MOTT MACDONALD

Agreement No. CE 64/2020 (EP) Environmental Team for Tung Chung New Town Extension (West) – Design and Construction

Monthly Environmental Monitoring & Audit Report for March 2022

April 2022

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Agreement No. CE 64/2020 (EP) Environmental Team for Tung Chung New Town Extension (West) – Design and Construction

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Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

土木工程拓展署
Civil Engineering and Development Department

MOTT MACDONALD

Environmental Permit No. EP-519/2016

Tung Chung New Town Extension (West)

Environmental Team Leader Certification

Reference Document/Plan

Document to be Certified:	Monthly Environmental Monitoring and Audit Report for March 2022
Date of Document:	April 2022
Date received by ETL:	12 April 2022

Reference EP Condition

Environmental Permit Condition: 3.5

The Permit Holder shall submit 4 hard copies and 1 electronic copy of Monthly EM&A Reports for the construction stage of the Project to the Director, within 2 weeks after the end of the reporting month. The monthly EM&A Reports shall include an executive summary of all environmental audit results, together with actions taken in the event of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit Levels), complaints received and emergency events relating to violation of environmental legislation (such as illegal dumping and landfilling). The submissions shall be certified by the ET Leader and verified by the IEC as having complied with the requirements as set out in the updated EM&A Manual before submission to the Director. Additional copies of the Monthly EM&A Reports shall be provided upon request by the Director.

ETL Certification

I hereby certify that the above reference document/plan complies with the above referenced condition of EP-519/2016.

Daniel Sum

Environmental Team Leader Date: 13 April 2022

Your Ref.

By Post

Our Ref. 198377-0484

Date 13 April 2022

Sustainable Lantau Office
Civil Engineering and Development Department
13/F, North Point Government Offices
333 Java Road, North Point
Hong Kong

Attention: Mr. Gary YUNG / Ms. Carol LAM

Dear Sir / Madam,

Agreement No. CE 59/2017 (EP)
Independent Environmental Checker for Tung Chung New Town Extension – Investigation
Monthly Environmental Monitoring & Audit Report for March 2022 for TCW

We refer to the Monthly Environmental Monitoring & Audit Report for March 2022 for Tung Chung New Town Extension (West) (TCW) dated April 2022 and certified by the Environmental Team (ET) Leader of TCW on 13 April 2022. Please note the submission is hereby verified, in accordance with the requirement stipulated in Condition 3.5 of EP-519/2016.

Should you have any query, please feel free to contact the undersigned at 2608 7314 (chuawo@binnies.com) or our Edward Lau at 6848 5737 (iec.tcnte@gmail.com or lauky@binnies.com).

Yours faithfully,
for and on behalf of
BINNIES HONG KONG LIMITED

MANUEL CHUA
INDEPENDENT ENVIRONMENTAL CHECKER

cc: ET Leader / TCW – Mott (Attn: Mr. Daniel SUM) [by Email: daniel.sum@mottmac.com]
PM / TCW – Arup (Attn: Mr. Jackson WONG) [by Email: jackson.wong@tcw.c5c6.hk]

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Civil Engineering and Development Department (CEDD) commissioned Mott MacDonald Hong Kong Limited (MMHK) to undertake the role of Environmental Team (ET) for carrying out the Environmental Monitoring & Audit (EM&A) works during the construction phase of the Project in accordance with the requirements specified in the EP, Updated EM&A Manual (the Manual), EIA Report of the Project – i.e., Tung Chung New Town Extension (TCNTE) development in Tung Chung West (TCW) and other relevant statutory requirements.

This EM&A Report summarises the monitoring results and audit findings of the EM&A programme undertaken for the TCW Project during the reporting period from 1 to 31 March 2022 in accordance with the Manual. A summary of the monitoring and audit activities conducted in the reporting period is listed as below.

Summary of Monitoring and Audit Activities in the Reporting Period

Parameter	Number of Sessions
Air Quality Monitoring	5 sessions
Noise Monitoring	5 sessions
Water Quality Monitoring	13 sessions
Ecological Monitoring	1 session
Environmental Site Inspection	Contract No. NL/2020/05 ("Contract 5"): 5 sessions Contract No. NL/2020/06 ("Contract 6"): 5 sessions

Environmental auditing works, including weekly site inspections of construction works conducted by the ET, audit of implementation of Waste Management Plan was conducted in the reporting period. Based on the audit results and the observation for the reporting period, environmental pollution control and mitigation measures for the Project were properly implemented.

Breaches of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Levels was recorded for construction air quality monitoring in the reporting period.

Breaches of Action and Limit Levels for Noise

No exceedance of Action and Limit Levels was recorded for construction noise monitoring in the reporting period.

Breaches of Action and Limit Levels for Water Quality

No exceedance of Action and Limit Levels was recorded for impact water quality monitoring in the reporting period.

Ecological Monitoring

No exceedance of Action and Limit Levels was recorded for impact ecological monitoring in the reporting period.

Environmental Complaints, Non-compliance & Summons

There was no environmental complaint, notification of summons or prosecution recorded in the reporting period.

Reporting Change

There was no reporting change in the reporting period.

Summary of Upcoming Construction Activities

Contract No. NL/2020/05 ("Contract 5") - Ma Wan Chung

- Demolition of Existing Structures at Part D;
- Ground Investigation, Site Clearance, Slope Excavation, Road Diversion and Temporary ELS Works at Part E;
- Geotechnical Investigation and Forming Site Access at Part G;
- Site Clearance and Hoarding and Fencing Erection at Part H;
- Trial Pit Excavation and Road Diversion at Part F

Contract No. NL/2020/06 ("Contract 6") - Tung Chung Valley

- Site Clearance at Area 42 and Road L29;
- Tree Planting at Compensatory Woodland

1 Introduction

1.1 Background

Tung Chung New Town Extension (TCNTE) is one of the major initiatives under the Government's multi-pronged approach to increase land supply to meet Hong Kong's medium- to long-term needs for housing, economic and social developments. The Environmental Impact Assessment (EIA) Report for TCNTE (Register No. AEIAR-196/2016) was approved on 8 April 2016 and the Environmental Permit (EP) No. EP-519/2016, covering the construction and operation of TCNTE, was granted on 9 August 2016. The EIA Report and EP cover both Tung Chung East (TCE) and Tung Chung West (TCW, hereafter referred to as "the Project").

Civil Engineering and Development Department (CEDD) commissioned Mott MacDonald Hong Kong Limited (MMHK) to undertake the role of Environmental Team (ET) for carrying out the Environmental Monitoring & Audit (EM&A) works during the construction phase of the Project in accordance with the requirements specified in the EP, Updated EM&A Manual (the Manual), EIA Report of the TCW Project and other relevant statutory requirements. The scope of the Project works in TCW includes the following elements:

- Site formation works;
- Construction or the River Park including a visitor centre;
- Construction of proposed open space;
- Construction of sustainable urban drainage system;
- Construction of roads, footpath and the associated junction / road improvement works;
- Construction of coastal pedestrian access;
- Engineering infrastructure works covering drainage, sewerage, waterworks and landscaping works; and
- Implementation of environmental mitigation measures and environmental monitoring and audit works.

The construction works for the Project were commenced on 3 November 2021 and are divided into various works contracts. The following active works contracts were commenced on the dates shown in **Table 1.1**.

Table 1.1: Commencement Dates of Construction Works for the Active Works Contracts

Contract No.	Contract Name	Commencement Date of Construction Works
Contract No. NL/2020/05 ("Contract 5")	Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung	3 Nov 2021
Contract No. NL/2020/06 ("Contract 6")	Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1	3 Nov 2021 (Note: Construction works at Tung Chung Valley commenced on 30 Nov 2021)

The locations of Contracts 5 and 6 are shown in **Figures 1.1 and 1.2** respectively.

1.2 Scope of this Report

This is the Monthly EM&A Report for the TCW Project which summarises the key findings of the EM&A programme for the construction works during the reporting period from 1 to 31 March 2022.

1.3 Organisation Structure

The organisation structure of the Project is shown in **Appendix A**. The key personnel contact names and contact details of the active works contracts are summarised in **Table 1.2** below.

Table 1.2: Contact Information of Key Personnel

Party	Position	Name	Telephone
Contract No. NL/2020/05 ("Contract 5") **Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung**			
Project Proponent (Civil Engineering and Development Department (CEDD))	Chief Engineer	Gavin Wong	2231 4439
	Senior Engineer	Gary Yung	2195 0847
	Engineer	Carol Lam	2231 4472
Engineer's Representative (ER) (Ove Arup and Partners Hong Kong Limited)	Principal Resident Engineer	Jackson Wong	5699 5710
	Resident Engineer	Sam Chan	9671 5538
	Senior Inspector of Works	Tony Chiu	5699 5792
Contractor (Build King – Richwell Civil Joint Venture)	Project Manager	Eric Yip	9196 6098
	Construction Manager	Artie Wong	9633 0977
	Site Agent	Ricky Hon	9100 7509
	Environmental Officer	Calvin Chan	6117 2894
	24-hour Complaint Hotline	-	9326 1161
Contract No. NL/2020/06 ("Contract 6") **Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1**			
Project Proponent (Civil Engineering and Development Department (CEDD))	Chief Engineer	Gavin Wong	2231 4439
	Senior Engineer	CT Lam	2231 4469
	Engineer	Samuel Yiu	2231 4510
Engineer's Representative (ER) (Ove Arup and Partners Hong Kong Limited)	Principal Resident Engineer	Jackson Wong	5699 5710
	Resident Engineer	Shirley Yeung	9671 5518
	Senior Inspector of Works	Jensen Lo	5699 5746
Contractor (China Railway Group Limited)	Project Manager	Gregory Lo	9333 5171
	Deputy Project Manager	Yang Wei Cai, Yancy	6218 6768
	Deputy Project Manager / Superintendent	Robert Luo	9588 2485
	Construction Manager	Paul Chan	6263 0621
	Environmental Officer	Simon Mak	5560 8600
	24-hour Complaint Hotline	-	9326 1161
Environmental Team (ET) (Mott MacDonald Hong Kong Limited)	ET Leader	Daniel Sum	2585 8495
	Deputy ET Leader	Heidi Yu	2828 5704
Independent Environmental Checker (IEC) (Binnies Hong Kong Limited)	IEC	Manuel Chua	3894 9501
	Deputy IEC	Edward Lau	3894 9502

1.4 Summary of Construction Works

The programme of the construction is shown in **Appendix B**.

As informed by the Contractors of the active works contracts, details of the major works carried out in this reporting period are listed in **Table 1.3**.

The environmental mitigation implementation schedule is presented in **Appendix C**.

Table 1.3: Major Activities in the Reporting Period

Activities	Key Issues	Key Mitigation Measures
Contract No. NL/2020/05 ("Contract 5") **Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung**		
• Ground Investigation Works at Part E • Geotechnical Investigation Works at Part G • Hoarding and Fencing Erection at Part E, H and H1 • Initial Survey at Part H and H1 • Site Clearance at Part E, H and H1 • Temporary Drainage Diversion at Part E • Temporary ELS Works at Part E	• Dust Emission • Handling and storage of C&D materials generated from construction activities • Noise from plant operation • Emission of dark smoke from PMEs • Efficiency of wastewater and drainage management • Tree Protection	• Good site practices • Regular water spraying on stockpiles • Provide tarpaulin sheets coverage on stockpiles • Sorting and reuse of C&D materials as far as practicable • Use of QPME and noise barrier/acoustic mat • Regular maintenance of PMEs • Implementation of wastewater and drainage management • Retain and protect all existing trees and vegetation within the study area which are not directly affected by the works
Contract No. NL/2020/06 ("Contract 6") **Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1**		
• Site Clearance at Area 42 • Pre-drilling at Sewage Pumping Station-A • Foundation Works at Temporary Bridge A	• Dust Emission • Handling and storage of C&D materials generated from construction activities • Noise from plant operation • Emission of dark smoke from PMEs • Efficiency of wastewater and drainage management • Tree Protection	• Good site practices • Regular water spraying on stockpiles • Provide tarpaulin sheets coverage on stockpiles • Sorting and reuse of C&D materials as far as practicable • Use of QPME and noise barrier/acoustic mat • Regular maintenance of PMEs • Implementation of wastewater and drainage management • Retain and protect all existing trees and vegetation within the study area which are not directly affected by the works

1.5 Summary of EM&A Requirements

The status of all environmental aspects is presented in **Table 1.4**. The EM&A requirements remained unchanged during the reporting period.

Table 1.4: Summary of Status for the Environmental Aspects under the Updated EM&A Manual

Parameter	Status
Air Quality	
Baseline Monitoring	The results of baseline air quality monitoring for TCW were reported in the Baseline Monitoring Report and submitted to EPD under EP Condition 3.4.
Impact Monitoring	On-going for TCW. Monitoring conducted three times in every 6 days.
Noise	
Baseline Monitoring (Construction Noise)	The results of baseline noise monitoring for TCW were reported in the Baseline Monitoring Report and submitted to EPD under EP Condition 3.4.
Impact Monitoring (Construction Noise)	On-going for TCW. Monitoring conducted once per week.
Impact Monitoring for Road Traffic Noise during Operational Phase	To be conducted during operational phase.
Fixed Noise Commissioning Test	To be implemented by the Contractor before operation of Tung Chung New Town Extension (TCNTE) development.
Water Quality	
Baseline Monitoring	The results of baseline water quality monitoring for TCW were reported in the Baseline Monitoring Report and submitted to EPD under EP Condition 3.4.
Impact Monitoring	On-going for TCW. Monitoring conducted three times per week.
Waste Management	
Waste Monitoring	On-going.
Land Contamination	
Contamination Assessment Plan (CAP), Remediation Action Plan (RAP) and Remediation Report (RR)	Proposed site investigation of the potentially contaminated areas identified in the approved EIA Report is to be conducted after land resumption.
Ecology	
Monitoring for Compensation Woodland	To be conducted when compensation woodland is planted.
Monitoring for Emergent Plant inside the future River Park	To be conducted when the emergent plants are planted.
Monitoring for Translocated Amphibians of Conservation Importance	Pre-construction survey was conducted during 20-22 October 2021. Capture and translocation exercise was conducted during 29-31 October 2021.
Monitoring for Preserved/Transplanted Plant Species of Conservation Importance	To be conducted after preservation/transplantation.
Baseline Monitoring for Tung Chung Stream Ecologically Important Stream (EIS) and Wong Lung Hang EIS	The results of baseline ecological monitoring for TCW were reported in the Baseline Monitoring Report and submitted to EPD under EP Condition 3.4. Monitoring for Wong Lung Hang was not required and the proposal by the ET Leader of TCE was accepted by EPD on 2 September 2021.
Impact Monitoring for Tung Chung Stream	On-going for TCW. Monitoring conducted at monthly intervals.
Landscape and Visual	
Baseline Monitoring	The results of baseline landscape and visual monitoring were reported in the Baseline Monitoring Report and submitted to EPD under EP Condition 3.4.

Parameter	Status
Site Environmental Audit	
Regular Site Inspection	On-going.
Plan on Provision of Buffer Zones implementation measures	Under implementation by the Contractor of Contract 6.
Plan for Review of Use of New Low Noise Road Surfacing Material implementation measures	Not applicable during this reporting period.
River Park Plan implementation measures	Under implementation by the Contractor of Contract 6.
Preservation and/or Translocation Plan for Plant Species of Conservation Importance implementation measures	Under implementation by the Contractors of Contracts 5 and 6.
Detailed Compensatory Woodland Planting Plan implementation measures	Not applicable during this reporting period.
Habitat Enhancement and Translocation Plan for Amphibian Species of Conservation Importance implementation measures	Under implementation by the Contractor of Contract 6.
Waste Management Plan implementation measures	Under implementation by the Contractors of Contracts 5 and 6.
Complaint Hotline and Email Channel	Under implementation by the Contractors of Contracts 5 and 6.
Environmental Log Book	On-going.

Taking into account the construction works, impact monitoring of air quality, noise, water quality, ecology and waste management were carried out in the reporting period. The monitoring schedule of air quality, noise, water quality and ecological monitoring are provided in **Appendix F, Appendix G, Appendix H and Appendix I** respectively.

The EM&A programme also involved environmental site inspections and related auditing conducted by the ET for checking the implementation of the required environmental mitigation measures recommended in the approved EIA Report and relevant EP submissions, including Habitat Enhancement and Translocation Plan for Amphibian Species of Conservation Importance and Waste Management Plan.

1.6 Status of Statutory Environmental Compliance with the Environmental Permit

The status of statutory environmental compliance with the EP conditions under the EIAO, submission status under the EP and implementation status of mitigation measures are presented in **Appendix D**.

1.7 Status of Other Statutory Environmental Requirements

The environmental licences and permits (including Environmental Permit, waste disposal billing account, registration as chemical waste producer and construction noise permit) which were valid in the reporting period are presented in **Appendix E**. No non-compliance with environmental statutory requirements was recorded.

1.8 Reporting of EM&A Results

The EM&A programme for the Project required environmental monitoring for air quality, noise and water quality as well as environmental site inspections for air quality, noise, water quality, waste management, ecology, and landscape and visual impacts. The EM&A requirements and related findings for each component are summarised in the following sections:

- Section 2 - Air Quality;
- Section 3 - Noise;
- Section 4 - Water Quality;
- Section 5 - Ecology;
- Section 6 - Waste Management Status;
- Section 7 - EM&A Site Inspection;
- Section 8 - Implementation Status of Environmental Mitigation Measures;
- Section 9 - Summary of Exceedances of the Environmental Quality Performance Limit;
- Section 10 - Summary of Complaints, Notification of Summons and Successful Prosecutions;
- Section 11 - Future Key Issues; and
- Section 12 - Conclusions and Recommendations.

2 Air Quality

2.1 Monitoring Requirements

According to the requirements in the Updated EM&A Manual, regular impact air quality monitoring shall be carried out at the designated monitoring locations during the construction period of the Project to obtain 1-hour Total Suspended Particulate (TSP) concentrations. One-hour sampling should be done at least 3 times per 6 days while the highest dust impact is expected. Further details of the impact air quality monitoring are presented in the following sections.

2.2 Monitoring Locations

A total of two air quality monitoring stations were identified for impact monitoring in the TCNTE possible development area (PDA) at Tung Chung West and are covered by this Report.

Locations of the impact air quality monitoring stations covered in this Report are summarised in **Table 2.1** and shown in **Appendix F1**.

Table 2.1: Impact Air Quality Monitoring Stations

Monitoring Station	Location
DM-5	Lung Tseung Tau
DM-6	Mok Ka

2.3 Monitoring Parameters, Frequency, Duration and Monitoring Dates

Table 2.2 summarises the parameters, frequency, duration and monitoring dates for impact air quality monitoring during the reporting period.

Table 2.2: Impact Air Quality Monitoring Parameters, Frequency, Duration and Monitoring Dates

Monitoring Station	Parameter	Frequency and Duration	Monitoring Dates
DM-5	1-hour Total Suspended Particulates (TSP)	3 times per 6 days during the construction period of the Project	4, 10, 16, 22 & 28 Mar 2022
DM-6			

2.4 Action and Limit Levels

The Action and Limit Levels of the air quality monitoring are provided in **Table 2.3** below.

Table 2.3: Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level (μg/m^3)	Limit Level (μg/m^3)
DM-5	266	500
DM-6	260	500

2.5 Monitoring Equipment

Portable direct reading dust meter was used to carry out the 1-hour TSP impact monitoring for the Project. The proposed use of portable direct reading dust meters was submitted to IEC and agreed by IEC in accordance with Section 5.5 of the Updated EM&A Manual. With the use of direct reading dust meter, it can allow prompt and direct results for the EM&A reporting and the implementation of the Event and Action Plan. The portable direct reading dust meter would be

calibrated every year against High Volume Sampler (HVS) to check the validity and accuracy of the results measured by direct reading method.

Table 2.4 summarizes the equipment used in the impact air quality monitoring during the reporting period. Copies of the calibration certificates for the portable dust meters are presented in **Appendix F2** and show that the portable direct reading dust meter is capable of providing comparable results with that provided by HVS.

Table 2.4: Impact Air Quality Monitoring Equipment

Monitoring Station	Equipment	Model
DM-5	Portable direct reading dust meter	SIBATA LD-3B (Serial No. 276019 and 6Z7784)
DM-6		

2.6 Monitoring Schedule for the Reporting Period

The schedule for impact air quality monitoring during the reporting period is provided in **Appendix F3**.

2.7 Results and Observations

The monitoring results for 1-hour TSP are summarised in **Table 2.5**. The monitoring data and the graphical presentation are provided in **Appendix F4**.

Table 2.5: Summary of 1-hour TSP Monitoring Results in the Reporting Period

Monitoring Station	Average ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
DM-5	39	17 – 90	266	500
DM-6	37	14 – 69	260	500

The dust sources in the reporting period included road traffic and nearby construction sites.

No exceedance of Action and Limit Levels was recorded for construction air quality monitoring in the reporting period. No action was thus required to be undertaken in accordance with the Event and Action Plan presented in **Appendix F5**.

3 Noise

3.1 Monitoring Requirements

According to the requirements in the Updated EM&A Manual, regular impact construction noise monitoring shall be carried out at the designated monitoring locations once per week during the construction period of the Project. Construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq\ (30min)}$ shall be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. For all other time periods, $L_{eq\ (5min)}$ shall be employed for comparison with the Noise Control Ordinance (NCO) criteria. As supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

During the reporting period, regular impact construction noise monitoring at NMS-CA-6, NMS-CA-7, NMS-CA-8 and NMS-CA-9 in Tung Chung Valley commenced on 2 December 2021 (after the commencement of construction works in Tung Chung Valley), while regular impact construction noise monitoring at NMS-CA-5 in Ma Wan Chung continued.

Further details of the impact construction noise monitoring are presented in the following sections.

3.2 Monitoring Locations

A total of five construction noise monitoring stations were identified for impact monitoring in the TCNTE possible development area (PDA) at Tung Chung West and are covered by this Report.

Locations of the impact construction noise monitoring stations covered in this Report are summarised in **Table 3.1** and shown in **Appendix G1**.

Table 3.1: Impact Construction Noise Monitoring Stations

Monitoring Station	Location	Type of Measurement
NMS-CA-5	Village house in Ma Wan Chung (G/F)	Free field^
NMS-CA-6	Village house in Shek Mun Kap (G/F)	Free field^
NMS-CA-7	YMCA of Hong Kong Christian College (Roof Floor)	Façade
NMS-CA-8	Caritas Charles Vath College (Roof Floor)	Façade
NMS-CA-9*	Hong Chi Shiu Pong Morninghope School (Roof Floor)	Façade

Remark: * NMS-CA-9, which was described as "possible school development near Tung Chung Area 39" in the Updated EM&A Manual, was subsequently confirmed as "Hong Chi Shiu Pong Morninghope School" prior to commencement of baseline monitoring.
^ For Free Field measurement, +3dB(A) should be added to the measured results.

3.3 Monitoring Parameters, Frequency, Duration and Monitoring Dates

Table 3.2 summarises the parameters, frequency, duration and monitoring dates for impact construction noise quality monitoring during the reporting period.

Table 3.2: Impact Construction Noise Monitoring Parameters, Frequency, Duration and Monitoring Dates

Monitoring Station	Parameter	Frequency and Duration	Monitoring Dates
NMS-CA-5	30-min measurement between 0700 & 1900 hrs on normal weekdays (Monday to Saturday)	Once every week for 30 mins during the construction period of the Project	3, 8, 15, 22 & 29 Mar 2022
NMS-CA-6			
NMS-CA-7			
NMS-CA-8			

Monitoring Station	Parameter	Frequency and Duration	Monitoring Dates
NMS-CA-9	L_{eq}, L_{10} and L_{90} would be recorded		

3.4 Action and Limit Levels

The Action and Limit Levels for construction noise of the Project are provided in **Table 3.3** below.

Table 3.3: Action and Limit Levels for Construction Noise

Monitoring Station	Time Period	Action Level	Limit Level (dB(A), $L_{eq(30min)}$)
NMS-CA-5 NMS-CA-6	0700-1900 hrs on normal weekdays[#]	When one documented complaint is received	75
NMS-CA-7* NMS-CA-8* NMS-CA-9*			70 (65 during school examination periods)

Note: [#] If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
* Denotes school / educational institution.

3.5 Monitoring Equipment

Integrating Sound Level Meters were used to conduct impact construction noise monitoring. They were the Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{Aeq}) and percentile sound pressure level (L_x). They complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). **Table 3.4** summarizes the equipment used in the impact construction noise monitoring. Copies of the calibration certificates for the sound level meters and acoustical calibrators are attached in **Appendix G2**.

Table 3.4: Noise Monitoring Equipment

Monitoring Station	Equipment & Model	
	Integrating Sound Level Meter	Acoustical Calibrator
NMS-CA-5	Rion NL-52 (serial no. 00710259)	Larson Davis CAL200 (serial no. 11333)
NMS-CA-6		
NMS-CA-7		
NMS-CA-8		
NMS-CA-9		

3.6 Monitoring Schedule for the Reporting Period

The schedule for impact construction noise monitoring during the reporting period is provided in **Appendix G3**.

3.7 Results and Observations

The monitoring results for construction noise are summarised in **Table 3.5**. The monitoring data and the graphical presentation are provided in **Appendix G4**.

Table 3.5: Summary of Construction Noise Monitoring Results in the Reporting Period

Monitoring Station	Average (dB(A), $L_{eq(30min)}$)	Range (dB(A), $L_{eq(30min)}$)	Limit Level (dB(A), $L_{eq(30min)}$)
NMS-CA-5	56^	52 – 58^	75
NMS-CA-6	53^	50 – 54^	

Monitoring Station	Average ($dB(A), L_{eq(30min)}$)	Range ($dB(A), L_{eq(30min)}$)	Limit Level ($dB(A), L_{eq(30min)}$)
NMS-CA-7	55	52 – 57	70 (65#(1) during school examination periods)
NMS-CA-8	60	56 – 63	
NMS-CA-9	57	56 – 59	

Note: ^ +3dB(A) Façade correction included for Free Field measurement.
No school examination was taken place at NMS-CA-7 and NMS-CA-9 during this reporting period.
(1) Reduced to 65 dB(A) during school examination periods at NMS-CA-8. School examination at NMS-CA-8 took place from 22 Feb to 4 Mar.

The major noise sources during the construction noise monitoring in the reporting period included bird sound, nearby traffic, school activities and aircraft as well as nearby construction sites.

No exceedance of Action and Limit Levels was recorded for construction noise monitoring in the reporting period. No action was thus required to be undertaken in accordance with the Event and Action Plan presented in **Appendix G5**.

4 Water Quality

4.1 Monitoring Requirements

According to the requirements in the Updated EM&A Manual, regular impact water quality monitoring shall be carried out 3 days per week at the designated monitoring locations during the construction period of the Project. The interval between two sets of monitoring shall not be less than 36 hours. Further details of the impact water quality monitoring are presented in the following sections.

4.2 Monitoring Locations

The locations of the monitoring stations under the Project are shown in **Table 4.1** and **Appendix H1**.

Table 4.1: Impact Water Quality Monitoring Stations

Monitoring Station	Description	Location	
		Easting	Northing
TCW-WQM1	Downstream of Tung Chung Stream	810784	815710
Tung Chung Stream (West)			
TCW-WQM2	Middle of Tung Chung Stream (West)	810701	815015
TCW-WQM4	Upstream of Tung Chung Stream (West)	810641	814405
TCW-WQM6(1)	Downstream of Tung Chung Stream (West)	810814	815385
Tung Chung Stream (East)			
TCW-WQM3A(2)	Middle of Tung Chung Stream (East) [aka Upstream of River Park]	811080	814965
TCW-WQM5A(3)	Upstream of Tung Chung Stream (East)	811194 811138	814368 814498
TCW-WQM7(1)	Downstream of Tung Chung Stream (East) [aka Downstream of River Park]	810862	815400

Notes:
(1) TCW-WQM6 and TCW-WQM7 are additional monitoring stations which can monitor the water quality impact associated with construction activities along the Tung Chung Stream (West) and Tung Chung Stream (East) respectively.

(2) TCW-WQM3A is the proposed relocated TCW-WQM3, which will be upstream of the River Park where there are no direct works on Tung Chung Stream (East). The original TCW-WQM3 location lies within the construction works area for the future River Park, which will be directly modified and inaccessible during construction phase.

(3) The monitoring location of TCW-WQM5A will be bounded by the coordinates shown, with the exact location depending on the nearest safe accessible and practical location to the original TCW-WQM5.

4.3 Monitoring Parameters, Frequency and Duration

Table 4.2 summarises the parameters, frequency and duration for impact water quality monitoring during the reporting period.

Table 4.2: Water Quality Monitoring Parameters, Duration and Frequency

Monitoring Station	Parameters (Units)	Frequency, Duration and Replication	Monitoring Dates
TCW-WQM1, TCW-WQM2, TCW-WQM3A, TCW-WQM4,	• Dissolved Oxygen (DO) (mg/L and % saturation) • Temperature (°C) • Turbidity (NTU) • Salinity (ppt)	**Impact monitoring:** 3 days per week during the construction period of the Project.	2, 4, 7, 9, 11, 14, 16, 18, 22, 24, 26, 28 & 30 Mar 2022

Monitoring Station	Parameters (Units)	Frequency, Duration and Replication	Monitoring Dates
TCW-WQM5A, TCW-WQM6, TCW-WQM7	• pH • Suspended Solids (SS) (mg/L) • Conductivity(1) (µS/cm)	Not less than 36 hours' interval between two sets of monitoring. Two (2) replicate in-situ measurements and water samples.	

Remark:
1. Water depth measurement is not applicable due to very shallow depth of the monitoring locations.
Note:
(1) Conductivity is an additional reference monitoring parameter adopted during a review of the baseline monitoring programme in June 2021. It is not compulsory as prescribed in the Updated EM&A Manual.

In addition to the parameters presented in **Table 4.2**, other relevant data were also recorded, including monitoring location, time, approximate water depth (by visual observation), tidal condition (if applicable), weather conditions and any special phenomena or work underway at the Project site.

4.4 Action and Limit Levels

The calculated Action and Limit Levels of the impact water quality monitoring for the monitoring stations of Tung Chung Stream (West),Tung Chung Stream (East) and TCW-WQM1 are shown in **Table 4.3** below.

Table 4.3: Calculated Action and Limit Levels for Impact Water Quality Monitoring

Parameters	Action Level	Limit Level
Tung Chung Stream (West)		
DO in mg/L	3.4 mg/L	3.3 mg/L
SS in mg/L	7.0 mg/L or 120% of upstream control station at the same tide of the same day, whichever is higher	16.9 mg/L or 130% of upstream control station at the same tide of the same day, whichever is higher
Turbidity in NTU	6.7 NTU or 120% of upstream control station at the same tide of the same day, whichever is higher	22.0 NTU or 130% of upstream control station at the same tide of the same day, whichever is higher
Tung Chung Stream (East)		
DO in mg/L	4.2 mg/L	4.0 mg/L
SS in mg/L	7.2 mg/L or 120% of upstream control station at the same tide of the same day, whichever is higher	9.7 mg/L or 130% of upstream control station at the same tide of the same day, whichever is higher
Turbidity in NTU	9.8 NTU or 120% of upstream control station at the same tide of the same day, whichever is higher	22.5 NTU or 130% of upstream control station at the same tide of the same day, whichever is higher
TCW-WQM1		
DO in mg/L	2.2 mg/L	1.8 mg/L
SS in mg/L	7.3 mg/L	9.7 mg/L
Turbidity in NTU	24.7 NTU	35.3 NTU

Notes:
(1) For DO, non-compliance occurs when monitoring results is lower than the limits.
(2) For SS and Turbidity, non-compliance occurs when monitoring results is larger than the limits.
(3) Action and Limit Levels do not apply to TCW-WQM4 and TCW-WQM5A which are upstream control stations.

4.5 Monitoring Equipment

Table 4.4 summarizes the equipment used in the impact water quality monitoring works. All the monitoring equipment complied with the requirements set out in the Updated EM&A Manual. Copies of the calibration certificates are attached in **Appendix H2**.

Table 4.4: Water Quality Monitoring Equipment

Equipment	Brand and Model
Multifunctional Meter (in-situ measurement of DO, pH, temperature, salinity, turbidity and conductivity)	Horiba U-53 (serial no. KP23RRSM & LUAVCDWU)

4.6 Monitoring Schedule for the Reporting Period

The schedule for impact water quality monitoring during the reporting period is provided in **Appendix H3**.

4.7 Results and Observations

A total of 13 monitoring events for impact water quality monitoring were conducted at all designated monitoring stations during the reporting period. Impact water quality monitoring results and graphical presentations were provided in **Appendix H4**.

No exceedance of Action and Limit Levels was recorded for impact water quality monitoring in the reporting period. No action was thus required to be undertaken in accordance with the Event and Action Plan presented in **Appendix H5**.

5 Ecology

5.1 Monitoring Requirements

According to the requirements in the Updated EM&A Manual, regular impact ecological monitoring in terms of water quality, aquatic invertebrate and fish species shall be carried out on a monthly basis at the designated monitoring locations during the construction period of the Project. Further details of the impact ecological monitoring are presented in the following sections.

5.2 Monitoring Locations

A total of seven (7) monitoring stations at Tung Chung Stream covering both River Park and other Public Works (road crossings, polders, and stormwater attenuation and treatment ponds) were identified for the construction phase monitoring.

The locations of the monitoring stations are presented in **Table 5.1** and **Appendix I1**. Note that the exact monitoring locations were subject to fine adjustment based on site conditions (e.g. adverse weather conditions, blockage by plants, rocks or other obstacles).

Table 5.1: Impact Ecological Monitoring Stations

Monitoring Station	Description	Coordinates			
		Easting	Northing	Latitude (N)	Longitude (E)
RP1	Conservation Zone (Natural Section)	811150	814469	22°16'07.95"N	113°55'59.41"E
RP2	Upstream of River Park	811083	814895	22°16'21.77"N	113°55'57.05"E
RP3	Revitalisation Zone (Channelised Section)	811036	815076	22°16'27.66"N	113°55'55.38"E
RP4	Downstream of River Park	810846	815402	22°16'38.25"N	113°55'48.72"E
PW1	Near Public Works	811099	814589	22°16'11.83"N	113°55'57.63"E
PW2	Near Public Works	810933	815318	22°16'35.54"N	113°55'51.79"E
PW3	Near Public Works	810789	815658	22°16'46.56"N	113°55'46.71"E

5.3 Monitoring Frequency and Dates

As required under the Updated EM&A Manual, the impact ecological monitoring shall cover the full construction programme on a monthly basis. **Table 5.2** summarises the frequency and monitoring dates for the impact monitoring during the reporting period.

Table 5.2: Impact Ecological Monitoring Schedule

Reporting Month	River Park Study Area (RP1, RP2, RP3 and RP4) and Other Public Works Study Area (PW1, PW2 and PW3)
Mar 2022	18 Mar 2022

5.4 Monitoring Methodology

5.4.1 Stream Fauna

Several survey methods which covered different components of the stream fauna (which includes fish species and aquatic invertebrates) were used to monitor the study areas to yield a comprehensive result:

1. Direct Observation - covered all along the accessible part of the watercourse to provide a species list of fish and aquatic invertebrate with corresponding relative abundance.
2. Baited Fish Cage - At each sampling location, two replicates of baited fish cages were deployed for a duration of at least one hour. All collected fish and aquatic invertebrate species were recorded and their abundance were counted. This method may collect fishes which are wary of humans. Permit from the AFCD was obtained before the use of any equipment to collect stream fauna in any streams and watercourses.
3. Kick Sampling - at least two replicates of kick sampling were performed at each monitoring station to obtain aquatic invertebrate (and fish) samples. Kick sampling is a relatively quick method to survey aquatic invertebrates in shallow fast-flowing streams. A ~30 cm x ~30 cm kick sampler with ~0.5 mm mesh size was placed on the stream bed and the area just upstream of the sampler were vigorously disturbed by kicking for one minute. The contents of the net were transferred to suitable containers with freshwater for identification and counting in situ. All identifiable samples were released back to the sampling locations.

5.4.2 Water Quality

Ecologically-related water quality monitoring, including *in situ* measurements and collection of water samples for laboratory analysis, was conducted at each monitoring location. Duplicate water samples were collected at surface water level at each monitoring location.

Water quality parameters including Dissolved Oxygen (in % saturation and mg/L), pH value, temperature, turbidity and salinity were measured in situ while the other parameters, including Suspended Solids (SS), Ammonia, Total Kjeldahl Nitrogen (TKN), Total Phosphorus (TP), *Escherichia coli (E. coli)*, 5-day Biochemical Oxygen Demand (BOD_5), Chemical Oxygen Demand (COD) and Oil & Grease, were measured at a HOKLAS accredited laboratory for water quality analysis. Other relevant data, including time, water depth, weather conditions and special phenomena or works underway in the vicinity were recorded.

The measured water quality parameters and laboratory testing method are shown in **Table 5.3**.

Table 5.3: Ecologically-related Water Quality Monitoring Parameters and Testing Methods

Parameter		
In situ measurements	**Instrument Range Capability [(1)]**	**Measurement Resolution**
pH	0 – 14 pH units	0.01 pH units
Salinity	0 – 70 ppt	0.01 ppt
Temperature	-5 – 70°C	0.1°C
Turbidity	0 – 4000 NTU	0.1 NTU
Dissolved Oxygen (DO)	0 – 50 mg/L	0.1 mg/L
	0 – 500% saturation	0.1% saturation
Laboratory testing and analyses	**Method Reference**	**Level of Reporting**
Suspended Solids (SS)	APHA 2540 D	0.5 mg/L
Ammonia as N	APHA 4500 NH_3 G	0.01 mg/L

Parameter		
Total Kjeldahl Nitrogen (TKN) as N	APHA 4500 P: J; APHA 4500 NO3: I	0.05 mg/L
Total Phosphorus as P	APHA 4500 P: J	0.01 mg/L
E. coli	TM09/EC/10/98 Issue 3, HKEPD	1 CFU/100mL
5-day Biochemical Oxygen Demand (BOD_5)	APHA 5210 B	1 mg/L
Chemical Oxygen Demand (COD)	APHA 5220 B	2 mg/L
Oil & Grease	APHA 5520 B	2 mg/L

Note (1): Specifications based on YSI ProDSS Multiparameter Water Quality Meter

The equipment used for the *in situ* ecologically-related water quality monitoring work is summarised in **Table 5.5**. Copies of the calibration certificates are attached in **Appendix I2**.

Table 5.4: Ecologically-related Water Quality Monitoring Equipment

Equipment	Brand and Model
Multifunctional Meter (in-situ measurement of DO, pH, temperature, salinity and turbidity)	Horiba U-53 (serial no. KP23RRSM)

5.5 Action and Limit Levels

The Action and Limit Levels for the impact ecological monitoring are defined in **Table 5.5.**

Table 5.5: Action and Limit Levels for Impact Ecological Monitoring

Exceedance Level	Description
Action Level	Reduction in the monthly taxa diversity (i.e. number of species) of fish or aquatic invertebrate (macroinvertebrate only) of any monitoring station compared to the corresponding monitoring season and station of the baseline survey by **30%**.
Limit Level	Reduction in the monthly taxa diversity (i.e. number of species) of fish or aquatic invertebrate (macroinvertebrate only) of any monitoring station compared to the corresponding monitoring station and season of the baseline survey by **50%**.

For ease of reference, the Action and Limit Levels for aquatic invertebrate and fish (rounded to nearest 0.1) in Wet Season (April to October) and Dry Season (November to March) at each monitoring station are provided in **Table 5.6** and **Table 5.7** respectively.

Table 5.6: Action Level (AL) and Limit Level (LL) for Number of Aquatic Invertebrate Species at Each Monitoring Station during Wet (Apr - Oct) and Dry (Nov - Mar) Seasons

		River Park Study Area				Public Works Study Area		
		RP1	RP2	RP3	RP4	PW1	PW2	PW3
Wet season	**AL**	2.1	1.2	1.3	2.0	0.9	2.8	1.6
	LL	1.5	0.9	1.0	1.5	0.7	2.0	1.2
Dry season	**AL**	1.5	1.3	0.7	2.5	1.4	2.6	0.5
	LL	1.1	0.9	0.5	1.8	1.0	1.9	0.4

Table 5.7: Action Level (AL) and Limit Level (LL) for Number of Fish Species at Each Monitoring Station during Wet (Apr – Oct) and Dry (Nov – Mar) Seasons

		River Park Study Area				Public Works Study Area		
		RP1	RP2	RP3	RP4	PW1	PW2	PW3
Wet season	AL	3.6	3.5	0.9	5.0	2.8	0.9	4.4
	LL	2.6	2.5	0.7	3.6	2.0	0.7	3.2
Dry season	AL	4.1	3.5	0.1	4.3	4.7	0.5	4.2
	LL	2.9	2.5	0.1	3.1	3.4	0.4	3.0

5.6 Results and Observations

5.6.1 Environment of Stream Courses

The environment of stream courses at the monitoring stations for the River Park Study Area (RP1 to RP4) and other Public Works Study Area (PW1 to PW3) are presented in **Table 5.8.**

Table 5.8: Environment of Stream Courses at each Monitoring Station

Station Name	Location	Physical Environment
RP1	Conservation Zone (Natural Section)	Fast flowing natural stream. The substrate was dominant with boulders and rocks, and sands were sometimes observed. Woodland with dense vegetation was on the river banks.
RP2	Upstream of River Park	Moderate fast flowing natural stream. The substrate was in the form of boulders, rocks, sand and silt mixture. Short but dense herbaceous vegetation was on the right bank of the stream, while dense woodland was on the left bank. A truck with water pump was observed extracting water from the stream.
RP3	Revitalisation Zone (Channelised Section)	Slow flowing artificial, concretised and channelised stream. Pavement was the dominant substrate with little sand and rock. Algal mat was observed at this site. Short but dense herbaceous vegetation was on the river banks. A culvert was on the right bank of the stream, and a footbridge was on the upstream of the location.
RP4	Downstream of River Park	The channelised section of Tung Chung Stream ended at the upstream of RP4. RP4 is a moderate fast flowing natural stream close to the estuary. The substrate was in the form of boulders, rocks, sand and silt mixture. Woody plants and herbaceous plants were along the river banks.
PW1	Near Public Works	Fast flowing natural stream. The substrate was dominant with boulders and rocks, and sand was sometimes observed. Woodland with dense vegetation was on the river banks.
PW2	Near Public Works	Slow flowing artificial, concretised and channelised stream. Pavement was the dominant substrate with little sand and rock. Algal mat was observed at this site. Short but dense herbaceous vegetation was on the left bank of the stream, woody plants and herbaceous plants were on right bank of the river.
PW3	Near Public Works	A natural estuary. The substrate was dominant with sand and mud. Dense mangroves were on the shores of the estuary.

5.6.2 Stream Fauna

A total of 15 aquatic invertebrate species and 17 fish species were recorded across all monitoring stations during the reporting period. The monitoring results for aquatic invertebrate and fish species are summarised in **Table 5.9** and **Table 5.10**. The monitoring data is provided in

Appendix I4 and **Appendix I5**. Representative photos of the species of conservation importance recorded are presented in **Appendix I3**.

Table 5.9: Summary of Aquatic Invertebrate Species Recorded in the Reporting Period

Common Name	Species Name	River Park Study Area				Public Works Study Area		
		RP1	RP2	RP3	RP4	PW1	PW2	PW3
Scud	*Amphipoda*							✔
Small Minnow Mayfly	*Baetidae*	✔	✔	✔	✔	✔		
Freshwater Shrimp	*Caridina cantonensis*	✔		✔				
Black-banded Gossamerwing (Larva)	*Euphaea decorata*				✔			
Mangrove Crab	*Gelasimus borealis*							✔
Caddisfly	*Hydropsychidae*	✔	✔		✔			
Caddisfly	*Lepidostomatidae*		✔					
Freshwater Prawn	*Macrobrachium sp.*	✔						
Unidentified Skimmer (Larva)	*Orthetrum sp.*						✔	
European Physa	*Physella acuta*			✔	✔		✔	
Water Strider	*Ptilomera tigrina*					✔		
Freshwater Snail	*Radix plicatulus*			✔				
Smaller Water Strider	*Rhagovelia sp.*	✔	✔			✔		
Freshwater Snail	*Tarebia granifera*				✔			
Dropwings (Larva)	*Trithemis sp.*						✔	
	Total no. of species	**5**	**4**	**4**	**5**	**3**	**3**	**2**
	Action Level (Dry Season)	1.5	1.3	0.7	2.5	1.4	2.6	0.5
	Limit Level (Dry Season)	1.1	0.9	0.5	1.8	1.0	1.9	0.4

Table 5.10: Summary of Fish Species Recorded in the Reporting Period

Common Name	Species Name	River Park Study Area				Public Works Study Area		
		RP1	RP2	RP3	RP4	PW1	PW2	PW3
Beijiang Thick-lipped Barb	*Acrossocheilus beijiangensis* (1)	✔	✔			✔		
Mosquito Fish	Barbodes semifasciolatus		✔			✔		
Long Rayed Silverbiddy	*Gambusia affinis*					✔	✔	
Common Silverbiddy	*Gerres oyena*				✔			✔
Fork Tongue Goby	*Glossogobius giuris*				✔			✔
Broken-band Hillstream Loach	*Liniparhomaloptera disparis*	✔	✔			✔		
Mullet	*Mugilidae*				✔			✔
Rice Fish	*Oryzias curvinotus* (1)				✔			
Predaceous Chub	*Parazacco spilurus* (2)	✔	✔			✔		
Common Mudskipper	*Periophthalmus modestus*							✔
Southern Platyfish	*Poecilia maculatis*				✔	✔		
Sucker-belly Loach	*Pseudogastromyzon myersi*	✔	✔					
Javanese Fatnose Goby	*Pseudogobius javanicus*							✔
-	*Rhinogobius duospilus*	✔	✔			✔		
Barcheek Goby	*Rhinogobius giurinus*		✔		✔			
Swordtail	*Xiphophorus hellerii*	✔	✔	✔		✔		
Variable Platyfish	*Xiphophorus variatus*		✔			✔		
	Total no. of species	**6**	**9**	**1**	**6**	**9**	**1**	**5**
	Action Level (Dry Season)	4.1	3.5	0.1	4.3	4.7	0.5	4.2
	Limit Level (Dry Season)	2.9	2.5	0.1	3.1	3.4	0.4	3.0

Note (1): Species of conservation importance (Fellowes et. al., 2002)

Note (2): Species of conservation importance (Zheng & Wang,1998)

No exceedance of Action and Limit Levels was recorded for the impact ecological monitoring in the reporting period, comparing against the baseline monitoring data. No action was thus required to be undertaken in accordance with the Event and Action Plan presented in **Appendix I6**.

5.6.3 Water Quality

As the EM&A programme of TCW already has its own river water quality monitoring (i.e. 3 times per week, refer to **Section 4** of this EM&A Report) and its associated Action and Limit Levels, this section of ecologically-related water quality monitoring results (i.e. at monthly basis) will be adopted for facilitating the investigation in case of any trigger of Action and Limit Levels of the ecological monitoring. The ecologically-related water quality monitoring result during the reporting period is summarised in **Appendix I7**.

5.7 References

Fellowes, J., M. Lau, D. Dudgeon, G.T. Reels, G.W.J., Ades, G. Carey, B. Chan, K. Roger, K.S. Lee M. Leven, K. Wilson and Y.T. Yu. 2002. Wild animals to watch: terrestrial and freshwater fauna of conservation concern in Hong Kong. Memoirs of the Hong Kong Natural History Society. 25:123-159.

Zheng, G., and Wang, Q. 1998. China Red Data Book of Endangered Animals: Aves. Science Press, Beijing. China. 346pp.

6 Waste Management Status

6.1 General

The Contractors of Contracts 5 and 6 have each obtained a waste disposal billing account and registered as chemical waste producer. Sufficient numbers of receptacles were available for general refuse collection and sorting.

All dump trucks engaged on site were equipped with Real Time Tracking and Monitoring (RTTM) system during the reporting period. The Surveillance Team of the ET conducted regular site inspections on the dump trucks and their track records. No illegal dumping and landfilling of C&D materials was found during the reporting period.

Wastes generated during this reporting period include mainly non-inert construction wastes. Reference has been made to the waste flow tables prepared by the Contractors. The quantities of different types of wastes and imported fill materials are summarised in **Table 6.1**.

Table 6.1: Quantities of Different Waste Generated and Imported Fill Materials for TCW

Month / Year	Inert C&D Materials[(a)] (in '000m^3)	Imported Fill Materials[(d)] (in '000m^3)	Inert Construction Waste Re-used in the Contract (in '000m^3)	Inert Construction Waste Re-used in other Projects[(e)] (in '000m^3)	Non-inert Construction Waste[(b)] (in '000m^3)	Recyclable Materials[(c)] (in '000kg)	Chemical Waste (kg)
Jan 2022	1.51	0	0	1.51	0.35	0.089	0
Feb 2022	0.59	0	0	0.59	0.29	0.094	0
Mar 2022	0.41	0.015	0	0.39	0.46	0.103	0

Notes: (a) Inert construction and demolition wastes include hard rock and large broken concrete, and materials disposed as public fill.
(b) Non-inert construction wastes include general refuse disposed at landfill.
(c) Recyclable materials include metals, paper, cardboard, plastics and others.
(d) Imported fill materials include public fill.
(e) Inert Construction Waste reused in other construction contracts under TCNTE.

7 EM&A Site Inspection

7.1 Monitoring Requirements

Environmental site inspections were carried out on a weekly basis with the Contractors and ER to monitor the implementation of proper environmental pollution control and mitigation measures for air quality, noise, water quality, waste management, ecology and landscape and visual impacts under the Project.

7.2 Site Inspections and Key Observations

In the reporting period:

- Five (5) site inspections were carried out on 1, 8, 15, 22 and 29 March 2022 for Contract 5; and
- Five (5) site inspections were carried out on 4, 10, 17, 24 and 29 March 2022 for Contract 6.

Key observations during the site inspections are summarised in **Table 7.1**.

The Contractors have rectified all of the observations identified during environmental site inspections in the reporting period. The Contractors were reminded to implement all relevant mitigation measures related to construction dust, construction noise, water quality and waste management outlined in the EIA Report and the Updated EM&A Manual.

Table 7.1: Key Observations Identified during Site Inspections in this Reporting Period

Contract No.	Inspection Date(s)	Environmental Observation	Recommendation / Remark
Contract 5	1 Mar 2022	Area Part E in Ma Wan Chung • No deficiency was observed	• Nil
	8 Mar 2022	Area Part E in Ma Wan Chung • No deficiency was observed	• Nil
	15 Mar 2022	Area Part E in Ma Wan Chung • No deficiency was observed	• Nil
	22 Mar 2022	Area Part E and Part H in Ma Wan Chung • No deficiency was observed	• Nil
	29 Mar 2022	Area Part E in Ma Wan Chung • No deficiency was observed	• Nil
Contract 6	4 Mar 2022	Area 42 in Tung Chung Valley • Ingress of site drainage was found in excavations Pumping station at Chung Mun Road • No deficiency was observed	Area 42 in Tung Chung Valley • The Contractor was urged to remove the standing water and backfill the excavations.
	10 Mar 2022	Area 42 in Tung Chung Valley • No deficiency was observed	• Nil
	17 Mar 2022	Area 42 in Tung Chung Valley • Ineffective water spraying was observed • Chemical waste storage cabinet was found unlocked Pumping Station at Chung Mun Road and Temporary Bridge A • No deficiency was observed	Area 42 in Tung Chung Valley • The Contractor was urged to provide sufficient water sprayers to ensure effective water spraying on exposed worksite and haul road. • The Contractor was urged to lock the chemical waste storage cabinet properly.
	24 Mar 2022	Area 42 and Temporary Bridge A in Tung Chung Valley • No deficiency was observed Pumping station at Chung Mun Road • Copy of Environmental Permit was not observed	Pumping station at Chung Mun Road • The Contractor was urged to display a copy of valid Environmental Permit for public information.
	29 Mar 2022	Area 42 in Tung Chung Valley • Idled stockpiles were found not to be covered properly Temporary Bridge A • No deficiency was observed	Area 42 in Tung Chung Valley • The Contractor was urged to cover the idled stockpiles by impervious sheeting.

8 Implementation Status of Environmental Mitigation Measures

A summary of the Environmental Mitigation Implementation Schedule is presented in **Appendix C**. The necessary mitigation measures were implemented properly for the Project.

9 Summary of Exceedances of the Environmental Quality Performance Limit

The monitoring results for air quality monitoring (1-hour TSP) complied with the Action/Limit levels in the reporting period. No Action/Limit Level exceedance was recorded for construction noise monitoring in the reporting period.

No Action/Limit Level exceedance was recorded for impact water quality monitoring in the reporting period. No Action/Limit Level exceedance was recorded for impact ecological monitoring in the reporting period.

Cumulative statistics on exceedance are summarised in **Appendix J**.

10 Summary of Complaints, Notification of Summons and Successful Prosecutions

There was no environmental complaint, notification of summons or prosecution recorded in the reporting period.

Statistics on complaints, notifications of summons, successful prosecutions are summarised in **Appendix J**.

11 Future Key Issues

11.1 Construction Programme for the Coming Reporting Period

Works to be undertaken in the next monitoring period of April 2022 are summarised in **Table 11.1** below, together with the key issues and the key mitigation measures.

The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures. The ET will also recommend to the Contractors about the environmental toolbox topics on the abovementioned key issues for the next reporting period.

11.2 Monitoring Schedule for the Coming Reporting Period

The tentative schedules for environmental monitoring in April 2022 are provided in **Appendix K**.

Table 11.1: Major Activities for the next Reporting Period

Activities	Key Issues	Key Mitigation Measures
Contract No. NL/2020/05 ("Contract 5") **Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung**		
• Demolition of Existing Structures at Part D • Ground Investigation at Part E • Geotechnical Investigation at Part G • Forming Site Access at Part G • Temporary ELS Works at Part E • Site Clearance at Part E and H • Hoarding and Fencing Erection at Part H • Slope Excavation at Part E • Trial Pit Excavation at Part F • Road Diversion at Part E and F	• Dust Emission • Handling and storage of C&D materials generated from construction activities • Noise from plant operation • Emission of dark smoke from PMEs • Efficiency of wastewater and drainage management • Tree Protection	• Good site practices • Regular water spraying on stockpiles • Provide tarpaulin sheets coverage on stockpiles • Sorting and reuse of C&D materials as far as practicable • Use of QPME and noise barrier/acoustic mat • Regular maintenance of PMEs • Implementation of wastewater and drainage management • Retain and protect all existing trees and vegetation within the study area which are not directly affected by the works
Contract No. NL/2020/06 ("Contract 6") **Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1**		
• Site Clearance at Area 42 • Site Clearance at Road L29 • Tree Planting at Compensatory Woodland	• Dust Emission • Handling and storage of C&D materials generated from construction activities • Noise from plant operation • Emission of dark smoke from PMEs • Efficiency of wastewater and drainage management • Tree Protection	• Good site practices • Regular water spraying on stockpiles • Provide tarpaulin sheets coverage on stockpiles • Sorting and reuse of C&D materials as far as practicable • Use of QPME and noise barrier/acoustic mat • Regular maintenance of PMEs • Implementation of wastewater and drainage management • Retain and protect all existing trees and vegetation within the study area which are not directly affected by the works

12 Conclusions and Recommendations

General

This EM&A Report presents the findings of the EM&A activities undertaken for the Project – i.e., Tung Chung New Town Extension (TCNTE) development in Tung Chung West (TCW) – during the period from 1 to 31 March 2022 in accordance with the Updated EM&A Manual and the requirements of the Environmental Permit (EP) (No. EP-519/2016).

Air Quality

No exceedance of Action/Limit Levels was recorded for the air quality monitoring (1-hour TSP) in the reporting period.

Noise

No exceedance of Action/Limit Levels was recorded for construction noise monitoring in the reporting period.

Water Quality

No exceedance of Action/Limit Levels was recorded for impact water quality monitoring in the reporting period.

Ecology

No exceedance of Action/Limit Levels was recorded for impact ecological monitoring in the reporting period.

Environmental Site Inspections

Environmental site inspections were carried out during the reporting period. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

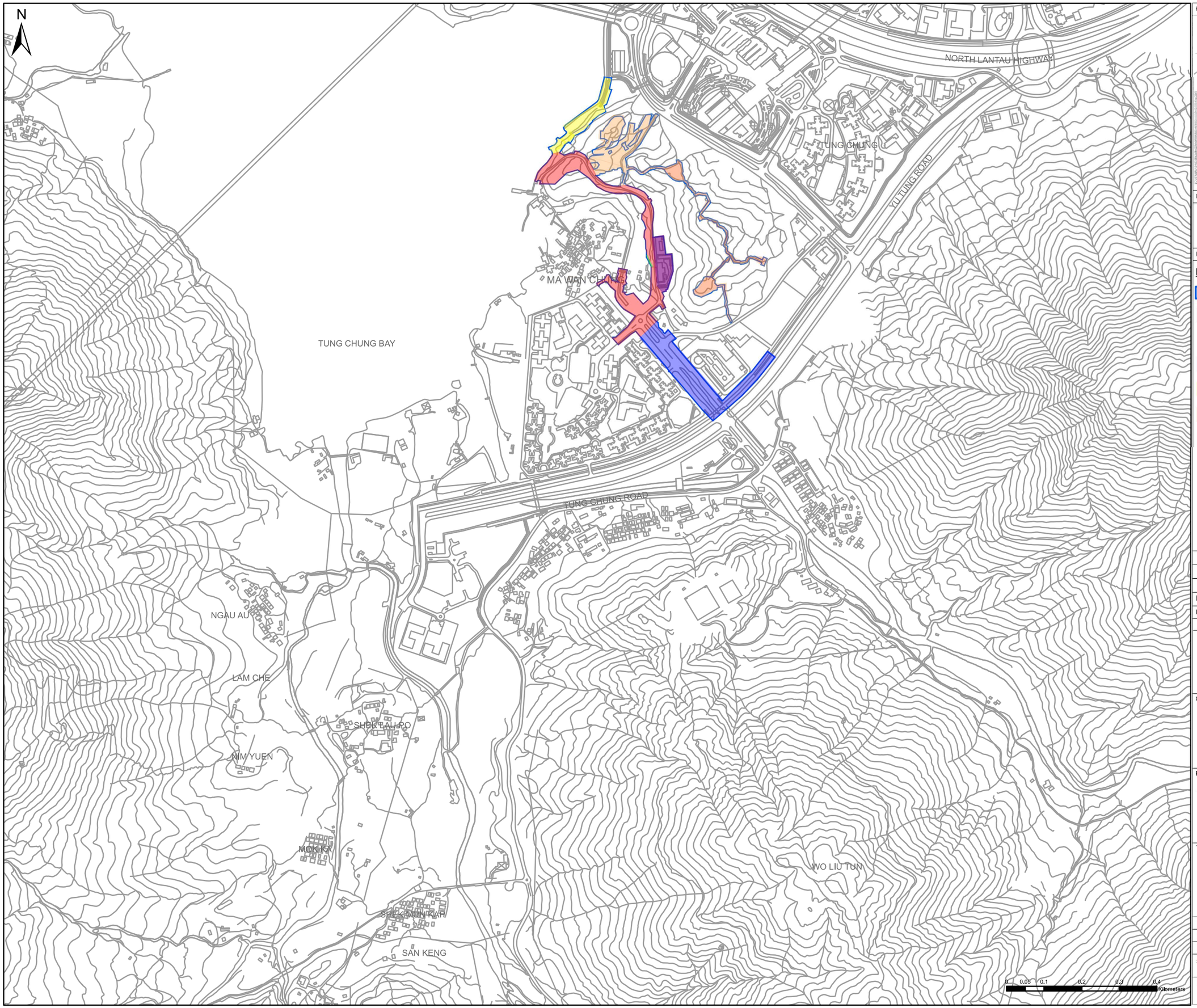
Environmental Complaint, Notification of Summons or Prosecution

There was no environmental complaint, notification of summons or prosecution recorded in the reporting period.

Recommendations

The ET will keep track of the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Figures



Key Plan: 1:140,000

Notes:

Key to symbols:

LEGEND

- PROJECT AREA
- PART D
- PART E
- PART F
- PART G
- PART H
- PART I

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 2021	KN		LL	TC

MOTT MACDONALD
3/F International Trade Tower
348 Kwun Tung Road
Kwun Tung, Kowloon
Hong Kong
T +852 2828 5757
F +852 2827 1823
W mottmac.com

Client

CEDD 土木工程拓展署 Civil Engineering and Development Department

Project

AGREEMENT NO. CE 64/2020(EP)
ENVIRONMENTAL TEAM FOR
TUNG CHUNG NEW TOWN EXTENSION (WEST)
– DESIGN AND CONSTRUCTION

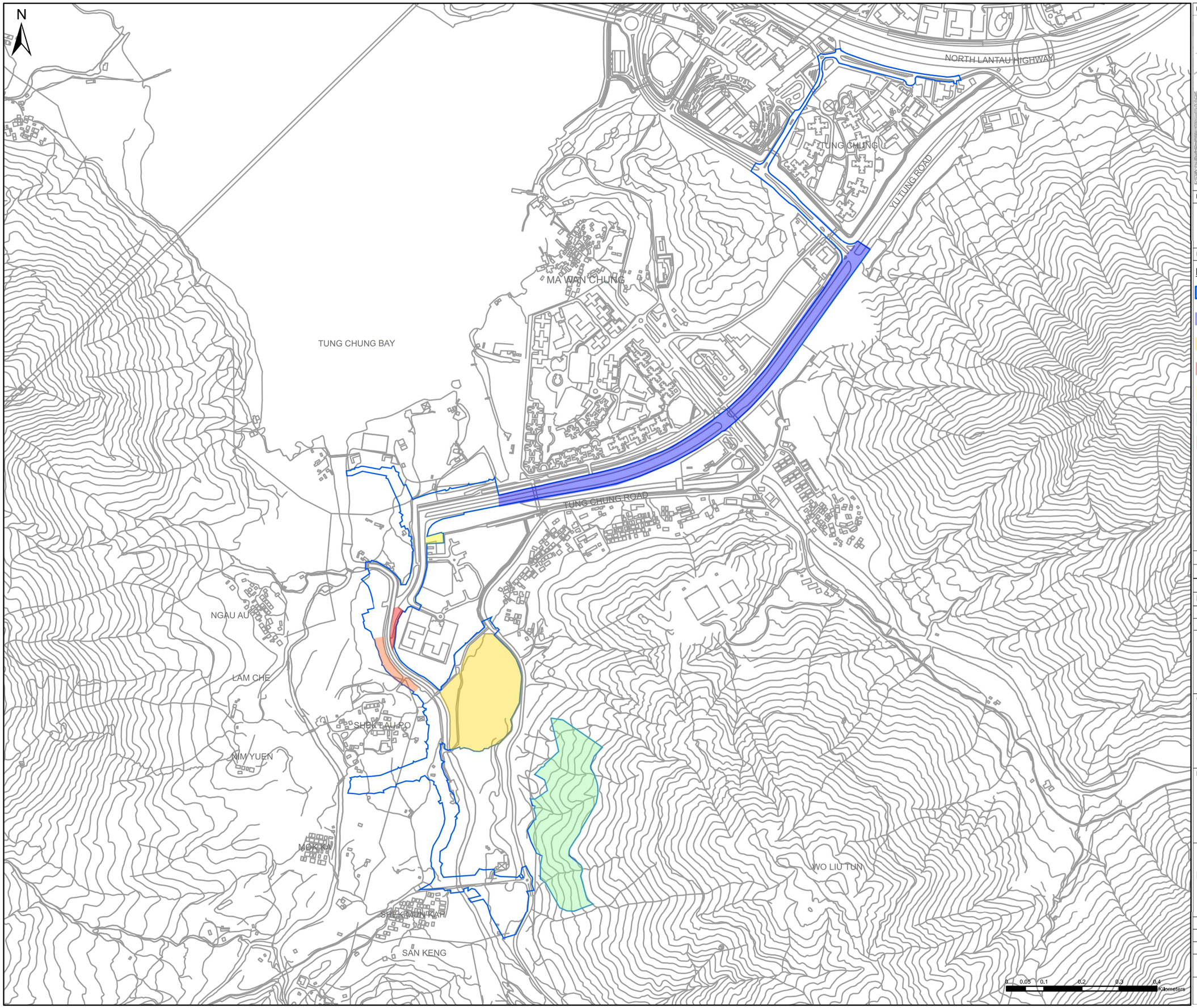
Title

Location of Contract No. NL/2020/05 ("Contract 5")

Designed			Eng check		
Drawn			Coordination		
Dwg check			Approved		
Scale at A3		Status		Rev	

Drawing Number

FIGURE 1.1



Key Plan: 1:140,000

Notes:

Key to symbols:

LEGEND

- PROJECT AREA
- YU TUNG ROAD
- AREA 42
- TEMPORARY BRIDGE A
- SEWAGE PUMPING STATION-A
- COMPENSATORY WOODLAND AREA
- ROAD L29

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 2021	KN		LL	TC

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Civil Engineering and Development Department

Project

**AGREEMENT NO. CE 64/2020(EP)
ENVIRONMENTAL TEAM FOR
TUNG CHUNG NEW TOWN EXTENSION (WEST)
– DESIGN AND CONSTRUCTION**

Title

Location of Contract No. NL/2020/06 ("Contract 6")

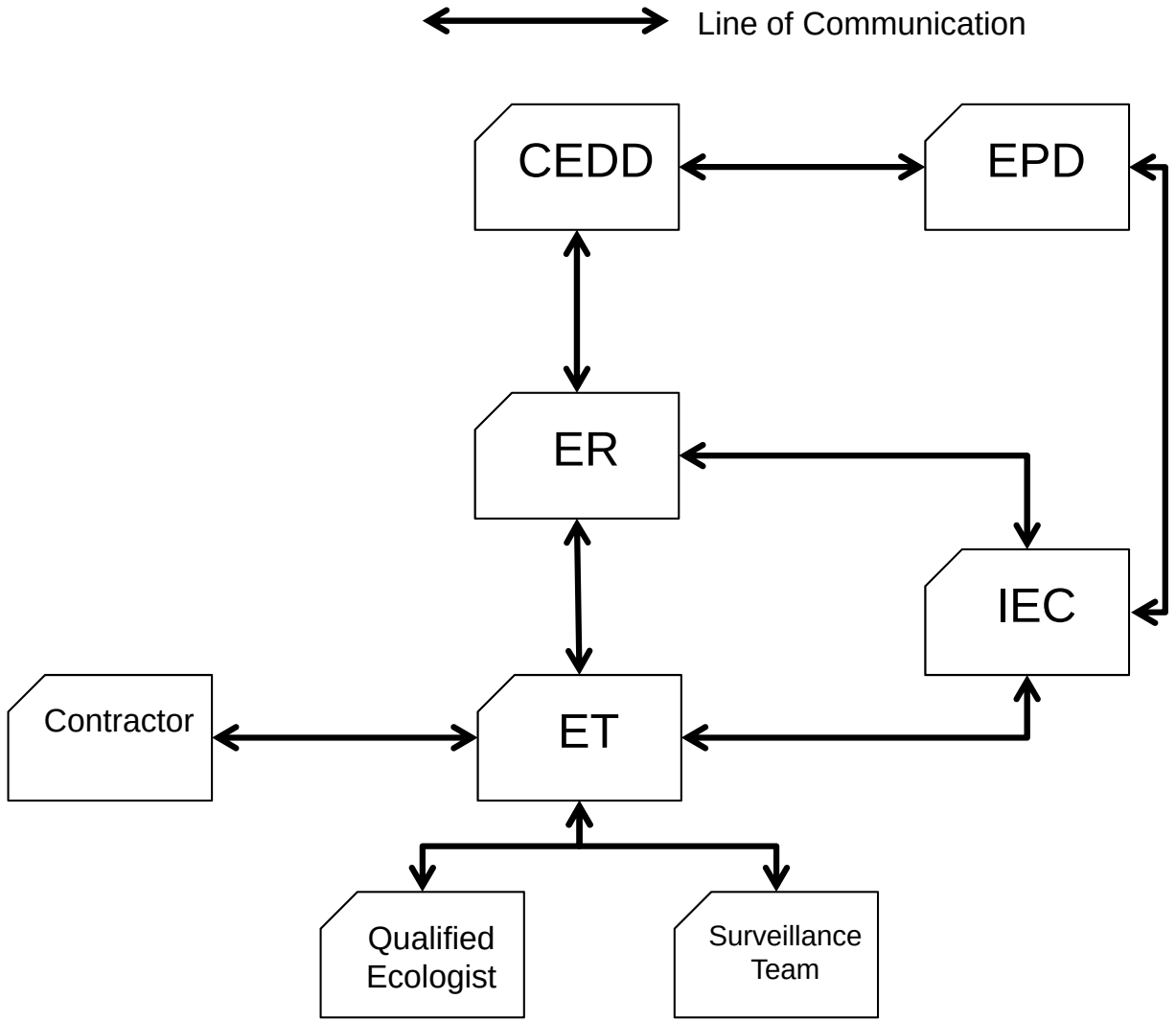
Designed			Eng check		
Drawn			Coordination		
Dwg check			Approved		
Scale at A3		Status		Rev	

Drawing Number

FIGURE 1.2

Appendices

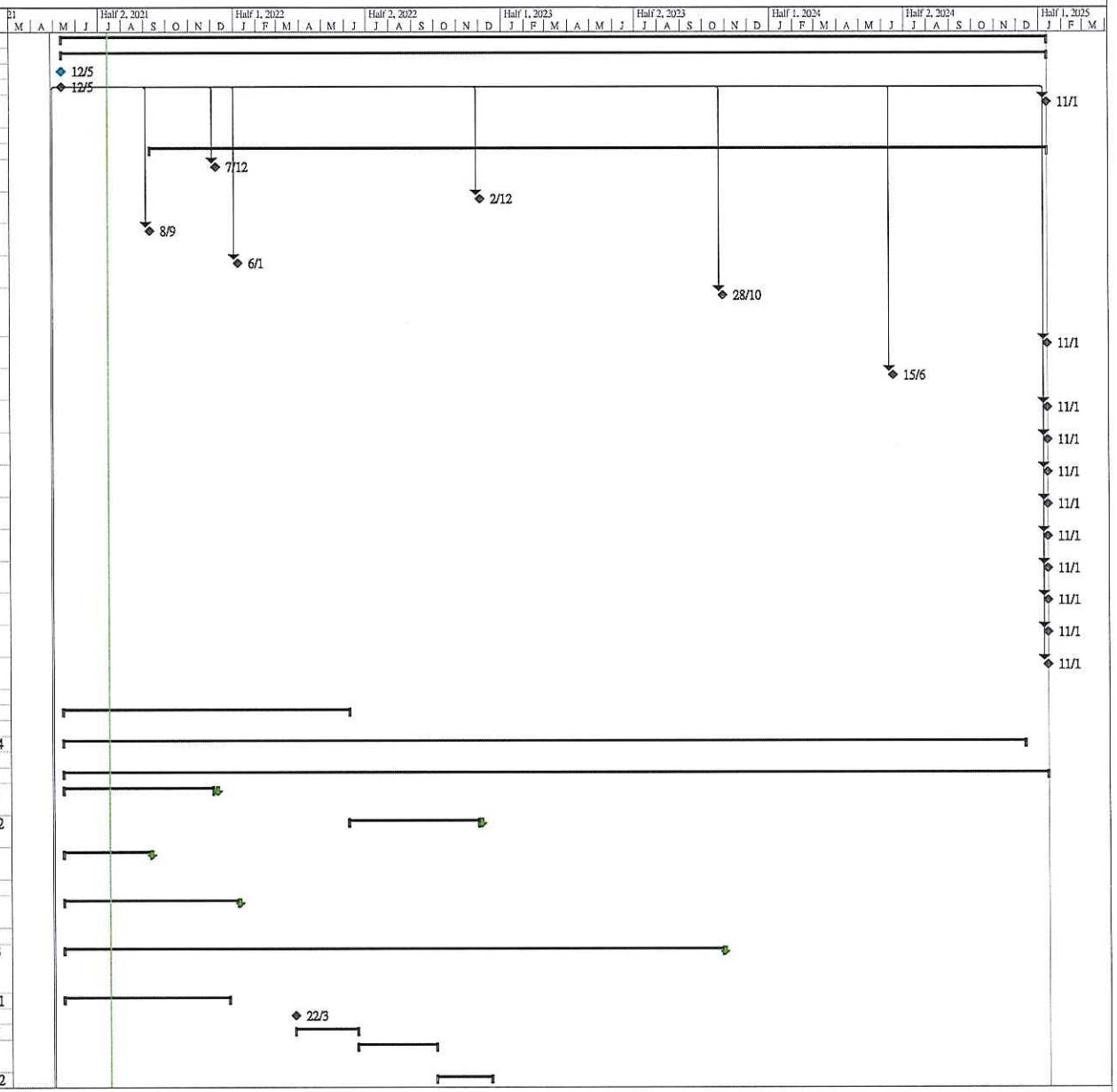
A. Project Organisation


Line of Communication
CEDD
EPD
ER
IEC
Contractor
ET
Qualified Ecologist
Surveillance Team

B. Construction Works Programme

NL/2020/05 - TUNG CHUNG NEW TOWN EXTENSION - SITE FORMATION AND INFRASTRUCTURE WORKS AT MA WAN CHUNG
INITIAL WORKS PROGRAMME

ID	Task Name	Duration	Start	Finish
1	CONTRACT PARTICULARS	1341 days	Wed 12/5/21	Sat 11/1/25
2	COMMENCEMENT AND COMPLETION DATES	1341 days	Wed 12/5/21	Sat 11/1/25
3	Contract Date - 12 May 21	0 days	Wed 12/5/21	Wed 12/5/21
4	Project Starting Date (ASD) 12 May 21	0 days	Wed 12/5/21	Wed 12/5/21
5	Completion Date for the Works including Establishment Works 365 days (ASD1341, 11 Jan 25)	0 days	Sat 11/1/25	Sat 11/1/25
6				
7	CONTRACT SECTIONAL COMPLETION	1221 days	Wed 8/9/21	Sat 11/1/25
8	KeyDate-1 - Completion of the promenade improvement works within Part B1 of the Site (ASD210)	0 days	Tue 7/12/21	Tue 7/12/21
9	KeyDate-2 - Completion of the promenade improvement works within Part B3 of the Site (ASD570)	0 days	Fri 2/12/22	Fri 2/12/22
10	KeyDate-3 Completion of renovation works of site office for site accomm of PM & Contractor within Part A1 (ASD120)	0 days	Wed 8/9/21	Wed 8/9/21
11	Section I - Design and carry out renovation works of ex site office for NGOs within Part B2 (ASD240)	0 days	Thu 6/1/22	Thu 6/1/22
12	Section II - Demolition of ex. Bldg struct. Site formation with associated works including geotechnical works within Part D (ASD900)	0 days	Sat 28/10/23	Sat 28/10/23
13	Section III - Promenade improv works & subseq mgmt & maint B1&B3/ Int Exhib System at CLC Part C (ASD1341)	0 days	Sat 11/1/25	Sat 11/1/25
14	Section IV - Management and maintenance of Part A2 of the Site (ASD1131)	0 days	Sat 15/6/24	Sat 15/6/24
15	Section V Site form & infras works for open spaces at Tung Chung Area 29A within Parts H & H1 (ASD1341)	0 days	Sat 11/1/25	Sat 11/1/25
16	Section VI - Widening for Tung Chung Rd N & assoc infras works, R&D works at Ma Wan Chung within Part E &I (ASD1341)	0 days	Sat 11/1/25	Sat 11/1/25
17	Section VII - Infras works at Chung Yan Rd within Part F which is "Section subject to Excision" (ASD1341)	0 days	Sat 11/1/25	Sat 11/1/25
18	Section VIII - Coastal Pedestrian Access with associated works within Part G (ASD1341)	0 days	Sat 11/1/25	Sat 11/1/25
19	Section VIIIA - The remaining works not included in Sections I to X, XA & XI (ASD1341)	0 days	Sat 11/1/25	Sat 11/1/25
20	Section IX - Landscape softworks and associated Establishment works within Parts H & H1 (ASD 1341)	0 days	Sat 11/1/25	Sat 11/1/25
21	Section X - Landscape softworks and associated establishment works within Parts E & I (ASD1341)	0 days	Sat 11/1/25	Sat 11/1/25
22	Section XA - Landscape softworks and asso Est works within Part F which is "Section subject to Excision" (ASD1341)	0 days	Sat 11/1/25	Sat 11/1/25
23	Section XI - Landscape softworks and associated Establishment works within Part G (ASD1341)	0 days	Sat 11/1/25	Sat 11/1/25
24				
25	ACCESS DATE	390 days	Wed 12/5/21	Sun 5/6/22
33				
34	PRELIMINARY WORKS AND SUBMISSION	1310 days	Wed 12/5/21	Wed 11/12/24
56				
57	CONSTRUCTION	1341 days	Wed 12/5/21	Sat 11/1/25
58	KEY DATE-1 - PART B1 COMPLETION OF PROMENDAE IMPROVEMENT WORKS (ASD210)	204 days	Wed 12/5/21	Wed 1/12/21
62	KEY DATE-2 - PARTB3 COMPLETION OF PROMENADE IMPROVEMENT WORKS (ASD570)	177 days	Sun 5/6/22	Mon 28/11/22
65	KEY DATE-3 PART A1 COMPLETION OF RENOVATION AT EX SITE OFFICE PM & CONTRACTOR ACCOMM (ASO120)	119 days	Wed 12/5/21	Tue 7/9/21
68				
69	SECTION I - PART B2 DESIGN AND CARRY OUT RENOVATION WORKS OF EXISTING SITE OFFICE FOR NGOS	238 days	Wed 12/5/21	Tue 4/1/22
75				
76	SECTION II - PART D DEMOLITION OF EX BLDG, SITE FORMATION WITH ASSOCIATED WORKS INCL. GEOT WORKS (ASD 900)	898 days	Wed 12/5/21	Thu 26/10/23
77	Procurement and submission	225 days	Wed 12/5/21	Wed 22/12/21
80	Access Date of Part D	0 days	Tue 22/3/22	Tue 22/3/22
81	Preliminary Works	85 days	Wed 23/3/22	Wed 15/6/22
88	Removal of Asbestos and Demolition of Existing Structures at Area 23	107 days	Thu 16/6/22	Fri 30/9/22
99	Interface with Housing Department & Ground Investigation	75 days	Sat 1/10/22	Wed 14/12/22

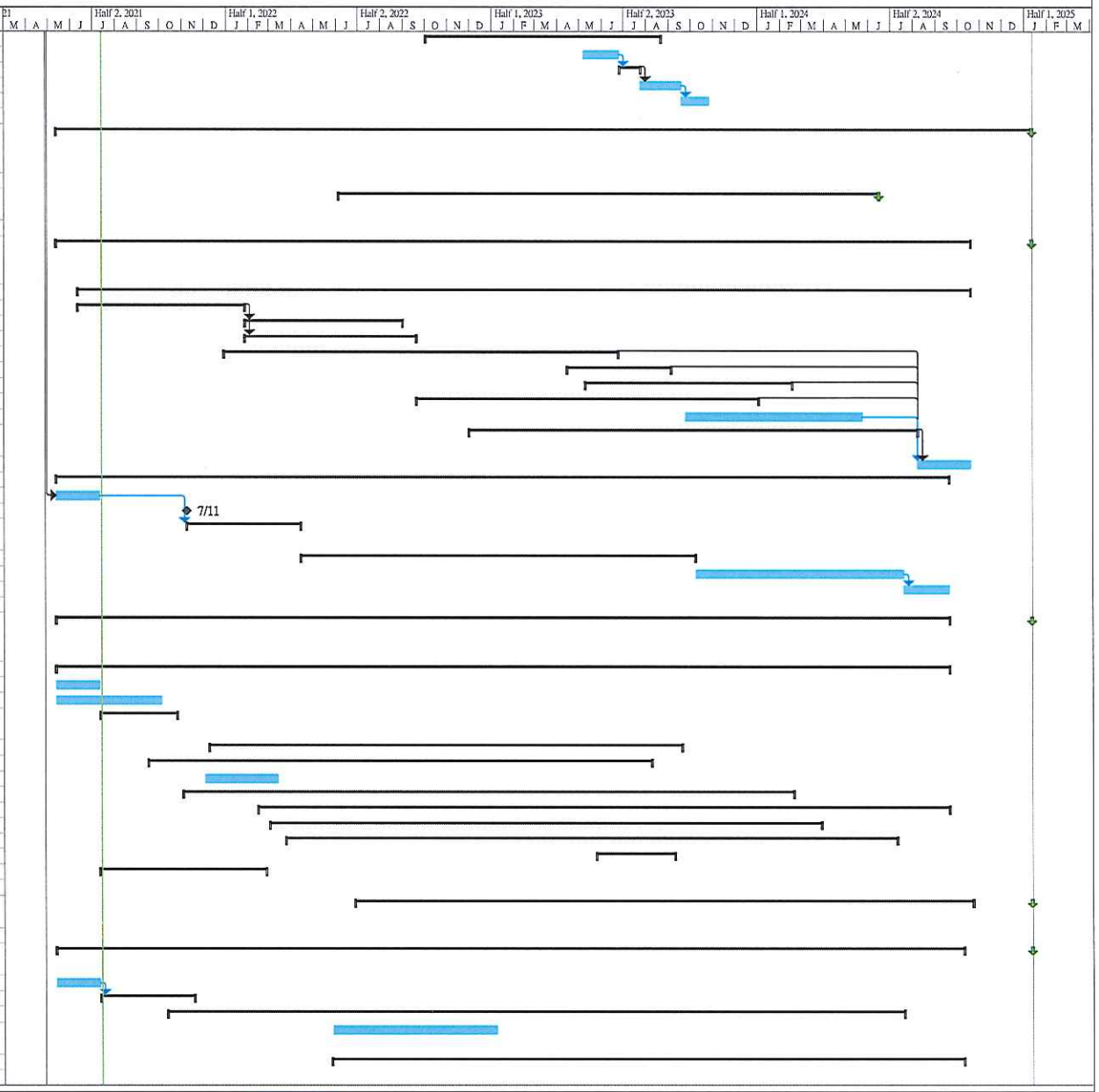


IWP Rev 0
Date: 12/5/2021

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Critical | Critical Split | Progress | Manual Progress

NL/2020/05 - TUNG CHUNG NEW TOWN EXTENSION - SITE FORMATION AND INFRASTRUCTURE WORKS AT MA WAN CHUNG
INITIAL WORKS PROGRAMME

ID	Task Name	Duration	Start	Finish
101	Soldier Piled Retaining Wall No. 2,3A,3B,4A,4B & 5	323 days	Mon 3/10/22	Mon 21/8/23
110	Site Formation - Excavation	40 days	Mon 8/5/23	Sat 24/6/23
111	Fill Slopes between Area 23 and Tung Chung Road	24 days	Mon 26/6/23	Mon 24/7/23
114	Drainage Works	48 days	Tue 25/7/23	Mon 18/9/23
115	Miscellaneous Works at Part D	30 days	Tue 19/9/23	Thu 26/10/23
116				
117	SECTION III - PART B1&B3 PROMENADE IMPROVEMENT AND SUBSEQUENT MANAGEMENT AND MAINTENANCE; PART C INTERACTIVE EXHIB SYSTEM (ASD1341)	1341 days	Wed 12/5/21	Sat 11/1/25
128				
129	SECTION IV - PART A2 - MANAGEMENT AND MAINTENANCE (ASD1131)	742 days	Sun 5/6/22	Sat 15/6/24
131				
132	SECTION V - PART H&H1 - SITE FORMATION AND INFRASTRUCTURE WORKS FOR OPEN SPACES AT TUNG CHUNG AREA 29A (ASD1341)	1257 days	Wed 12/5/21	Sat 19/10/24
133	Part H - Open Space in Town Park	1227 days	Fri 11/6/21	Sat 19/10/24
134	Procurement and Preliminary Works	230 days	Fri 11/6/21	Wed 26/1/22
143	Pocket site 1 - Preparation works prior to site formation	217 days	Thu 27/1/22	Wed 31/8/22
150	Hiking trail upgrading works	236 days	Thu 27/1/22	Mon 19/9/22
152	Site Formation works	542 days	Wed 29/12/21	Fri 23/6/23
171	Sewerage Works	143 days	Sat 15/4/23	Mon 4/9/23
176	Drainage Works	284 days	Wed 10/5/23	Sat 17/2/24
181	Waterworks	470 days	Tue 20/9/22	Tue 2/1/24
186	Construction of Barrier Free Access	193 days	Mon 25/9/23	Thu 23/5/24
187	Structural Works of Pavilion 2, Plant Room, Guard Booth, Services Building & Park Facilities	616 days	Thu 1/12/22	Wed 7/8/24
191	Town Park Perimeter Fencing Works	60 days	Thu 8/8/24	Sat 19/10/24
192	Part H1 - Barrier Free Access in Town Park	1227 days	Wed 12/5/21	Thu 19/9/24
193	Procurement	60 days	Wed 12/5/21	Sat 10/7/21
194	Access Date of Part H1	0 days	Sun 7/11/21	Sun 7/11/21
195	Preparation works, site clearance, tree felling, hoarding, ground investigation	128 days	Mon 8/11/21	Wed 13/4/22
201	Site Formation	542 days	Thu 14/4/22	Sat 7/10/23
208	Construction of Barrier Free Access	230 days	Mon 9/10/23	Fri 19/7/24
209	Town Park Perimeter Fencing Works	52 days	Sat 20/7/24	Thu 19/9/24
210				
211	SECTION VI - PART E&I WIDENING FOR TUNG CHUNG RD N & INFRASTRUCTURE WORKS; ROAD AND DRAIANGE WORKS AT MA WAN CHUNG (ASD1341)	1228 days	Wed 12/5/21	Fri 20/9/24
212	Part E	1228 days	Wed 12/5/21	Fri 20/9/24
213	Procurement	60 days	Wed 12/5/21	Sat 10/7/21
214	Submission & Approval - Temporary Drainage Diversion Scheme	145 days	Wed 12/5/21	Sun 3/10/21
215	Preparation Works, Site Clearance, Ground Investigation, Instrumentation, and Hoarding	106 days	Mon 12/7/21	Mon 25/10/21
220	Slope Works	650 days	Thu 9/12/21	Tue 19/9/23
224	Retaining Wall Works	692 days	Thu 16/9/21	Tue 8/8/23
234	Earthworks at Ma Wan Chung Nullah Area - Filling to Formation	80 days	Fri 3/12/21	Sat 12/3/22
235	Drainage Works	839 days	Wed 3/11/21	Mon 19/2/24
240	Sewerage Works	950 days	Mon 14/2/22	Fri 20/9/24
243	Waterworks	758 days	Wed 2/3/22	Thu 28/3/24
246	Road Works	840 days	Thu 24/3/22	Wed 10/7/24
249	Interface Management with Utility Undertakers	108 days	Thu 25/5/23	Sat 9/9/23
251	Part I	229 days	Sat 10/7/21	Thu 24/2/22
254				
255	SECTION VII - PART F INFRASTRUCTURE WORKS AT CHUNG YAN ROAD, "SUBJECT TO EXCISION" (ASD 1341)	849 days	Mon 27/6/22	Tue 22/10/24
259				
260	SECTION VIII - PART G - COASTAL PEDESTRIAN ACCESS WITH ASSOCIATED WORKS (ASD1341)	1247 days	Wed 12/5/21	Wed 9/10/24
261	Procurement	60 days	Wed 12/5/21	Sat 10/7/21
262	Preliminary Works	129 days	Mon 12/7/21	Wed 17/11/21
267	Condition Surveys and Archaeological Works	1012 days	Tue 12/10/21	Fri 19/7/24
271	Natural Terrain Hazard Mitigation Works - Install Flexible Barriers & Rock Scaling, etc	185 days	Sat 28/5/22	Fri 6/1/23
272	Coastal Pedestrian Access Construction	868 days	Thu 26/5/22	Wed 9/10/24
304				

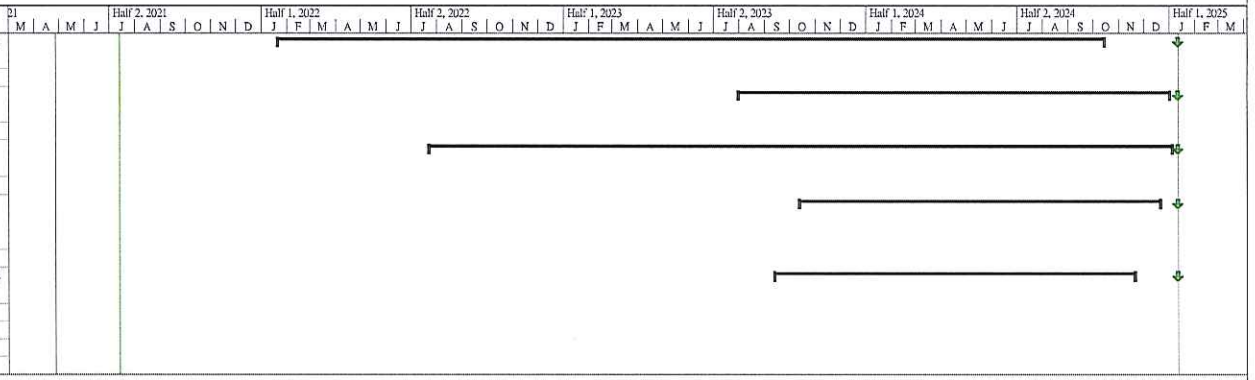


IWP Rev 0
Date: 12/5/2021

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Critical | Critical Split | Progress | Manual Progress

NL/2020/05 - TUNG CHUNG NEW TOWN EXTENSION - SITE FORMATION AND INFRASTRUCTURE WORKS AT MA WAN CHUNG
INITIAL WORKS PROGRAMME

ID	Task Name	Duration	Start	Finish
305	SECTION VIIIA - REMAINING WORKS NOT INCLUDED IN SECTIONS I TO X, XA AND XI (ASD1341)	998 days	Fri 21/1/22	Mon 14/10/24
307				
308	SECTION IX - LANDSCAPE SOFTWORKS AND ASSOCICATED ESTABLISHMENT WORKS WITHIN PARTS H & H1	521 days	Mon 31/7/23	Wed 1/1/25
312				
313	SECTION X - LANDSCAPE SOFTWORKS AND ASSOCICATED ESTABLISHMENT WORKS WITHIN PARTS E & I	897 days	Sat 23/7/22	Sat 4/1/25
319				
320	SECTION XA - LANDSCAPE SOFTWORKS AND ASSOCICATED ESTABLISHMENT WORKS WITHIN PART F "SECTION SUBJECT TO EXCISION"	436 days	Fri 13/10/23	Sat 21/12/24
323				
324	SECTION XI - LANDSCAPE SOFTWORKS AND ASSOCICATED ESTABLISHMENT WORKS WITHIN PART G	435 days	Wed 13/9/23	Wed 20/11/24
327				
328				
329				
330				



IWP Rev 0
Date: 12/5/2021

Task | Summary | Inactive Milestone | Duration-only | Start-only | External Milestone | Critical Split
Split | Project Summary | Inactive Summary | Manual Summary Rollup | Finish-only | Deadline | Progress
Milestone | Inactive Task | Manual Task | Manual Summary | External Tasks | Critical | Manual Progress

Contract No. NL/2020/06
Contract Title: Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase1
Working Programme

Activity	2021												2022												2023												2024												2025												2026	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Preparation works (GI inverstigation and other preparation works)																																																																
Advance Work - Species Translocation																																																															
Preparation and Construction works at Area 42																																																															
Preparation and Construction works at Area 46																																																															
Preparation and Construction of River Park and Visitor Centre																																																															
Preparation and Construction works at Tung Chung River																																																															
Preparation and Construction of River Park Footbridge																																																															
Attenuation & Treatment Ponds																																																															
Preparation and Construction works of Yu Tung Road, Shun Tung Road, Tat Tung Road and Cheung Tung Road																																																															
Preparation and Construction works of Improvement works for Chun Mun Road																																																															
Preparation and Construction for New Road L29																																																															
Preparation and Construction works for New Road L30																																																															
Road Improvement works for Shek Mun Kap Road																																																															
Woodland Compensation Works																																																															
Pumping Station A (SPS-A) and Pumping Station B (SPS-B)																																																															
Landscape Softworks																																																															
Establishment works for Landscape Softworks																																																														

Landscape related works
Construction works except Landscape

C. Environmental Mitigation Implementation Schedule

(Relevant pages for the Project works in Tung Chung West, originally extracted from the Updated EM&A Manual, dated May 2018)

Environmental Mitigation Implementation Schedule – Tung Chung New Town Extension

Note: Chapters 1 to 2 of the EIA report present the background information of the Project, identified concurrent projects, objectives and scope for various environmental aspects, and description on alternative options and construction description. Chapters 3 to 12 of the EIA report present the EIA findings and mitigation measures are described below with cross-reference to the EIA report. Chapters 13 to 15 describe the environmental monitoring requirements, summary of environmental outcomes and conclusion.

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)							
Construction Dust Impact							
S3.4.6	D1	Water spraying every hour on exposed worksites and haul road.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIAO criteria
S3.4.6	D2	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIAO criteria
S3.4.6	D3	The following dust suppression measures should be incorporated to control the dust nuisance throughout the construction phase: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIAO criteria

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		• A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones; • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens,					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.					
S3.4.6	D4	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected dust monitoring stations	Construction stage	• TM-EIAO

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Construction Noise							
S4.3.4	N1	Implement the following good site management practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) 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, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	Control construction airborne noise	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIAO
S4.3.4	N2	Use of quiet plant which should be made reference to the Powered Mechanical Equipment (PME) listed in the Technical Memorandum or the Quality Powered Mechanical Equipment (QPME) / other commonly used PME listed in Environmental Protection Department (EPD) web pages as far as possible which includes the Sound Power Level (SWLs) for specific quiet PME.	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIAO
S4.3.4	N3	Install movable temporary noise barriers (typical design is wooden framed barrier with a small-cantilevered upper portion of superficial density no less than 7kg/m^2 on a skid	Screen the noisy plant items to be used at all	Contractor	All construction sites where	Construction stage	• Annex 5, TM-EIAO

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		footing with 25mm thick internal sound absorptive lining), and full enclosure, screen the noisy plants including air compressors, generators etc.	construction sites		practicable		
S4.3.4	N4	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected noise monitoring stations	Construction stage	• TM-EIAO
Operational Noise (Road Traffic Noise)							
S4.5.4	N5	Provide a series of noise mitigation measures including low noise surfacing material, noise barriers, facades with no openable window, school boundary walls and architectural fins before occupation of the protected NSRs. Locations of noise mitigation measures are stated as following: Year 2023: • Facade with no openable window at B1-1 and B1-2 for TCE; TCV-6 for TCW • 1.5m long architectural fin at B1-1 and B1-2 for TCE • Approx. 50m long, 4m high school boundary wall at possible school development near Tung Chung Area 39 • Approx. 120m long, 5m high vertical barrier with 3m cantilevered arm at 45^{o} at the corner at junction between Chung Mun Road and Road L24 • Approx. 210m long LNRS along Chung Mun Road • Approx. 160m long LNRS along Road L24 • Approx. 160m long LNRS along Road L30 Year 2025: • Facade with no openable window at B1-1, B1-2, D1-1,	Reduce operation noise from road traffic	Relevant government departments / Private developers	Refer to Figure 6.1, Figure 6.1a-b, Figure 6.2, Figures 6.2a-b, Figure 6.3, Figures 6.3a-d, Figure 6.4, and Figures 6.4a-e	Prior to operation of the Project for existing NSRs. While for mitigation measures to protect planned NSRs, it should be constructed before population intake of planned NSRs.	• TM-EIAO

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		D1-2, D2-3 and D2-4 for TCE; TCV-6 for TCW • 1.5m long architectural fin at B1-1, B1-2 and D2-4 for TCE; TCV-1 for TCW • Approx. 60m long, 5m high school boundary wall along Road L3 • Approx. 70m long, 5m high school boundary wall with 3m cantilevered arm at 45^{o} along Road L3 • Approx. 50m long, 4m high school boundary wall at possible school development near Tung Chung Area 39 • Approx. 120m long, 5m high vertical barrier with 3m cantilevered arm at 45^{o} at the corner at junction between Chung Mun Road and Road L24 • Approx. 210m long LNRS along Chung Mun Road • Approx. 160m long LNRS along Road L24 • Approx. 160m long LNRS along Road L30 Year 2027: • Facade with no openable window at A1-1, A1-2, A2-1, A2-2, A2-3, A2-4, B1-1, B1-2, D1-1, D1-2, D2-3 and D2-4 for TCE; TCV-6 for TCW • 1.5m long architectural fin at A2-1, A2-4, B1-1, B1-2 and D2-4 for TCE; • 1.8m long architectural fin at A1-1, A1-2, A2-1 and A2-4 • Approx. 60m long, 5m high school boundary wall along Road L3 • Approx. 70m long, 5m high school boundary wall with 3m cantilevered arm at 45^{o} along Road L3 • Approx. 50m long, 4m high school boundary wall at					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		possible school development near Tung Chung Area 39 • Approx. 120m long, 5m high vertical barrier with 3m cantilevered arm at 45° at the corner at junction between Chung Mun Road and Road L24 • Approx. 210m long LNRS along Chung Mun Road • Approx. 160m long LNRS along Road L24 • Approx. 160m long LNRS along Road L30 Year 2045: • Facade with no openable window at A1-1, A1-2, A2-1, A2-2, A2-3, A2-4, B1-1, B1-2, C1-1, C2-1, C2-2, D1-1, D1-2, D2-3, D2-4, E1-4 and E1-5 for TCE; TCV-1 and TCV-6 for TCW • 1.5m long architectural fin at A2-1, A2-4, B1-1, B1-2, C1-1 and D2-4 for TCE; TCV-1 for TCW • 1.8m long architectural fin at A1-1, A1-2, A2-1, A2-4 and C1-1 • Approx. 100m long, 5m high absorptive vertical barrier along Road D3 • Approx. 50m long, 5m high absorptive vertical barrier with 3m cantilevered arm at 45° along Road L7 • Approx. 60m long, 5m high school boundary wall along Road L3 • Approx. 70m long, 5m high school boundary wall with 3m cantilevered arm at 45° along Road L3 • Approx. 80m long, 4m high school boundary wall along Road L2 • Approx. 40m long, 3m high school boundary wall along Road L2					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		• Approx. 50m long, 4m high school boundary wall at possible school development near Tung Chung Area 39 • Approx. 120m long, 5m high vertical barrier with 3m cantilevered arm at 45º at the corner at junction between Chung Mun Road and Road L24 • Approx. 210m long LNRS along Chung Mun Road • Approx. 160m long LNRS along Road L24 • Approx. 160m long LNRS along Road L30					
Operational Noise (Fixed Noise)							
S4.6.4	N6	For existing and planned NSRs which are located near to the proposed noise sources, the following tentative noise mitigation measures are considered: • All the pumps should be enclosed inside building structures; • Proper selection of quiet plant to reduce the tonality at NSRs; • Installation of silencer / acoustic enclosure / acoustic louvers for the exhaust of ventilation system. • For underground train stations, sound attenuators with sufficient attenuations can be installed to the ventilation shafts. • Openings of ventilation system should be located away from NSRs.	Reduce operation fixed noise	Relevant government departments / Future Operator	All plant rooms where practicable	Prior to operation of the Project	• Noise Control Ordinance and its TM, TM-EIAO
Operational Noise (Rail Noise)							

Environmental Mitigation Implementation Schedule – Tung Chung New Town Extension

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
S4.8.4	N7	Before Phase 1 is occupied: • Facade with no openable windows for residential block at B1-2 • 1.5m long architectural fin at B1-2 Before Phase 3 is occupied: It should be noted that Railway Stations at TCE and TCW and its associated railway system is a Designated Project under Item A.2 of Schedule 2 of TM-EIAO. Hence, the proposed mitigation measures are tentative for cumulative assessment purpose in this EIA and all the mitigation measures will be revised by the railway operator during their Schedule 2 EIA. • Approx. 325m long, semi enclosure along the tracks of Tung Chung Line facing B0-2 and COM-1 • Approx. 210m long, semi enclosure along the tracks of Tung Chung Line facing A1-2 and C1-1 • Approx. 390m long, semi enclosure along the track of Tung Chung Line to Tung Chung direction facing C1-1 to C2-1 • Approx. 630m long, semi enclosure along the track of Tung Chung Line to Hong Kong direction facing C1-1 and C2-1	Reduce operation rail noise	Relevant government departments / Future Operator	Refer to Figure 6.1, Figure 6.1a-b, Figure 6.2, Figures 6.2a-b, Figure 6.3, Figures 6.3a-d, Figure 6.4, and Figures 6.4a-e	Prior to final population intake	• Noise Control Ordinance and its TM, TM-EIAO

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Water Quality (Construction Phase)							
S5.4.3	W1	*General Construction Activities* In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), best management practices should be implemented on site as far as practicable. The best practices are detailed below: • At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works. Channels, earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities.; • Diversion of natural stormwater should be provided as far as possible. The design of temporary on-site drainage should prevent runoff going through site surface, construction machinery and equipment in order to avoid or minimize polluted runoff. Sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m3 capacities, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and suited to applications where the influent is pumped; • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a silt/sediment trap. The silt/sediment traps should be incorporated in the permanent drainage channels to enhance deposition rates; • The design of efficient silt removal facilities should be	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where applicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-DSS

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of the sand/silt traps should be undertaken by the contractor prior to the commencement of construction; • Construction works should be programmed to minimize surface excavation works during the rainy seasons (April to September). All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means; • All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas; • If the excavation of trenches in wet periods is necessary, it should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; • All open stockpiles of construction materials (for example, aggregates, sand and fill material) should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system; • Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		directed into foul sewers; • Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events; • All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains; • Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain; • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts; • All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		receivers nearby;and • Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the water bodies, mangroves and open sea.					
S5.4.3	W2	*Sewage from workforce* • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance; • Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project; • Regular environmental audit on the construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site.	To minimize water quality from sewage effluent in construction phase	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-DSS
S5.4.3	W3	*Construction Works and Bridge Works near Tung Chung Stream* • Use precast structures or other similar approaches	To prevent any construction works in river and avoid any direct water quality impact to Tung Chung Stream	Contractor	All construction sites where practicable	Construction stage	• ProPECC PN1/94
S5.4.3	W4	*Construction Works of Sewage Pumping Stations* • A buffer zone of about 20m or about 30m will be zoned to	To avoid any direct water quality impact to Tung Chung Stream	Contractor	All construction sites where	Construction stage	• ProPECC PN1/94

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		prevent any construction works near river.			practicable		
S5.4.3	W5	*Construction Work of Fresh Water and Salt Water Reservoirs* • Good site management as stipulated in ProPECC PN1/94 will be fully implemented to avoid polluted liquid or solid wastes from falling into the river waters or drainage.	To avoid water quality impact	Contractor	All construction sites where practicable	Construction stage	• ProPECC PN1/94
S5.4.3	W6	*Construction of Storm Water Management Facilities and Polder Scheme* • Good site management as stipulated in ProPECC PN1/94 will be fully implemented to avoid polluted liquid or solid wastes from falling into the river waters or drainage.	To avoid any direct water quality impact to Tung Chung Stream	Contractor	All construction sites where practicable	Construction stage	• ProPECC PN1/94
S5.4.3	W7	*Groundwater and Runoff for Tunnel Works* • Cut-and-Cover method for the underpass at Road D1 in Tung Chung East to minimise the intrusion of groundwater. Good site management as stipulated in ProPECC PN1/94 will be fully implemented to avoid polluted liquid or solid wastes from falling into the river waters or drainage.	To avoid water quality impact	Contractor	All construction sites where practicable	Construction stage	• ProPECC PN1/94
S5.5.8	W8	*Good Management Practice in Construction Phase* The following good site management practices shall be adopted for the filling works: • Water quality monitoring shall be implemented to ensure effective control of water pollution and recommend additional mitigation measures required; • The decent speed of grabs shall be controlled to minimize the seabed impact and to reduce the volume of over-dredging; • A perimeter silt curtain shall be installed during the entire	To avoid water quality impact	Contractor	All construction sites where practicable	Construction stage	• ProPECC PN1/94

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		reclamation periods; • Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation; • Excess materials shall be cleaned from the decks and exposed fittings of barges before the vessels are moved; • Plants should not be operated with leaking pipes and any pipe leakages shall be repaired quickly; • Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; • All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and • The works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site.					
S5.5.8	W9	• The recovered C&D materials for filling would be ensured no floating or non-inert material by visual inspection, quality assurance, etc.	To avoid water quality impact	Contractor	All construction sites where practicable	Construction stage	• Waste Disposal Ordinance

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Water Quality (Operational Phase)							
S5.6.10	W10	The following mitigation measures will be implemented to TCV East, North and West SPS, upgraded CMRSPS, proposed TCE West SPS and TCE East SPS • 100% standby pump capacity with spare pump of 50% pump capacity • Dual-feed power supply • Wet well storage providing up to 6-hours ADWF capacity (equivalent to about 4 hours of response time during peak flow condition); and • Emergency communication mechanism amongst relevant government departments.	To prevent the impact due to the emergency discharge at TCW and TCE	DSD	Proposed Sewage Pumping Station at TCW and TCE	Operational Stage	• DSD's Sewerage Manual
S5.6.10	W11	The following mitigation measures will be implemented to gravity sewers and rising mains • Adopt high density polyethylene (HDPE) pipe for proposed gravity sewers and rising mains. • Further protection on proposed rising mains with concrete surround will be provided to mitigate the risk of bursting.	To minimize the risk of bursting and hence bursting discharge from gravity sewers and rising mains	DSD	Proposed rising mains within TCE and TCW	Operational Stage	-
S5.6.10	W12	*Maintenance Dredging for the Proposed Marina* Silt curtain should be deployed to reduce the sediment dispersion from the dredging inside the marina.	To reduce the sediment dispersion	Future operator	Proposed marina at TCE	Operational Stage	-

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Sewage and Sewerage Treatment Implications							
S6.5.4	SS1	*Emergency Discharge of Proposed TCV West SPS, TCV East SPS, TCV North SPS and Upgraded CMRSPS* The following mitigation measures will be implemented to TCV East, North and West SPS, and upgraded CMRSPS: • 100% standby pumping capacity within each SPS, with spare pump up to 50% pumping capacity stockpiled in each SPS for any emergency use • Twin rising mains • Dual-feed power supply • Emergency storage facilities up to 6-hours ADWF capacity; and • Emergency communication mechanism amongst relevant government departments.	To prevent the impact due to the emergency discharge at TCW	DSD	Proposed Sewage Pumping Station at TCW	Operational stage	N/A
S6.5.4	SS2	*Emergency Discharge of Proposed TCE West SPS and TCE East SPS* In order to minimize the impact due to the emergency discharge, the following precautionary measures shall be included in the design of sewage pumping station: • 100% standby pumping capacity within each SPS, with spare pump up to 50% pumping capacity stockpiled in each SPS for any emergency use • Twin rising mains • Dual-feed power supply • Emergency storage facilities up to 6-hours ADWF capacity; and • Emergency communication mechanism amongst relevant	To minimize the impact due to the emergency discharge at TCE	DSD	Proposed Sewage Pumping Station at TCE	Operational stage	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		government departments.					
S6.5.4	SS3	The following mitigation measures will be implemented to prevent pipe bursting on Rising Mains within TCE and TCW: • Strong pipe – use HDPE pipe with welded joints • Concrete encasement – concrete surround all rising mains	To minimize the risk of bursting and hence bursting discharge from gravity sewers and rising mains	DSD	Proposed rising mains within TCE and TCW	Operational stage	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Waste Management (Construction Waste)							
S7.4.1	WM1	Good Site Practices The following good site practices are recommended throughout the construction activities: • nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; • training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling; • provision of sufficient waste disposal points and regular collection for disposal; • imposition of penalty system on Contractors' improper behaviours when illegal dumping and landfilling outside their respective construction sites, i.e. on nearby farmlands and riverbanks, are reported; • appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and • the contractor should prepare a Waste Management Plan (WMP) as part of the Environmental Management Plan (EMP) in accordance with the ETWB TC(W) No. 19/2005 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.	Minimize waste generation during construction	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
S7.4.1	WM2	Waste Reduction Measures Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction: • segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal; • proper storage and site practices to minimize the potential for damage and contamination of construction materials; • plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; • sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.); • provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.	Reduce waste generation	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
S7.4.1	WM3	Storage of Waste The following recommendation should be implemented to minimize the impacts: • waste such as soil should be handled and stored well to ensure secure containment; and • Depends on actual site activities, certain locations within the site area would be used for storage of waste to enhance reuse. However, there would not be any designated location for storage of waste, and the storage locations would need to be adjusted to suite actual site conditions;	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
S7.4.1	WM4	Collection and Transportation of Waste The following recommendation should be implemented to minimize the impacts: • remove waste in timely manner; • employ the trucks with cover or enclosed containers for waste transportation; • obtain relevant waste disposal permits from the appropriate authorities; and • disposal of waste should be done at licensed waste disposal facilities.	Minimize waste impacts from storage	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
S7.4.1	WM5	Excavated and C&D Materials Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure acceptability at public fill reception facilities or reclamation sites. The following mitigation measures should be implemented in handling the excavated and C&D materials: • maintain temporary stockpiles and reuse excavated fill material for backfilling; • carry out on-site sorting; • make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; and • implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified, so as to avoid the illegal dumping and landfilling of C&D materials on farmlands/ riverbanks at TCW; The recommended C&D materials handling should include:	Minimize waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction Stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005 • Project Administrative Handbook for Civil Engineering Works, 2012 Edition

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		• On-site sorting of C&D materials • Reuse of C&D materials • Use of Standard Formwork and Planning of Construction Materials purchasing					
S7.4.1	WM6	Provision of Wheel Wash Facilities Wheel wash facilities have to be provided at the site entrance before the trucks leaving the works area. Dust disturbance due to the trucks transportation to the public road network could be minimized by such arrangement.	Minimize waste impacts from trucks transportation	Contractor	All construction sites	Construction Stage	N/A
S7.4.1	WM7	Excavated Contaminated Soil As a precaution, it is recommended that standard good site practice should be implemented during the construction phase to minimize any potential exposure to contaminated soils or groundwater.	Remediate contaminated soil	Contractor	All construction sites where applicable	Construction stage	• Practice Guide for Investigation and Remediation of Contaminated Land
S7.4.1	WM8	Excavated Marine Sediments Reference has been made to the sediment testing results. Possible mitigation measures to handle the contaminated/ uncontaminated sediment are summarized as follows. • All construction plant and equipment shall be designed and maintained to minimise the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location. • All vessels shall be sized such that adequate draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. • Adequate freeboard shall be maintained on barges to	Handle excavated sediment	Contractor	All construction sites where applicable	Construction stage	• ETWB-TCW 34/2002

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		ensure that decks are not washed by wave action.					
S7.4.1	WM9	<u>Dumping of excavated sediment</u> • Keep and produce logs and other records to demonstrate compliance and ensure journeys are consistent with designated locations • Comply with the conditions in the dumping permit. • All bottom dumping vessels (hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material. • The excavated sediment shall be placed into the disposal pit by bottom dumping. • Contaminated marine mud shall be transported by split barge of not less than 750m^3 capacity and capable of rapid opening and discharge at the disposal site. • Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Sediment adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site. • For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.	Handle excavated sediment	Contractor	All construction sites where applicable	Construction stage	• ETWB-TCW 34/2002
S7.4.1	WM10	<u>Chemical Waste</u>	Control the chemical waste and ensure proper	Contractor	All construction	Construction stage	• Waste Disposal

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producer. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste collector. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	storage, handling and disposal.		sites		(Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
S7.4.1	WM11	<u>General Refuse</u> • General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. • Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. • A reputable waste collector should be employed to remove general refuse on a daily basis.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance
S7.4.1	WM12	<u>Floating Refuse accumulated along the seawall</u> The floating refuse along seawall should be collected to avoid accumulation. In addition, proper seawall design should be employed, and regular checking and cleaning of floating refuse should be implemented.	Control floating refuse and ensure proper disposal	Contractor	Construction sites along seawall	Construction stage	• Waste Disposal Ordinance
Waste Management (Operational Waste)							
S7.4.2	WM13	<u>Illegal dumping and landfilling</u>	Prevent waste from	Relevant	All	Operational stage	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		As a Development Permission Area (DPA) plan will be issued by the Town Planning Board as a temporary measure before the formal Outline Zoning Plan (OZP) for Tung Chung New Town Extension is adopted, statutory right to guide and control the development and use of land would be authorised. Should there be illegal dumping and landfilling observed/ reported on nearby farmlands and riverbanks, the government authority should take all necessary actions including but not limited to prosecution to remediate the circumstances.	illegal dumping and landfilling	government departments	construction sites		
S7.4.2	WM14	<u>Municipal Solid Waste</u> • A reputable waste collector should be employed to remove general refuse on a daily basis. • A 4-bin recycling system for paper, metals, plastics and glass should be adopted together with a general refuse bin. They should be placed in prominent places to promote waste separation at source. All recyclable materials should be collected by recyclers.	Remove general refuse generated from the proposed development	FEHD/ Relevant Operators	All construction sites	Operational stage	• Waste Disposal Ordinance
S7.4.2	WM15	<u>Chemical Waste</u> • Localized chemical waste storage areas should be located close to the source of waste generation for temporary storage. Drum-type containers with proper labelling should be used to collect chemical wastes for storage at the designated areas. • A licensed collector should be employed for the chemical waste collection and the chemical wastes should be disposed at an appropriate facility, such as Chemical Waste Treatment Centre (CWTC) in Tsing Yi. • Collection receipts issued by the licensed collector showing the quantities and types of chemical waste taken off-site and details of the treatment facility should be kept for record.	Reduce chemical waste due to waste handling	Contractors/ Relevant Operators	All construction sites	Operational stage	

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S7.4.2	WM16	Floating Refuse accumulated along seawall • The floating refuse along seawall should be collected to avoid accumulation.	Control floating refuse and ensure proper disposal	MD	Along seawall	Operational stage	• Waste Disposal Ordinance
S7.4.2	WM17	Floating Refuse inside Marina • Floating refuse at the marina will be collected and disposed by the licensed waste collector and as required.	Reduce floating refuse washing up onto marina by currents and wind	Future operator	Marina	Operational stage	• Waste Disposal Ordinance

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Land Contamination							
S8.4.1	LC1	Undertaking environmental Site Inspection (SI) for all potentially contaminated sites as listed in the Contamination Assessment Plan (CAP).	Verify the land contamination potential before the commencement of construction	Project Proponent / Detailed Design Consultant / Private developer	All potentially contaminated sites as listed in the CAP	Prior to the construction stage	• Annex 19 of the TM-EIAO, Guidelines for Assessment of Impact On Sites of Cultural Heritage and Other Impacts (Section 3 : Potential Contaminated Land Issues); • Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management; • Guidance Notes for Contaminated Land Assessment and Remediation; and • Practice Guide for Investigation and Remediation of Contaminated Land

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							• Recommendations in Health Risk Assessment
S8.4.2	LC2	Re-appraisal would be required for the surveyed sites, other remaining areas of the PDAs and the works areas for the associated infrastructures because the development of these sites/ areas would only commence a number of years later, which may allow changes in the land usage of these sites and may give rise to potential land contamination issues. The Project Proponent's appointed consultant would prepare a supplementary CAP presenting the findings of the re-appraisal and strategy of the recommended SI, if required, and submit to EPD for review and approval.	To assess the latest site situation and identify any potential additional hot spots and contaminated sites.	Project Proponent / Detailed Design Consultant / Private developer	All the surveyed sites as listed in the CAP, other remaining areas of the PDAs and works areas for the associated infrastructures	Prior to the construction stage	Ditto
S8.5	LC3	After approval of the supplementary CAP and upon completion of the SI works, the PP should prepare and submit a Contamination Assessment Report (CAR) for all potentially contaminated sites listed in the CAP to EPD for agreement.	Present the findings of SI and evaluate the level and extent of potential contamination	Project Proponent / Detailed Design Consultant / Private developer	All the surveyed sites as listed in the CAP, other remaining areas of the PDAs and works areas for the associated infrastructures	Prior to the construction stage	Ditto
S.8.5	LC4	Preparation and submission of Remediation Action Plan (RAP) to EPD for agreement if land contamination is confirmed.	Recommend appropriate mitigation measures for the contaminated soil and groundwater identified in the	Project Proponent / Detailed Design Consultant / Private developer	All the surveyed sites as listed in the CAP, other remaining	Prior to the construction stage	Ditto

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			assessment if remediation is required		areas of the PDAs and works areas for the associated infrastructures		
S.8.5	LC5	Preparation and submission of Remediation Report (RR) to EPD for agreement.	Demonstrate that the decontamination work is adequate and is carried out in accordance with the endorsed CAR and RAP	Project Proponent / Detailed Design Consultant / Private developer	All the surveyed sites as listed in the CAP, other remaining areas of the PDAs and works areas for the associated infrastructures	Prior to the construction stage	Ditto

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Ecology (Design Phase)							
S9.8.1	EC1	Development under the Project have avoided all the recognised sites of conservation importance, including Country Parks,	To protect the recognised sites of conservation importance and habitats inside	PlanD	TCW	RODP	• Not available
S9.8.1	EC2	About 30m buffer zone at the two main branches and the joined outlet section of Tung Chung Stream; and about 20m buffer for the major tributary at Ngau Au of Tung Chung Stream	To protect the Tung Chung Stream	PlanD	Tung Chung Stream	RODP	• Not available
S9.8.2	EC3	Detailed designs should avoid the encroachment of important habitats (e.g. Fung Shui Wood) within the Project Site	To protect the important habitats within Project Site	PlanD	TCW	Design Phase	• Not available
S9.8.2	EC4	Detailed designs of noise barriers to prevent bird collision	To prevent bird collision	HyD	Noise barriers	Design Phase	• Guidelines on Design of Noise Barriers
S9.8.2	EC5	Measures and suitable designs of sewage pumping stations to prevent emergency discharge accidents in TCE and TCW • 100% standby pumping capacity within each SPS, with spare pump up to 50% pumping capacity stockpiled in each SPS for any emergency use • Twin rising mains • Dual-feed power supply • Emergency storage facilities up to 6-hours ADWF capacity; and • Emergency communication mechanism amongst relevant government departments.	To protect the water bodies from impacts due to emergency discharge in TCE and TCW	DSD	Proposed and Upgraded Sewage pumping stations at TCE and TCW	Design Phase	• DSD standards

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Ecology (Construction Phase)							
S9.8.2	EC6	Adoption of non-dredged reclamation method	To maintain the marine water quality	Contractor	Reclamation area of TCE and Road P1	Construction phase	• EIA • Contractual requirements
S9.8.3	EC7	Compensation woodland planting	To compensate loss of woodland, fung shui wood and orchard	Contractor	Uphill of Sheung Lei Pai FSW and Tung Chung Road	Construction phase	• EIA • Contractual requirements
S9.8.3	EC8	Planting of emergent plant	To provide habitats for this Jhora Scrub Hopper, and to compensate the loss of their habitats (wet abandoned agricultural land) in northern section of Fong Yuen	DSD / Contractor	Inside the future River Park	Construction phase	• EIA • Contractual requirements
S9.8.3	EC9	Capture-and-translocation exercise	Minimize the potential impact to amphibian species of conservation importance including Romer's Tree Frog and Chinese Bullfrog due to site formation	For public works, provided by the government departments responsible for the construction of those public works or the site formation works . For TCV-1 and	Public works near the eastern branch of Tung Chung Stream, in particular 1) the River Park, 2) the Distributor Road along	Capture-and-translocation exercise before commencement of site formation	• EIA • Contractual requirements • Explanatory statement of the OZP (for private lots)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
				TCV-5, where the lands within mostly belong to private lots, the future project proponents of those private lots, via the established mechanism for land transaction application.	the eastern branch of Tung Chung Stream, 3) the road upgrade along the existing Shek Mun Kap Road, and 4) the attenuation and treatment ponds in TCV-k, TCV-e, TCV-l, TCV-c, and TCV-n. Also be required in private lands in TCV-1 and TCV-5		
S9.8.3	EC10	Preservation and/or Transplantation of plant species of conservation importance and the following monitoring of preserved/transplanted plant individuals	Protection of plant species of conservation importance	For public works, provided by the government departments responsible for the construction of those public works or the site formation works.	Within construction sites All areas for public works Also be required in private lands	For preservation and/or transplantation, before commencement of site formation.	• EIA • Contractual requirements • Explanatory statement of the OZP (for private lots)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
				For TCV-1, where the lands within mostly belong to private lots, the future project proponents of those private lots, via the established mechanism for land transaction application.	in TCV-1.		
S9.8.3	EC11	Defining and maintaining construction site boundaries (including erection of site hoarding, fences etc.)	Screen construction disturbance to the nearby habitats	Contractor	Along the boundary of construction sites and buffer zones of Tung Chung Streams, along the boundary of mature woodland and Fung Shui Wood, and along the boundary between TCV-6 and the middle section of Fong Yuen	Before commencement of site formation	• EIA • Contractual requirements
S9.8.3	EC12	Protection of Tung Chung Stream	Minimize the potential water pollution due to	Contractor	Within construction	Construction	• EIA

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
			construction of road crossings or other works near Tung Chung Stream		sites	phase	• Contractual requirements
S9.8.3	EC13	Implementation of standard site practices	Minimize the potential impact due to dust, noise and runoff during construction phase	Contractor	Within construction sites	Construction phase	• EIA • Contractual requirements
S9.8.4	EC14	Adopting Eco-shoreline design	To mitigate the impact of the marine loss	CEDD	Along future seawall	Construction stage	• EIA • Contractual requirements
S9.8.4	EC15	Strict enforcement on no-dumping	Minimise the potential impact to marine habitats	Contractor	In reclamation area as well as all works area and travel route of works vessels	Before and during construction phase	• EIA • Contractual requirements
S9.8.4	EC16	Spill response plan	Minimise the potential impact to marine habitats	Contractor	In reclamation area as well as all works area and travel route of works vessels	Before and during construction phase	• EIA • Contractual requirements
S.9.8.4	EC17	Control and minimization of marine traffic by including using larger-sized barges, land transportation of materials, reuse of excavation and C&D materials and speed limits &	Reduce marine traffic	Contractor	In reclamation area as well	Construction phase	• EIA • Contractual

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
		regular routes of works vessels			as all works area and travel route of works vessels		requirements
S9.8.4	EC18	Dolphin exclusion zone and dolphin watching plan	Protection of CWD	Contractor	In reclamation area as well as all works area	Construction phase	• EIA • Contractual requirements
S9.8.4	EC19	Speed limits and regular routes of works vessels; Prepare and submit a "Works Vessel Travel Route Plan"	Protection of CWD	Contractor	In reclamation area as well as all works area	Construction phase	• EIA • Contractual requirements
S9.11.1	EC20	Monitoring of compensatory planting woodland	Monitor the survival of trees and establishment of the woodland	CEDD/ Contractor	Areas of compensatory woodland planting	Quarterly for 3 years after completion of planting works	• EIA • Contractual requirements
S9.11.1	EC21	Monitoring of translocated amphibians	Monitor the effectiveness of the translocation programme	Public works: Responsible government departments / Contractor Private lots: Private developers	Release sites for translocated amphibians	After translocation exercise. At least three surveys in each release site during the breeding season, preferably monthly between April and June,	• EIA • Contractual requirements • Explanatory statement of the OZP (for private lots)
S9.11.1	EC22	Monitoring of preserved / transplanted plant species	Monitor and evaluate	Public works:	Construction	After	• EIA

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
			the effectiveness of the preservation and transplantation programme.	Responsible government departments / Contractor Private lots: Private developers	sites for preserved plants; recipient sites for transplanted plants	transplantation or preservation. For transplanted individuals, for two years, monthly for the first year, and then quarterly for the second year. For the preserved individuals, monthly throughout the construction.	• Contractual requirements • Explanatory statement of the OZP (for private lots)
S9.11.1	EC23	Monitoring of Tung Chung Stream and Wong Lung Hang Stream EISs	Protect the EISs	Contractor	Tung Chung Stream and Wong Lung Hang Stream	Construction phase and post-construction phase	• EIA • Contractual requirements
9.11.2	EC24	Monitoring of Tung Chung Bay and Tai Ho Wan	Protect Tung Chung Bay and Tai Ho Wan	Contractor	Tung Chung Bay and Tai Ho Wan	Construction phase and post-construction phase	• EIA • Contractual requirements
Ecology (Operational Phase)							
S9.11.1	EC25	Monitoring of emergent plant inside River Park	Monitor the survival of emergent plant	DSD/ Contractor	Three months after completion of planting in future River Park	Quarterly for 2 years after completion of planting works	• EIA • Contractual requirements

Environmental Mitigation Implementation Schedule – Tung Chung New Town Extension

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9.11.2	EC26	Eco-shoreline monitoring	Monitor the colonisation and establishment of fauna and/or flora, water quality, and recruitments of fisheries species	CEDD/ Contractor	Eco-shoreline at TCE PDA reclamation	Post-construction phase, twice in wet and dry seasons respectively, at least 3 years, subject to review	• EIA • Contractual requirements

Environmental Mitigation Implementation Schedule – Tung Chung New Town Extension

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
Fisheries							
S10.8	F1	Good Site Practices	To protect the fisheries resources	Contractor	In reclamation area	Construction phase	• EIA • Contractual requirements
S10.8	F2	No dumping	To protect the fisheries resources	Contractor	In reclamation area	Construction phase	• EIA • Contractual requirements
S10.8	F3	Spill response plan	To protect the fisheries resources	Contractor	In reclamation area	Construction phase	• EIA • Contractual requirements
S10.9	F4	Follow the mitigation measures proposed in the water quality assessment for the construction and operation phases of the project.	To protect the fisheries resources	Contractor	Waters in Northern Lantau	Construction phase and operation phase	• EIA • Contractual requirements
S10.9	F5	Follow the mitigation measure of eco-shoreline in ecology chapter for the construction and operation phases of the project.	To enhance the fisheries resources	Contractor	Eco-shorelines	Construction phase and operation phase	• EIA • Contractual requirements

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Landscape and Visual (Construction Phase)							
S11.7 MM1	LV1	Optimisation of Construction Areas & Providing Temporary Landscape on Temporary Construction – Construction areas' control shall be enforced, where possible, to ensure that the landscape and visual impacts arising from the construction activities are minimised. It includes reduction of the extent of working areas and temporary works areas, management on storing and using the construction equipment and materials, and consideration of detailed schedules to shorten the construction period. Temporary landscape treatments are considered to be adopted such as applying hydro-seeding on temporary stockpiles and reclamation areas to alleviate the potential impacts.	Minimise the landscape and visual impacts arising from the construction activities	Relevant Government Departments / Private Sector	Through-out Tung Chung West (TCW) area and Tung Chung East (TCE) area	Construction Phase	
S11.7 MM2	LV2	Minimize Topographical Change – The footprint of construction elements and temporary works areas should be optimised to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls and cut slopes should be considered as appropriate. To minimize landform changes and land resumption, earthworks and engineered slopes should be designed to be a visually interesting, compatible with the surrounding landscape and to mimic the natural contouring and terrain as appropriate.	Reduce topographical changes and minimize land resumption	Relevant Government Departments / Private Sector	Through-out TCW area	Prior to Construction & Construction Phase	• GEO Publication No/1/2011, Technical Guidelines on Landscape Treatment for Slopes
S11.7 MM3	LV3	Preservation of Potentially Registerable OVTs, Rare and Protective Vegetation – Exiting trees to be retained within the Project Site should be carefully protected during construction. In particular Potentially Registerable OVTs are considered to be preserved according to ETWB	Protect and Preserve Trees	Relevant Government Departments / Private Sector	Onsite, particularly for TCW area	Prior to Construction & Construction Phase	• ETWB TC(W) No.29/2004 and DEVB TC(W)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
		Technical Circular (Works) No. 29/2004. Rare and Protective Vegetation shall be protected following Forestry Regulations (Cap.96) and Protection of Endangered Species of Animals and Plants Ordinance (Cap.586). Detailed Tree Protection Specification shall be provided in the Contract Specification according to DEVB TCW No. 10/2013 Tree Preservation. Following DEVB (GLTM) Guidelines for Tree Preservation during Development, 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. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.					No.10/2013. • Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau, Guidelines on Tree Preservation during Development (April, 2015)
S11.7 MM4	LV4	Transplanting of Existing Trees – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor locations within the site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme. A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with DEVB TCW 10/2013 and LAO PN 7/2007 and final locations of transplanted trees should be agreed prior to commencement of the work. For trees associated with highways e.g. roadside planting	Transplant Trees where suitable for transplantation	Relevant Government Departments / Private Sector	Onsite where possible, otherwise consider offsite locations	Prior to Construction & Construction Phase	• DEVB TC(W) No.10/2013 and LAO PN7/2007 • HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
		along highways, that are unavoidably affected and should be transplanted. HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.					Ambit • GLTM of the Development Bureau, Guidelines on Tree Preservation during Development (April, 2015)
S11.7 MM5	LV5	Screen hoarding – To reduce negative visual impact, construction site hoarding should be erected around the site to screen pedestrian level views into the construction area from visual sensitive receivers. Hoarding design should consider greening measures such as colour and form should be adopted to improve its visual appearance.	To screen undesirable views of the work site.	Relevant Government Departments / Private Sector	Through-out TCW and TCE areas	Construction Phase	
S11.7 MM6	LV6	Adopting Non-dredge Method for the Reclamation – In order to minimize the potential adverse impacts caused by the reclamation, a number of alternative construction methodologies has been critically examined. After considering all the options such as fully dredged, partially dredged and non-dredged methods for seawall construction and reclamation, non-dredged method for both the seawall construction and reclamation are recommended so as to minimize the generation of dredged sediment.	Minimize the potential adverse impacts caused by the reclamation	Relevant Government Departments / Private Sector	Through-out TCE area	Construction Phase	• Foreshore and Sea-bed (Reclamations) Ordinance (Cap.127)
S11.7 MM7	LV7	Protection of Natural Rivers and Streams – For all the natural rivers and streams inside the development area, in accordance with ETWB TCW 5/2005, consideration of protection measures should be made to minimize any impacts from the construction works, especially those	Protection of Natural Rivers and Streams Minimize the impacts from the construction works	Relevant Government Departments / Private Sector	Through-out TCW area	Prior to Construction & Construction Phase	• EPD ProPECC PN1/94 Construction Site Drainage. • DSD Technical

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
		development near Tung Chung Stream. According to the latest RODP, a 30m buffer zone will be zoned as "CA". Precast structures or other similar approaches will be used to prevent / minimise any construction works in river and thus to avoid any direct water quality impact. Good site management as stipulated in ProPECC PN1/94 will be fully implemented to avoid polluted liquid or solid wastes from falling into the river waters.					Circular No. 2/2004. • ETWB TC(W) No.5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works
S11.7 MM8	LV8	Preservation of Natural Coastline – The natural coastline along the proposed "RO" of the RODP in TCW should be preserved. The remaining natural shorelines in Tung Chung Bay including sandy shores close to the Tung Chung old pier will be conserved as a Waterfront Park according to the latest RODP.	Preservation of Natural Coastline	Relevant Government Departments	Onsite where possible	Prior to Construction & Construction Phase	
S11.7 MM9	LV9	Providing Natural Rock Material/ Planting for Artificial Seawall – There would be inevitable permanent losses of marine waters (seabed and water column), and direct impacts on existing artificial seawalls due to the reclamation. To minimize the impacts, the design of the future seawall like 'eco-shoreline' could be improved to provide high ecological functions and mitigate the impact of the loss. An 'eco-shoreline' is any shoreline which provides beneficial functions to the local ecosystem through a range of active or passive solutions, whilst providing coastal protection. By means of using natural rock materials for artificial seawall and considering to introduce a native vegetation buffer directly behind the top of seawalls as appropriate to create habitat, shelter and a source of food	Mitigate the impacts on existing artificial seawalls	Relevant Government Departments	Onsite where possible	Prior to Construction & Construction Phase	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
		for benefiting both terrestrial and aquatic species along the foreshore, these measures can help to enhance the ecological functions and 'natural-look' of the shoreline, and the potential impacts will be mitigated.					
Landscape and Visual (Operational Phase)							
S11.7 MM10	LV10	Compensatory Planting – Compensatory planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under DEVB TCW No. 10/2013 and LAO PN 7/2007. The location of compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes including roadside planting, as well as the open areas within development lots. The species to be planted should be all native species, taken "Characteristics of Major Local Tree Species Propagated by AFCD" as a reference. A search of species to be planted will be conducted in a further detailed stage.	Compensate for trees and shrubs lost due to the Project	Relevant Government Departments / Private Sector	Onsite where possible, particular-ly for TCW area	Prior to Construction, Construction Phase & Maintenance in Operation Phase	• DEVB TC(W) No.10/2013 and LAO PN 7/2007. • GLTM of the Development Bureau, Guidelines on Tree Preservation during Development (April, 2015)
S11.7 MM11	LV11	Woodland Restoration – A search of area to mitigate the loss of woodland has been conducted. Priority has been given to the practicability of compensation of woodland within the boundary of RODP. Given the nature of the project is to provide development opportunities to satisfy the needs for the society in general and the aspirations of local communities, compensation of woodland is only possible for the areas beyond the RODP. It is considered that the areas adjoining the woodlands near the existing services reservoirs, and hillsides to the east of Tung Chung Road, would be suitable locations. The advantage of these locations is that there are existing woodlands immediately	Reprovide areas of woodland to compensate for those areas of quality woodland lost	CEDD /AFCD	In areas identified and as agreed with AFCD	Prior to Construction, Construction Phase & Maintenance in Operation Phase	• DEVB Technical Circular Works 10/2013- Tree Preservation • GLTM of the Development Bureau, Guidelines on Tree Preservation

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		downhill to the location and the Sheung Ling Pei Fung Shui Wood is further downhill behind Sheung Ling Pei Village, planting new woodland areas adjoining existing woodlands would form an ecological linkage and increase the overall habitat size, and hence would help to enhance the ecological and landscape values in the long run. It is noted that the compensation trees for landscape impacts will also be planted near the future service reservoirs. The tree species to be planted should be all native species for woodland compensation, and the two areas uphill to Sheung Ling Pei should also make reference to the existing tree species reported in Fung Shui Woods habitat.					during Development (April, 2015)
S11.7 MM12	LV12	Screen Planting – Tall screen/buffer trees and shrubs should be planted to screen proposed structures such as roads and buildings. This measure will form part of the compensatory planting and will improve compatibility with the surrounding environment and create a pleasant pedestrian environment.	To screen proposed structures Improve compatibility with the surrounding environment	Relevant Government Departments	Through-out the working sites of the TCW and TCE areas	Prior to Construction, Construction Phase & Maintenance in Operation Phase	• HyD HQ/GN/15– Guidelines for Greening Works along Highways.
S11.7 MM13	LV13	Roadside Planting – Roadside greening is proposed alongside all roads within the possible developments. It will enhance local identity, if theme planting is used, and reduce visual impact through screening. At-grade road planting should be considered along central dividers and on road islands e.g. in the middle of roundabouts.	Soften the hard, straight edges and provide greening along the roads; Improve the visual amenity	Relevant Government Departments	Along new roads, and On appropriate viaducts	Prior to Construction, Construction Phase & Maintenance in Operation Phase	• HyD HQ/GN/15– Guidelines for Greening Works along Highways. • Development Bureau Technical Circular Works No.2/2012 – Allocation of Space for Quality

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
							Greening on Roads

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
S11.7 MM14	LV14	Aesthetic Design of Built Development – The planning of the revised RODP has considered reducing potential visual impacts, enhancing visual amenity and keeping visual corridors. The proposed development will ensure the building massing is compatible with its surroundings. To improve visual amenity, natural building materials could be used on building facades. For example, stone and timber should be considered for architectural features; light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should be considered for the façade treatment to reduce the visibility of the development components. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. It would only be implemented for public developments/projects.	Improve visual amenity of the new buildings, keep visual corridors and integrate as possible into the surrounding landscape	Relevant Government Departments	Through-out the TCW and TCE areas	Prior to Construction, Maintenance in Operation Phase	• Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); • PNAP APP-152, Sustainable Building Design Guidelines
S11.7 MM15	LV15	Maximise Greening on Structures – The Government has been actively promoting greening in buildings and structures such as bridges to improve the environment. This includes actively implementing rooftop greening or vertical greening, as where practicable to enhance the cityscape and mitigate the heat island effect in urban areas. For the new built forms in TCW and TCE, it is considered the implementation of the following greening measures could alleviate the landscape and visual impacts of new development and help the development blend in with its surrounding landscape: • Sky Garden: Refuge floors or voids in building mass formed by partial removal of floor plates on certain building storeys or provision of freed up areas on certain building storeys provide opportunities for sky gardens for the proposed built development. It can allow views through the development to the background formed by the natural hillsides and	Maximise Greening coverage Enhance visual amenity, create visual corridors and integrate as possible into the surrounding landscape	Relevant Government Departments	On appropriate buildings and structures	Prior to Construction, Construction Phase & Maintenance in Operation Phase	• Development Bureau Technical Circular (Works) No. 3/2012 Site Coverage of Greenery for Government Building Projects • PNAP APP-152, Sustainable Building Design Guidelines

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
		enhance the visual amenity effectively. For public developments, relevant technical document Technical Circular (Works) No. 3/2012 Site Coverage of Greenery for Government Building Projects by Development Bureau in 2011 shall be referred to. For private developments, it is only applicable to sites with inadequate greening coverage and should be implemented in accordance with Sustainable Building Design Guidelines PNAP APP-152. • Green Roof: The Architectural Services Department completed the Study on Green Roof Application in Hong Kong in 2007 which reviewed the latest concepts and design technology of green roof and recommended technical guidelines suitable for application in Hong Kong. The study will be taken into account to the new buildings to be built in TCW and TCE. Landscape and visual impact can be alleviated and the landscape and visual value can be enhanced. For private development, it is only applicable to sites with inadequate greening coverage and should be implemented in accordance with Sustainable Building Design Guidelines PNAP APP-152. Relevant technical document Technical Circular (Works) No. 3/2012 Site Coverage of Greenery for Government Building Projects by Development Bureau in 2011 shall be reference. For public developments, relevant technical document Technical Circular (Works) No. 3/2012 Site Coverage of Greenery for Government Building Projects by Development Bureau in 2011 shall be referred to. For private developments, it is only applicable to sites with inadequate greening coverage and should be implemented in accordance with Sustainable Building Design Guidelines PNAP APP-152. • Vertical Green: Planting of climbers to grow up					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
		vertical surfaces where appropriate (e.g. building edges), to soften hard structures and facilities. Relevant technical document Technical Circular (Works) No. 3/2012 Site Coverage of Greenery for Government Building Projects by Development Bureau in 2011 shall be observed. For public developments, relevant technical document Technical Circular (Works) No. 3/2012 Site Coverage of Greenery for Government Building Projects by Development Bureau in 2011 shall be reference. For private development, it is only applicable to sites with inadequate greening coverage and should be implemented in accordance with Sustainable Building Design Guidelines PNAP APP-152. • Greening on infrastructure: Planting could be provided on infrastructure such as bridges where appropriate to enhance greenery to soften its built edges. Screen planting could be provided near infrastructure to reduce any undesirable visual impacts.					
S11.7 MM16	LV16	Noise barrier design – The visual impact of noise mitigation measures will be mitigated by appropriate detailed design, including suitable combination of transparent and sound absorbent materials, appropriate colour selection of panels and supporting structures, or provision of at-grade planting of trees, shrubs and/or climbers camouflage to the barriers, as well as design of supporting structures to incorporate a high level of quality and aesthetics. A combination of transparent panels at top and solid panels at bottom would lighten the visual impact, and at the same time maintain the attractiveness by using colourful panels. The noise barriers would be implemented for District Distributor Roads and Local Distributor Roads at both TCE and TCW area.	Minimize the visual impact from the structures of noise barriers	HyD	Noise barriers within the TCW and TCE areas	Prior to Construction, Construction Phase & Maintenance in Operation Phase	• GLTM of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012). • Guidelines on Design of Noise Barriers by HyD and EPD in 2003

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
S11.7 MM17	LV17	Landscape Treatment for Polders & Attenuation Ponds – There would be polders and attenuation ponds in TCW. While they are primarily used for receiving and treating surface runoff and alleviating the flood risk during heavy rainfall, the design of those has provided an opportunity to have a synergy to enhance both the ecological and landscape values together. Depending on detailed design, part of these attenuation ponds (mainly the biofiltration zone) could be refined in an appropriate manner, without compromising its primary functions of treating surface runoff and flood protection, to incorporate ecological and landscape design such as planting of aquatic plants and butterfly foodplant for providing the landscape and ecological enhancement.	Enhance the landscape and visual value	DSD	Polders & Attenuation Ponds where possible	Prior to Construction, Construction Phase & Maintenance in Operation Phase	
Landscape and Visual (Construction & Operational Phase)							
S11.7 MM18	LV18	Landscaping on Slopes – Hydro seeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes where condition allow.	Enhance landscape value, plant diversity and their visual appearance	CEDD	Onsite, particularly in TCW area	Prior to Construction, Construction Phase & Maintenance in Operation Phase	• GEO Publication No.1/2011 Technical Guidelines on Landscape Treatment for Slopes by CEDD in 2011
S11.7 MM19	LV19	Landscape Treatment on Channelized Watercourses – For the channelized watercourses in Tung Chung Stream that will be dechannelized, the Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental Considerations for River Channel Design, should be considered and appropriate measures included ensuring the new watercourses match the existing as far as possible.	Avoid direct impacts on the watercourse Improve the visual amenity	CEDD	The channelized watercourses throughout the TCW area	Prior to Construction, Construction Phase & Maintenance in Operation Phase	• Drainage Services Department Practice Note No.1/2005 – Guidelines on Environmental

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location	Implementation Stage	Requirements and / or standards to be achieved
		Measures can include enhancement planting to upgrade the channels as appropriate, including consideration of wetland planting along embankments where appropriate; as well as consideration of the best materials for the channel lining (e.g. gabion).					Considerations for River Channel Design
S11.7 MM20	LV20	Light Control – Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the construction stage. Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase.	Minimize negative glare impact to adjacent VSRs	Relevant Government Departments / Private Sector	Through-out the TCW and TCE areas	Construction Phase & Operation Phase	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Cultural Heritage Impact (Construction and Operational Phase)							
S.12.5	CH1	Terrestrial Archaeology • Implement rescue excavations/ survey-cum-rescue excavations/ further surveys after land resumption and prior to any construction works (see **Figure 14.1** for the locations of rescue excavations/survey-cum-rescue excavations/further survey)	1) Rescue excavations to salvage archaeological data and cultural materials 2) Survey-cum-rescue excavations to better locate and design the follow up rescue excavations 3) Further surveys to obtain sufficient data for formulation of appropriate mitigation measures	Contractor / Future Private Developer	After land resumption and prior to any construction works	After land resumption and prior to any construction works	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • Antiquities and Monuments Ordinance
S.12.5	CH2	Terrestrial Archaeology • Implement watching brief during construction phase (see **Figure 14.1** for the locations of watching brief)	To identify and record any archaeological material or features revealed during construction phase	Contractor / Future Private Developer	During construction phase	During construction phase	

Environmental Mitigation Implementation Schedule – Tung Chung New Town Extension

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
EM&A Project							
S13.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO
S13.2 – 13.4	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Project Proponent	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO

ET's note: Pages B-53 and B-54 are not relevant to the Project works in Tung Chung West and therefore not presented.

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Post-planting Monitoring and Maintenance (Details to be provided after the submission of Detailed Compensatory Woodland Planting Plan as required under EP Condition 2.22)							

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Use of New Low Noise Road Surfacing Material(s) (Details to be provided after the submission of Plan for Review of Use of New Low Noise Road Surfacing Material(s) as required under EP Condition 2.23)							

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
Follow-up actions to be taken by the Contractor and Dump Truck Drivers in case of Illegal Dumping and Landfilling of C&D Materials (Extracted from Waste Management Plan submitted under Condition 2.24 of the EP)							
S5.4	WM1	Investigation report will be prepared by the Contractor and submit to ER within 2 working days.	Control EM&A Performance	Contractor	All constructi on sites	Construction stage	• EP • Contractual requirements
S5.4	WM2	The Contractor will discuss with ER for the follow up actions (e.g. warning letter, cease operation, etc.) if required.	Control EM&A Performance	Contractor	All constructi on sites	Construction stage	• EP • Contractual requirements

D. Status of Submissions and Implementation Status of Mitigation Measures under EP

Appendix D: Status of Submissions and Implementation Status of Mitigation Measures under EP

EP Condition	Submission / Implementation Status	Status
2.1	Set up of Community and Professional Liaison Groups	Community and Professional Liaison Groups were set up
2.1	Complaint Management Plan (for Contracts 5 and 6)	Accepted by EPD
2.5	Employment of Qualified Ecologist(s)	Qualified Ecologists have been employed to carry out work relating to ecological aspects
2.6	Employment of Surveillance Team	Surveillance Team has been employed to conduct regular site inspection
2.11	Management Organisations (for Contracts 5 and 6)	Accepted by EPD
2.12	Construction Works Schedule and Location Plans (for Contracts 5 and 6)	Accepted by EPD
2.18	Plan on Provision of Buffer Zones	Accepted by EPD
2.19	River Park Plan	Revised Submission submitted to EPD on 6 Jan 2022
2.20	Habitat Enhancement and Translocation Plan for Amphibian Species of Conservation Importance	Accepted by EPD
2.21	Detailed Preservation and/or Translocation Plan for Plant Species of Conservation Importance	Revised Submission submitted to EPD on 30 Mar 2022
2.22	Detailed Compensatory Woodland Planting Plan	Revised Submission submitted to EPD on 14 Dec 2021
2.23	Plan for Review of Use of New Low Noise Road Surfacing Material(s)	Revised Submission submitted to EPD on 2 Dec 2021
2.24	Waste Management Plan (for Contracts 5 and 6)	Accepted by EPD
2.31	Implement Plan on Provision of Buffer Zones, River Park Plan, Habitat Enhancement and Translocation Plan for Amphibian Species of Conservation Importance, Detailed Preservation and/or Translocation Plan for Plant Species of Conservation Importance and Detailed Compensatory Woodland Planting Plan	Provision of Buffer Zones and Habitat Enhancement and Translocation Plan for Amphibian Species of Conservation Importance are under implementation. Others are to be implemented.
2.32	Implement Plan for Review of Use of New Low Noise Road Surfacing Material(s)	To be implemented
2.32	Implement Waste Management Plan	Under implementation
2.33	Install noise barriers and low noise road surfacing at the extended Chung Mun Road and Road D3. All noise mitigation measures implemented shall be properly maintained during the operation of the above roads.	To be implemented
2.34	Implement a deodouriser with an odour removal efficiency of at least 95% shall be installed, operated and maintained within each sewage pumping station. The exhaust of the deodouriser shall be oriented away from sensitive receivers; and all odourous facilities of each sewage pumping station shall be enclosed and negative pressure shall be maintained within the facilities.	To be implemented
2.35	Enclose all the pumps inside a building structure	To be implemented

EP Condition	Submission / Implementation Status	Status
2.36	(i) a 100% standby pumping capacity shall be installed and maintained;	To be implemented
	(ii) a 50% spare pumping capacity shall be installed and maintained;	To be implemented
	(iii) dual-feed power supply shall be installed and maintained; and	To be implemented
	(iv) an emergency facility with a 6-hour storage capacity of average dry weather flow shall be installed and maintained.	To be implemented

E. Status of Statutory Environmental Requirements

Appendix E: Status of Statutory Environmental Requirements

Contract No.	Description	Location	Ref. No.	Status
General	Environmental Permit	TCW Works Areas	EP-519/2016	Issued on 9 Aug 2016
NL/2020/05 ("Contract 5")	Billing Account for Disposal of Construction Waste	Contract 5 works areas	Account No. 7040874	Issued on 25 Jun 2021
	Registration as Chemical Waste Producer	Contract 5 works areas	WPN 5213-950-B2634-01	Issued on 13 Jul 2021
	Discharge Licence under Water Pollution Control Ordinance	Tung Chung Road North, Tung Chung	476376	Application submitted to EPD on 24 Jan 2022
		Cheung Tung Road, Tai Ho Wan, Tung Chung	476380	Application submitted to EPD on 24 Jan 2022
	Construction Noise Permit	-	-	-
NL/2020/06 ("Contract 6")	Billing Account for Disposal of Construction Waste	Contract 6 works areas	Account No. 7040815	Issued on 17 Jun 2021
	Registration as Chemical Waste Producer	Contract 6 works areas	WPN 5213-950-C4603-01	Issued on 13 Jul 2021
	Discharge Licence under Water Pollution Control Ordinance	Pumping Station at Chung Mun Road	WT00039653-2021	Valid from 17 Jan 2022 to 31 Jan 2027
		Contract 6 works areas	474634	Application submitted to EPD on 7 Dec 2021
	Construction Noise Permit	-	-	-

F. Air Quality

F1. Locations of Air Quality Monitoring Stations

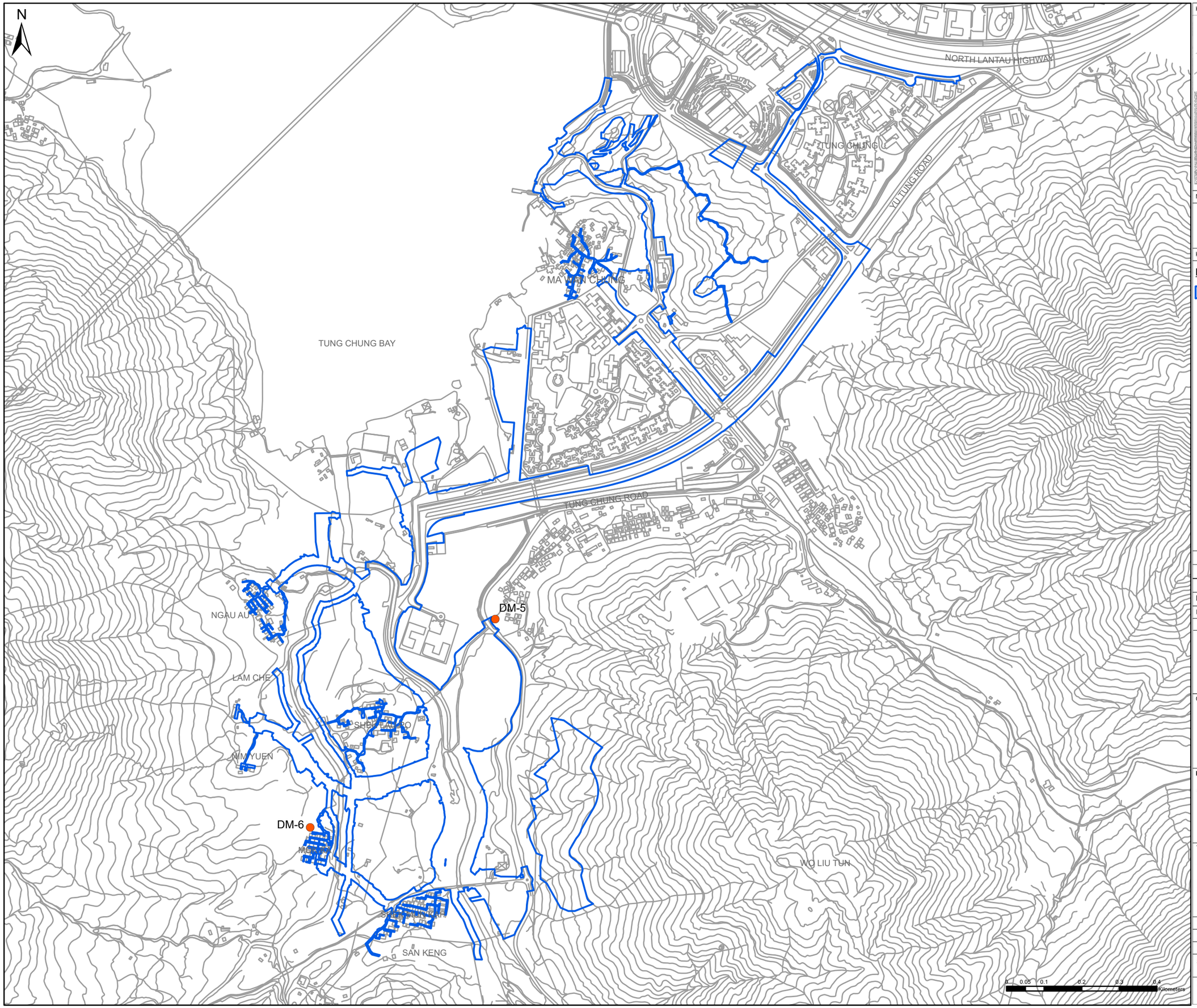
F2. Air Quality Monitoring Equipment Calibration Certificates

F3. Air Quality Monitoring Schedule

F4. Air Quality Monitoring Results

F5. Air Quality Monitoring Event and Action Plan

F1. Locations of Air Quality Monitoring Stations



Key Plan: 1:140,000

Notes:

Key to symbols:

LEGEND

- PROJECT AREA
- AIR QUALITY MONITORING STATION

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 2021	KN		LL	TC

MOTT MACDONALD
3/F International Trade Tower
348 Kwun Tung Road
Kwun Tung, Kowloon
Hong Kong
T +852 2828 5757
F +852 2827 1823
W mottmac.com

Client

CEDD 土木工程拓展署 Civil Engineering and Development Department

Project

AGREEMENT NO. CE 64/2020(EP)
ENVIRONMENTAL TEAM FOR
TUNG CHUNG NEW TOWN EXTENSION (WEST)
– DESIGN AND CONSTRUCTION

Title

LOCATIONS OF AIR QUALITY MONITORING STATIONS

Designed			Eng check		
Drawn			Coordination		
Dwg check			Approved		
Scale at A3		Status		Rev	

Drawing Number

APPENDIX F1

F2. Air Quality Monitoring Equipment Calibration Certificates

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	: **HK2144588**
CLIENT	: **ENVIROTECH SERVICES CO.**		
ADDRESS	: RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 2-NOV-2021
		DATE OF ISSUE	: 11-NOV-2021
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Calibration was subcontracted to and analysed by Action-United Environmental Services & Consulting.**

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	*Position*
Richard Fung	Managing Director

This is the Final Report and supersedes any preliminary report with this batch number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 **www.alsglobal.com**

WORK ORDER : HK2144588
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2144588-001	S/N: 276019	Equipments	02-Nov-2021	S/N: 276019

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	276019
Equipment Ref:	Nil
Job Order	HK2144588

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	5 November 2021

Equipment Verification Results:

Verification Date: 5 November 2021

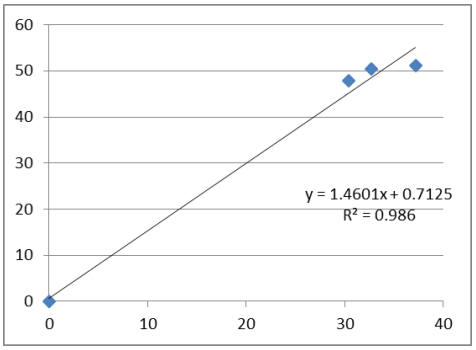
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
2hr01min	09:11 ~ 11:12	25.6	1012.5	51.2	4508	37.2
2hr01min	11:15 ~ 13:16	25.6	1012.5	47.8	3690	30.4
2hr02min	13:20 ~ 15:22	25.6	1012.5	50.4	3979	32.7

Linear Regression of Y or X

Slope (K-factor): 1.4601 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9930

Date of Issue 8 November 2021



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 1.4601 (µg/m^3)/CPM should be applied for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Fai So Signature : Date : 8 November 2021

QC Reviewer : Ben Tam Signature : Date : 8 November 2021

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	5-Nov-21
Location ID :	Calibration Room	Next Calibration Date:	5-Feb-22

CONDITIONS

Sea Level Pressure (hPa)	1012.5	Corrected Pressure (mm Hg)	759.375
Temperature (°C)	25.6	Temperature (K)	299

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10574
Model->	5025A	Qstd Intercept ->	-0.00985
Calibration Date->	19-Jan-21	Expiry Date->	18-Jan-22

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.675	52	51.93	Slope = 24.2092
13	5	5	10.0	1.504	48	47.93	Intercept = 10.8881
10	3.9	3.9	7.8	1.329	42	41.94	Corr. coeff. = 0.9959
8	2.5	2.5	5.0	1.065	36	35.95	
5	1.0	1.0	2.0	0.675	28	27.96	

Calculations :

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

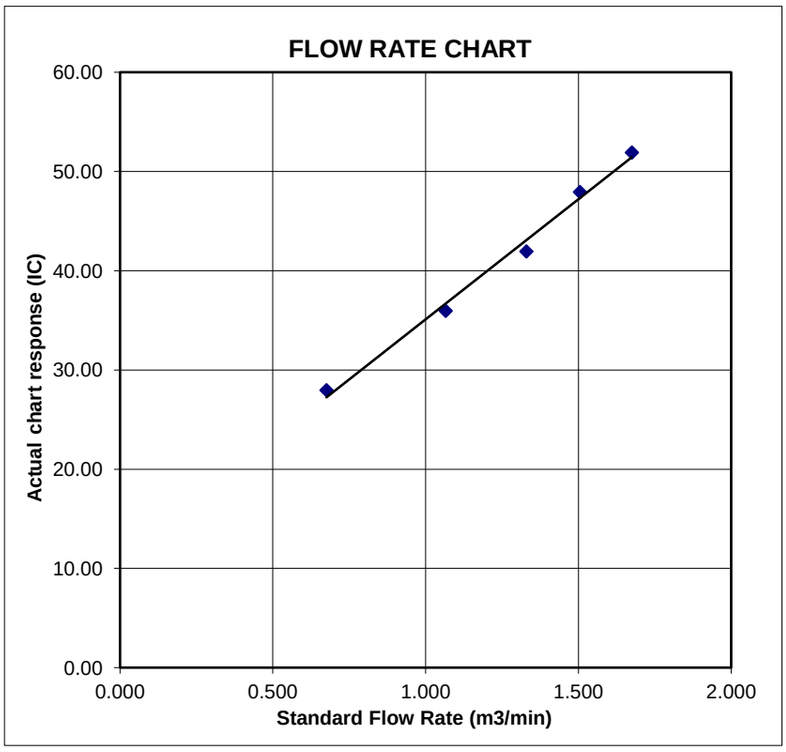
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
January 19, 2022

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	January 19, 2021	**Rootsmeter S/N:** 438320	**Ta:** 294	°K
Operator:	Jim Tisch		**Pa:** 755.1	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **1941**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4830	3.2	2.00
2	3	4	1	1.0420	6.4	4.00
3	5	6	1	0.9290	8.0	5.00
4	7	8	1	0.8840	8.8	5.50
5	9	10	1	0.7340	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)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0029	0.6762	1.4192	0.9958	0.6715	0.8824
0.9986	0.9583	2.0071	0.9915	0.9516	1.2479
0.9965	1.0726	2.2440	0.9894	1.0650	1.3952
0.9954	1.1260	2.3535	0.9883	1.1180	1.4633
0.9899	1.3487	2.8385	0.9829	1.3391	1.7648
QSTD	**m=**	**2.10574**	**QA**	**m=**	**1.31858**
	b=	**-0.00985**		**b=**	**-0.00612**
	r=	**0.99992**		**r=**	**0.99992**

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	:	**HK2146425**
CLIENT	: **ENVIROTECH SERVICES CO.**			
ADDRESS	: RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH	:	1
		DATE RECEIVED	:	11-NOV-2021
		DATE OF ISSUE	:	22-NOV-2021
PROJECT	: ----	NO. OF SAMPLES	:	1
		CLIENT ORDER	:	----

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Calibration was subcontracted to and analysed by Action-United Environmental Services & Consulting.**

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	*Position*
Richard Fung	Managing Director

This is the Final Report and supersedes any preliminary report with this batch number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group
11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK2146425
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2146425-001	S/N: 6Z7784	Equipments	11-Nov-2021	S/N: 6Z7784

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	6Z7784
Equipment Ref:	Nil
Job Order	HK2146425

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	5 November 2021

Equipment Verification Results:

Verification Date: 16 November 2021

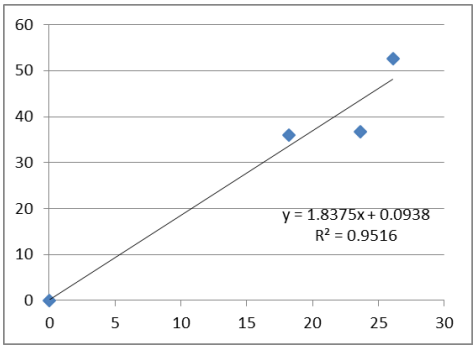
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
2hr01min	09:17 ~ 11:18	23.2	1017	36.0	2196	18.2
2hr01min	11:22 ~ 13:23	23.2	1017	36.7	2850	23.6
2hr01min	13:27 ~ 15:28	23.2	1017	52.5	3151	26.1

Linear Regression of Y or X

Slope (K-factor): 1.8375 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9755

Date of Issue 19 November 2021



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 1.8375 (µg/m^3)/CPM should be applied for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Fai So Signature : Date : 19 November 2021

QC Reviewer : Ben Tam Signature : Date : 19 November 2021

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	5-Nov-21
Location ID :	Calibration Room	Next Calibration Date:	5-Feb-22

CONDITIONS

Sea Level Pressure (hPa)	1012.5	Corrected Pressure (mm Hg)	759.375
Temperature (°C)	25.6	Temperature (K)	299

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10574
Model->	5025A	Qstd Intercept ->	-0.00985
Calibration Date->	19-Jan-21	Expiry Date->	18-Jan-22

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.675	52	51.93	Slope = 24.2092
13	5	5	10.0	1.504	48	47.93	Intercept = 10.8881
10	3.9	3.9	7.8	1.329	42	41.94	Corr. coeff. = 0.9959
8	2.5	2.5	5.0	1.065	36	35.95	
5	1.0	1.0	2.0	0.675	28	27.96	

Calculations :

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

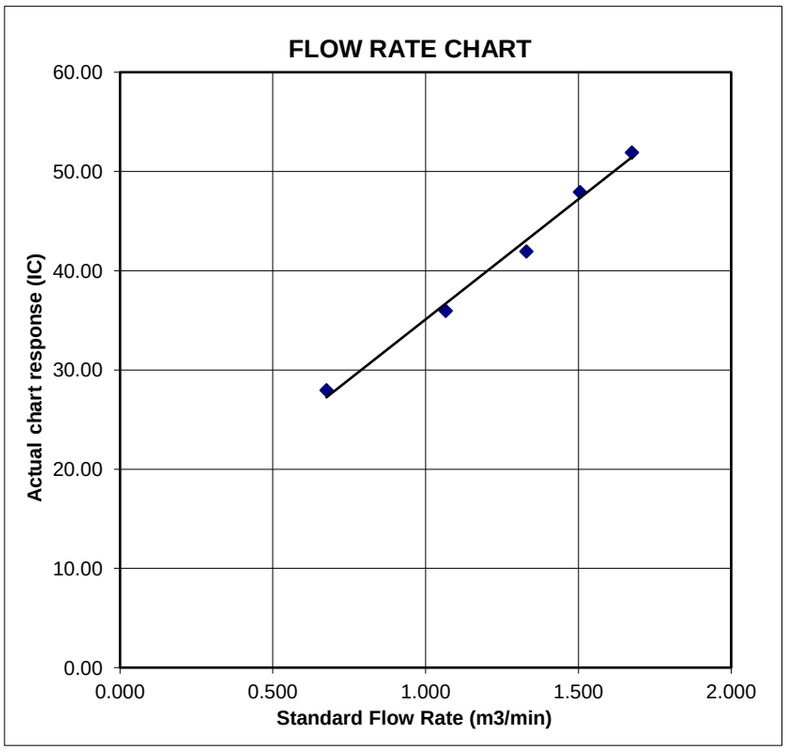
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
January 19, 2022

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	January 19, 2021	**Rootsmeter S/N:** 438320	**Ta:** 294	°K
Operator:	Jim Tisch		**Pa:** 755.1	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **1941**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4830	3.2	2.00
2	3	4	1	1.0420	6.4	4.00
3	5	6	1	0.9290	8.0	5.00
4	7	8	1	0.8840	8.8	5.50
5	9	10	1	0.7340	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)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0029	0.6762	1.4192	0.9958	0.6715	0.8824
0.9986	0.9583	2.0071	0.9915	0.9516	1.2479
0.9965	1.0726	2.2440	0.9894	1.0650	1.3952
0.9954	1.1260	2.3535	0.9883	1.1180	1.4633
0.9899	1.3487	2.8385	0.9829	1.3391	1.7648
QSTD	**m=**	**2.10574**	**QA**	**m=**	**1.31858**
	b=	**-0.00985**		**b=**	**-0.00612**
	r=	**0.99992**		**r=**	**0.99992**

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

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

F3. Air Quality Monitoring Schedule

Mar 2022 - Impact Monitoring Schedule for Tung Chung West

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4 Air Quality Monitoring	5
6	7	8	9	10 Air Quality Monitoring	11	12
13	14	15	16 Air Quality Monitoring	17	18	19
20	21	22 Air Quality Monitoring	23	24	25	26
27	28 Air Quality Monitoring	29	30	31		

Notes:

Air Quality Monitoring Station: DM-5 - Lung Tseung Tau
DM-6 - Mok Ka

F4. Air Quality Monitoring Results

1-hour TSP Results

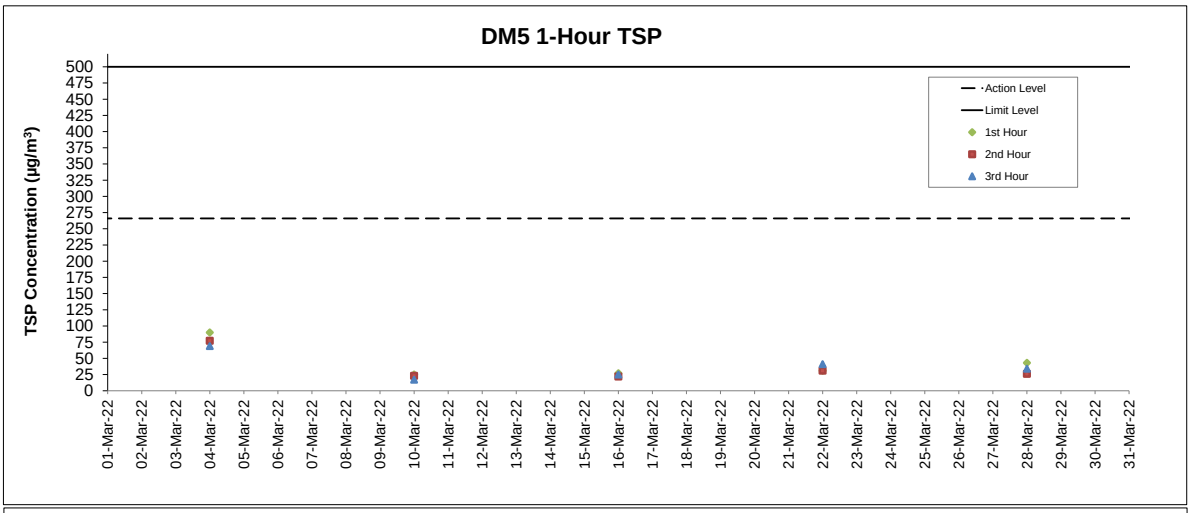
Station: DM5 - Lung Tseung Tau

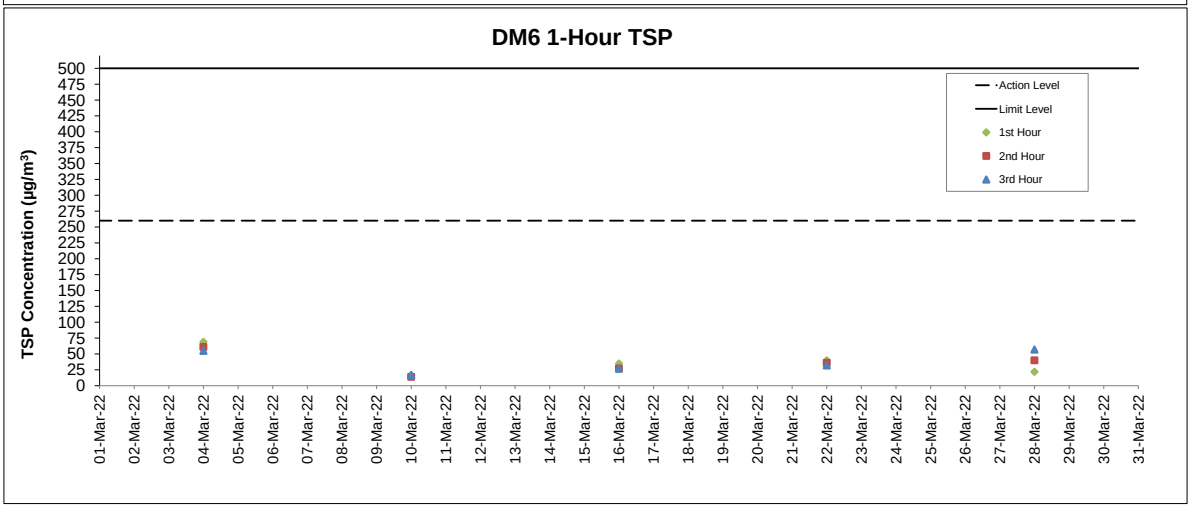
Date	Strat Time	Finish Time	Weather	1-hr TSP (μg/m^3)	Action Level (μg/m^3)	Limit Level (μg/m^3)
04-Mar-22	8:43	9:43	Sunny	90	266	500
04-Mar-22	9:43	10:43	Sunny	77	266	500
04-Mar-22	10:43	11:43	Sunny	69	266	500
10-Mar-22	8:33	9:33	Sunny	25	266	500
10-Mar-22	9:33	10:33	Sunny	23	266	500
10-Mar-22	10:33	11:33	Sunny	17	266	500
16-Mar-22	8:39	9:39	Cloudy	27	266	500
16-Mar-22	9:39	10:39	Cloudy	22	266	500
16-Mar-22	10:39	11:39	Cloudy	25	266	500
22-Mar-22	8:34	9:34	Sunny	31	266	500
22-Mar-22	9:34	10:34	Sunny	31	266	500
22-Mar-22	10:34	11:34	Sunny	41	266	500
28-Mar-22	9:00	10:00	Cloudy	43	266	500
28-Mar-22	13:17	14:17	Cloudy	26	266	500
28-Mar-22	14:17	15:17	Cloudy	34	266	500

1-hour TSP Results

Station: DM6 - Mok Ka

Date	Start Time	Finish Time	Weather	1-hr TSP (μg/m^3)	Action Level (μg/m^3)	Limit Level (μg/m^3)
04-Mar-22	9:00	10:00	Sunny	69	260	500
04-Mar-22	10:00	11:00	Sunny	61	260	500
04-Mar-22	11:00	12:00	Sunny	55	260	500
10-Mar-22	8:47	9:47	Sunny	16	260	500
10-Mar-22	9:47	10:47	Sunny	14	260	500
10-Mar-22	10:47	11:47	Sunny	17	260	500
16-Mar-22	8:55	9:55	Cloudy	35	260	500
16-Mar-22	9:55	10:55	Cloudy	27	260	500
16-Mar-22	10:55	11:55	Cloudy	27	260	500
22-Mar-22	8:57	9:57	Sunny	40	260	500
22-Mar-22	9:57	10:57	Sunny	36	260	500
22-Mar-22	10:57	11:57	Sunny	32	260	500
28-Mar-22	9:18	10:18	Cloudy	22	260	500
28-Mar-22	13:15	14:15	Cloudy	40	260	500
28-Mar-22	14:15	15:15	Cloudy	57	260	500





Notes

1. Major site activities carried out during the reporting period are summarized in Section 1.4 of the monthly EM&A report.
2. Weather conditions during monitoring are presented in the data tables above.
3. QA/QC requirements as stipulated in the EM&A Manual were carried out during measurement.

F5. Air Quality Monitoring Event and Action Plan

Table F5.1: Event and Action Plan for Construction Air Quality (Action Level)

Event	Action			
	ET	IEC	ER	Contractor
Action Level				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the 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 IEC and ER; 8. If exceedance stops, cease additional monitoring.	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 ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Table F5.2: Event and Action Plan for Construction Air Quality (Limit Level)

Event	Action			
	ET	IEC	ER	Contractor
Limit Level				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 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; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented..	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	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; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

G. Noise

G1. Locations of Construction Noise Monitoring Stations

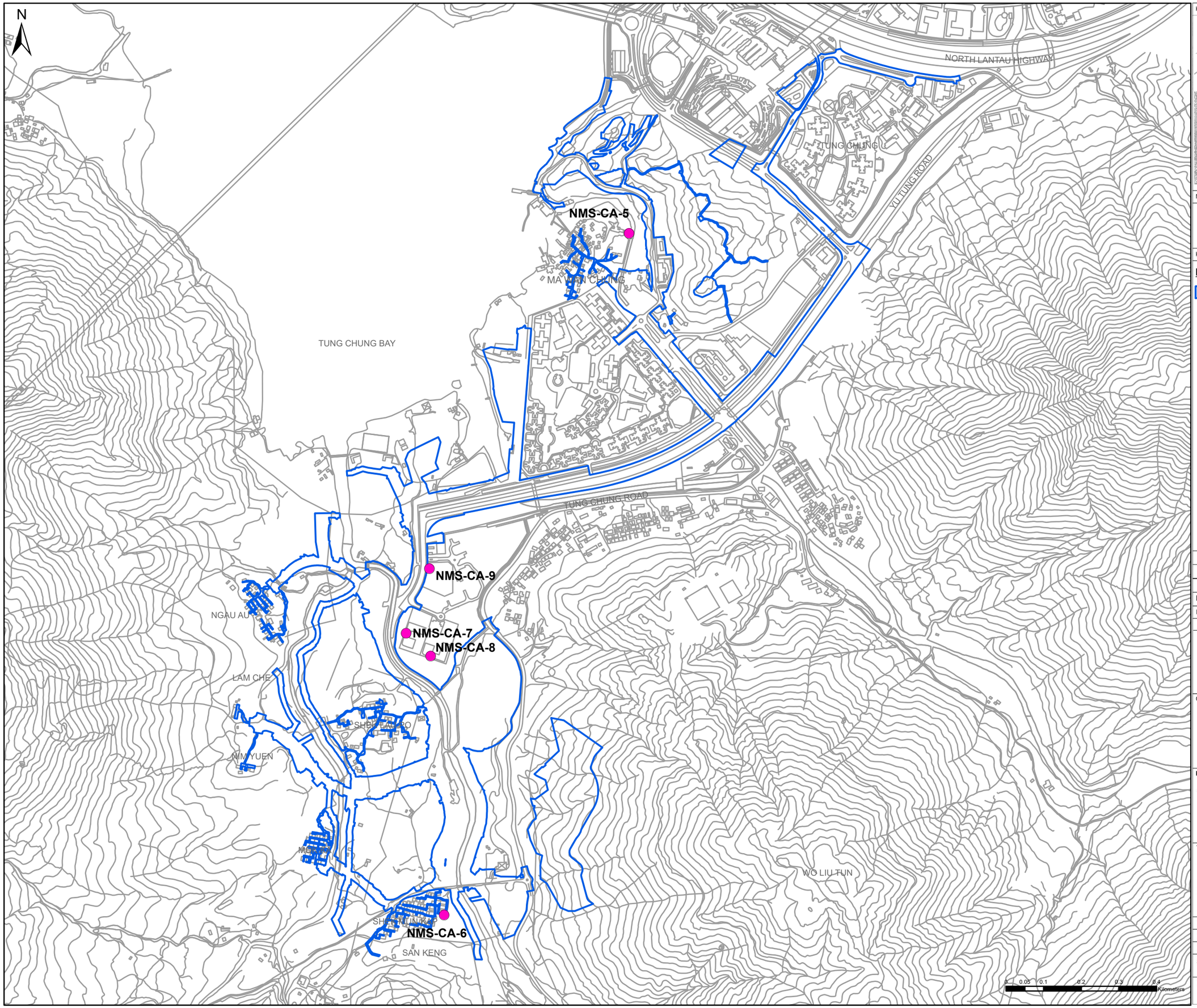
G2. Construction Noise Monitoring Equipment Calibration Certificates

G3. Construction Noise Monitoring Schedule

G4. Construction Noise Monitoring Results

G5. Construction Noise Monitoring Event and Action Plan

G1. Locations of Construction Noise Monitoring Stations



Key Plan: 1:140,000

Notes:

Key to symbols:

LEGEND

- PROJECT AREA
- NOISE MONITORING STATION

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 2021	KN		LL	TC

MOTT MACDONALD
3/F International Trade Tower
348 Kwun Tung Road
Kwun Tung, Kowloon
Hong Kong
T +852 2828 5757
F +852 2827 1823
W mottmac.com

Client

CEDD 土木工程拓展署 Civil Engineering and Development Department

Project

**AGREEMENT NO. CE 64/2020(EP)
ENVIRONMENTAL TEAM FOR
TUNG CHUNG NEW TOWN EXTENSION (WEST)
– DESIGN AND CONSTRUCTION**

Title

LOCATIONS OF CONSTRUCTION NOISE MONITORING STATIONS

Designed			Eng check		
Drawn			Coordination		
Dwg check			Approved		
Scale at A3		Status		Rev	

Drawing Number

APPENDIX G1

G2. Construction Noise Monitoring Equipment Calibration Certificates

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C213253
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序号編號 : IC21-1006) Date of Receipt / 收件日期 : 21 May 2021

Description / 儀器名稱	:	Precision Acoustic Calibrator
Manufacturer / 製造商	:	LARSON DAVIS
Model No. / 型號	:	CAL200
Serial No. / 編號	:	11333
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 4 June 2021

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : Cheuk
K P Cheuk
Project Engineer

Certified By 核證 : K C Lee
Engineer

Date of Issue 簽發日期 : 7 June 2021

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C213253
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C203952
CL281	Multifunction Acoustic Calibrator	AV210017
TST150A	Measuring Amplifier	C201309

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.8	± 0.2	± 0.2
114 dB, 1 kHz	113.8		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000	1 kHz ± 1 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C216702
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC21-2322) Date of Receipt / 收件日期 : 9 November 2021

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-52
Serial No. / 編號	:	00710259
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 20 November 2021

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification. (after adjustment)
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong
Assistant Engineer

Certified By 核證 : K C Lee
Engineer

Date of Issue 簽發日期 : 22 November 2021

Certificate of Calibration
校正證書

Certificate No. : C216702
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using the internal standard (After Adjustment) was performed before the test 6.1.1.2 to 6.3.2.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C210084
CL281	Multifunction Acoustic Calibrator	AV210017

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	* 96.0	± 1.1

* Out of IEC 61672 Class 1 Spec.

6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.1
				114.00		114.1

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

Certificate of Calibration
校正證書

Certificate No. : C216702
證書編號

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.3

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	92.9	-1.1 (+2.1 ; -3.1)
					16 kHz	86.0	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	93.1	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	91.0	-3.0 (+2.1 ; -3.1)
					16 kHz	84.1	-8.5 (+3.5 ; -17.0)

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C216702
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 13748

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
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G3. Construction Noise Monitoring Schedule

Mar 2022 - Impact Monitoring Schedule for Tung Chung West

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3 Noise Monitoring	4	5
6	7	8 Noise Monitoring	9	10	11	12
13	14	15 Noise Monitoring	16	17	18	19
20	21	22 Noise Monitoring	23	24	25	26
27	28	29 Noise Monitoring	30	31		

Notes:

Noise Monitoring Stations:

- NMS-CA-5 - Village house in Ma Wan Chung
- NMS-CA-6 - Village house in Shek Mun Kap
- NMS-CA-7 - YMCA of Hong Kong Christian College
- NMS-CA-8 - Caritas Charles Vath College
- NMS-CA-9 - Hong Chi Shiu Pong Morninghope School

G4. Construction Noise Monitoring Results

Noise Measurement Results

Station: NMS-CA-5 Village House in Ma Wan Chung

Date	Weather	Time	Measured $L_{eq(5mins)}$ dB(A)	Measured L_{10} dB(A)	Measured L_{90} dB(A)	$L_{eq(30mins)}$ dB(A)^
03-Mar-22	Sunny	13:00	57.5	60.7	51.8	58
03-Mar-22	Sunny	13:05	58.8	62.5	51.7	
03-Mar-22	Sunny	13:10	58.1	60.9	52.4	
03-Mar-22	Sunny	13:15	57.3	60.3	52.3	
03-Mar-22	Sunny	13:20	58.7	61.9	53.1	
03-Mar-22	Sunny	13:25	57.1	60.1	51.1	
08-Mar-22	Sunny	13:01	57.1	60.6	50.5	58
08-Mar-22	Sunny	13:06	56.2	60.0	50.7	
08-Mar-22	Sunny	13:11	57.0	60.1	52.1	
08-Mar-22	Sunny	13:16	60.1	64.5	52.2	
08-Mar-22	Sunny	13:21	58.6	62.9	50.5	
08-Mar-22	Sunny	13:26	59.0	62.0	52.7	
15-Mar-22	Sunny	13:00	53.5	55.7	49.0	55
15-Mar-22	Sunny	13:05	57.0	60.5	50.1	
15-Mar-22	Sunny	13:10	53.5	56.3	48.8	
15-Mar-22	Sunny	13:15	52.6	55.0	48.3	
15-Mar-22	Sunny	13:20	54.4	57.1	49.9	
15-Mar-22	Sunny	13:25	56.7	59.3	50.6	
22-Mar-22	Sunny	16:37	50.9	53.3	47.6	52
22-Mar-22	Sunny	16:42	50.4	52.2	46.0	
22-Mar-22	Sunny	16:47	51.8	54.0	47.3	
22-Mar-22	Sunny	16:52	52.7	55.6	47.5	
22-Mar-22	Sunny	16:57	51.4	54.1	46.8	
22-Mar-22	Sunny	17:02	52.0	54.2	48.2	
29-Mar-22	Cloudy	13:01	54.8	57.8	48.0	56
29-Mar-22	Cloudy	13:06	57.7	60.9	50.8	
29-Mar-22	Cloudy	13:11	58.6	62.2	50.5	
29-Mar-22	Cloudy	13:16	56.3	59.0	49.0	
29-Mar-22	Cloudy	13:21	53.4	56.0	49.4	
29-Mar-22	Cloudy	13:26	55.5	58.6	50.5	

Remarks:

(^) +3dB (A) Façade correction included for free-field measurement.

Noise Measurement Results

Station: NMS-CA-6 Village House in Shek Mun Kap

Date	Weather	Time	Measured $L_{eq(5mins)}$ dB(A)	Measured L_{10} dB(A)	Measured L_{90} dB(A)	$L_{eq(30mins)}$ dB(A)^
03-Mar-22	Sunny	11:18	57.6	60.1	44.5	53
03-Mar-22	Sunny	11:23	46.9	48.7	42.6	
03-Mar-22	Sunny	11:28	49.2	50.4	43.8	
03-Mar-22	Sunny	11:33	49.1	51.9	44.0	
03-Mar-22	Sunny	11:38	53.8	54.4	44.8	
03-Mar-22	Sunny	11:43	48.2	50.6	42.8	
08-Mar-22	Sunny	11:10	55.5	56.6	47.1	54
08-Mar-22	Sunny	11:15	48.4	50.6	44.6	
08-Mar-22	Sunny	11:20	47.3	49.5	43.9	
08-Mar-22	Sunny	11:25	47.9	50.6	43.7	
08-Mar-22	Sunny	11:30	58.0	60.2	46.3	
08-Mar-22	Sunny	11:35	53.1	55.0	44.6	
15-Mar-22	Sunny	11:10	53.2	56.2	46.8	54
15-Mar-22	Sunny	11:15	55.1	58.5	47.3	
15-Mar-22	Sunny	11:20	57.1	60.9	47.7	
15-Mar-22	Sunny	11:25	51.3	53.4	45.6	
15-Mar-22	Sunny	11:30	52.6	55.9	46.7	
15-Mar-22	Sunny	11:35	53.1	56.0	47.7	
22-Mar-22	Sunny	11:12	50.6	53.9	46.1	52
22-Mar-22	Sunny	11:17	57.0	57.8	46.6	
22-Mar-22	Sunny	11:22	49.4	52.1	45.4	
22-Mar-22	Sunny	11:27	50.0	52.2	46.3	
22-Mar-22	Sunny	11:32	51.0	53.9	46.8	
22-Mar-22	Sunny	11:37	49.3	52.1	44.8	
29-Mar-22	Cloudy	11:12	50.1	51.6	46.2	50
29-Mar-22	Cloudy	11:17	46.6	48.5	44.4	
29-Mar-22	Cloudy	11:22	46.0	47.6	44.2	
29-Mar-22	Cloudy	11:27	54.0	54.2	43.5	
29-Mar-22	Cloudy	11:32	46.4	48.5	43.1	
29-Mar-22	Cloudy	11:37	48.4	50.6	43.4	

Remarks:

(^) +3dB (A) Façade correction included for free-field measurement.

Noise Measurement Results

Station: NMS-CA-7 YMCA of Hong Kong Christian College

Date	Weather	Time	Measured $L_{eq(5mins)}$ dB(A)	Measured L_{10} dB(A)	Measured L_{90} dB(A)	$L_{eq(30mins)}$ dB(A)
03-Mar-22	Sunny	09:19	53.2	56.0	48.4	55
03-Mar-22	Sunny	09:24	55.7	59.8	48.8	
03-Mar-22	Sunny	09:29	59.6	63.2	50.4	
03-Mar-22	Sunny	09:34	53.8	56.4	49.7	
03-Mar-22	Sunny	09:39	53.2	56.4	49.0	
03-Mar-22	Sunny	09:44	52.1	54.1	49.3	
08-Mar-22	Sunny	09:14	53.1	55.6	48.4	52
08-Mar-22	Sunny	09:19	51.1	53.9	46.6	
08-Mar-22	Sunny	09:24	50.6	53.0	47.4	
08-Mar-22	Sunny	09:29	51.3	53.8	47.8	
08-Mar-22	Sunny	09:34	51.9	54.4	48.7	
08-Mar-22	Sunny	09:39	52.1	54.2	47.9	
15-Mar-22	Sunny	09:20	57.6	60.9	52.2	54
15-Mar-22	Sunny	09:25	52.7	54.9	49.9	
15-Mar-22	Sunny	09:30	52.9	54.9	49.8	
15-Mar-22	Sunny	09:35	53.5	55.8	50.5	
15-Mar-22	Sunny	09:40	53.7	55.9	49.7	
15-Mar-22	Sunny	09:45	53.4	56.0	50.0	
22-Mar-22	Sunny	09:15	61.4	62.8	49.8	57
22-Mar-22	Sunny	09:20	53.1	55.2	49.2	
22-Mar-22	Sunny	09:25	55.8	59.8	49.1	
22-Mar-22	Sunny	09:30	51.7	53.7	49.4	
22-Mar-22	Sunny	09:35	55.1	57.8	50.5	
22-Mar-22	Sunny	09:40	55.0	57.5	51.3	
29-Mar-22	Cloudy	09:22	53.6	56.6	49.4	57
29-Mar-22	Cloudy	09:27	55.5	56.2	50.0	
29-Mar-22	Cloudy	09:32	51.8	52.6	49.8	
29-Mar-22	Cloudy	09:37	60.2	60.8	49.6	
29-Mar-22	Cloudy	09:42	60.5	63.3	49.5	
29-Mar-22	Cloudy	09:47	52.5	54.9	50.0	

Noise Measurement Results

Station: NMS-CA-8 Caritas Charles Vath College

Date	Weather	Time	Measured $L_{eq(5mins)}$ dB(A)	Measured L_{10} dB(A)	Measured L_{90} dB(A)	$L_{eq(30mins)}$ dB(A)
03-Mar-22	Sunny	10:13	62.4	64.3	58.2	63
03-Mar-22	Sunny	10:18	61.1	63.5	57.3	
03-Mar-22	Sunny	10:23	64.2	66.6	60.7	
03-Mar-22	Sunny	10:28	62.8	65.1	58.0	
03-Mar-22	Sunny	10:33	63.6	66.1	60.0	
03-Mar-22	Sunny	10:38	63.9	66.4	60.7	
08-Mar-22	Sunny	10:09	59.3	62.2	53.5	59
08-Mar-22	Sunny	10:14	60.6	64.3	54.0	
08-Mar-22	Sunny	10:19	62.5	66.8	54.6	
08-Mar-22	Sunny	10:24	56.7	58.1	53.1	
08-Mar-22	Sunny	10:29	55.2	57.0	53.0	
08-Mar-22	Sunny	10:34	55.1	57.0	52.3	
15-Mar-22	Sunny	10:13	60.0	61.5	58.2	59
15-Mar-22	Sunny	10:18	59.7	61.5	57.2	
15-Mar-22	Sunny	10:23	57.9	59.7	53.7	
15-Mar-22	Sunny	10:28	59.3	60.6	55.5	
15-Mar-22	Sunny	10:33	57.6	59.6	53.8	
15-Mar-22	Sunny	10:38	57.9	60.3	53.4	
22-Mar-22	Sunny	10:13	57.5	59.7	54.5	59
22-Mar-22	Sunny	10:18	57.8	59.5	55.3	
22-Mar-22	Sunny	10:23	59.1	61.3	55.6	
22-Mar-22	Sunny	10:28	59.3	61.3	56.7	
22-Mar-22	Sunny	10:33	60.2	62.8	56.7	
22-Mar-22	Sunny	10:38	58.7	60.8	54.9	
29-Mar-22	Cloudy	10:15	56.6	58.1	54.6	56
29-Mar-22	Cloudy	10:20	57.2	59.2	54.8	
29-Mar-22	Cloudy	10:25	55.5	56.8	53.4	
29-Mar-22	Cloudy	10:30	55.4	57.5	52.6	
29-Mar-22	Cloudy	10:35	55.8	57.2	53.9	
29-Mar-22	Cloudy	10:40	55.8	57.4	53.8	

Noise Measurement Results

Station: NMS-CA-9 Hong Chi Shiu Pong Morninghope School

Date	Weather	Time	Measured $L_{eq(5mins)}$ dB(A)	Measured L_{10} dB(A)	Measured L_{90} dB(A)	$L_{eq(30mins)}$ dB(A)
03-Mar-22	Sunny	08:27	57.7	60.3	53.0	57
03-Mar-22	Sunny	08:32	56.4	59.0	52.7	
03-Mar-22	Sunny	08:37	57.7	61.4	52.7	
03-Mar-22	Sunny	08:42	54.9	56.6	52.7	
03-Mar-22	Sunny	08:47	56.7	59.1	53.4	
03-Mar-22	Sunny	08:52	57.1	59.2	55.0	
08-Mar-22	Sunny	08:25	56.5	58.9	52.6	58
08-Mar-22	Sunny	08:30	57.8	60.4	52.3	
08-Mar-22	Sunny	08:35	58.7	61.2	54.1	
08-Mar-22	Sunny	08:40	58.2	61.1	51.9	
08-Mar-22	Sunny	08:45	58.7	61.6	51.2	
08-Mar-22	Sunny	08:50	56.7	59.2	51.2	
15-Mar-22	Sunny	08:31	59.7	60.0	53.1	59
15-Mar-22	Sunny	08:36	60.0	63.8	52.5	
15-Mar-22	Sunny	08:41	59.1	61.7	53.0	
15-Mar-22	Sunny	08:46	57.1	60.7	52.1	
15-Mar-22	Sunny	08:51	58.2	61.2	52.7	
15-Mar-22	Sunny	08:56	58.1	60.2	52.9	
22-Mar-22	Sunny	08:25	55.3	58.1	50.7	56
22-Mar-22	Sunny	08:30	54.5	56.4	50.9	
22-Mar-22	Sunny	08:35	56.4	59.3	51.8	
22-Mar-22	Sunny	08:40	57.7	61.1	52.0	
22-Mar-22	Sunny	08:45	55.7	58.6	51.1	
22-Mar-22	Sunny	08:50	56.2	58.8	51.2	
29-Mar-22	Cloudy	08:30	57.6	60.7	51.2	56
29-Mar-22	Cloudy	08:35	56.0	58.6	51.5	
29-Mar-22	Cloudy	08:40	56.0	58.9	50.7	
29-Mar-22	Cloudy	08:45	55.4	58.4	49.9	
29-Mar-22	Cloudy	08:50	54.1	56.4	50.4	
29-Mar-22	Cloudy	08:55	54.8	57.5	50.5	

NMS-CA-5 Leq (30 min) dB(A)
Leq (30 min)
Limit Level
Sound Level dB(A)
80
75
70
65
60
55
50
45
40
01-Mar-22
02-Mar-22
03-Mar-22
04-Mar-22
05-Mar-22
06-Mar-22
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27-Mar-22
28-Mar-22
29-Mar-22
30-Mar-22
31-Mar-22

NMS-CA-6 Leq (30 min) dB(A)
Leq (30 min)
Limit Level
Sound Level dB(A)
80
75
70
65
60
55
50
45
40
01-Mar-22
02-Mar-22
03-Mar-22
04-Mar-22
05-Mar-22
06-Mar-22
07-Mar-22
08-Mar-22
09-Mar-22
10-Mar-22
11-Mar-22
12-Mar-22
13-Mar-22
14-Mar-22
15-Mar-22
16-Mar-22
17-Mar-22
18-Mar-22
19-Mar-22
20-Mar-22
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22-Mar-22
23-Mar-22
24-Mar-22
25-Mar-22
26-Mar-22
27-Mar-22
28-Mar-22
29-Mar-22
30-Mar-22
31-Mar-22

NMS-CA-7 Leq (30 min) dB(A)
Leq (30 min)
Limit Level
Sound Level dB(A)
80
75
70
65
60
55
50
45
40
01-Mar-22
02-Mar-22
03-Mar-22
04-Mar-22
05-Mar-22
06-Mar-22
07-Mar-22
08-Mar-22
09-Mar-22
10-Mar-22
11-Mar-22
12-Mar-22
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24-Mar-22
25-Mar-22
26-Mar-22
27-Mar-22
28-Mar-22
29-Mar-22
30-Mar-22
31-Mar-22

NMS-CA-8 Leq (30 min) dB(A)
Leq (30 min)
Limit Level
Sound Level dB(A)
80
75
70
65
60
55
50
45
40
01-Mar-22
02-Mar-22
03-Mar-22
04-Mar-22
05-Mar-22
06-Mar-22
07-Mar-22
08-Mar-22
09-Mar-22
10-Mar-22
11-Mar-22
12-Mar-22
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16-Mar-22
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26-Mar-22
27-Mar-22
28-Mar-22
29-Mar-22
30-Mar-22
31-Mar-22

NMS-CA-9 Leq (30 min) dB(A)
Leq (30 min)
Limit Level
Sound Level dB(A)
80
75
70
65
60
55
50
45
40
01-Mar-22
02-Mar-22
03-Mar-22
04-Mar-22
05-Mar-22
06-Mar-22
07-Mar-22
08-Mar-22
09-Mar-22
10-Mar-22
11-Mar-22
12-Mar-22
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26-Mar-22
27-Mar-22
28-Mar-22
29-Mar-22
30-Mar-22
31-Mar-22

G5. Construction Noise Monitoring Event and Action Plan

Table G5.1: Event and Action Plan for Construction Noise

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action Level Exceedance	1. Notify IEC, ER and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	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. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals.
Limit Level Exceedance	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

H. Water Quality

H1. Locations of Water Quality Monitoring Stations

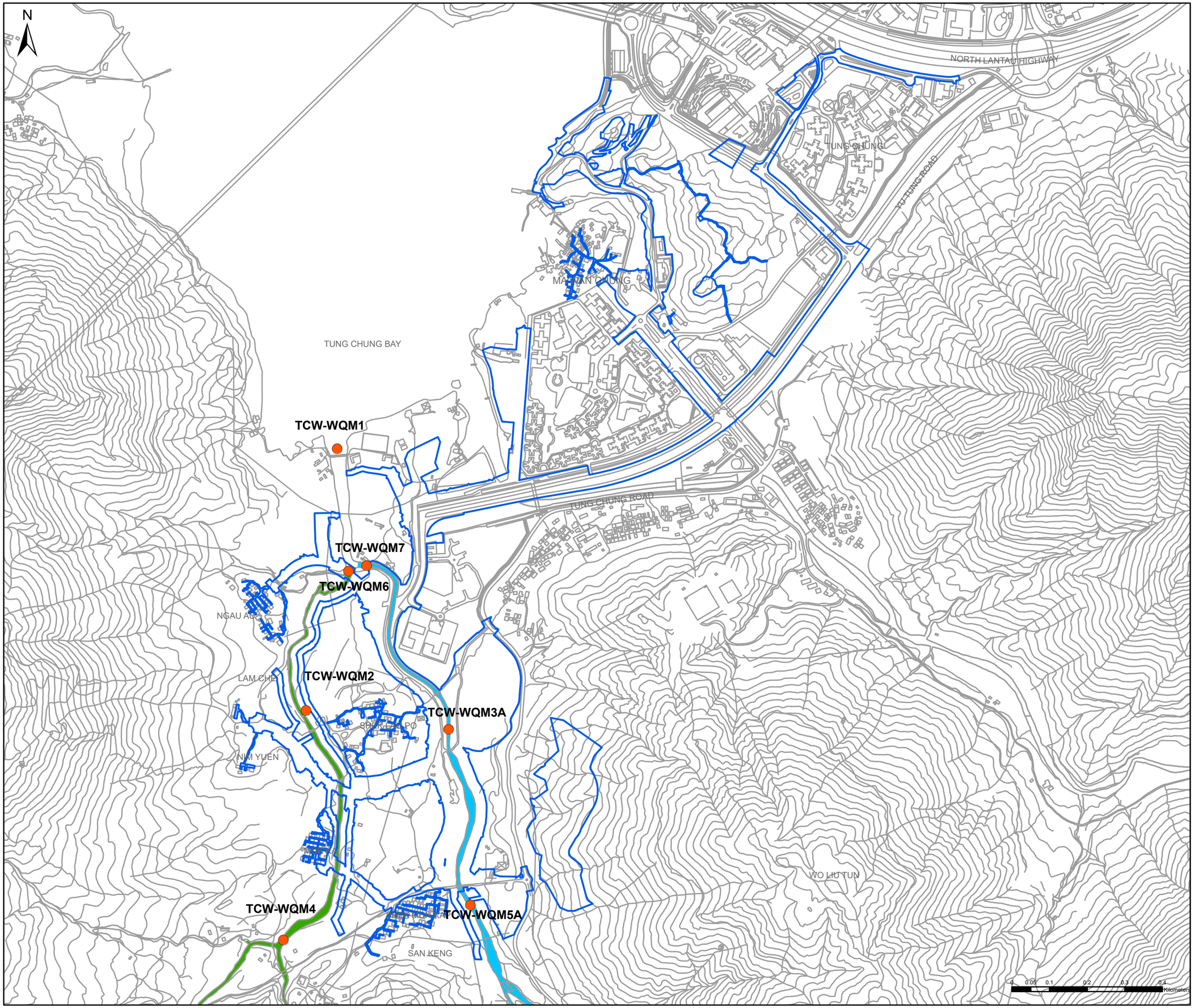
H2. Water Quality Monitoring Equipment Calibration Certificates

H3. Water Quality Monitoring Schedule

H4. Water Quality Monitoring Results

H5. Water Quality Monitoring Event and Action Plan

H1. Locations of Water Quality Monitoring Stations



Key Plan: 1:140,000

Notes:

Key to symbols:

LEGEND

- PROJECT AREA
- WATER QUALITY MONITORING STATION

TUNG CHUNG RIVER SECTION

- EASTERN TRIBUTARY
- WESTERN TRIBUTARY

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	SEP 2021	KN		LL	TC

MOTT MACDONALD
3/F International Trade Tower
348 Kwun Tung Road
Kwun Tung, Kowloon
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T +852 2828 5757
F +852 2827 1823
W mottmac.com

Client

CEDD 土木工程拓展署 Civil Engineering and Development Department

Project

AGREEMENT NO. CE 64/2020(EP)
ENVIRONMENTAL TEAM FOR
TUNG CHUNG NEW TOWN EXTENSION (WEST)
– DESIGN AND CONSTRUCTION

Title

LOCATIONS OF WATER QUALITY MONITORING STATIONS

Designed			Eng check		
Drawn			Coordination		
Dwg check			Approved		
Scale at A3		Status		Rev	

Drawing Number

APPENDIX H1

H2. Water Quality Monitoring Equipment Calibration Certificates

ALS Technichem (HK) Pty Ltd
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1-3 Wing Yip Street, Kwai Chung
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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR K.W.FAN	WORK ORDER:	HK2152127
CLIENT:	ENVIROTECH SERVICES CO.		
ADDRESS:	RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	17-Dec-2021
		DATE OF ISSUE:	22-Dec-2021

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.
The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.
The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Brand Name/ Model No.:	[HORIBA]/ [U-53]
Serial No./ Equipment No.:	[KP23RRSM]/ [N/A]
Date of Calibration:	20-December-2021

GENERAL COMMENTS

This is the Final Report and supersedes any previous report(s) with this reference.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2152127

SUB-BATCH: 0
DATE OF ISSUE: 22-Dec-2021
CLIENT: ENVIROTECH SERVICES CO.

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [HORIBA]/ [U-53]
Serial No./ Equipment No.: [KP23RRSM]/ [N/A]
Date of Calibration: 20-December-2021 Date of Next Calibration: 20-March-2022

PARAMETERS:

Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	151	+2.8
6667	6180	-7.3
12890	12700	-1.5
58670	53700	-8.5
	Tolerance Limit (%)	±10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.91	3.99	+0.08
5.85	5.76	-0.09
8.56	8.48	-0.08
	Tolerance Limit (mg/L)	±0.20

pH Value

Method Ref: APHA (21st edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.05	+0.05
7.0	6.92	-0.08
10.0	9.93	-0.07
	Tolerance Limit (pH unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2152127

SUB-BATCH: 0
DATE OF ISSUE: 22-Dec-2021
CLIENT: ENVIROTECH SERVICES CO.

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [HORIBA]/ [U-53]
Serial No./ Equipment No.: [KP23RRSM]/ [N/A]
Date of Calibration: 20-December-2021 Date of Next Calibration: 20-March-2022

PARAMETERS:

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.32	--
4	4.07	+1.8
40	41.7	+4.3
80	82.3	+2.9
400	419	+4.8
800	820	+2.5
	Tolerance Limit (%)	±10.0

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.02	--
10	9.93	-0.7
20	19.91	-0.4
30	29.23	-2.6
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2152127

SUB-BATCH: 0
DATE OF ISSUE: 22-Dec-2021
CLIENT: ENVIROTECH SERVICES CO.

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [HORIBA]/ [U-53]
Serial No./ Equipment No.: [KP23RRSM]/ [N/A]
Date of Calibration: 20-December-2021 Date of Next Calibration: 20-March-2022

PARAMETERS:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (^{o}C)	Displayed Reading (^{o}C)	Tolerance (^{o}C)
10.5	10.08	-0.4
21.0	20.32	-0.7
39.5	38.76	-0.7
	Tolerance Limit (^{o}C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

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

Report No. : 221149WA220558

Report on Calibration of HORIBA Multifunction Meter

Information Supplied by Client

Client	:	ENVIROTECH SERVICE COMPANY
Client's address	:	RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T., HONG KONG

Calibration Item

Description	:	Multifunctional Meter
Manufacturer	:	HORIBA
Model	:	U-5000
Serial No.	:	-
Equipment No.	:	LUAVCDWU

Laboratory Information

Lab. sample ID	:	WA220558/1
Date sample received	:	18/03/2022
Date of calibration	:	21/03/2022
Next calibration date	:	20/06/2022
Test method used	:	In-house comparison method

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

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

Report No. : 221149WA220558

Results :

A. pH calibration

pH value at 25°C			
Theoretical	Measured	Deviation (pH value)	Maximum acceptable Deviation (pH value)
4.0	3.90	-0.10	±0.20
7.0	7.01	+0.01	
10.0	10.00	0.00	

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation (%)	Maximum acceptable Deviation (%)
0	0.03	-	±10.0
10	10.70	+7.0	
20	20.89	+4.5	
30	30.80	+2.7	
40	40.65	+1.6	

C. Dissolved Oxygen calibration

Dissolved oxygen content, mg/L			
Theoretical	Measured	Deviation (mg/L)	Maximum acceptable Deviation (mg/L)
4.85	4.89	+0.04	±0.20
6.95	6.80	-0.15	
8.26	8.41	+0.15	

Certified by : Chan Hoi Yan

Approved Signatory : CHAN Hoi Yan, Winnie
Assistant Manager

Date : 24-3-2022

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

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

Report No. : 221149WA220558

Results :

D. Temperature calibration

Temperature, °C			
Thermometer reading	Measured	Deviation (°C)	Maximum acceptable Deviation (°C)
10.5	10.21	-0.29	±2.0
20.3	20.53	+0.23	
40.2	39.99	-0.21	

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation (%)	Maximum acceptable Deviation (%)
0	0.18	-	±10.0
4	3.98	-0.5	
40	39.5	-1.3	
80	80.6	+0.8	
400	398	-0.5	
800	803	+0.4	

F. Conductivity calibration

Conductivity, µS/cm			
Theoretical	Measured	Deviation (%)	Maximum acceptable Deviation (%)
146.9	152	+3.5	±10.0
1408	1520	+8.0	
6667	6530	-2.1	
12890	13500	+4.7	
24820	25100	+1.1	

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

Date : 14-3-2022

** End of Report **

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

H3. Water Quality Monitoring Schedule

Mar 2022 - Impact Monitoring Schedule for Tung Chung West

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2 Water (13:30)	3	4 Water (14:00)	5
6	7 Water (14:00)	8	9 Water (15:00)	10	11 Water (16:30)	12
13	14 Water (11:30)	15	16 Water (13:00)	17	18 Water (13:30)	19
20	21	22 Water (15:30)	23	24 Water (16:00)	25	26 Water (16:30)
27	28 Water (11:30)	29	30 Water (13:00)	31		

Notes:

Impact Water Quality Monitoring Stations:

TCW-WQM1 - Downstream of Tung Chung Stream

Tung Chung Stream (West)

TCW-WQM2 - Middle of Tung Chung Stream (West)

TCW-WQM4 - Upstream of Tung Chung Stream (West)

TCW-WQM6 - Downstream of Tung Chung Stream (West)

Tung Chung Stream (East)

TCW-WQM3A - Middle of Tung Chung Stream (East) [aka Upstream of River Park]

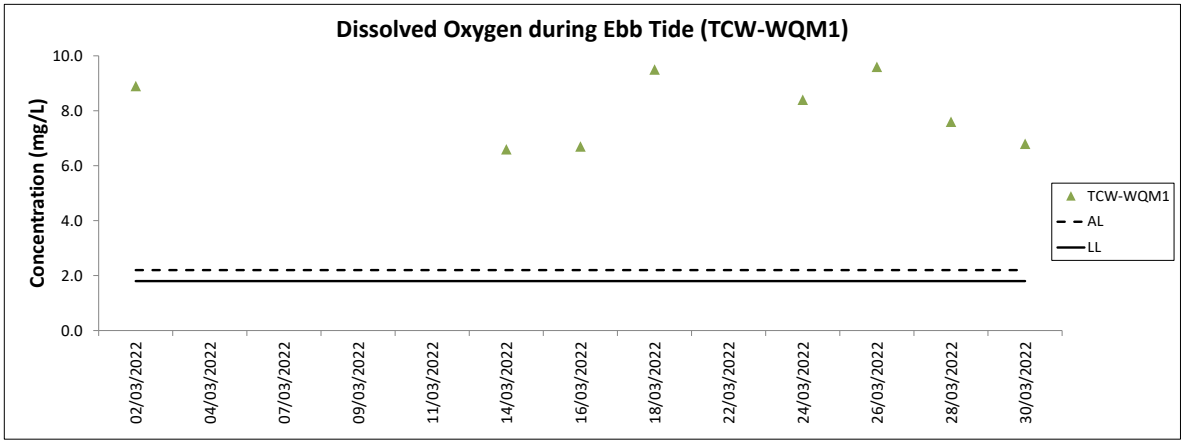
TCW-WQM5A - Upstream of Tung Chung Stream (East)

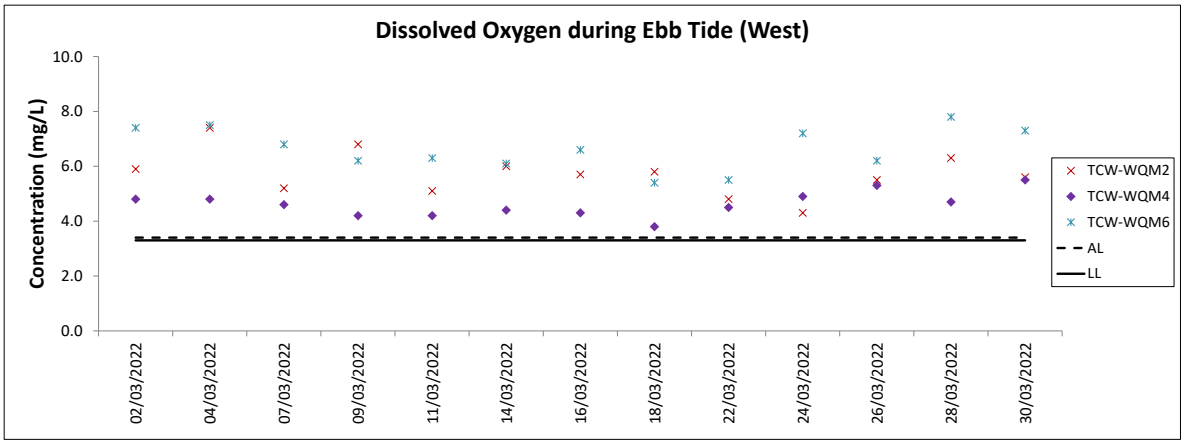
TCW-WQM7 - Downstream of Tung Chung Stream (East) [aka Downstream of River Park]

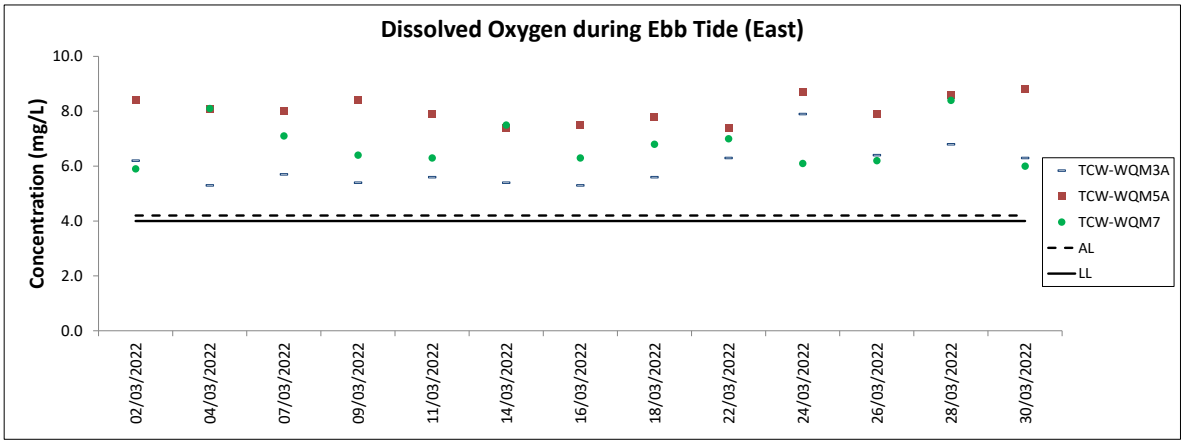
Remark:

Water quality monitoring is arranged at the ebb tide of each monitoring day. Tidal information refers to Chek Lap Kok East provided by the Hong Kong Observatory.

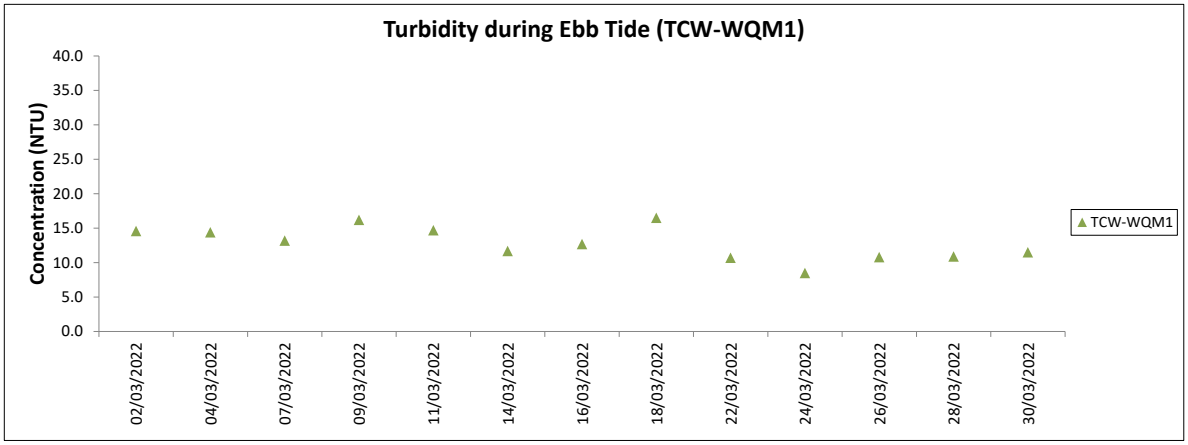
H4. Water Quality Monitoring Results

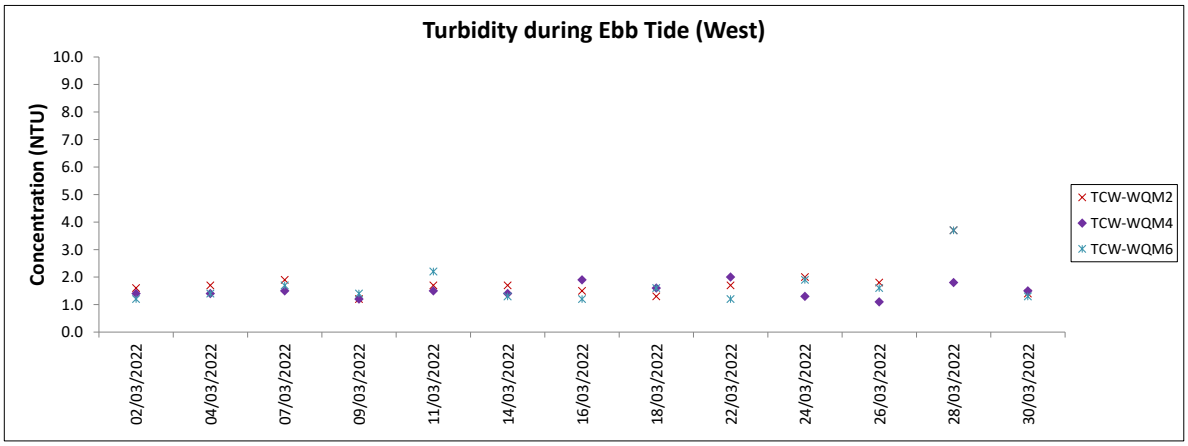


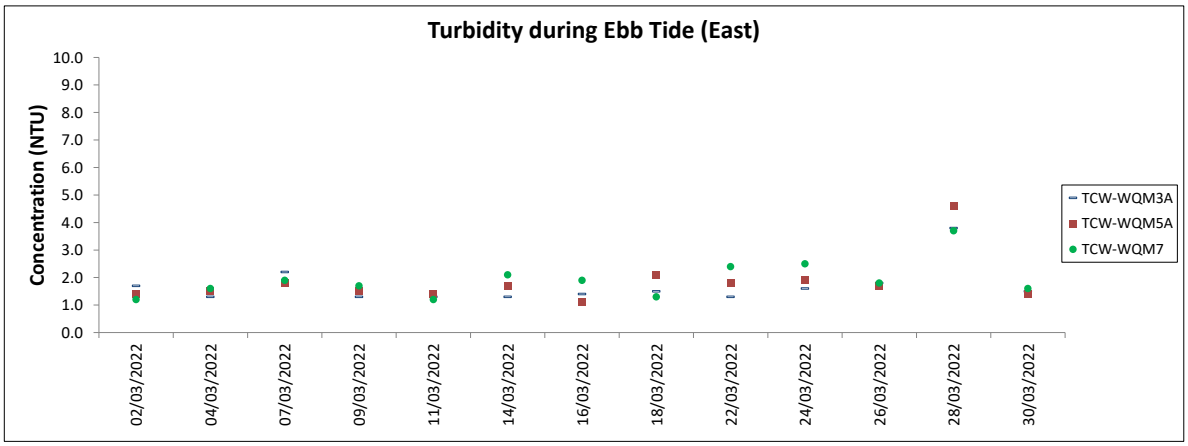




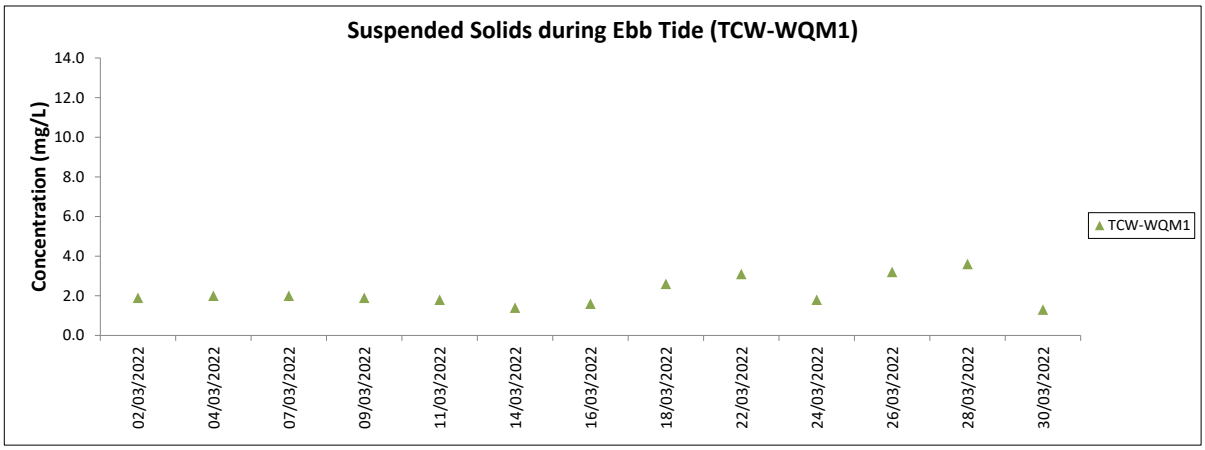
Note: The Action and Limit Level of dissolved oxygen can be referred to Table 4.3 of the monthly EM&A report.
Major site activities carried out during the reporting period are summarized in Section 1.4 of the monthly EM&A report.
Weather conditions during monitoring are presented in the data tables above.
QA/ QC requirements as stipulated in the EM&A Manual were carried out during measurement.

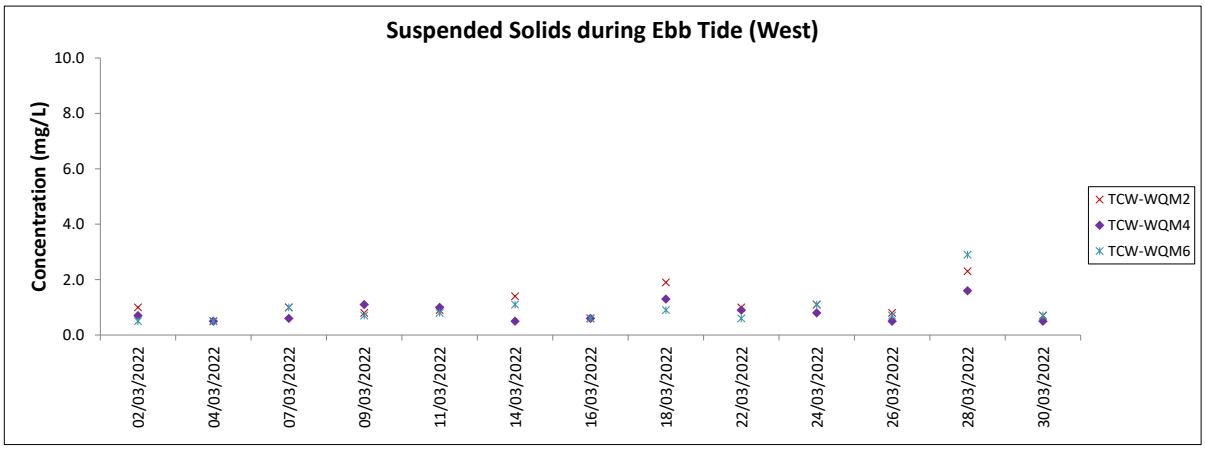


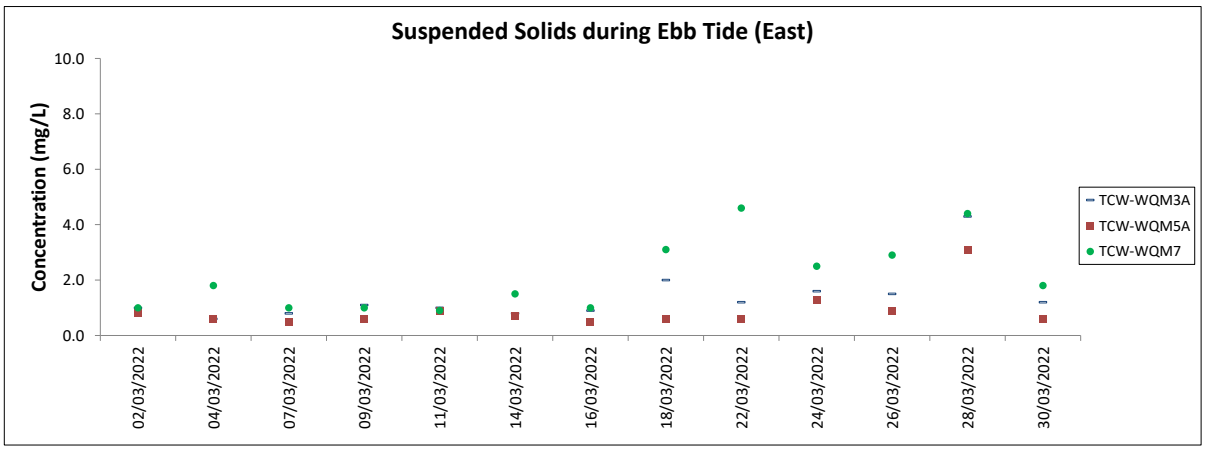




Note: The Action and Limit Level of turbidity can be referred to Table 4.3 of the monthly EM&A report.
Major site activities carried out during the reporting period are summarized in Section 1.4 of the monthly EM&A report.
Weather conditions during monitoring are presented in the data tables above.
QA/ QC requirements as stipulated in the EM&A Manual were carried out during measurement.







Note: The Action and Limit Level of suspended solids can be referred to Table 4.3 of the monthly EM&A report.
Major site activities carried out during the reporting period are summarized in Section 1.4 of the monthly EM&A report.
Weather conditions during monitoring are presented in the data tables above.
QA/ QC requirements as stipulated in the EM&A Manual were carried out during measurement.

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 02 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Sunny	Rough	13:01	1st	24.9	24.9	8.0	8.0	23.12	23.11	36600	36600	121.0	122.3	8.8	8.9	14.6	14.6	1.9	1.9
				2nd	24.9		8.0		23.10		36600		123.5		9.0		14.6		1.8	
TCW-WQM2	Sunny	NA	11:03	1st	20.2	20.2	6.5	6.5	0.01	0.01	34	35	62.5	65.1	5.7	5.9	1.5	1.6	0.9	1.0
				2nd	20.2		6.5		0.01		35		67.7		6.1		1.6		1.0	
TCW-WQM3A	Sunny	NA	10:22	1st	20.6	20.6	6.8	6.8	0.03	0.03	76	76	69.1	69.2	6.2	6.2	1.6	1.7	1.1	1.0
				2nd	20.6		6.8		0.03		76		69.3		6.2		1.7		0.9	
TCW-WQM4	Sunny	NA	09:08	1st	18.7	18.7	6.1	6.1	0.02	0.02	43	43	52.2	51.2	4.9	4.8	1.3	1.4	0.7	0.7
				2nd	18.7		6.1		0.02		43		50.1		4.7		1.4		0.6	
TCW-WQM5A	Sunny	NA	09:40	1st	19.5	19.5	7.0	7.0	0.02	0.02	36	36	92.3	91.1	8.5	8.4	1.4	1.4	0.8	0.8
				2nd	19.5		7.0		0.02		36		89.9		8.3		1.4		0.7	
TCW-WQM6	Sunny	NA	11:42	1st	20.4	20.4	6.5	6.5	0.02	0.02	45	45	80.5	81.4	7.3	7.4	1.1	1.2	<0.5	<0.5
				2nd	20.4		6.5		0.02		45		82.3		7.4		1.3		<0.5	
TCW-WQM7	Sunny	NA	12:18	1st	27.5	27.5	9.6	9.6	0.05	0.05	107	107	74.6	74.8	5.9	5.9	1.2	1.2	0.9	1.0
				2nd	27.5		9.6		0.05		107		74.9		5.9		1.2		1.1	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 04 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Sunny	Rough	14:02	1st	24.1	24.1	8.4	8.4	22.27	22.29	35400	35400	135.8	136.8	10.0	10.1	14.0	14.4	1.8	2.0
				2nd	24.1		8.4		22.31		35400		137.7		10.2		14.8		2.2	
TCW-WQM2	Sunny	NA	11:23	1st	20.8	20.8	6.6	6.6	0.01	0.01	33	33	81.2	82.0	7.3	7.4	1.6	1.7	<0.5	<0.5
				2nd	20.8		6.6		0.01		33		82.8		7.4		1.8		<0.5	
TCW-WQM3A	Sunny	NA	10:41	1st	21.4	21.4	6.7	6.7	0.04	0.04	78	78	59.9	59.3	5.3	5.3	1.2	1.3	0.5	0.6
				2nd	21.4		6.7		0.04		78		58.6		5.2		1.3		0.6	
TCW-WQM4	Sunny	NA	09:31	1st	19.2	19.2	6.1	6.1	0.02	0.02	42	42	53.7	51.8	5.0	4.8	1.4	1.4	<0.5	<0.5
				2nd	19.2		6.1		0.02		42		49.8		4.6		1.4		<0.5	
TCW-WQM5A	Sunny	NA	10:04	1st	20.3	20.3	7.1	7.1	0.02	0.02	37	37	90.0	89.8	8.1	8.1	1.4	1.5	0.6	0.6
				2nd	20.3		7.1		0.02		37		89.6		8.1		1.6		0.5	
TCW-WQM6	Sunny	NA	11:58	1st	20.9	20.9	6.6	6.6	0.02	0.02	45	46	83.1	83.6	7.4	7.5	1.4	1.4	<0.5	<0.5
				2nd	20.9		6.6		0.02		46		84.1		7.5		1.4		<0.5	
TCW-WQM7	Sunny	NA	12:46	1st	28.9	28.9	9.8	9.8	0.05	0.05	116	117	104.7	104.7	8.1	8.1	1.7	1.6	1.5	1.8
				2nd	28.9		9.8		0.05		117		104.6		8.1		1.5		2.1	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 07 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Sunny	Rough	14:02	1st	21.8	21.8	8.5	8.5	22.63	22.64	35900	35900	144.8	145.4	11.2	11.2	12.8	13.2	2.1	2.0
				2nd	21.8		8.5		22.64		35900		146.0		11.2		13.6		1.8	
TCW-WQM2	Cloudy	NA	12:20	1st	20.7	20.7	6.4	6.4	0.02	0.02	38	38	54.3	57.4	4.9	5.2	1.8	1.9	1.0	1.0
				2nd	20.7		6.4		0.02		38		60.4		5.4		2.0		1.0	
TCW-WQM3A	Cloudy	NA	11:47	1st	20.9	20.9	6.7	6.7	0.04	0.04	79	79	64.1	63.9	5.7	5.7	2.2	2.2	0.8	0.8
				2nd	20.9		6.7		0.04		79		63.6		5.7		2.2		0.8	
TCW-WQM4	Cloudy	NA	10:57	1st	20.3	20.3	6.1	6.1	0.02	0.02	49	49	53.0	50.5	4.8	4.6	1.4	1.5	0.6	0.6
				2nd	20.3		6.1		0.02		49		48.0		4.3		1.6		0.6	
TCW-WQM5A	Cloudy	NA	11:18	1st	20.7	20.7	7.0	7.0	0.02	0.02	38	38	88.4	88.9	7.9	8.0	1.6	1.8	0.5	0.5
				2nd	20.7		7.0		0.02		38		89.4		8.0		1.9		0.5	
TCW-WQM6	Sunny	NA	12:41	1st	20.7	20.7	6.5	6.5	0.02	0.02	48	48	74.8	75.3	6.7	6.8	1.8	1.7	1.1	1.0
				2nd	20.7		6.5		0.02		48		75.8		6.8		1.5		0.9	
TCW-WQM7	Sunny	NA	12:57	1st	22.6	22.6	9.7	9.7	0.04	0.04	94	94	85.7	81.8	7.4	7.1	2.0	1.9	1.0	1.0
				2nd	22.6		9.7		0.04		94		77.9		6.7		1.8		0.9	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 09 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Sunny	Rough	14:43	1st	23.5	23.5	8.7	8.7	23.95	23.95	37800	37800	153.0	155.5	11.3	11.5	16.4	16.2	2.2	1.9
				2nd	23.5		8.7		23.95		37800		157.9		11.7		16.0		1.5	
TCW-WQM2	Sunny	NA	12:37	1st	20.9	20.9	6.6	6.6	0.02	0.02	36	36	77.2	76.2	6.9	6.8	1.1	1.2	0.8	0.8
				2nd	20.9		6.6		0.02		35		75.2		6.7		1.2		0.7	
TCW-WQM3A	Sunny	NA	11:58	1st	20.5	20.5	6.9	6.9	0.04	0.04	85	85	56.4	59.6	5.1	5.4	1.3	1.3	1.0	1.1
				2nd	20.5		6.9		0.04		85		62.8		5.7		1.3		1.1	
TCW-WQM4	Sunny	NA	10:51	1st	18.2	18.2	6.2	6.2	0.02	0.02	48	48	45.0	44.1	4.2	4.2	1.2	1.2	1.3	1.1
				2nd	18.2		6.2		0.02		48		43.1		4.1		1.2		0.9	
TCW-WQM5A	Sunny	NA	11:19	1st	20.1	20.1	7.1	7.1	0.02	0.02	37	37	93.2	92.1	8.5	8.4	1.6	1.5	0.6	0.6
				2nd	20.1		7.1		0.02		37		91.0		8.3		1.4		<0.5	
TCW-WQM6	Sunny	NA	13:17	1st	20.2	20.2	6.4	6.4	0.02	0.02	47	47	71.0	68.6	6.4	6.2	1.3	1.4	<0.5	0.7
				2nd	20.2		6.4		0.02		47		66.1		6.0		1.5		0.8	
TCW-WQM7	Sunny	NA	13:48	1st	28.8	28.8	10.0	10.0	0.04	0.04	94	94	81.7	83.0	6.3	6.4	1.6	1.7	0.9	1.0
				2nd	28.8		10.0		0.04		94		84.3		6.5		1.7		1.1	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 11 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Sunny	Rough	15:55	1st	25.3	25.3	9.0	9.0	24.37	24.37	38300	38350	183.0	181.7	13.1	13.0	14.7	14.7	1.8	1.8
				2nd	25.3		9.0		24.36		38400		180.4		12.9		14.7		1.7	
TCW-WQM2	Sunny	NA	13:49	1st	22.7	22.7	6.7	6.6	0.01	0.01	35	35	55.1	58.2	4.8	5.1	1.5	1.7	0.9	0.9
				2nd	22.7		6.6		0.01		35		61.2		5.3		1.8		0.9	
TCW-WQM3A	Sunny	NA	13:06	1st	22.7	22.7	6.9	6.9	0.04	0.04	81	81	64.8	65.0	5.6	5.6	1.4	1.3	1.0	1.0
				2nd	22.7		6.9		0.04		81		65.2		5.6		1.2		0.9	
TCW-WQM4	Sunny	NA	11:54	1st	19.8	19.8	6.1	6.1	0.02	0.02	42	42	46.4	45.8	4.2	4.2	1.5	1.5	1.0	1.0
				2nd	19.8		6.1		0.02		42		45.1		4.1		1.4		1.0	
TCW-WQM5A	Sunny	NA	12:24	1st	22.6	22.6	7.3	7.3	0.02	0.02	37	37	92.7	91.4	8.0	7.9	1.3	1.4	0.9	0.9
				2nd	22.6		7.3		0.02		37		90.1		7.8		1.5		0.8	
TCW-WQM6	Sunny	NA	14:24	1st	21.9	21.9	6.4	6.4	0.02	0.02	47	47	72.4	71.8	6.3	6.3	2.3	2.2	0.8	0.8
				2nd	21.9		6.4		0.02		47		71.1		6.2		2.1		0.7	
TCW-WQM7	Sunny	NA	14:58	1st	27.1	27.1	10.0	10.0	0.04	0.04	90	90	79.0	78.7	6.3	6.3	1.2	1.2	1.0	0.9
				2nd	27.1		10.0		0.04		90		78.4		6.2		1.1		0.8	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 14 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (µS/cm)		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	Value	Average
TCW-WQM1	Sunny	Rough	11:18	1st	26.6	26.7	8.4	8.4	20.50	20.50	32800	32800	94.0	91.8	6.7	6.6	11.3	11.7	1.4	1.4
				2nd	26.7		8.4		20.50		32800		89.5		6.4		12.1		1.4	
TCW-WQM2	Sunny	NA	09:33	1st	21.9	21.9	6.3	6.3	0.02	0.02	37	37	66.2	67.7	5.8	6.0	1.8	1.7	1.5	1.4
				2nd	21.9		6.3		0.02		37		69.2		6.1		1.5		1.3	
TCW-WQM3A	Sunny	NA	08:59	1st	22.1	22.1	6.9	6.9	0.04	0.04	81	80	63.2	61.6	5.5	5.4	1.3	1.3	0.8	0.8
				2nd	22.1		6.9		0.04		79		59.9		5.2		1.2		0.7	
TCW-WQM4	Sunny	NA	07:54	1st	21.1	21.1	6.0	6.0	0.02	0.02	42	42	49.2	49.5	4.4	4.4	1.4	1.4	0.5	0.5
				2nd	21.1		6.0		0.02		42		49.7		4.4		1.4		0.5	
TCW-WQM5A	Sunny	NA	08:20	1st	21.6	21.6	7.1	7.1	0.02	0.02	40	40	82.5	83.2	7.3	7.4	1.5	1.7	0.6	0.7
				2nd	21.6		7.1		0.02		40		83.8		7.4		1.8		0.7	
TCW-WQM6	Sunny	NA	10:05	1st	22.2	22.2	6.5	6.5	0.02	0.02	48	48	67.2	69.0	5.9	6.1	1.2	1.3	1.0	1.1
				2nd	22.2		6.5		0.02		48		70.8		6.2		1.3		1.1	
TCW-WQM7	Sunny	NA	10:41	1st	27.3	27.3	9.8	9.8	0.04	0.04	83	83	92.9	94.3	7.4	7.5	2.2	2.1	1.4	1.5
				2nd	27.3		9.8		0.04		83		95.7		7.6		1.9		1.5	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 16 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Cloudy	Rough	12:33	1st	26.7	26.7	8.5	8.5	21.27	21.27	33900	33900	95.1	93.8	6.8	6.7	12.5	12.7	1.6	1.6
				2nd	26.7		8.5		21.27		33900		92.5		6.6		12.9		1.6	
TCW-WQM2	Cloudy	NA	10:24	1st	22.7	22.7	6.4	6.4	0.02	0.02	36	36	64.3	65.5	5.5	5.7	1.5	1.5	0.6	0.6
				2nd	22.7		6.4		0.02		36		66.7		5.8		1.5		0.6	
TCW-WQM3A	Cloudy	NA	09:52	1st	23.4	23.4	6.9	6.9	0.04	0.04	85	86	63.0	61.4	5.4	5.3	1.3	1.4	0.9	0.9
				2nd	23.4		6.9		0.04		86		59.7		5.1		1.4		0.8	
TCW-WQM4	Cloudy	NA	08:55	1st	21.7	21.8	6.1	6.0	0.02	0.02	42	42	50.3	48.4	4.4	4.3	1.9	1.9	<0.5	0.6
				2nd	21.8		6.0		0.02		42		46.5		4.1		1.8		0.6	
TCW-WQM5A	Cloudy	NA	09:19	1st	22.8	22.8	7.2	7.2	0.02	0.02	39	39	86.0	86.5	7.4	7.5	1.1	1.1	<0.5	<0.5
				2nd	22.8		7.2		0.02		39		86.9		7.5		1.1		<0.5	
TCW-WQM6	Cloudy	NA	10:59	1st	22.6	22.6	6.4	6.4	0.02	0.02	49	49	77.4	75.7	6.7	6.6	1.1	1.2	0.6	0.6
				2nd	22.6		6.4		0.02		49		73.9		6.4		1.2		0.5	
TCW-WQM7	Cloudy	NA	11:39	1st	25.1	25.1	9.3	9.3	0.04	0.04	85	85	77.3	75.5	6.4	6.3	1.8	1.9	1.0	1.0
				2nd	25.1		9.3		0.04		85		73.7		6.1		1.9		1.0	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 18 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Cloudy	Rough	13:22	1st	25.6	25.6	8.7	8.7	23.06	23.07	36500	36500	131.8	131.1	9.5	9.5	16.3	16.5	2.5	2.6
				2nd	25.6		8.7		23.08		36500		130.3		9.4		16.7		2.6	
TCW-WQM2	Cloudy	NA	12:16	1st	23.9	24.0	6.7	6.7	0.01	0.01	34	34	66.8	68.2	5.6	5.8	1.4	1.3	1.7	1.9
				2nd	24.0		6.7		0.01		34		69.5		5.9		1.1		2.1	
TCW-WQM3A	Cloudy	NA	11:54	1st	24.2	24.2	6.8	6.8	0.04	0.04	84	84	65.9	66.7	5.5	5.6	1.4	1.5	2.1	2.0
				2nd	24.2		6.8		0.04		84		67.4		5.7		1.5		1.8	
TCW-WQM4	Cloudy	NA	11:04	1st	22.3	22.4	6.2	6.2	0.02	0.02	42	42	44.3	42.7	3.9	3.8	1.4	1.6	1.4	1.3
				2nd	22.4		6.1		0.02		41		41.0		3.6		1.7		1.2	
TCW-WQM5A	Cloudy	NA	11:29	1st	23.6	23.6	7.1	7.1	0.02	0.02	39	39	92.3	91.6	7.8	7.8	2.0	2.1	0.6	0.6
				2nd	23.7		7.1		0.02		39		90.8		7.7		2.2		0.6	
TCW-WQM6	Cloudy	NA	12:35	1st	23.5	23.5	6.7	6.7	0.02	0.02	50	50	62.3	62.8	5.3	5.4	1.5	1.6	0.8	0.9
				2nd	23.5		6.7		0.02		50		63.2		5.4		1.6		0.9	
TCW-WQM7	Cloudy	NA	12:46	1st	28.2	28.2	9.2	9.2	0.04	0.04	90	90	88.9	87.1	6.9	6.8	1.2	1.3	3.2	3.1
				2nd	28.2		9.2		0.04		90		85.2		6.6		1.3		3.0	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 22 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Cloudy	Rough	16:02	1st	25.9	25.8	8.6	8.6	26.88	26.87	41900	41900	161.0	165.4	11.3	11.6	10.2	10.7	3.2	3.1
				2nd	25.8		8.6		26.86		41900		169.7		11.9		11.2		3.0	
TCW-WQM2	Cloudy	NA	14:39	1st	26.0	26.0	6.5	6.6	0.02	0.02	39	39	58.6	59.0	4.8	4.8	1.7	1.7	0.9	1.0
				2nd	26.0		6.6		0.02		39		59.4		4.8		1.6		1.0	
TCW-WQM3A	Cloudy	NA	14:13	1st	25.7	25.7	6.8	6.8	0.04	0.04	87	87	77.2	76.9	6.3	6.3	1.3	1.3	1.2	1.2
				2nd	25.7		6.8		0.04		87		76.5		6.2		1.3		1.1	
TCW-WQM4	Cloudy	NA	13:14	1st	23.1	23.1	6.1	6.1	0.02	0.02	47	48	50.4	52.0	4.3	4.5	1.9	2.0	0.9	0.9
				2nd	23.1		6.1		0.02		48		53.5		4.6		2.0		0.9	
TCW-WQM5A	Cloudy	NA	13:36	1st	25.3	25.3	7.2	7.2	0.02	0.02	44	44	90.4	90.5	7.4	7.4	1.8	1.8	0.6	0.6
				2nd	25.3		7.2		0.02		44		90.5		7.4		1.8		0.5	
TCW-WQM6	Cloudy	NA	15:17	1st	24.9	24.9	6.4	6.4	0.13	0.13	285	284	66.1	65.9	5.5	5.5	1.1	1.2	0.6	0.6
				2nd	24.9		6.4		0.13		282		65.7		5.4		1.2		0.6	
TCW-WQM7	Cloudy	NA	15:30	1st	30.3	30.3	8.7	8.7	0.05	0.05	112	112	92.3	92.0	7.0	7.0	2.3	2.4	4.5	4.6
				2nd	30.3		8.7		0.05		112		91.6		6.9		2.5		4.7	

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NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 24 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Cloudy	Rough	15:34	1st	22.2	22.2	8.1	8.1	26.65	26.66	41600	41600	112.9	112.9	8.4	8.4	8.4	8.5	1.7	1.8
				2nd	22.2		8.1		26.66		41600		112.9		8.4		8.5		1.9	
TCW-WQM2	Rainy	NA	13:26	1st	21.0	21.0	6.5	6.5	0.06	0.06	122	122	48.5	48.2	4.3	4.3	2.0	2.0	1.1	1.1
				2nd	21.0		6.5		0.06		122		47.8		4.3		1.9		1.1	
TCW-WQM3A	Cloudy	NA	12:52	1st	20.9	20.9	6.8	6.8	0.04	0.04	79	79	87.9	88.3	7.9	7.9	1.6	1.6	1.7	1.6
				2nd	20.9		6.8		0.04		79		88.6		7.9		1.6		1.5	
TCW-WQM4	Cloudy	NA	11:51	1st	20.8	20.8	6.3	6.3	0.03	0.03	63	63	54.9	54.8	4.9	4.9	1.3	1.3	0.8	0.8
				2nd	20.8		6.3		0.03		63		54.7		4.9		1.3		0.8	
TCW-WQM5A	Cloudy	NA	12:15	1st	20.7	20.7	6.8	6.8	0.02	0.02	40	40	96.6	96.7	8.7	8.7	1.9	1.9	1.2	1.3
				2nd	20.7		6.8		0.02		40		96.7		8.7		1.8		1.4	
TCW-WQM6	Rainy	NA	14:21	1st	20.7	20.7	6.5	6.5	0.14	0.14	296	297	78.8	79.7	7.1	7.2	1.9	1.9	1.0	1.1
				2nd	20.7		6.5		0.14		298		80.6		7.2		1.8		1.2	
TCW-WQM7	Cloudy	NA	14:57	1st	21.5	21.5	7.3	7.3	0.20	0.20	415	415	70.1	69.0	6.2	6.1	2.5	2.5	2.4	2.5
				2nd	21.5		7.4		0.20		415		67.9		6.0		2.4		2.6	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 26 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Cloudy	Rough	16:02	1st	24.5	24.5	8.4	8.4	25.83	25.83	40400	40400	135.1	133.5	9.7	9.6	10.5	10.8	3.0	3.2
				2nd	24.5		8.4		25.83		40400		131.9		9.5		11.0		3.4	
TCW-WQM2	Cloudy	NA	13:39	1st	24.3	24.3	6.6	6.6	0.02	0.02	49	49	66.6	65.1	5.6	5.5	1.7	1.8	0.9	0.8
				2nd	24.3		6.5		0.02		48		63.5		5.3		1.8		0.7	
TCW-WQM3A	Cloudy	NA	13:06	1st	25.4	25.4	6.8	6.8	0.04	0.04	84	84	78.3	77.7	6.4	6.4	1.8	1.8	1.4	1.5
				2nd	25.4		6.8		0.04		84		77.1		6.3		1.7		1.6	
TCW-WQM4	Cloudy	NA	11:58	1st	22.2	22.2	6.2	6.2	0.02	0.02	54	55	60.3	60.7	5.3	5.3	1.1	1.1	<0.5	<0.5
				2nd	22.2		6.2		0.02		55		61.0		5.3		1.1		<0.5	
TCW-WQM5A	Cloudy	NA	12:24	1st	24.9	24.9	7.0	7.0	0.02	0.02	42	42	95.2	95.5	7.9	7.9	1.8	1.7	0.9	0.9
				2nd	24.9		7.1		0.02		42		95.7		7.9		1.6		0.8	
TCW-WQM6	Cloudy	NA	14:17	1st	24.1	24.1	6.5	6.5	0.02	0.02	55	55	72.7	73.0	6.1	6.2	1.6	1.6	0.7	0.7
				2nd	24.1		6.5		0.02		55		73.3		6.2		1.6		0.7	
TCW-WQM7	Cloudy	NA	14:51	1st	28.1	28.1	7.6	7.6	0.05	0.05	115	115	77.5	78.4	6.1	6.2	1.7	1.8	3.0	2.9
				2nd	28.1		7.6		0.05		115		79.2		6.2		1.8		2.7	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 28 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Cloudy	Rough	12:08	1st	20.7	20.7	7.2	7.2	0.71	0.71	1410	1410	85.9	85.7	7.6	7.6	11.1	10.9	3.5	3.6
				2nd	20.7		7.2		0.71		1410		85.5		7.6		10.6		3.7	
TCW-WQM2	Rainy	NA	10:21	1st	20.5	20.5	6.7	6.7	0.02	0.02	43	43	68.8	69.5	6.2	6.3	3.6	3.7	2.5	2.3
				2nd	20.5		6.7		0.02		43		70.1		6.3		3.7		2.1	
TCW-WQM3A	Cloudy	NA	09:54	1st	20.4	20.4	6.8	6.8	0.03	0.03	73	74	75.6	75.6	6.8	6.8	3.8	3.8	4.3	4.3
				2nd	20.4		6.8		0.03		74		75.5		6.8		3.8		4.3	
TCW-WQM4	Cloudy	NA	08:45	1st	21.1	21.1	6.3	6.3	0.04	0.04	83	83	52.9	52.6	4.7	4.7	1.8	1.8	1.4	1.6
				2nd	21.1		6.3		0.04		83		52.3		4.7		1.8		1.7	
TCW-WQM5A	Cloudy	NA	09:14	1st	20.3	20.3	6.6	6.6	0.02	0.02	37	37	95.1	95.0	8.6	8.6	4.5	4.6	3.3	3.1
				2nd	20.3		6.6		0.02		37		94.9		8.6		4.7		2.9	
TCW-WQM6	Rainy	NA	10:59	1st	20.5	20.5	6.5	6.6	0.02	0.02	51	51	86.1	86.1	7.8	7.8	3.7	3.7	2.8	2.9
				2nd	20.5		6.6		0.02		51		86.0		7.8		3.7		3.0	
TCW-WQM7	Rainy	NA	11:29	1st	20.7	20.7	7.2	7.2	0.04	0.04	96	96	92.9	93.3	8.3	8.4	3.6	3.7	4.3	4.4
				2nd	20.7		7.2		0.04		95		93.7		8.4		3.8		4.4	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

Tung Chung New Town Extension (West)
Water Quality Monitoring
Water Quality Monitoring Results on 30 March 2022 during Ebb Tide

Monitoring Station	Weather Condition	Tidal Condition	Sampling Time	Replicate	Water Temperature (°C)		pH		Salinity (ppt)		Conductivity (μS/cm)		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	Value	Average
TCW-WQM1	Sunny	Rough	12:55	1st	22.4	22.4	7.9	7.9	25.30	25.30	39700	39700	91.3	91.3	6.8	6.8	11.3	11.5	1.2	1.3
				2nd	22.4		7.9		25.30		39700		91.2		6.8		11.6		1.4	
TCW-WQM2	Sunny	NA	11:24	1st	21.4	21.4	6.6	6.6	0.03	0.03	61	60	61.9	62.7	5.5	5.6	1.3	1.4	0.8	0.7
				2nd	21.4		6.7		0.03		58		63.4		5.6		1.4		0.6	
TCW-WQM3A	Cloudy	NA	10:57	1st	22.0	22.0	6.7	6.7	0.05	0.05	110	111	72.0	71.5	6.3	6.3	1.5	1.5	1.2	1.2
				2nd	22.0		6.7		0.05		111		71.0		6.2		1.4		1.1	
TCW-WQM4	Cloudy	NA	09:46	1st	21.0	21.0	6.2	6.2	0.02	0.02	49	49	60.1	61.4	5.4	5.5	1.5	1.5	<0.5	<0.5
				2nd	20.9		6.2		0.02		48		62.6		5.6		1.5		<0.5	
TCW-WQM5A	Cloudy	NA	10:16	1st	21.2	21.2	7.0	7.0	0.02	0.02	40	40	98.6	98.3	8.8	8.8	1.5	1.4	0.7	0.6
				2nd	21.2		7.0		0.02		40		97.9		8.7		1.3		0.5	
TCW-WQM6	Sunny	NA	11:59	1st	21.3	21.3	6.5	6.5	0.02	0.02	52	52	82.6	82.3	7.3	7.3	1.3	1.3	0.6	0.7
				2nd	21.3		6.5		0.02		52		81.9		7.3		1.2		0.7	
TCW-WQM7	Sunny	NA	12:27	1st	24.0	24.0	7.4	7.4	0.05	0.05	117	117	72.1	70.9	6.1	6.0	1.6	1.6	1.8	1.8
				2nd	24.0		7.4		0.05		117		69.6		5.9		1.6		1.7	

Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
NA: This monitoring location is not subject to tidal effect.
Value exceeding Action Level is underlined; **Value exceeding Limit Level is bolded and underlined**

H5. Water Quality Monitoring Event and Action Plan

Table H5.1: Event and Action Plan for Construction Water Quality

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action Level Exceedance for one sampling day	1. Inform IEC, Contractor and ER; 2. Check monitoring data, all plant, equipment and Contractor's working methods; and 3. Discuss remedial measures with IEC and Contractor and ER.	1. Discuss with ET, ER and Contractor on the implemented mitigation measures; 2. Review proposals on remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the implemented mitigation measures; 2. Make agreement on the remedial measures to be implemented; 3. Supervise the implementation of agreed remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment; 5. Consider changes of working methods; 6. Discuss with ER, ET and IEC and purpose remedial measures to IEC and ER; and 7. Implement the agreed mitigation measures.
Action Level Exceedance for more than one consecutive sampling days	1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Inform IEC, contractor and ER; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss remedial measures with IEC, contractor and ER 5. Ensure remedial measures are implemented.	1. Discuss with ET, Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with ET, IEC and Contractor on the proposed mitigation measures; 2. Make agreement on the remedial measures to be implemented ; and 3. Discuss with ET, IEC and Contractor on the effectiveness of the implemented remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of remedial measures to ER and IEC within 3 working days of notification; and 6. Implement the agreed mitigation measures.

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Limit Level Exceedance for one sampling day	1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Inform IEC, contractor and ER; 3. Rectify unacceptable practice; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Consider changes of working methods; 6. Discuss mitigation measures with IEC, ER and Contractor; and 7. Ensure the agreed remedial measures are implemented.	1. Discuss with ET, Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with ET, IEC and Contractor on the implemented remedial measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the remedial measures to be implemented; and 4. Discuss with ET, IEC and Contractor on the effectiveness of the implemented remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC within 3 working days of notification; and 6. Implement the agreed remedial measures.
Limit Level Exceedance for more than one consecutive sampling days	1. Inform IEC, Contractor and ER; 2. Check monitoring data, all plant, equipment and Contractor's working methods; 3. Discuss mitigation measures with IEC, ER and Contractor; and 4. Ensure mitigation measures are implemented; and 5. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	1. Discuss with ET, Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with ET, IEC and Contractor on the implemented remedial measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the remedial measures to be implemented; 4. Discuss with ET and IEC on the effectiveness of the implemented mitigation measures; and 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the relevant site construction activities until no exceedance of Limit level.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC within 3 working days of notification; and 6. Implement the agreed remedial measures. 7. As directed by the ER, to slow down or stop all or part of the relevant site construction activities until no exceedance of Limit level.

I. Ecology

I1. Locations of Ecological Impact Monitoring Stations

I2. Ecologically-related Water Quality Monitoring Equipment Calibration Certificates

I3. Representative Photos of Species of Conservation Importance

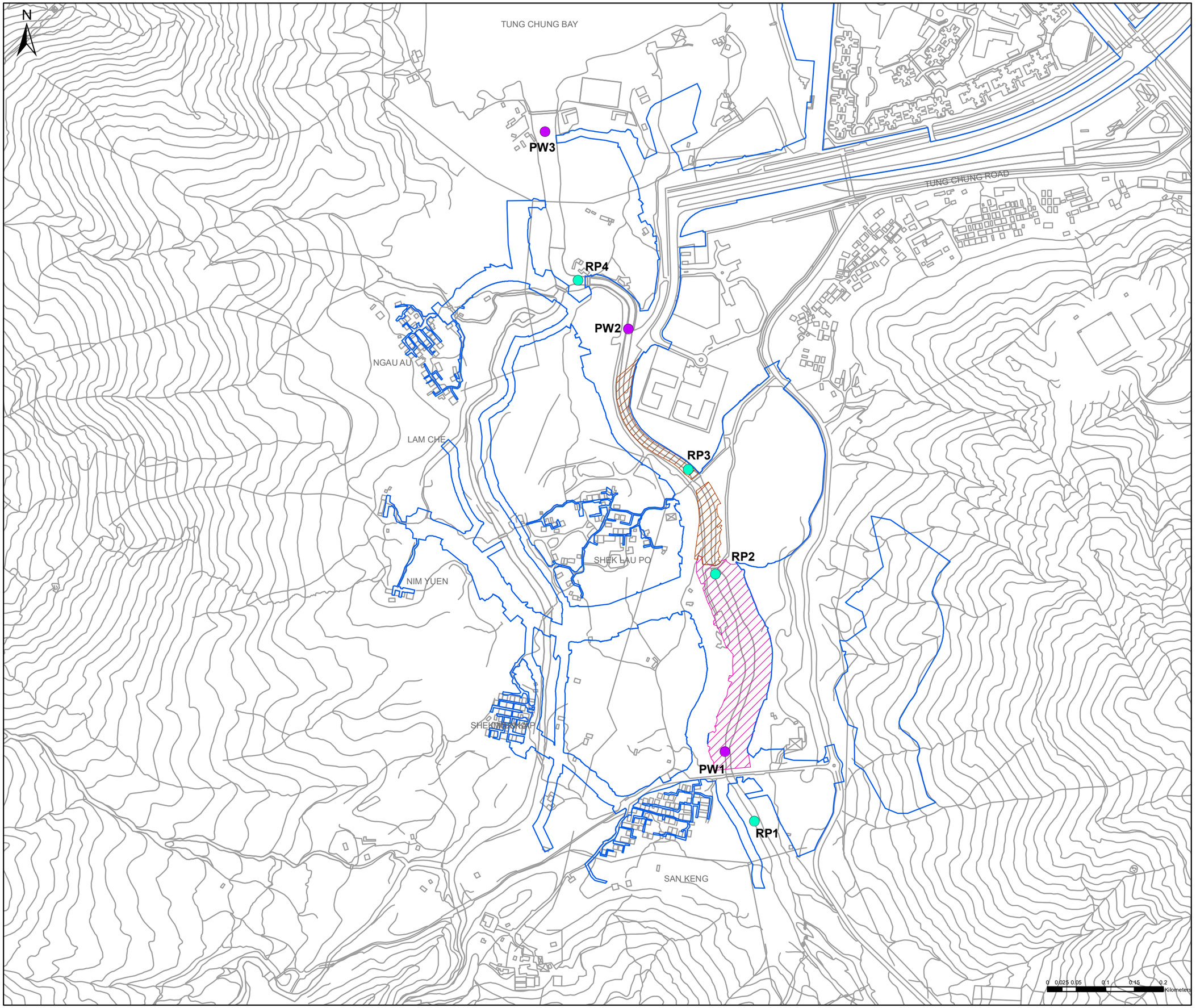
I4. Monthly Monitoring Data of Stream Fauna (Aquatic invertebrate) in the Reporting Period

I5. Monthly Monitoring Data of Stream Fauna (Fish) in the Reporting Period

I6. Event and Action Plan for Exceedance in Action and Limit Levels of Stream Fauna

I7. Summary of Water Quality Data in the Reporting Period

I1. Location of Ecological Impact Monitoring Stations



Key Plan 1:140,000

Notes:

Key to symbols:

LEGEND

- PROJECT AREA
- ECOLOGICAL MONITORING STATION (FOR RIVER PARK)
- ECOLOGICAL MONITORING STATION (FOR OTHER PUBLIC WORKS)
- RIVER PARK PHASE 1
- RIVER PARK PHASE 2

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	AUG 2021	KN		LL	TC

MOTT MACDONALD
3/F International Trade Tower
348 Kwun Tung Road
Kwun Tung, Kowloon
Hong Kong
T +852 2828 5757
F +852 2827 1823
W mottmac.com

Client

土木工程拓展署
Civil Engineering and Development Department

Project

**AGREEMENT NO. CE 64/2020(EP)
ENVIRONMENTAL TEAM FOR
TUNG CHUNG NEW TOWN EXTENSION (WEST)
– DESIGN AND CONSTRUCTION**

Title

LOCATION OF ECOLOGICAL IMPACT MONITORING STATIONS

Designed			Eng check		
Drawn			Coordination		
Dwg check			Approved		
Scale at A3		Status		Rev	

Drawing Number

APPENDIX I1

I2. Ecologically-related Water Quality Monitoring Equipment Calibration Certificates

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street, Kwai Chung
N.T., Hong Kong
T: +852 2610 1044 | F: +852 2610 2021

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR K.W.FAN	WORK ORDER:	HK2152127
CLIENT:	ENVIROTECH SERVICES CO.		
ADDRESS:	RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	17-Dec-2021
		DATE OF ISSUE:	22-Dec-2021

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.
The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.
The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Brand Name/ Model No.:	[HORIBA]/ [U-53]
Serial No./ Equipment No.:	[KP23RRSM]/ [N/A]
Date of Calibration:	20-December-2021

GENERAL COMMENTS

This is the Final Report and supersedes any previous report(s) with this reference.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2152127

SUB-BATCH: 0
DATE OF ISSUE: 22-Dec-2021
CLIENT: ENVIROTECH SERVICES CO.

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [HORIBA]/ [U-53]
Serial No./ Equipment No.: [KP23RRSM]/ [N/A]
Date of Calibration: 20-December-2021 Date of Next Calibration: 20-March-2022

PARAMETERS:

Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	151	+2.8
6667	6180	-7.3
12890	12700	-1.5
58670	53700	-8.5
	Tolerance Limit (%)	±10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.91	3.99	+0.08
5.85	5.76	-0.09
8.56	8.48	-0.08
	Tolerance Limit (mg/L)	±0.20

pH Value

Method Ref: APHA (21st edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.05	+0.05
7.0	6.92	-0.08
10.0	9.93	-0.07
	Tolerance Limit (pH unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2152127

SUB-BATCH: 0
DATE OF ISSUE: 22-Dec-2021
CLIENT: ENVIROTECH SERVICES CO.

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [HORIBA]/ [U-53]
Serial No./ Equipment No.: [KP23RRSM]/ [N/A]
Date of Calibration: 20-December-2021 Date of Next Calibration: 20-March-2022

PARAMETERS:

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.32	--
4	4.07	+1.8
40	41.7	+4.3
80	82.3	+2.9
400	419	+4.8
800	820	+2.5
	Tolerance Limit (%)	±10.0

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.02	--
10	9.93	-0.7
20	19.91	-0.4
30	29.23	-2.6
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2152127

SUB-BATCH: 0
DATE OF ISSUE: 22-Dec-2021
CLIENT: ENVIROTECH SERVICES CO.

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [HORIBA]/ [U-53]
Serial No./ Equipment No.: [KP23RRSM]/ [N/A]
Date of Calibration: 20-December-2021 Date of Next Calibration: 20-March-2022

PARAMETERS:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (^{o}C)	Displayed Reading (^{o}C)	Tolerance (^{o}C)
10.5	10.08	-0.4
21.0	20.32	-0.7
39.5	38.76	-0.7
	Tolerance Limit (^{o}C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganic

I3. Representative Photos of Species of Conservation Importance

Acrossocheilus beijiangensis

Oryzias curvinotus

Parazacco spilurus

I4. Monthly Monitoring Data of Stream Fauna (Aquatic invertebrate) in the Reporting Period

Relative abundance: +: Uncommon, ++: Common, +++: Abundant

Date	Sampling Point	Method	Scientific Name	Common Name	Chinese Name	Abundance	Relative Abundance
Mar/22	PW2	Kick	*Physella acuta*	European Physa	尖膀胱螺	12	
Mar/22	PW2	Kick	*Trithemis sp.*	Dropwings (Larva)	-	6	
Mar/22	PW2	Kick	*Orthetrum sp.*	Unidentified Skimmer (Larva)	灰蜻屬 (稚蟲)	2	
Mar/22	RP3	Kick	*Caridina cantonensis*	Freshwater Shrimp	廣東米蝦	3	
Mar/22	RP3	Kick	*Baetidae*	Small Minnow Mayfly	四節蜉科	2	
Mar/22	RP3	Kick	*Physella acuta*	European Physa	尖膀胱螺	11	+++
Mar/22	RP3	Kick	*Radix plicatulus*	Freshwater Snail	椎實螺	2	
Mar/22	RP4	Kick	*Tarebia granifera*	Freshwater Snail	斜粒粒蜷	5	
Mar/22	RP4	Kick	*Baetidae*	Small Minnow Mayfly	四節蜉科	1	
Mar/22	RP4	Kick	*Euphaea decorata*	Black-banded Gossamerwing (Larva)	方帶溪蟌 (稚蟲)	1	
Mar/22	RP4	Kick	*Hydropsychidae*	Caddisfly	石蛾	3	
Mar/22	RP4	Kick	*Physella acuta*	European Physa	尖膀胱螺	1	
Mar/22	RP1	Observe	*Caridina cantonensis*	Freshwater Shrimp	廣東米蝦		+
Mar/22	RP1	Observe	*Macrobrachium sp.*	Freshwater Prawn	沼蝦屬		++
Mar/22	RP1	Cage	*Macrobrachium sp.*	Freshwater Prawn	沼蝦屬	3	
Mar/22	RP1	Observe	*Rhagovelia sp.*	Smaller Water Strider	水黽		++
Mar/22	RP1	Kick	*Rhagovelia sp.*	Smaller Water Strider	水黽	2	
Mar/22	RP1	Kick	*Baetidae*	Small Minnow Mayfly	四節蜉科	6	
Mar/22	RP1	Kick	*Hydropsychidae*	Caddisfly	石蛾	2	
Mar/22	PW3	Kick	*Amphipoda*	Scud	端足類	50+	
Mar/22	PW3	Kick	*Gelasimus borealis*	Mangrove Crab	北方丑招潮蟹	1	
Mar/22	PW1	Observe	*Ptilomera tigrina*	Water Strider	虎紋毛足澗黽蝽		++
Mar/22	PW1	Observe	*Rhagovelia sp.*	Smaller Water Strider	水黽		+++
Mar/22	PW1	Kick	*Rhagovelia sp.*	Smaller Water Strider	水黽	2	
Mar/22	PW1	Kick	*Baetidae*	Small Minnow Mayfly	四節蜉科	8	
Mar/22	RP2	Kick	*Rhagovelia sp.*	Smaller Water Strider	水黽	1	
Mar/22	RP2	Kick	*Baetidae*	Small Minnow Mayfly	四節蜉科	38	
Mar/22	RP2	Kick	*Lepidostomatidae*	Caddisfly	石蛾	6	
Mar/22	RP2	Kick	*Hydropsychidae*	Caddisfly	石蛾	13	

I5. Monthly Monitoring Data of Stream Fauna (Fish) in the Reporting Period

Relative abundance: +: Uncommon, ++: Common, +++: Abundant

Date	Sampling Point	Method	Scientific Name	Common Name	Chinese Name	Abundance	Relative Abundance
Mar/22	PW2	Kick	*Gambusia affinis*	Mosquito Fish	食蚊魚	1	
Mar/22	RP3	Kick	*Xiphophorus hellerii*	Swordtail	劍尾魚	1	
Mar/22	RP1	Observe	*Acrossocheilus beijiangensis**	Beijiang Thick-lipped Barb	北江光唇魚	3	
Mar/22	RP1	Cage	*Acrossocheilus beijiangensis**	Beijiang Thick-lipped Barb	北江光唇魚		+
Mar/22	RP1	Observe	*Liniparhomaloptera disparis*	Broken-band Hillstream Loach	擬平鰍		++
Mar/22	RP1	Observe	*Parazacco spilurus**	Predaceous Chub	異鱲		+++
Mar/22	RP1	Cage	*Parazacco spilurus**	Predaceous Chub	異鱲	3	
Mar/22	RP1	Observe	*Rhinogobius duospilus*	-	溪吻鰕虎魚		++
Mar/22	RP1	Kick	*Rhinogobius duospilus*	-	溪吻鰕虎魚	2	
Mar/22	RP1	Observe	*Xiphophorus hellerii*	Swordtail	劍尾魚		++
Mar/22	RP1	Cage	*Xiphophorus hellerii*	Swordtail	劍尾魚	1	
Mar/22	RP1	Observe	*Pseudogastromyzon myersi*	Sucker-belly Loach	麥氏擬腹吸鰍		+
Mar/22	RP1	Kick	*Pseudogastromyzon myersi*	Sucker-belly Loach	麥氏擬腹吸鰍	2	
Mar/22	RP4	Observe	*Gerres oyena*	Common Silverbiddy	奧奈銀鱸		++
Mar/22	RP4	Observe	*Mugilidae*	Mullet	鯔科		+++
Mar/22	RP4	Observe	*Oryzias curvinotus**	Rice Fish	弓背青鱂		+
Mar/22	RP4	Observe	*Rhinogobius giurinus*	Barcheek Goby	子陵吻鰕虎魚		+
Mar/22	RP4	Observe	*Glossogobius giuris*	Fork Tongue Goby	舌鰕虎魚		+
Mar/22	RP4	Observe	*Poecilia maculatis*	Southern Platyfish	花斑劍尾魚		+
Mar/22	PW3	Observe	*Gerres oyena*	Common Silverbiddy	奧奈銀鱸		+
Mar/22	PW3	Observe	*Mugilidae*	Mullet	鯔科		+++
Mar/22	PW3	Observe	*Periophthalmus modestus*	Common Mudskipper	彈塗魚		++
Mar/22	PW3	Observe	*Pseudogobius javanicus*	Javanese Fatnose Goby	爪哇擬鰕虎魚		+
Mar/22	PW3	Observe	*Glossogobius giuris*	Fork Tongue Goby	舌鰕虎魚		+
Mar/22	PW1	Observe	*Acrossocheilus beijiangensis**	Beijiang Thick-lipped Barb	北江光唇魚		+
Mar/22	PW1	Cage	*Barbodes semifasciolatus*	Chinese Barb	五線無鬚鮈	1	
Mar/22	PW1	Cage	*Gambusia affinis*	Mosquito Fish	食蚊魚	1	
Mar/22	PW1	Observe	*Parazacco spilurus**	Predaceous Chub	異鱲		+++
Mar/22	PW1	Cage	*Parazacco spilurus**	Predaceous Chub	異鱲	2	
Mar/22	PW1	Observe	*Rhinogobius duospilus*	-	溪吻鰕虎魚		+
Mar/22	PW1	Observe	*Xiphophorus hellerii*	Swordtail	劍尾魚		+++
Mar/22	PW1	Cage	*Xiphophorus hellerii*	Swordtail	劍尾魚	13	
Mar/22	PW1	Observe	*Xiphophorus variatus*	Variable Platyfish	雜色劍尾魚		+++
Mar/22	PW1	Cage	*Xiphophorus variatus*	Variable Platyfish	雜色劍尾魚	25	
Mar/22	PW1	Observe	*Poecilia maculatis*	Southern Platyfish	花斑劍尾魚		+++
Mar/22	PW1	Cage	*Poecilia maculatis*	Southern Platyfish	花斑劍尾魚	36	
Mar/22	PW1	Observe	*Liniparhomaloptera disparis*	Broken-band Hillstream Loach	擬平鰍		+
Mar/22	RP2	Observe	*Acrossocheilus beijiangensis**	Beijiang Thick-lipped Barb	北江光唇魚		++
Mar/22	RP2	Cage	*Barbodes semifasciolatus*	Chinese Barb	五線無鬚鮈	2	
Mar/22	RP2	Observe	*Parazacco spilurus**	Predaceous Chub	異鱲		+++
Mar/22	RP2	Cage	*Parazacco spilurus**	Predaceous Chub	異鱲	18	
Mar/22	RP2	Cage	*Pseudogastromyzon myersi*	Sucker-belly Loach	麥氏擬腹吸鰍	1	
Mar/22	RP2	Observe	*Rhinogobius duospilus*	-	溪吻鰕虎魚		+
Mar/22	RP2	Observe	*Rhinogobius giurinus*	Barcheek Goby	子陵吻鰕虎魚		+
Mar/22	RP2	Observe	*Xiphophorus hellerii*	Swordtail	劍尾魚		+++
Mar/22	RP2	Cage	*Xiphophorus hellerii*	Swordtail	劍尾魚	2	
Mar/22	RP2	Observe	*Xiphophorus variatus*	Variable Platyfish	雜色劍尾魚		++
Mar/22	RP2	Observe	*Liniparhomaloptera disparis*	Broken-band Hillstream Loach	擬平鰍		++
Mar/22	RP2	Cage	*Liniparhomaloptera disparis*	Broken-band Hillstream Loach	擬平鰍	4	

**Acrossocheilus beijiangensis and Oryzias curvinotus* are considered as species of conservation importance (Fellowes, 2002); *Parazacco spilurus* is considered as species of conservation importance (Zheng & Wang, 1998)

I6. Event and Action Plan for Exceedance in Action and Limit Levels of Stream Fauna

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action Level Exceedance	1. Check monitoring data and confirm findings; 2. Investigate the cause of the reduction if it is related to construction works; 3. Immediately inform IEC, Contractor and ER; 4. Discuss mitigation measures with IEC, Contractor and ER; 5. Ensure mitigation measures are implemented.	1. Check monitoring data, analysis and investigation by ET; 2. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 3. Review and advise the ET and ER on the effectiveness of the mitigation measures after implementation.	1. Check the monitoring results and findings from ET and IEC; 2. Discuss with ET, IEC and Contractor on the proposed mitigation measures; 3. Supervise the implementation of the mitigation measures; 4. Discuss with ET, IEC and Contractor on the effectiveness of the implemented mitigation measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Discuss with ET, IEC and ER and submit proposal of mitigation measures to ER and IEC; 4. Implement the agreed mitigation measures. 5. Instigate remedial action to remove or reduce source of disturbance if the cause is identified as project related.
Limit Level Exceedance	1. Check monitoring data and confirm findings; 2. Investigate the cause of the reduction if it is related to construction works; 3. Immediately inform IEC, Contractor and ER; 4. Discuss additional mitigation measures with IEC, Contractor and ER; 5. Ensure additional mitigation measures are implemented.	1. Check monitoring data, analysis and investigation by ET; 2. Discuss with ET, Contractor and ER on the additional mitigation measures implemented; 3. Review the proposed additional mitigation measures submitted by Contractor and advise the ER accordingly; 4. Review and advise the ET and ER on the effectiveness of the additional mitigation measures implemented	1. Check the monitoring results and findings from ET and IEC; 2. Discuss with ET, IEC and Contractor on the additional mitigation measures proposed; 3. Supervise the implementation of the additional mitigation measures; 4. Discuss with ET, IEC and Contractor on the effectiveness of the additional mitigation measures implemented.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC; 4. Implement the agreed additional mitigation measures. 5. Instigate additional remedial action to remove or reduce source of disturbance if the cause is identified as project related.

I7. Summary of Water Quality Data in the Reporting Period

Tung Chung New Town Extension (West)
Ecologically-related Water Quality Monitoring Results

Reporting Month: **Mar-2022**

Monitoring Station		RP1		RP2		RP3		RP4		PW1		PW2		PW3	
Replicate	Unit	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Sampling Time	-	09:05	09:05	10:45	10:45	11:12	11:12	13:15	13:15	09:48	09:48	11:49	11:49	14:45	14:45
Weather	-	Overcast	Overcast	Overcast	Overcast	Overcast	Overcast	Sunny	Sunny	Overcast	Overcast	Overcast	Overcast	Sunny	Sunny
Sampling Depth	m	0.3	0.3	0.4	0.4	0.1	0.1	0.3	0.3	0.4	0.4	0.2	0.2	0.3	0.3
Parameter															
pH		6.7	6.7	7	7	7.9	7.8	9.2	9.2	6.7	6.5	9.3	9.3	9	9
Salinity	ppt	0.02	0.02	0.03	0.03	0.03	0.03	0.06	0.06	0.02	0.02	0.04	0.04	23	23.02
Temperature	°C	22.5	22.5	23.3	23.3	25.7	25.6	30.5	30.6	22.7	22.8	27.5	27.6	27.9	27.9
Turbidity	NTU	1.0	0.9	1.2	1.1	0.9	0.9	1.6	1.5	1.9	1.9	1.0	1.0	17.3	15.9
DO	mg/L	7.9	7.8	5.8	5.7	8.6	8.4	7.2	8.1	7.4	6.6	8.1	8.5	13.3	14.5
DO Saturation	%	91.3	89.6	67.3	66.9	105.8	102.9	96.3	108.2	85.8	76.3	102.7	107.8	192.3	210.5
Suspended Solids	mg/L	0.6	0.6	0.8	0.8	1.9	1.7	4.8	4.2	1.1	1	4.6	4.2	2.7	2.6
Ammonia as N	mg/L	<0.01	<0.01	0.02	0.02	0.01	0.01	0.07	0.08	0.28	0.25	0.15	0.17	0.04	0.03
Total Kjeldahl Nitrogen as N	mg/L	0.05	<0.05	0.11	0.12	0.16	0.16	0.39	0.36	0.42	0.37	0.44	0.44	0.2	0.19
Total Phosphorus as P	mg/L	<0.01	<0.01	0.04	0.04	0.04	0.04	0.07	0.07	0.06	0.06	0.1	0.09	0.03	0.03
Escherichia coli	CFU/100mL	27	21	87	82	90	82	84	52	2200	1700	1500	1300	34	34
Biochemical Oxygen Demand	mg/L	<1.0	<1.0	1	<1.0	1.2	<1.0	1.7	1.9	1.4	1.2	2.1	1.8	1.3	1.1
Chemical Oxygen Demand	mg/L	<2	<2	3	<2	6	8	13	12	9	10	9	10	15	13
Oil & Grease	mg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2

J. Cumulative Statistics on Exceedances, Environmental Complaints, Notifications of Summons and Status of Prosecutions

Table J.1: Cumulative Statistics on Exceedances

Parameter	Exceedance Level	Total No. Recorded in this Reporting Period[1]	Total No. Recorded since Project Commencement
Air Quality (1-hour TSP)	**Action**	0	0
	Limit	0	0
Noise	**Action**	0	0
	Limit	0	0
Water Quality	**Action**	0	0
	Limit	0	0
Ecology	**Action**	0	0
	Limit	0	0

Remark: (1) Exceedances, which are not project related, are not shown in this table.

Table J.2: Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Contract No.	Reporting Period	Cumulative Statistics		
		Complaints	Notifications of Summons	Prosecutions
Contract 5	**This Reporting Period (1 – 31 Mar 2022)**	0	0	0
	Total No. Received since Project Commencement	0	0	0
Contract 6	**This Reporting Period (1 – 31 Mar 2022)**	0	0	0
	Total No. Received since Project Commencement	2	0	0

K. Monitoring Schedule for the Next Reporting Period

Apr 2022 - Impact Monitoring Schedule for Tung Chung West

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 WQM (12:30) DM-5, DM-6	2
3	4 WQM (15:00)	5	6 WQM (16:30)	7 DM-5, DM-6 CA5, CA6, CA7, CA8, CA9	8 WQM (16:00)	9
10	11 WQM (09:00)	12 CA5, CA6, CA7, CA8, CA9	13 WQM (12:00) DM-5, DM-6	14	15	16
17	18	19 WQM (15:00) DM-5, DM-6 Ecological Monitoring	20	21 WQM (16:30)	22 CA5, CA6, CA7, CA8, CA9	23 WQM (16:00)
24	25 WQM (10:00) DM-5, DM-6	26	27 WQM (12:00)	28 CA5, CA6, CA7, CA8, CA9	29 WQM (13:00)	30 DM-5, DM-6

Notes:

Air Quality Monitoring Station:
- DM-5: Lung Tseng Tau
- DM-6: Mok Ka

Noise Monitoring Station:
- CA5: Village House in Ma Wan Chung (G/F)
- CA6: Village House in Shek Mun Kap (G/F)
- CA7: YMCA of Hong Kong Christian College (Roof Floor)
- CA8: Caritas Charles Vath College (Roof Floor)
- CA9: Hong Chi Shiu Pong Morninghope School (Roof Floor)

WQM - Water Quality Monitoring

[1] Water quality monitoring is arranged at ebb tide of the day

[2] Tidal information refers to the Chek Lap Kok East provided by Hong Kong Observatory

[3] Indicated time is the start time of the monitoring at TCW-WQM1