Civil Engineering and Development Department

Agreement No. CE 60/2017 (EP)

Environmental Team for Tung Chung New Town Extension (East) - Design and Construction

Monthly Environmental Monitoring & Audit Report for March 2022

ERM

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The business of sustainability

Agreement No. CE60/2017 (EP) Environmental Team for Tung Chung New Town Extension (East) – Design and Construction

Monthly Environmental Monitoring & Audit Report for March 2022

Revision 2

Document Code: 0445700_Monthly EM&A March 2022_v2.docx

Environmental Resources Management

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Client: Civil Engineering and Development Department	Project No: 0445700
Summary: This document presents the Monthly EM&A Report for March 2022 for *Environmental Team for Tung Chung New Town Extension (East) – Design and Construction (Agreement No. CE 60/2017 [EP])*.	Date: 24 May 2022 Approved by:  Craig A. Reid *Partner*

Revision	Description	By	Checked	Approved	Date
2	Monthly EM&A Report (for March 2022)	Var	RC/JT	CAR	24/5/22

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CEDD Civil Engineering and Development Department

Tung Chung New Town Extension

Environmental Certification Sheet for Environmental Permit No. EP-519/2016

Reference Document/Plan

Document/Plan to be Certified:	Monthly Environmental Monitoring & Audit Report for March 2022 (Revision 2)
Date of Report:	24 May 2022

Reference EP Condition

Environmental Permit Condition: 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.

ET Certification

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

Kelvin So
Environmental Team Leader

Date: 24 May 2022

Your Ref.

By Post

Our Ref. 198377-0507

Date 24 May 2022

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

Attention: Mr. Vincent CHOW/ Mr. K.T. WO

Dear Sir,

Agreement No. CE 59/2017 (EP)
Independent Environmental Checker for Tung Chung New Town Extension – Investigation
Monthly Environmental Monitoring & Audit Report (Revision 2) for March 2022 for TCE

We refer to the Monthly Environmental Monitoring & Audit Report (Revision 2) for March 2022 for Tung Chung New Town Extension (East) (TCE) dated May 2022 and certified by the Environmental Team (ET) Leader of TCE on 24 May 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 / TCE – ERM (Attn: Mr. Kelvin So) [by Email: Kelvin.So@erm.com]
PM / TCE – AECOM (Attn: Mr. Chris Cheung) [by Email: crec1@tce-aecom.com]

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ABBREVIATIONS

C&D	Construction and Demolition
CAP	Contamination Assessment Plan
CEDD	Civil Engineering and Development Department
CWD	Chinese White Dolphin
DCM	Deep Cement Mixing
DO	Dissolved Oxygen
EIA	Environmental Impact Assessment
EIAO	Environmental Impact Assessment Ordinance
EIS	Ecologically Important Stream
EM&A	Environmental Monitoring and Audit
EP	Environmental Permit
EPD	Environmental Protection Department
ER	Engineer's Representative
ERM	ERM-Hong Kong, Limited
ET	Environmental Team
HVS	High Volume Sampler
IEC	Independent Environmental Checker
PDA	Planned Development Area
PME	Powered Mechanical Equipment
QPME	Quality Powered Mechanical Equipment
RAP	Remediation Action Plan
RR	Remediation Report
RTTM	Real Time Tracking and Monitoring
SS	Suspended Solid
TCB	Tung Chung Bay
TCE	Tung Chung East
TCNTE	Tung Chung New Town Extension
TCW	Tung Chung West
The Project	Tung Chung New Town Extension (East)
THW	Tai Ho Wan
TSP	Total Suspended Particulate
Updated EM&A Manual	Updated Environmental Monitoring and Audit Manual for Tung Chung New Town Extension prepared by ERM under Agreement No. CE 60/2017 (EP) and deposited to EPD under Environmental Permit No. EP-519/2016

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). ERM-Hong Kong, Limited (ERM) is commissioned to undertake the role of Environmental Team (ET) for the construction and operation of TCE Project ("the Project") in accordance with the requirements specified in the EP, Updated Environmental Monitoring and Audit (EM&A) Manual, EIA Report of the TCNTE project and other relevant statutory requirements.

The construction of the Contract No. NL/2017/03 - Tung Chung New Town Extension – Reclamation and Advance Works ("Contract 1") at TCE commenced on 9 July 2018.

The construction of the Contract No. NL/2020/02 - Tung Chung New Town Extension – Salt Water Supply System ("Contract 2") at TCE commenced on 4 September 2021.

The construction of the Contract No. NL/2020/03 - Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East ("Contract 3") at TCE commenced on 5 November 2021.

The construction of the Contract No. NL/2020/07 - Tung Chung New Town Extension – Tai Ho Interchange ("Contract 7") at TCE commenced on 15 March 2022.

This is the Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 March 2022 for the TCE Project in accordance with the Updated EM&A Manual.

A summary of monitoring and audit activities conducted in the reporting period is listed below:

Air Quality Monitoring	6 sessions
Noise Monitoring	6 sessions
Water Quality Monitoring	13 sessions
Preserved Plant Species Monitoring	1 session
Transplanted Plant Species Monitoring	5 session

Environmental Site Inspection

- Contract 1 4 sessions (1)
- Contract 2 5 sessions
- Contract 3 3 sessions (2)
- Contract 7 5 sessions

Environmental Management Meeting

- Contract 1 1 session
- Contract 2 1 session
- Contract 3 1 session
- Contract 7 1 session

Environmental auditing works, including weekly site inspections of construction works conducted by the ET, audit of works vessels, audit of implementation of Dolphin Watching Plan, Works Vessel Travel Route Plan, Silt Curtain Deployment Plan, Spill Response, Waste Management Plan and Detailed Preservation and/or Translocation of Plant Species of Conservation Importance were 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 Limit Levels was recorded for construction noise monitoring in the reporting period. However, two (2) Action Level were triggered from two (2) environmental complaints related to noise nuisance in the reporting period. Investigations were conducted for the exceedances in accordance with the Event and Action Plan.

Breaches of Action and Limit Levels for Water Quality

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

(1) Site inspection on 3 March 2022 for Contract 1 was cancelled due to COVID-19 pandemic.

(2) Site inspection on 4 March 2022 for Contract 3 was cancelled due to COVID-19 pandemic.

Soft Shore Ecological Monitoring

No impact soft shore ecological monitoring at Tung Chung Bay and Tai Ho Wan was scheduled during the reporting period. (1)

Environmental Complaints, Non-compliance & Summons

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

Three (3) environmental complaints related to Contract 3 were received in the reporting period. Investigations were conducted for the environmental complaints in accordance with the complaint handling process as stated in the Complaint Management Plan.

Reporting Change

There was no reporting change in the reporting period.

Key Issues For The Coming Month

Potential environmental impacts arising from the upcoming construction activities in the next reporting period of April 2022 are mainly associated with dust emission, noise from barge and plant operation during normal working hours and restricted hours, elevation in SS due to marine filling works, disturbance to Chinese White Dolphin (CWD) during marine works, handling and storage of C&D materials generated from construction activities, efficiency of wastewater and drainage management and tree protection. 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 Contractor about the environmental toolbox topics on the abovementioned key issues for the coming month.

(1) Impact soft shore ecological monitoring at Tung Chung Bay and Tai Ho Wan was postponed to April 2022 due to COVID-19 pandemic.

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).

ERM-Hong Kong, Limited (ERM) is commissioned to undertake the role of Environmental Team (ET) for the construction and operation of TCE Project ("the Project") in accordance with the requirements specified in the EP, Updated Environmental Monitoring and Audit (EM&A) Manual (1), EIA Report of the TCNTE project (2) and other relevant statutory requirements.

The TCNTE comprises the following elements:

(a) TCE Project

1. Reclamation of the seabed by a non-dredged method at TCE to form a total of about 130 hectares of land;

2. Construction of about 4.9 kilometers of seawalls, with an eco-shoreline, three drainage box culvert outfalls, three circulation drains and a seawater intake at TCE;

3. Provision of infrastructure for Tung Chung Area 58, including construction of a single two-lane road with a footpath and the associated utility works;

4. Construction of proposed open space;

5. Construction of roads, footpaths, cycle tracks and the associated junction / road improvement works;

6. Engineering infrastructure works covering drainage, sewerage, waterworks (including a fresh water service reservoir, a salt water service reservoir and a salt water pumping station), common utility tunnels and landscaping works; and

(1) ERM (2018a). Updated Environmental Monitoring and Audit Manual for Tung Chung New Town Extension. Deposited to EPD under EP-519/2016

(2) Arup (2015). Environmental Impact Assessment Report for Tung Chung New Town Extension. Deposited to EPD under Register No. AEIAR-196/2016

7. Implementation of environmental mitigation measures and environmental monitoring and audit programme for the works.

(b) TCW Project

1. Site formation works at TCW;

2. Construction of proposed open space;

3. Construction of the River Park including a visitor centre at TCW; and

4. Construction of sustainable urban drainage systems at TCW.

The locations of Contracts 1, 2, 3 and 7 are shown in *Figure 1.1* to *1.4*. The construction and the reclamation related marine works of Contract 1 commenced on 9 and 13 July 2018, respectively. The construction of Contracts 2, 3 and 7 commenced on 4 September 2021, 5 November 2021 and 15 March 2022, respectively.

1.2 SCOPE OF THE EM&A REPORT

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

1.3 ORGANIZATION STRUCTURE

The organization structure of the Project is shown in *Annex A*. The key personnel contact names and contact details are summarized in *Table 1.1* below.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone
Environmental Team (ET) (ERM-Hong Kong, Limited)	ET Leader	Ray Yan	3894 9507
	Deputy ET Leader	Kelvin So	3894 9504
Independent Environmental Checker (IEC) (Binnies Hong Kong Limited)	IEC	Manuel Chua	3894 9501
	Deputy IEC	Edward Lau	3894 9502
Contract No. NL/2017/03 - Tung Chung New Town Extension – Reclamation and Advance Works (Contract 1)			
Civil Engineering and Development Department	Senior Geotechnical Engineer	C H Yan	3894 9702
	Marine Conservation Officer	Wo King Tai	3894 9707

Engineer's Representative (ER) (AECOM Asia Company Limited)	Principal Resident Engineer	Frankie Fan	3894 9603
	Chief Resident Engineer	Chris Cheung	3894 9604
	Resident Engineer	Nelson Ling	3894 9647
	Senior Inspector of Works	C K Liu	3894 9733
Contractor (Build King – SCT Joint Venture)	Site Agent	Keith Tse	3903 1503
	Construction Team Leader	Marco Chan	3903 1523
	Environmental Officer	Issac Wong	9850 0989
	24-hour Complaint Hotline	-	9862 2910

Contract No. NL/2020/02 - Tung Chung New Town Extension – Salt Water Supply System (Contract 2)

Civil Engineering and Development Department	Senior Engineer	Bryan H M Ho	2231 4435
	Electrical & Mechanical Engineer	Samson K L Yip	2231 4460
Engineer's Representative (ER) (AECOM Asia Company Limited)	Principal Resident Engineer	Frankie Fan	3894 9603
	Senior Resident Engineer	Sunny Ng	3894 9605
	Senior Resident Engineer	Vincent Leung	3894 9645
	Resident Engineer	Terence Chan	3894 9683
	Senior Inspector of Works	Wong Ting Yu	3894 9706
Contractor (China Geo-Engineering Corporation)	Construction Manager	Ambrose Kwong	6198 7787
	Site Agent	Timothy Lo	9661 2662
	Construction Team Leader	Edward Mok	6498 4306
	Environmental Officer	Dixon Lee	6100 1005
	24-hour Complaint Hotline [(a)]	-	5484 9233

Contract No. NL/2020/03 - Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East (Contract 3)

Civil Engineering and Development Department	Senior Engineer	Eddie W C Lam	2231 4445
	Engineer	Timothy H M Chan	2231 4473
	Engineer	S C Fung	2231 4461
	Senior Engineer	Vincent S H Chow	2231 4426
	Engineer	Colin K C Wong	2231 4417
	Engineer	Wing Chen	3894 9704
Engineer's Representative (ER) (AECOM Asia Company Limited)	Principal Resident Engineer	Frankie Fan	3894 9603
	Senior Resident Engineer	Boris Lo	3894 9650
	Resident Engineer	David Li	3894 9684
	Resident Engineer	Carl Yu	3894 9671
	Senior Inspector of Works	Douglas Ng	3894 9737

Contractor (Build King Civil Engineering Limited)	Construction Manager	Cheung Siu Lun	2272 3680
	Site Agent	Paul Lui	2272 3680
	Deputy Site Agent	Aldous Lo	9225 0368
	Construction Team Leader	Ken Yau	9197 2219
	Environmental Officer	Allen Wong	6012 2643
	24-hour Complaint Hotline [(a)]	-	9806 0726
Contract No. NL/2020/07 - Tung Chung New Town Extension – Tai Ho Interchange (Contract 7)			
Civil Engineering and Development Department	Senior Engineer	Phoebe Tang	2231 4423
	Engineer	Matthew Ng	2231 4449
	Engineer	Candy Lau	2231 4420
Engineer's Representative (ER) (AECOM Asia Company Limited)	Principal Resident Engineer	Frankie Fan	3894 9603
	Senior Resident Engineer	Kelvin Kwan	3894 9641
	Senior Resident Engineer	Brian Li	3894 9556
	Resident Engineer	Kingsley Ho	3894 9552
	Resident Engineer	Carl Yu	3894 9671
	Senior Inspector of Works	Douglas Ng	3894 9554
Contractor (Build King Civil Engineering Limited)	Site Agent	Hon Yee	9090 3109
	Deputy Site Agent	Vincent Kwan	9833 1313
	Construction Team Leader	Vincent Lo	9883 9229
	Environmental Officer	Nash Wong	9810 1946
	24-hour Complaint Hotline [(a)]	-	5976 1853

Note:
(a) The 24-hour complaint hotline is subjected for approval.

1.4 SUMMARY OF CONSTRUCTION WORKS

As informed by the Contractor, details of the major works carried out in this reporting period are listed below:

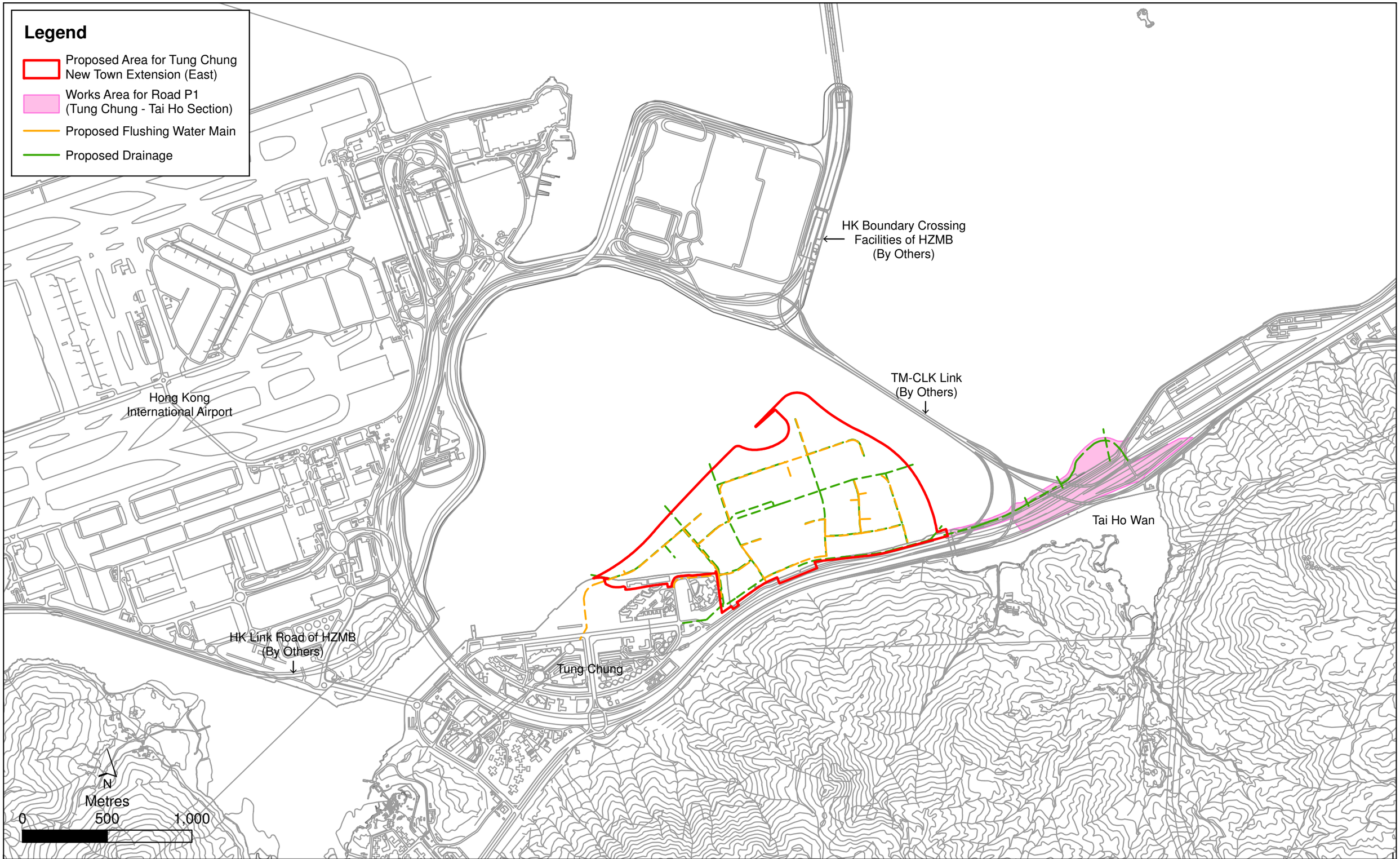

Figure 1.1

Location of Contract No. NL/2017/03 - Tung Chung New Town Extension – Reclamation and Advance Works (Contract 1)

File: T:\GIS\CONTRACT\0445700\mxd\0445700_Infrastructure_Works.mxd
Date: 11/10/2018

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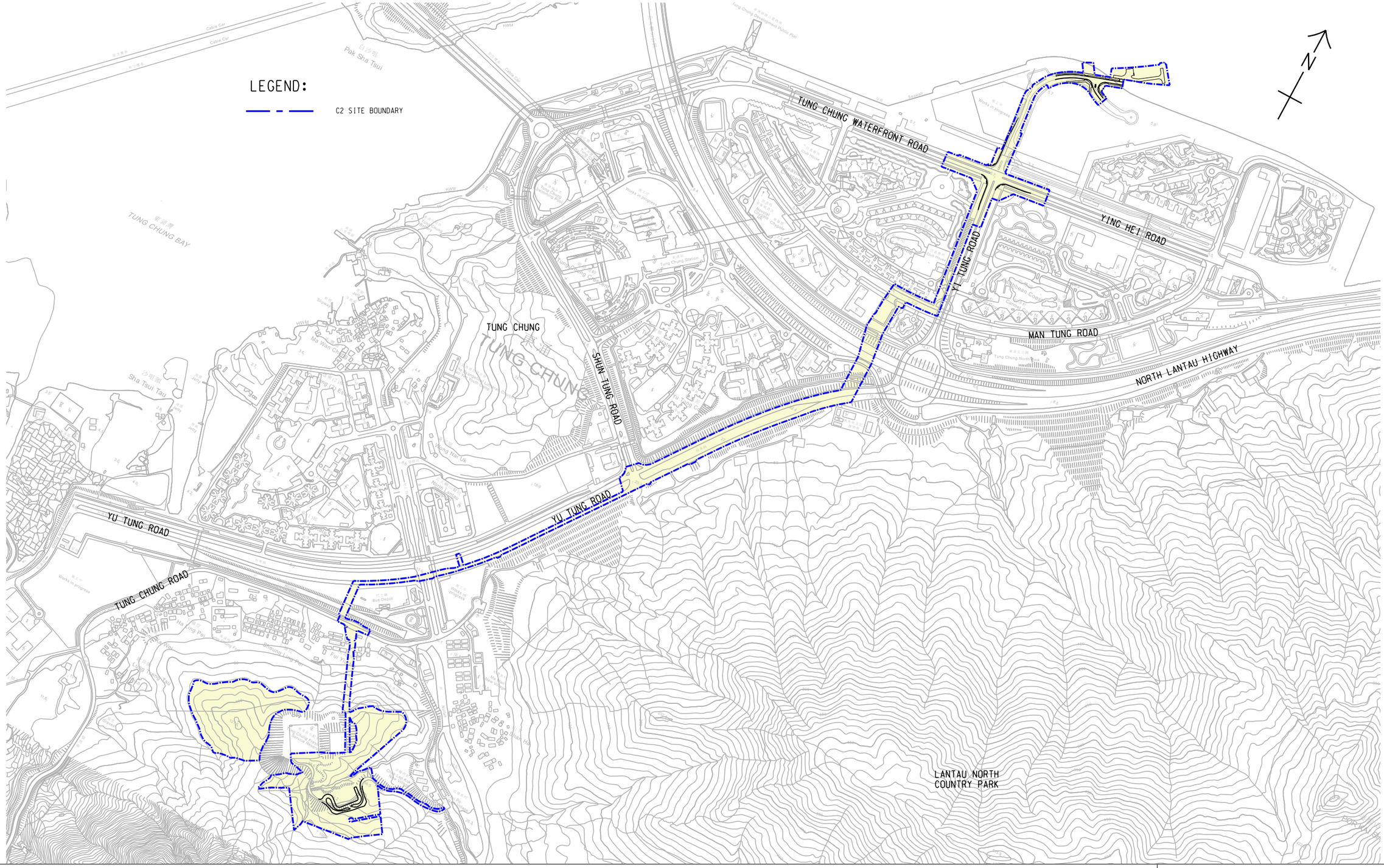

Figure 1.2

Location of Contract No. NL/2020/02 - Tung Chung New Town Extension – Salt Water Supply System (Contract 2)

FILE: 0445700i.cdr
DATE: 13/09/2021

Environmental Resources Management

ERM

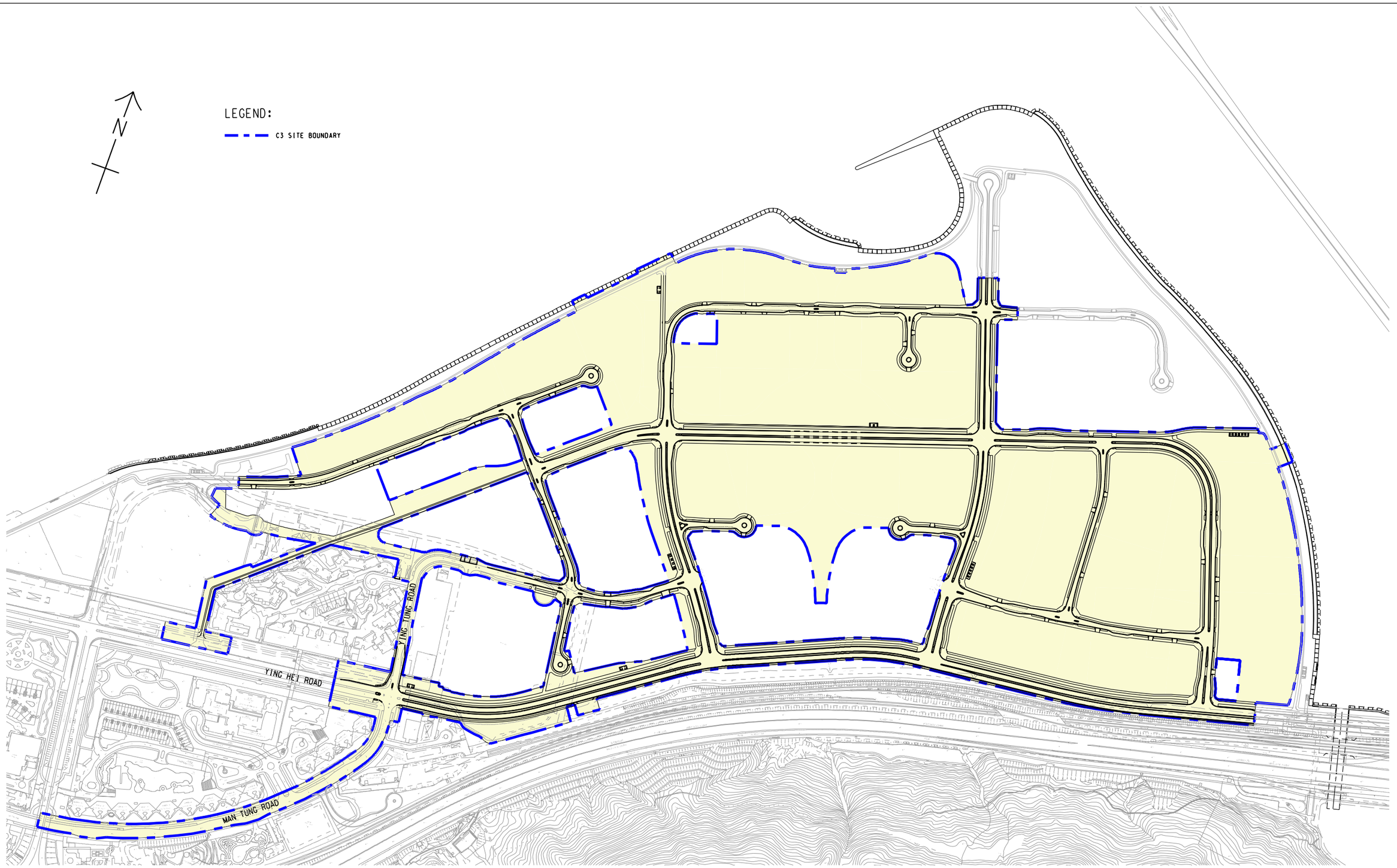

Figure 1.3

Location of Contract No. NL/2020/03 - Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East (Contract 3)

FILE: 0445700j.cdr
DATE: 09/08/2021

Environmental Resources Management

ERM

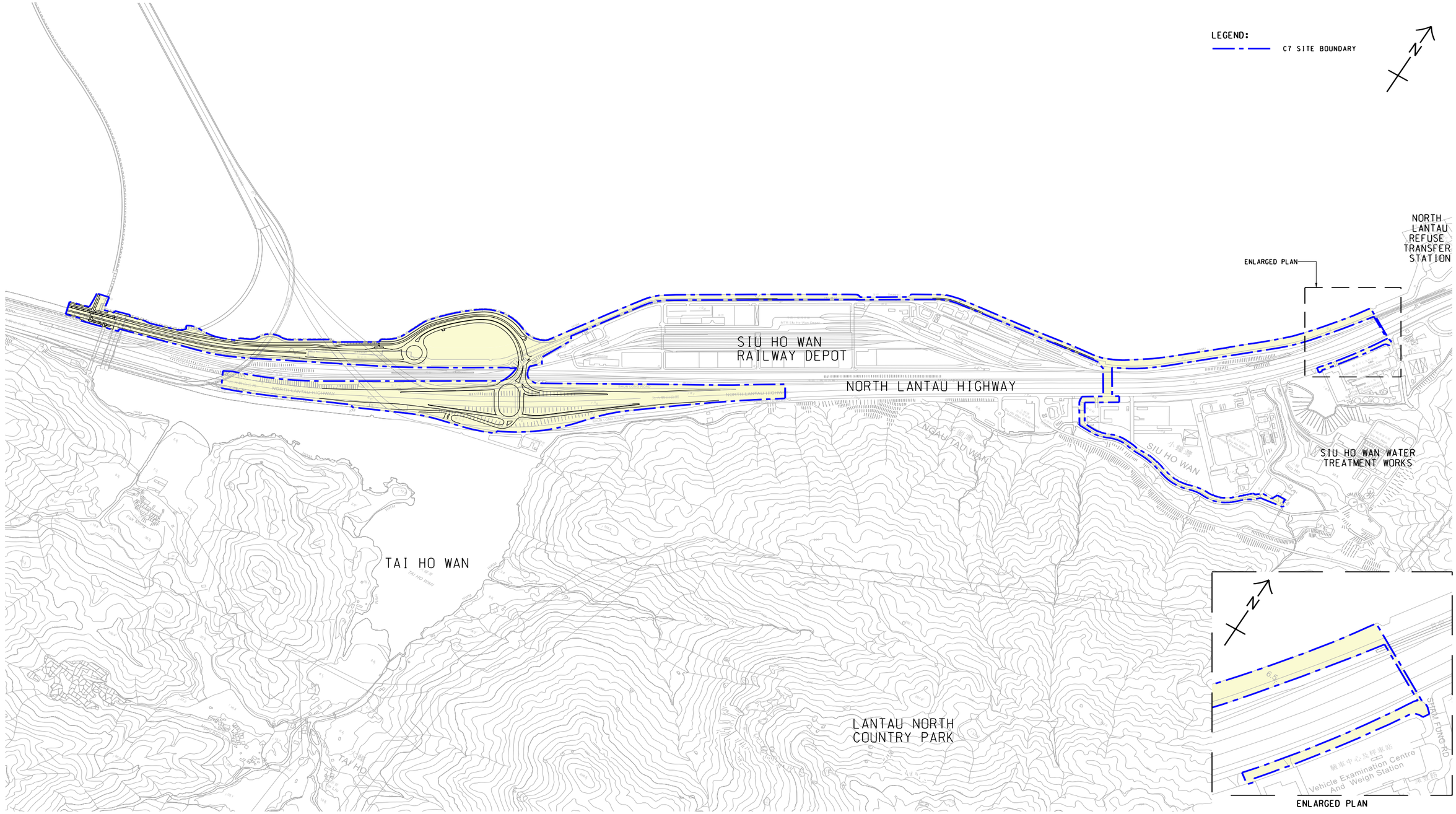

Figure 1.4

Location of Contract No. NL/2020/07 – Tung Chung New Town Extension – Tai Ho Interchange (Contract 7)

FILE: 0445700
DATE: 8/11/2021

Environmental Resources Management

ERM

Table 1.2 Major Activities in the Reporting Period

Activities	Key Issues	Key Mitigation Measures
Contract No. NL/2017/03 - Tung Chung New Town Extension – Reclamation and Advance Works (Contract 1)		
Land-based Works		
• Ground investigation works • Land DCM works • Jet grouting works • Placing of sorted public fill • Box culvert construction • Installation of PVD • Chain link fence erection and U-channel construction	• 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	• Good site practices • Regular water spraying on stockpiles, unpaved haul road and land filling area • 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
Marine-based Works		
• Laying of geotextile for seawall construction • Marine-based instruments monitoring works • Placing of sorted public fill • Seawall construction	• Elevation in impact on Water Quality due to sediment loss from sand blanket laying and marine filling works • Potential surface runoff • Potential filling material drop from barges • Disturbance to Chinese White Dolphin • Noise from marine vessels and plant operation during normal working hours or restricted hours • Dust emission during storage and transfer of sand/ sorted public fill • Emission of dark smoke from marine vessel	• Provision of perimeter silt curtain • Provision of a leading seawall of at least 200m before marine filling works • Regular cleaning of accumulated sand/fill materials at the edge of the barges • Implementation of Dolphin Watching for the marine-based works • Strictly follow requirement under CNP for the use of PMEs and works within restricted period • Use of acoustic mat and other noise mitigation measures when necessary • Regular maintenance of engines and mechanical equipment

Contract No. NL/2020/02 - Tung Chung New Town Extension – Salt Water Supply System (Contract 2)		
Land-based Works		
• Initial survey (land survey prior to the commencement of construction works) • Sheet piling works for ELS at Portion 6 • Site formation, retaining wall and soil nailing works at Portion 3 • Watermain laying works at Portion 3 along Yu Tung Road • Sheet piling works and trench excavation for drainage works at Portion 5A • Ground investigation to determine the rockhead for HDD works at Portion 3	• 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, unpaved haul road and land filling area • 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/2020/03 - Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East (Contract 3)		
Land-based Works		
• Installation of sheetpile at Portion 104 • Installation of sheetpile at CUT no.1 • Site formation works/ drainage works and construction of temporary transformer building at WA6/WA9 • Erection of PM office at WA9 • Installation of sheetpile at Portion 8 and 8A • Drainage/ sewerage works at Portion 12 • Setting up of TTA for watermain at Man Tung Road	• 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	• Good site practices • Regular water spraying on stockpiles, unpaved haul road and land filling area • 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

Land-based Works		
• Backfilling at WA4 • Inspection pit excavation at Portions 32, 35-37 and 146-5 • Trench excavation at Portions 36-38 • Tree survey, tree risk assessment and condition survey • Site clearance and tidiness	• 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	• Good site practices • Regular water spraying on stockpiles, unpaved haul road and land filling area • 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

The environmental mitigation implementation schedule is presented in *Annex B*.

1.5 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

The status for all environmental aspects are presented in *Table 1.3*. The EM&A requirements remained unchanged during the reporting period.

Table 1.3 Summary of Status for the Environmental Aspects under the Updated EM&A Manual

Parameters	Status
Air Quality	
Baseline Monitoring	The results of baseline air quality monitoring for TCE were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.4
Impact Monitoring	On-going for TCE, monitoring conducted three times every six days
Noise	
Baseline Monitoring	The results of baseline noise monitoring for TCE were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.4
Impact Monitoring	On-going for TCE, 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 TCNTE
Water Quality	

Parameters	Status
Baseline Monitoring	The results of baseline water quality monitoring for TCE were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.4
Impact Monitoring	On-going for TCE, 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)	To be conducted under TCW. Refer to the EM&A Reports of TCW.
Ecology	
Monitoring for Compensation Woodland	To be conducted when compensation woodland are planted
Monitoring for Emergent Plant inside the future River Park	To be conducted under TCW. Refer to the EM&A Reports of TCW.
Monitoring for Translocated Amphibians of Conservation Importance	To be conducted under TCW. Refer to the EM&A Reports of TCW.
Monitoring for Preserved/Transplanted Plant Species of Conservation Importance	On-going, for transplanted plant species, monitoring conducted once per week for the first three months; for preserved plant species, monitoring conducted once per month
Monitoring for Tung Chung Stream EIS and Wong Lung Hang EIS	To be conducted under TCW. Refer to the EM&A Reports of TCW. Monitoring for Wong Lung Hang was not required and the proposal was accepted by EPD on 2 September 2021
Eco-shoreline Monitoring	To be conducted when eco-shoreline at TCE PDA and Road P1 is built
Tung Chung Bay and Tai Ho Wan Baseline Monitoring	The results of baseline soft shore ecological monitoring at Tung Chung Bay and Tai Ho Wan were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.4
Tung Chung Bay and Tai Ho Wan Impact Monitoring	On-going for TCE, monitoring conducted quarterly
Landscape and Visual	
Baseline Monitoring	The results of baseline landscape and visual monitoring were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.4
Site Environmental Audit	
Regular Site Inspection	On-going
Dolphin Watching Plan implementation measures	Under implementation by the Contractor of Contract 1

Parameters	Status
Works Vessel Travel Route Plan implementation measures	Under implementation by the Contractor of Contract 1
Silt Curtain Deployment Plan implementation measures	Under implementation by the Contractor of Contract 1
Spill Response Plan implementation measures	Under implementation by the Contractor of Contract 1
Waste Management Plan implementation measures	Under implementation by the Contractor of Contract 1
Complaint Hotline and Email Channel	Under implementation by the Contractor of Contract 1. The 24-hour complaint hotline/email channel under Contracts 2, 3, and 7 are subjected for approval
Environmental Log Book	On-going

Taking into account the construction works, impact monitoring of air quality, noise, water quality and waste management were carried out in the reporting period. The monitoring schedule of air quality, noise and water quality monitoring are provided in *Annex E2*, *Annex F2* and *Annex G2*, 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 Dolphin Watching Plan, Works Vessel Travel Route Plan, Silt Curtain Deployment Plan, Spill Response Plan and Waste Management Plan.

To promote the environmental awareness and enhance the environmental performance of the contractors, environmental trainings and regular environmental management meetings were conducted during the reporting period, which are summarized as below:

- Four (4) environmental management committee meetings were held with the Contractors of Contract 1 and 7 and ER, ET, IEC and CEDD on 25 and 8 March 2022, respectively, and Contractors of Contract 2 and 3 on 16 March 2022;

- Environmental toolbox trainings on nuisance to residence (light pollution/sudden noise /dusty work), site hygiene, wastewater handling, discharge and treatment facilities, works vessel travel route plan, handling and storage of chemicals, construction noise permit on 2, 4, 11, 16, 25 and 30 March 2022 were conducted for Contract 1;

- Environmental toolbox trainings on site plant and machinery on 3, 18 and 24 March 2022 were conducted for Contract 2;

- Environmental toolbox trainings on paving, site clearance, construction noise and suppression, environmental abatement facilities, chemical waste management, dust control and air pollution abatement measures

on 1, 8, 17, 22, 24, 29 and 31 March 2022 were conducted for Contract 3;

- Environmental toolbox trainings on proper storage & disposal of general refuse, proper use of recycle bins, reuse, recycling & proper storage of C&D material and precautions after long holiday on 2, 16, 23 and 30 March 2022 were conducted for Contract 7.

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 *Annex C*.

1.7 STATUS OF OTHER STATUTORY ENVIRONMENTAL REQUIREMENTS

The environmental licenses and permits, including environmental permit, waste discharge license, registration as chemical waste producer and construction noise permit, which were valid in the reporting period are presented in *Annex D*. No non-compliance with environmental statutory requirements was recorded.

2 EM&A RESULTS FOR TUNG CHUNG EAST

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

2.1 AIR QUALITY

2.1.1 Monitoring Requirements and Equipment

According to the Updated EM&A Manual of the Project, impact air quality monitoring in terms of 1-hour Total Suspended Particulate (TSP) was conducted three (3) times every six (6) days when the highest dust impact was expected. The Action and Limit Levels of the air quality monitoring is provided in *Table 2.1* below.

Table 2.1 Action and Limit Levels for 1-hour TSP

Location	Action Level, $\mu g/m^3$	Limit Level, $\mu g/m^3$
Monitoring station for Tung Chung East	279	500

Portable direct reading dust meters were used to measure 1-hour TSP levels in undertaking the air quality monitoring for the Project. The proposed use of portable direct reading dust meters was submitted to IEC and obtained agreement from the IEC as stated in 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.

The monitoring location and equipment used in the impact air quality monitoring programme are summarized in *Table 2.2* and illustrated in *Figure 2.1*. Copies of the calibration certificates for the equipment are presented in *Annex E1*, which showed that the portable direct reading dust meter is capable of providing comparable results with that provided by a HVS.

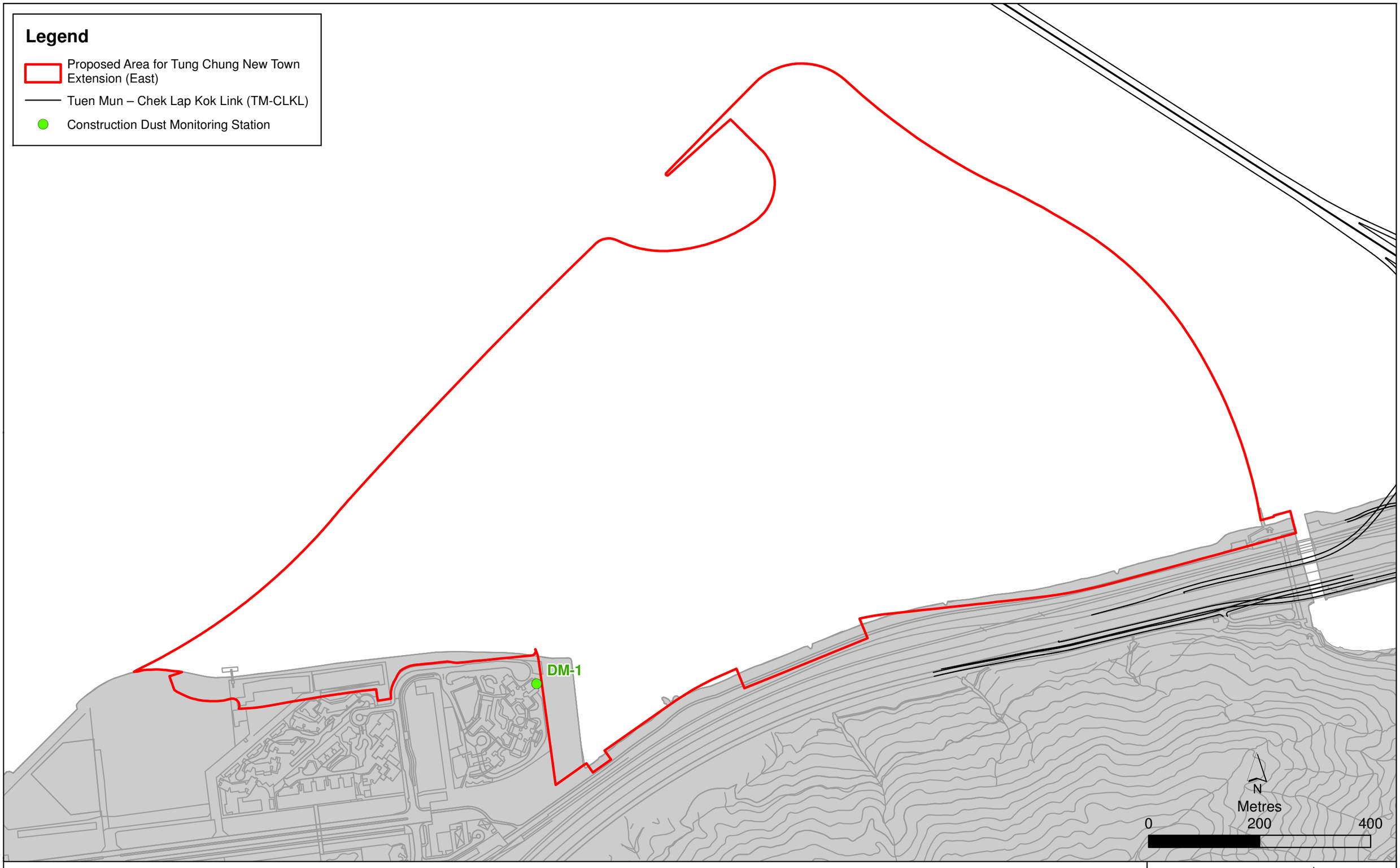

Figure 2.1

Construction Dust Monitoring Station Location

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Date: 11/10/2018

Environmental Resources Management

ERM

Table 2.2 *Air Quality Monitoring Details*

Monitoring Station	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
DM-1	Tung Chung Area 56 – Ying Tung Estate	1-hour TSP	Three times per six days during the construction period of the Project	1, 7, 12, 18, 24 and 30 March 2022	1-hour TSP Dust Meter SIBATA LD-3B (S/N: 276017)

Remark:
It should be noted that impact monitoring at other construction dust monitoring locations at TCE as stated in the Updated EM&A Manual will commence after the flat intake (for Monitoring Stations DM-2, DM-3 and DM-4).

2.1.2 Monitoring Schedule for the Reporting Month

The schedule for air quality monitoring during the reporting period is provided in *Annex E2*.

2.1.3 Results and Observations

The monitoring results for 1-hour TSP are summarized in *Table 2.3*. The monitoring data and the graphical presentation are provided in *Annex E3.*

Table 2.3 ***Summary of 1-hour TSP Monitoring Results in the Reporting Period***

Monitoring Station	Average (μg/m³)	Range (μg/m³)	Action Level (μg/m³)	Limit Level (μg/m³)
DM-1	41	22-64	279	500

Major dust sources in the reporting period included haul road traffic, unloading of sand/fill material and filling works under the Project.

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 *Annex E4*.

2.2 NOISE MONITORING

2.2.1 Monitoring Requirements and Equipment

According to the Updated EM&A Manual of the Project, impact noise monitoring was conducted once per week during the construction phase of the Project. The Action and Limit Level for construction noise of the Project is provided in *Table 2.4* below.

Table 2.4 Action and Limit Levels for Construction Noise

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

Notes:
Limit level is exceeded when $L_{eq} \geq 75$ dB(A). 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.
* Reduce to 70 dB (A) for schools and 65 dB (A) during school examination periods.

Noise monitoring was performed using sound level meter at the designated monitoring stations NMS-CA-1A (1) (2) and NMS-CA-4 (*Figure 2.2; Table 2.5*) in accordance with the requirements stipulated in the Updated EM&A Manual. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Details of the deployed equipment are provided in *Table 2.5*. Copies of the calibration certificates for the equipment are presented in *Annex F1*.

(1) Impact monitoring at monitoring station NMS-CA-1A commenced on 19 September 2018 in view of the close vicinity of the construction works near the residential area at Century Link.

(2) Due to land handover issue, NMS-CA-1A was relocated to Ying Hong Road which is located 60m away from the original location. Proposal on the relocation of NMS-CA-1A was approved by IEC on 23 November 2018. Noise monitoring at the relocated location commenced since 24 November 2018.

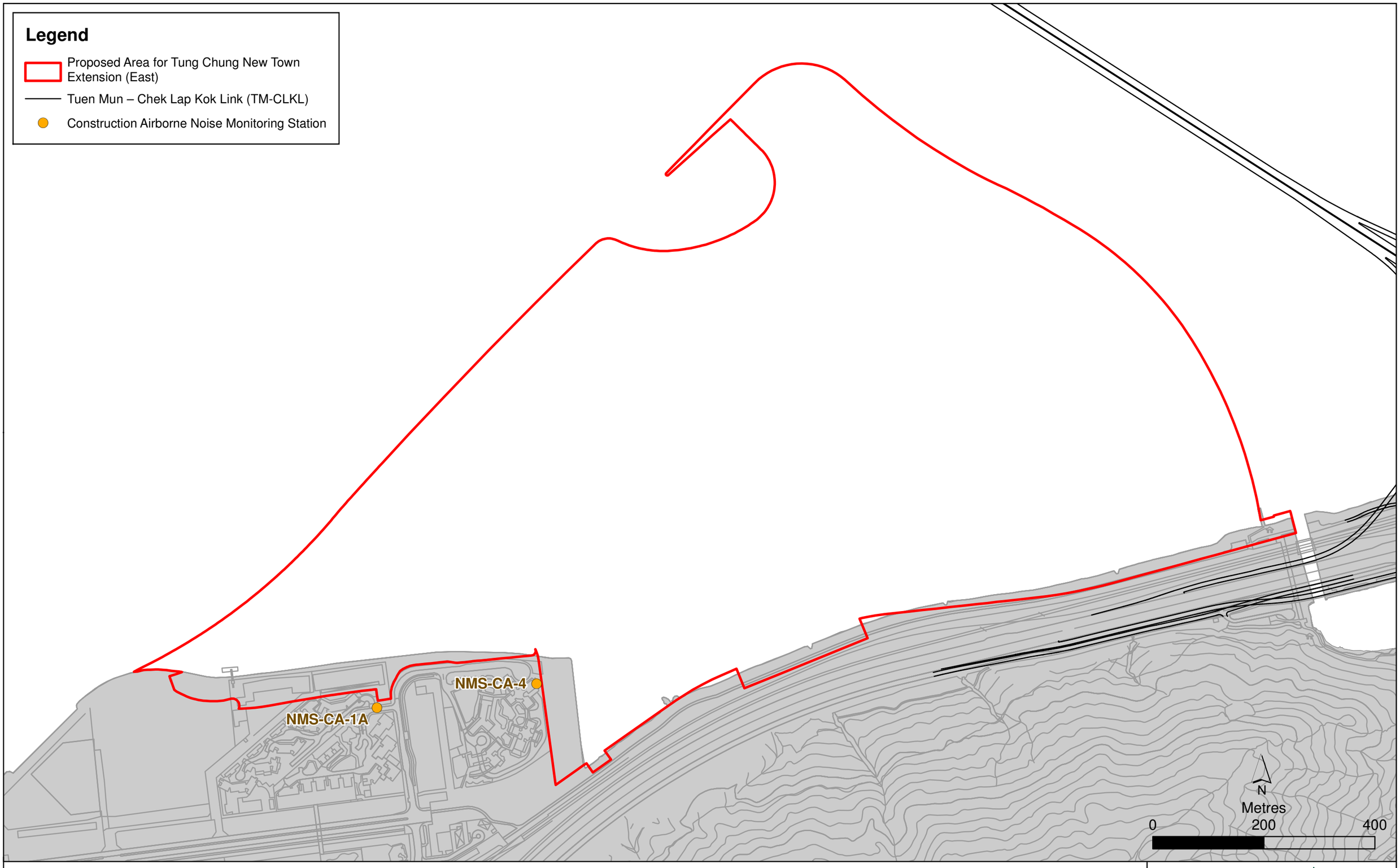

Figure 2.2 Construction Airborne Noise Monitoring Station Location

(Note : Due to land handover issue, NMS-CA-1A was relocated to Ying Hong Road which is located 60m away from the original location. Noise monitoring at the relocated location commenced since 24 November 2018.)

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Date: 10/12/2018

Environmental Resources Management

ERM

Table 2.5 Noise Monitoring Details

Monitoring Station [a]	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
NMS-CA-1A [b]	Residential premise in Tung Chung East – Century Link/Ying Hong Road [c]	30-minute measurement between 0700 and 1900 on normal weekdays (Monday to Saturday). L_{eq}, L_{10} and L_{90} would be recorded.	Once per week for 30 mins during the construction period of the Project	1, 7, 12, 18, 24 and 30 March 2022	Sound Level Meter: Rion NL-52 (S/N: 00331805) Acoustic Calibrator: LARSON DAVIS CAL200 (S/N: 11333)
NMS-CA-4	Residential premise in the reclamation area next to Tung Chung East – Ying Tung Estate				

Remarks:

(a) It should be noted that impact monitoring at other construction noise monitoring locations at TCE as stated in the Updated EM&A Manual will commence after the flat intake of residential premise in TCE (for Monitoring Station NMS-CA-1) and operation of schools (for Monitoring Stations NMS-CA-2 and NMS-CA-3).

(b) Impact monitoring at monitoring station NMS-CA-1A commenced on 19 September 2018 in view of the close vicinity of the construction works near the residential area at Century Link.

(c) Due to land handover issue, NMS-CA-1A was relocated to Ying Hong Road which is located 60m away from the original location. Proposal on the relocation of NMS-CA-1A was approved by IEC on 23 November 2018. Noise monitoring at the relocated location commenced since 24 November 2018.

2.2.2 *Monitoring Schedule for the Reporting Month*

The schedule for noise monitoring during the reporting period is provided in *Annex F2*.

2.2.3 *Results and Observations*

Results for noise monitoring are summarized in *Table 2.6*. The monitoring data and the graphical presentation are provided in *Annex F3*.

Table 2.6 Summary of Construction Noise Monitoring Results in the Reporting Period

Monitoring Station	Average , dB(A), $L_{eq\ (30mins)}$	Range, dB(A), $L_{eq\ (30mins)}$	Limit Level, dB(A), $L_{eq\ (30mins)}$
NMS-CA-1A	66.1	63.9-68.5	75
NMS-CA-4	63.2	61.4-65.8	75

Major noise sources during the noise monitoring included noise from plant operation, craning, piling, haul road traffic, nearby traffic and aircraft as well as nearby construction sites.

No Limit Level exceedance was recorded for construction noise monitoring in the reporting period. However, two (2) Action Levels were triggered from two (2) environmental complaints related to noise nuisance in the reporting period.

2.3 WATER QUALITY MONITORING

2.3.1 Monitoring Requirements and Equipment

Impact water quality monitoring was carried out to ensure that any deterioration of water quality was detected, and that timely action was taken to rectify the situation. Impact water quality monitoring was undertaken three days per week since the commencement of marine works during the reporting period in accordance with the Updated EM&A Manual. Each impact water quality monitoring was scheduled such that the interval between two impact water quality monitoring was more than 36 hours to record representative water quality data throughout the week during the marine works.

Two (2) replicate *in-situ* measurements and samples were collected at each monitored water depth of each designated monitoring stations. Dissolved Oxygen (DO), pH value, salinity, temperature and turbidity were measured *in-situ* whereas the level of suspended solids (SS) were determined by ALS Technichem (HK) Pty Ltd which is a HOKLAS accredited laboratory.

The Action and Limit Levels of the water quality monitoring are provided in *Table 2.7*.

Table 2.7 Action and Limit Levels for Water Quality

Parameters	Action Level	Limit Level
DO in mg/L (Surface, Middle & Bottom)	Surface and Middle 5.9 mg/L [1] Bottom 5.6 mg/L	Surface and Middle 4 mg/L [1] Bottom 2 mg/L
SS in mg/L (Depth-averaged)	13.5 mg/L or 120% of upstream control station at the same tide of the same day, whichever is higher. [2]	23.5 mg/L or 130% of upstream control station at the same tide of the same day, whichever is higher. [2]
Turbidity in NTU (Depth-averaged)	17.1 NTU or 120% of upstream control station at the same tide of the same day, whichever is higher. [2]	23.5 NTU or 130% of upstream control station at the same tide of the same day, whichever is higher. [2]

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

The locations of the monitoring stations under the Project are shown in *Figure 2.3* and *Table 2.8*.

Table 2.8 Locations of Impact Water Quality Monitoring Stations and the Corresponding Monitoring Requirements

Monitoring Station	Description	Coordinates		Parameters [a]	Frequency	Monitoring Dates	Depth
		Easting	Northing				
TCE-WQM1	Near Airport Channel	811838	817341	• Dissolved Oxygen (DO) (mg/L and % saturation) • Temperature (°C) • Turbidity (NTU) • Salinity (ppt) • pH • Water depth (m) • Suspended Solid (SS) (mg/L)	Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides during the construction period of the Project	2, 4, 7, 9, 11, 14, 16, 18, 21, 23, 25, 28 and 30 March 2022	3 water depths: 1m below sea surface, mid-depth and 1m above seabed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted
TCE-WQM2a	Marine Park 1	814439	819879				
TCE-WQM2b	Marine Park 2	814439	821905				
TCE-WQM3A	Outlet of Tai Ho Wan	814705	817859				
TCE-WQM4	HKBCF	813344	818849				
TCE-C1	Control Station - Outside Airport Channel	804247	815620				
TCE-C2	Control Station - Sunny Bay	819460	821473				

Notes:

(a) In addition to the abovementioned parameters, other relevant data shall also be recorded, including monitoring location / position, time, water depth, tidal stages, weather conditions and any special phenomena or work underway at the construction site.

Table 2.9 summarizes the equipment used in the impact water quality monitoring works. Copies of the calibration certificates are attached in *Annex G1*.

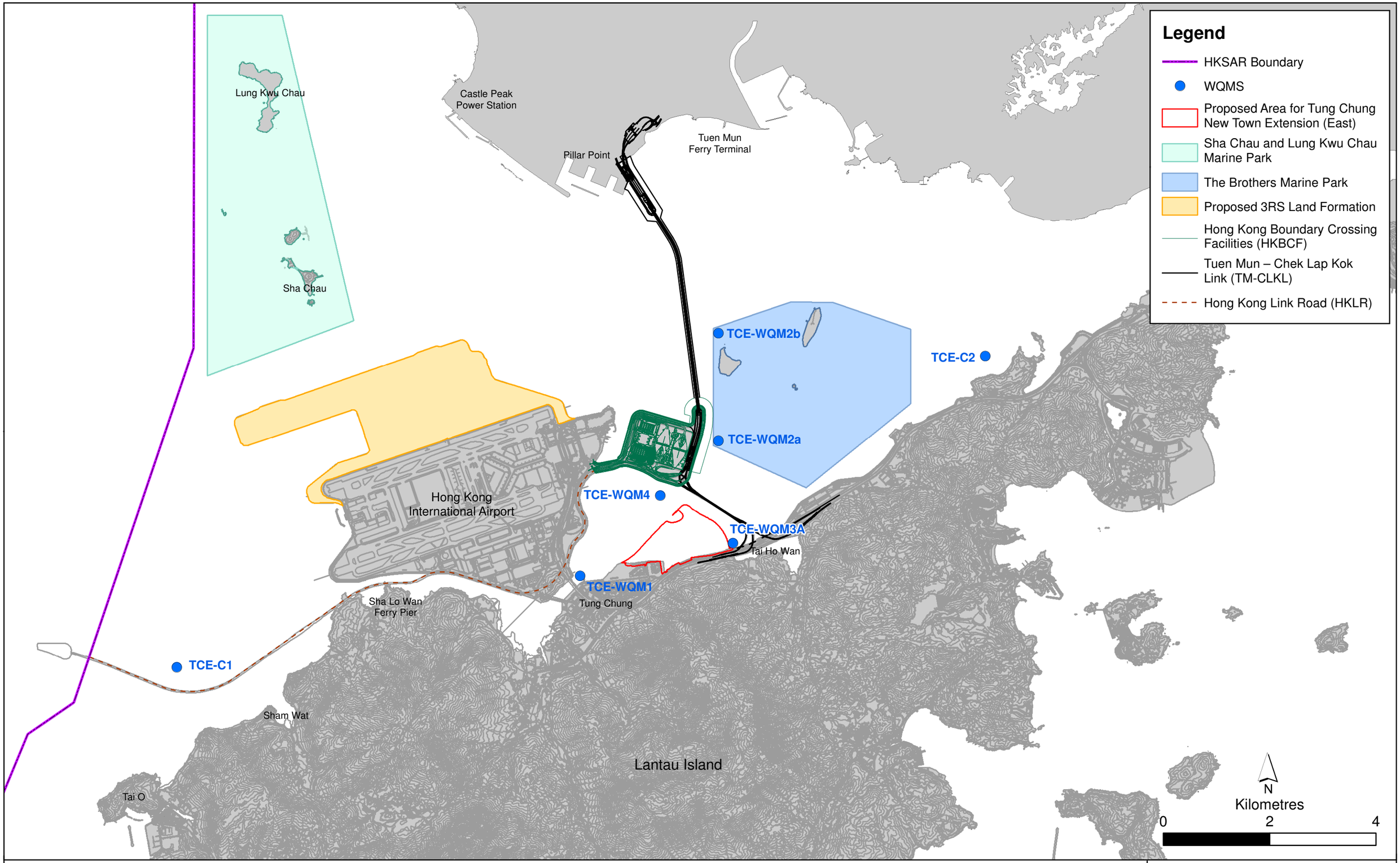

Figure 2.3

Water Quality Monitoring Locations

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Date: 23/10/2018

Environmental Resources Management

ERM

Table 2.9 Water Quality Monitoring Equipment

Equipment	Model
Water Sampler	Kahlsico Water Samplers
Multi-parameter Water Quality System (measurement of DO, Temperature, Turbidity, Salinity and pH)	YSI ProDSS (S/N: 16H104233, 16H104234, 17E100747, 21G105356)

2.3.2 Monitoring Schedule for the Reporting Month

The schedule for water quality monitoring during the reporting period was provided in *Annex G2*.

2.3.3 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 *Annex G3*.

No exceedance of Action and Limit Levels was recorded for water quality impact monitoring in the reporting period. No action was thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex G4*.

2.4 PRESERVED/TRANSPLANTED PLANT SPECIES OF CONSERVATION IMPORTANCE MONITORING

Plant species of conservation importance, including three individuals of *Aquilaria sinensis* and 33 individuals of *Gmelina chinensis*, were identified within works areas for Contract 2. All individuals of *Aquilaria sinensis* and 31 individuals of *Gmelina chinensis* were recommended being preserved *in-situ* while two individuals of *Gmelina chinensis* (RT-07 and RT-08) were recommended being transplanted to the receptor site in accordance with the Detailed Preservation and/or Translocation Plan for Plant Species of Conservation Importance approved under Condition 2.21 of EP-519/2016. Initial tree survey was conducted in September 2021 under Contract No. NL/2020/02 before the commencement of construction works. According to the initial tree survey conducted, the *in-situ* preserved plant species of conservation importance of which one individual of *Aquilaria sinensis* and six individuals of *Gmelina chinensis* were found missing.

2.4.1 Preserved Plant Species of Conservation Importance

Monthly monitoring of the *in-situ* preserved plant species of conservation importance by the Qualified Personnel (QP) appointed under Contract 2 was implemented in the reporting period. Health condition was considered fair for the majority of the *in-situ* preserved plant species of conservation importance, of which two individuals of *Gmelina chinensis* could not be

monitored as a result of unsafe access to the locations, as recorded during the monitoring carried out on 24 March 2022.

Tree protection zones for the *in-situ* preserved plant species of conservation importance were demarcated. No injuries and/or damages to the individuals of the *in-situ* preserved plant species of conservation importance were reported by the QP since the previous monitoring events. Photographic record and tree schedule of the preserved plant species of conservation importance monitoring are provided in *Annex H1*.

2.4.2 Transplanted Plant Species of Conservation Importance

Site visit to the receptor site for the transplanted plant species of conservation importance was carried out on 20 January 2022 prior to the commencement of transplantation works for the transplanted plant species of conservation importance on 21 January 2022.

Four monitoring of the transplanted plant species of conservation importance events were implemented as part of the ET's regular site inspection on 2, 9(1), 16, 23 and 30 March 2022. Key observations during the monitoring events are summarized in Table 2.13. Photographic record of root pruning, transplantation, post-transplantation monitoring and the suitable receptor site location of the transplanted plant species of conservation importance monitoring are provided in *Annex H2*.

Organic mulching was applied to improve the preservation environment and the plant health on 11 March 2022. The transplanted plant species of conservation importance were watered daily to keep the soil moist except in days with heavy rainfall. The ET will continue to monitor the implementation of monitoring of *in-situ* preserved/ transplanted plant species of conservation importance.

2.5 SOFT SHORE ECOLOGICAL MONITORING

No impact soft shore ecological monitoring at Tung Chung Bay and Tai Ho Wan was scheduled during the reporting period. The impact soft shore ecological monitoring at Tung Chung Bay and Tai Ho Wan was postponed to April 2022 due to COVID-19 pandemic.

2.6 EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis with the Contractor and ER to monitor the implementation of proper environmental pollution control and mitigation measures for air quality, noise, water quality, waste management, marine ecology, landscape and visual impacts and preservation

(1) Monitoring of *in-situ* preserved plant species of conservation importance for the week ending 12 March 2022 was carried out on 11 March 2022 with organic mulching application carried out on the same day.

and/or transplantation of plant species of conservation importance under the Project. In the reporting period, four (4) site inspections were carried out on 10, 17, 24 and 31 March 2022 for Contract 1(1), five (5) site inspections were carried out on 2, 9, 16, 23 and 30 March 2022 for Contract 2, three (3) site inspections were carried out on 11, 16 and 25 March 2022 for Contract 3(2) and five (5) site inspections were carried out on 1, 8, 15, 22 and 29 March 2022 for Contract 7.

Key observations during the site inspections are summarized in *Table 2.10*.

Table 2.10 Key Observations Identified during the Site Inspection in this Reporting Month

Contract No.	Inspection Date	Environmental Observations	Recommendations/ Remarks
Contract 1	10 March 2022	Max Team 12, Lantau Pioneer 06 • No deficiency was observed.	• Nil
	17 March 2022	Lantau Pioneer 01, Yiu Chuen 138 • No deficiency was observed.	• Nil
	24 March 2022	Area E • No deficiency was observed.	• Nil
	31 March 2022	Berth 5 • Discoloured NRMM labels were observed.	Berth 5 • The Contractor was reminded to affix appropriate NRMM labels in accordance with the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation.
Contract 2	2 March 2022	Portion 3 • The health condition of the transplanted plant species of conservation importance was poor (RT-07 and RT-08). • Labels were not observed on chemical containers.	Portion 3 • The Contractor was reminded to provide mitigation measures (i.e. daily watering, use of mulch and pruning/weeding) when necessary, keep close monitoring of the plants in terms of their health condition and report to relevant parties in the event of deterioration immediately. • The Contractor was reminded to affix appropriate labels on chemical containers
	9 March 2022	Portion 3 • Drainage blockage was observed. • The health condition of the transplanted plant species of conservation importance was poor (RT-07 and RT-08).	Portion 3 • The Contractor was reminded to keep the drainage clear and provide proper drainage arrangement to prevent discharge/runoff. • The Contractor was reminded to provide mitigation measures (i.e. daily watering, use of mulch and pruning/weeding) when necessary, keep close monitoring of the plants in terms of their health condition and report to relevant parties in the event of deterioration immediately.

(1) Site inspection on 3 March 2022 for Contract 1 was cancelled due to COVID-19 pandemic.

(2) Site inspection on 4 March 2022 for Contract 3 was cancelled due to COVID-19 pandemic.

Contract No.	Inspection Date	Environmental Observations	Recommendations/ Remarks
	16 March2022	Portion 3 • The health condition of the transplanted plant species of conservation importance was poor (RT07 and RT-08). • Debris was observed in drainage.	Portion 3 • The Contractor was reminded to provide mitigation measures (i.e. daily watering, use of mulch and pruning/weeding) when necessary, keep close monitoring of the plants in terms of their health condition and report to relevant parties in the event of deterioration immediately. • The Contractor was reminded to keep the drainage clear and provide mitigation measures for waste water.
	23 March 2022	Portion 3 • The health condition of the transplanted plant species of conservation importance was poor (RT-07 and RT-08). • Runoff was observed.	Portion 3 • The Contractor was reminded to provide mitigation measures (i.e. daily watering, use of mulch and pruning/weeding) when necessary, keep close monitoring of the plants in terms of their health condition and report to relevant parties in the event of deterioration immediately. • The Contractor was urge to implement mitigation measures to prevent polluted site runoff from discharging into near drainage system / waterbodies, critically review the drainage system and identify the source and end/ collection point of the discharge
	30 March 2022	Portion 3 • The health condition of the transplanted plant species of conservation importance was poor (RT-07 and RT-08). HDD • Environmental permit was not observed on the gate. • Construction materials were observed placing nearby the retained trees and no tree protection was observed.	Portion 3 • The Contractor was reminded to provide mitigation measures (i.e. daily watering, use of mulch and pruning/weeding) when necessary, keep close monitoring of the plants in terms of their health condition and report to relevant parties in the event of deterioration immediately. HDD • The Contractor was reminded to affix environmental permit on the gate. • The Contractor was urged to remove the materials and provide tree protection.
Contract 3	11 March 2022	WA6, WA9 • General refuse was observed on ground.	WA6, WA9 • The Contractor was reminded to clear the general refuse regularly.
	16 March 2022	Portion 104, WA6, WA9, CUT1 • No deficiency was observed.	• Nil.
	25 March 2022	WA6, WA9 • Retained water was observed in drip tray.	WA6, WA9 • The Contractor was reminded to remove the water in drip tray.
Contract 7	1 March 2022	WA4, Portion 32 • No deficiency was observed.	• Nil.

Contract No.	Inspection Date	Environmental Observations	Recommendations/ Remarks
	8 March 2022	Portion 37 • Accumulated refuse was observed at site.	Portion 32 • The Contractor was reminded to dispose of general refuse regularly.
	15, 22 and 29 March 2022	Portion 32, 37 • No deficiency was observed.	• Nil.

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 Updated EM&A Manual.

2.7 WASTE MANAGEMENT STATUS

The Contractors of Contract 1, 2, 3 and 7 have registered as chemical waste producer. Sufficient numbers of receptacles were available for general refuse collection and sorting.

All dump trucks engaged on site was equipped with RTTM system during the reporting period. The Surveillance Team of the ET conducted regular site inspection 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 2.11*.

Table 2.11 Quantities of Different Waste Generated and Imported Fill Materials

Contract No.	Month/ Year	Inert C&D Materials [(a)] (m^3)	Imported Fill [(b)] (sand) (m^3)	Imported Fill [(c)] (public fill) (m^3)	Inert Construction Waste Re-used [(d)] (m^3)	Non-inert Construction Waste [(e)] (m^3)	Recyclable Materials [(f)] (kg)	Chemical Wastes (kg)
TCNTE (East)	1 to 31 Jan 22	0.0	53,001.0	162,752.5	17,728.7	129.7	1,760.5	0.0
	1 to 28 Feb 22	0.0	54,894.0	129,981.0	7,071.0	73.0	12,100.0	3,200.0
	1 to 31 Mar 22	0.0	19,815.0	152,054.0	7,418.0	201.4	3,550,479.0 [(g)]	90.0

Notes:
(a) Inert construction wastes include hard rock and large broken concrete, and materials disposed as public fill.
(b) Imported materials include of sand fill from any source outside of TCNTE.
(c) Imported sorted public fill include all G200, G400 and glass gullet (local recycling materials) from any source outside of TCNTE.
(d) Reuse of inert construction waste generated under the TCNTE contracts.
(e) Non-inert construction wastes include general refuse disposed at landfill.
(f) Recyclable materials include metals, paper, cardboard, plastics and others.
(g) 3,550,090kg of steel was recycled from dismantlement of berth.

2.8 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

2.9 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

The monitoring results for air quality monitoring (1-hour TSP) and construction noise monitoring complied with the Action/ Limit levels in the reporting period.

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

Cumulative statistics on exceedances is provided in *Annex I*.

2.10 SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

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

Three (3) environmental complaints related to Contract 3 were received in the reporting period. Investigations were conducted for the environmental complaints in accordance with the complaint handling process as stated in the

Complaint Management Plan. Environmental complaints in the reporting period are summarized below.

	Complaint(s)	Investigation/Follow up action(s)
1	Environmental complaint related to Contract 3 regarding noise nuisance generated from an industrial generator on 7 March 2022 was referred by EPD on 10 March 2022.	Based on photo provided by the complainant, the noise mentioned was likely generated by sheetpile installation and PM office construction at Portion WA6 & WA9. According to the work record provided by the Contractor and investigation conducted by ET, no loud noise from generator at the concerned area was encountered and QPME generator was being used. In order to address the noise issue mentioned, Contractor have implemented mitigation measures including erected noise barrier and acoustic mat covering sheet piling hammers and generators. With reference to data from weekly noise monitoring, no project related exceedance was recorded.
2	Environmental complaint related to Contract 3 regarding air and noise on 18 March 2023 was referred by EPD on 23 March 2022.	Based on the complaint and supplement provided by EPD, the concerned area was solely used as entrance/exit for the construction site. In order to reduce air impact, Contractor have provided additional workers at wheel washing facilities, patrol team for inspecting the road condition and mechanical covers of all dump trucks with loading. In order to reduce the noise impact, Contractor have implemented mitigation measures including vehicle speed limit and prohibited unnecessary honking.
3	Environmental complaint related to Contract 3 regarding dust/mud and debris along Ying Hei Road was referred by EPD on 31 March 2022.	Based on daily inspection conducted by ET, wheel washing facilities were provided before vehicles exit from the entrance/exit located near Ying Hei Road. In order to prevent mud/debris from falling onto the public roads, Contractor have provided additional workers at wheel washing facilities, patrol team for inspecting the road condition, mechanical covers of all dump trucks with loading and installed CCTV at site exit.

Statistics on complaints, notifications of summons, successful prosecutions are summarised in *Annex I.*

3 FUTURE KEY ISSUES

3.1 CONSTRUCTION PROGRAMME FOR THE COMING MONTH

Works to be undertaken in the next monitoring period of April 2022 are summarized in *Table 3.1* below, together with the key issues and the key mitigation measures:

Table 3.1 Major Activities for the Next Reporting Period

Activities	Key Issues	Key Mitigation Measures
Contract No. NL/2017/03 - Tung Chung New Town Extension – Reclamation and Advance Works (Contract 1)		
Land-based Works		
• Ground investigation works • Land DCM works • Jet grouting works • Placing of sorted public fill • Box culvert construction • Installation of PVD	• 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	• Good site practices • Regular water spraying on stockpiles, unpaved haul road and land filling area • 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
Marine-based Works		
• Laying of geotextile for seawall construction • Marine-based instruments monitoring works • Placing of sorted public fill • Seawall construction	• Elevation in impact on Water Quality due to marine filling works • Potential surface runoff • Potential filling material drop from barges • Disturbance to Chinese White Dolphin • Noise from marine vessels and plant operation during normal working hours or restricted hours • Dust emission during storage and transfer of sand/ sorted public fill • Emission of dark smoke from marine vessel	• Provision of perimeter silt curtain • Provision of a leading seawall of at least 200m before marine filling works • Regular cleaning of accumulated sand/fill materials at the edge of the barges • Implementation of Dolphin Watching for the marine-based works • Strictly follow requirement under CNP for the use of PMEs and works within restricted period • Use of acoustic mat and other noise mitigation measures when necessary • Regular maintenance of engines and mechanical equipment

Contract No. NL/2020/02 - Tung Chung New Town Extension – Salt Water Supply System (Contract 2)		
Land-based Works		
• Initial survey (land survey prior to the commencement of construction works) • Sheet piling works for ELS and excavation works at Portion 6 • Site formation, retaining wall, road diversion and soil nailing works at Portion 3 • Watermain laying works at Portion 3 along Yu Tung Road • Sheet piling works and trench excavation for drainage works at Portion 5A • Ground investigation to determine the rockhead and construction of entry pit for HDD works at Portion 3 • Compensatory woodland planting at Portion 1 and 2 • Construction of box culvert at Portion 5B	• 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, unpaved haul road and land filling area • 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/2020/03 - Tung Chung New Town Extension – Major Infrastructure Works in Tung Chung East (Contract 3)		
Land-based Works		
• Installation of sheetpile at Portion 104 • Installation of sheetpile at CUT no.1 • Drainage works and construction of temporary transformer building at WA6/WA9 • Erection of PM office at WA9 • Installation of sheetpile and excavation at Portion 8 and 8A • Drainage/ sewerage works at Portion 12 • Setting up of TTA for twin rising mains laying at Man Tung Road and Ying Tung Road • CCTV inspection for drainage works at Yi Tung Road	• 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, unpaved haul road and land filling area • 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/2020/07 - Tung Chung New Town Extension – Tai Ho Interchange (Contract 7)		
Land-based Works		
• Backfilling / chain link fence at WA4 • Inspection pit excavation at Portion 34 • Trench excavation at Portions 32, 36-38 • Site preparation works for slip roads at Portion 31 and Pak Mong Subway Extension • Ground investigation works for Bridge C • Site clearance and tidiness	• 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	• Good site practices • Regular water spraying on stockpiles, unpaved haul road and land filling area • 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

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.

3.2 MONITORING SCHEDULE FOR THE COMING MONTH

The tentative schedules for environmental monitoring in April 2022 are provided in *Annex J*.

4 CONCLUSION AND RECOMMENDATION

This EM&A Report presents the findings of the EM&A activities undertaken for the TCE Project 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-519/2016)*.

Air quality (1-hour TSP), noise, water quality (DO, turbidity and SS), monitoring of the *in-situ* preserved plant species of conservation importance and monitoring of the transplanted plant species of conservation importance were carried out in the reporting period.

The monitoring results for air quality monitoring (1-hour TSP) and water quality impact monitoring complied with the Action/ Limit levels in the reporting period.

No exceedance of Limit Levels was recorded for construction noise monitoring in the reporting period. However, two (2) Action Levels were triggered from two (2) environmental complaints related to noise nuisance in the reporting period.

No impact soft shore ecological monitoring at Tung Chung Bay and Tai Ho Wan was scheduled during the reporting period. The impact soft shore ecological monitoring at Tung Chung Bay and Tai Ho Wan was postponed to April 2022 due to COVID-19 pandemic.

Monitoring of the *in-situ* preserved plant species of conservation importance and monitoring of the transplanted plant species of conservation importance were carried out in the reporting period. Recommendations were given to the Contractors for the deficiencies identified during the inspections.

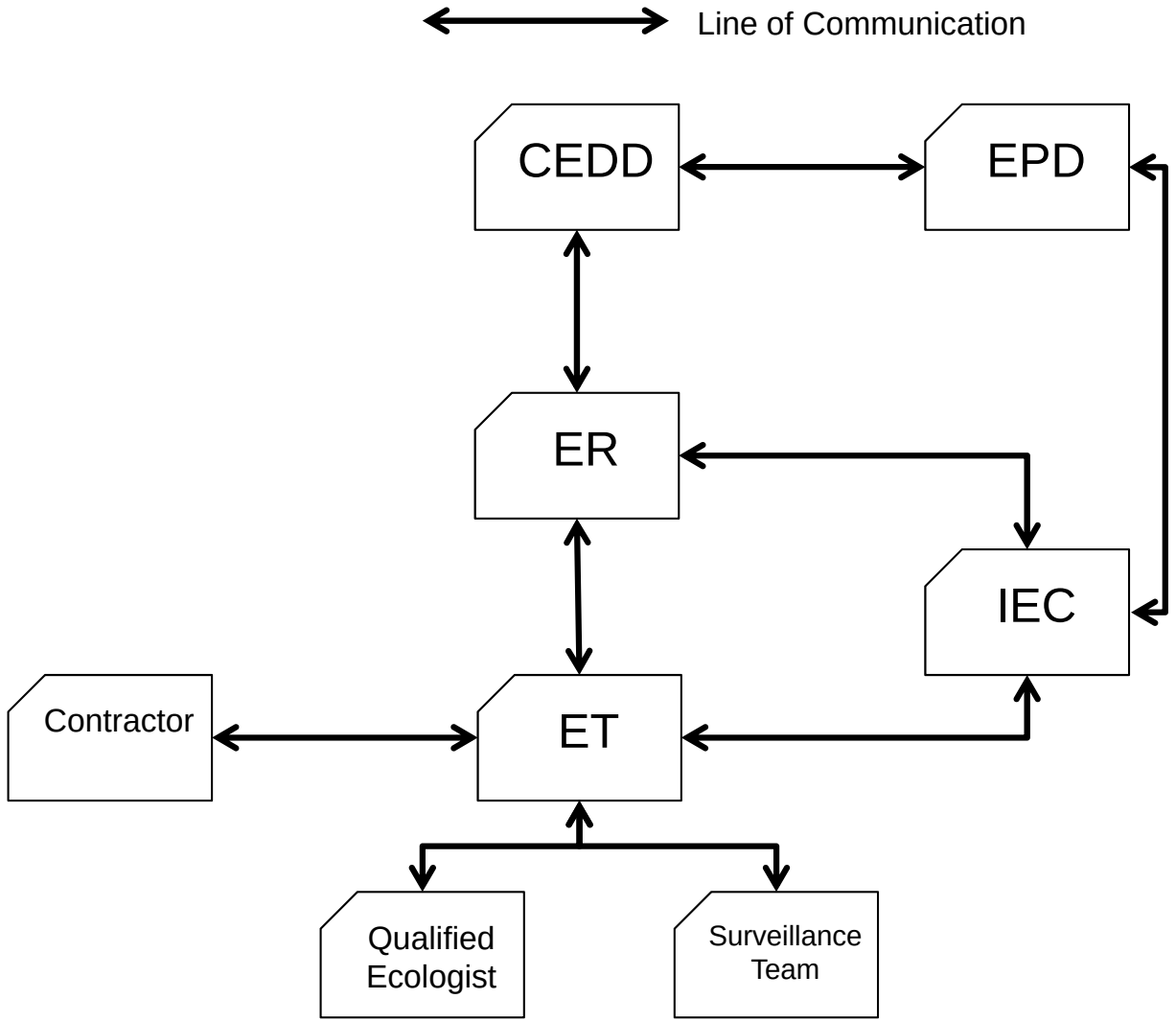
Environmental site inspections were carried out during the reporting period. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

There were no notification of summons or prosecution recorded in the reporting period. Three (3) environmental complaints related to Contract 3 were received in the reporting period. Investigations were conducted for the environmental complaints in accordance with the complaint handling process as stated in the Complaint Management Plan.

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

Annex A

Project Organisation


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

Annex B

Environmental Mitigation Implementation Schedule

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 45º 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 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 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 45º 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^{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 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^{o} 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^{o} 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)							

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	<u>*General Construction Activities*</u> 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	<u>Good Site Practices</u> 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	<u>Waste Reduction Measures</u> 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	<u>Storage of Waste</u> 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	<u>Collection and Transportation of Waste</u> 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	<u>Excavated and C&D Materials</u> 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	<u>Provision of Wheel Wash Facilities</u> 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	<u>Excavated Contaminated Soil</u> 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	<u>Excavated Marine Sediments</u> 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	

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
S7.4.2	WM16	<u>Floating Refuse accumulated along seawall</u> • 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	<u>Floating Refuse inside Marina</u> • 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

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
							• 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

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
			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

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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

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
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

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
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

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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					

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		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

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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

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		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	

Environmental Mitigation Implementation Schedule – Tung Chung New Town Extension

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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

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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

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Works Vessel Travel Routes (Extracted from Works Vessel Travel Route Plan submitted under Condition 2.13 of the EP)							
S3.2	WVTR1	All works vessels shall be equipped with Global Positional System (GPS) or equivalent automatic identification system (AIS) for real time tracking and monitoring of their travel routing, speed and anchorage points. The system shall be capable to record and analyse the travel routing, speed and anchorage points.	Control EM&A Performance	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements
S3.3.1	WVTR2	1) Once approaching or leaving the entrance of the silt curtain, all vessels will travel at a speed no greater than 8 knots between the site and boundary of The Brothers Marine Park. The vessels can then navigate at normal speed (8-12 knots) after that distance unless other restrictions are imposed. 2) If any dolphins are sighted within 250m of a vessel then the vessel will slow down to a speed no greater than 5 knots for at least 3 minutes after the last sighting.	Protection of CWD	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements
S3.3.2	WVTR3	All captains and the supervising staff should undergo training to learn about local dolphins and porpoises. They should be trained to be aware of the protocol for dolphin friendly" vessel operation (refer to the Code of Conduct for Dolphin Watching Activities from AFCD).	Protection of CWD	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements
S3.3.2	WVTR4	Training on the requirements of the WVTRP would be provided for construction vessels' personnel to follow, which should include the details of the normal operational routings of the construction works vessels and reporting of deviations from the normal operational routings of the construction works vessels. The training course will be given to the licensed vessel captains by the trainers before commencement of work and refreshment course will be provided every quarter.	Protection of CWD	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements

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Deployment of Silt Curtain(s) (Extracted from Silt Curtain Deployment Plan submitted under Condition 2.16 of the EP)							
S4	SCD1	Before the start of the installation work, Qualified Ecologists with dolphin monitoring experience shall scan the exclusion zone for at least 30 minutes. If dolphins are observed in the exclusion zone, the installation work shall be delayed until the dolphins left the area.	Protection of CWD	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements
S4	SCD2	If dolphins are observed within the exclusion zone during the installation work, the relevant part of the work shall cease until the dolphins left the area.	Protection of CWD	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements
S5	SCD3	On-board supervisors will be assigned to check the condition of the silt curtain before commencement of works every day. An inspection checklist will be kept on site for record purpose.	Silt Curtain Integrity	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements
S5	SCD4	For the tentative arrangement of silt curtain under adverse weather, the silt curtain will not be temporary removed during adverse weather. However, related works will be suspended immediately if silt curtain is found any damaged.	Silt Curtain Integrity	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements
S5	SCD5	Diver inspection shall be carried out if necessary to inspect the installation and decommission of silt curtain to ensure proper installation and functioning of the silt curtain according to the design drawings. Nearby marine works will resume after repairing of the damaged silt curtains.	Silt Curtain Integrity	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements
S5	SCD6	Refuse around the silt curtain will be collected at regular intervals on a daily basis so that water behind the silt curtains will be kept free from floating debris.	Waste Management	Contractor	All marine construction sites	Construction stage	• EIA • Contractual requirements

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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 construction 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 construction sites	Construction stage	• EP • Contractual requirements

Annex C

Status of Submissions and Implementation Status of Mitigation Measures under EP

Annex C *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 1, 2, 3 and 7)	The Plan was submitted to EPD on 14 March 2022
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 Organizations (for Contracts 1, 2, 3 and 7)	Updated Submission was submitted to EPD on 23 December 2021 and accepted by EPD on 12 January 2022
2.12	Construction Works Schedule and Location Plans (for Contract 1)	Updated Plan was submitted on 1 February 2021 and accepted by EPD on 26 February 2021
2.13	Works Vessel Travel Route Plan (for Contract 1)	Accepted by EPD
2.14	Eco-shoreline Implementation Plan (for Contract 1)	The Plan was submitted to EPD on 15 September 2020 and accepted by EPD on 23 November 2020
2.15	Dolphin Watching Plan (for Contract 1)	Updated Plan was submitted on 21 September 2018 and accepted by EPD on 12 October 2018
2.16	Silt Curtain Deployment Plan (for Contract 1)	Updated Plan was submitted to EPD on 15 September 2020 and accepted by EPD on 14 October 2020
2.17	Spill Response Plan (for Contract 1)	Accepted by EPD
2.18	Plan on Provision of Buffer Zones	To be prepared no later than 3 months before the commencement of construction works at Tung Chung Valley. Refer to the EM&A Reports of TCW.
2.19	River Park Plan	To be prepared no later than 3 months before the commencement of construction works at Tung Chung Valley. Refer to the EM&A Reports of TCW.
2.20	Habitat Enhancement and Translocation Plan for Amphibian Species of Conservation Importance	To be prepared no later than 3 months before the commencement of construction works at Tung Chung Valley. Refer to the EM&A Reports of TCW.
2.21	Detailed Preservation and/or Translocation Plan for Plant Species of Conservation Importance	Accepted by EPD on 9 December 2021
2.22	Detailed Compensatory Woodland Planting Plan	The Plan was submitted to EPD on 14 December 2021
2.23	Plan for Review of Use of New Low Noise Road Surfacing Material(s)	To be prepared no later than 3 months before the commencement of roadworks
2.24	Waste Management Plan (for Contracts 1, 2, 3 and 7)	The Plan was submitted to EPD on 29 March 2022

EP Condition	Submission / Implementation Status	Status
2.25	(i) no dredging of marine sediment shall be carried out for the Project	Under implementation
	(ii) all reclamation filling works shall be carried out within a leading seawall of at least 200m; and	Under implementation
	(iii) silt curtains surrounding the reclamation area shall be deployed in accordance with the Silt Curtain Deployment Plan	Under implementation
2.26	Implement Silt Curtain Deployment Plan and Spill Response Plan	Under implementation
2.27	Implement dolphin exclusion zone of 250m around the reclamation site at Tung Chung East during the installation of the perimeter silt curtains and any re-deployment of the perimeter silt curtains by Qualified Ecologist(s)	Under implementation
2.28	Once the perimeter silt curtains are installed or re-deployed, the Dolphin Watching Plan shall be implemented as part of the EM&A programme	Under implementation
2.29	(i) no underwater blasting and percussive piling shall be carried out for the Project; and	Under implementation
	(ii) air compressors and other noisy equipment mounted on works vessels shall be acoustically-decoupled	Under implementation
2.30	Implement Works Vessel Travel Route Plan	Under implementation
	Implement Eco-shoreline Implementation Plan	Under implementation
	Implement Dolphin Watching Plan	Under implementation
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	Detailed Preservation and/or Translocation Plan for Plant Species of Conservation Importance is under implementation
2.32	Implement Plan for review of the use of new road surfacing material(s)	To be implemented
	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	To be implemented
	All noise mitigation measures implemented shall be properly maintained during the operation of the above roads	

EP Condition	Submission / Implementation Status	Status
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
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

Annex D

Status of Statutory Environmental Requirements

Annex D Status of Statutory Environmental Requirements

Contract No.	Description	Location	Ref No.	Status
General	Environmental Permit	TCNTE Works Area	EP-519/2016	Granted on 9 Aug 2016
Contract No. NL/2017/03 (Contract 1)	Discharge License under Water Pollution Control Ordinance	Area WA1, near Ying Tung Road, Tung Chung	WT00031099-2018	Validity from 19 Jun 2018 to 30 Jun 2023
		Area WA1, near Ying Tung Road, Tung Chung	WT00034715-2019	Validity from 21 Jan 2020 to 31 Jan 2025
	Billing Account for Disposal of Construction Waste	-	Application No. 7029877	Approved on 22 January 2018
	Registration as Chemical Waste Producer	Site Office for TCE	WPN-5213-950-B2528-01	Issued on 28 Feb 2018
		TCE Site Area	WPN-5213-950-B2528-02	Issued on 20 Apr 2018
		Area WA3, near To Kau Wan, Tung Chung	WPN-5213-974-B2528-03	Issued on 9 April 2019
	Construction Noise Permit	Reclamation area	GW-RS0106-22	Validity from 25 Feb 2022 to 16 Apr 2022
		TCE Works Area near Lantau Toll Plaza	GW-RW0038-22	Validity from 15 Feb 2022 to 14 July 2022
	Licence for the conduct of a Specified Process (SP Licence)	TCNTE Works Area	L-3-264 (1)	Validity from 12 Aug 2020 to 11 Aug 2024
Contract No. NL/2020/02 (Contract 2)	Billing Account for Disposal of Construction Waste	-	Application No. 7040975	Approved on 29 Jul 2021
	Registration as Chemical Waste Producer	Working site of Contract No. NL/2020/02	WPN-5213-950-C4323-04	Issued on 17 Aug 2021

Contract No.	Description	Location	Ref No.	Status
Contract No. NL/2020/03 (Contract 3)	Billing Account for Disposal of Construction Waste	-	Application No. 7041004	Approved on 13 Jul 2021
	Registration as Chemical Waste Producer	Working site of Contract No. NL/2020/03	WPN-5213-950-B2500-07	Issued on 25 Aug 2021
	Construction Noise Permit	Percussive Piling at Construction Site of Contract No. NL/2020/03 (Portion 8, 8A, 12A, 12, 111A, 111B and 111C-1)	PP-RS0016-21	Validity from 28 Oct 2021 to 27 Apr 2022
		Construction Site of Contract No. NL/2020/03 (WA9, WA6, WA4, WA5, WA7, WA2, WA3 & Portion 8, 8A, 12, 12A, 111B, 104)	GW-RS0954-21	Validity from 28 Dec 2021 to 27 Jun 2022
	Discharge License under Water Pollution Control Ordinance	Construction Site of Contract No. NL/2020/03	WT00039577-2021	Validity from 1 Dec 2021 to 31 Dec 2026
Contract No. NL/2020/07 (Contract 7)	Billing Account for Disposal of Construction Waste	-	Application No. 7041997	Approved on 26 Oct 2021
	Registration as Chemical Waste Producer	Working site of Contract No. NL/2020/07	WPN-5213-961-B2500-08	Issued on 30 Nov 2021

Annex E

Air Quality

Annex E1

Calibration Certificates for Air Quality

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	: **HK2117310**
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	: 29-APR-2021
		DATE OF ISSUE	: 11-MAY-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 Enviro Services.

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 : HK2117310
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ---

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2117310-001	S/N: 276017	Equipments	29-Apr-2021	S/N: 276017

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	276017
Equipment Ref:	Nil
Job Order	HK2117310

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	26 April 2021

Equipment Verification Results:

Verification Date: 7 May 2021

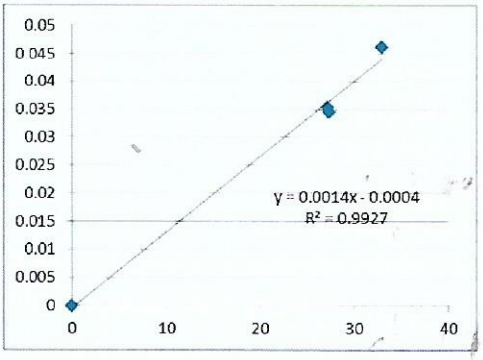
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
2hr	09:30 ~ 11:30	26.6	1013.2	0.046	3951	32.9
2hr01min	11:32 ~ 13:33	26.6	1013.2	0.035	3293	27.3
2hr10min	13:35 ~ 15:45	26.6	1013.2	0.036	3519	27.2

Linear Regression of Y or X

Slope (K-factor): 0.0014

Correlation Coefficient 0.9963

Date of Issue 10 May 2021



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 0.0014 should be applied for TSP monitoring

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

Operator : Fai So Signature : Date : 10 May 2021

QC Reviewer : Ben Tam Signature : Date : 10 May 2021

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	26-Apr-21
Location ID :	Calibration Room	Next Calibration Date:	26-Jul-21

CONDITIONS

Sea Level Pressure (hPa)	1013.7	Corrected Pressure (mm Hg)	760.275
Temperature (°C)	23.4	Temperature (K)	296

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	6.9	6.9	13.8	1.774	56	56.16	Slope = 39.9922
13	5.5	5.5	11.0	1.584	50	50.14	Intercept = -13.7742
10	4.2	4.2	8.4	1.385	42	42.12	Corr. coeff. = 0.9961
8	2.7	2.7	5.4	1.111	32	32.09	
5	1.9	1.9	3.8	0.933	22	22.06	

Calculations :

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

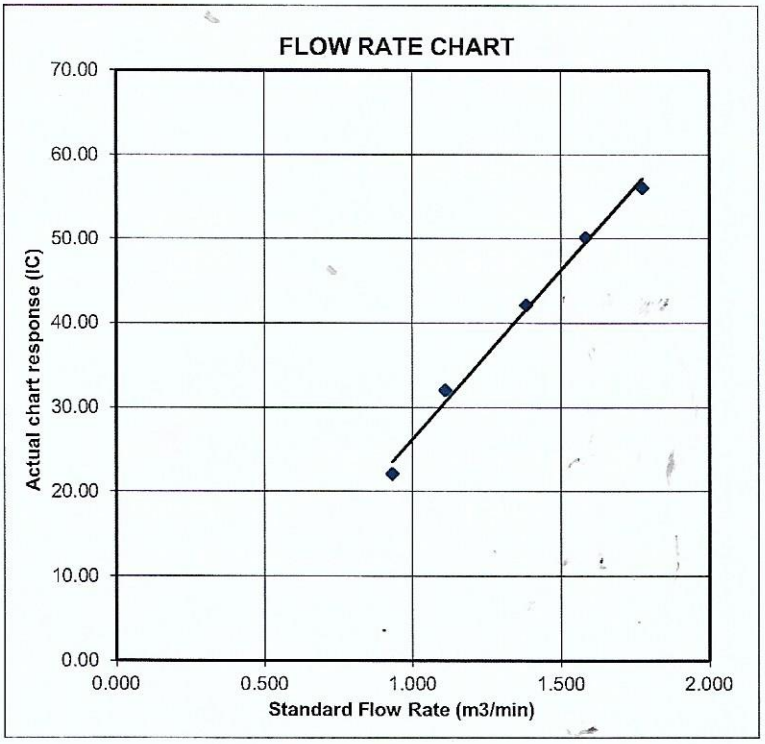
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

Annex E2

Monitoring Schedule for Air Quality

Tung Chung New Town Extension (East)
Air Quality Monitoring Schedule (March 2022)

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

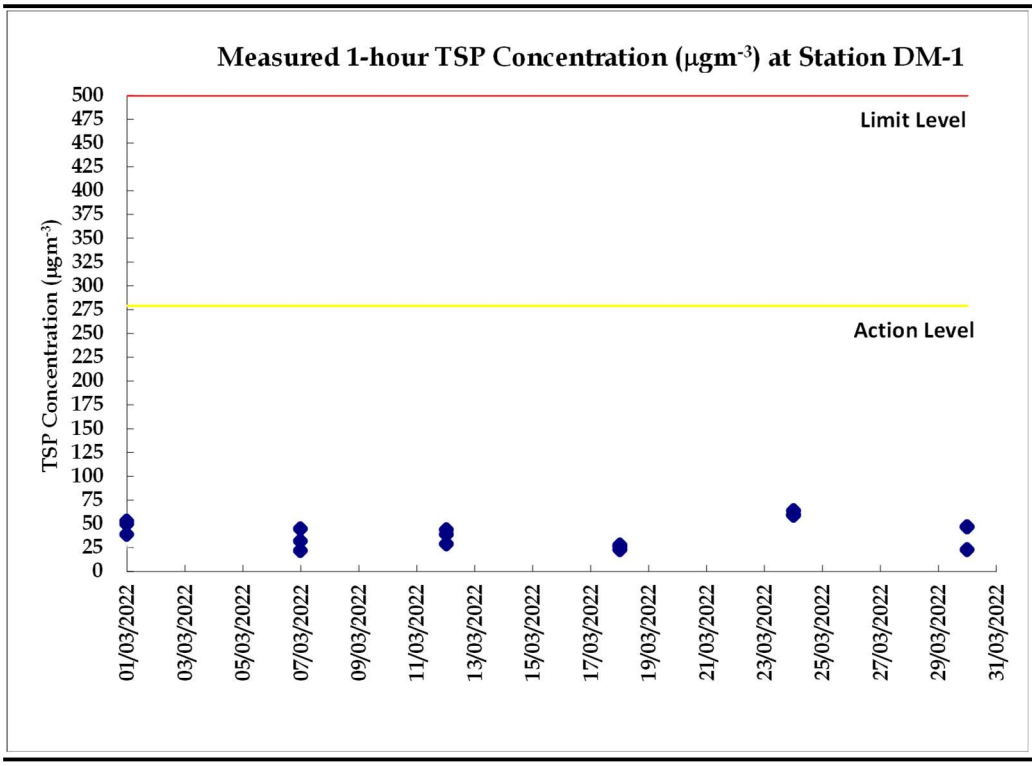
Annex E3

Monitoring Results for Air Quality

Table E3 Data for 1-hr TSP Monitoring at Station DM-1

Date	Start Time	Finish Time	Weather	1-hour TSP ($\mu g/m^3$)
2022-03-01	9:00	10:00	Sunny	53
2022-03-01	10:00	11:00	Sunny	39
2022-03-01	11:00	12:00	Sunny	50
2022-03-07	9:40	10:40	Cloudy	22
2022-03-07	10:40	11:40	Cloudy	32
2022-03-07	11:40	12:40	Cloudy	45
2022-03-12	9:05	10:05	Sunny	44
2022-03-12	10:05	11:05	Sunny	29
2022-03-12	11:05	12:05	Sunny	39
2022-03-18	8:10	9:10	Sunny	28
2022-03-18	9:10	10:10	Sunny	26
2022-03-18	10:10	11:10	Sunny	23
2022-03-24	9:00	10:00	Cloudy	64
2022-03-24	10:00	11:00	Cloudy	59
2022-03-24	11:00	12:00	Cloudy	60
2022-03-30	9:16	10:16	Sunny	23
2022-03-30	10:16	11:16	Sunny	47
2022-03-30	11:16	12:16	Sunny	47

Figure E3 Graphical Presentation for 1-hr TSP Monitoring at Station DM-1



Annex E4

Event and Action Plan for Air Quality

Annex E4 Event and Action Plan for Air Quality

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.
Action level 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.

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.
Limit level 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.

Annex F

Noise

Annex F1

Calibration Certificates for Noise

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

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.

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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

Certificate of Calibration
校正證書

Certificate No. : C216702
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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
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Annex F2

Monitoring Schedule for Noise

Tung Chung New Town Extension (East)
Noise Monitoring Schedule (March 2022)

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

Annex F3

Monitoring Results for Noise

Table F3.1 Data for Noise Monitoring at Station NMS-CA-1A during Normal Working Hours (0700-1900 hours)

Date & Time	$L_{eq\ (5min)}$	L_{10}	L_{90}	$L_{eq\ (30min)}$
2022-03-01 9:38	65.9	68.5	61.6	63.9
2022-03-01 9:43	64.1	66.1	60.3	
2022-03-01 9:48	61.9	64.1	58.1	
2022-03-01 9:53	62.9	65.9	58.9	
2022-03-01 9:58	63.3	65.7	58.1	
2022-03-01 10:03	64.4	66.6	59.1	
2022-03-07 9:02	65.5	68.0	59.7	65.0
2022-03-07 9:07	63.5	66.7	58.8	
2022-03-07 9:12	65.1	67.4	60.7	
2022-03-07 9:17	65.4	68.6	58.2	
2022-03-07 9:22	65.0	67.5	59.1	
2022-03-07 9:27	65.0	68.3	59.5	
2022-03-12 9:47	66.9	69.6	61.9	67.5
2022-03-12 9:52	67.8	69.6	64.5	
2022-03-12 9:57	67.0	69.6	63.1	
2022-03-12 10:02	67.2	70.4	61.4	
2022-03-12 10:07	67.6	70.6	61,3	
2022-03-12 10:12	68.2	70.3	62.7	
2022-03-18 8:54	65.1	68.0	58.2	66.1
2022-03-18 8:59	64.3	67.1	58.4	
2022-03-18 9:04	66.6	70.6	58.2	
2022-03-18 9:09	67.2	70.4	57.9	
2022-03-18 9:14	65.7	68.6	56.6	
2022-03-18 9:19	66.9	68.9	57.4	
2022-03-24 10:20	66.9	69.2	62.3	68.5
2022-03-24 10:25	67.3	70.0	63.0	
2022-03-24 10:30	69.2	71.9	63.4	
2022-03-24 10:35	70.0	73.0	63.7	
2022-03-24 10:40	67.9	70.1	63.4	
2022-03-24 10:45	68.6	71.0	63.7	
2022-03-30 14:56	65.6	68.1	62.2	65.8
2022-03-30 15:01	66.2	68.8	61.5	
2022-03-30 15:06	66.4	67.9	60.9	
2022-03-30 15:11	64.5	67.2	60.7	
2022-03-30 15:16	66.6	69.1	62.6	
2022-03-30 15:21	65.2	67.1	60.8	

Figure F3.1 Graphical Presentation for Noise Monitoring at Station NMS-CA-1A

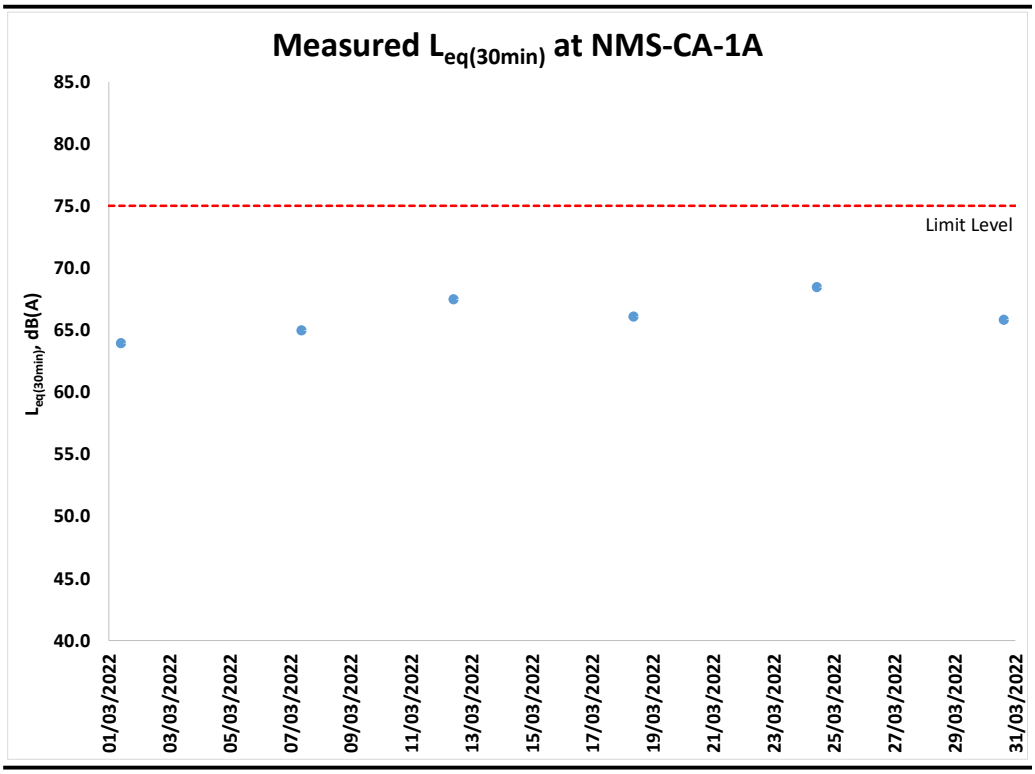
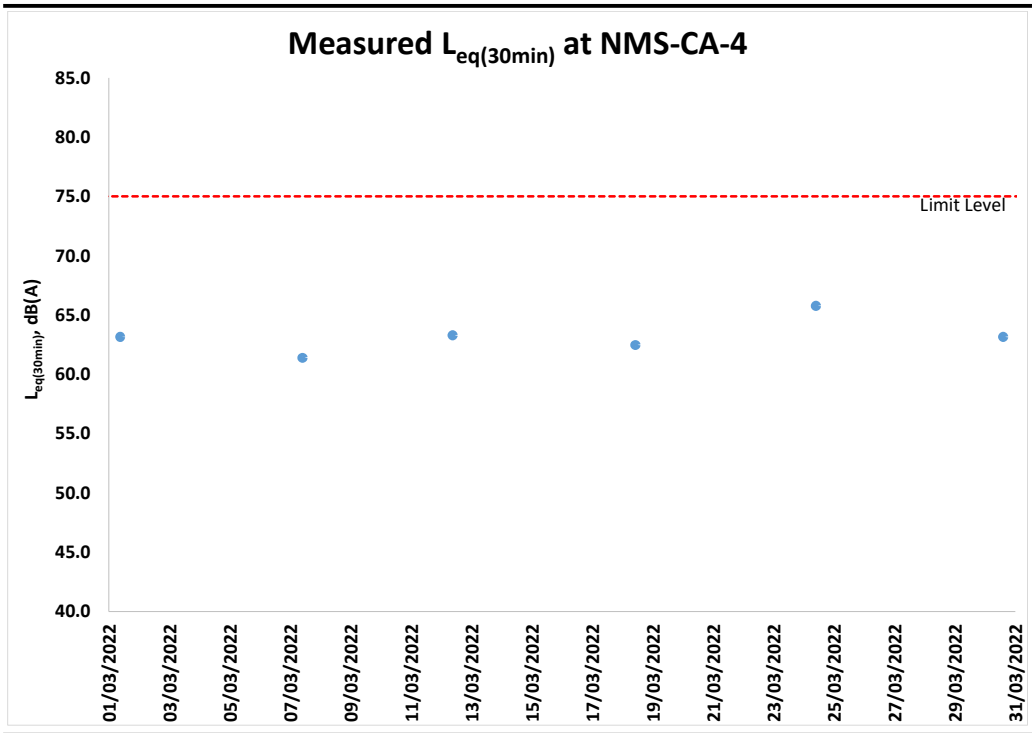


Table F3.2 Data for Noise Monitoring at Station NMS-CA-4 during Normal Working Hours (0700-1900 hours)

Date & Time	$L_{eq\ (5min)}$	L_{10}	L_{90}	$L_{eq\ (30min)}$
2022-03-01 8:56	59.8	60.8	58.4	63.2
2022-03-01 9:01	62.6	65.6	58.7	
2022-03-01 9:06	65.5	68.1	59.0	
2022-03-01 9:11	64.7	67.2	58.1	
2022-03-01 9:16	60.7	63.1	57.1	
2022-03-01 9:21	63.0	66.6	57.7	
2022-03-07 9:50	62.1	65.2	57.4	61.4
2022-03-07 9:55	58.3	60.0	56.0	
2022-03-07 10:00	62.7	66.9	55.7	
2022-03-07 10:05	62.8	65.4	57.3	
2022-03-07 10:10	59.6	62.1	57.0	
2022-03-07 10:15	61.1	63.0	57.0	
2022-03-12 9:06	63.4	66.8	56.8	63.3
2022-03-12 9:11	63.1	66.6	57.0	
2022-03-12 9:16	62.1	65.2	58.3	
2022-03-12 9:21	63.5	66.9	58.4	
2022-03-12 9:26	64.0	68.3	58.5	
2022-03-12 9:31	63.4	67.4	58.0	
2022-03-18 10:05	60.9	62.2	59.2	62.5
2022-03-18 10:10	61.2	62.4	59.3	
2022-03-18 10:15	61.8	63.7	59.9	
2022-03-18 10:20	63.4	65.0	59.8	
2022-03-18 10:25	62.8	65.0	60.0	
2022-03-18 10:30	63.9	65.2	60.3	
2022-03-24 9:35	66.1	68.4	60.3	65.8
2022-03-24 9:40	65.0	67.3	60.9	
2022-03-24 9:45	65.4	67.7	59.2	
2022-03-24 9:50	66.0	67.9	59.3	
2022-03-24 9:55	65.9	68.7	59.7	
2022-03-24 10:00	66.1	69.0	59.4	
2022-03-30 14:20	64.6	67.8	58.9	63.2
2022-03-30 14:25	63.7	67.7	59.0	
2022-03-30 14:30	62.2	64.8	59.1	
2022-03-30 14:35	64.4	67.5	59.7	
2022-03-30 14:40	61.5	63.2	58.9	
2022-03-30 14:45	61.4	63.1	59.2	

Figure F3.2 Graphical Presentation for Noise Monitoring at Station NMS-CA-4



Annex F4

Event and Action Plan for Noise

Annex F4 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.

Annex G

Water Quality

Annex G1

Calibration Certificates for Water Quality

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB030068
Date of Issue : 21 March 2022

PART A - CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Flat 2207, Yu Fun House Yu Chui Court, Shatin
New Territories (HK) Hong Kong
Attn :

PART B - SAMPLE INFORMATION

Name of Equipment :	YSI ProDSS (Multi-Parameters)
Manufacturer :	YSI (a xylem brand)
Serial Number :	S/N: 16H104233
Date of Received :	18 March 2022
Date of Calibration :	18 March 2022
Date of Next Calibration :	17 June 2022

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
Turbidity	APHA 21e 2130B
Conductivity	APHA 21e 2510B
Dissolved oxygen	APHA 21e 4500 O
pH value	APHA 21e 4500 H+
Salinity	APHA 21e 2520B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure

PART D - CALIBRATION RESULT

(1) Turbidity

EXPECTED READING (NTU)	DISPLAY READING (NTU)	TOLERANCE (%)	RESULT
0	0.05	--	Satisfactory
10	10.09	0.9	Satisfactory
20	19.68	-1.6	Satisfactory
100	104.79	4.79	Satisfactory
800	793.41	-0.82	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

(2) Conductivity

EXPECTED READING (MS/CM AT 25°C)	DISPLAY READING	TOLERANCE (%)	RESULT
146.9	149.71	1.91	Satisfactory
1412	1471	4.18	Satisfactory
12890	12690	-1.55	Satisfactory
58670	57736	-1.59	Satisfactory
111900	110653	-1.11	Satisfactory

Tolerance of Conductivity should be less than ± 10.0 (%)

(3) Dissolved oxygen

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED SIGNATORY:

LEE Chun-ning
Assistant Manager (Chemical Testing)

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB030068
Date of Issue : 21 March 2022

EXPECTED READING (MG/L)	DISPLAY READING (MG/L)	TOLERANCE (MG/L)	RESULT
8.08	8.23	0.15	Satisfactory
4.8	4.92	0.12	Satisfactory
1.8	1.81	0.01	Satisfactory
0.08	0.33	0.25	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(4) pH value

TARGET (PH UNIT)	DISPLAY READING (PH UNIT)	TOLERANCE	RESULT
4.00	4.09	0.09	Satisfactory
7.42	7.49	0.07	Satisfactory
10.01	9.87	-0.14	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(5) Salinity

EXPECTED READING (G/L)	DISPLAY READING (G/L)	TOLERANCE (%)	RESULT
10	9.9	-1.00	Satisfactory
20	19.83	-0.85	Satisfactory
30	30.33	1.10	Satisfactory

Tolerance of Salinity should be less than ± 10.0 (%)

(6) Temperature

READING OF REF. THERMOMETER (°C)	DISPLAY READING (°C)	TOLERANCE (°C)	RESULT
10	10	0	Satisfactory
20	20	0	Satisfactory
48	48	0	Satisfactory

Tolerance of Temperature should be less than ± 2.0 (°C)

Remark(s)

·The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.

·The results relate only to the calibrated equipment as received

·The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

·"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.

·The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.

--- END OF REPORT ---

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
Email: info@qualityprotest.com; Website: www.qualityprotest.com
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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB030069
Date of Issue : 21 March 2022
Page No. : 1 of 2

PART A - CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Flat 2207, Yu Fun House Yu Chui Court, Shatin
New Territories (HK) Hong Kong
Attn :

PART B - SAMPLE INFORMATION

Name of Equipment :	YSI ProDSS (Multi-Parameters)
Manufacturer :	YSI (a xylem brand)
Serial Number :	S/N: 16H104234
Date of Received :	18 March 2022
Date of Calibration :	18 March 2022
Date of Next Calibration :	17 June 2022

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
Turbidity	APHA 21e 2130B
Conductivity	APHA 21e 2510B
Dissolved oxygen	APHA 21e 4500 O
pH value	APHA 21e 4500 H+
Salinity	APHA 21e 2520B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure

PART D - CALIBRATION RESULT

(1) Turbidity

EXPECTED READING (NTU)	DISPLAY READING (NTU)	TOLERANCE (%)	RESULT
0	0.05	--	Satisfactory
10	10.20	2.0	Satisfactory
20	19.77	-1.2	Satisfactory
100	104.21	4.2	Satisfactory
800	792.60	-0.9	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

(2) Conductivity

EXPECTED READING (MS/CM AT 25°C)	DISPLAY READING	TOLERANCE (%)	RESULT
146.9	152.1	3.54	Satisfactory
1412	1472	4.25	Satisfactory
12890	12618	-2.11	Satisfactory
58670	57412	-2.14	Satisfactory
111900	110616	-1.15	Satisfactory

Tolerance of Conductivity should be less than ± 10.0 (%)

(3) Dissolved oxygen

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED SIGNATORY:

LEE Chun-ning
Assistant Manager (Chemical Testing)

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB030069
Date of Issue : 21 March 2022

EXPECTED READING (MG/L)	DISPLAY READING (MG/L)	TOLERANCE (MG/L)	RESULT
8.08	8.25	0.17	Satisfactory
4.8	5.00	0.20	Satisfactory
1.8	1.74	-0.06	Satisfactory
0.08	0.5	0.42	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(4) pH value

TARGET (PH UNIT)	DISPLAY READING (PH UNIT)	TOLERANCE	RESULT
4.00	4.08	0.08	Satisfactory
7.42	7.47	0.05	Satisfactory
10.01	9.90	-0.11	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(5) Salinity

EXPECTED READING (G/L)	DISPLAY READING (G/L)	TOLERANCE (%)	RESULT
10	9.93	-0.70	Satisfactory
20	19.81	-0.95	Satisfactory
30	30.12	0.40	Satisfactory

Tolerance of Salinity should be less than ± 10.0 (%)

(6) Temperature

READING OF REF. THERMOMETER (°C)	DISPLAY READING (°C)	TOLERANCE (°C)	RESULT
10	10	0	Satisfactory
20	20	0	Satisfactory
48	48	0	Satisfactory

Tolerance of Temperature should be less than ± 2.0 (°C)

Remark(s)

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·The results relate only to the calibrated equipment as received

·The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

·"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.

·The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.

--- END OF REPORT ---

專業化驗有限公司
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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BA120147
Date of Issue : 30 December 2021

PART A - CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Flat 2207, Yu Fun House Yu Chui Court, Shatin
New Territories (HK) Hong Kong
Attn :

PART B - SAMPLE INFORMATION

Name of Equipment :	YSI ProDSS (Multi-Parameters)
Manufacturer :	YSI (a xylem brand)
Serial Number :	17E100747
Date of Received :	24 December 2021
Date of Calibration :	24 December 2021
Date of Next Calibration :	23 March 2022

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
Turbidity	APHA 21e 2130B
Conductivity	APHA 21e 2510B
Dissolved oxygen	APHA 21e 4500 O
pH value	APHA 21e 4500 H+
Salinity	APHA 21e 2520B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure

PART D - CALIBRATION RESULT

(1) Turbidity

EXPECTED READING (NTU)	DISPLAY READING (NTU)	TOLERANCE (%)	RESULT
0	0.10	--	Satisfactory
10	9.88	-1.2	Satisfactory
20	19.79	-1.1	Satisfactory
100	100.26	0.3	Satisfactory
800	808.37	1.0	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

(2) Conductivity

EXPECTED READING (MS/CM AT 25°C)	DISPLAY READING (MS/CM AT 25°C)	TOLERANCE (%)	RESULT
146.9	151.2	2.92	Satisfactory
1412	1348	-4.53	Satisfactory
12890	12591	-2.32	Satisfactory
58670	57734	-1.60	Satisfactory
111900	111592	-0.28	Satisfactory

Tolerance of Conductivity should be less than ± 10.0 (%)

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AUTHORIZED SIGNATORY:

LEE Chun-ning
Assistant Manager (Chemical Testing)

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BA120147
Date of Issue : 30 December 2021

(3) Dissolved oxygen

EXPECTED READING (MG/L)	DISPLAY READING (MG/L)	TOLERANCE (MG/L)	RESULT
7.65	7.76	0.11	Satisfactory
6.09	6.17	0.08	Satisfactory
3.20	3.28	0.08	Satisfactory
0.78	0.56	-0.22	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(4) pH value

TARGET (PH UNIT)	DISPLAY READING (PH UNIT)	TOLERANCE	RESULT
4.00	4.04	0.04	Satisfactory
7.42	7.46	0.04	Satisfactory
10.01	10.13	0.12	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(5) Salinity

EXPECTED READING (G/L)	DISPLAY READING (G/L)	TOLERANCE (%)	RESULT
10	9.93	-0.70	Satisfactory
20	19.89	-0.55	Satisfactory
30	30.20	0.67	Satisfactory

Tolerance of Salinity should be less than ± 0.0 (%)

(6) Temperature

READING OF REF. THERMOMETER (°C)	DISPLAY READING (°C)	TOLERANCE (°C)	RESULT
10	9.9	-0.1	Satisfactory
20	20.0	0.0	Satisfactory
40	40.0	0.0	Satisfactory

Tolerance of Temperature should be less than ± 2.0 (°C)

Remark(s)

·The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.
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--- END OF REPORT ---

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BA120148
Date of Issue : 30 December 2021

PART A - CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Flat 2207, Yu Fun House Yu Chui Court, Shatin
New Territories (HK) Hong Kong
Attn :

PART B - SAMPLE INFORMATION

Name of Equipment :	YSI ProDSS (Multi-Parameters)
Manufacturer :	YSI (a xylem brand)
Serial Number :	21G105356
Date of Received :	24 December 2021
Date of Calibration :	24 December 2021
Date of Next Calibration :	23 March 2022

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
Turbidity	APHA 21e 2130B
Conductivity	APHA 21e 2510B
Dissolved oxygen	APHA 21e 4500 O
pH value	APHA 21e 4500 H+
Salinity	APHA 21e 2520B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure

PART D - CALIBRATION RESULT

(1) Turbidity

EXPECTED READING (NTU)	DISPLAY READING (NTU)	TOLERANCE (%)	RESULT
0	0.10	--	Satisfactory
10	9.81	-1.9	Satisfactory
20	19.82	-0.9	Satisfactory
100	100.22	0.2	Satisfactory
800	810.23	1.3	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

(2) Conductivity

EXPECTED READING (MS/CM AT 25°C)	DISPLAY READING (MS/CM AT 25°C)	TOLERANCE (%)	RESULT
146.9	150.3	2.31	Satisfactory
1412	1369	-3.05	Satisfactory
12890	12488	-3.12	Satisfactory
58670	57746	-1.57	Satisfactory
111900	111426	-0.42	Satisfactory

Tolerance of Conductivity should be less than ± 10.0 (%)

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AUTHORIZED SIGNATORY:

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BA120148
Date of Issue : 30 December 2021

(3) Dissolved oxygen

EXPECTED READING (MG/L)	DISPLAY READING (MG/L)	TOLERANCE (MG/L)	RESULT
7.65	7.80	0.15	Satisfactory
6.09	6.20	0.11	Satisfactory
3.20	3.33	0.13	Satisfactory
0.78	0.56	-0.22	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(4) pH value

TARGET (PH UNIT)	DISPLAY READING (PH UNIT)	TOLERANCE	RESULT
4.00	4.03	0.03	Satisfactory
7.42	7.45	0.03	Satisfactory
10.01	10.11	0.10	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(5) Salinity

EXPECTED READING (G/L)	DISPLAY READING (G/L)	TOLERANCE (%)	RESULT
10	9.93	-0.70	Satisfactory
20	19.88	-0.60	Satisfactory
30	30.19	0.63	Satisfactory

Tolerance of Salinity should be less than ± 0.0 (%)

(6) Temperature

READING OF REF. THERMOMETER (°C)	DISPLAY READING (°C)	TOLERANCE (°C)	RESULT
10	9.9	-0.1	Satisfactory
20	20.0	0.0	Satisfactory
40	40.0	0.0	Satisfactory

Tolerance of Temperature should be less than ± 2.0 (°C)

Remark(s)

·The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.

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--- END OF REPORT ---

Annex G2

Monitoring Schedule for Water Quality

Tung Chung New Town Extension (East)
Impact Marine Water Quality Monitoring (WQM) Schedule (March 2022)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Mar	2-Mar	3-Mar	4-Mar	5-Mar
			ebb tide 11:35 - 15:05 flood tide 6:05 - 9:35		ebb tide 12:45 - 16:15 flood tide 7:03 - 10:33	
6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar
	ebb tide 14:17 - 17:47 flood tide 7:57 - 11:27		ebb tide 15:45 - 18:22 flood tide 8:38 - 12:08		ebb tide 18:16 - 21:46 flood tide 6:22 - 8:52	
13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar
	ebb tide 10:08 - 12:45 flood tide 14:15 - 17:45		ebb tide 10:37 - 14:07 flood tide 5:45 - 8:40		ebb tide 11:34 - 15:04 flood tide 5:54 - 9:24	
20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar
	ebb tide 13:15 - 16:45 flood tide 7:04 - 10:34		ebb tide 14:44 - 18:14 flood tide 8:02 - 11:32		ebb tide 16:52 - 20:22 flood tide 6:14 - 9:05	
27-Mar	28-Mar	29-Mar	30-Mar	31-Mar		
	ebb tide 9:23 - 12:52 flood tide 14:06 - 17:36		ebb tide 10:41 - 14:11 flood tide 16:02 - 19:32			

Remark:
Pickup time and place of 1st tide: 15 min before tidal window at Sham Tseng pier
Pickup time and place of 2nd tide: 15 min before tidal window at Tung Chung pier

Annex G3

Monitoring Results for Water Quality

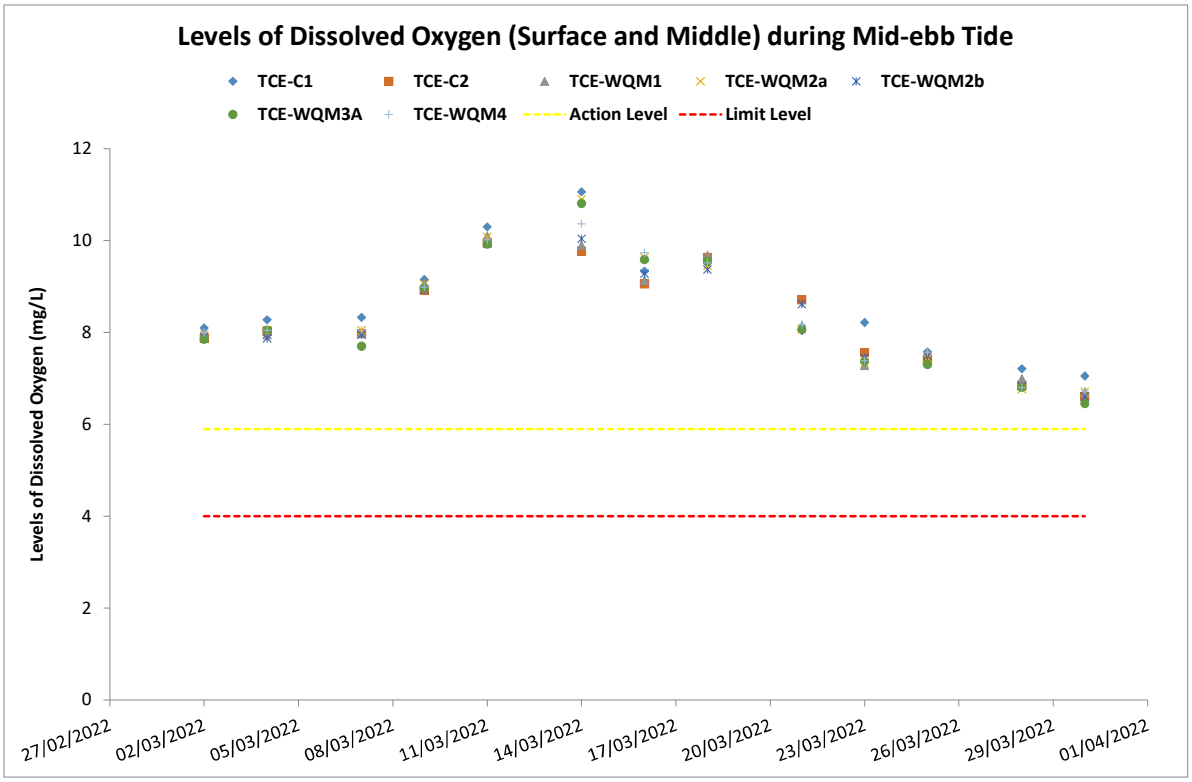


Figure 1: Levels of Dissolved Oxygen (Surface and Middle) (mg/L) recorded at Mid-ebb Tide during the Water Quality Monitoring between 1 to 31 March 2022

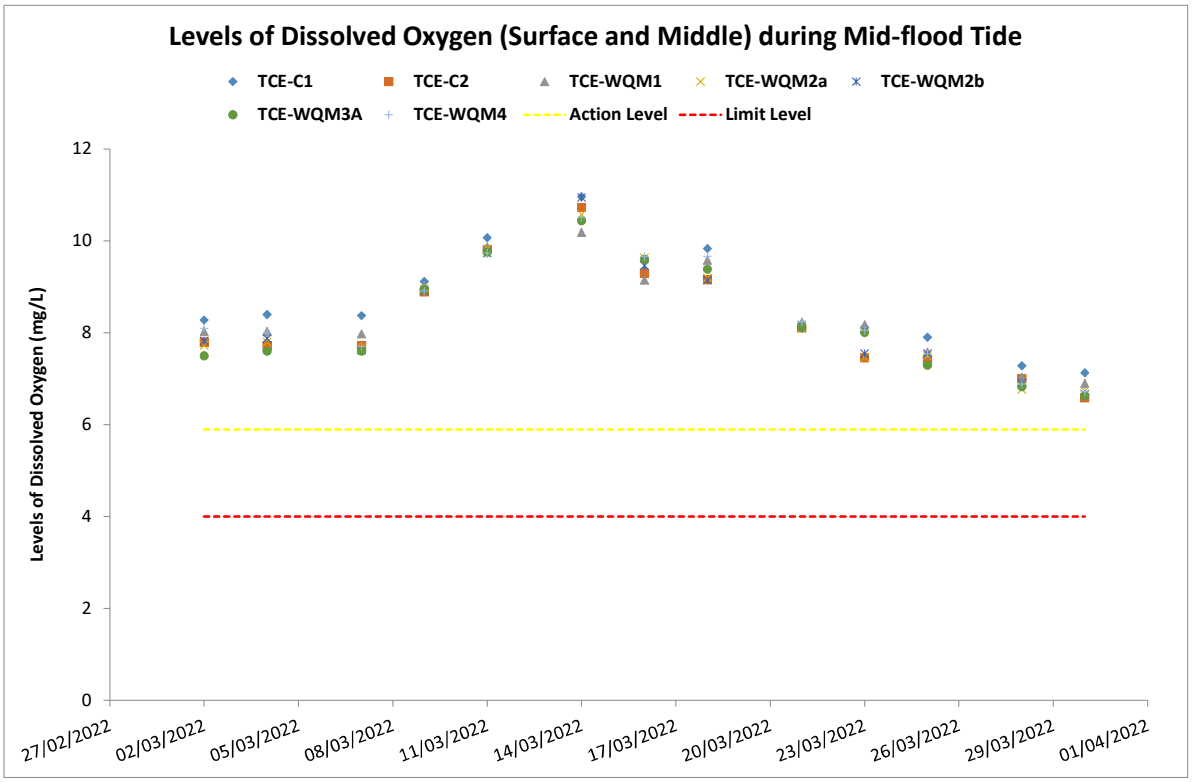


Figure 2: Levels of Dissolved Oxygen (Surface and Middle) (mg/L) recorded at Mid-flood Tide during the Water Quality Monitoring between 1 to 31 March 2022

Source: P:\Projects\0445700 CEDD ET for Tung Chung.JT\02_Deliverable\10 Monthly EM&A Report\

Date: March 2022

Environmental Resources Management

ERM

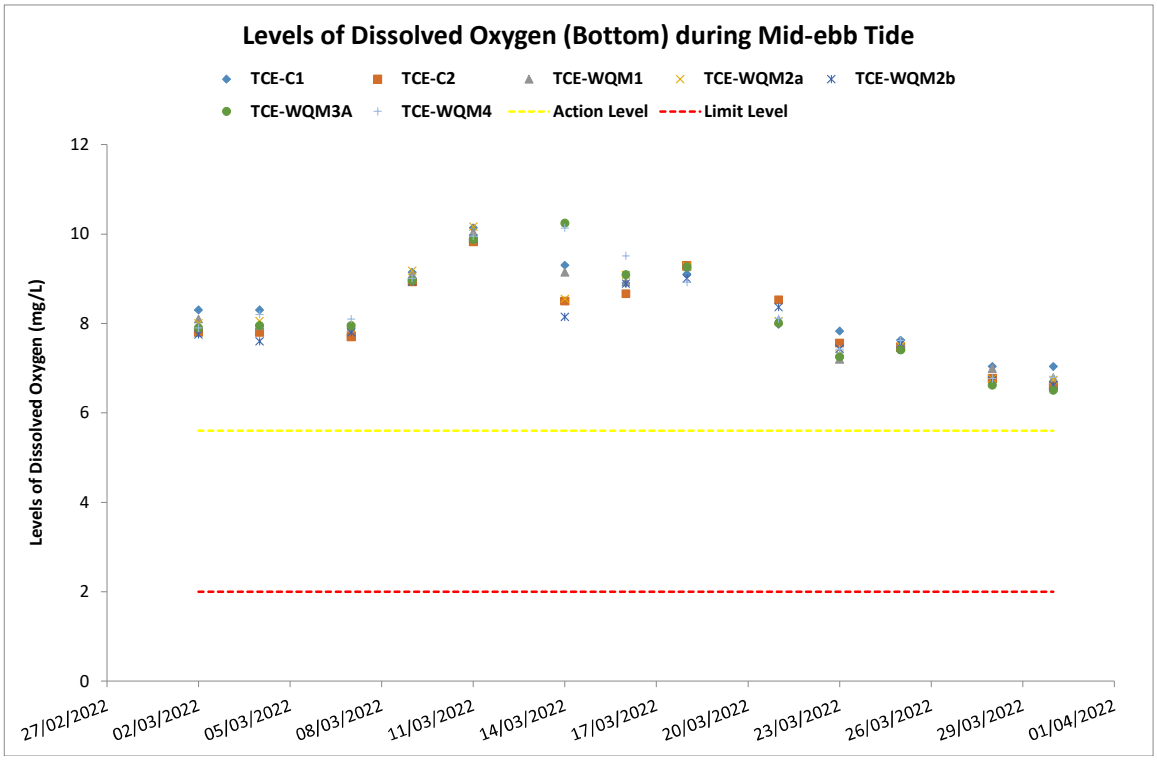


Figure 3: Levels of Dissolved Oxygen (Bottom) (mg/L) recorded at Mid-ebb Tide during the Water Quality Monitoring between 1 to 31 March 2022

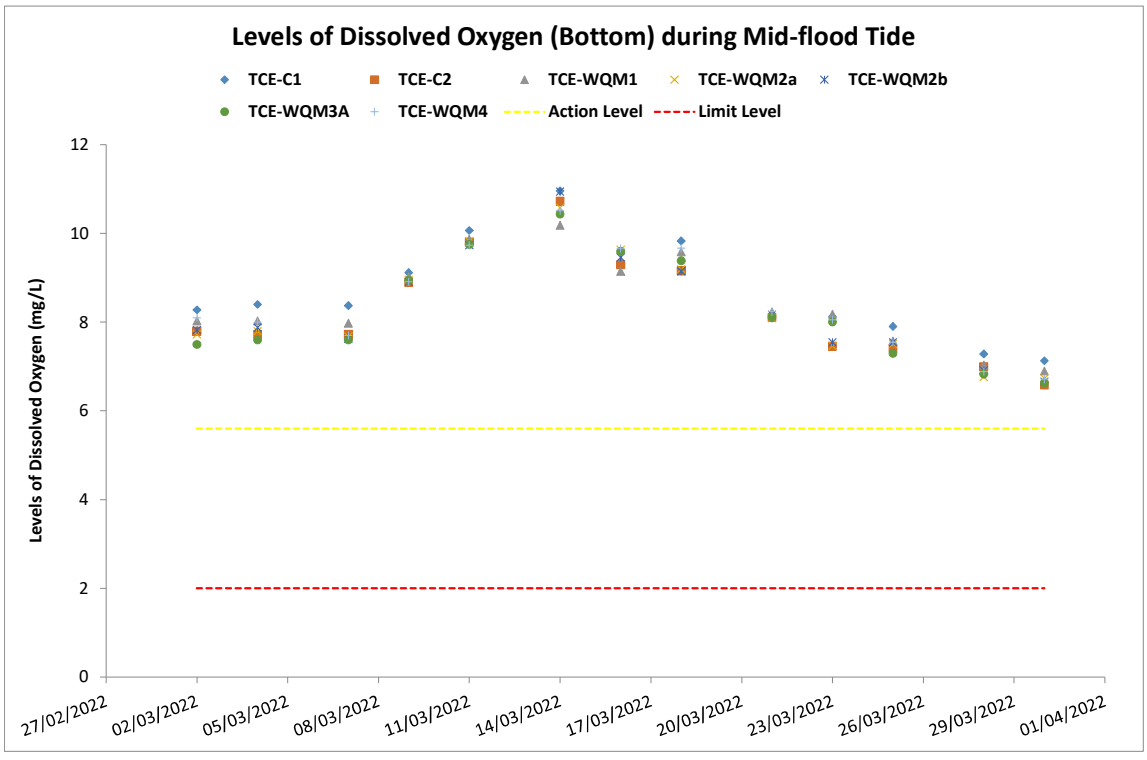


Figure 4: Levels of Dissolved Oxygen (Bottom) (mg/L) recorded at Mid-flood Tide during the Water Quality Monitoring between 1 to 31 March 2022

Source: P:\Projects\0445700 CEDD ET for Tung Chung.JT\02_Deliverable\10 Monthly EM&A Report\

Date: March 2022

Environmental Resources Management

ERM

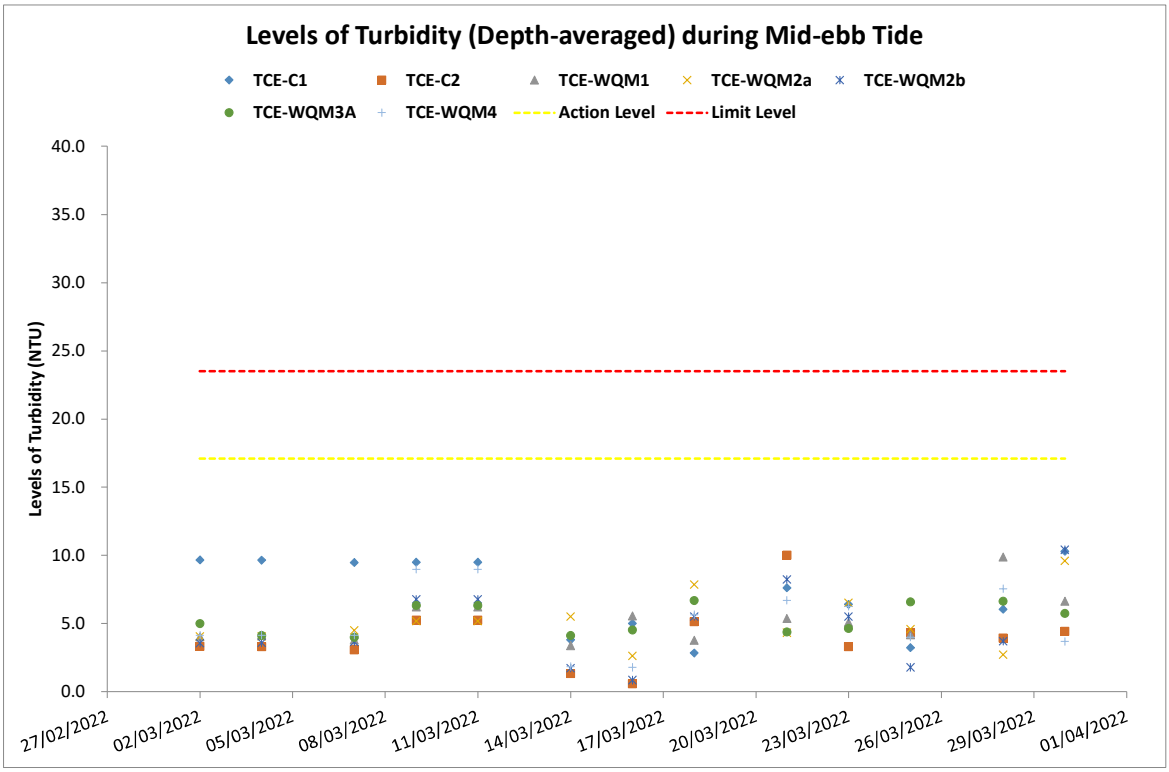


Figure 5: Levels of Turbidity (Depth-averaged) (NTU) recorded at Mid-ebb Tide during the Water Quality Monitoring between 1 to 31 March 2022

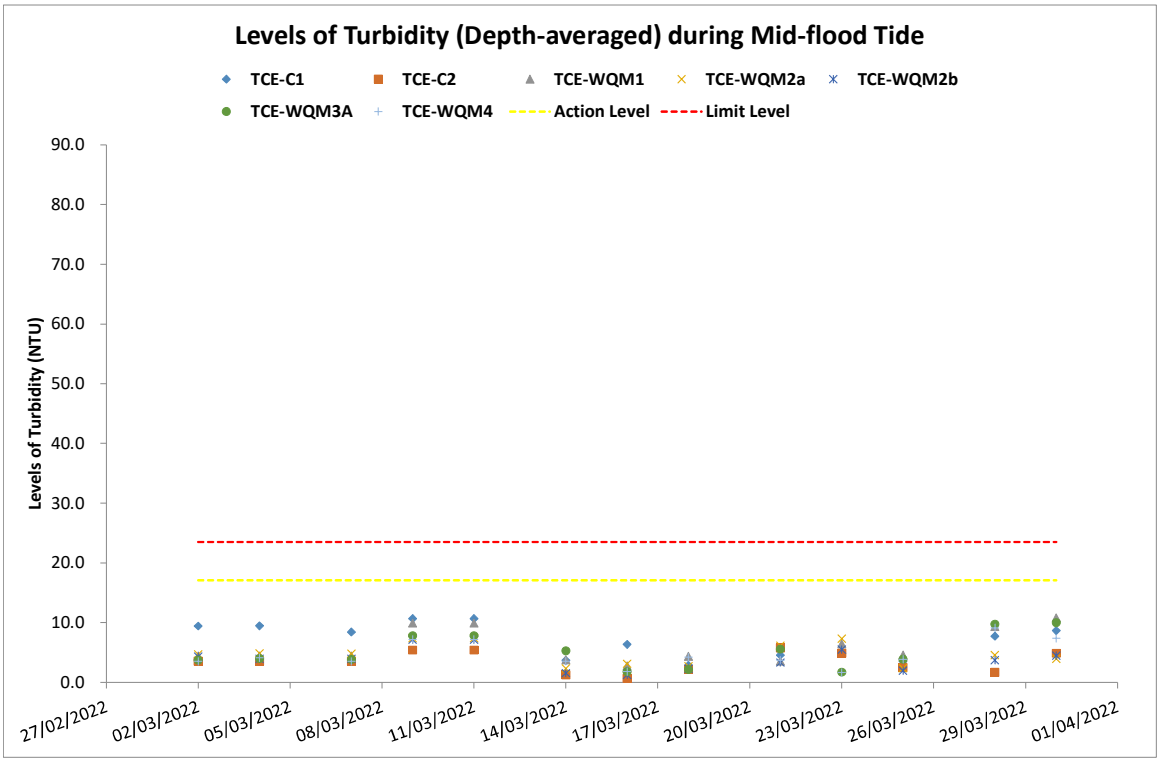


Figure 6: Levels of Turbidity (Depth-averaged) (NTU) recorded at Mid-flood Tide during the Water Quality Monitoring between 1 to 31 March 2022

Source: P:\Projects\0445700 CEDD ET for Tung Chung.JT\02_Deliverable\10 Monthly EM&A Report\

Date: March 2022

Environmental Resources Management

ERM

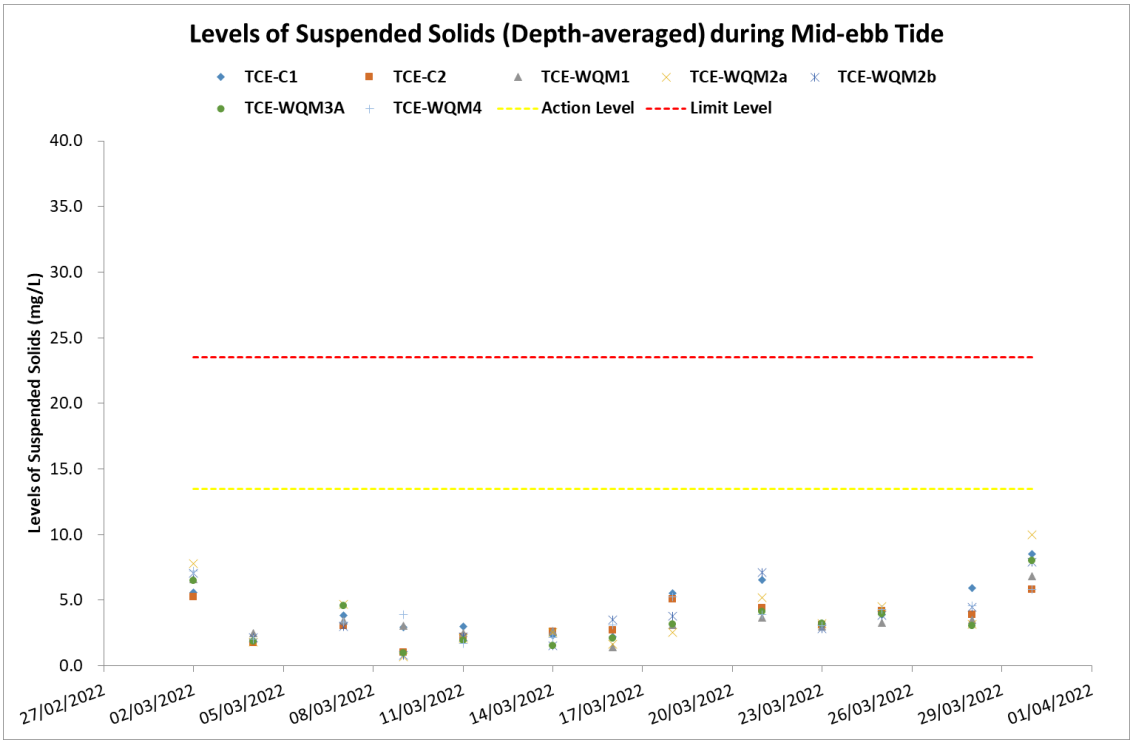


Figure 7: Levels of Suspended Solids (Depth-averaged) (mg/L) recorded at Mid-ebb Tide during the Water Quality Monitoring between 1 to 31 March 2022

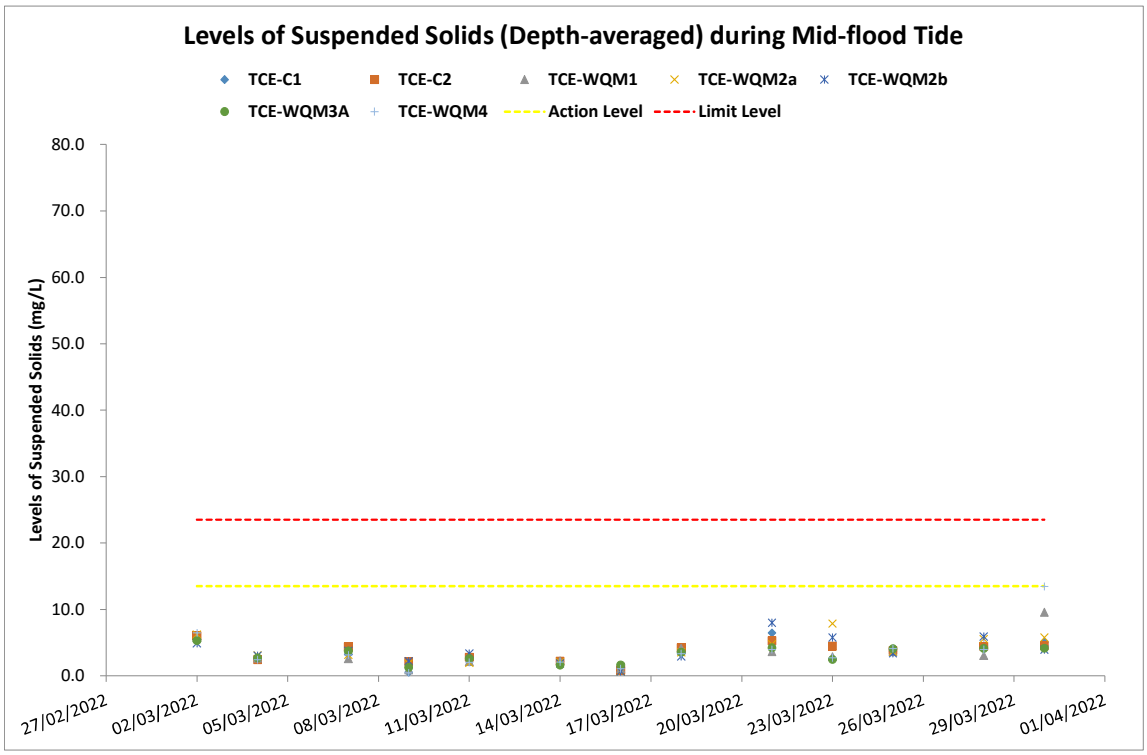


Figure 8: Levels of Suspended Solids (Depth-averaged) (mg/L) recorded at Mid-flood Tide during the Water Quality Monitoring between 1 to 31 March 2022

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-02	Mid-Ebb	TCE-C1	Misty	Moderate	12:06	8.0	Surface	1.0	1	16.8	8.3	33.0	8.2	102.8	10.8	7.4	8.1	9.7	5.6
									2	16.5	8.2	32.7	8.0	99.7	11.1	7.1			
							Middle	4.0	1	16.5	8.2	32.8	8.0	99.7	9.2	5.7			
									2	16.7	8.0	32.8	8.2	103.4	7.6	5.3			
							Bottom	7.0	1	16.7	8.0	32.8	8.3	103.8	9.6	4.0	8.3		
									2	16.7	8.0	32.8	8.3	103.8	9.7	3.9			
		TCE-C2	Misty	Moderate	13:51	12.4	Surface	1.0	1	17.4	8.1	32.5	7.8	99.0	3.3	4.2	7.9	3.3	5.3
									2	17.5	8.2	32.3	8.0	101.8	3.3	4.4			
							Middle	6.2	1	17.5	8.3	32.4	8.0	101.9	3.8	5.1			
									2	17.6	8.2	32.3	7.7	98.0	4.0	5.0			
							Bottom	11.4	1	17.6	8.3	32.2	7.7	98.1	2.7	6.4	7.8		
									2	17.3	8.4	32.4	7.9	99.5	2.9	6.4			
		TCE-WQM1	Misty	Moderate	12:44	8.0	Surface	1.0	1	16.7	8.0	31.1	7.8	97.2	4.6	7.9	8.0	4.0	6.6
									2	16.6	8.0	31.0	8.0	99.5	4.5	7.8			
							Middle	4.0	1	16.6	8.0	31.1	8.1	99.9	3.6	7.3			
									2	16.8	8.0	31.1	8.0	99.5	3.5	7.5			
							Bottom	7.0	1	16.8	8.3	31.2	8.0	99.7	4.0	4.6	8.1		
									2	16.8	8.3	30.9	8.2	102.4	4.0	4.4			
		TCE-WQM2a	Misty	Moderate	13:16	7.2	Surface	1.0	1	17.3	8.1	32.4	7.7	97.1	3.7	9.9	8.0	4.1	7.8
									2	17.3	8.1	32.4	7.7	97.1	3.7	9.8			
							Middle	3.6	1	17.7	8.2	32.4	8.3	105.6	4.4	7.8			
									2	17.4	8.2	32.5	8.1	102.4	4.3	8.0			
							Bottom	6.2	1	17.4	8.2	32.5	8.1	102.4	4.0	5.6	8.0		
									2	17.2	8.2	32.3	7.9	99.8	4.2	5.5			
		TCE-WQM2b	Misty	Moderate	13:28	10.2	Surface	1.0	1	17.3	8.3	32.4	7.9	99.5	3.2	9.1	7.9	3.6	7.0
									2	17.2	8.2	32.3	8.0	100.8	3.6	9.3			
							Middle	5.1	1	17.2	8.2	32.5	7.9	100.4	3.7	7.0			
									2	17.6	8.3	32.5	7.8	99.0	3.7	6.8			
							Bottom	9.2	1	17.6	8.3	32.5	7.8	99.0	3.7	5.0	7.8		
									2	17.3	8.2	32.4	7.7	97.0	3.5	5.0			
		TCE-WQM3A	Misty	Moderate	13:05	4.2	Surface	1.0	1	17.2	8.2	31.3	7.9	99.6	5.0	7.7	7.9	5.0	6.5
									2	17.3	8.2	31.3	7.8	98.0	4.8	7.3			
							Bottom	3.2	1	17.3	8.2	31.7	7.8	98.4	5.0	5.5	7.9		
									2	17.0	8.1	31.6	8.0	103.1	5.2	5.4			
		TCE-WQM4	Misty	Moderate	12:55	3.6	Surface	1.0	1	17.0	8.1	31.8	8.0	103.5	4.2	8.5	8.0	4.2	7.2
									2	17.3	8.1	31.8	8.0	100.7	4.3	8.1			
							Bottom	2.6	1	17.3	8.1	31.8	8.0	100.6	4.1	6.3	7.9		
									2	16.7	8.0	31.8	7.8	97.4	4.0	6.0			
2022-03-02	Mid-Flood	TCE-C1	Misty	Moderate	9:08	8.0	Surface	1.0	1	16.5	8.1	33.0	8.3	104.1	12.0	6.2	8.3	9.4	5.5
									2	16.5	8.1	32.9	8.4	103.6	12.0	6.6			
							Middle	4.0	1	16.8	8.0	32.7	8.2	103.1	8.3	5.6			
									2	16.8	8.0	32.8	8.2	103.3	8.2	5.7			
							Bottom	7.0	1	16.5	8.3	32.7	8.3	103.1	7.9	4.4	8.3		
									2	16.5	8.3	32.6	8.3	103.4	8.2	4.5			
		TCE-C2	Misty	Moderate	7:01	12.8	Surface	1.0	1	17.7	8.2	32.4	7.7	97.8	3.8	7.0	7.8	3.6	6.0
									2	17.7	8.2	32.3	7.6	97.3	4.0	7.2			
							Middle	6.4	1	17.7	8.1	32.4	7.9	101.1	2.7	6.2			
									2	17.7	8.1	32.2	8.0	101.1	2.9	6.2			
							Bottom	11.8	1	17.7	7.8	32.5	8.0	102.5	4.0	4.8	8.0		
									2	17.7	7.8	32.4	8.0	102.6	3.9	4.5			
		TCE-WQM1	Misty	Moderate	8:19	8.2	Surface	1.0	1	16.9	8.2	31.1	7.9	98.9	3.4	6.2	8.0	4.4	5.7
									2	16.9	8.2	31.3	7.9	98.5	3.6	6.6			
							Middle	4.1	1	16.3	8.3	31.1	8.2	100.5	5.0	5.6			
									2	16.3	8.3	31.3	8.1	100.2	5.0	5.7			
							Bottom	7.2	1	16.2	8.2	31.2	7.9	97.3	4.8	5.0	8.0		
									2	16.2	8.2	31.1	8.0	97.3	4.8	5.3			
		TCE-WQM2a	Misty	Moderate	7:40	7.0	Surface	1.0	1	17.1	8.4	32.2	7.9	99.8	5.8	8.1	7.7	4.7	6.2
									2	17.1	8.4	32.2	7.9	99.8	5.8	8.3			
							Middle	3.5	1	17.6	8.2	32.2	7.5	95.7	4.5	6.2			
									2	17.6	8.2	32.0	7.6	96.1	4.6	6.1			
							Bottom	6.0	1	17.3	8.1	32.1	7.9	100.0	3.9	4.6	8.0		
									2	17.3	8.1	32.1	8.1	100.0	3.6	4.1			
		TCE-WQM2b	Misty	Moderate	7:25	10.6	Surface	1.0	1	17.4	8.0	32.1	7.9	100.5	2.9	6.0	7.8	4.3	4.9
									2	17.4	8.0	32.3	7.9	100.2	2.6	6.2			
							Middle	5.3	1	17.3	8.1	32.2	7.8	98.1	4.4	4.6			
									2	17.3	8.1	32.0	7.7	97.6	4.4	4.8			
							Bottom	9.6	1	17.2	8.1	32.0	7.8	98.1	5.8	3.8	7.8		
									2	17.2	8.1	32.3	7.8	98.4	5.8	4.0			
		TCE-WQM3A	Misty	Moderate	7:54	4.0	Surface	1.0	1	17.3	8.1	31.1	7.5	94.6	3.9	4.2	7.5	3.7	5.3
									2	17.3	8.1	31.4	7.5	94.9	3.8	4.4			
							Bottom	3.0	1	17.2	8.0	31.5	7.9	99.7	3.5	6.3	7.9		
									2	17.2	8.0	31.3	7.9	99.7	3.7	6.4			
		TCE-WQM4	Misty	Moderate	8:06	3.6	Surface	1.0	1	17.0	8.3	31.4	8.1	101.2	3.5	6.0	8.1	3.5	6.5
									2	17.0	8.3	31.5	8.1	101.5	3.2	5.5			
							Bottom	2.6	1	17.2	8.1	31.6	7.8	97.6	3.6	7.3	7.8		
									2	17.2	8.1	31.2	7.8	97.3	3.8	7.1			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-04	Mid-Ebb	TCE-C1	Fine	Rough	13:14	8.0	Surface	1.0	1	16.5	8.4	30.9	8.6	105.8	10.8	2.0	8.3	9.7	1.8
									2	16.5	8.4	33.0	8.5	105.7	11.1	1.9			
							Middle	4.0	1	16.7	8.3	32.7	8.0	100.4	9.1	1.7			
									2	16.7	8.3	32.9	8.0	100.6	7.6	1.8			
							Bottom	7.0	1	16.8	8.2	32.9	8.3	103.9	9.6	1.8	8.3		
									2	16.8	8.2	32.9	8.3	104.0	9.7	1.7			
		TCE-C2	Fine	Rough	15:07	12.4	Surface	1.0	1	17.4	8.1	32.4	8.1	103.2	3.3	1.6	8.0	3.3	1.8
									2	17.4	8.2	32.5	8.1	103.1	3.3	1.5			
							Middle	6.2	1	17.3	8.3	32.5	7.9	100.6	3.6	1.8			
									2	17.3	8.3	32.4	8.0	101.0	4.0	1.8			
							Bottom	11.4	1	17.5	8.3	32.4	7.8	99.4	2.7	1.7	7.8		
									2	17.5	8.3	32.4	7.8	99.2	2.9	2.2			
		TCE-WQM1	Fine	Rough	13:52	8.0	Surface	1.0	1	17.0	8.0	31.8	8.0	100.6	5.1	2.3	8.0	4.2	2.5
									2	17.0	8.2	31.0	8.0	100.3	4.8	2.6			
							Middle	4.0	1	16.6	8.0	31.1	7.9	97.6	3.6	2.1			
									2	16.6	8.0	31.1	7.9	97.6	3.5	2.7			
							Bottom	7.0	1	16.8	8.4	31.3	7.9	98.9	4.0	2.9	8.0		
									2	16.8	8.4	31.0	8.0	98.9	4.0	2.3			
		TCE-WQM2a	Fine	Rough	14:31	7.2	Surface	1.0	1	17.1	8.3	32.6	7.9	100.0	3.6	2.6	8.1	4.1	1.8
									2	17.1	8.3	32.6	7.9	100.0	3.6	2.3			
							Middle	3.6	1	17.7	8.1	32.4	8.2	104.8	4.4	1.7			
									2	17.7	8.1	32.6	8.2	104.6	4.3	1.6			
							Bottom	6.2	1	17.5	8.4	32.6	8.1	102.7	4.3	1.6	8.1		
									2	17.5	8.4	32.4	8.0	102.2	4.2	1.2			
		TCE-WQM2b	Fine	Rough	14:44	10.2	Surface	1.0	1	17.4	8.3	32.2	7.8	99.2	3.3	2.6	7.9	3.6	2.2
									2	17.4	8.2	32.4	7.8	99.5	3.6	2.1			
							Middle	5.1	1	17.3	8.0	32.2	8.0	100.5	3.7	2.2			
									2	17.3	8.0	32.4	7.9	100.5	3.7	2.4			
							Bottom	9.2	1	17.6	8.2	32.4	7.6	96.5	3.7	1.9	7.6		
									2	17.6	8.2	32.6	7.6	96.3	3.5	1.8			
		TCE-WQM3A	Fine	Rough	14:15	4.2	Surface	1.0	1	17.2	8.0	32.3	8.0	101.1	3.0	1.8	8.1	4.1	1.9
									2	17.2	8.0	31.3	8.1	101.2	3.3	1.9			
							Bottom	3.2	1	17.2	8.1	31.2	7.9	98.6	5.0	1.8	8.0		
									2	17.2	8.1	31.7	8.0	98.3	5.2	1.9			
		TCE-WQM4	Fine	Rough	14:03	3.6	Surface	1.0	1	17.1	8.3	31.8	8.0	101.3	4.2	1.5	8.1	4.2	2.0
									2	17.1	8.3	31.7	8.1	101.1	4.3	2.2			
							Bottom	2.6	1	17.1	8.0	31.7	8.2	102.5	4.1	2.0	8.2		
									2	17.1	8.0	32.0	8.2	103.0	4.0	2.4			
2022-03-04	Mid-Flood	TCE-C1	Cloudy	Rough	9:17	8.0	Surface	1.0	1	16.4	8.1	33.0	8.4	104.9	11.7	2.6	8.4	9.5	2.7
									2	16.4	8.1	32.8	8.4	105.4	11.6	2.4			
							Middle	4.0	1	16.7	8.2	32.5	8.4	105.2	7.3	2.7			
									2	16.7	8.2	33.0	8.4	105.0	8.2	2.5			
							Bottom	7.0	1	16.3	8.2	32.6	8.2	101.3	9.0	2.8	8.2		
									2	16.3	8.2	32.5	8.2	101.4	9.0	3.0			
		TCE-C2	Cloudy	Rough	7:07	12.8	Surface	1.0	1	17.7	8.1	32.2	7.8	99.4	3.8	2.2	7.7	3.6	2.5
									2	17.7	8.1	32.2	7.8	99.2	4.0	2.5			
							Middle	6.4	1	17.7	8.1	32.4	7.6	97.3	2.7	2.5			
									2	17.7	8.1	32.4	7.7	96.9	2.9	2.5			
							Bottom	11.8	1	17.8	7.9	32.6	7.8	100.2	4.0	2.5	7.8		
									2	17.8	7.9	32.4	7.8	99.8	3.9	2.5			
		TCE-WQM1	Cloudy	Rough	8:24	8.2	Surface	1.0	1	16.7	8.3	31.0	8.0	99.7	3.4	2.7	8.0	4.4	2.7
									2	16.7	8.3	31.2	8.0	99.9	3.6	2.3			
							Middle	4.1	1	16.4	8.3	30.9	8.1	99.5	5.0	2.8			
									2	16.4	8.3	31.2	8.0	99.2	5.0	2.1			
							Bottom	7.2	1	16.5	8.2	31.2	8.0	98.4	4.8	3.2	8.0		
									2	16.5	8.2	31.2	8.0	98.9	4.8	3.0			
		TCE-WQM2a	Cloudy	Rough	7:43	7.0	Surface	1.0	1	17.1	8.4	32.2	7.9	99.4	5.3	3.5	7.8	4.9	3.1
									2	17.1	8.4	32.2	7.9	99.4	5.3	3.3			
							Middle	3.5	1	17.5	8.4	32.2	7.7	97.5	5.5	3.4			
									2	17.5	8.4	32.1	7.7	97.3	5.7	2.7			
							Bottom	6.0	1	17.2	8.1	32.2	8.0	100.7	3.9	2.7	8.1		
									2	17.2	8.1	32.3	8.1	100.3	3.6	2.8			
		TCE-WQM2b	Cloudy	Rough	7:28	10.6	Surface	1.0	1	17.4	8.1	32.3	7.9	100.2	2.9	2.8	7.9	4.0	3.0
									2	17.4	8.1	32.2	7.9	100.0	2.6	3.1			
							Middle	5.3	1	17.4	8.3	32.1	7.8	99.3	3.2	3.2			
									2	17.4	8.3	32.0	7.9	99.6	3.4	2.8			
							Bottom	9.6	1	17.0	8.1	32.1	7.9	99.6	5.8	3.2	7.9		
									2	17.0	8.1	32.1	7.9	99.1	5.8	3.1			
		TCE-WQM3A	Cloudy	Rough	7:56	4.0	Surface	1.0	1	17.1	8.1	31.0	7.6	94.9	3.9	2.2	7.6	4.0	2.7
									2	17.1	8.1	31.3	7.6	95.0	3.8	1.9			
							Bottom	3.0	1	17.2	8.1	31.5	7.9	99.7	4.6	3.3	7.9		
									2	17.2	8.1	31.5	7.9	99.7	3.7	3.4			
		TCE-WQM4	Cloudy	Rough	8:09	3.6	Surface	1.0	1	17.0	8.4	31.4	8.0	100.2	4.8	2.3	8.0	4.1	2.4
									2	17.0	8.4	31.5	8.0	100.2	4.4	2.1			
							Bottom	2.6	1	17.0	8.0	31.7	7.8	98.1	3.6	2.5	7.9		
									2	17.0	8.0	31.2	7.9	98.4	3.6	2.8			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-07	Mid-Ebb	TCE-C1	Fine	Rough	15:04	8.0	Surface	1.0	1	16.9	8.4	30.9	8.5	106.3	10.8	4.6	8.3	9.5	3.8
									2	16.9	8.4	32.9	8.4	105.9	11.1	4.6			
							Middle	4.0	1	16.8	8.4	32.7	8.2	103.4	8.0	3.5			
									2	16.8	8.4	32.8	8.2	103.6	7.6	3.6			
							Bottom	7.0	1	17.0	8.0	32.9	7.9	99.7	9.6	3.2	7.9		
									2	17.0	8.0	33.0	7.9	100.1	9.7	3.4			
		TCE-C2	Fine	Rough	17:00	12.4	Surface	1.0	1	17.4	8.1	32.6	7.9	100.6	3.3	2.7	8.0	3.1	3.1
									2	17.4	8.2	32.6	8.0	101.0	3.3	2.7			
							Middle	6.2	1	17.8	8.3	32.5	8.0	101.9	3.3	3.0			
									2	17.8	8.3	32.4	8.0	102.1	3.0	2.8			
							Bottom	11.4	1	17.8	8.3	32.2	7.7	98.7	2.7	3.7	7.7		
									2	17.8	8.2	32.3	7.7	98.8	2.9	3.5			
		TCE-WQM1	Fine	Rough	15:42	8.0	Surface	1.0	1	17.4	8.0	31.7	7.9	99.4	3.9	5.3	8.0	3.8	3.5
									2	17.4	8.2	31.2	7.9	99.2	3.9	5.3			
							Middle	4.0	1	16.9	8.2	30.9	8.1	100.3	3.6	3.0			
									2	16.9	8.0	31.2	8.0	99.8	3.5	3.0			
							Bottom	7.0	1	17.1	8.4	31.2	7.9	98.6	4.0	2.2	7.9		
									2	17.1	8.4	31.2	7.9	98.8	4.0	2.0			
		TCE-WQM2a	Fine	Rough	16:21	7.2	Surface	1.0	1	17.4	8.1	32.4	7.9	99.7	5.2	3.4	8.1	4.5	4.7
									2	17.4	8.1	32.4	7.9	99.7	5.2	3.2			
							Middle	3.6	1	18.1	8.1	32.4	8.2	105.4	4.4	4.3			
									2	18.1	8.1	32.6	8.2	104.9	4.3	4.4			
							Bottom	6.2	1	17.8	8.2	32.6	7.9	100.7	3.8	6.5	7.9		
									2	17.8	8.2	32.3	7.9	100.3	4.2	6.2			
		TCE-WQM2b	Fine	Rough	16:34	10.2	Surface	1.0	1	17.8	8.3	32.4	7.9	101.3	3.8	3.6	8.0	3.7	3.0
									2	17.8	8.4	32.2	7.9	101.1	3.6	4.0			
							Middle	5.1	1	17.7	8.1	32.4	8.0	101.7	3.7	3.3			
									2	17.7	8.1	32.5	8.0	101.6	3.7	3.0			
							Bottom	9.2	1	17.8	8.1	32.6	7.8	100.0	3.7	2.0	7.8		
									2	17.8	8.2	32.5	7.8	99.7	3.5	2.1			
		TCE-WQM3A	Fine	Rough	16:05	4.2	Surface	1.0	1	17.3	8.0	32.5	7.7	97.0	3.0	3.2	7.7	4.0	4.6
									2	17.3	8.0	31.1	7.7	96.6	2.8	3.5			
							Bottom	3.2	1	17.6	8.1	31.3	7.9	100.3	5.0	6.0	8.0		
									2	17.6	8.1	31.6	8.0	100.6	5.2	5.6			
		TCE-WQM4	Fine	Rough	15:53	3.6	Surface	1.0	1	17.1	8.1	31.8	8.0	101.3	4.2	3.9	8.1	4.2	3.3
									2	17.1	8.1	31.8	8.1	101.4	4.3	3.8			
							Bottom	2.6	1	17.2	8.0	31.9	8.1	102.3	4.1	3.0	8.1		
									2	17.2	8.0	31.8	8.1	102.0	4.0	2.6			
2022-03-07	Mid-Flood	TCE-C1	Fine	Rough	10:27	8.0	Surface	1.0	1	16.6	8.1	33.0	8.3	103.7	9.6	2.4	8.4	8.4	3.2
									2	16.6	8.1	32.9	8.4	103.2	9.8	2.4			
							Middle	4.0	1	16.9	8.1	32.5	8.4	105.5	7.5	2.7			
									2	16.9	8.1	33.0	8.4	105.9	7.2	3.0			
							Bottom	7.0	1	16.4	8.4	32.6	8.4	104.2	8.2	4.7	8.4		
									2	16.4	8.4	32.6	8.3	103.8	8.2	4.2			
		TCE-C2	Fine	Moderate	8:17	12.8	Surface	1.0	1	18.1	8.3	32.3	7.8	100.5	3.8	6.7	7.7	3.6	4.4
									2	18.1	8.3	32.3	7.8	100.4	4.0	6.5			
							Middle	6.4	1	18.0	8.1	32.4	7.6	97.0	2.7	3.5			
									2	18.0	8.1	32.4	7.7	97.2	2.9	3.6			
							Bottom	11.8	1	17.8	8.0	32.5	7.9	101.1	4.0	3.0	7.9		
									2	17.8	8.0	32.4	7.9	100.9	3.9	2.8			
		TCE-WQM1	Fine	Rough	9:34	8.2	Surface	1.0	1	17.1	8.4	31.1	8.1	100.7	3.4	1.8	8.0	4.4	2.6
									2	17.1	8.4	31.3	8.1	101.1	3.6	1.6			
							Middle	4.1	1	16.8	8.4	30.9	7.8	97.5	5.0	2.7			
									2	16.8	8.4	31.2	7.9	97.9	5.0	2.9			
							Bottom	7.2	1	16.8	8.2	31.4	8.0	99.6	4.8	3.1	8.0		
									2	16.8	8.2	31.2	8.0	99.9	4.8	3.4			
		TCE-WQM2a	Fine	Moderate	8:53	7.0	Surface	1.0	1	17.5	8.4	32.2	7.6	95.9	5.4	2.6	7.7	4.8	3.2
									2	17.5	8.4	32.2	7.6	95.9	5.4	2.8			
							Middle	3.5	1	17.8	8.3	32.1	7.8	98.9	5.4	3.1			
									2	17.8	8.3	32.0	7.7	98.6	5.2	3.1			
							Bottom	6.0	1	17.3	8.0	32.2	8.1	102.1	3.9	3.5	8.1		
									2	17.3	8.0	32.2	8.1	102.4	3.6	3.8			
		TCE-WQM2b	Fine	Moderate	8:38	10.6	Surface	1.0	1	17.7	8.0	32.1	7.5	95.9	2.9	4.9	7.6	4.0	3.8
									2	17.7	8.0	32.4	7.5	96.2	2.6	4.8			
							Middle	5.3	1	17.7	8.2	32.1	7.7	98.6	3.3	3.7			
									2	17.7	8.2	32.2	7.8	98.9	3.4	3.5			
							Bottom	9.6	1	17.3	8.2	32.1	8.1	101.8	5.8	2.8	8.1		
									2	17.3	8.2	32.3	8.0	101.7	5.8	2.8			
		TCE-WQM3A	Fine	Moderate	9:06	4.0	Surface	1.0	1	17.6	7.9	31.0	7.6	95.4	3.9	4.4	7.6	3.8	3.8
									2	17.6	7.9	31.4	7.6	95.6	3.8	4.0			
							Bottom	3.0	1	17.4	8.1	31.3	7.9	99.9	3.9	3.3	8.0		
									2	17.4	8.1	31.4	8.0	100.2	3.7	3.3			
		TCE-WQM4	Fine	Moderate	9:19	3.6	Surface	1.0	1	17.6	8.3	31.5	7.7	97.8	4.4	3.5	7.7	3.5	3.2
									2	17.6	8.3	31.5	7.7	97.4	4.4	3.4			
							Bottom	2.6	1	17.5	8.0	31.6	7.5	94.5	2.6	2.9	7.5		
									2	17.5	8.0	31.4	7.5	94.7	2.6	2.8			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-09	Mid-Ebb	TCE-C1	Cloudy	Moderate	15:46	8.3	Surface	1.0	1	17.6	8.2	32.0	9.2	114.6	8.5	2.4	9.2	9.5	2.9
									2	17.6	8.2	32.0	9.2	114.6	8.9	2.6			
							Middle	4.2	1	17.6	8.2	32.0	9.1	114.4	9.4	3.0			
									2	17.6	8.2	32.0	9.1	114.4	9.4	3.1			
							Bottom	7.3	1	17.6	8.2	32.0	9.1	114.4	10.1	3.5	9.1		
									2	17.6	8.2	32.0	9.1	114.4	10.8	3.0			
		TCE-C2	Cloudy	Moderate	17:50	13.1	Surface	1.0	1	17.5	8.1	31.6	8.9	111.5	5.1	1.6	8.9	5.3	1.0
									2	17.5	8.1	31.6	8.9	111.5	5.1	2.2			
							Middle	6.6	1	17.6	8.1	31.7	8.9	111.2	5.2	0.9			
									2	17.6	8.1	31.7	8.9	111.3	5.2	0.8			
							Bottom	12.1	1	17.6	8.1	31.6	8.9	111.5	5.5	0.3	8.9		
									2	17.6	8.1	31.6	8.9	111.6	5.5	0.3			
		TCE-WQM1	Cloudy	Moderate	16:31	8.1	Surface	1.0	1	17.6	8.1	30.3	9.1	112.2	6.0	2.9	9.1	6.2	3.1
									2	17.6	8.1	30.3	9.1	112.1	6.1	2.9			
							Middle	4.1	1	17.6	8.1	30.4	9.1	112.3	6.3	3.2			
									2	17.6	8.2	30.4	9.1	112.4	6.4	3.0			
							Bottom	7.1	1	17.6	8.2	30.4	9.1	112.7	6.3	3.0	9.1		
									2	17.6	8.2	30.4	9.1	112.8	6.3	3.4			
		TCE-WQM2a	Cloudy	Moderate	17:05	6.9	Surface	1.0	1	17.5	8.1	31.7	9.0	112.5	5.2	0.9	9.1	5.2	0.7
									2	17.5	8.1	31.7	9.0	112.5	5.2	0.8			
							Middle	3.5	1	17.5	8.1	31.7	9.1	113.1	5.2	0.8			
									2	17.5	8.1	31.7	9.1	113.2	5.1	0.3			
							Bottom	5.9	1	17.4	8.2	31.6	9.2	114.0	5.1	0.7	9.2		
									2	17.4	8.2	31.6	9.2	114.1	5.2	0.8			
		TCE-WQM2b	Cloudy	Moderate	17:14	12.0	Surface	1.0	1	17.5	8.1	31.6	9.0	111.6	5.2	0.8	8.9	6.8	0.8
									2	17.5	8.1	31.7	9.0	111.6	5.3	1.0			
							Middle	6.0	1	17.6	8.1	31.7	8.9	111.4	6.2	0.7			
									2	17.6	8.1	31.7	8.9	111.3	6.8	0.8			
							Bottom	11.0	1	17.6	8.1	31.7	8.9	111.5	8.6	0.8	8.9		
									2	17.6	8.1	31.6	8.9	111.5	8.6	0.6			
		TCE-WQM3A	Cloudy	Moderate	16:54	4.6	Surface	1.0	1	17.2	8.1	30.6	9.0	110.5	5.9	1.3	9.0	6.3	1.0
									2	17.2	8.1	30.6	9.0	110.5	5.9	1.5			
							Bottom	3.6	1	17.2	8.1	30.8	9.0	110.5	6.6	0.8	9.0		
									2	17.2	8.1	30.8	9.0	110.5	6.9	0.3			
		TCE-WQM4	Cloudy	Moderate	16:42	3.5	Surface	1.0	1	17.3	8.1	31.0	9.0	111.1	8.2	3.1	9.0	9.0	3.9
									2	17.3	8.1	31.0	9.0	111.2	8.3	4.4			
							Bottom	2.5	1	17.4	8.1	31.1	9.0	111.7	9.5	3.8	9.0		
									2	17.4	8.1	31.1	9.0	111.8	9.9	4.3			
2022-03-09	Mid-Flood	TCE-C1	Cloudy	Moderate	10:44	8.4	Surface	1.0	1	17.6	8.2	32.0	9.1	114.4	12.2	0.3	9.1	10.7	0.6
									2	17.6	8.2	32.0	9.1	114.3	12.1	0.3			
							Middle	4.2	1	17.6	8.2	32.0	9.1	114.0	9.7	0.7			
									2	17.6	8.2	32.0	9.1	114.0	9.6	0.6			
							Bottom	7.4	1	17.6	8.2	32.0	9.1	113.9	10.0	0.9	9.1		
									2	17.6	8.2	32.0	9.1	113.9	10.4	0.7			
		TCE-C2	Cloudy	Moderate	8:55	13.4	Surface	1.0	1	17.6	8.1	31.6	8.9	111.2	4.9	0.8	8.9	5.4	2.2
									2	17.6	8.1	31.6	8.9	111.2	5.3	1.1			
							Middle	6.7	1	17.6	8.1	31.6	8.9	110.9	5.7	1.8			
									2	17.6	8.1	31.6	8.9	110.9	5.7	2.7			
							Bottom	12.4	1	17.5	8.1	31.7	8.9	111.4	5.5	2.9	9.0		
									2	17.5	8.1	31.7	9.0	111.6	5.4	3.6			
		TCE-WQM1	Cloudy	Moderate	10:02	7.8	Surface	1.0	1	17.5	8.1	30.3	9.1	111.8	7.0	1.4	9.0	9.9	0.9
									2	17.5	8.1	30.3	9.0	111.8	7.3	1.2			
							Middle	3.9	1	17.5	8.1	30.4	9.0	111.4	10.1	0.8			
									2	17.5	8.1	30.4	9.0	111.4	10.3	0.3			
							Bottom	6.8	1	17.5	8.1	30.5	9.0	111.2	12.1	0.6	9.0		
									2	17.5	8.1	30.5	9.0	111.2	12.6	1.0			
		TCE-WQM2a	Cloudy	Moderate	9:32	7.2	Surface	1.0	1	17.4	8.1	31.4	9.0	111.5	7.2	0.9	9.0	7.4	1.8
									2	17.4	8.1	31.4	9.0	111.5	7.2	0.6			
							Middle	3.6	1	17.4	8.1	31.4	9.0	111.2	7.5	1.8			
									2	17.5	8.1	31.4	8.9	111.2	7.6	1.8			
							Bottom	6.2	1	17.5	8.1	31.4	8.9	111.3	7.4	2.8	8.9		
									2	17.4	8.1	31.4	9.0	111.2	7.4	3.1			
		TCE-WQM2b	Cloudy	Moderate	9:21	11.2	Surface	1.0	1	17.4	8.1	31.5	8.9	111.0	5.9	0.5	8.9	7.1	2.2
									2	17.4	8.1	31.5	8.9	111.0	5.9	0.9			
							Middle	5.6	1	17.4	8.1	31.5	8.9	110.6	6.5	1.6			
									2	17.4	8.1	31.5	8.9	110.5	6.6	2.5			
							Bottom	10.2	1	17.4	8.1	31.4	8.9	110.0	8.9	4.1	8.9		
									2	17.4	8.1	31.4	8.9	110.0	8.9	3.7			
		TCE-WQM3A	Cloudy	Moderate	9:42	4.2	Surface	1.0	1	17.1	8.1	30.4	8.9	109.7	7.7	1.5	8.9	7.8	1.3
									2	17.1	8.1	30.5	8.9	109.8	7.7	1.0			
							Bottom	3.2	1	17.2	8.1	30.8	9.0	110.4	8.0	1.2	9.0		
									2	17.2	8.1	30.8	9.0	110.4	8.0	1.3			
		TCE-WQM4	Cloudy	Moderate	9:53	3.2	Surface	1.0	1	17.3	8.1	30.7	8.9	110.0	7.2	0.6	8.9	7.2	0.5
									2	17.3	8.1	30.7	8.9	110.0	7.2	0.3			
							Bottom	2.2	1	17.2	8.1	30.7	8.9	110.1	7.2	0.3	8.9		
									2	17.2	8.1	30.7	8.9	110.1	7.2	0.7			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-11	Mid-Ebb	TCE-C1	Sunny	Moderate	18:16	8.7	Surface	1.0	1	17.9	8.1	25.4	10.4	125.8	8.5	1.8	10.3	9.5	3.0
									2	17.9	8.1	25.4	10.4	125.8	8.9	1.8			
							Middle	4.4	1	17.9	8.1	28.2	10.2	125.6	9.4	3.4			
									2	17.9	8.1	28.2	10.2	125.6	9.4	3.1			
							Bottom	7.7	1	17.9	8.1	29.2	10.1	125.6	10.1	4.0	10.1		
									2	17.9	8.1	29.2	10.1	125.6	10.8	3.9			
		TCE-C2	Sunny	Moderate	20:20	12.9	Surface	1.0	1	18.2	8.1	25.8	10.0	122.7	5.1	1.9	10.0	5.3	2.2
									2	18.2	8.1	25.8	10.0	122.7	5.1	2.0			
							Middle	6.5	1	18.2	8.1	28.5	9.9	122.4	5.2	2.0			
									2	18.2	8.1	28.5	9.9	122.5	5.2	2.2			
							Bottom	11.9	1	18.1	8.1	29.8	9.8	122.7	5.5	2.5	9.8		
									2	18.1	8.1	29.8	9.8	122.8	5.5	2.8			
		TCE-WQM1	Sunny	Moderate	19:00	8.2	Surface	1.0	1	17.9	8.1	26.4	10.1	123.4	6.0	3.2	10.1	6.2	2.5
									2	17.9	8.1	26.5	10.1	123.3	6.1	3.4			
							Middle	4.1	1	17.9	8.1	27.6	10.1	123.5	6.3	2.3			
									2	17.9	8.1	27.6	10.1	123.6	6.4	2.6			
							Bottom	7.2	1	17.9	8.1	28.6	10.0	123.9	6.3	2.0	10.0		
									2	17.9	8.1	28.6	10.1	124.0	6.3	1.6			
		TCE-WQM2a	Sunny	Moderate	19:36	7.2	Surface	1.0	1	18.1	8.1	26.7	10.1	123.7	5.2	3.0	10.1	5.2	2.1
									2	18.1	8.1	26.7	10.1	123.7	5.2	2.6			
							Middle	3.6	1	18.0	8.1	28.2	10.1	124.3	5.2	1.9			
									2	18.0	8.1	28.6	10.1	124.4	5.1	2.0			
							Bottom	6.2	1	17.8	8.1	28.6	10.2	125.2	5.1	1.8	10.2		
									2	17.8	8.1	28.6	10.2	125.3	5.2	1.4			
		TCE-WQM2b	Sunny	Moderate	19:44	11.4	Surface	1.0	1	18.2	8.1	27.2	10.0	122.8	5.2	2.0	9.9	6.8	2.2
									2	18.2	8.1	27.2	10.0	122.8	5.3	2.2			
							Middle	5.7	1	18.2	8.1	28.3	9.9	122.6	6.2	2.2			
									2	18.2	8.1	28.3	9.9	122.5	6.8	2.3			
							Bottom	10.4	1	18.1	8.1	28.6	9.9	122.7	8.6	2.4	9.9		
									2	18.1	8.1	28.6	9.9	122.7	8.6	2.3			
		TCE-WQM3A	Sunny	Moderate	19:25	4.1	Surface	1.0	1	17.8	8.1	27.9	9.9	121.7	5.9	1.4	9.9	6.3	2.0
									2	17.8	8.1	27.9	9.9	121.7	5.9	1.1			
							Bottom	3.1	1	17.9	8.1	28.8	9.9	121.7	6.6	2.7	9.9		
									2	17.6	8.1	28.8	9.9	121.7	6.9	2.6			
		TCE-WQM4	Sunny	Moderate	19:11	3.2	Surface	1.0	1	17.6	8.1	27.6	10.0	122.3	8.2	2.3	10.0	9.0	1.7
									2	17.7	8.1	27.7	10.0	122.4	8.3	2.1			
							Bottom	2.2	1	17.7	8.1	29.0	10.0	122.9	9.5	1.2	10.0		
									2	17.9	8.1	29.0	9.9	123.0	9.9	1.3			
2022-03-11	Mid-Flood	TCE-C1	Cloudy	Moderate	8:36	8.6	Surface	1.0	1	17.9	8.1	25.2	10.2	123.0	12.2	2.0	10.1	10.7	2.3
									2	17.9	8.1	25.2	10.2	122.9	12.1	1.9			
							Middle	4.3	1	17.9	8.1	28.0	10.0	122.6	9.7	2.3			
									2	17.9	8.1	28.0	10.0	122.6	9.6	2.3			
							Bottom	7.6	1	17.9	8.1	29.0	9.9	122.5	10.0	2.7	9.9		
									2	17.8	8.1	29.0	9.9	122.5	10.4	2.6			
		TCE-C2	Cloudy	Moderate	6:49	13.2	Surface	1.0	1	17.9	8.1	25.7	9.9	119.8	4.9	3.5	9.8	5.4	2.8
									2	17.9	8.1	25.7	9.9	119.8	5.3	3.5			
							Middle	6.6	1	17.9	8.1	28.3	9.7	119.5	5.7	2.8			
									2	17.8	8.1	28.3	9.7	119.5	5.7	2.8			
							Bottom	12.2	1	17.8	8.0	29.6	9.7	120.0	5.5	2.1	9.7		
									2	17.5	8.0	29.7	9.8	120.2	5.4	2.2			
		TCE-WQM1	Cloudy	Moderate	7:54	7.9	Surface	1.0	1	17.8	8.1	26.3	9.9	120.4	7.0	1.3	9.9	9.9	2.2
									2	17.8	8.1	26.3	9.9	120.4	7.3	1.8			
							Middle	4.0	1	17.8	8.1	27.4	9.8	120.0	10.1	2.4			
									2	17.8	8.1	27.4	9.8	120.0	10.3	2.4			
							Bottom	6.9	1	17.8	8.1	28.5	9.7	119.8	12.1	2.5	9.8		
									2	17.6	8.1	28.5	9.8	119.8	12.6	2.6			
		TCE-WQM2a	Cloudy	Moderate	7:24	6.9	Surface	1.0	1	17.7	8.1	26.6	9.9	120.1	7.2	2.8	9.8	7.4	2.0
									2	17.7	8.1	26.6	9.9	120.1	7.2	2.4			
							Middle	3.5	1	17.8	8.1	28.0	9.8	119.8	7.5	1.8			
									2	17.8	8.1	28.4	9.7	119.8	7.6	1.9			
							Bottom	5.9	1	17.7	8.1	28.4	9.8	119.9	7.4	1.4	9.8		
									2	17.7	8.1	28.5	9.8	119.8	7.4	1.5			
		TCE-WQM2b	Cloudy	Moderate	7:13	11.4	Surface	1.0	1	17.7	8.1	28.5	9.7	119.6	5.9	5.0	9.7	7.1	3.3
									2	17.7	8.1	28.5	9.7	119.6	5.9	4.7			
							Middle	5.7	1	17.7	8.1	28.2	9.7	119.2	6.5	2.8			
									2	17.7	8.1	28.1	9.7	119.1	6.6	2.6			
							Bottom	10.4	1	17.7	8.1	28.4	9.7	118.6	8.9	2.4	9.6		
									2	17.9	8.1	28.4	9.6	118.6	8.9	2.5			
		TCE-WQM3A	Cloudy	Moderate	7:35	4.5	Surface	1.0	1	17.4	8.1	27.4	9.8	118.3	7.7	2.9	9.8	7.8	2.6
									2	17.5	8.1	27.5	9.7	118.4	7.7	3.0			
							Bottom	3.5	1	17.5	8.1	28.8	9.7	119.0	8.0	2.3	9.7		
									2	17.7	8.1	28.8	9.7	119.0	8.0	2.3			
		TCE-WQM4	Cloudy	Moderate	7:44	3.2	Surface	1.0	1	17.6	8.1	27.7	9.7	118.6	7.2	2.6	9.7	7.2	2.0
									2	17.5	8.1	27.7	9.7	118.6	7.2	2.5			
							Bottom	2.2	1	17.5	8.1	28.7	9.7	118.7	7.2	1.5	9.7		
									2	17.4	8.1	28.7	9.7	118.7	7.2	1.5			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-14	Mid-Ebb	TCE-C1	Sunny	Moderate	12:20	8.4	Surface	1.0	1	20.7	8.4	21.7	12.4	157.6	1.6	2.2	11.1	3.8	2.3
									2	20.7	8.4	21.7	12.4	157.5	1.6	2.3			
							Middle	4.2	1	17.9	8.1	29.6	9.7	122.1	3.7	2.4			
									2	17.9	8.1	29.6	9.7	121.9	3.6	2.0			
							Bottom	7.4	1	17.6	8.1	30.3	9.3	116.8	6.3	2.2	9.3		
									2	17.6	8.1	30.3	9.3	117.1	6.3	2.9			
		TCE-C2	Fine	Moderate	10:22	13.8	Surface	1.0	1	20.1	8.3	24.3	10.6	135.2	1.2	2.4	9.8	1.3	2.6
									2	20.1	8.3	24.3	10.6	135.1	1.2	2.9			
							Middle	6.9	1	18.0	8.1	29.5	8.9	112.4	1.4	2.8			
									2	17.9	8.1	29.6	8.9	112.1	1.4	2.5			
							Bottom	12.8	1	17.8	8.1	30.0	8.5	107.0	1.4	2.0	8.5		
									2	17.8	8.1	30.0	8.5	107.0	1.4	2.9			
		TCE-WQM1	Sunny	Moderate	11:37	7.8	Surface	1.0	1	20.0	8.3	24.9	10.2	130.4	2.5	3.2	9.9	3.4	2.7
									2	20.0	8.3	24.9	10.2	130.3	2.5	3.5			
							Middle	3.9	1	19.5	8.2	26.2	9.6	121.8	2.9	3.4			
									2	19.5	8.2	26.3	9.6	121.7	2.9	2.6			
							Bottom	6.8	1	19.2	8.2	27.0	9.2	116.4	4.6	1.8	9.2		
									2	19.2	8.2	27.0	9.1	116.2	4.9	1.5			
		TCE-WQM2a	Fine	Moderate	11:03	7.3	Surface	1.0	1	19.8	8.3	25.6	11.6	147.8	2.1	1.9	10.9	5.5	2.6
									2	19.8	8.3	25.6	11.6	147.8	2.1	2.4			
							Middle	3.7	1	18.9	8.2	27.0	10.2	128.7	6.5	2.0			
									2	19.0	8.2	26.9	10.2	128.9	6.1	2.8			
							Bottom	6.3	1	18.1	8.1	29.2	8.6	107.7	7.6	3.4	8.6		
									2	18.1	8.1	29.2	8.6	107.7	8.6	2.8			
		TCE-WQM2b	Fine	Moderate	10:51	12.1	Surface	1.0	1	20.2	8.4	23.1	11.3	143.3	1.5	2.0	10.0	1.7	1.5
									2	20.2	8.4	23.1	11.3	143.1	1.5	1.3			
							Middle	6.1	1	18.2	8.1	28.8	8.8	110.4	1.8	1.4			
									2	18.1	8.1	28.9	8.8	110.2	1.8	1.5			
							Bottom	11.1	1	17.7	8.0	29.9	8.1	102.3	2.0	1.6	8.1		
									2	17.7	8.0	29.9	8.2	102.4	2.0	1.3			
		TCE-WQM3A	Fine	Moderate	11:15	4.1	Surface	1.0	1	20.4	8.3	24.1	10.8	138.0	3.1	1.6	10.8	4.1	1.6
									2	20.4	8.3	24.1	10.8	138.0	3.1	1.2			
							Bottom	3.1	1	19.8	8.3	25.7	10.2	130.6	5.1	1.6	10.2		
									2	19.9	8.3	25.6	10.3	130.7	5.2	1.8			
		TCE-WQM4	Fine	Moderate	11:26	3.1	Surface	1.0	1	20.5	8.3	24.6	10.4	133.2	1.7	1.3	10.4	1.8	2.1
									2	20.5	8.3	24.6	10.4	133.1	1.7	1.5			
							Bottom	2.1	1	20.2	8.3	25.3	10.1	129.9	2.0	3.1	10.1		
									2	20.1	8.3	25.3	10.1	129.7	2.0	2.6			
2022-03-14	Mid-Flood	TCE-C1	Sunny	Moderate	14:16	8.2	Surface	1.0	1	20.3	8.4	22.7	12.2	153.8	1.6	2.5	11.0	3.7	2.2
									2	20.3	8.4	22.6	12.2	153.6	1.6	2.6			
							Middle	4.1	1	17.9	8.1	29.6	9.8	123.0	3.4	2.4			
									2	17.9	8.1	29.6	9.8	122.9	3.3	2.1			
							Bottom	7.2	1	17.6	8.1	30.3	9.3	116.8	6.1	1.5	9.3		
									2	17.6	8.1	30.3	9.3	116.9	6.2	1.9			
		TCE-C2	Sunny	Moderate	15:58	13.6	Surface	1.0	1	20.9	8.4	23.3	11.8	151.3	1.3	2.4	10.7	1.2	2.2
									2	20.9	8.4	23.3	11.8	151.3	1.3	2.5			
							Middle	6.8	1	18.6	8.1	28.3	9.7	122.2	1.2	1.7			
									2	18.6	8.1	28.3	9.7	122.0	1.2	1.8			
							Bottom	12.6	1	17.8	8.1	29.9	8.6	108.3	1.1	2.2	8.6		
									2	17.9	8.1	29.9	8.6	108.4	1.1	2.7			
		TCE-WQM1	Sunny	Calm	14:52	7.8	Surface	1.0	1	19.9	8.3	25.3	10.3	131.8	3.0	3.0	10.2	3.8	2.3
									2	19.9	8.3	25.2	10.3	131.7	3.0	2.5			
							Middle	3.9	1	19.7	8.2	25.9	10.1	128.3	3.5	2.5			
									2	19.6	8.2	26.0	10.0	127.2	3.6	2.0			
							Bottom	6.8	1	19.3	8.2	26.9	9.2	116.9	4.7	1.9	9.2		
									2	19.3	8.2	26.9	9.2	116.8	4.7	1.8			
		TCE-WQM2a	Sunny	Moderate	15:24	7.1	Surface	1.0	1	20.6	8.3	24.7	10.8	139.6	1.7	2.1	10.6	2.3	2.1
									2	20.6	8.3	24.7	10.8	139.6	1.7	1.8			
							Middle	3.6	1	19.3	8.2	26.6	10.3	131.2	1.6	2.6			
									2	19.3	8.2	26.6	10.3	130.6	1.6	2.2			
							Bottom	6.1	1	18.2	8.1	29.0	9.1	114.6	3.7	1.8	9.1		
									2	18.2	8.1	29.0	9.1	114.5	3.9	2.0			
		TCE-WQM2b	Sunny	Moderate	15:35	11.2	Surface	1.0	1	21.3	8.5	21.0	12.7	162.5	1.2	3.0	10.9	1.5	1.9
									2	21.3	8.5	21.0	12.7	162.4	1.2	2.3			
							Middle	5.6	1	18.3	8.1	28.6	9.2	115.3	1.8	1.5			
									2	18.3	8.1	28.6	9.2	115.3	1.7	1.7			
							Bottom	10.2	1	17.8	8.0	29.8	8.1	101.6	1.6	1.4	8.1		
									2	17.8	8.0	29.8	8.1	101.6	1.7	1.3			
		TCE-WQM3A	Sunny	Calm	15:12	4.1	Surface	1.0	1	19.9	8.3	25.9	10.4	133.5	3.6	1.6	10.4	5.3	1.6
									2	19.9	8.3	25.9	10.4	133.5	3.6	1.3			
							Bottom	3.1	1	19.6	8.2	26.5	9.8	125.0	7.0	1.8	9.8		
									2	19.6	8.2	26.5	9.8	124.8	7.0	1.8			
		TCE-WQM4	Sunny	Calm	15:03	3.5	Surface	1.0	1	20.5	8.3	24.9	10.5	135.2	1.6	2.4	10.5	3.6	2.1
									2	20.5	8.3	24.9	10.5	135.2	1.6	2.1			
							Bottom	2.5	1	20.2	8.3	25.6	11.0	141.1	5.5	2.0	11.0		
									2	20.2	8.3	25.6	11.0	141.2	5.5	1.8			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-16	Mid-Ebb	TCE-C1	Cloudy	Moderate	10:38	8.2	Surface	1.0	1	19.2	8.1	25.6	9.5	119.6	1.6	2.6	9.3	5.0	2.2
									2	19.1	8.1	25.6	9.5	119.2	1.9	2.6			
							Middle	4.1	1	18.6	8.1	28.1	9.2	116.1	4.8	2.4			
									2	18.6	8.1	28.1	9.2	115.9	4.8	2.4			
							Bottom	7.2	1	18.4	8.1	28.7	8.9	112.6	8.5	1.7	8.9		
									2	18.4	8.1	28.7	8.9	112.5	8.6	1.4			
		TCE-C2	Cloudy	Moderate	12:23	14.4	Surface	1.0	1	18.7	8.1	28.3	9.3	118.1	0.7	1.8	9.1	0.6	2.7
									2	18.6	8.1	28.5	9.3	117.8	0.7	2.1			
							Middle	7.2	1	18.4	8.1	29.1	8.8	111.8	0.5	2.9			
									2	18.4	8.1	29.2	8.8	111.6	0.5	3.1			
							Bottom	13.4	1	18.4	8.0	29.2	8.7	109.9	0.6	3.2	8.7		
									2	18.4	8.0	29.1	8.7	109.7	0.6	3.3			
		TCE-WQM1	Cloudy	Moderate	11:17	8.0	Surface	1.0	1	20.4	8.2	25.4	9.2	118.0	3.4	2.7	9.1	5.6	1.4
									2	20.4	8.2	25.4	9.2	117.9	3.3	2.6			
							Middle	4.0	1	20.4	8.2	25.4	9.1	117.2	4.2	0.9			
									2	20.3	8.2	25.5	9.1	117.0	4.5	0.9			
							Bottom	7.0	1	20.3	8.2	25.6	8.9	114.8	8.7	0.6	8.9		
									2	20.3	8.2	25.6	8.9	114.6	9.3	0.7			
		TCE-WQM2a	Cloudy	Moderate	11:48	7.5	Surface	1.0	1	19.7	8.2	25.5	9.7	123.1	0.8	1.1	9.6	2.6	1.7
									2	19.7	8.2	25.5	9.7	123.1	0.8	0.9			
							Middle	3.8	1	19.1	8.1	27.0	9.6	121.8	2.7	1.8			
									2	19.1	8.1	27.1	9.6	121.7	3.0	1.7			
							Bottom	6.5	1	18.8	8.1	27.9	9.1	115.2	4.0	2.2	9.1		
									2	18.8	8.1	27.9	9.1	115.2	4.3	2.2			
		TCE-WQM2b	Cloudy	Moderate	11:59	11.4	Surface	1.0	1	19.8	8.1	25.6	9.5	121.4	1.0	2.7	9.3	0.9	3.5
									2	19.8	8.1	25.6	9.5	121.4	0.9	2.9			
							Middle	5.7	1	18.5	8.1	28.9	9.0	114.6	0.8	3.0			
									2	18.5	8.1	28.9	9.0	114.4	0.9	3.2			
							Bottom	10.4	1	18.5	8.1	28.9	8.9	112.8	0.8	4.5	8.9		
									2	18.5	8.1	28.9	8.9	112.7	0.8	4.8			
		TCE-WQM3A	Cloudy	Moderate	11:38	4.9	Surface	1.0	1	20.0	8.2	24.6	9.6	122.0	1.7	1.5	9.6	4.5	2.1
									2	20.0	8.2	24.6	9.6	121.9	1.8	1.5			
							Bottom	3.9	1	19.8	8.1	25.2	9.1	115.8	7.4	2.6	9.1		
									2	19.8	8.1	25.2	9.1	115.5	7.3	2.7			
		TCE-WQM4	Cloudy	Moderate	11:28	3.4	Surface	1.0	1	20.0	8.2	25.4	9.7	124.3	1.8	4.0	9.7	1.8	3.1
									2	20.0	8.2	25.4	9.7	124.2	1.8	3.6			
							Bottom	2.4	1	20.0	8.2	25.4	9.5	121.7	1.8	2.6	9.5		
									2	20.0	8.2	25.4	9.5	121.2	1.8	2.2			
2022-03-16	Mid-Flood	TCE-C1	Cloudy	Moderate	8:37	8.5	Surface	1.0	1	19.4	8.1	25.3	9.5	120.4	0.7	1.5	9.4	6.4	1.3
									2	19.4	8.1	25.3	9.5	120.4	0.7	1.7			
							Middle	4.3	1	18.6	8.1	28.2	9.2	116.0	5.9	1.1			
									2	18.6	8.1	28.2	9.2	115.9	6.6	1.2			
							Bottom	7.5	1	18.4	8.1	28.9	8.9	113.1	12.1	1.0	8.9		
									2	18.4	8.1	28.9	8.9	112.9	12.0	1.0			
		TCE-C2	Cloudy	Moderate	6:45	13.3	Surface	1.0	1	19.0	8.0	27.8	9.5	120.2	0.5	0.3	9.3	0.7	0.8
									2	19.0	8.0	27.7	9.5	120.1	0.5	0.3			
							Middle	6.7	1	18.5	8.0	29.0	9.1	115.9	0.9	0.6			
									2	18.5	8.0	29.0	9.1	115.8	0.9	0.7			
							Bottom	12.3	1	18.5	8.0	29.0	9.0	114.1	0.5	1.6	9.0		
									2	18.5	7.9	29.0	9.0	113.8	0.6	1.6			
		TCE-WQM1	Cloudy	Moderate	7:53	8.2	Surface	1.0	1	20.3	8.2	25.4	9.2	118.5	2.3	1.4	9.1	2.8	1.1
									2	20.3	8.2	25.4	9.2	118.3	2.3	1.3			
							Middle	4.1	1	20.2	8.1	25.4	9.1	116.6	2.7	1.1			
									2	20.2	8.1	25.5	9.1	116.3	2.8	1.1			
							Bottom	7.2	1	20.1	8.1	25.7	8.9	113.4	3.3	0.9	8.8		
									2	20.1	8.1	25.6	8.8	113.2	3.3	0.8			
		TCE-WQM2a	Cloudy	Moderate	7:19	7.7	Surface	1.0	1	19.7	8.2	25.5	9.8	124.1	0.5	0.9	9.6	3.1	0.6
									2	19.7	8.2	25.5	9.8	124.1	0.5	1.0			
							Middle	3.9	1	19.2	8.1	26.8	9.5	120.5	3.1	0.7			
									2	19.2	8.1	26.8	9.5	120.4	3.0	0.7			
							Bottom	6.7	1	19.1	8.1	27.1	9.2	117.1	5.8	0.3	9.2		
									2	19.1	8.1	27.1	9.2	117.0	5.8	0.3			
		TCE-WQM2b	Cloudy	Moderate	7:08	11.4	Surface	1.0	1	19.5	8.1	25.9	9.6	121.6	0.9	0.9	9.5	1.2	0.7
									2	19.5	8.1	25.9	9.6	121.5	0.9	0.8			
							Middle	5.7	1	19.3	8.1	26.6	9.4	118.6	1.0	0.6			
									2	19.3	8.1	26.6	9.3	118.5	1.0	0.6			
							Bottom	10.4	1	18.8	8.0	27.7	8.8	111.7	1.8	0.5	8.8		
									2	18.8	8.0	27.7	8.8	111.4	1.9	0.6			
		TCE-WQM3A	Cloudy	Moderate	7:30	4.3	Surface	1.0	1	20.0	8.2	24.6	9.6	122.0	0.7	0.7	9.6	1.8	1.7
									2	20.0	8.2	24.6	9.6	121.9	0.8	0.9			
							Bottom	3.3	1	19.9	8.1	25.0	9.3	117.5	2.9	2.5	9.2		
									2	19.9	8.1	25.0	9.2	117.4	2.8	2.5			
		TCE-WQM4	Cloudy	Moderate	7:40	3.5	Surface	1.0	1	19.9	8.2	25.1	9.7	123.1	0.9	0.8	9.7	1.8	1.1
									2	19.9	8.2	25.2	9.7	123.1	0.9	0.7			
							Bottom	2.5	1	19.8	8.1	25.8	9.4	119.9	2.7	1.6	9.4		
									2	19.8	8.1	25.8	9.4	119.8	2.8	1.2			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-18	Mid-Ebb	TCE-C1	Foggy	Rough	11:42	7.7	Surface	1.0	1	20.5	8.2	27.3	9.9	128.5	3.4	5.8	9.5	2.8	5.5
									2	20.5	8.2	27.3	9.9	128.4	3.4	5.9			
							Middle	3.9	1	19.4	8.1	29.8	9.2	118.9	2.1	5.5			
									2	19.4	8.1	29.8	9.2	118.9	2.1	5.5			
							Bottom	6.7	1	19.4	8.1	30.0	9.1	118.1	3.0	5.2	9.1		
									2	19.4	8.1	30.0	9.1	118.1	3.0	5.3			
		TCE-C2	Foggy	Moderate	13:42	13.1	Surface	1.0	1	21.4	8.2	26.1	9.6	126.0	2.4	6.2	9.6	5.1	5.1
									2	21.4	8.2	26.1	9.6	126.0	2.4	5.8			
							Middle	6.6	1	20.5	8.2	27.0	9.7	126.3	7.0	4.7			
									2	20.6	8.2	27.0	9.7	126.2	7.0	4.7			
							Bottom	12.1	1	20.2	8.2	27.3	9.3	120.5	6.0	4.5	9.3		
									2	20.2	8.2	27.3	9.3	120.5	6.0	4.5			
		TCE-WQM1	Foggy	Moderate	12:25	10.6	Surface	1.0	1	20.8	8.2	27.1	9.9	129.0	3.4	2.8	9.7	3.8	3.1
									2	20.8	8.2	27.1	9.8	129.0	3.4	2.8			
							Middle	5.3	1	20.4	8.2	27.3	9.5	124.1	4.0	3.3			
									2	20.4	8.2	27.3	9.5	123.9	4.0	3.0			
							Bottom	9.6	1	20.3	8.2	27.6	9.3	120.7	4.0	3.4	9.3		
									2	20.3	8.2	27.6	9.3	120.4	4.0	3.4			
		TCE-WQM2a	Foggy	Moderate	13:04	7.6	Surface	1.0	1	20.4	8.2	26.9	9.5	123.5	7.0	2.1	9.5	7.9	2.6
									2	20.4	8.2	26.9	9.5	123.5	7.0	2.3			
							Middle	3.8	1	20.4	8.2	27.1	9.4	122.1	8.4	2.5			
									2	20.4	8.2	27.1	9.4	122.1	8.4	2.6			
							Bottom	6.6	1	20.2	8.2	27.3	9.3	120.4	8.1	2.9	9.3		
									2	20.2	8.2	27.3	9.3	120.4	8.2	2.9			
		TCE-WQM2b	Foggy	Moderate	13:17	10.4	Surface	1.0	1	21.3	8.2	26.1	9.5	125.1	2.6	4.4	9.4	5.5	3.8
									2	21.3	8.2	26.1	9.5	125.1	2.7	4.4			
							Middle	5.2	1	20.3	8.2	27.3	9.2	119.7	7.4	3.5			
									2	20.3	8.2	27.3	9.2	119.6	7.3	3.6			
							Bottom	9.4	1	20.0	8.2	28.0	9.0	116.9	6.6	3.4	9.0		
									2	20.0	8.2	28.0	9.0	116.8	6.6	3.4			
		TCE-WQM3A	Foggy	Calm	12:52	4.8	Surface	1.0	1	20.4	8.2	26.8	9.6	123.9	6.9	3.3	9.6	6.7	3.2
									2	20.4	8.2	26.8	9.6	123.9	6.8	3.6			
							Bottom	3.8	1	20.1	8.2	27.5	9.3	120.1	6.5	3.0	9.3		
									2	20.1	8.2	27.5	9.3	120.1	6.6	2.8			
		TCE-WQM4	Foggy	Calm	12:39	4.1	Surface	1.0	1	20.4	8.2	26.8	9.5	123.5	6.6	6.0	9.5	5.6	5.2
									2	20.4	8.2	26.8	9.5	123.5	6.6	6.2			
							Bottom	3.1	1	19.6	8.1	29.3	8.9	115.8	4.6	4.3	8.9		
									2	19.6	8.1	29.3	8.9	115.6	4.7	4.4			
2022-03-18	Mid-Flood	TCE-C1	Foggy	Moderate	8:02	8.4	Surface	1.0	1	20.5	8.2	27.3	9.9	128.8	2.5	3.4	9.8	2.8	3.3
									2	20.5	8.2	27.3	9.9	128.7	2.6	3.5			
							Middle	4.2	1	20.4	8.2	27.4	9.8	127.3	3.5	3.4			
									2	20.4	8.2	27.4	9.8	127.3	3.5	3.4			
							Bottom	7.4	1	19.8	8.2	28.7	9.4	122.6	2.5	3.1	9.4		
									2	19.8	8.2	28.7	9.4	122.6	2.5	3.2			
		TCE-C2	Foggy	Moderate	5:58	15.5	Surface	1.0	1	19.8	8.1	28.9	9.3	120.4	2.2	3.5	9.2	2.1	4.2
									2	19.8	8.1	29.0	9.2	120.0	2.2	3.8			
							Middle	7.8	1	19.3	8.1	29.9	9.1	117.3	2.2	4.3			
									2	19.3	8.1	29.9	9.1	117.3	2.2	4.1			
							Bottom	14.5	1	19.2	8.1	30.3	9.0	116.5	2.0	4.7	9.0		
									2	19.2	8.1	30.3	9.0	116.5	2.0	5.0			
		TCE-WQM1	Foggy	Calm	7:16	11.6	Surface	1.0	1	20.4	8.2	27.4	9.8	127.6	4.3	4.4	9.6	4.4	4.2
									2	20.4	8.2	27.4	9.8	127.6	4.4	4.7			
							Middle	5.8	1	19.9	8.1	28.5	9.4	121.6	5.9	4.2			
									2	19.9	8.1	28.5	9.4	121.5	5.7	4.1			
							Bottom	10.6	1	19.4	8.1	29.9	9.0	117.2	3.0	3.7	9.0		
									2	19.4	8.1	29.9	9.0	117.2	2.9	3.9			
		TCE-WQM2a	Foggy	Moderate	6:38	7.9	Surface	1.0	1	19.7	8.1	29.2	9.3	121.1	2.4	4.7	9.2	2.7	3.6
									2	19.7	8.1	29.2	9.3	121.1	2.4	4.7			
							Middle	4.0	1	19.3	8.1	30.1	9.1	117.8	2.6	3.3			
									2	19.3	8.1	30.1	9.1	117.8	2.7	3.2			
							Bottom	6.9	1	19.2	8.1	30.6	9.0	117.2	3.2	2.8	9.0		
									2	19.2	8.1	30.6	9.0	117.2	3.2	2.6			
		TCE-WQM2b	Foggy	Moderate	6:28	11.2	Surface	1.0	1	19.9	8.1	28.9	9.4	121.7	2.1	2.6	9.1	2.3	2.9
									2	19.8	8.1	29.0	9.4	121.6	2.1	2.8			
							Middle	5.6	1	19.2	8.1	30.5	8.9	115.9	2.2	2.9			
									2	19.2	8.1	30.6	8.9	115.9	2.2	2.9			
							Bottom	10.2	1	19.1	8.1	30.7	8.9	115.4	2.6	3.2	8.9		
									2	19.1	8.1	30.7	8.9	115.3	2.6	3.2			
		TCE-WQM3A	Foggy	Calm	6:54	4.9	Surface	1.0	1	19.8	8.1	29.1	9.4	122.1	2.2	3.9	9.4	2.2	3.6
									2	19.8	8.1	29.1	9.4	122.2	2.1	4.0			
							Bottom	3.9	1	19.5	8.1	29.8	9.2	119.9	2.2	3.4	9.2		
									2	19.5	8.1	29.8	9.2	119.9	2.1	3.0			
		TCE-WQM4	Foggy	Calm	7:06	5.8	Surface	1.0	1	20.4	8.2	27.4	9.7	125.8	3.5	3.6	9.7	4.2	3.3
									2	20.4	8.2	27.4	9.7	125.8	3.5	3.4			
							Bottom	4.8	1	19.4	8.1	30.0	8.9	115.4	4.9	3.1	8.9		
									2	19.4	8.1	30.0	8.9	115.3	5.0	3.2			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-21	Mid-Ebb	TCE-C1	Fine	Rough	13:19	8.1	Surface	1.0	1	20.2	8.1	26.7	8.1	104.2	3.4	4.5	8.0	7.6	6.6
									2	20.2	8.1	26.7	8.1	104.0	3.3	4.6			
							Middle	4.1	1	20.1	8.1	26.7	8.0	103.5	9.3	7.2			
									2	20.1	8.1	26.7	8.0	103.4	9.4	6.2			
							Bottom	7.1	1	20.1	8.1	26.8	8.0	103.0	10.2	8.5	8.0		
									2	20.1	8.1	26.8	8.0	103.0	10.1	8.3			
		TCE-C2	Fine	Rough	15:03	15.4	Surface	1.0	1	20.0	8.1	27.7	8.7	113.0	6.8	4.8	8.7	10.0	4.4
									2	20.0	8.1	27.7	8.7	113.0	6.8	4.2			
							Middle	7.7	1	20.0	8.2	27.7	8.7	112.4	9.2	4.4			
									2	20.0	8.2	27.7	8.7	112.4	9.2	4.4			
							Bottom	14.4	1	19.9	8.1	27.9	8.5	110.3	14.1	4.2	8.5		
									2	19.9	8.1	27.9	8.5	110.3	14.1	4.3			
		TCE-WQM1	Fine	Moderate	13:50	9.9	Surface	1.0	1	20.1	8.1	26.8	8.2	105.4	3.5	3.6	8.1	5.4	3.7
									2	20.1	8.1	26.8	8.2	105.4	3.6	3.8			
							Middle	5.0	1	20.1	8.1	26.9	8.1	105.0	4.4	3.4			
									2	20.1	8.1	26.9	8.1	104.9	4.5	4.0			
							Bottom	8.9	1	20.0	8.1	26.9	8.1	104.2	8.1	3.6	8.1		
									2	20.0	8.1	26.9	8.1	104.2	8.2	3.6			
		TCE-WQM2a	Fine	Moderate	14:20	7.8	Surface	1.0	1	20.5	8.1	26.5	8.1	104.8	3.0	5.3	8.1	4.3	5.2
									2	20.5	8.1	26.5	8.1	104.8	3.0	5.1			
							Middle	3.9	1	20.4	8.1	26.7	8.1	104.5	3.9	5.1			
									2	20.4	8.1	26.7	8.1	104.5	3.9	4.8			
							Bottom	6.8	1	20.4	8.1	26.7	8.1	104.3	6.2	5.2	8.1		
									2	20.4	8.1	26.7	8.1	104.3	6.2	5.6			
		TCE-WQM2b	Fine	Rough	14:34	10.3	Surface	1.0	1	20.0	8.2	27.6	8.7	112.9	6.4	6.7	8.6	8.2	7.1
									2	20.0	8.2	27.6	8.7	112.6	6.5	7.5			
							Middle	5.2	1	19.9	8.2	27.8	8.5	110.3	8.7	7.4			
									2	19.9	8.2	27.8	8.5	110.3	8.7	7.0			
							Bottom	9.3	1	19.9	8.2	27.9	8.4	108.3	9.6	6.6	8.4		
									2	19.9	8.2	27.9	8.4	108.2	9.6	7.6			
		TCE-WQM3A	Fine	Moderate	14:12	5.2	Surface	1.0	1	20.4	8.1	26.6	8.1	104.6	3.6	4.2	8.1	4.4	4.1
									2	20.4	8.1	26.6	8.1	104.6	3.6	4.0			
							Bottom	4.2	1	20.3	8.1	26.8	8.0	103.8	5.1	4.2	8.0		
									2	20.3	8.1	26.8	8.0	103.8	5.2	4.0			
		TCE-WQM4	Fine	Moderate	14:01	4.9	Surface	1.0	1	20.1	8.1	26.8	8.2	105.4	6.1	4.1	8.2	6.7	3.9
									2	20.1	8.1	26.8	8.2	105.4	6.1	3.7			
							Bottom	3.9	1	20.0	8.1	26.9	8.1	104.7	7.4	4.0	8.1		
									2	20.0	8.1	26.9	8.1	104.7	7.4	3.8			
2022-03-21	Mid-Flood	TCE-C1	Fine	Rough	9:45	7.2	Surface	1.0	1	20.2	8.1	26.6	8.1	105.2	3.2	5.6	8.1	4.6	6.5
									2	20.2	8.1	26.6	8.1	105.1	3.2	6.4			
							Middle	3.6	1	20.2	8.1	26.6	8.1	104.0	4.9	5.8			
									2	20.2	8.1	26.6	8.1	104.0	4.9	6.4			
							Bottom	6.2	1	20.1	8.1	26.8	7.9	101.8	5.5	6.9	7.9		
									2	20.1	8.1	26.8	7.9	101.6	5.5	7.7			
		TCE-C2	Fine	Moderate	7:12	13.6	Surface	1.0	1	19.9	8.0	27.0	8.2	105.4	2.8	5.9	8.1	5.8	5.3
									2	19.9	8.0	27.0	8.2	105.4	2.8	5.2			
							Middle	6.8	1	19.6	8.0	28.0	8.0	103.4	6.0	5.3			
									2	19.6	8.0	28.1	8.0	103.4	6.8	4.7			
							Bottom	12.6	1	19.5	8.0	28.3	8.0	102.8	8.1	5.6	8.0		
									2	19.5	8.0	28.3	8.0	102.8	8.1	5.0			
		TCE-WQM1	Fine	Calm	8:35	9.1	Surface	1.0	1	20.1	8.1	26.6	8.3	106.6	2.8	4.1	8.2	3.5	3.7
									2	20.1	8.1	26.6	8.3	106.6	2.8	3.7			
							Middle	4.6	1	20.1	8.1	26.6	8.2	105.7	3.4	3.4			
									2	20.1	8.1	26.6	8.2	105.6	3.5	3.8			
							Bottom	8.1	1	20.1	8.1	26.7	8.2	105.4	4.4	3.3	8.2		
									2	20.1	8.1	26.7	8.2	105.5	4.3	3.6			
		TCE-WQM2a	Fine	Moderate	7:58	6.8	Surface	1.0	1	20.0	8.1	26.9	8.1	104.4	5.9	5.6	8.1	6.2	4.8
									2	20.0	8.1	26.9	8.1	104.4	5.9	5.4			
							Middle	3.4	1	20.0	8.1	26.9	8.1	104.1	5.6	3.9			
									2	20.0	8.1	26.9	8.1	104.0	5.6	4.6			
							Bottom	5.8	1	20.0	8.1	26.9	8.0	103.4	7.0	4.5	8.0		
									2	20.0	8.1	26.9	8.0	103.3	7.0	4.6			
		TCE-WQM2b	Fine	Moderate	7:43	8.7	Surface	1.0	1	19.9	8.0	27.0	8.2	105.6	2.8	7.5	8.2	3.3	8.0
									2	19.9	8.0	27.0	8.2	105.5	2.8	7.4			
							Middle	4.4	1	19.9	8.0	27.2	8.1	104.8	3.2	8.0			
									2	19.9	8.0	27.2	8.1	104.8	3.3	8.5			
							Bottom	7.7	1	19.6	8.0	28.0	8.1	104.0	3.9	8.8	8.1		
									2	19.6	8.0	28.0	8.1	104.0	4.0	7.8			
		TCE-WQM3A	Fine	Calm	8:08	4.1	Surface	1.0	1	20.0	8.1	26.9	8.1	104.6	4.9	3.6	8.1	5.6	4.2
									2	20.0	8.1	26.9	8.1	104.6	5.0	4.1			
							Bottom	3.1	1	20.0	8.1	26.9	8.1	104.1	6.2	4.3	8.1		
									2	20.0	8.1	26.9	8.1	104.1	6.2	4.9			
		TCE-WQM4	Fine	Calm	8:23	3.9	Surface	1.0	1	20.1	8.1	26.6	8.2	106.3	3.2	3.5	8.2	3.7	4.0
									2	20.1	8.1	26.6	8.2	106.2	3.2	4.1			
							Bottom	2.9	1	20.1	8.1	26.7	8.1	104.7	4.3	4.0	8.1		
									2	20.1	8.1	26.7	8.1	104.7	4.2	4.3			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-23	Mid-Ebb	TCE-C1	Rainy	Moderate	14:48	8.0	Surface	1.0	1	20.5	8.0	27.7	8.3	108.1	5.1	3.4	8.2	6.4	3.2
									2	20.5	8.0	27.8	8.3	108.3	5.1	2.8			
							Middle	4.0	1	20.5	8.0	29.5	8.2	107.7	6.1	3.4			
									2	20.5	8.0	29.4	8.2	107.6	6.2	3.8			
							Bottom	7.0	1	20.6	8.0	29.1	7.8	103.5	8.0	3.3	7.8		
									2	20.6	8.0	29.0	7.8	103.1	8.0	2.7			
		TCE-C2	Rainy	Moderate	16:36	12.4	Surface	1.0	1	21.2	7.9	26.4	7.6	99.8	2.1	3.9	7.6	3.3	3.1
									2	21.2	7.9	26.4	7.6	99.8	2.2	3.8			
							Middle	6.2	1	21.1	7.9	26.4	7.6	99.7	3.5	2.3			
									2	21.1	7.9	26.4	7.6	99.7	3.4	3.1			
							Bottom	11.4	1	21.1	7.9	26.4	7.6	99.7	4.3	2.6	7.6		
									2	21.1	7.9	26.4	7.6	99.7	4.4	2.8			
		TCE-WQM1	Rainy	Moderate	15:26	8.6	Surface	1.0	1	20.9	7.9	27.5	7.4	96.7	4.1	3.5	7.3	5.1	3.0
									2	20.9	7.9	27.5	7.3	96.7	4.1	3.0			
							Middle	4.3	1	21.6	7.9	27.6	7.2	96.2	5.0	3.5			
									2	21.6	7.9	27.6	7.2	96.2	5.1	2.7			
							Bottom	7.6	1	21.6	7.9	27.5	7.2	96.0	6.1	2.6	7.2		
									2	21.6	7.9	27.5	7.2	95.9	6.2	2.7			
		TCE-WQM2a	Rainy	Moderate	15:59	8.2	Surface	1.0	1	21.3	7.9	26.9	7.3	97.0	5.1	2.5	7.3	6.5	3.2
									2	21.3	7.9	26.9	7.3	97.0	5.1	2.6			
							Middle	4.1	1	21.3	7.9	27.1	7.3	96.8	6.7	3.7			
									2	21.3	7.9	27.1	7.3	96.7	6.7	3.4			
							Bottom	7.2	1	21.2	7.9	27.1	7.3	96.5	7.8	3.7	7.3		
									2	21.2	7.9	27.1	7.3	96.4	7.9	3.3			
		TCE-WQM2b	Rainy	Moderate	16:11	10.2	Surface	1.0	1	21.3	7.9	26.5	7.5	98.4	4.0	3.0	7.4	5.5	2.8
									2	21.3	7.9	26.5	7.5	98.3	4.0	2.1			
							Middle	5.1	1	21.2	7.9	26.6	7.4	98.1	5.9	2.4			
									2	21.2	7.9	26.6	7.4	98.0	6.0	3.0			
							Bottom	9.2	1	21.0	7.9	26.6	7.4	97.9	6.6	2.9	7.4		
									2	21.0	7.9	26.6	7.4	97.9	6.5	3.6			
		TCE-WQM3A	Rainy	Moderate	15:49	4.0	Surface	1.0	1	20.7	7.9	27.0	7.4	95.9	4.2	2.7	7.4	4.6	3.2
									2	20.7	7.9	27.1	7.4	95.9	4.1	2.4			
							Bottom	3.0	1	20.9	7.9	27.1	7.3	95.9	5.2	3.6	7.3		
									2	20.9	7.9	27.1	7.3	96.0	5.1	4.2			
		TCE-WQM4	Rainy	Moderate	15:38	4.0	Surface	1.0	1	20.9	7.9	27.0	7.4	97.0	5.9	3.2	7.4	6.3	3.1
									2	20.9	7.9	27.0	7.4	97.0	5.8	4.0			
							Bottom	3.0	1	20.7	7.9	27.0	7.4	96.8	6.7	2.8	7.4		
									2	20.7	7.9	27.0	7.4	96.8	6.7	2.2			
2022-03-23	Mid-Flood	TCE-C1	Rainy	Moderate	10:30	8.0	Surface	1.0	1	20.9	8.1	28.0	8.1	107.2	3.4	2.4	8.1	4.9	2.6
									2	20.9	8.1	28.0	8.1	107.2	3.5	2.7			
							Middle	4.0	1	20.8	8.1	28.0	8.1	106.9	5.1	2.1			
									2	20.8	8.1	28.0	8.1	106.8	5.1	2.1			
							Bottom	7.0	1	20.7	8.1	28.1	8.1	106.5	6.0	2.9	8.1		
									2	20.6	8.1	28.0	8.1	106.5	6.1	3.2			
		TCE-C2	Rainy	Moderate	8:37	12.8	Surface	1.0	1	21.4	8.0	26.8	7.5	98.9	3.9	4.3	7.5	4.9	4.5
									2	21.4	8.0	26.8	7.5	98.8	3.9	4.6			
							Middle	6.4	1	21.4	8.0	26.9	7.4	98.5	4.3	5.6			
									2	21.4	7.9	26.9	7.4	98.5	4.4	5.0			
							Bottom	11.8	1	21.4	7.9	26.9	7.5	98.7	6.5	3.5	7.5		
									2	21.4	7.9	26.9	7.5	98.7	6.5	3.9			
		TCE-WQM1	Rainy	Moderate	9:46	8.2	Surface	1.0	1	20.7	8.1	28.8	8.2	108.4	5.4	3.4	8.2	6.5	2.9
									2	20.7	8.1	28.8	8.2	108.4	5.3	3.1			
							Middle	4.1	1	20.7	8.1	29.1	8.2	107.9	6.6	3.0			
									2	20.7	8.1	29.1	8.1	107.7	6.7	2.5			
							Bottom	7.2	1	20.7	8.0	29.2	8.1	106.7	7.4	2.7	8.1		
									2	20.7	8.0	29.1	8.1	106.6	7.4	2.6			
		TCE-WQM2a	Rainy	Moderate	9:14	7.3	Surface	1.0	1	21.5	8.0	26.7	7.5	99.0	6.8	7.4	7.5	7.3	7.9
									2	21.5	8.0	26.7	7.5	99.0	6.8	7.4			
							Middle	3.7	1	21.5	8.0	26.9	7.5	98.7	7.2	7.3			
									2	21.5	8.0	27.0	7.5	98.7	7.1	8.2			
							Bottom	6.3	1	21.3	8.0	27.0	7.5	99.2	8.1	8.2	7.5		
									2	21.3	8.0	27.0	7.5	99.3	8.0	8.6			
		TCE-WQM2b	Rainy	Moderate	9:00	10.6	Surface	1.0	1	21.5	8.0	26.6	7.6	99.8	4.3	7.9	7.5	5.5	5.8
									2	21.5	8.0	26.6	7.5	99.7	4.3	7.3			
							Middle	5.3	1	21.5	8.0	26.7	7.6	99.8	5.2	6.0			
									2	21.5	8.0	26.7	7.6	99.9	5.3	5.1			
							Bottom	9.6	1	21.4	8.0	26.7	7.6	99.8	7.0	4.1	7.6		
									2	21.4	8.0	26.7	7.6	99.8	6.9	4.2			
		TCE-WQM3A	Rainy	Moderate	9:25	4.0	Surface	1.0	1	20.9	8.0	27.7	8.0	105.4	1.2	2.4	8.0	1.7	2.5
									2	20.9	8.0	27.7	8.0	105.2	1.2	2.0			
							Bottom	3.0	1	20.8	8.0	27.7	7.9	103.9	2.3	3.0	7.9		
									2	20.8	8.0	27.7	7.9	103.6	2.3	2.5			
		TCE-WQM4	Rainy	Moderate	9:35	3.6	Surface	1.0	1	20.9	8.0	27.7	8.1	106.0	1.1	2.9	8.1	1.6	2.7
									2	20.9	8.0	27.7	8.1	106.0	1.2	2.3			
							Bottom	2.6	1	20.9	8.0	27.8	8.0	105.5	2.2	2.9	8.0		
									2	20.9	8.0	27.8	8.0	105.4	2.2	2.8			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-25	Mid-Ebb	TCE-C1	Misty	Moderate	16:57	8.2	Surface	1.0	1	20.4	8.1	29.4	7.6	99.8	2.5	3.1	7.6	3.2	3.9
									2	20.4	8.1	29.4	7.6	99.8	2.5	3.9			
							Middle	4.1	1	20.4	8.1	29.4	7.6	99.7	3.1	4.3			
									2	20.3	8.1	29.5	7.6	99.7	3.1	3.4			
							Bottom	7.2	1	20.3	8.1	29.6	7.6	100.3	4.1	3.9	7.6		
									2	20.3	8.1	29.6	7.6	100.5	4.1	4.7			
		TCE-C2	Misty	Moderate	18:29	12.2	Surface	1.0	1	19.7	8.1	31.6	7.4	97.5	3.2	3.5	7.4	4.3	4.2
									2	19.7	8.1	31.6	7.4	97.5	3.1	4.1			
							Middle	6.1	1	19.7	8.1	31.8	7.4	98.0	4.1	4.0			
									2	19.7	8.1	31.8	7.4	98.1	4.1	4.8			
							Bottom	11.2	1	19.7	8.1	31.8	7.5	98.6	5.6	4.0	7.5		
									2	19.7	8.1	31.8	7.5	98.7	5.8	4.8			
		TCE-WQM1	Misty	Moderate	17:20	8.4	Surface	1.0	1	20.4	8.1	28.9	7.6	99.5	3.1	2.8	7.6	4.2	3.3
									2	20.4	8.1	29.0	7.6	99.4	3.1	3.2			
							Middle	4.2	1	20.3	8.1	29.1	7.6	99.1	4.3	3.1			
									2	20.3	8.1	29.2	7.6	99.1	4.3	3.1			
							Bottom	7.4	1	20.3	8.1	29.2	7.6	99.6	5.1	4.0	7.6		
									2	20.3	8.1	29.2	7.6	99.7	5.1	3.6			
		TCE-WQM2a	Misty	Moderate	17:51	8.0	Surface	1.0	1	20.1	8.0	29.9	7.5	97.9	3.7	4.7	7.4	4.6	4.5
									2	20.1	8.0	29.9	7.5	97.9	3.7	4.4			
							Middle	4.0	1	20.1	8.0	30.1	7.4	97.8	4.8	4.2			
									2	20.1	8.0	30.1	7.5	97.9	4.8	3.9			
							Bottom	7.0	1	20.1	8.0	30.1	7.5	98.5	5.5	5.0	7.5		
									2	20.1	8.0	30.1	7.5	98.7	5.2	4.9			
		TCE-WQM2b	Misty	Moderate	18:01	10.4	Surface	1.0	1	20.1	8.0	30.0	7.5	98.6	1.0	3.8	7.5	1.8	3.8
									2	20.1	8.0	30.1	7.5	98.5	1.1	4.5			
							Middle	5.2	1	20.0	8.0	30.2	7.5	98.5	1.7	3.8			
									2	20.0	8.0	30.3	7.5	98.6	1.7	3.2			
							Bottom	9.4	1	20.0	8.0	30.3	7.5	99.2	2.7	4.0	7.5		
									2	20.0	8.0	30.3	7.6	99.4	2.7	3.7			
		TCE-WQM3A	Misty	Moderate	17:41	4.0	Surface	1.0	1	20.2	8.1	29.5	7.3	95.8	6.0	3.6	7.3	6.6	4.0
									2	20.2	8.1	29.5	7.3	96.0	6.1	4.3			
							Bottom	3.0	1	20.2	8.1	29.6	7.4	97.0	7.1	3.7	7.4		
									2	20.2	8.1	29.6	7.4	97.4	7.1	4.2			
		TCE-WQM4	Misty	Moderate	17:31	4.2	Surface	1.0	1	20.3	8.0	29.4	7.6	99.5	3.2	5.0	7.6	4.0	4.3
									2	20.3	8.0	29.4	7.6	99.5	3.2	4.5			
							Bottom	3.2	1	20.3	8.0	29.5	7.6	100.1	4.8	3.9	7.6		
									2	20.3	8.0	29.5	7.6	100.3	4.8	3.8			
2022-03-25	Mid-Flood	TCE-C1	Misty	Moderate	9:02	8.4	Surface	1.0	1	20.0	8.1	31.8	8.0	105.6	2.2	3.8	7.9	3.5	3.7
									2	20.0	8.1	31.8	7.9	105.4	2.1	3.6			
							Middle	4.2	1	19.9	8.1	32.1	7.9	104.4	3.6	4.3			
									2	19.9	8.1	32.1	7.9	104.2	3.5	3.6			
							Bottom	7.4	1	19.8	8.1	32.4	7.8	103.6	4.9	3.5	7.8		
									2	19.8	8.1	32.4	7.8	103.5	4.8	3.5			
		TCE-C2	Misty	Moderate	7:13	12.4	Surface	1.0	1	19.9	8.0	30.8	7.4	97.7	1.9	3.7	7.4	2.5	3.8
									2	19.9	8.0	30.9	7.4	97.7	1.9	3.3			
							Middle	6.2	1	19.8	8.0	31.3	7.4	97.7	2.0	3.9			
									2	19.8	8.0	31.3	7.4	97.7	2.1	4.4			
							Bottom	11.4	1	19.8	8.0	31.2	7.4	97.8	3.4	3.5	7.4		
									2	19.8	8.0	31.2	7.4	97.8	3.5	4.2			
		TCE-WQM1	Misty	Moderate	8:22	8.0	Surface	1.0	1	20.4	8.1	29.0	7.6	99.5	3.8	4.4	7.6	4.6	3.6
									2	20.4	8.1	29.0	7.6	99.6	3.9	3.7			
							Middle	4.0	1	20.2	8.1	29.9	7.6	99.8	4.4	4.0			
									2	20.2	8.1	30.0	7.6	99.7	4.4	3.0			
							Bottom	7.0	1	20.2	8.1	29.9	7.6	99.9	5.4	3.0	7.6		
									2	20.3	8.1	29.8	7.6	99.9	5.5	3.6			
		TCE-WQM2a	Misty	Moderate	7:50	6.8	Surface	1.0	1	20.1	8.1	29.8	7.5	98.5	1.0	4.2	7.5	2.4	3.7
									2	20.1	8.1	29.8	7.5	98.5	1.0	4.0			
							Middle	3.4	1	20.1	8.1	30.0	7.5	98.7	2.4	4.2			
									2	20.1	8.1	30.0	7.5	98.7	2.5	3.4			
							Bottom	5.8	1	20.1	8.0	30.0	7.6	99.5	3.7	3.1	7.6		
									2	20.2	8.0	29.9	7.6	99.5	3.6	3.0			
		TCE-WQM2b	Misty	Moderate	7:39	10.4	Surface	1.0	1	20.1	8.1	29.8	7.6	99.4	1.1	3.2	7.5	1.9	3.4
									2	20.1	8.1	29.8	7.6	99.3	1.1	2.7			
							Middle	5.2	1	20.0	8.0	30.3	7.5	99.1	1.8	3.9			
									2	20.0	8.0	30.3	7.5	99.1	1.8	3.0			
							Bottom	9.4	1	20.2	8.0	30.3	7.6	99.5	3.0	3.6	7.6		
									2	20.2	8.0	30.2	7.6	99.7	3.0	3.8			
		TCE-WQM3A	Misty	Moderate	8:02	4.2	Surface	1.0	1	20.2	8.0	29.4	7.3	95.7	3.7	3.9	7.3	3.9	4.1
									2	20.2	8.0	29.4	7.3	95.8	3.8	4.1			
							Bottom	3.2	1	20.7	8.0	29.2	7.3	96.9	4.0	4.2	7.3		
									2	20.9	8.0	29.1	7.3	97.2	4.0	4.1			
		TCE-WQM4	Misty	Moderate	8:11	3.8	Surface	1.0	1	20.2	8.0	28.7	7.5	98.6	3.2	4.5	7.6	3.8	4.1
									2	20.2	8.0	28.7	7.6	98.8	3.1	4.1			
							Bottom	2.8	1	20.2	8.0	28.7	7.7	100.2	4.6	4.3	7.7		
									2	20.2	8.0	28.7	7.7	100.5	4.5	3.5			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-28	Mid-Ebb	TCE-C1	Rainy	Moderate	11:24	8.2	Surface	1.0	1	19.5	8.0	26.9	7.3	93.7	2.9	5.3	7.2	6.0	5.9
									2	19.5	8.0	26.9	7.3	93.7	2.9	5.0			
							Middle	4.1	1	19.4	8.0	29.8	7.1	91.9	2.7	5.5			
									2	19.3	8.0	29.9	7.1	91.8	2.7	6.0			
							Bottom	7.2	1	19.3	7.9	30.2	7.0	91.3	12.6	7.0	7.0		
									2	19.3	7.9	30.2	7.0	91.3	12.6	6.8			
		TCE-C2	Rainy	Moderate	9:25	14.0	Surface	1.0	1	19.8	7.9	26.8	6.9	88.8	3.0	3.3	6.9	3.9	3.9
									2	19.8	7.9	26.8	6.9	88.8	3.0	3.7			
							Middle	7.0	1	19.6	7.9	29.9	6.8	88.4	3.8	3.8			
									2	19.6	7.9	29.9	6.8	88.4	3.9	4.1			
							Bottom	13.0	1	19.6	7.9	29.9	6.8	88.2	5.1	4.2	6.8		
									2	19.6	7.9	29.9	6.8	88.2	5.0	4.4			
		TCE-WQM1	Rainy	Moderate	10:43	8.6	Surface	1.0	1	20.3	7.9	25.6	7.0	89.8	5.9	3.8	7.0	9.9	3.5
									2	20.3	7.9	25.6	7.0	89.9	5.9	4.2			
							Middle	4.3	1	20.1	7.9	26.0	7.0	89.9	9.4	3.5			
									2	20.1	7.9	26.0	7.0	89.9	9.7	3.3			
							Bottom	7.6	1	20.1	7.9	26.0	7.0	89.8	14.2	3.0	7.0		
									2	20.1	7.9	26.0	7.0	89.8	14.2	3.2			
		TCE-WQM2a	Rainy	Moderate	10:12	7.0	Surface	1.0	1	19.8	7.9	26.5	6.8	87.5	2.2	3.5	6.8	2.7	3.2
									2	19.8	7.9	26.5	6.8	87.5	2.2	3.8			
							Middle	3.5	1	19.7	7.9	29.0	6.7	87.1	2.7	3.4			
									2	19.7	7.9	29.0	6.7	87.1	2.8	3.0			
							Bottom	6.0	1	19.7	7.9	29.0	6.8	87.6	3.2	2.8	6.8		
									2	19.7	7.9	29.0	6.8	87.7	3.3	2.6			
		TCE-WQM2b	Rainy	Moderate	10:01	12.7	Surface	1.0	1	19.8	7.9	26.8	6.9	88.6	3.3	3.8	6.8	3.7	4.5
									2	19.8	7.9	26.8	6.9	88.6	3.1	3.5			
							Middle	6.4	1	19.6	7.9	29.9	6.8	88.1	4.1	4.0			
									2	19.6	7.9	29.9	6.8	88.0	4.1	4.4			
							Bottom	11.7	1	19.7	7.9	29.9	6.7	87.7	3.9	5.3	6.7		
									2	19.7	7.9	29.9	6.7	87.8	3.8	5.7			
		TCE-WQM3A	Rainy	Moderate	10:22	4.9	Surface	1.0	1	20.5	7.9	24.0	6.8	87.1	4.4	2.4	6.8	6.6	3.1
									2	20.5	7.9	24.1	6.8	87.0	5.0	2.7			
							Bottom	3.9	1	20.6	7.9	24.7	6.6	85.1	8.9	3.4	6.6		
									2	20.6	7.9	24.7	6.6	85.0	8.3	3.8			
		TCE-WQM4	Rainy	Moderate	10:32	4.0	Surface	1.0	1	20.6	7.9	24.8	6.8	87.6	5.2	4.4	6.8	7.6	4.6
									2	20.6	7.9	24.8	6.8	87.5	5.3	4.1			
							Bottom	3.0	1	20.6	7.9	24.9	6.8	87.2	9.8	5.0	6.8		
									2	20.6	7.9	24.9	6.8	87.3	10.0	4.8			
2022-03-28	Mid-Flood	TCE-C1	Rainy	Moderate	14:11	8.0	Surface	1.0	1	19.6	8.0	27.6	7.4	94.7	2.7	3.6	7.3	7.7	4.5
									2	19.6	8.0	27.6	7.4	94.7	2.7	3.9			
							Middle	4.0	1	19.4	8.0	29.2	7.2	93.0	7.1	4.4			
									2	19.4	8.0	29.2	7.2	92.9	7.8	4.6			
							Bottom	7.0	1	19.3	8.0	30.5	7.1	92.4	13.1	5.1	7.1		
									2	19.3	8.0	30.5	7.1	92.5	13.1	5.5			
		TCE-C2	Rainy	Moderate	16:02	12.4	Surface	1.0	1	19.9	8.0	27.4	7.1	91.0	1.6	3.7	7.0	1.7	4.5
									2	19.9	8.0	27.5	7.1	90.9	1.6	4.1			
							Middle	6.2	1	19.7	7.9	28.1	7.0	89.8	1.6	4.6			
									2	19.7	7.9	28.2	6.9	89.7	1.6	4.2			
							Bottom	11.4	1	19.7	7.9	28.5	7.1	91.6	1.9	5.2	7.1		
									2	19.8	7.9	28.5	7.1	91.8	1.8	4.9			
		TCE-WQM1	Rainy	Moderate	14:57	8.6	Surface	1.0	1	20.2	7.9	25.8	7.0	90.5	7.1	2.6	7.0	9.3	3.0
									2	20.2	7.9	25.8	7.0	90.5	7.4	2.4			
							Middle	4.3	1	20.1	7.9	26.1	7.0	90.3	9.8	3.1			
									2	20.1	7.9	26.1	7.0	90.3	9.9	2.8			
							Bottom	7.6	1	20.0	7.9	26.0	7.0	90.0	11.0	3.5	7.0		
									2	20.0	7.9	26.0	7.0	90.0	10.8	3.8			
		TCE-WQM2a	Rainy	Moderate	15:28	7.4	Surface	1.0	1	20.2	7.9	27.1	6.8	87.8	4.3	6.6	6.8	4.6	5.5
									2	20.2	7.9	27.1	6.8	87.8	4.3	6.1			
							Middle	3.7	1	20.1	7.9	27.3	6.8	87.5	5.3	5.2			
									2	20.1	7.9	27.3	6.8	87.4	5.4	5.6			
							Bottom	6.4	1	19.9	7.9	28.3	6.7	86.8	4.6	5.0	6.7		
									2	19.9	7.9	28.4	6.7	86.9	3.8	4.7			
		TCE-WQM2b	Rainy	Moderate	15:39	11.3	Surface	1.0	1	20.3	7.9	26.2	6.9	89.3	3.2	6.2	6.9	3.7	5.9
									2	20.3	7.9	26.2	6.9	89.2	3.2	6.4			
							Middle	5.7	1	20.0	7.9	26.5	6.9	88.6	3.8	5.9			
									2	20.0	7.9	26.5	6.9	88.8	3.8	6.0			
							Bottom	10.3	1	19.8	7.9	28.8	6.9	89.2	4.1	5.3	6.9		
									2	19.8	7.9	28.8	6.9	89.4	4.2	5.7			
		TCE-WQM3A	Rainy	Moderate	15:18	4.4	Surface	1.0	1	20.5	7.9	25.5	6.8	88.1	10.2	4.7	6.8	9.7	4.1
									2	20.5	7.9	25.5	6.8	88.1	10.2	5.0			
							Bottom	3.4	1	20.4	7.9	25.6	6.9	88.5	9.2	3.2	6.9		
									2	20.4	7.9	25.7	6.9	88.6	9.5	3.6			
		TCE-WQM4	Rainy	Moderate	15:08	3.5	Surface	1.0	1	20.5	7.9	24.8	6.9	88.5	7.8	3.8	6.9	9.1	4.0
									2	20.5	7.9	24.8	6.9	88.4	7.9	3.5			
							Bottom	2.5	1	20.5	7.9	24.8	6.9	88.7	10.4	4.1	6.9		
									2	20.5	7.9	24.8	6.9	88.8	10.4	4.4			

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
2022-03-30	Mid-Ebb	TCE-C1	Cloudy	Moderate	12:33	8.4	Surface	1.0	1	19.8	8.0	26.9	7.2	92.2	4.2	9.6	7.1	10.3	8.5
									2	19.8	8.0	26.9	7.2	92.2	4.7	10.1			
							Middle	4.2	1	19.6	8.0	29.0	6.9	89.8	11.8	8.7			
									2	19.6	8.0	29.0	6.9	89.8	12.0	9.1			
							Bottom	7.4	1	19.6	8.0	30.1	7.0	91.7	14.5	7.0	7.0		
									2	19.6	8.0	30.1	7.0	91.7	14.6	6.7			
		TCE-C2	Cloudy	Moderate	10:41	13.4	Surface	1.0	1	19.7	7.9	29.2	6.6	85.9	3.9	5.4	6.6	4.4	5.8
									2	19.7	7.9	29.2	6.6	85.9	3.8	5.6			
							Middle	6.7	1	19.6	7.9	29.8	6.6	85.7	4.4	5.7			
									2	19.6	7.9	29.8	6.6	85.7	4.5	6.0			
							Bottom	12.4	1	19.6	7.9	29.8	6.6	85.9	5.1	5.9	6.6		
									2	19.6	7.9	29.8	6.6	85.9	5.0	6.2			
		TCE-WQM1	Cloudy	Moderate	11:50	8.8	Surface	1.0	1	19.6	7.9	27.9	6.7	86.3	6.1	5.2	6.7	6.6	6.9
									2	19.6	7.9	27.9	6.7	86.3	6.1	5.4			
							Middle	4.4	1	19.6	7.9	27.9	6.7	86.4	6.3	6.8			
									2	19.6	7.9	27.9	6.7	86.4	6.3	7.1			
							Bottom	7.8	1	19.6	7.9	27.9	6.8	87.3	7.5	8.3	6.8		
									2	19.6	7.9	27.9	6.8	87.4	7.6	8.3			
		TCE-WQM2a	Cloudy	Moderate	11:17	7.5	Surface	1.0	1	19.7	8.0	28.3	6.7	86.8	7.3	11.1	6.7	9.6	10.0
									2	19.7	8.0	28.3	6.7	86.8	7.3	11.2			
							Middle	3.8	1	19.7	7.9	28.3	6.7	86.5	8.9	9.9			
									2	19.7	7.9	28.3	6.7	86.5	9.9	10.0			
							Bottom	6.5	1	19.7	7.9	28.4	6.7	87.0	11.9	8.7	6.7		
									2	19.7	7.9	28.3	6.8	87.1	12.3	8.9			
		TCE-WQM2b	Cloudy	Moderate	11:05	12.4	Surface	1.0	1	19.7	7.9	28.8	6.6	85.7	8.1	5.5	6.6	10.4	7.9
									2	19.7	7.9	28.8	6.6	85.7	8.4	5.1			
							Middle	6.2	1	19.7	7.9	28.9	6.6	85.5	9.9	7.8			
									2	19.7	7.9	28.9	6.6	85.5	10.4	8.1			
							Bottom	11.4	1	19.7	7.9	28.9	6.6	85.8	12.9	10.2	6.6		
									2	19.7	7.9	28.9	6.6	85.9	12.8	10.8			
		TCE-WQM3A	Cloudy	Moderate	11:28	4.8	Surface	1.0	1	19.8	7.9	28.2	6.5	83.5	4.9	7.7	6.5	5.7	8.0
									2	19.8	7.9	28.2	6.5	83.4	5.1	7.3			
							Bottom	3.8	1	19.8	7.9	28.3	6.5	84.1	6.4	8.6	6.5		
									2	19.8	7.9	28.3	6.5	84.2	6.6	8.4			
		TCE-WQM4	Cloudy	Moderate	11:38	3.5	Surface	1.0	1	19.7	7.9	27.9	6.7	86.7	3.5	6.2	6.7	3.7	5.8
									2	19.7	7.9	27.9	6.7	86.9	3.5	6.0			
							Bottom	2.5	1	19.7	7.9	28.0	6.8	87.6	3.9	5.7	6.8		
									2	19.7	7.9	28.0	6.8	87.7	3.9	5.4			
2022-03-30	Mid-Flood	TCE-C1	Cloudy	Moderate	16:03	8.2	Surface	1.0	1	19.8	8.0	27.0	7.2	92.6	3.0	4.3	7.1	8.7	5.1
									2	19.8	8.0	27.0	7.2	92.6	2.9	4.7			
							Middle	4.1	1	19.6	8.0	29.2	7.1	91.4	7.5	5.4			
									2	19.6	8.0	29.2	7.1	91.4	7.6	5.1			
							Bottom	7.2	1	19.5	8.0	29.7	7.0	90.9	15.9	5.3	7.0		
									2	19.5	8.0	29.7	7.0	91.0	15.3	5.6			
		TCE-C2	Cloudy	Moderate	17:44	13.6	Surface	1.0	1	19.9	8.0	29.2	6.6	86.0	4.1	5.1	6.6	4.9	4.6
									2	19.8	8.0	29.2	6.6	86.0	4.0	5.3			
							Middle	6.8	1	19.6	8.0	29.7	6.6	85.4	4.5	4.8			
									2	19.6	8.0	29.7	6.6	85.4	4.6	4.7			
							Bottom	12.6	1	19.6	8.0	29.7	6.6	85.9	6.1	3.8	6.6		
									2	19.6	8.0	29.7	6.6	86.0	6.0	3.6			
		TCE-WQM1	Cloudy	Moderate	16:40	8.4	Surface	1.0	1	19.7	8.0	28.0	6.9	88.9	9.9	5.8	6.9	10.8	9.6
									2	19.7	8.0	28.0	6.9	89.0	9.9	6.0			
							Middle	4.2	1	19.6	8.0	28.0	6.9	88.8	11.4	9.4			
									2	19.6	8.0	27.9	6.9	88.9	11.4	10.0			
							Bottom	7.4	1	19.7	7.9	27.9	6.9	89.4	11.3	13.0	6.9		
									2	19.7	7.9	27.9	7.0	89.5	11.2	13.3			
		TCE-WQM2a	Cloudy	Moderate	17:10	7.0	Surface	1.0	1	19.8	8.0	28.4	6.8	87.6	3.4	6.5	6.7	3.9	5.8
									2	19.8	8.0	28.4	6.8	87.6	3.4	6.2			
							Middle	3.5	1	19.7	8.0	28.9	6.7	86.9	4.0	5.8			
									2	19.7	7.9	28.9	6.7	87.1	4.1	5.7			
							Bottom	6.0	1	19.7	7.9	28.9	6.8	88.0	4.4	5.1	6.8		
									2	19.7	7.9	28.9	6.8	88.1	4.4	5.4			
		TCE-WQM2b	Cloudy	Moderate	17:21	11.1	Surface	1.0	1	19.9	8.0	28.4	6.8	87.6	3.7	3.5	6.7	4.5	3.9
									2	19.9	8.0	28.5	6.7	87.3	3.7	3.1			
							Middle	5.6	1	19.7	8.0	29.4	6.6	85.7	4.2	4.2			
									2	19.6	8.0	29.5	6.6	85.7	4.3	4.0			
							Bottom	10.1	1	19.6	8.0	29.7	6.7	86.5	5.5	4.2	6.7		
									2	19.6	8.0	29.7	6.7	86.9	5.4	4.6			
		TCE-WQM3A	Cloudy	Moderate	16:59	4.5	Surface	1.0	1	19.9	8.1	28.1	6.6	85.7	8.1	5.2	6.6	10.0	4.2
									2	19.9	8.1	28.1	6.6	86.0	8.5	4.8			
							Bottom	3.5	1	19.9	8.1	28.0	6.7	86.9	11.7	3.4	6.7		
									2	19.9	8.1	28.0	6.7	87.2	11.7	3.3			
		TCE-WQM4	Cloudy	Moderate	16:50	3.5	Surface	1.0	1	20.0	8.0	27.9	6.7	87.0	5.1	14.8	6.7	7.4	13.5
									2	20.0	8.0	27.9	6.7	87.0	5.5	14.5			
							Bottom	2.5	1	19.9	7.9	28.0	6.7	86.7	9.2	12.5	6.7		
									2	19.9	7.9	28.0	6.7	86.8	9.8	12.1			

Annex G4

Event and Action Plan for Water Quality

Annex G4 Event and Action Plan for 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 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 dredging 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 dredging activities until no exceedance of Limit level.

Annex H

Preserved/Transplanted Plant Species of Conservation Importance Monitoring

Annex H1

Preserved Plant Species of Conservation Importance Monitoring

G01_30-R001

G01_30-R002

G01_30-R003

G01_30-R004

G01_30-R005

G01_39-R01_Inaccessible

G01_39-R02_Inaccessible

G01_81-RT-01

G01_81-RT-02 (T1535)

G02_29-R007

G02_29-R013

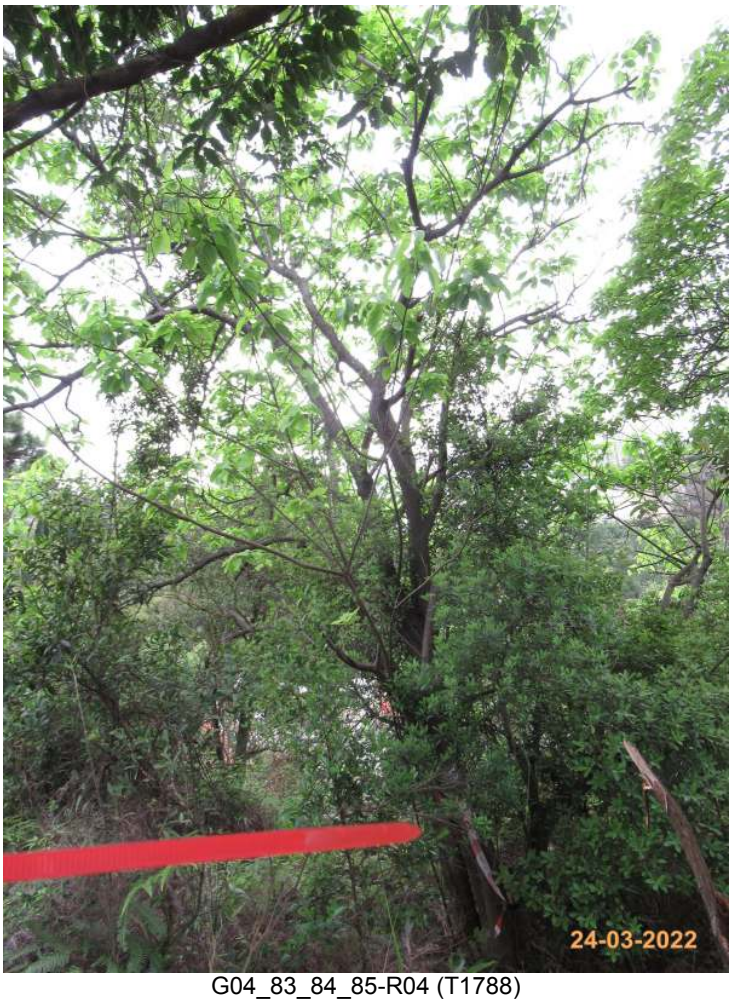
G03_44-R014

G03_44-R015

G03_44-R017

G04_21-R03

G04_45-R011



G04_83_84_85-R04 (T1788)

G04_83_84_85-R05 (T1572)

G04_83_84_85-R06

G04_83_84_85-R07

G04_83_84_85-R08

G04_83_84_85-R09

G04_83_84_85-R010

G04_83_84_85-R011

G05_9-R04

G05_67-R008

G06_66-R009

Contract No. : NL/2020/02
Tung Chung New Town Extension - Salt Water Supply System
Monthly Report (24 March 2022) For In-situ Plant Species of Conservation Importance

Drawing no.	Tree group no.	Tree No.	Botanical Name	Chinese Name	SIZE			Amenity Value	Form	Health	Structural Condition	Conservation Status	Recommendation in Detailed Preservation and/or Translocation Plan for Plant Species of Conservation Importance for Tung Chung East (Retain/ Transplant/ Fell)	Justification	Remarks
					Height (m)	DBH (mm)	Spread (m)	(Good/ Fair/ Poor)							
60507694/C2/1721	G01/39	R01	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Retain	-	On Slope, Inaccessible
		R02	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Retain	-	On Slope, Inaccessible
	G06/59	R018	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Retain	-	Missing
	G03/61	R019	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Retain	-	Missing
	G05/62	RT06	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Transplant	Direct conflict with proposed works	Missing
	G01/81	RT-01	*Gmelina chinensis*	石梓	5	160	3	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Strangled by Epiphytes
		RT-02 (T1535)	*Gmelina chinensis*	石梓	8	110	3	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Co-dominant Branches, Strangled by Epiphytes.
	G02/82	RT03	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Transplant	Direct conflict with proposed works	Missing
	G04/83/84/85	R04 (T1788)	*Gmelina chinensis*	石梓	9	260	8	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Multiple Trunks
		R05 (T1572)	*Gmelina chinensis*	石梓	8	120	5	Good	Poor	Fair	Fair	Yes	Retain	-	On slope
		R05	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Retain	-	Missing
		R06	*Gmelina chinensis*	石梓	5	100	3	Good	Fair	Fair	Fair	Yes	Retain	-	On slope
		R07	*Gmelina chinensis*	石梓	8	166	5	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Co-dominant Trunks
		R08	*Gmelina chinensis*	石梓	7	160	5	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Broken Leader, Epicormics, Imbalanced Crown
		R09	*Gmelina chinensis*	石梓	5	140	4	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Broken Leader wih Epiphyte, Broken Leader with Epicormics
		R010	*Gmelina chinensis*	石梓	8	110	3	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Broken Leader with Epicormics
		R011	*Gmelina chinensis*	石梓	9	130	4	Good	Poor	Fair	Poor	Yes	Retain	-	On slope, Multiple Branches, Leaning without Self-correction
60507694/C2/1722	G04/21	R03	*Gmelina chinensis*	石梓	5	120	2	Good	Fair	Fair	Fair	Yes	Retain	-	Undersized, On Slope
	G05/9	R04	*Gmelina chinensis*	石梓	5	100	2	Good	Fair	Fair	Fair	Yes	Retain	-	On Slope
60507694/C2/1732	G01/30	R001	*Gmelina chinensis*	石梓	7	110	2	Good	Poor	Fair	Fair	Yes	Retain	-	On Slope
		R002	*Gmelina chinensis*	石梓	8	120	5	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Co-dominant Branches, Root Flare was Partially Buried
		R003	*Gmelina chinensis*	石梓	5	140	2	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Bulge at Trunk, Root Flare was Partially Buried
		R004	*Aquilaria sinensis*	土沉香	10	150	3	Good	Fair	Fair	Fair	Yes	Retain	-	On slope
		R005	*Aquilaria sinensis*	土沉香	8	130	3	Good	Fair	Fair	Fair	Yes	Retain	-	On slope
		R006	*Aquilaria sinensis*	土沉香	-	-	-	-	-	-	-	Yes	Retain	-	Missing
	G02/29	R007	*Gmelina chinensis*	石梓	10	170	5	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Co-dominant Branches with Included Bark, Crossed Branches
		R013	*Gmelina chinensis*	石梓	8	150	7	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Co-dominant Branches, Epicormics at Branch, Broken Leader with Epiphyte
	G03/44	R014	*Gmelina chinensis*	石梓	7	160	5	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Co-dominant Branches
		R015	*Gmelina chinensis*	石梓	6	110	2	Good	Poor	Poor	Fair	Yes	Retain	-	On slope, Broken Leader, Epiphytes
		R016	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Retain	-	Missing
		R017	*Gmelina chinensis*	石梓	8	130	4	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Broken Leader with Epicormics
	G04/45	R010	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Retain	-	Missing
		R011	*Gmelina chinensis*	石梓	8	140	7	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Co-dominant Branches
		R012	*Gmelina chinensis*	石梓	-	-	-	-	-	-	-	Yes	Retain	-	Missing
	G05/67	R008	*Gmelina chinensis*	石梓	6	120	4	Good	Fair	Fair	Fair	Yes	Retain	-	On slope
	G06/66	R009	*Gmelina chinensis*	石梓	7	120	5	Good	Poor	Fair	Fair	Yes	Retain	-	On slope, Epicormic at Broken Stump

Annex H2

Transplanted Plant Species of Conservation Importance Monitoring

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022

1st Root Prunning for G62RT07

1st Root Prunning for G62RT08

Depth of root ball for G62RT07

Depth of root ball for G62RT08

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022

Backfilled with soil mix-A

Backfilled with soil mix-B

Watering-A

Watering-B

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022

Fixing Bamboo Stakes-A

Fixing Bamboo Stakes-B

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022

2nd Root Prunning for G62RT07

2nd Root Prunning for G62RT08

Backfilled with soil mix-A

Backfilled with soil mix-B

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022

Depth of rootball for G62RT07

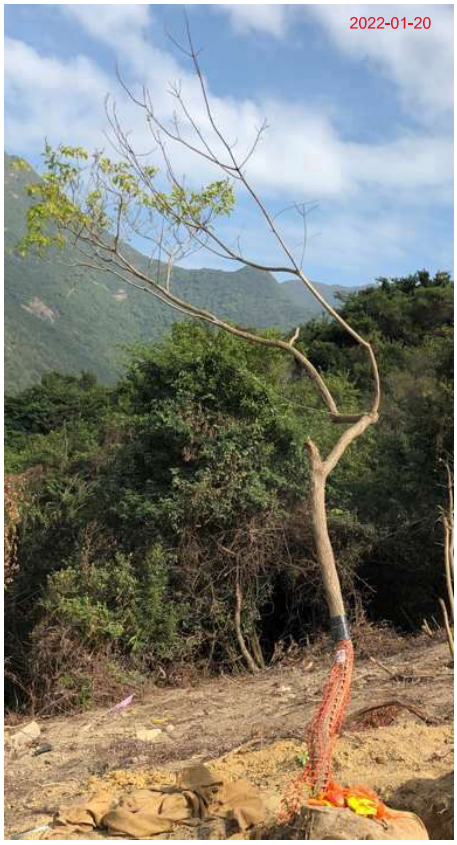
Depth of rootball for G62RT08

Watering-A

Watering-B

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022



3rd Root Prunning for G62RT07

3rd Root Prunning for G62RT08

Depth of rootball for G62RT07

Depth of rootball for G62RT08

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022

Watering-A

Watering-B

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022

Tied with coir mat for root ball

Tied with triple twist wire mesh

Lifing the tree-A

Lifing the tree-B

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022

Lifing and Transplanting for G62RT07

Lifing and Transplanting for G62RT08

Watering-A

Watering-B

Contract No. NL/2020/02
Tung Chung New Town Extension—Salt Water Supply System
Location: Near Tung Chung Fresh Water Service Reservoir
Completion of Tree Transplanting Work for 2 Nos. Trees in January 2022
Ref.: C3113/22/TGD0533
Date: 14 February 2022

Date of 1st stage root pruning: 22 Dec 2021
Date of 2nd stage root pruning: 6 Jan 2022
Date of transplantation: 21 Jan 2022

Tree planting in the final location-G62TR07

Tree planting in the final location-G62TR08

Inspection date: 2 Mar 2022

	
Photo 01: Tree tag of G62/ RT-07	Photo 02: Tree crown of G62/ RT-07
	Not used
Photo 03: Whole view of G62/RT-07	

	
Photo 04: Tree tag of G62/ RT-08	Photo 05: Root collar of G62/RT-08

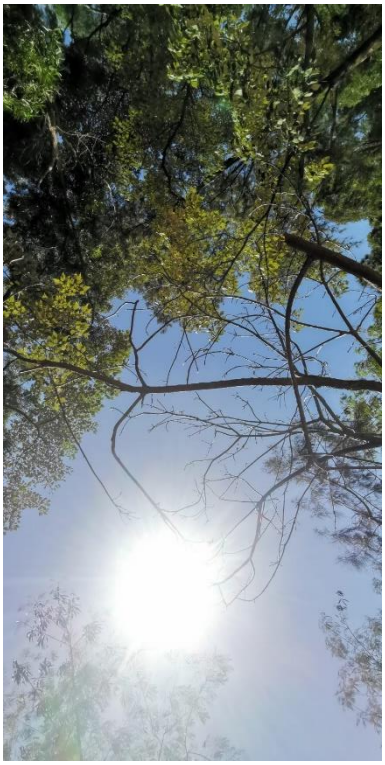



Photo 06: Crown condition of G62/RT-08	Photo 07: Crown condition of G62/RT-08

Inspection date: 11 Mar 2022

	
Photo 08: Tree tag of G62/ RT-07	Photo 09: Root collar of G62/RT-07
	
Photo 10: Crown condition of G62/RT-07	Photo 11: Whole view for G62/RT-07

Photo 12: Tree tag of G62/ RT-08

Photo 13: Root collar of G62/RT-08

Photo 14: Trunk condition of G62/RT-08

Photo 15: Whole view of G62/RT-08

Inspection date: 16 Mar 2022

	
Photo 16: Tree tag of G62/ RT-07	Photo 17: Trunk condition of G62/RT-07
	
Photo 18: Crown condition of G62/RT-07	Photo 19: Whole view for G62/RT-07

	
Photo 20: Root collar of G62/ RT-08	Photo 21: Crown condition of G62/RT-08
	
Photo 22: Crown condition of G62/RT-08	Photo 23: Whole view of G62/RT-08

Inspection date: 23 Mar 2022

	
Photo 24: Tree tag of G62/ RT-07	Photo 25: Crown condition of G62/RT-07
	
Photo 26: Crown condition of G62/RT-07	Photo 27: Whole view for G62/RT-07

Photo 28: Tree tag of G62/ RT-08

Photo 29: Crown condition of G62/RT-08

Photo 30: Crown condition of G62/RT-08

Photo 31: Whole view of G62/RT-08

Inspection date: 30 Mar 2022

	
Photo 32: Root collar of G62/ RT-07	Photo 33: Crown condition of G62/RT-07

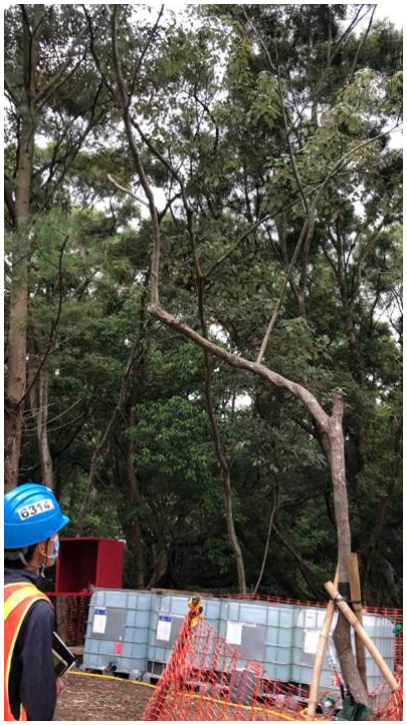



Photo 34: Crown condition of G62/RT-07	Photo 35: Trunk condition for G62/RT-07

	
Photo 36: Root collar of G62/ RT-08	Photo 37: Trunk condition of G62/RT-08
	
Photo 38: Crown condition of G62/RT-08	Photo 39: Crown condition of G62/RT-08

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

Proposed receptor site for RT08

Proposed receptor site for RT07

811800 E

811900 E

815300 N

815200 N

815100 N

東涌食水配水庫
Tung Chung Fresh Water Service Reservoir

沖積地
Washed-out Area

G02/40

G01/39

G06/59

G06/66

G03/61

G05/62

G01/81

G02/82

G04/83/84/85

LEGEND:

WOODLAND TREE AND SHRUB MIX PLANTING ON SLOPE

SHRUB MIX PLANTING ON SLOPE

TA578(R) EXISTING TREE TO BE RETAINED

RT07 EXISTING TREE WITH CONSERVATION VALUE TO BE RETAINED

RO10 TENTATIVE RECEPTOR LOCATION FOR EXISTING TREE WITH CONSERVATION VALUE TO BE TRANSPLANTED (EXACT LOCATION TO BE AGREED WITH FUTURE MAINTENANCE DEPARTMENT)

N

11-November-2020

Plot File by: Shuyan.Wang@aecom.com
PATH: pw:\\aecom-as-pw.bentley.com:AECOM_DS02_AS\Documents\60507694_TCNTE - D&C\CAD PRODUCTION\DRAWING\REPORT\247\247_031.dgn

AECOM

PROJECT
項目

TUNG CHUNG NEW TOWN EXTENSION (EAST) - DESIGN AND CONSTRUCTION

CLIENT
業主

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

CONSULTANT
工務顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 修訂摘要	CHK. 核查
A	NOV. 20	REVISED LAYOUT	CC
-	OCT. 20	FIRST ISSUE	CC

STATUS
狀況

SCALE
比例

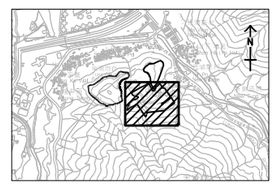
A1 1 : 500

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

A1 1 : 20000



PROJECT NO.
項目編號

60507694

CONTRACT NO.
合約編號

CE 69/2015 (CE)

SHEET TITLE
圖紙名稱

LOCATION OF RECEPTOR SITE FOR THE TRANSPLANTED PLANTS OF CONSERVATION IMPORTANCE

SHEET NUMBER
圖紙編號

60507694/Z47/FIGURE 3

Annex I

Cumulative Statistics on Exceedances, Environmental Complaints, Notification of Summons and Status of Prosecutions

Table H1 Cumulative Statistics on Exceedances

		Total No. recorded in this reporting period (1)	Total No. recorded since project commencement
Air Quality (1-hr TSP)	Action	0	0
	Limit	0	0
Noise	Action	2	57
	Limit	0	0
Water Quality	Action	0	0
	Limit	0	0
Marine Ecology	Action	0	0
	Limit	0	0

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

Table H2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Contract No.	Reporting Period	Cumulative Statistics		
		Complaints	Notifications of Summons	Prosecutions
Contract 1	This Reporting Period (1 – 31 March 2022)	0	0	0
	Total no. received since project commencement	106	0	0
Contract 2	This Reporting Period (1 – 31 March 2022)	0	0	0
	Total no. received since project commencement	0	0	0
Contract 3	This Reporting Period (1 – 31 March 2022)	3	0	0
	Total no. received since project commencement	9	0	0
Contract 7	This Reporting Period (1 – 31 March 2022)	0	0	0
	Total no. received since project commencement	0	0	0

Annex J

Monitoring Schedule for the Next Reporting Period

Tung Chung New Town Extension (East)
Air Quality and Noise Monitoring Schedule (April 2022)

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

Tung Chung New Town Extension (East)
Impact Marine Water Quality Monitoring (WQM) Schedule (April 2022)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Apr	2-Apr
					ebb tide 11:43 - 15:13 flood tide 5:48 - 9:18	
3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	8-Apr	9-Apr
	ebb tide 13:11 - 16:41 flood tide 6:43 - 10:13		ebb tide 14:20 - 16:30 flood tide 7:23 - 10:53		ebb tide 15:52 - 19:22 flood tide 4:30 - 6:46	
10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr
	ebb tide 19:47 - 22:17 flood tide 7:22 - 10:52		ebb tide 10:17 - 13:08 flood tide 14:59 - 18:29		ebb tide 10:35 - 14:05 flood tide 16:33 - 20:03	
17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr
	ebb tide 12:16 - 15:46 flood tide 5:54 - 9:24		ebb tide 13:43 - 17:13 flood tide 6:55 - 10:25		ebb tide 15:32 - 19:02 flood tide 8:07 - 11:37	
24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr	30-Apr
	ebb tide 8:16 - 11:33 flood tide 12:45 - 16:15		ebb tide 9:42 - 13:12 flood tide 15:03 - 18:33		ebb tide 10:44 - 14:14 flood tide 16:44 - 20:14	

Remark:
Pickup time and place of 1st tide: 15 min before tidal window at Sham Tseng pier
Pickup time and place of 2nd tide: 15 min before tidal window at Tung Chung pier

Tung Chung New Town Extension (East)
Soft Shore Ecological Monitoring Schedule (April 2022)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Apr	2-Apr
3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	8-Apr	9-Apr
	Soft Shore Monitoring at Tung Chung Bay					
10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr
17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr
		Soft Shore Monitoring at Tai Ho Bay	**Soft Shore Monitoring at Tung Chung Bay**			
24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr	30-Apr
					Soft Shore Monitoring at Tung Chung Bay	

Remarks:

Soft shore ecological monitoring was postponed from March to April due to COVID-19 pandemic.