M-4 Summary of Cumulative Complaint Log

Reporting Month/Year	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
December 2023	0	0	0
January 2024	0	0	0
February 2024	0	0	0
Total	0	0	0

APPENDIX N
WASTE GENERATION IN THE REPORTING MONTH

Contract No.: DC/2022/03

Yuen Long Barrage and Nullah Improvement Schemes

Monthly Summary Waste Flow Table (2024)

Month	Total Quantity Generated (Sum of a - k)	Accumulated Quantities of Inert C&D Materials Generated Monthly				Accumulated Quantities of Non-inert C&D Wastes Generated Monthly						
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
		Hard Rock and Large Broken Concrete Recycled	Reused in this Project	Reused in other Projects	Disposed as Public Fill	Disposed at Sorting Facility	Metals Recycled	Paper/ Cardboard Packaging Recycled	Timber/Wood Pallet Recycled	Plastics Recycled	Chemical Waste Collected	Others, e.g. General Refuse Disposed at Landfill
	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)
2023	58.72	0.00	0.00	0.00	56.45	0.00	0.00	0.00	0.00	0.00	0.00	2.27
January	47.64	0	0	0	28.70	0	0	0.01	0	0	0	18.93
February	9.81	0	0	0	0.00	0	0	0.00	0	0	0	9.81
March												
April												
May												
June												
July												
August												
September												
October												
November												
December												
Total	**116.17**	**0.0**	**0.0**	**0.0**	**85.15**	**0.0**	**0.00**	**0.01**	**0.0**	**0.003**	**0.00**	**31.01**

Note:
1. Excavated materials will not be considered as construction waste
2. Disposal of inert waste to public fill will be excluded from the calculation of the waste recycling rate

Recycled materials = $\frac{(a) + (c) + (d) + (g) + (h) + (i) + (j)}{(a)+(b)+(c)+(d)+(e)+(f)+(g)+(h)+(i)+(j)+(k)}$ = 0.01 tonne

Total C&D waste generated = 116.17 tonne

Waste Recycling Rate = $\frac{\text{Recycled materials}}{\text{Total C\&D waste generated}}$ x 100% = 0.01%

APPENDIX O
TENTATIVE CONSTRUCTION PROGRAMME

Yuen Long Barrage Scheme (EP-604/2022)

3 Months Look Ahead Programme (Mar to May）

Year			
Quarter	**3**	**4**	**5**
1. Construction of Barrage Scheme Structure			
- Predrill Works (Land & Nullah)			
- Remove marine sediment and mixing			
- Sheeting Pile construction along nullah			
- Root Pruning and Tree Transplant			
- Master Control Centre (MCC) - Pre-bored Socket H-pile			
- Yuen Long Barrage Pumping Station - Pre-bored Socket H-pile			
- Tidal Barrier - Pre-bored Socket H-pile			
- Pumping Forebay with local deepening - Pre-bored Socket H-pile			
- Access Bridge - Pre-bored Socket H-pile			
- Main Discharge Channel - Pre-bored Socket H-pile			
2. Decommissioning of the existing low flow pumping station and inflatable dam			
- Modification work of existing low flow pumping station			
- Removal of Inflatable dam			
3. Construction and modification of parapet walls			
- Along Yuen Long Nullah (Kung Um Road)			
- Along Sham Chung River			
- Along Kam Tin River -Initial Survey			
4. Revitalisation works of Yuen Long Nullah			
- Chainage C0+000 to C0+295			
- Chainage C0+295 to C0+607			
- Chainage C0+607 to C0+950			
- Chainage C0+950 to C1+300			
- Chainage C1+300 to C1+650			

Yuen Long Town Nullah (EP-578/2020)

3 Months Look Ahead Programme (Mar to May）

Year			
Quarter	**3**	**4**	**5**
1. Construction of Dry Weather Flow Interceptor (DWFI) System			
- Chainage C0+000 to C0+295			
- Chainage C0+295 to C0+607			
- Chainage C0+607 to C0+950			
- Chainage C0+950 to C1+300			
- Chainage C1+300 to C1+650			
2. Construction of Rising Main			
- Rising Main works - Sheeting Pile Works			
3. Construction of Dry Weather Flow (DWF) Pumping Station			
- DWF Pumping Station - Sheeting Pile Works			

APPENDIX P
CULTURAL HERITAGE MONITORING RESULTS

Appendix P – Cultural Heritage Monitoring Results

Date	Time	Vibration (mm/s)		
		Measurement Direction		
		Tran	Vertical	Longitudinal
1-Feb-24		---	---	---
2-Feb-24		---	---	---
3-Feb-24		---	---	---
4-Feb-24		---	---	---
5-Feb-24		---	---	---
6-Feb-24		---	---	---
7-Feb-24		---	---	---
8-Feb-24		---	---	---
9-Feb-24		---	---	---
10-Feb-24		---	---	---
11-Feb-24		---	---	---
12-Feb-24		---	---	---
13-Feb-24		---	---	---
14-Feb-24		---	---	---
15-Feb-24		---	---	---
16-Feb-24		---	---	---
17-Feb-24		---	---	---

Appendix P – Cultural Heritage Monitoring Results

Date	Time	Vibration (mm/s)		
		Measurement Direction		
		Tran	Vertical	Longitudinal
18-Feb-24		---	---	---
19-Feb-24		---	---	---
20-Feb-24		---	---	---
21-Feb-24		---	---	---
22-Feb-24		---	---	---
23-Feb-24		---	---	---
24-Feb-24		---	---	---
25-Feb-24		---	---	---
26-Feb-24		---	---	---
27-Feb-24		---	---	---
28-Feb-24		---	---	---
29-Feb-24		---	---	---
Alert Level		5		
Alarm Level		6		
Action Level		7.5		

Note:
Bold means Alert Level exceedance
Bold Italic means Alarm Level exceedance
Bold Italic with underline means Action Level exceedance