ANEWR

Civil Engineering and Development Department
4/F, Civil Engineering and Development Building
Port Works Division
101 Princess Margaret Road
Ho Man Tin
Kowloon

Your reference:

Our reference: HKCEDD15/50/107782

Date: 14 January 2022

Attention: Ms Katy S L Lam

BY EMAIL & POST
(email: ksllam@cedd.gov.hk)

Dear Sirs

Agreement No.: PI 3/2020
Independent Environmental Checker for Lei Yue Mun Waterfront Enhancement Project
Verification of Monthly Environmental Monitoring and Audit Report (December 2021)

We refer to emails of 12 and 13 January 2022 from Acuity Sustainability Consulting Limited attaching a Monthly Environmental Monitoring and Audit Report (December 2021).

We have no comments and hereby verify the captioned report in accordance with Clause 3.4 of the Environmental Permit no. EP-564/2018 and Section 13.4 of the Environmental Monitoring and Audit Manual.

Should you have any queries, please do not hesitate to contact the undersigned or our Ms Karen Po on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LCCR/PKWK/lsmt

cc ArchSD – Mr Ken Cheung (email: cheunkk3@archsd.gov.hk)
Acuity – Mr Kevin Li (email: kli@acuityhk.com)
Acuity – Mr Kelvin Lau (email: klau@acuityhk.com)

ANewR Consulting Limited
Unit 517, 5/F, Tower A, Regent Centre
63 Wo Yi Hop Road, Kwai Chung, Hong Kong
Tel: (852) 2618 2831 Fax: (852) 3007 8648
Email: info@anewr.com
Web: www.anewr.com

ISO 9001 : 2015
Certificate No.: CC 3988

ACUITY
SUSTAINABILITY
CONSULTING LIMITED

Website: www.acityhk.com

Unit C, 11/F, Ford Glory Plaza,
Nos. 37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon.

Tel. : (852) 2698 6833
Fax.: (852) 2698 9383

土木工程拓展署
Civil Engineering and Development Department

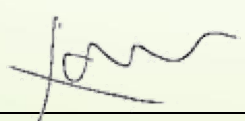
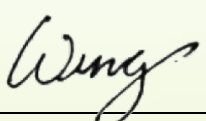
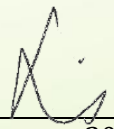
Contract No. PI 2/2020

Environmental Monitoring Works for Lei Yue Mun Waterfront Enhancement Project

Monthly EM&A Report (December 2021)

Document No.

ASCL	/	200168151	/	EMA122021	/	1
Publisher		Project Code		Sequential No.		Revision Index

	Prepared by:	Checked by:	Certified by:
Name	Kelvin Lau	Wingo SO	Kevin LI
Position	Environmental Team Member	Environmental Team Member	Environmental Team Leader
Signature			
Date:	13 January 2022	13 January 2022	13 January 2022

REVISION HISTORY

REV.	DESCRIPTION OF MODIFICATION	DATE
1	Revision according to IEC's comments	13 January 2022

CONTENTS

EXECUTIVE SUMMARY

INTRODUCTION

A1. The Project, Lei Yue Mun Waterfront Enhancement Project, is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) and is currently governed by an Environmental Permit (EP No. EP-564/2018) for the construction and operation of the Project.

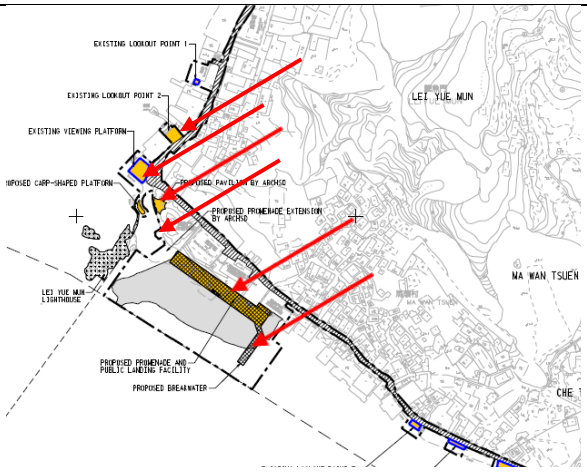
A2. The Civil Engineering and Development Department (CEDD) commissioned Acuity Sustainability Consulting Limited (ASCL) to undertake the role of Environmental Team (ET) for carrying out the Environmental Monitoring & Audit (EM&A) works during the construction phase of the Project in accordance with the EM&A Manual (the Manual).

A3. In accordance with the Manual for the Project, the results and findings of all EM&A work required in this Manual shall be reported in the monthly EM&A reports prepared by the ET and endorsed by the Independent Environmental Checker (IEC).

A4. This is the 8th Monthly EM&A Report for the Project which summarizes the key findings of the EM&A programme during the reporting period from 1 December to 31 December 2021.

SUMMARY OF MAIN WORKS UNDERTAKEN & KEY MITIGATION MEASURES IMPLEMENTED

A5. Key activities carried out in this reporting period for the Project included the followings:

Works Description	Location
Contract No. CV/2020/09 • Pre-bored socketed H pile at landing facility • Infill grouting of 610mm dia. pipe piles • Rock Excavation • Temporary working platform erection for pre-bored socketed H piles at breakwater area • 273mm Dia. pipe piling work at Viewing Platform • Infill grouting of pipe piles Contract No. SS J521 • 4th Pour concrete work • 5th Pour concrete work • Formwork & Rebar fixing • Excavation	

A6. The major environmental impacts brought by the above construction works include:

- Construction dust and noise generation from excavation and construction works
- Waste generation from construction activities
- Impact on water quality from marine construction works and inland construction works

A7. The key environmental mitigation measures implemented for the Project in this reporting period associated with the above construction works include:

- Dust suppression by regular wetting and water spraying for construction works
- Reduction of noise from equipment and machinery on-site
- Sorting and storage of general refuse and construction waste
- The dredging rate shall not exceed 100 m^3 per hour with a maximum working period of 12 hours per day throughout the construction phase and operation phase.
- Silt curtains should be deployed enclosing the dredging operation. Regular inspection on the silt curtain on the silt curtain condition by the contractor should be carried out.

SUMMARY OF EXCEEDANCE & INVESTIGATION & FOLLOW-UP

A8. No noise-related exceedance was recorded in the reporting period.

A9. Water monitoring exceedances were record in reporting period and the follow-up would be present in the next monthly EM&A report.

A10. Weekly site inspections of the construction work by ET were carried out on 2, 9, 17, 23 and 30 December 2021to audit the mitigation measures implementation status. Observations were recorded in the site inspection checklists and provided to the contractors together with the appropriate follow-up actions where necessary.

COMPLAINT HANDLING AND PROSECUTION

A11. No project-related environmental complaint was received during the reporting period.

A12. Neither notifications of summons nor prosecution was received for the Project.

REPORTING CHANGE

A13. There was no change to be reported that may affect the on-going EM&A programme.

SUMMARY OF UPCOMING KEY ISSUES AND KEY MITIGATION MEASURES

A14.Key activities anticipated in the next reporting period for the Project will include the followings:

Works Description	Location
Contract No. CV/2020/09	
610mm Dia. pipe piling works at landing facility	Landing Facility
Pre-bored socketed H pile at landing facility	Landing Facility
Infill grouting of 610mm dia. pipe piles	Landing Facility
Infill grouting of pre-bored socketed H pile	Landing Facility
Rock excavation at landing facility	Landing Facility
Temporary working platform erection for pre-bored socketed H piles at breakwater area	Breakwater Construction Area
Installation of precast seawall & RC pavement at viewing platform	Viewing Platform
Construction of skin wall and R.C paving	Lookout Point
Contract No. SS J521	
Concrete work	Draw pit
Excavation	Planter 1
Construct blinding layer	Planter 1
Rebar fixing	Planter 1
Formwork	Precast staircase
Excavation Backfill the existing soil	UG Drainage System UG cable ducting (meter room) Draw pit

A15.The major environmental impacts brought by the above construction works will include:

- Construction dust and noise generation from excavation and construction works
- Waste generation from construction activities
- Impact on water quality from marine construction works and inland construction works

A16.The key environmental mitigation measures for the Project in the coming reporting period associated with the above construction works will include:

- Dust suppression by regular wetting and water spraying for construction works
- Reduction of noise from equipment and machinery on-site
- Sorting and storage of general refuse and construction waste
- The dredging rate shall not exceed 100 m^3 per hour with a maximum working period of 12 hours per day throughout the construction phase and operation phase.
- Silt curtains should be deployed enclosing the dredging operation. Regular inspection on the silt curtain on the silt curtain condition by the contractor should be carried out.

1. BASIC PROJECT INFORMATION

1.1. BACKGROUND

Civil Engineering and Development Department (CEDD) has contracted Concentric - Hong Kong River Joint Venture (CHKRJV) to carry out the Construction of Lei Yue Mun Public Landing Facility under **Contract No. CV/2020/09**; and Architectural Services Department (ArchSD) has contracted Milestone Builder Engineering Limited to carry out the development of a waterfront promenade and related improvement works under **Contract No. SS J521** for the Lei Yue Mun Waterfront Enhancement Project (the Project).

Acuity Sustainability Consulting Limited (ASCL) is commissioned by CEDD to undertake the Environmental Team (ET) services as required and/or implied, both explicitly and implicitly, in the Environmental Permit (EP), Environmental Impact Assessment Report (EIA Report) (Register No. AEIAR-219/2018) and Environmental Monitoring and Audit Manual (EM&A Manual) for the Project; and to carry out the Environmental Monitoring and Audit (EM&A) programme in fulfillment of the EIA Report's EM&A requirements under **Contract No. PI 2/2020**.

Pursuant to the Environmental Impact Assessment Ordinance (EIAO), the Director of Environmental Protection granted the Environmental Permit (No. EP-564/2018) to CEDD for the Project.

1.2. THE REPORTING SCOPE

This is the 8th Monthly EM&A Report for the Project which summarizes the key findings of the EM&A programme during the reporting period from 1 December to 31 December 2021.

1.3. PROJECT ORGANIZATION

The Project Organization structure for Construction Phase is presented in **Figure 1.1**. The key personnel's' contacts are presented in **Table 1.1** and **Table 1.2**.

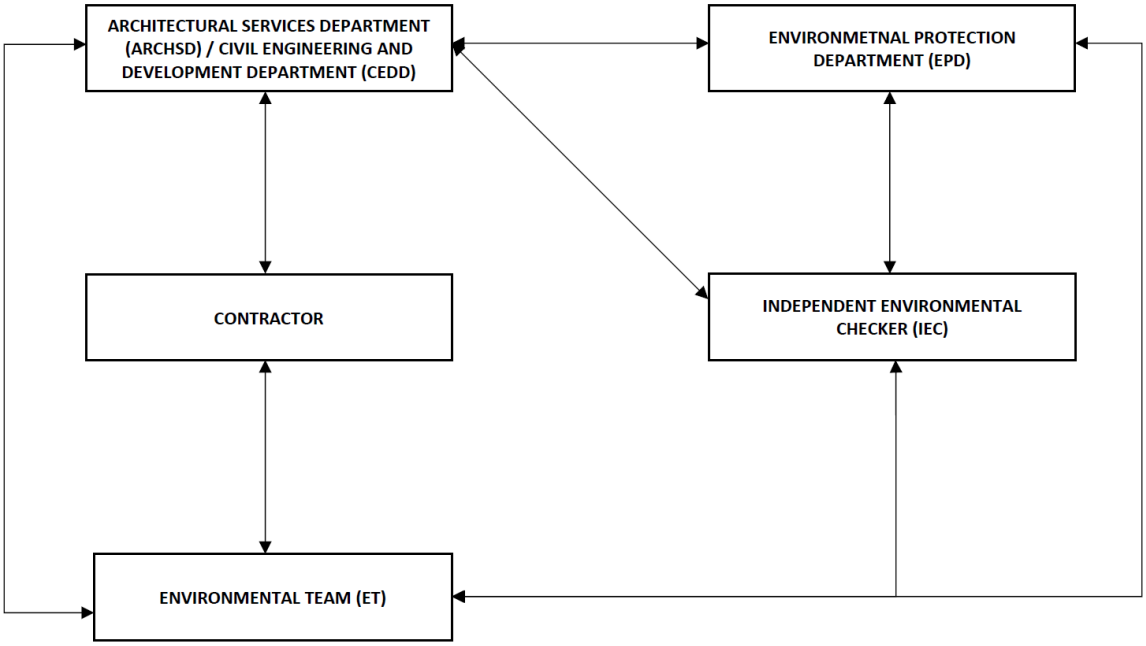


Figure 1.1 Project Organization Chart

Table 1.1 Key Personnel's' Contact for the Construction of a Public Landing Facility and Improvement Works to Existing Lookout Points and Viewing Platform

Party	Position	Name	Phone
Civil Engineering and Development Department	Engineer	Ms. Lam Sau Lai, Katy	2762 5044
ANewR	Independent Environmental Checker	Mr. Choi Pui Sum, James	2618 2831
Acuity Sustainability Consulting Limited	Environmental Team	Mr. Li Wai Ming, Kevin	2698 6833
Concentric - Hong Kong River Joint Venture	Contractor	Mr. T S Lam	9655 5486

Table 1.2 Key Personnel's' Contact for the Development of a Waterfront Promenade and Related Improvement Works

Party	Position	Name	Phone
Architectural Services Department	Project Manager	Mr. Ken Chan	2867 3850
ANewR	Independent Environmental Checker	Mr. Choi Pui Sum, James	2618 2831
Acuity Sustainability Consulting Limited	Environmental Team	Mr. Li Wai Ming, Kevin	2698 6833
Milestone Builder Engineering Ltd.	Environmental Officer	Ms. Mandy Fung	6506 0375

1.4. SUMMARY OF CONSTRUCTION WORKS

Details of the major construction activities undertaken in this reporting period are shown as below. The construction programme is presented in **Appendix A**.

Key activities carried out in this reporting period for the Project included the followings:

Works Description	Location
Contract No. CV/2020/09	
Pre-bored socketed H pile at landing facility	Landing Facility
Infill grouting of 610mm dia. pipe piles	Landing Facility
Rock Excavation	Landing Facility and Breakwater Construction Area
Temporary working platform erection for pre-bored socketed H piles at breakwater area	Breakwater Construction Area
273mm Dia. pipe piling work at Viewing Platform	Viewing Platform
Infill grouting of pipe piles	Viewing Platform
Contract No. SS J521	
4th Pour concrete work 5th Pour concrete work Formwork & Rebar fixing	Viewing Platform
Formwork & Rebar fixing	Manhole
Excavation	UG Drainage System UG cable ducting (meter room) Draw pit

1.5. SUMMARY OF ENVIRONMENTAL STATUS

A summary of the valid permits, licences, and/or notifications on environmental protection for this Project is presented in **Table 1.3**.

Table 1.3 Summary of the Status of Valid Environmental Licence, Notification and Permit

Permit/ Licenses/ Notification	Reference	Validity Period
Contract No. CV/2020/09		
Environmental Permit	EP-564/2018	Throughout the Contract
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	Ref. No.: 463353	Throughout the Contract
Chemical Waste Producer Registration	5213-298-C3752-02	Throughout the Contract
Billing Account for Disposal of Construction Waste	7039364	Throughout the Contract
Contract No. SS J521		
Environmental Permit	EP-564/2018	Throughout the Contract
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	Ref. No.: 467619	Throughout the Contract
Chemical Waste Producer Registration	5312-298-M2939-02	Throughout the Contract
Billing Account for Disposal of Construction Waste	7039353	Throughout the Contract
Discharge Licence under Water Pollution Control Ordinance	WT00039075-2021	Valid to 30 Sep 2026

The status for all environmental aspects is presented in **Table 1.4**.

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

Parameters	Status
Water Quality	
Baseline Monitoring under EM&A Manual	The baseline monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.3 on 25 May 2021
Impact Monitoring	The impact water quality monitoring of the Project commenced on 14 September 2021
Noise	
Baseline Monitoring	The baseline monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.3 on 25 May 2021
Noise Management Plan	The Noise Management Plan was submitted by the Contractor on 4 May 2021 and approved on 10 May 2021
Impact Monitoring	On-going
Ecology	
Conceptual Landscape Layout Plan	The Conceptual Landscape Layout Plan will be submitted no later than three months prior to the commencement of detailed design of the landscape and architectural works of the Project under EP Condition 2.10
Coral Baseline Survey Report	The Coral Baseline Survey Report was submitted to EPD under EP Condition 2.14 on 12 May 2021 and approved by EPD on 18 May 2021
Coral Translocation Plan	The Coral Translocation Plan was submitted to EPD under EP Condition 2.16 on 28 April 2021 and commented received on 27 September 2021. Updated Coral Translocation Plan was submitted to EPD on 22 December 2021 and approved on 7 January 2022.
Coral Review Report	The Coral Review Report will be submitted no later than three months before the commencement of each maintenance dredging under EP Condition 2.20
Waste Management	
Mitigation Measures in Waste Monitoring Plan	On-going
Environmental Audit	
Site Inspection covering Measures of Air Quality, Noise Impact, Water Quality, Waste, Ecological Quality, Fisheries, Landscape and Visual	On-going

Other than the EM&A work by ET, environmental briefings, trainings and regular environmental management meetings were conducted, in order to enhance environmental awareness and closely monitor the environmental performance of the contractors.

The EM&A programme has been implemented in accordance with the recommendations presented in the approved EIA Report and the EM&A Manual. A summary of implementation status of the environmental mitigation measures for the construction phase of the Project during the reporting period is provided in **Appendix B**.

2. NOISE

2.1. MONITORING REQUIREMENTS

To ensure no adverse noise impact, noise monitoring is recommended to be carried out within 300m radius from the nearby noise sensitive receivers (NSRs), during construction phase. The NSRs selected as monitoring station are (i) NM1 – Village house in Lei Yue Mun Hoi Pong Road Central, (ii) NM2-A – No.79B, Lei Yue Mun Hoi Pong Road East, (iii) NM3 – Jockey Club Lei Yue Mun Plus and (iv) NM4 – No. 21C, Lei Yue Mun Hoi Pong Road East respectively.

In accordance with the EM&A Manual, baseline noise level at the noise monitoring stations were established as presented in the Baseline Monitoring Report. Impact noise monitoring was conducted once per week in the form of 30-minutes measurements Leq, L10 and L90 levels recorded at each monitoring station between 0700 and 1900 on normal weekdays.

Four (4) sessions of noise monitoring were carried out at the monitoring locations sited at LYM in the reporting month. The results are presented in **Appendix F.**

Construction noise level were measured in terms of the A-weighted equivalent continuous sound pressure level (LAeq). Leq $_{30min}$ was used as the monitoring parameter for the time period between 0700 and 1900 on normal weekdays. **Table 2.1** summarizes the monitoring parameters, frequency and duration of the impact noise monitoring.

Table 2.1 Noise Monitoring Parameters, Time, Frequency and Duration

Time	Duration	Interval	Parameters
Daytime: 0700-1900	Day time: 0700-1900 (during normal weekdays)	Continuously in $L_{eq\ 5min}$/$L_{eq\ 30min}$ (average of 6 consecutive $L_{eq\ 5min}$)	$L_{eq\ 30min}$ $L_{10\ 30min}$ & $L_{90\ 30min}$

2.2. MONITORING LOCATIONS

The monitoring locations should normally be made at a point 1m from the exterior of the NSRs building façade and be at a position 1.2m above the ground. A correction of +3dB(A) should be made to the free-field measurements.

According to the environmental findings detailed in the EIA report and Baseline Monitoring Report, the designated locations for the construction noise monitoring are listed in **Table 2.2** below.

Table 2.2 Noise Monitoring Locations

Station	Noise Monitoring Stations	Monitoring Location	Position
NM1	Village house in Lei Yue Mun Hoi Pong Road Central	Pedestrian Road on Ground Floor	1 m from facade
NM2	No.81, Lei Yue Mun Hoi Pong Road East	Pedestrian Road on Ground Floor	1 m from facade
NM3	Jockey Club Lei Yue Mun Plus	Fenced Road on Ground Floor	1 m from facade
NM4	No. 21C, Lei Yue Mun Hoi Pong Road East	Fenced Road on Ground Floor	1 m from facade

The original construction noise monitoring station NM2 was selected at the façade of No. 81 of Lei Yue Mun Hoi Pong Road East. However, the residents of the premises at No. 81 of Lei Yue Mun Hoi Pong Road East do not allow the setting up of the construction noise monitoring station NM2. No. 79B, Lei Yue Mun Hoi Pong Road East, was proposed as the alternative noise monitoring location for set up of construction noise monitoring station named as NM2-A.

A Proposal for Alternative Noise Monitoring Station, which was certified by the ET Leader and verified by the IEC, has been prepared to conclude that the alternative construction noise monitoring station NM2-A could conform to relevant requirements as set out in the EM&A Manual, namely:

- locate close to the major site activities which are likely to have noise impacts;
- locate close to the most affected existing NSRs; and
- take into account the possibility of minimizing disturbance to occupants at the NSRs during monitoring.

The Proposal for Alternative Noise Monitoring Station NM2-A has been approved by EPD on 16 April 2021.

The latest locations for the construction noise monitoring are listed in **Table 2.3**.

Table 2.3 Updated Noise Monitoring Stations for Baseline and Impact Monitoring

Station	Noise Sensitive Receiver	Monitoring Location	Position
NM1	Village house in Lei Yue Mun Hoi Pong Road Central	Pedestrian Road on Ground Floor	1 m from facade
NM2-A	No.79B, Lei Yue Mun Hoi Pong Road East	Pedestrian Road on Ground Floor	1 m from facade
NM3	Jockey Club Lei Yue Mun Plus	Fenced Road on Ground Floor	1 m from facade
NM4	No. 21C, Lei Yue Mun Hoi Pong Road East	Fenced Road on Ground Floor	1 m from facade

The location of all original construction noise monitoring stations and the alternative construction noise monitoring station are shown in **Figure 2.1**.

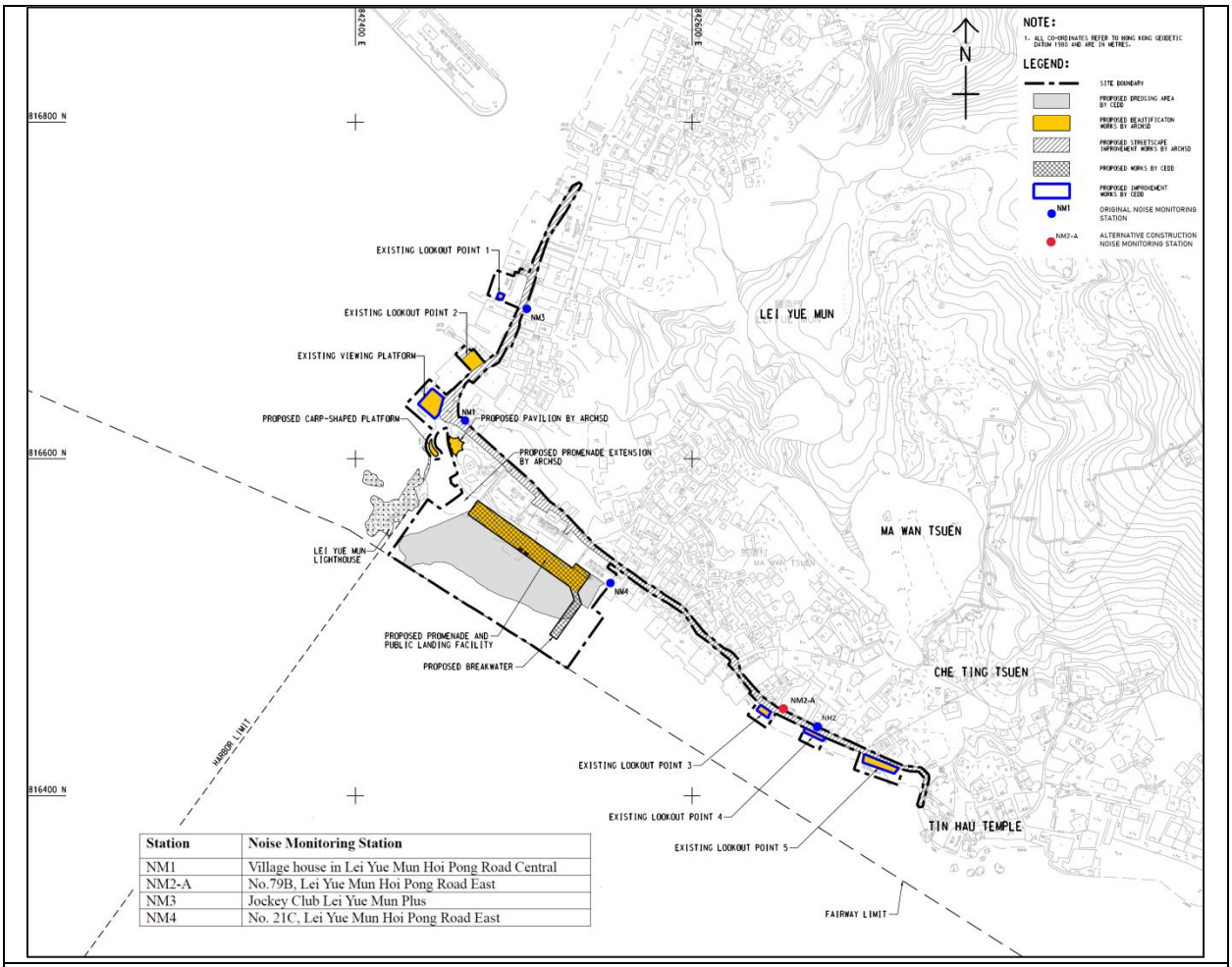


Figure 2.1 Noise Monitoring Locations

2.3. IMPACT MONITORING METHODOLOGY

Integrated sound level meter shall be used for the noise monitoring. The meter shall be in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels before and after the noise measurements agree to within 1.0 dB(A). Calibration certificates of the instruments used are shown at **Appendix E**.

Noise measurements shall not be made in the presence of fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

Table 2.4 Impact Noise Monitoring Equipment

Equipment	Make and Model
Sound Level Meter	Scarlet ST-11D
Acoustic Calibrator	Pulsar Model 105

2.4. ACTION AND LIMIT LEVELS

The Action/Limit Levels are in line with the criteria of Practice Note for Professional Persons (ProPECC PN 2/93) "Noise from Construction Activities – Non-statutory Controls" and Technical Memorandum on Environmental Impact Assessment Process issued by HKSAR Environmental Protection Department ["EPD"] under the Environmental Impact Assessment Ordinance, Cap 499, S.16 are presented in **Table 2.5**.

Table 2.5 Action and Limit Levels for Noise per EM&A Manual

Time Period	Action	Limit (dB(A))
0700-1900 on normal weekdays	When one documented complaint is received from any one of the noise sensitive receivers	75 dB(A) for residential areas; 70 dB(A) for school; and 65 dB(A) during examination period

Notes: Limits specified in the GW-TM and IND-TM for construction and operation noise, respectively.

If exceedances were found during noise monitoring, the actions in accordance with the Event and Action Plan shall be carried out according to **Appendix D**.

2.5. MONITORING RESULTS AND OBSERVATIONS

Referring to EM&A manual Section 4.6.1.1 construction noise monitoring should be carried out when there are project-related construction activities undertaken within a radius of 300m from the monitoring stations. Four (4) sessions of noise monitoring were carried out at the monitoring locations sited at LYM in the reporting month. The below **Table 2.6** summarized the results of the monitoring.

Table 2.6 Summary of Noise Monitoring Results in the Reporting Month

Location	Noise in dB(A)
	$L_{eq\ 30min}$ Daytime (7:00-19:00 on normal weekdays)
NM1	62.9 - 67.5
NM2-A	60.8 - 61.4
NM3	62.3 - 65.7
NM4	63.9 - 67.9

3. WATER QUALITY

3.1. MONITORING REQUIREMENTS

As identified in the EIA Report, suspended sediment is the most critical water quality parameter caused by the dredging works. Marine water quality monitoring should be carried out during the dredging and filling operation to ensure that any unacceptable increase in suspended solids / turbidity and decrease in dissolved oxygen due to the dredging activities could be readily detected and timely action be taken to rectify the situation.

During the dredging (both capital and maintenance) and filling operation of the Project, water quality impact monitoring should be undertaken 3 days per week, at mid-flood and mid-ebb tides, with sampling / measurement at the designated monitoring stations. The locations for impact monitoring should be the same as those for baseline monitoring.

The impact water quality monitoring of the Project commenced on 14 September 2021.

3.2. WATER QUALITY PARAMETERS

The parameters that have been selected for measurement in situ and in the laboratory are those that were either determined in the EIA to be those with the most potential to be affected by the construction works or are a standard check on water quality conditions. Parameters to be measured in the impact monitoring are listed in **Table 3.1**.

Table 3.1 Parameters measured in the marine water quality monitoring

Parameters	Unit	Abbreviation
In-situ measurements		
Dissolved oxygen*	mg/L	DO
Temperature	^{o}C	-
pH	-	-
Turbidity*	NTU	-
Salinity	mg/L	-
Laboratory measurements		
Suspended Solids*	mg/L	SS

Notes: * Key Parameters shown in EM&A manual Table 5.1.

3.3. MONITORING EQUIPMENT

For water quality monitoring, the following equipment will be used:

Dissolved Oxygen and Temperature Measuring Equipment - The instrument will be a portable, weatherproof dissolved oxygen measuring instrument complete with cable, sensor, comprehensive operation manuals, and will be operable from a DC power source. It will be capable of measuring: dissolved oxygen levels in the range of 0 - 20 mg/L and 0 - 200% saturation; and a temperature of 0 - 45 degrees Celsius. It shall have a membrane electrode with automatic temperature compensation complete with a cable of not less than 35 m in length. Sufficient stocks of spare electrodes and cables shall be available for replacement where necessary (e.g. YSI model 59 DO meter, YSI 5739 probe, YSI 5795A submersible stirrer with reel and cable or an approved similar instrument).

Turbidity Measurement Equipment - The instrument will be a portable, weatherproof turbidity-measuring unit complete with cable, sensor and comprehensive operation manuals. The equipment will be operated from a DC power source, it will have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU and will be complete with a cable with at least 35 m in length (for example Hach 2100P or an approved similar instrument).

pH Measurement Instrument - The instrument should consist of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It should be readable to 0.1 pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 should be used for calibration of the instrument before and after use.

Salinity Measurement Instrument - A portable salinometer capable of measuring salinity in the range of 0 - 40 ppt will be provided for measuring salinity of the water at each monitoring location.

Sample Containers and Storage - Water samples for SS should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4 °C without being frozen) and delivered to the laboratory and analyzed as soon as possible after collection. Sufficient volume of samples should be collected to achieve the detection limit.

Water Depth Gauge – A portable, battery-operated echo sounder (for example Seafarer 700 or a similar approved instrument) will be used for the determination of water depth at each designated monitoring station. This unit will preferably be affixed to the bottom of the work boat if the same vessel is to be used throughout the monitoring programme. The echo sounder should be suitably calibrated. The ET shall seek approval for their proposed equipment with the client prior to deployment.

Positioning Device – A Global Positioning System (GPS) shall be used during monitoring to allow accurate recording of the position of the monitoring vessel before taking measurements. The Differential GPS, or equivalent instrument, should be suitably calibrated at appropriate checkpoint (e.g. Quarry Bay Survey Nail) to verify that the monitoring station is at the correct position before the water quality monitoring commence.

Water Sampling Equipment - A water sampler, consisting of a PVC or glass cylinder of not less than two litres, which can be effectively sealed with cups at both ends, will be used (e.g. Kahlsico Water Sampler 13SWB203 or an approved similar instrument). The water sampler will have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth.

Calibration certificate for the water quality monitoring equipment is attached in **Appendix H**.

3.4. Sampling / Testing Protocols

All in situ monitoring instruments will be checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at monthly intervals throughout the stages of the water quality monitoring. Responses of sensors and electrodes will be checked with certified standard solutions before each use.

On-site calibration of field equipment shall follow the "Guide to On-Site Test Methods for the Analysis of Waters", BS 1427: 2009. Sufficient stocks of spare parts shall be maintained for replacements when necessary. Backup monitoring equipment shall also be made available so that monitoring can proceed uninterrupted even when equipment is under maintenance, calibration etc.

3.5. Laboratory Measurement and Analysis

All laboratory work shall be carried out in a HOKLAS accredited laboratory. Sufficient volume of each water sample shall be collected at the monitoring stations for carrying out the laboratory analyses. Using chain of custody forms, collected water samples will be transferred to an HOKLAS accredited laboratory for immediate processing. The determination work shall start within 24 hours after collection of the water samples. The laboratory measurements shall be provided to the client within 5 working days of the sampling event. Analytical methodology and sample preservation of other parameters will be based on the latest edition of Standard Methods for the Examination of Waste and Wastewater published by APHA, AWWA and WPCF and methods by USEPA, or suitable method in accordance with requirements of HOKLAS or another internationally accredited scheme.

Detailed testing methods, pre-treatment procedures, instruments use, Quality Assurance / Quality Control (QA/QC) details (such as blank, spike recovery, number of replicate samples per batch, etc.), detection limit and accuracy were submitted to EPD for approval on 3 February 2021 prior to the commencement of monitoring programme. EPD may also request the laboratory to carry out analysis of known standards provided by EPD for quality assurance. The QA / QC shall be in accordance with the requirements of HOKLAS or international accredited scheme. The QA/ QC results shall be reported. The testing methods and related proposal were checked and certified by IEC before submission to EPD for approval.

Parameters for laboratory measurements, their standard methods and their detection limits are presented in **Table 3.2**.

Table 3.2 Laboratory measurements, standard methods and corresponding detection limits of marine water quality monitoring

Parameter	Standard Method	Detection Limit	Accuracy
Suspended Solids (mg/L)	APHA 2540D	1.0*	±17%

Remark *: Albeit the selected HOKLAS accredited laboratories' standard testing method of total suspended solid according to APHA Method 2540D is capable of reporting the results to 1 mg/L, the laboratory advised that results reported between 1 and 2 mg/L shall be considered to be used as reference value and receive no HOKLAS accreditation for this particular range of result.

If exceedances were found during water monitoring, the actions in accordance with the Event and Action Plan shall be carried out according to **Appendix G**.

3.6. MONITORING LOCATIONS

The water quality monitoring locations for baseline are in accordance to the EM&A Manual and detailed in **Table 3.3** below. The water quality monitoring schedule should be submitted to EPD at least 1 week before the first day of the monitoring month.

Table 3.3 Location of Water Quality Monitoring Station

Station	Easting	Northing	Description
C1	842134	816765	Control Station
C2	842946	816172	Control Station
M1	842605	816433	Coral Communities (Impact Monitoring Station)
M2	842329	816615	100m away from the dredging site (Impact Monitoring Station)
M3	842639	816410	Coral Communities (Impact Monitoring Station)
M4	842515	816878	Sam Ka Tsuen Typhoon Shelter (Impact Monitoring Station)

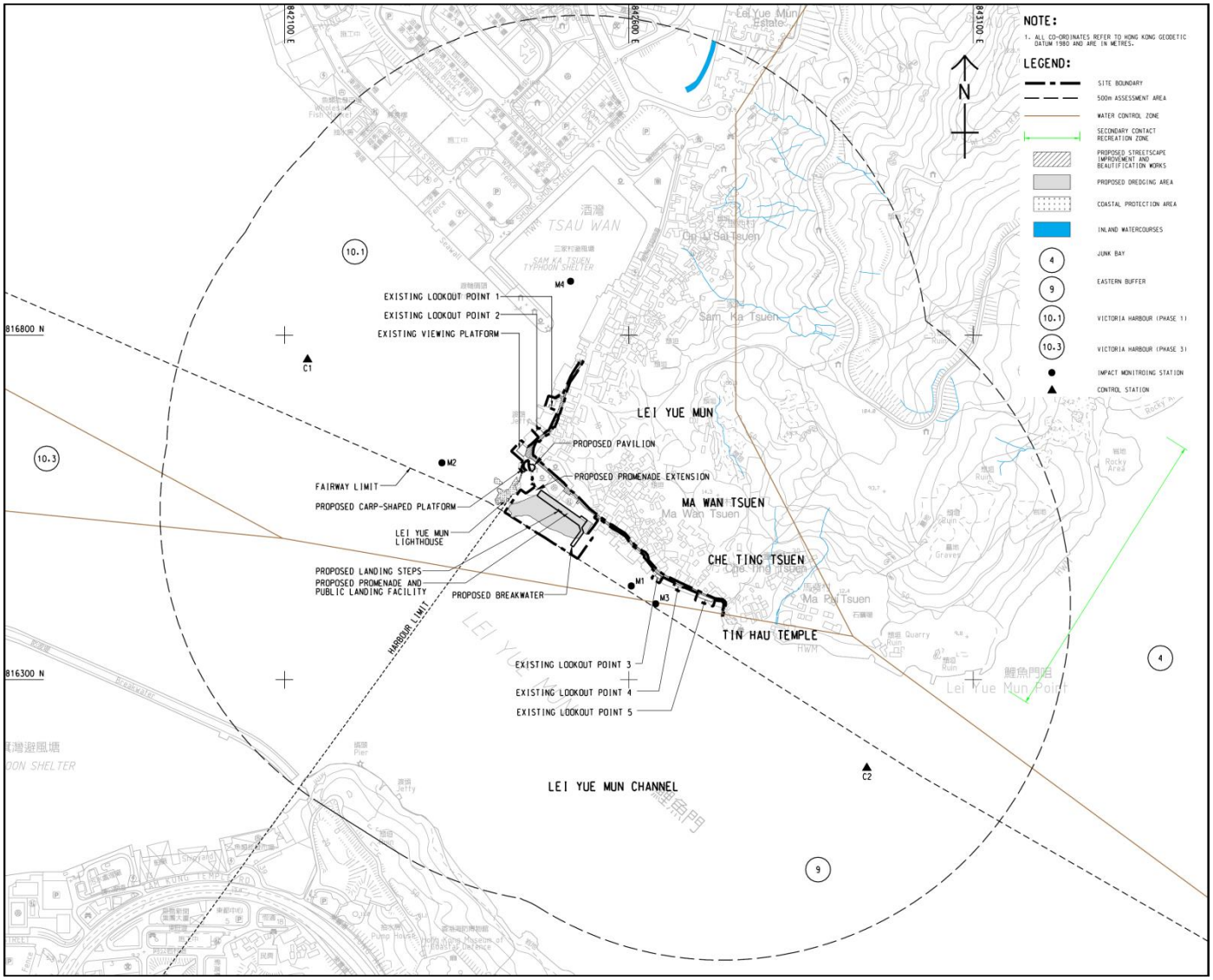


Figure 3.1 Water quality monitoring locations under EM&A Manual

3.7. Sampling Frequency

During periods when there are dredging or filling works, impact monitoring should be undertaken at the monitoring stations as shown in **Figure 3.1** and **Table 3.3** three days per week during the construction phase after the commencement of marine construction works and dredging or filling activities. Monitoring at each station would be undertaken at both mid-ebb and mid-flood tides on the same day. The interval between two sets of monitoring would not be less than 36 hours. The monitoring frequency would be increased in the case of exceedances of Action/Limit Levels if considered necessary by ET. Monitoring frequency would be maintained as far as practicable.

3.8. Sampling Depths & Replication

For water quality monitoring, each station will be sampled and measurements/ water samples will be taken at three depths, 1 m below the sea surface, mid-depth and 1 m above the seabed. For stations that are less than 3 m in depth, only the mid depth sample shall be taken. For stations that are less than 6 m in depth, only the surface and seabed sample shall be taken. For in situ measurements, duplicate readings shall be made at each water depth at each station. Duplicate water samples shall be collected at each water depth at each station.

3.9. Action and Limit levels

Based on the baseline water quality monitoring data and the derivation criteria specified in the Baseline Monitoring Report, the Action/Limit Levels have been derived for the Project and presented in **Table 3.4**.

Table 3.4 Derived Action and Limit Levels for Water Quality Monitoring

Parameters	Action	Limit
During the Dredging and Filling Operation of the Project		
DO in mg/L	Surface and Middle 7.95 mg L^{-1} Bottom 7.91 mg L^{-1}	Surface and Middle 4 mg L^{-1} Bottom 2 mg L^{-1}
SS in mg/L (Depth-averaged)	6.73 mg L^{-1} or 120% of control station's SS at the same tide of the same day	17.60 mg L^{-1} or 130% of control station's SS at the same tide of the same day and specific sensitive receiver water quality requirements (e.g. required SS level for concerned seawater intakes)
Turbidity in NTU (Depth-averaged)	7.42 NTU or 120% of control station's SS at the same tide of the same day compared with corresponding data from control station	7.79 NTU or 130% of control station's SS at the same tide of the same day compared with corresponding data from control station

Notes:
i. "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.

ii. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
iii. For Turbidity, SS and Salinity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3.10. MONITORING PROGRAMME

The ET of the Project had conducted the baseline water monitoring between 15 April 2021 to 11 May 2021 at all six designated monitoring stations (i.e. C1, C2, M1, M2, M3 and M4). The monitoring results was presented in Baseline Water Quality Monitoring Report separately.

The commencement of marine construction activities for the Project is expected to be commenced in mid-September 2021 and the impact water quality monitoring of the Project commenced on 14 September 2021.

3.11. MONITORING RESULTS AND OBSERVATIONS

The impact water quality monitoring at all six monitoring stations (i.e. C1, C2, M1, M2, M3 and M4). The monitoring results are summarized in **Table 3.5**. Details of water quality monitoring results are presented in **Appendix I**.

Table 3.5 Summary of Water Quality Monitoring Results in the Reporting Month

Location		Parameters							
		Dissolved Oxygen (mg/L)				Turbidity (NTU)		Suspended Solids (mg/L)	
		S&M[(i)]		B[(i)]					
		Mid-Flood	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood	Mid-Ebb
C1	Avg.	8.46	8.47	8.46	8.46	4.68	6.02	7	12
	Min.	7.93	7.94	7.96	7.98	1.96	2.39	4	5
	Max.	9.13	9.64	9.36	9.49	8.26	12.83	25	26
C2	Avg.	8.52	8.61	8.43	8.56	6.49	4.70	11	9
	Min.	8.11	8.02	7.94	7.96	2.80	2.59	5	4
	Max.	9.06	9.62	9.22	9.71	9.77	7.90	29	22
M1	Avg.	8.63	8.46	8.60	8.53	4.78	4.47	8	7
	Min.	8.08	8.12	7.97	8.08	2.00	1.54	3	3
	Max.	9.10	8.83	9.02	8.96	6.89	8.02	24	12
M2	Avg.	8.61	8.55	8.54	8.44	4.72	4.16	7	7
	Min.	8.08	8.03	7.95	8.01	1.99	1.73	4	3
	Max.	9.22	9.33	9.31	9.41	7.98	7.58	11	11
M3	Avg.	8.38	8.56	8.67	8.68	4.69	4.38	6	6
	Min.	8.05	8.04	7.96	8.01	1.89	1.94	3	4
	Max.	8.71	9.12	9.33	9.36	7.41	8.73	18	11
M4	Avg.	8.61	8.56	8.50	8.54	4.23	4.00	8	6
	Min.	8.02	8.07	8.08	8.07	1.92	1.09	3	3
	Max.	9.19	9.42	9.01	9.13	8.02	7.32	23	9

Notes:

i. " S&M": Surface and Middle, "B": Bottom.

Water monitoring exceedances were record in reporting period and summarized as below:

Date	Tidal	Location	Parameter	Monitoring Result (mg/L)	AL (mg/L)	LL (mg/L)
30/12/2021	Mid-Flood	M1	SS*	13.83	6.80	7.37
30/12/2021	Mid-Flood	M4	SS*	22.50	6.80	7.37
30/12/2021	Mid-Ebb	M2	SS*	7.50	7.40	8.02

Notes: SS*: Suspended Solids

All water monitoring exceedances were under investigation and the follow-up would be present in the next monthly EM&A report.

4. ECOLOGICAL

4.1. INTRODUCTION

Background

Lei Yue Mun (LYM) is one of the most popular tourist attractions in Hong Kong, for its pleasant seaside ambience and excellent seafood. LYM was included in the Tourism Commission (TC)'s Tourism District Enhancement Programme to enrich Hong Kong's appeal to visitors. In 2003, initial minor improvements were completed along the LYM waterfront, and further improvement of facilities along the LYM waterfront was planned.

The Project, Lei Yue Mun Waterfront Enhancement Project is a Designated Project under the Environmental Impact Assessment Ordinance (EIAO). An EIA Report under Agreement No. CE 54/2015 (EP) (Report No.: AEIAR-219/2018) for the Project was approved under EIAO on 26 October 2018 in accordance with the EIA Study Brief (No. ESB-287/2015) and the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). The corresponding Environmental Permit was issued (EP no.: EP-564/2018) by the Director of Environmental Protection (DEP) on 10 December 2018.

The works to be executed under Contract No. CV/2020/09 Construction of Lei Yue Mun Public Landing Facility (hereinafter called "the Contract") mainly comprise the construction of a public landing facility, a breakwater, and structural improvement works to an existing viewing platform and a lookout point. Dredging and excavation works for berthing of vessels at the new public landing facility will be involved, which might directly affect the hard coral colonies. Thus, a coral baseline survey that involves a detail coral mapping survey shall be conducted to ascertain the location, sizes, species and health status of the corals with reference to the extent of marine ecological survey indicated at Figure 9.1 of the EIA Report under the Contract.

Coral mapping surveys were conducted in March 2021, forty-four (44) octocoral colonies recorded on movable boulders shall be translocated to a coral recipient site Fat Tong Chau (FTC), Junk Bay.

Coral translocation was conducted on 20 and 21 May 2021, a total of forty-seven (47) octocoral colonies attached to movable boulders were translocated to the coral recipient site FTC, Junk Bay.

A Post-translocation Coral Survey was conducted on 21 May 2020, to monitor the health condition of the tagged colonies after coral translocation, including the tagged colonies from the donor site (i.e. the proposed dredging area at LYM) and also the tagged naturally occurring corals at the coral recipient site at Fat Tong Chau (FTC), Junk Bay.

Followed by the Post-translocation Coral Survey, Post-translocation monitoring will be conducted quarterly for one year.

4.2. METHOD

Following coral translocation which was undertaken on 20th and 21st May 2021, 10 selected translocated coral colonies as well as the 10 tagged natural coral colonies at the recipient site will be monitored once every 3 months for a period of 12 months. The monitoring team will record the following parameters (using the same methodology adopted during the pre-translocation survey): size, presence, survival, health conditions (percentage of mortality) and percentage of sediment of each translocated coral colonies. The general environmental conditions including weather, sea, and tidal conditions of the coral recipient site will also be monitored.

Photographic records of the translocated and natural coral colonies will be taken as far as possible maintaining the same aspect and orientation as photographs taken for the pre-translocation surveys. All the tags for marking the translocated and natural coral colonies will be removed / retrieved once the monitoring programme is completed.

The results of the post-translocation monitoring surveys should be reviewed with reference to findings of the baseline survey and the data from original colonies at the recipient site.

If, during the post-translocation monitoring, observations of any die-off / abnormal conditions of the translocated corals are made, the ET will inform the Contractor, Independent Environmental Checker (IEC)/ Environmental Project Office (ENPO), Agriculture, Fisheries and Conservation Department (AFCD) and in liaison with AFCD investigate any measures needed.

The results of the post-translocation monitoring will be reviewed with reference to findings of the baseline survey and the data from naturally occurring colonies at the recipient site and evaluated against Action and Limit Levels. Evaluation will be based on recorded changes in percentage of partial mortality of the corals. Action and Limit Levels are defined in **Table 4.2.1** below.

Table 4.2.1 Action and Limit Levels for Coral Post-translocation Monitoring

Parameter	Action Level Definition	Limit Level Definition
Mortality	If during Post-translocation Monitoring a 15% increase in the percentage of partial mortality on the corals occurs at more than 20% of the translocated coral colonies that are not recorded on the original corals at the receptor site, then the Action Level is exceeded.	If during the Post-translocation Monitoring a 25% increase in the percentage of partial mortality at more than 20% of the translocated coral colonies occurs that is not recorded at the original corals at the recipient site, then the Limit Level is exceeded.

Post-translocation monitoring results will be evaluated against Action and Limit Levels. Evaluation will be based on recorded changes in percentage of partial mortality of the corals. Action and Limit Levels are defined in **Table 2.1**.

If the defined Action Level or Limit Level for coral monitoring as listed in **Table 4.2.1** is exceeded, the actions as set out in **Table 4.2.2** will be implemented.

Table 4.2.2 Event and Action Plan for Coral Post-translocation Monitoring

Event	Action		
	ET Leader	IEC	Main Contractor
Action Level Exceedance	1. Check monitoring data; 2. Identify the source(s) of impact; 3. Inform the IEC and main contractor of the findings; 4. Increase the monitoring to at least once a month to confirm findings; 5. Liaise with AFCD to investigate any mitigation measures needed; and 6. Propose mitigation measures for consideration.	1. Discuss monitoring with the ET; 2. Review proposals for additional monitoring and any other measures and advise the main contractor accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make the agreement on the measures to be implemented.
Limit Level Exceedance	1. Undertake Steps 1-5 as in the Action Level Exceedance. If further exceedance of Limit Level, propose enhancement measures for consideration.	1. Discuss monitoring with the ET; 2. Review proposals for additional monitoring and any other measures and advise the main contractor accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make the agreement on the measures to be implemented.

4.3. MONITORING RESULTS AND OBSERVATIONS

No Post-translocation Monitoring was performed in the reporting month.

Table 4.3.1 Weather Condition for the Coral Translocation

Date	Condition	Average Underwater Visibility
NIL	- --	--

10 selected translocated coral colonies were monitored at the recipient site as suggested in the Coral Translocation Plan. The area with translocated coral colonies in recipient Site A is shown in **Figure 4.1.** The general health conditions (size, mortality, bleaching and sediment) were recorded and summarized in **Table 4.3.2**.

Table 4.3.2 Size, Mortality, Bleaching and Sediment of 16 Translocated Coral Colonies

Coral #	Species	Size (cm) – Max. Diameter/ Height	Mortality (%)		Bleaching (%)		Sediment (%)	
			Baseline	Dec-21*	Baseline	Dec-21*	Baseline	Dec-21*
T1	*Echinomuricea* sp.	20	**0**	N. A	**0**	N. A	**0**	N. A
T2	*Echinomuricea* sp.	15	**0**	N. A	**0**	N. A	**0**	N. A
T3	*Echinomuricea* sp.	15	**0**	N. A	**0**	N. A	**0**	N. A
T4	*Echinomuricea* sp.	20	**0**	N. A	**0**	N. A	**0**	N. A
T5	*Echinomuricea* sp.	20	**0**	N. A	**0**	N. A	**0**	N. A
T6	*Echinomuricea* sp.	25	**0**	N. A	**0**	N. A	**0**	N. A
T7	*Echinomuricea* sp.	20	**0**	N. A	**0**	N. A	**0**	N. A
T8	*Echinomuricea* sp.	25	**0**	N. A	**0**	N. A	**0**	N. A
T9	*Echinomuricea* sp.	15	**0**	N. A	**0**	N. A	**0**	N. A
T10	*Echinomuricea sp.*	15	**0**	N. A	**0**	N. A	**0**	N. A

Notes: * No Post-translocation Monitoring was performed in the reporting month.

Ten (10) hard coral colonies which grow naturally at the recipient site R3 were also monitored and photos of each coral colony were taken during the post-translocation activities (Photo Plate 2). The general health conditions (Size, Mortality, Bleaching and Sediment) were recorded and summarized in **Table 4.3.3**.

Table 4.3.3 Size, Mortality, Bleaching and Sediment of 10 Natural Coral Colonies

Coral #	Species	Size (cm) – Max. Height	Mortality (%)		Bleaching (%)		Sediment (%)	
			Baseline	Dec-21*	Baseline	Dec-21*	Baseline	Dec-21*
R1	*Echinomuricea* sp.	35	0	N. A	0	N. A	0	N. A
R2	*Echinomuricea* sp.	35	0	N. A	0	N. A	0	N. A
R3	*Echinomuricea* sp.	30	0	N. A	0	N. A	0	N. A
R4	*Echinomuricea* sp.	30	0	N. A	0	N. A	0	N. A
R5	*Echinomuricea* sp.	35	0	N. A	0	N. A	0	N. A
R6	*Echinomuricea* sp.	30	0	N. A	0	N. A	0	N. A
R7	*Echinomuricea* sp.	30	0	N. A	0	N. A	0	N. A
R8	*Echinomuricea* sp.	20	0	N. A	0	N. A	0	N. A
R9	*Echinomuricea* sp.	20	0	N. A	0	N. A	0	N. A
R10	*Echinomuricea sp.*	20	0	N. A	0	N. A	0	N. A

Notes: * No Post-translocation Monitoring was performed in the reporting month.

4.4. DISCUSSION AND CONCLUSION

No Post-translocation Monitoring was performed in the reporting month.

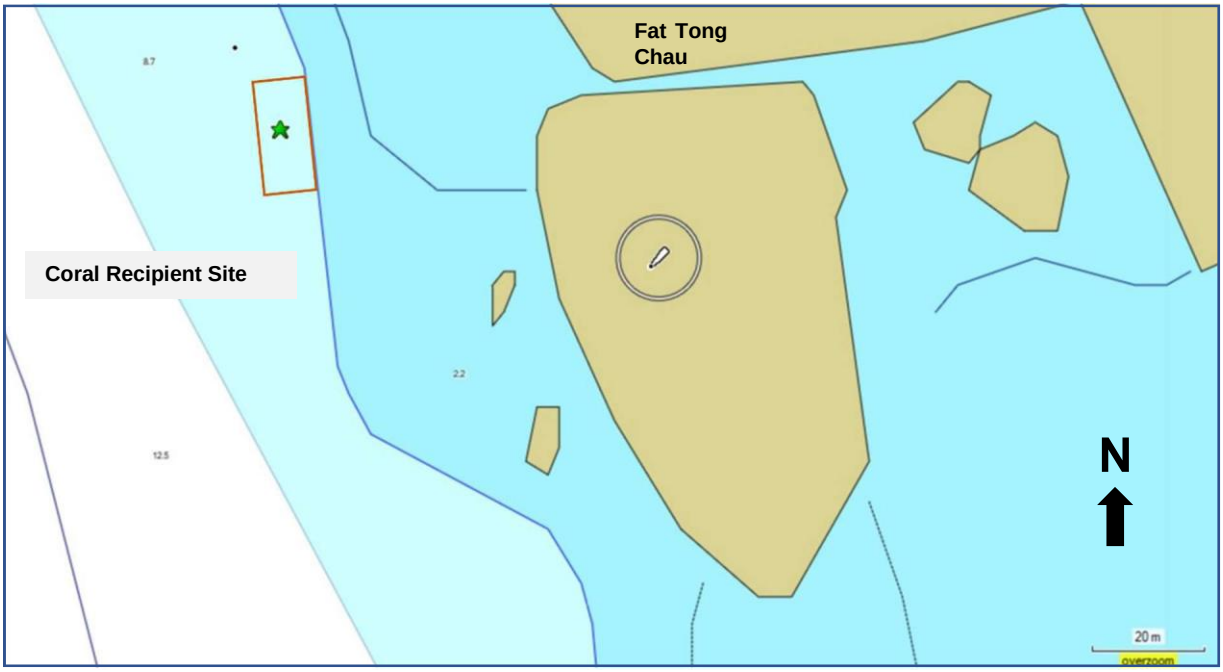


Figure 4.1 Location of Coral Recipient Site

5. WASTE

The waste generated from this Project includes inert construction and demolition (C&D) materials, and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes and recyclable wastes such as plastics and paper/cardboard packaging waste. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are presented in **Table 5.1**.

Table 5.1 Quantities of Waste Generated from the Project during 2021

Department: CEDD
Contract : CV/2020/09 - Construction of Lei Yue Mun Public Landing Facility

協力 - 瑞沃 聯營
Concentric – Hong Kong River Joint Venture

Monthly Summary Waste Flow Table for Year 2021

Month	Quantities of Inert C&D Materials Generated Monthly														Quantities of C&D Wastes Generated Monthly									
	Total Quantity Generated		Broken Concrete (see Note 2)		Reused in the Contract		Reused in other Projects		Disposed as Public Fill		Disposal at Alternative Disposal Ground		Imported Fill		Metals		Paper / Cardboard packaging		Plastics (see Note 3)		Chemical Waste		Others, e.g. general refuse	
	(in '000m³)		(in '000m³)		(in '000m³)		(in '000m³)		(in '000m³)		(in '000m³)		(in '000m³)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m³)	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
Jan	0.02	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	0
Feb	0.02	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	0
Mar	0.02	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.005
Apr	0.02	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.005
May	0.02	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0
Jun	0.02	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0.005	0
Sub-total	0.12	0	0	0	0	0	0	0	0.12	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0.07	0.01
Jul	0.2	0	0	0	0	0	0	0	0.2	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0.005	0
Aug	1.42	0	0	0	0	0	0	0	0.3	0	1.0	0	0.12	0	0	0	0	0	0	0	0	0	0.005	0
Sep	0.3	0	0	0	0	0	0	0	0.3	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0.005	0
Oct	0.2	0	0	0	0	0	0	0	0.2	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0.005	0
Nov	0.2	0	0	0	0	0	0	0	0.2	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0.005	0
Dec	0.2	0	0	0	0	0	0	0	0.2	0	0.0	0	0	0	0	0	0	0	0	0	0.01	0	0.005	0
Total	2.640	0	0	0	0	0	0	0	1.52	0	1.00	0	0.12	0.25	0	0	0	0	0	0	0.02	0	0.10	0.01

Forecast of Total Quantities of C&D Materials to be Generated from the Contract											
Total Quantity Generated	Broken Concrete (see Note 2)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Disposal at Alternative Disposal Ground	Imported Fill	Metals	Paper / Cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m³)
3.8	0	0	0	2.7	1.0	0.12	0.1	0.1	0.07	0.04	0.20

Notes: (1) The waste flow table shall also include C&D materials that are specified in the contract to be imported for use at the Site.
(2) Broken concrete for recycling into aggregates.
(3) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging material.

Architectural Services Department	Form No. D/OI.03/09.004

Contract No. / Works Order No.: - SS J521

Waste Flow Table (for Capital Works Contracts NOT subject to EM 2021 [year]

[to be submitted not later than the 15th of Mar, Jun, Sep & Dec following the reporting Quarter]

(All quantities shall be rounded off to 3 decimal places.)

Quarter ending	Actual Quantities of Inert Construction Waste Generated Quarterly					Actual Quantities of Non-inert Construction Waste Generated Quarterly				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken Concrete (see Note 3)	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed of as Public Fill	(f) Metals	(g) Paper/ cardboard packaging	(h) Plastics (see Note 2)	(i) Chemical Waste	(j) Others, e.g. general refuse disposed of at Landfill
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000m^3)
Feb	0.013	0.000	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.013
May	0.143	0.000	0.000	0.000	0.143	5.160	0.000	0.000	0.000	0.000
June	0.086	0.000	0.000	0.000	0.086	0.000	0.000	0.000	0.000	0.000
July	0.041	0.000	0.000	0.000	0.041	0.000	0.000	0.000	0.000	0.000
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sep	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nov	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dec	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.283	0.000	0.000	0.000	0.283	5.160	0.000	0.000	0.000	0.013

Notes:

(1) The waste flow table shall also include construction waste that are specified in the Contract to be imported for use at the site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(3) Broken concrete for recycling into aggregates.
(4) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.

6. SUMMARY OF MONITORING EXCEEDANCE, COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTIONS

No noise-related exceedance was recorded in the reporting period.

Water monitoring exceedances were record in reporting period and the follow-up would be present in the next monthly EM&A report.

No notification of summons and prosecution was received in the reporting period.

Statistics on complaints and regulatory compliance are summarized in **Appendix J**.

7. EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting period, site inspections were carried out on 2, 9, 17, 23 and 30 December 2021. A joint site inspection with IEC was carried out on 9 December 2021.

Environmental deficiencies were observed during weekly site inspection. Key observations during the site inspections and during the reporting period are summarized in **Table 7.1**.

Table 7.1 Site Observations

Date	Environmental Observations	Follow-up Status
Follow-up action of last month site observation(s)		
25 Nov 21	1. At viewing platform, mitigation measures should be well-implemented for silt curtain.	1. Rectified.
Site observation(s) in reporting month		
2 Dec 21	1. No observation.	1. N.A
9 Dec 21	1. At A and B site, NRMM label color faded out. 2. At A and B site, stagnant water on drip tray should be cleaned up.	1. Rectified. 2. Rectified.
17 Dec 21	1. No observation.	1. N.A
23 Dec 21	1. Mitigation measures should be well-implemented for the tree T7 at viewing platform. 2. Sewage leakage was observed at landing facility.	1. Rectified. 2. Rectified.
30 Dec 21	1. Chemical containers if empty should be removed, if not, should be stored properly with a drip tray.	1. Follow-up action would be reported in the following reporting month.

According to the EIA Study Report, Environmental Permit, contract documents and EM&A Manual, the mitigation measures detailed in the documents should be implemented as much as practical during the reporting period. An updated Implementation Status of Environmental Mitigation Measures (EMIS) is provided in **Appendix B**.

8. FUTURE KEY ISSUES

Works to be undertaken in the next reporting month are:

Works Description	Location
Contract No. CV/2020/09	
610mm Dia. pipe piling works at landing facility	Landing Facility
Pre-bored socketed H pile at landing facility	Landing Facility
Infill grouting of 610mm dia. pipe piles	Landing Facility
Infill grouting of pre-bored socketed H pile	Landing Facility
Rock excavation at landing facility	Landing Facility
Temporary working platform erection for pre-bored socketed H piles at breakwater area	Breakwater Construction Area
Installation of precast seawall & RC pavement at viewing platform	Viewing Platform
Construction of skin wall and R.C paving	Lookout Point
Contract No. SS J521	
Concrete work	Draw pit
Excavation	Planter 1
Construct blinding layer	Planter 1
Rebar fixing	Planter 1
Formwork	Precast staircase
Excavation Backfill the existing soil	UG Drainage System UG cable ducting (meter room) Draw pit

The major environmental impacts brought by the above construction works will include:

- Construction dust and noise generation from excavation and construction works
- Waste generation from construction activities
- Impact on water quality from marine construction works and inland construction works

The key environmental mitigation measures for the Project in the coming reporting period associated with the above construction works will include:

- Dust suppression by regular wetting and water spraying for construction works
- Reduction of noise from equipment and machinery on-site
- Sorting and storage of general refuse and construction waste
- The dredging rate shall not exceed 100 m^3 per hour with a maximum working period of 12 hours per day throughout the construction phase and operation phase.
- Silt curtains should be deployed enclosing the dredging operation. Regular inspection on the silt curtain on the silt curtain condition by the contractor should be carried out.

Referring to EM&A Manual Section 4.6.1.1, the impact noise and water quality monitoring should be carried out at all the designated monitoring stations when there are project-related construction activities undertaken within a radius of 300m from the monitoring stations.

9. CONCLUSIONS AND RECOMMENDATIONS

This is the 8th Monthly EM&A Report for the Project which summarizes the key findings of the EM&A programme during the reporting period from 1 December to 31 December 2021, in accordance with the EM&A Manual and the requirement under EP-564/2018.

No noise-related exceedance was recorded in the reporting period.

Water monitoring exceedances were record in reporting period and the follow-up would be present in the next monthly EM&A report.

Weekly environmental site inspection was conducted during the reporting period. No major deficiency was observed during site inspection. The environmental performance of the project was therefore considered satisfactory.

No environmental complaint was received in the reporting period.

No notification of summons or prosecution was received since commencement of the Contract.

Agreed with the EIA prediction in Section 14.2.4.4, with the adoption of good site practice, quiet PME and noise barriers/enclosure, the noise levels at all the representative NSRs complied with the EIAO-TM noise criteria. The comparison between the EM&A data in the reporting month and the most updated noise level prediction as presented in the Noise Mitigation Plan (NMP) is presented in **Table 9.1**.

Table 9.1 Comparison between the EM&A Data in the Reporting Month and the Updated Noise Level Predictions

EIA Noise Assessment Point (NAP)	Prediction [dB(A)]	EM&A Monitoring Station	Noise Levels [db(A)]
HPRC V1	62-72	NM1	62.9 - 67.5
HPRE 75B*	55-75	NM2-A	60.8 - 61.4
LYMP	70	NM3	62.3 - 65.7
HPRE 21C	67-75	NM4	63.9 - 67.9

*NM2-A is located between NAPs HPRE 75B and HPRE 81, with lack of data in the NMP, the EIA prediction was used instead.

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

Appendix A
Master Programme

Appendix B
Summary of Implementation Status of Environmental Mitigation

Appendix C
Impact Monitoring Schedule of this and next Reporting Period

Appendix D
Event/Action Plan for Noise Exceedance

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

Appendix E
Noise Monitoring Equipment Calibration Certificate

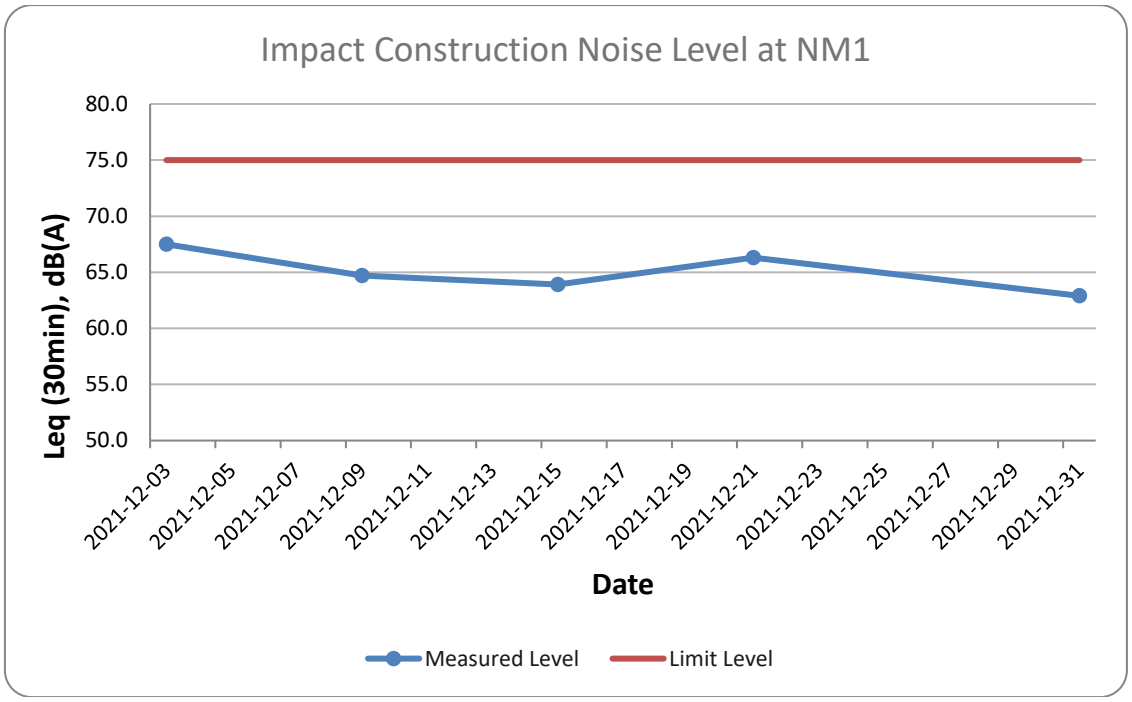
Appendix F
Noise Monitoring Results

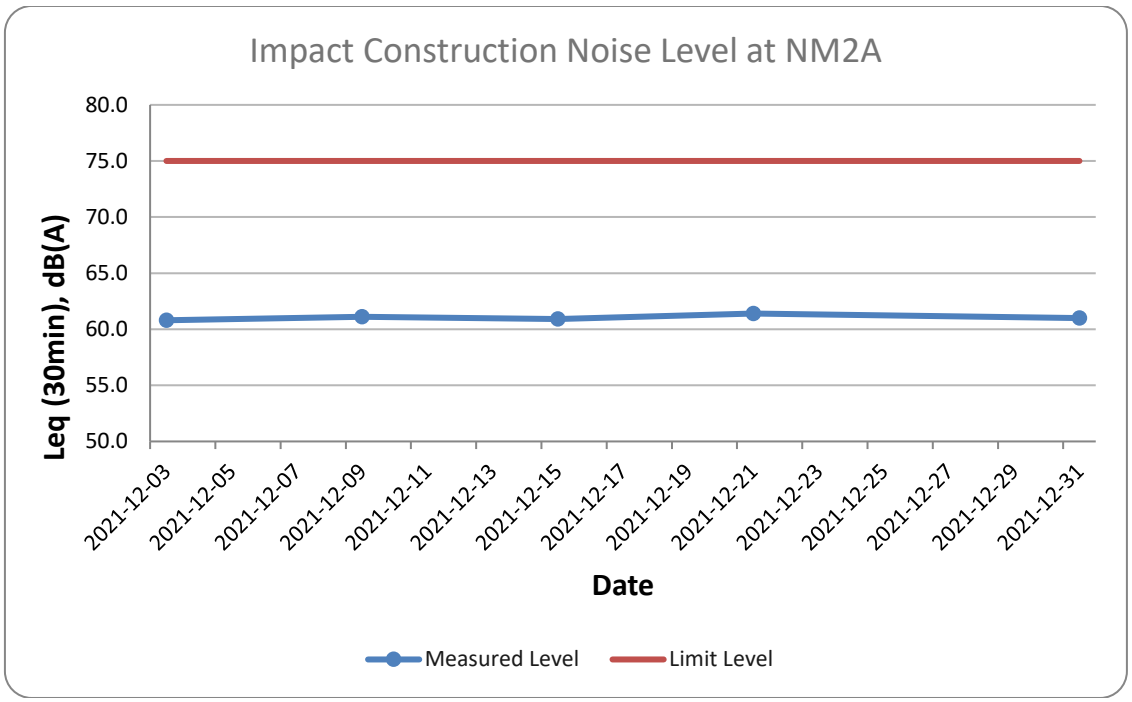
Location NM1 - Village house in Lei Yue Mun Hoi Pong Road Central					
Date	Time	Weather	Unit: dB (A) (30-mins)		
			Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
2021-12-03	13:44	Sunny	67.5	70.3	64.2
2021-12-09	9:40	Sunny	64.7	67.0	62.0
2021-12-15	13:44	Cloudy	63.9	67.2	53.9
2021-12-21	13:47	Fine	66.3	68.7	60.6
2021-12-31	13:43	Sunny	62.9	65.8	55.4

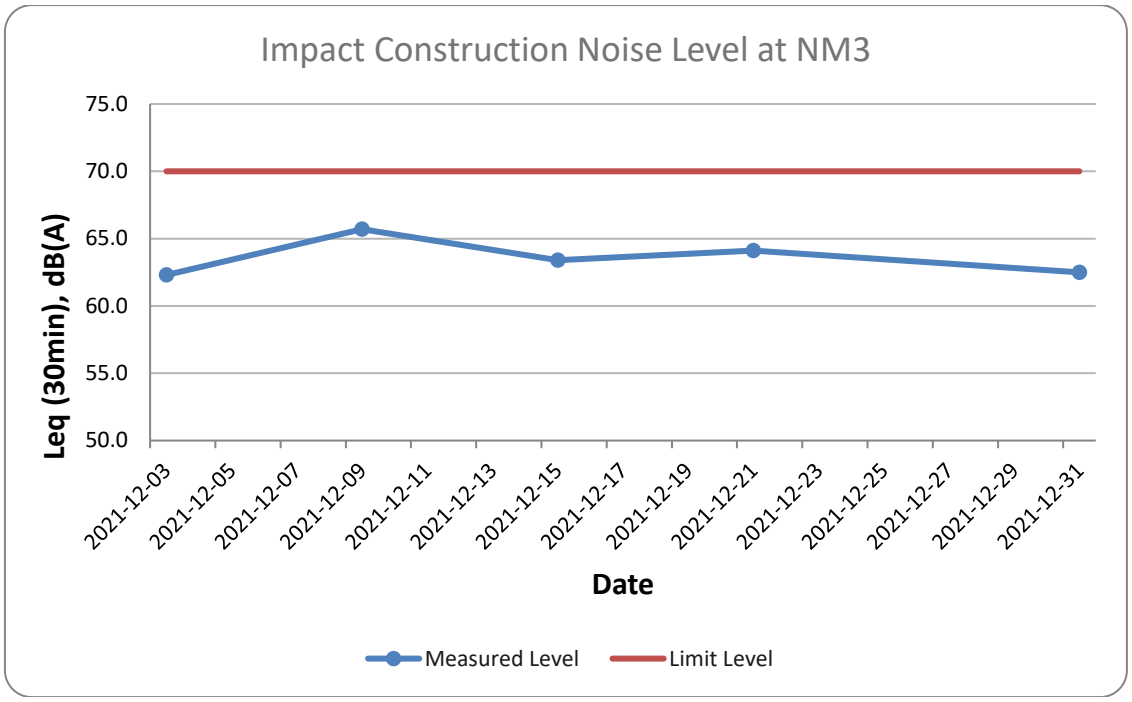
Location NM2A - No.79B, Lei Yue Mun Hoi Pong Road East					
Date	Time	Weather	Unit: dB (A) (30-mins)		
			Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
2021-12-03	14:57	Sunny	60.8	62.7	58.0
2021-12-09	10:53	Sunny	61.1	63.0	58.1
2021-12-15	14:55	Cloudy	60.9	62.1	59.7
2021-12-21	15:01	Fine	61.4	63.3	59.3
2021-12-31	14:57	Sunny	61.0	62.2	59.5

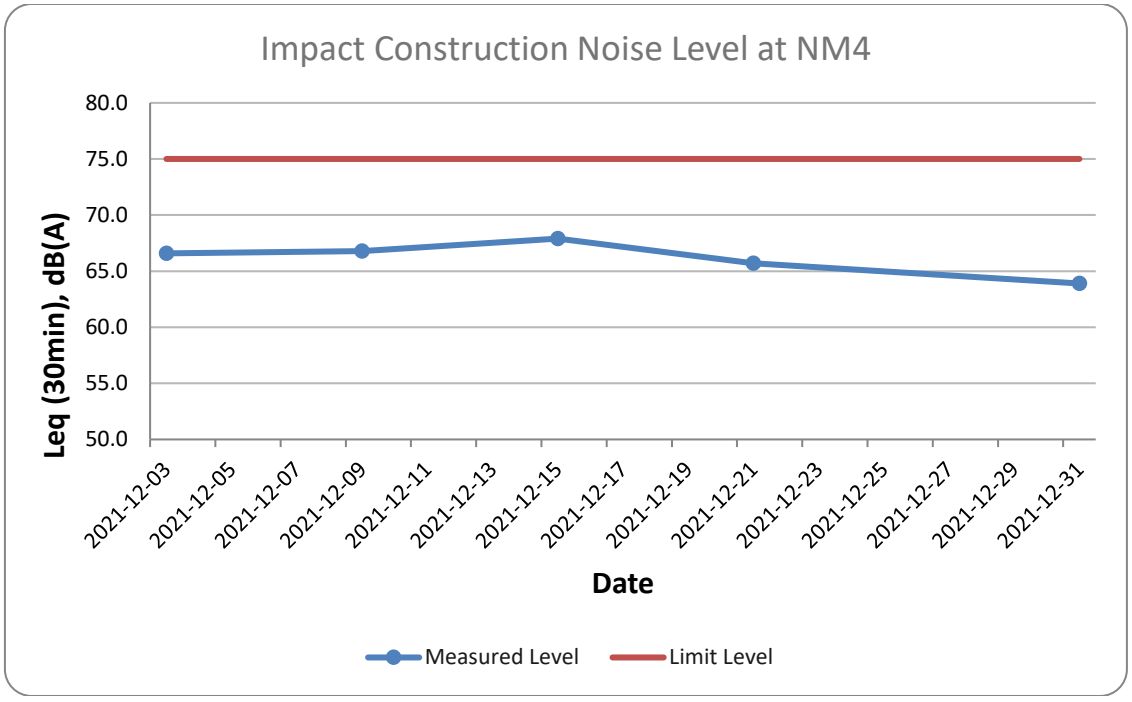
Location NM3 - Jockey Club Lei Yue Mun Plus					
Date	Time	Weather	Unit: dB (A) (30-mins)		
			Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
2021-12-03	13:07	Sunny	62.3	65.5	59.9
2021-12-09	9:03	Sunny	65.7	67.7	64.7
2021-12-15	13:08	Cloudy	63.4	65.0	60.8
2021-12-21	13:12	Fine	64.1	65.9	61.0
2021-12-31	13:07	Sunny	62.5	64.3	60.9

Location NM4 - No. 21C, Lei Yue Mun Hoi Pong Road East					
Date	Time	Weather	Unit: dB (A) (30-mins)		
			Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
2021-12-03	14:21	Sunny	66.6	70.0	63.6
2021-12-09	10:17	Sunny	66.8	70.0	65.3
2021-12-15	14:19	Cloudy	67.9	71.6	62.0
2021-12-21	14:22	Fine	65.7	69.1	60.9
2021-12-31	14:20	Sunny	63.9	65.8	61.3









Appendix G
Event/Action Plan for Water Quality Exceedance

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plants, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. (The above actions should be taken within 1 working day after the exceedance is identified) 7. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented. 3. Assess the effectiveness of the implemented mitigation measures 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plants and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)
Action level being exceeded by more than one consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plants, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. (The above actions should be taken within 1 working day after the exceedance is identified) 9. Repeat measurement on next working day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plants and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plants, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level. 8. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures. 5. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plants and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and Propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures
Limit level being exceeded by more than one consecutive sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plants, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for 2 consecutive days. 8. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures. 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the dredging and sand filling work until no exceedance of Limit level. 6. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plants and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and Propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by the ER, to slow down or stop all or part of the dredging and sand filling work.

Appendix H
Water Quality Monitoring Equipment Calibration Certificate

Appendix I
Water Quality Monitoring Results

Appendix J
Complaint Log

Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
December 2021	0	0	N/A

Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Details
December 2021	0	0	N/A

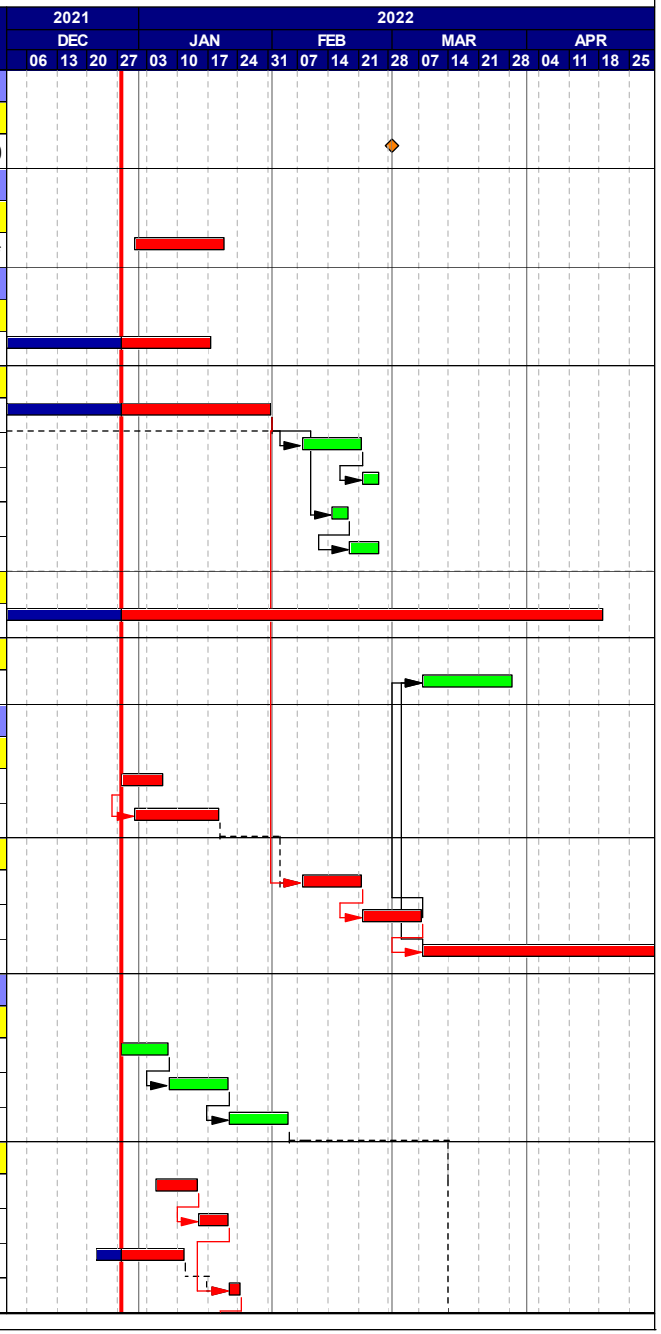
Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Details
December 2021	0	0	N/A

Appendix A
Master Programme

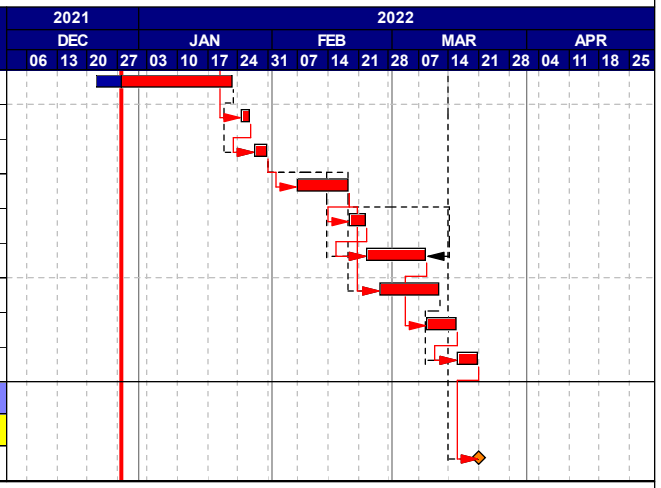
CEDD Contract No. CV/2020/09
Construction of Lei Yue Mun Public Landing Facility

Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float
Key Dates					
Completion Dates					
K2-1020	Section 3 of the Works	0		28FEB22 *	0
Bill No. 1 - Preliminaries					
Site Establishment					
B1-2200	Erection of Project Signboard	21	31DEC21	20JAN22	0 *
Bill No. 2 - Landing Facility & Seawall					
Pipe Pile Wall					
B2-3020	Installation & Grouting of Pipe Piles (86 Nos.)	200	02JUL21 A	17JAN22	-16d
Socketted Steel H-piles					
B2-4020	Construction of Main Piles (34 Nos.)	84	09NOV21 A	31JAN22	-45d
B2-4100	Setup of Pile Testing Equipment	14	08FEB22	21FEB22	105d
B2-4110	Pile Load Test (1 No.)	4	22FEB22	25FEB22	105d
B2-4200	Mobilization of Drilling Rig	4	15FEB22	18FEB22	23d
B2-4210	Post-construction Proof Drilling (1 No.)	7	19FEB22	25FEB22	23d
Dredging and Sloping Seawall					
B2-5100	Rock Excavation (Land-based)	160	10NOV21 A	18APR22	-29d
Linking Structure					
B2-6500	Construction of Main Piles (4 Nos.)	21	08MAR22	28MAR22	74d
Bill No. 3 - Breakwater					
Temporary Working Platform					
B3-1200	Installation of Temporary Piles	10	28DEC21	06JAN22	-33d
B3-1210	Installation of Temporary Working Platform	28	31DEC21 A	19JAN22	-33d
Socketted Steel H-piles					
B3-3000	Mobilization of Piling Plant	14	08FEB22	21FEB22	-45d
B3-3010	Construction of Preliminary Pile	14	22FEB22	07MAR22	-45d
B3-3020	Construction of Main Piles (34 Nos.)	140	08MAR22	25JUL22	-45d
Bill No. 4 - Lookout Point and Viewing Platform					
Improvement Works at Lookout Point					
B4-1290	Excavation and Placing of Concrete Blinding	11	28DEC21	07JAN22	24d
B4-1300	Casting of Skin Wall	14	08JAN22	21JAN22	24d
B4-1400	Laying of Concrete Paving	14	22JAN22	04FEB22	24d
Improvement Works at Viewing Platform					
B4-2200	Excavation to Formation Level	10	05JAN22	14JAN22	-20d
B4-2210	Placing of Levelling Stones	7	15JAN22	21JAN22	-20d
B4-2219	Precasting of Seawall Blocks	21	22DEC21 A	11JAN22	-10d
B4-2220	Installation of Seawall Blocks	3	22JAN22	24JAN22	-20d



CEDD Contract No. CV/2020/09
Construction of Lei Yue Mun Public Landing Facility

Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float
B4-2221	Precasting of Concrete Backing w/ Granite Facing	32	22DEC21 A	22JAN22	-15d
B4-2230	Placing of Concrete Blinding	2	25JAN22	26JAN22	-20d
B4-2240	Installation of Concrete Backing	3	28JAN22	30JAN22	-20d
B4-2250	Cast in-situ Concrete Coping	12	07FEB22	18FEB22	-20d
B4-2260	Installation of Geotextile Filter	4	19FEB22	22FEB22	-20d
B4-2300	Backfilling behind Concrete Backing & Coping	14	23FEB22	08MAR22	-20d
B4-2400	Installation of Enhanced Seawall Panels	14	26FEB22	11MAR22	-16d
B4-2500	Laying of Concrete Paving	7	09MAR22	15MAR22	-20d
B4-2600	Vacation of Site Area	5	16MAR22	20MAR22	-20d
Completion and Handover					
Sectional Completion					
C1-1020	Completion of Section 3 of the Works	0		20MAR22	-20d



Start date	15DEC20
Must finish date	30APR23
© Primavera Systems, Inc.	

CONSTRUCTION PROGRAMME

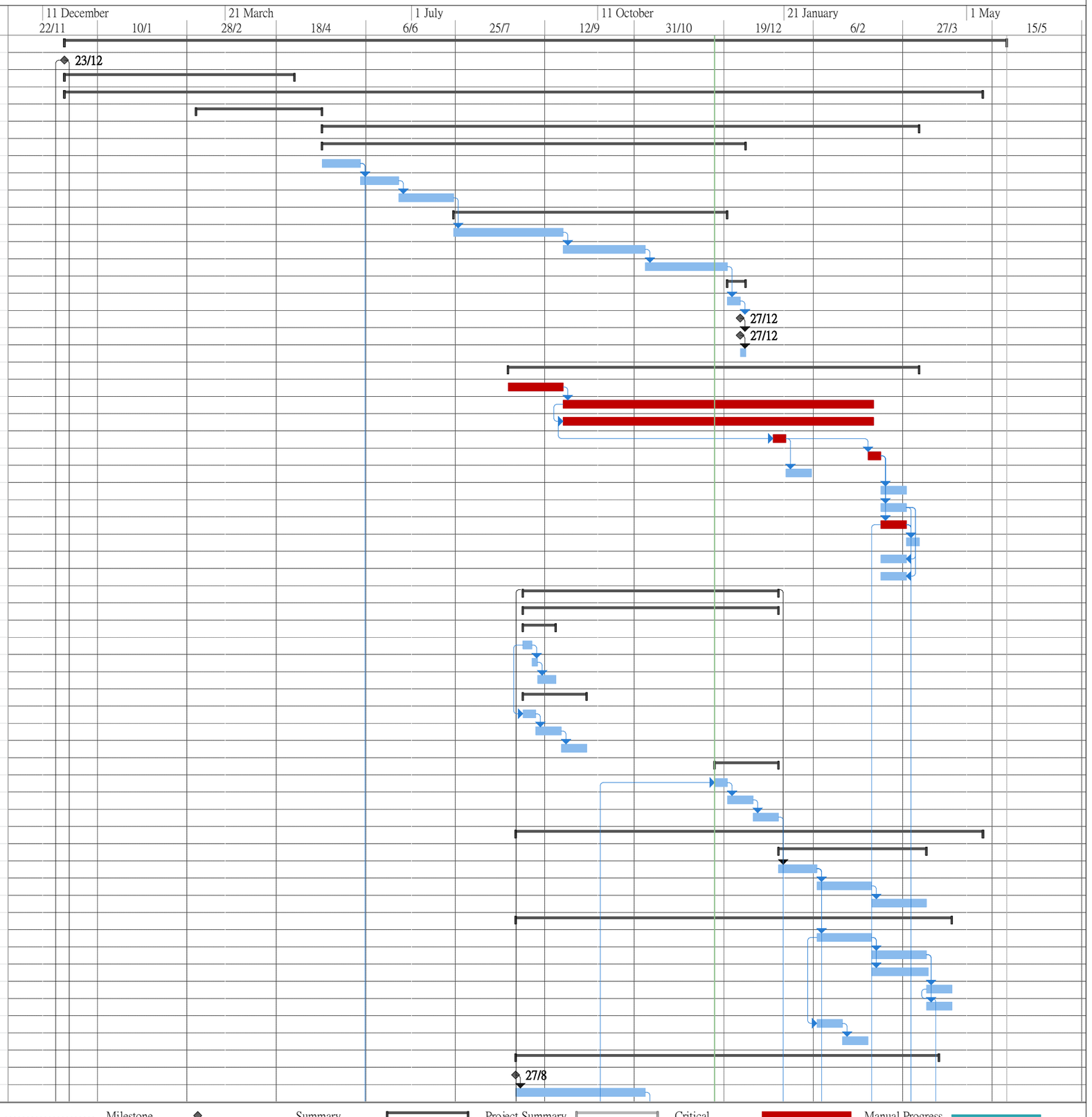
- Early bar
- Progress bar
- Critical bar
- Start milestone point
- Finish milestone point

Date	Revision	Checked	Approved
28DEC21		ZYW	TSL

MILESTONE BUILDER ENGINEERING LTD.
Contract : SS J521 - Lei Yue Mun Waterfront Enhancement Project

Master Programme V10r1 (1-Dec-21)

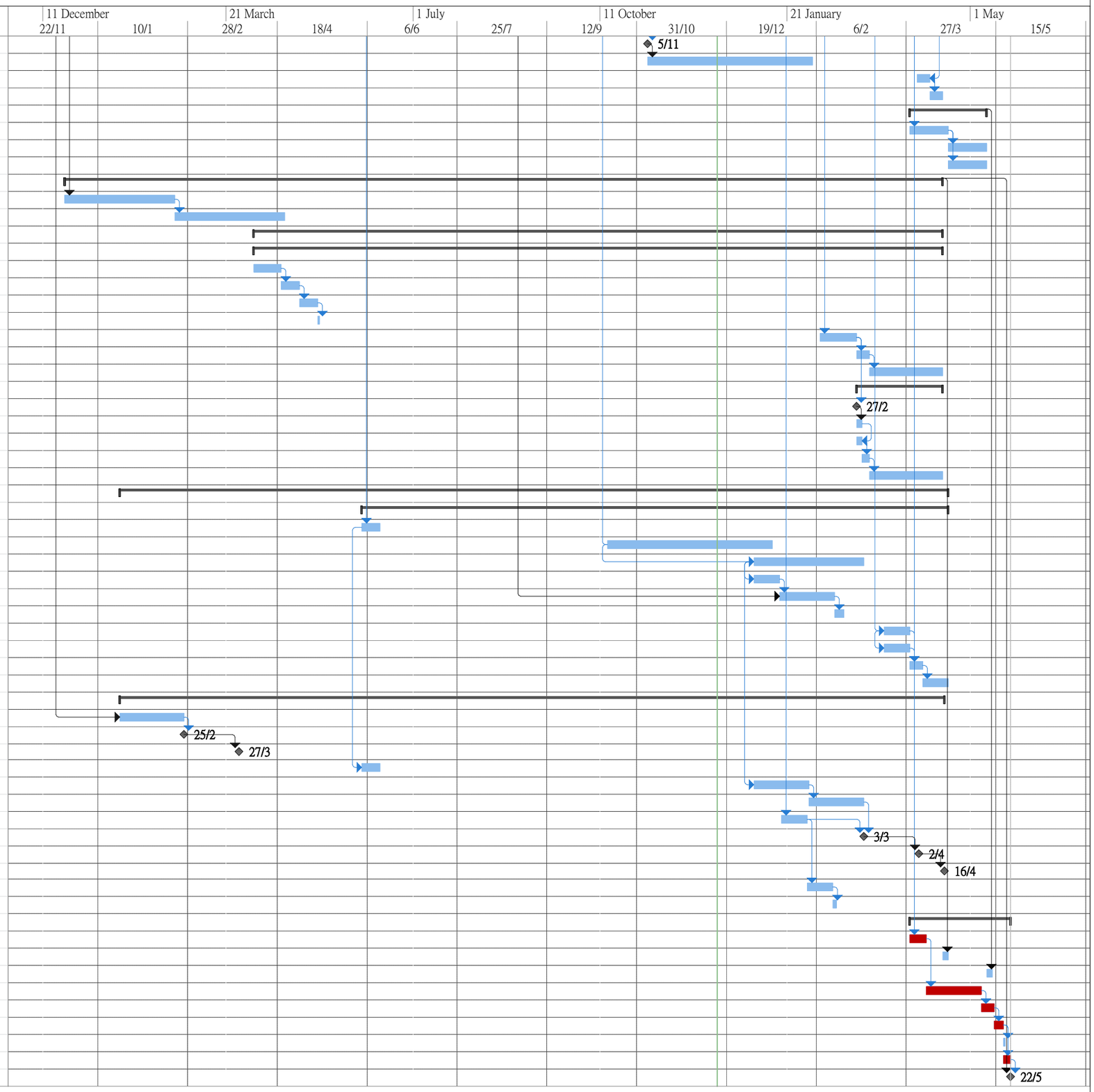
ID	Task Name	Duration	Start	Finish
1	**CONTRACT PERIOD**	**516 days**	**23/12/2020**	**22/5/2022**
2	Contract commencement	0 days	23/12/2020	23/12/2020
3	**PRELIMINARIES**	**126 days**	**23/12/2020**	**27/4/2021**
27	**SITE WORKS**	**503 days**	**23/12/2020**	**9/5/2022**
28	**Demolition**	**69 days**	**5/3/2021**	**12/5/2021**
35	**Viewing platform structural works**	**327 days**	**13/5/2021**	**4/4/2022**
36	**Concrete works**	**232 days**	**13/5/2021**	**30/12/2021**
37	Excavation (open cut)	21 days	13/5/2021	2/6/2021
38	Compaction and inspection	21 days	3/6/2021	23/6/2021
39	Blinding and inspection	30 days	24/6/2021	23/7/2021
40	**In-situ concreting / rebar / formwork (with inspection)**	**150 days**	**24/7/2021**	**20/12/2021**
41	Footing RF1 & RF2 (4 stages)	60 days	24/7/2021	21/9/2021
42	Bearing wall	45 days	22/9/2021	5/11/2021
43	Slab and bridge	45 days	6/11/2021	20/12/2021
44	**Precast concrete staircase**	**10 days**	**21/12/2021**	**30/12/2021**
45	Casting and inspection	7 days	21/12/2021	27/12/2021
46	IIA inspection (not required)	0 days	27/12/2021	27/12/2021
47	Delivery to site (not required)	0 days	27/12/2021	27/12/2021
48	Site installation	3 days	28/12/2021	30/12/2021
49	**Steel and metal works**	**225 days**	**23/8/2021**	**4/4/2022**
50	Materials testing	30 days	23/8/2021	21/9/2021
51	Off site pre-fabrication and inspection	170 days	22/9/2021	10/3/2022
52	IIA inspection	170 days	22/9/2021	10/3/2022
53	Delivery to site - 1st batch	7 days	15/1/2022	21/1/2022
54	Delivery to site - 2nd batch	7 days	8/3/2022	14/3/2022
55	Archhitectural features Site installation - 1st batch	14 days	22/1/2022	4/2/2022
56	Archhitectural features Site installation - 2nd batch	14 days	15/3/2022	28/3/2022
57	Type 2 Metal railing on pavement	14 days	15/3/2022	28/3/2022
58	Metal railing on viewing platform	14 days	15/3/2022	28/3/2022
59	On-site weld testing	7 days	29/3/2022	4/4/2022
60	Aluminum fins	14 days	15/3/2022	28/3/2022
61	Peforated sheet	14 days	15/3/2022	28/3/2022
62	**New planter structural works**	**140 days**	**31/8/2021**	**17/1/2022**
63	**Concrete works**	**140 days**	**31/8/2021**	**17/1/2022**
64	**Planter 3 & 4**	**18 days**	**31/8/2021**	**17/9/2021**
65	Excavation	5 days	31/8/2021	4/9/2021
66	Blinding and inspection	3 days	5/9/2021	7/9/2021
67	Concreting / rebar / formwork (with inspection)	10 days	8/9/2021	17/9/2021
68	**Planter 2**	**35 days**	**31/8/2021**	**4/10/2021**
69	Excavation	7 days	31/8/2021	6/9/2021
70	Blinding and inspection	14 days	7/9/2021	20/9/2021
71	Concreting / rebar / formwork (with inspection)	14 days	21/9/2021	4/10/2021
72	**Planter 1**	**35 days**	**14/12/2021**	**17/1/2022**
73	Excavation	7 days	14/12/2021	20/12/2021
74	Blinding and inspection	14 days	21/12/2021	3/1/2022
75	Concreting / rebar / formwork (with inspection)	14 days	4/1/2022	17/1/2022
76	**Finishes and misc**	**256 days**	**27/8/2021**	**9/5/2022**
77	**New Planter Finishing**	**81 days**	**18/1/2022**	**8/4/2022**
78	Floor and wall plastering	21 days	18/1/2022	7/2/2022
79	Washed granolithic finishes	30 days	8/2/2022	9/3/2022
80	Artificial granite finishes	30 days	10/3/2022	8/4/2022
81	**Existing rest garden Finishing**	**239 days**	**27/8/2021**	**22/4/2022**
82	Floor plastering	30 days	8/2/2022	9/3/2022
83	Washed granolithic finishes	30 days	10/3/2022	8/4/2022
84	Artificial granite finishes	31 days	10/3/2022	9/4/2022
85	Safety mat	14 days	9/4/2022	22/4/2022
86	New pergola roofing	14 days	9/4/2022	22/4/2022
87	Waterproofing to existing meter room	14 days	8/2/2022	21/2/2022
88	Meter room Wall plastering	14 days	22/2/2022	7/3/2022
89	**Fitness equipment**	**232 days**	**27/8/2021**	**15/4/2022**
90	Invite quotation	0 days	27/8/2021	27/8/2021
91	Selection / confirmation of quotation	71 days	27/8/2021	5/11/2021



Project: SSJ521- LeiYuMun const p
Date: 14/12/2021

Critical Split | Task | Split | Milestone | Summary | Project Summary | Critical | Manual Progress

ID	Task Name	Duration	Start	Finish
92	Subcontract awarded	0 days	5/11/2021	5/11/2021
93	Manufacture and delivery of materials	90 days	6/11/2021	3/2/2022
94	Concrete footing	7 days	2/4/2022	9/4/2022
95	Installation	7 days	9/4/2022	15/4/2022
96	**Viewing platform Finishing**	**42 days**	**29/3/2022**	**9/5/2022**
97	Floor & wall plastering	21 days	29/3/2022	18/4/2022
98	Washed granolithic finishes	21 days	19/4/2022	9/5/2022
99	Artificial granite finishes	21 days	19/4/2022	9/5/2022
100	**Landscape works**	**479 days**	**23/12/2020**	**15/4/2022**
101	Tree plan material and sampling submission/ approval	60 days	23/12/2020	20/2/2021
102	Tree & shrub selection	60 days	21/2/2021	21/4/2021
103	**Site works**	**376 days**	**5/4/2021**	**15/4/2022**
104	**Inside site boundary**	**376 days**	**5/4/2021**	**15/4/2022**
105	Coordination with LCSD	15 days	5/4/2021	19/4/2021
106	Root Prunning	10 days	20/4/2021	29/4/2021
107	Crown Prunning	10 days	30/4/2021	9/5/2021
108	Lifting of trees and transit to outside site boundary	1 day	10/5/2021	10/5/2021
109	Drain Laying	20 days	8/2/2022	27/2/2022
110	Import soil and backfill	7 days	28/2/2022	6/3/2022
111	Shrub & groundcover planting	40 days	7/3/2022	15/4/2022
112	**Outside site boundary**	**47 days**	**27/2/2022**	**15/4/2022**
113	Take possession of LCSD planters	0 days	27/2/2022	27/2/2022
114	Bamboo stakes and protection	3 days	28/2/2022	2/3/2022
115	Temporary fence off of existing planter	3 days	28/2/2022	2/3/2022
116	Remove existing shrubs	4 days	3/3/2022	6/3/2022
117	Shrub & groundcover planting	40 days	7/3/2022	15/4/2022
118	**BS installation**	**452 days**	**22/1/2021**	**18/4/2022**
119	**Electrical Installation**	**320 days**	**3/6/2021**	**18/4/2022**
120	TD existing lamp post	10 days	3/6/2021	12/6/2021
121	Construct u/g drain pipes and manhole	90 days	15/10/2021	12/1/2022
122	Construct u/g cable duct and draw pit	60 days	3/1/2022	3/3/2022
123	Construct footing for tubine / lamp post	14 days	3/1/2022	16/1/2022
124	Conduit & wiring	30 days	17/1/2022	15/2/2022
125	Install the relocated lamp post	5 days	16/2/2022	20/2/2022
126	Light fitting installation	14 days	15/3/2022	28/3/2022
127	Install wind turbine	14 days	15/3/2022	28/3/2022
128	Earting and lightning	7 days	29/3/2022	4/4/2022
129	T&C	14 days	5/4/2022	18/4/2022
130	**Plumbing installation**	**450 days**	**22/1/2021**	**16/4/2022**
131	Submission/ approval of plumbing materials	35 days	22/1/2021	25/2/2021
132	Submit WWO46 Part 1 & 2	0 days	25/2/2021	25/2/2021
133	Receive WWO46 Part 3 from WSD (30 days after Part1/2 submitted)	0 days	27/3/2021	27/3/2021
134	TD existing plumbing facilities	10 days	3/6/2021	12/6/2021
135	Trenching for water pipe laying	30 days	3/1/2022	1/2/2022
136	Water pipe laying, u/g and above ground	30 days	2/2/2022	3/3/2022
137	Irrigation point installation	14 days	18/1/2022	31/1/2022
138	Submit WWO46 Part 4 (u/g and above ground)	0 days	3/3/2022	3/3/2022
139	WSD inspection (30 days from Part 4 submitted)	0 days	2/4/2022	2/4/2022
140	Receive WWO46 Part 5 from WSD (14 days after satisfactory inspec	0 days	16/4/2022	16/4/2022
141	T&C	14 days	1/2/2022	14/2/2022
142	Connection to existing water services	2 days	15/2/2022	16/2/2022
143	**COMPLETION OF WORKS**	**55 days**	**29/3/2022**	**22/5/2022**
144	Removal of metal hoarding	9 days	29/3/2022	6/4/2022
145	General site cleaning - within & outside site boundary	3 days	16/4/2022	18/4/2022
146	General site cleaning - oyster beach	3 days	10/5/2022	12/5/2022
147	SCCU inspection / approval	30 days	7/4/2022	6/5/2022
148	Handover inspection with the LCSD	7 days	7/5/2022	13/5/2022
149	Final cleaning & defect rectification	5 days	14/5/2022	18/5/2022
150	Removal of tree protection	1 day	19/5/2022	19/5/2022
151	Removal of water barrier	4 days	19/5/2022	22/5/2022
152	Handover to the LCSD	0 days	22/5/2022	22/5/2022



Project: SSJ521- LeiYuMun const p
Date: 14/12/2021

Critical Split · Task · Split · Milestone · Summary · Project Summary · Critical · Manual Progress

Appendix B
Summary of Implementation Status of Environmental Mitigation

Appendix B IMPLEMENTATION SCHEDULE OF THE PROPOSED MITIGATION MEASURES

Table B.1 Implementation Schedule for Air Quality Mitigation Measures

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S3.7.1.1	Sufficient dust suppression measures as stipulated under the Air Pollution Control (Construction Dust) Regulation (Cap 311R) and good site practices should be properly implemented in order to minimise the construction dust generated. The measures include the followings: • Use of regular watering, to reduce dust emissions from exposed site surfaces and unpaved roads particularly during dry weather; • Use of frequent watering of particular dusty construction areas close to ASRs; • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • Open temporary stockpiles should be avoided or covered. Prevent placing dusty material storage plies near ASRs; • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; • Establishment and use of vehicle wheel and body washing facilities at the exit point of the site; • Imposition of speed control for vehicles on unpaved site roads. 8 km/hr is the recommended limit; • Routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.	Works sites / throughout the construction period	Contractor		√		♦ Air Pollution Control (Amendment) Ordinance 2013 (APCO) (Cap 311) ♦ Technical Memorandum on the Environmental Impact Assessment Process (EIAO-TM) ♦ Air Pollution Control (Construction Dust) Regulation (Cap 311R) ♦ Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation.

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S3.7.1.2	Guidelines stipulated in EPD's Recommended Pollution Control Clauses for Construction Contracts should also be incorporated in the contract documents to abate dust impacts. The clauses include: • The Contractor shall observe and comply with the Air Pollution Control Ordinance and its subsidiary regulations, particularly the Air Pollution Control (Open Burning) Regulation, Air Pollution Control (Construction Dust) Regulation and Air Pollution (Smoke) Regulation. • The Contractor shall undertake at all times to prevent dust nuisance and smoke as a result of the construction activities. • The Contractor shall ensure that there will be adequate water supply / storage for dust suppression. • The Contractor shall devise, arrange methods of working and carrying out the works in such a manner so as to minimise dust impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented. • Before the commencement of any work, the Contractor may require to submit the methods of working, plant, equipment and air pollution control system to be used on the site for the Engineer inspection and approval.	Works sites / throughout the construction period	Contractor		√		♦ EPD's Recommended Pollution Control Clauses for Construction Contracts

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S3.7.3.1	Loading of the dredged sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. Any dredged sediment should be stored in enclosed tanks or properly covered as far as practicable to minimise its exposed area during its temporary storage and should be placed as far away from the identified ASRs as practically possible. Dredging rate should be controlled carefully. The dredged sediment will be delivered off-site for disposal every day to avoid storing at the barge overnight. Dredged sediment placed on marine vessel for disposal should also be properly covered during transportation. Dredging activities should be conducted during non-summer season as far as possible.	Works sites / during dredging, handling of dredged materials	Contractor		√	√	♦ APCO ♦ EIAO-TM ♦ Air Pollution Control (Construction Dust) Regulation (Cap 311R) ♦ Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation.

* Des - Design, C - Construction, O – Operation

Table B.2 Implementation Schedule for Noise Mitigation Measures

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S4.8.1.3	Good Site Practice • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • Mobile plant, if any, should be sited as far from NSRs as possible; • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; and • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.	Work sites /during construction stage	Contractor		√		♦ Noise Control Ordinance (NCO) ♦ EIAO-TM ♦ Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM) ♦ Recommended Pollution Control Clauses for Construction Contracts
S4.8.1.4	The "Recommended Pollution Control Clauses for Construction Contracts" published by the EPD should be adopted in the Contract Specification for the Contractors to follow and implement relevant measures and good site practices in minimising noise impact.	Works sites / during construction stage	Contractor		√		Ditto

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S4.8.1.5, S4.8.1.6 & Table 4.5	Quiet Powered Mechanical Equipment 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.	Work sites /during construction stage	Contractor		√		Ditto
S4.8.1.7 & S4.8.1.8	Noise Barriers and Noise Enclosure The Contractor will be responsible for design of the movable noise barrier with due consideration given to the size of the PME and the requirement of intercepting the line of sight between the NSRs and PME. The movable noise barrier should have a minimum surface density of 10 kg/m^2 and it should have no openings or gaps. Portable noise enclosure should be used, as far as practicable, to mitigate the noise impacts arising from the use of handheld breaker, air compressor, compactor (vibratory) and drill/grinder, hand-held electric at some work areas (i.e. works areas LP3, LP4, LP5 and ST) where locate very close to the NSRs.	Work sites /during construction stage	Contractor		√		Ditto

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S4.8.1.10	The streetscape improvement works should not be carried out within 10 m from Jockey Club Lei Yue Mun Plus (LYMP) during the time when LYMP is used for any noise sensitive purposes, such as holding courses or workshops. In addition, the beautification works at work areas LP1 should not be conducted during examination period. The Contractor should liaise with the operator of LYMP to obtain the updated schedule of courses, workshops and examination at the time of conducting the relevant construction works.	Work sites /during construction stage	Contractor		√		Ditto
S4.8.2.6	Since conducting sewerage construction works and streetscape improvement works may involve repeated construction works at the same location, the ArchSD would closely liaise with DSD and their contractors in planning the interfacing works to minimise duplicated/concurrent construction works, including exploring the possibility of entrusting the streetscape improvement works to DSD, so as to minimise nuisance to nearby sensitive receivers such as residents, shops, restaurants and educational institution as far as practicable. Before commencing noisy construction works, such as road breaking works, in the vicinity of the NSRs, the Contractor would closely liaise with the affected NSRs to keep them informed of the works and should strive to complete the works in the shortest time possible. To minimise nuisance to nearby educational institution and seafood restaurants, noisy construction works would not	Work sites / during construction stage	Project Proponent / Contractor		√		Ditto

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	be carried out during the examination period of the educational institution and the peak business hour of the restaurant.						

* Des - Design, C - Construction, O – Operation

Table B.3 Implementation Schedule for Water Quality Mitigation Measures

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S5.7.1.1 & S5.7.2.13	The dredging operation would be properly scheduled such that no dredging works will be carried out during the period of the Annual Cross Harbour Swim Race to be held.	Works sites / during dredging in construction and operation stages	Contractor for dredging		√	√	N/A
S5.8.1.1	*Good Site Practices for Dredging* • 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 vessels movement or propeller wash; • All barges / dredgers should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; • Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved; • Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site or dumping grounds; • Construction activities should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation.	Works sites / during dredging in construction and operation stages	Contractor for Dredging		√	√	♦ EIAO-TM ♦ EIAO ♦ WPCO ♦ Waste Disposal Ordinance (WDO) ♦ Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS)

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S5.8.1.2	Only one closed grab should be used any time for the dredging works during both capital and maintenance dredging to minimise release of sediment and other contaminants.	Works sites / during dredging in construction and operation stages	Contractor for dredging		√	√	♦ Technical Memorandum on the Environmental Impact Assessment Process (EIAO-TM) ♦ Water Pollution Control Ordinance (WPCO)
S5.8.1.2	The dredging rate shall not exceed 100 m^3 per hour with a maximum working period of 12 hours per day throughout the construction phase and operation phase.	Works sites / during dredging in the construction and operation stages	Contractor for dredging		√	√	♦ EIAO-TM ♦ WPCO
S5.8.1.3	Silt curtains should be deployed enclosing the dredging, filling operation and seawall modification works. Under Section 10.6.31 of the Contaminated Spoil Management Study Final Report, silt curtains are defined as screens that extend over the full water depth in the dredging area to confine most of the suspended sediments. This is equivalent to the silt curtains to be adopted for the dredging, filling and seawall modification works in LYM waterfront, which involve the use of impervious sheets or filter fabrics extending over the full water depth. Regular inspection on the silt curtain condition by the contractor should be carried out to ensure the silt curtains are deployed properly and to maintain the performance of the silt curtains throughout the construction period.	Works sites / during dredging, filling operation and seawall modification in construction stage and maintenance dredging in operation stage	Contractor for dredging and seawall modification works		√	√	♦ EIAO-TM ♦ WPCO

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S5.8.1.5	Seawall modification works should be undertaken during low tide, when the water level is low.	Lookout point 1, 5 and viewing platform / during construction stage	Contractor for seawall modification works		√		♦ EIAO-TM ♦ WPCO
S5.8.2.1 – S5.8.2.2	Control of potential water quality impact arising from the general construction works shall be achieved based on the following principles: • Minimisation of surface run-off; • Prevention or minimisation of the likelihood of the identified pollutants being in contact with rain or run-off or adjacent marine waters; and • Measures to abate pollutants at source. The Contractor shall apply for a discharge license under the WPCO and the discharge shall comply with the terms and conditions of the license. The Contractor shall also devise an Emergency Contingency Plan for accidental leakage or spillage of chemicals during construction phase and maintenance dredging. It should detail the communication line between Contractor, relevant government and stakeholders, remediation plan for containing and cleaning of leakage, evaluation and improvement work and determine follow-up action, such as monitoring.	Works sites / during construction stage and maintenance dredging in operation stage	Contractor		√	√	♦ EIAO-TM ♦ WPCO
S5.8.2.3	*Site Runoff and General Activities* • High loading of SS in site run-off should be prevented through proper site management by the contractor; • Sand and silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly by the	All works sites / during construction stage	Contractor		√		♦ ProPECCPN 1/94 Construction Site Drainage ♦ WPCO

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	contractor, and at the onset of and after each rainstorm to ensure that these facilities are functioning properly; • The drilling operation can be fully controlled by the workers, the volume of sediment laden water and the material stockpiled in the temporary storage steel tank can be anticipated such that spillage can be prevented. The tank should be kept within the temporary working platform with surrounding concrete bund walls. The tanks should be removed to other site area located far away from the river immediately after filling up and within the same day; • Stockpiles should be located away from any watercourses and the seafront; • Plant workshop / maintenance areas should be bunded on a hard standing. Sediment traps and oil interceptors should be provided at appropriate locations; • Works should be programmed to minimise soil excavation works where practicable during the rainy days; • Vehicle wheel washing facilities should be provided at the site exit such that mud, debris, etc. attached to the vehicle wheels or body can be washed off before the vehicle leaves the work site; • Section of the road between the wheel washing bay and the public road will be paved to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains; and • Sufficient chemical toilets should be provided in the works areas in the proximity of the riverside for the sewage generated by the workforce. A licensed waste collector should be deployed to clean the						

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	chemical toilets on a regular basis. Any sewage or wastewater discharge into the surrounding environment should not be allowed. Any chemical toilets should be located away from the river.						
S5.8.3.2 & S5.8.3.3	*Design Measures* • Exposed surface shall be avoided within the proposed development to minimise soil erosion. Development site shall be either hard paved or covered by landscaping area where appropriate to reduce soil erosion. • The existing marine water in adjacent to the Project sites will be retained to maintain the original flow path. The drainage system will be designed to avoid any case of flooding based on the 1 in 50 year return period.	Works sites / during operation stage	Project Proponent / Operator	√		√	♦ EIAO-TM ♦ WPCO ♦ WDO
S5.8.3.4 to S5.8.3.6	*Devices / Facilities to Control Pollution* • Screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening off large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system. • Road gullies with standard design and silt traps and oil interceptors should be incorporated during the detailed design to remove particles present in storm water runoff. • Subject to detailed design, standard manholes with desilting opening / sand trap designed for first flush flow (capable of providing at least 5 minutes' detention time) can be provided at final discharge point before discharge into the existing watercourse.	Works sites/ during operation stage	Project Proponent / Operator	√		√	♦ EIAO-TM ♦ WPCO ♦ WDO

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	The feasibility of alternative measure such as Vortex grit separator would also be considered during the detailed design stage.						
S5.8.3.7 to S5.8.3.8	*Administrative Measures* • Good management measures such as regular cleaning and sweeping of road surface / open areas is suggested. The road surface / open area cleaning should also be carried out prior to occurrence of rainstorm. • Manholes, as well as storm water gullies, ditches provided among the development areas should be regularly inspected and cleaned (e.g. monthly). Additional inspection and cleansing should be carried out before forecast heavy rainfall.	Works sites/ during operation stage	The Operator			√	♦ EIAO-TM ♦ WPCO

* Des - Design, C - Construction, O – Operation

Table B.4 Implementation Schedule for Sewerage and Sewage Mitigation Measures

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
6.5.1.6	The Project Proponent should closely coordinate with DSD in monitoring the programme and liaise with DSD to formulate mitigation measures including but not limit to installation of chemical toilets near the restaurants to cater for the additional sewage arising from the increased tourist after commencement of the Lei Yue Mun Waterfront Enhancement project and before the commissioning of the proposed sewerage works under DSD project should any programme gap is identified in the future.	Works sites/ During operation stage	Project Proponent / Operator			√	♦ EIAO-TM

* Des - Design, C - Construction, O – Operation

Table B.5 Implementation Schedule for Waste Management Measures

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S7.7.2.1 – S7.7.2.2	*Waste Management Hierarchy* The waste management hierarchy should be applied: • Avoidance and minimisation of waste generation; • Reuse of materials as far as practicable; • Recovery and recycling of residual materials where possible; and • Treatment and disposal of waste according to relevant laws, guidelines and good practices Recommendations of good site practices and waste reduction measures should be stated in order to achieve avoidance and minimisation of waste generation in the waste management hierarchy. An Environmental Management Plan (EMP) and trip-ticket system are recommended for monitoring management of waste. Specific measures targeting the mitigation of impacts in works areas and the transportation of waste off-site should be provided to minimise the potential impacts to the surrounding environment.	Works sites/ during design and construction stages	Project Proponent/ Contractor	√	√		♦ EIAO-TM ♦ ETWB TCW No. 19/2005
S7.7.3.1	*Good Site Practices* • Nomination of an approved person, such as a site manager, to be responsible for 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 proper waste management and chemical wastes handling procedures.	Works sites/ during design and construction stages	Project Proponent/ Contractor	√	√		♦ EIAO-TM ♦ ETWB TCW No. 19/2005

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	• Provision of sufficient waste disposal points and regular collection for disposal. • Adoption of appropriate measures to minimise windblown litter and dust during handling, transportation and disposal of waste. • Preparation of a WMP in accordance with the ETWB TCW No. 19/2005 Environmental Management on Construction Sites and submitted it to the Engineer for approval.						
S7.7.4.1	*Waste Reduction Measures* • Segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. • Adopt proper storage and site practices to minimise the potential for damage to, and contamination of, construction materials. • Plan the delivery and stock of construction materials carefully to minimise the amount of waste generated; • Sort out demolition debris and excavated materials from demolition works to recover reusable / recyclable portions (i.e. soil, rock, broken concrete, etc.). • Maximise the use of reusable steel formwork to reduce the amount of C&D materials. • Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering. • Adopt pre-cast construction method instead of cast-in-situ method for construction of concrete structure as far as possible.	Works sites / during design and construction stages	Project Proponent/ Contractor	√	√		♦ EIAO-TM ♦ WDO

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S7.7.5.1 – 7.7.5.2	*Storage, Collection and Transportation of Waste* • Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution; • Maintain and clean storage areas routinely; • Stockpiling area should be provided with covers and water spraying system to prevent materials from being wind-blown or washed away; and • Different locations should be designated to stockpile each materials to enhance reuse. • Waste hauler with appropriate permits should be employed by the Contractor for the collection and transportation of waste from works areas to respective disposal outlets. The following recommendation should be implemented to minimise 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. – Dispose of waste at licensed waste disposal facilities.	Works sites / during construction stage	Contractor		√		♦ EIAO-TM ♦ WDO

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S7.7.6.1 – 7.7.6.10 & S7.7.13.1	*Dredged Marine Sediments* • The sediment should be dredged, handled, transported and disposed of in a manner that would minimise adverse environmental impacts. • Requirements of the Air Pollution Ordinance (Construction Dust) Regulation, where relevant, shall be adhered to during dredging, transportation and disposal of the sediment. • To minimise the exposure to contaminated materials, workers shall, if necessary, wear appropriate personal protective equipment (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site. • For off-site disposal, the basic requirements and procedures specified under ETWB TCW No. 34/2002 shall be followed. The rationale for sediment removal/disposal should be submitted to MFC/CEDD for agreement. For site allocation and application of marine dumping permit, separate Sediment Sampling and Testing Plan (SSTP) may need to be submitted to EPD for agreement under the Dumping at Sea Ordinance (DASO). Additional SI works, based on the SSTP, may need to be carried out in order to confirm the disposal arrangements of the dredged sediment. A Sediment Quality Report (SQR), reporting the chemical and biological screening results and the estimated quantities of sediment under different disposal options, may then need to be submitted to EPD for agreement under DASO.	Works sites / during dredging, handling, transportation and disposal of sediment in construction stage and maintenance dredging in operation stages	Project Proponent / Contractor		√	√	♦ DASO ♦ ETWB TCW No. 34/2002 ♦ APCO ♦ WPCO

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	• To ensure disposal space is allocated for the Project, the Project Proponent should be responsible for obtaining agreement from MFC on the allocation of the disposal site. The contractor(s), on the other hand, should be responsible for the application of the marine dumping permit under DASO from EPD for the sediment disposal. • The dredged sediments are expected to be loaded onto the barge and transported to the designated disposal sites allocated by MFC. The dredged sediment would be disposed of according to its determined disposal options and ETWB TCW No. 34/2002. • Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the dredged sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiling areas should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).						

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	• In order to minimise the potential odour / dust emissions during dredging and transportation of the sediment, the dredged sediments shall be wetted during dredging / material handling and shall be properly covered when placed on trucks or barges. Loading of the dredged sediment to the barge shall be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. • The barge transporting the sediments to the designated disposal sites shall be equipped with tight fitting seals to prevent leakage and shall not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified under DASO authority.						
S7.7.7.1 – 7.7.7.4	*Construction and Demolition (C&D) Materials* • Implement a trip-ticket system to monitor and document the disposal of C&D waste • C&D materials generated from dredging, lookout points excavation works, and landing facility and carp-shaped platform construction works should be segregated from other waste to avoid contamination and ensure acceptability at the public fill reception facilities or reclamation sites. • C&D materials should be sorted on-site into inert and non-inert materials.	Works sites / during construction stage	Contractor		√		♦ WDO ♦ DEVB TCW No. 06/2010 ♦ ETWB TCW 33/2002 ♦ ETWB TCW 19/2005

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	• Non-inert C&D waste, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed to landfill. • A suitable area should be designated within the site for temporary stockpiling of C&D materials and to facilitate the sorting process. • Within the stock pile areas, the following measures should be taken to control potential environmental impacts or nuisance: – Waste such as soil should be handled and stored well to ensure secure containment; – Covering materials during heavy rainfall; – Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; – Locating stockpiles to minimise potential visual impacts; and – Minimising land intake of stockpile area as far as possible. • A system should be devised for on-site sorting of C&D materials. This system should include the identification of the source of generation, estimated quantity of waste generated, arrangement for on-site sorting and / or collection, designated stockpiling areas, frequency of collection by recycling contractors and frequency of removal off-site. • All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.						

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S7.7.8.1	*Chemical Waste* • If chemical waste is produced at the construction site, the Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Chemical waste should be stored in appropriate containers and collected by a licensed chemical waste collector. • Chemical waste (e.g. spent lubricant oil) should be disposed of at either the CWTC, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Works sites / during construction stage	Contractor		√		♦ WDO ♦ Code of Practice on the Packaging, Labelling and Storage of Chemical Waste ♦ A Guide to the Chemical Waste Control Scheme
S7.7.9.1 & S7.7.11.1	*General Refuse* • General refuse should be stored in enclosed bins separately from construction and chemical waste. • Recycling bins should also be placed to encourage recycling. • Enclosed and covered areas should be provided preferably for general refuse collection. Routine cleaning should be also be provided to keep the areas clean. • A reputable waste collector should be employed to remove general refuse on a daily basis	Works sites / during construction and operation stages	Project Proponent / Contractor		√	√	♦ WDO
S7.7.10.1 & S7.7.10.2	*Floating Refuse* • Floating refuse should be collected and removed at regular intervals on a daily basis to keep water within the site boundary and the neighbouring water free from rubbish. • In case of floating refuse is identified, a waste	Works sites / during construction stage	Contractor		√		♦ WDO

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	collection vessel is needed to remove the floating materials and eventually store and dispose of together with the general refuse, after separating the recyclables for recycling, at North East New Territories Landfill (NENT) via Kwun Tong Road and Fanling Highway. • Provision of general refuse bins on site and education programme to construction workforce to minimise the potential of marine contamination.						
S7.7.12.1	• Sufficient general refuse and recycling bins should be provided respectively. Meanwhile, the general refuse collection areas should be enclosed and covered properly to avoid potential losses of waste to the adjacent watercourses.	Project site / during operation stage	Project Proponent			√	♦ WDO
S7.7.12.2	• Refuse scavenging and collection service will be provided by the Contractor of Marine Department (MD) under existing Contract.	Project site / during operation stage	MD			√	♦ WDO

* Des - Design, C - Construction, O – Operation

Table B.6 Implementation Schedule for Land Contamination Mitigation Measures

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S8.7.1.1	• No mitigation measure is required.	N/A	N/A				N/A

Table B.7 Implementation Schedule for Ecology Mitigation Measures

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S9.8.1.2	*Avoidance* • Avoided encroaching on recognized sites of conservation importance (i.e. the CPA comprising the oyster shell beach, rocky outcrop with the lighthouse to the south of LYM Village). • Avoided direct impact on area with relatively higher abundance of coral colonies (i.e. REA 2). • Avoided direct impact on natural terrestrial habitats, (e.g. mixed woodland, natural watercourses) and associated fauna and flora.	Works sites / during design, construction and operation stages	Project Proponent	√	√	√	♦ EIAO-TM
S9.8.1.3 – S9.8.1.4	*Minimisation of Direct Loss of Coral* • A detailed coral mapping should be undertaken before the commencement of the works • A detailed Coral Mitigation Plan should be prepared prior to the implementation of mitigation measures. Suitable recipient site(s) should be identified. Description of methodology including translocation (e.g. pre-translocation survey, identification / proposal of coral recipient site(s)) and/or other best practicable mitigation measures, and post-mitigation monitoring programme should be prepared with reference to recently approved EIA and subject to comment by the AFCD before commencement of the coral mitigation. All the coral mitigation exercises should be conducted by experienced marine ecologist(s) with at least 5 years relevant experience.	Works sites / prior to construction stage	Contractor		√		♦ Cap. 586
S9.8.1.3	• During operation phase, coral survey will be carried out to review and update the conditions of corals in the dredging area and its vicinity prior to each	Dredging area and its vicinity / prior to each	Contractor			√	♦ Cap. 586

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	maintenance dredging. Subject to the findings of the coral survey, the impact on corals due to maintenance dredging will be reviewed and mitigation measures will be proposed as necessary.	maintenance dredging in operation stage					
S9.8.1.5	*Minimisation of Water Quality Impact* • Adoption of the mitigation measures recommended in water quality impact assessment during capital and maintenance dredging operations, including use of closed grab, restriction of dredging production rate (no more than 100m^3 per hour) and deployment of silt curtains.	Works site / during dredging operation in the construction and maintenance dredging stages	Contractors		√	√	♦ EIAO-TM ♦ WPCO ♦
S9.8.1.6	• To minimise the contamination of wastewater discharge, accidental chemical spillage and construction site run-off to the receiving water bodies, mitigation measures recommended in water quality impact assessment should be adopted to control construction site runoff and drainage form the work areas, and to prevent runoff and drainage water with high levels of suspended solids from entering the nearby local stormwater drainage system and water bodies directly. The mitigation measures include: – The good site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be strictly followed to minimise surface runoff. – Surface run-off from construction sites should be discharged into storm drains via adequately designed sand / silt removal facilities such as sand traps, silt traps and sedimentation basins; – Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during	Works site / during the construction stage	Contractors		√		♦ WPCO ♦ ProPECC PN 1/94

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	rainstorms; – Good construction and site management practices should be observed to ensure that litter, fuels and solvents do no enter the storm water drains; and – Chemical toilets should be provided within the construction site and properly maintained. All effluent discharged from the construction site should comply with the standards stipulated in the "Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters" (TM-DSS).						
S9.8.1.7	*Other Minimisation Measures* • To mitigate the impact of the loss, the proposed sloping seawall would be constructed with rock armours which would have spaces between rock armour units to allow intertidal organisms to grow. • The new vertical seawall for the lookout points and viewing platform and the breakwater would also provide additional hard substrata for the recolonization of intertidal fauna and corals. Ecological features e.g. seawall enhanced with rough texture and irregular pattern would be incorporated into the design of vertical seawall as far as practicable. A submission on the detailed design of the ecological features to be adopted will be prepared subject to comment by the AFCD prior to the installation of the ecological features.	Works site / during the construction and operation stages	Project Proponent / Contractors		√	√	♦ EIAO-TM

* Des - Design, C - Construction, O – Operation

Table B.8 Implementation Schedule for Fisheries Mitigation Measures

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
S10.7.1.3	• During the capital and maintenance dredging operations, mitigation measures (including use of closed grab, silt curtains and restriction of dredging rate to no more than 100m^3 per hour) recommended in the water quality impact assessment would be implemented to control water quality impacts to within acceptable levels. These mitigation measures would also control and minimize the indirect impacts on fisheries resources due to deterioration in water quality as a result of both capital and maintenance dredging works.	Works site / during the construction and operation stages	Contractors		√	√	♦ EIAO-TM ♦ ProPECC PN 1/94 ♦ WPCO

* Des - Design, C - Construction, O – Operation

Table B.9 Implementation Schedule for Landscape and Visual Impact Mitigation Measures

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
Table 11.10	• CM1 - All the existing Trees to be retained and not to be affected by the Project should be carefully protected during the construction phase in accordance with DEVB TCW No. 7/2015 titled "Tree Preservation" and the latest "Guidelines on Tree Preservation during Development" issued by GLTM Section of DEVB, including provision of Tree Protection Zones (TPZs). Any existing vegetation in landscaped areas and natural terrain not to be affected by the Project should also be carefully preserved. Therefore, these existing landscape elements can maintain their qualities throughout the construction phase. • CM4 - Lighting for the construction works at night, if any, should be carefully controlled to prevent light overspill to the nearby VSRs and into the sky. • CM5 - Decorative Hoardings, with designs and forms compatible with the surrounding settings, should be erected during the construction phase to minimise the potential landscape and visual impacts from the construction works and activities, e.g. avoiding unintended destruction of existing trees and other landscape elements, and reducing visual bulkiness of the screen hoardings, etc. • CM6 - The layout and arrangement of construction site facilities which include site office and temporary storage area should be properly managed and construction activities at the site should be carefully supervised and controlled to minimise potential	Works site / during the design and construction stages	Project Proponent/ Contractors	√	√		♦ EIAO-TM ♦ DEVB TC (W) No.7/2015 ♦ Guidelines on Tree Preservation during Development

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	adverse landscape and visual impacts.						
Table 11.10	• CM7 - A buffer zone with a minimum distance of about 10m will be provided between the CPA and the boundary of dredging works to minimise the potential impact on the CPA arising from the dredging activities.	Works site / during the design construction and operation stages	Project Proponent/ Contractors	√	√	√	
Table 11.10	• CM8 - Silt curtains will be deployed to enclose the dredging works to minimise the potential water quality impact (e.g. dispersion of suspended sediments) on the CPA. • CM9 - The dredging works will be closely supervised by site staff to ensure no unauthorised works will be carried out within the CPA.	Works site / during the construction stage	Project Proponent/ Contractors		√		♦ EIAO-TM ♦ WPCO
Table 11.11	• OM1 - A buffer zone with a minimum distance of about 10m will be provided between the CPA and the boundary of maintenance dredging works to minimise the potential impact on the CPA arising from the dredging activities. • OM2 - Silt curtains will be deployed to enclose the maintenance dredging works to minimise the potential water quality impact (e.g. dispersion of suspended sediments) on the CPA. • OM 3 - The maintenance dredging works will be closely supervised by site staff to ensure no unauthorised works will be carried out within the CPA.	Works site / during maintenance dredging in operation stage	Project Proponent/ Contractors			√	♦ EIAO-TM
Table 11.11	• OM 4 - The Aboveground/Above-sea-level Structures/Hardscape Features of the Project, including the pavilion, the breakwater, and the promenade with public landing facility, etc. and elements of streetscape in regard to the layouts, forms, materials and finishes shall be sensitively	Works site / during the design and operation stages	Project Proponent/ Contractors	√		√	♦ EIAO-TM

EIA Ref.	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation and Guidelines
				Des	C	O	
	designed, so that the structures/hardscape features can blend with the surrounding landscape and visual context, e.g. the pavilion should be visually permeable and its appearance and orientation should take into account the overall landscape master plan of the proposed enhancement works. The proposed colour and texture for the proposed breakwater and lookout points shall be visually compatible with the adjacent landscape elements.						
Table 11.11	• OM5 - Buffer Planting shall be provided at the perimeter of potential intrusive aboveground structures, so as to visually screen and soften their hard edges and surfaces and create a more harmonious landscape. • OM 6 - Opportunity of Amenity Planting shall be maximised within the Project, so that the proposed works will be more compatible and harmonious with the surroundings landscape- and visual-wise. • OM7 - During the Operation Phase, all disturbed hard and soft landscape areas within temporary works sites and works areas caused by the proposed works shall have already been reinstated equal or better quality to the satisfaction of the relevant Government Departments, so as to maintain or improve the existing landscape and visual quality.	Works site / during the operation stage	Project Proponent/ Contractors			√	♦ EIAO-TM

* Des - Design, C - Construction, O – Operation

Appendix C
Impact Monitoring Schedule of this and next Reporting Period

Contract No. CV/2020/09 Lei Yue Mun Waterfront Enhancement Project
EM&A Monitoring Schedule

Dec-21						
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
			1	**2**	**3**	**4**
				Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 07:58 - 13:00 Flood Tide: 13:00 - 20:00 Monitoring Time: Mid-ebb: 08:44 - 12:14 Mid-flood: 14:45 - 18:15	Impact Daytime Noise monitoring for NM1, NM2-A, NM3 & NM4	Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 10:05 - 14:09 Flood Tide: 14:09 - 20:49 Monitoring Time: Mid-ebb: 10:2 - 13:52 Mid-flood: 15:44 - 19:00$
5	**6**	**7**	**8**	**9**	**10**	**11**
		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 13:00 - 16:00 Flood Tide: 06:00 - 13:00 Monitoring Time: Mid-ebb: 12:45 - 16:15 Mid-flood: 08:00 - 11:15*		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period Ebb Tide: 14:00 - 17:00 Flood Tide: 07:32 - 14:00 Monitoring Time: Mid-ebb: 13:45 - 17:15 Mid-flood: 09:01 - 12:31 Daytime Noise monitoring for NM1, NM2-A, NM3 & NM4		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period Ebb Tide: 17:00 - 20:00 Flood Tide: 09:19 - 17:00 Monitoring Time: Mid-ebb: 16:45 - 19:00&$ Mid-flood: 11:24 - 14:54
12	**13**	**14**	**15**	**16**	**17**	**18**
		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 06:04 - 11:34 Flood Tide: 11:34 - 19:03 Monitoring Time: Mid-ebb: 08:00 - 11:17* Mid-flood: 13:33 - 17:03	Impact Daytime Noise monitoring for NM1, NM2-A, NM3 & NM4	Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 08:23 - 12:33 Flood Tide: 12:33 - 19:53 Monitoring Time: Mid-ebb: 08:43 - 12:13 Mid-flood: 14:28 - 17:58		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 10:00 - 13:11 Flood Tide: 13:11 - 20:35 Monitoring Time: Mid-ebb: 09:50 - 13:20 Mid-flood: 15:08 - 18:38
19	**20**	**21**	**22**	**23**	**24**	**25**
		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 11:56 - 14:23 Flood Tide: 05:03 - 11:56 Monitoring Time: Mid-ebb: 11:24 - 14:54 Mid-flood: 08:00 - 10:14*$ Daytime Noise monitoring for NM1, NM2-A, NM3 & NM4		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 13:00 - 16:00 Flood Tide: 06:18 - 13:00 Monitoring Time: Mid-ebb: 12:45 - 16:15 Mid-flood: 08:00 - 11:24*		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 15:00 - 18:00 Flood Tide: 07:40 - 15:00 Monitoring Time: Mid-ebb: 14:45 - 18:15 Mid-flood: 09:35 - 13:05
26	**27**	**28**	**29**	**30**	**31**	
		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 17:19 - 22:36 Flood Tide: 10:00 - 17:19 Monitoring Time: Mid-ebb: 17:34 - 19:00&$ Mid-flood: 11:54 - 15:24		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 07:00 - 11:21 Flood Tide: 11:21 - 18:26 Monitoring Time: Mid-ebb: 08:00 - 10:55*$ Mid-flood: 13:08 - 16:38	Impact Daytime Noise monitoring for NM1, NM2-A, NM3 & NM4	

Remarks:
Daytime Noise Monitoring (07:00-1900)
Monitoring Parameters: Dissolved oxygen, Temperature, pH, Turbidity, Salinity, Suspended Solids

Note:
* - Due to safety concern of vessel transportation earlier than 0800, Water Quality Monitoring would start at 0800.
$ - Since predicted tide is shorter than 3.5 hours, method of 90% tidal period as monitoring time is adopted.
& - Due to safety concern for sampling event in night-time, method of 90% tidal period as monitoring time is approached and end at 1900.

Contract No. CV/2020/09 Lei Yue Mun Waterfront Enhancement Project
EM&A Monitoring Schedule

Jan-22						
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
						1
						Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 09:19 - 13:00 Flood Tide: 13:00 - 19:39 Monitoring Time: Mid-ebb: 09:24 - 12:54 Mid-flood: 14:34 - 18:04
2	3	4	5	6	7	8
		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 11:55 - 15:07 Flood Tide: 04:43 - 11:55 Monitoring Time: Mid-ebb: 11:46 - 15:16 Mid-flood: 08:00 - 10:04*$		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period Ebb Tide: 13:27 - 17:00 Flood Tide: 06:14 - 13:27 Monitoring Time: Mid-ebb: 13:28 - 16:58 Mid-flood: 08:05 - 11:35 Daytime Noise monitoring for NM1, NM2-A, NM3 & NM4		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period Ebb Tide: 15:00 - 19:00 Flood Tide: 07:32 - 15:00 Monitoring Time: Mid-ebb: 15:15 - 18:45 Mid-flood: 09:31 - 13:01
9	10	11	12	13	14	15
		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 17:38 - 09:14 Flood Tide: 23:00 - 17:38 Monitoring Time: Mid-ebb: 11:41 - 15:11 Mid-flood: 17:40 - 19:00&$		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 07:31 - 10:16 Flood Tide: 10:16 - 18:49 Monitoring Time: Mid-ebb: 08:00 - 10:38*$ Mid-flood: 12:47 - 16:17 Daytime Noise monitoring for NM1, NM2-A, NM3 & NM4		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 10:00 - 12:00 Flood Tide: 12:00 - 19:40 Monitoring Time: Mid-ebb: 09:15 - 12:45 Mid-flood: 14:05 - 17:35
16	17	18	19	20	21	22
		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 11:06 - 14:00 Flood Tide: 04:18 - 11:06 Monitoring Time: Mid-ebb: 10:48 - 14:18 Mid-flood: 08:00 - 10:45*$	Impact Daytime Noise monitoring for NM1, NM2-A, NM3 & NM4	Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 12:02 - 15:24 Flood Tide: 05:19 - 12:02 Monitoring Time: Mid-ebb: 11:58 - 15:28 Mid-flood: 08:00 - 10:25*$		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 13:13 - 17:05 Flood Tide: 06:21 - 13:13 Monitoring Time: Mid-ebb: 13:24 - 16:54 Mid-flood: 08:02 - 11:32
23	24	25	26	27	28	29
		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 15:28 - 20:28 Flood Tide: 08:00 - 15:28 Monitoring Time: Mid-ebb: 15:43 - 19:00&$ Mid-flood: 09:59 - 13:29		Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 05:21 - 09:25 Flood Tide: 09:25 - 16:58 Monitoring Time: Mid-ebb: 08:00 - 09:12*$ Mid-flood: 11:26 - 14:56	Impact Daytime Noise monitoring for NM1, NM2-A, NM3 & NM4	Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 08:38 - 11:20 Flood Tide: 11:20 - 18:31 Monitoring Time: Mid-ebb: 08:14 - 11:44 Mid-flood: 13:10 - 16:40
30	31					
	Impact Water Quality monitoring for C1, C2, M1, M2, M3 & M4 Tidal Period: Ebb Tide: 10:17 - 13:25 Flood Tide: 13:25 - 20:20 Monitoring Time: Mid-ebb: 10:06 - 13:36 Mid-flood: 15:07 - 18:37					

Remarks:
Daytime Noise Monitoring (07:00-1900)
Monitoring Parameters: Dissolved oxygen, Temperature, pH, Turbidity, Salinity, Suspended Solids

Note:
* - Due to safety concern of vessel transportation earlier than 0800, Water Quality Monitoring would start at 0800.
$ - Since predicted tide is shorter than 3.5 hours, method of 90% tidal period as monitoring time is adopted.
& - Due to safety concern for sampling event in night-time, method of 90% tidal period as monitoring time is approached and end at 1900.

Appendix D
Event/Action Plan for Noise Exceedance

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

Appendix E
Noise Monitoring Equipment Calibration Certificate

SCARLET | TECH

CERTIFICATE OF CALIBRATION

NO. 20200519037

Name of Product:	Sound Level Meter
Model:	ST-11D
Serial Number:	820197
Specification:	Class 1
Conclusion:	Pass
Date of calibration:	2020-12-31
Due Date:	2021-12-30

SCARLET TECH CO., LTD. SCARLET | TECH 思碩科技有限公司

Calibrated by:

I. This report certifies that all calibration equipment used in the test is traceable with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass then, and applies only to the unit identified above.
II. This certificate is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
III. This certificate of calibration shall not be reproduced except in full, without written permission of the Scarlet Tech Co Ltd Taiwan.

1. Preliminary inspection: OK

2. Type & serial No. of Microphone: AWA14425-35373

3. Adjustments to indicated sound levels:

Type of Calibrator B&K 4231

Sound Pressure Level 94.0 dB

Equivalent Free-field Sound Level (reference environment conditions) 93.8 dB

4. Measuring up limit: 140 dBA

5. Frequency weightings (Acoustic signal tests for Z weighting, other electric signal tests.)

Nominal frequency /Hz	Frequency weighting / dB			Nominal frequency /Hz	Frequency weighting / dB		
	A	C	Z		A	C	Z
10	-71.2	-14.4	-0.7	1000	0.0	-0.1	0.0
20	-50.2	-6.1	0.0	2000	1.2	-0.2	0.5
31.5	-39.5	-3.0	0.1	4000	1.0	-0.9	0.4
63	-26.3	-0.9	0.5	8000	-1.0	-3.2	-0.4
125	-16.0	-0.3	0.1	12500	-5.9	-7.9	-1.5
250	-8.6	-0.1	0.3	16000	-11.8	-13.8	-0.8
500	-3.2	-0.1	0.2	20000	-23.9	-25.9	0.1

6. Self-generated noise

Microphone replaced by electrical input signal device

9.4 dB(A)	15.6 dB(C)	19.5 dB(Z)

7. F&S Weighting

Rate of the F weighting decrease（dB/s）	35.2
Rate of the S weighting decrease（dB/s）	4.4
Deviation of F&S	0.0

8. Level Linearity (A-weighting at frequency 1 kHz)

Reference sound level 90.0 dB

Max error at 10dB steps upper reference sound level -0.1 dB

Max error at 1dB steps within 5dB of the upper limit linear operating range 0.0 dB

Max error at 10dB steps below reference sound level 0.1 dB

Max error at 1dB steps within 5dB upper the lower limit linear operating range 0.2 dB

9. Tone burst response（A Weighting）：

Single Toneburst duration /ms	Toneburst response /dB			
	L_{AFmax}-L_A	L_{ASmax}-L_A	L_{AE}-L_A	L_{AeqT}-L_A
500	0.0	-4.0	-2.9	-7.0
200	-1.0	-7.4	-6.9	-7.0
50	-18.0	-26.9	-26.9	-7.0
10	-27.2	/	-36.0	-7.0

10. Peak C sound level （500Hz）：

Cycle	One cycle	nominal value	Positive half	nominal value	Negative half	nominal value
LCpeak-LC(dB)	3.5	3.5	2.3	2.4	2.3	2.4

11. Overload indication： Pass

12. Statistical analysis function

Sweep signal maximum indicated sound level: 112.8 dB

Sweep amplitude: 40 dB

Scan cycle time: 60 S; Measurement period: 180 S.

Items	Measured value/dB	Theoretical calculated value/dB	Error/dB
LAeq,T	103.2	103.2	0.0

L5	110.8	110.8	0.0
L10	108.8	108.8	0.0
L50	92.9	92.8	0.1
L90	76.9	76.8	0.1
L95	75.0	74.8	0.2

Uncertainty of measurement results: 0.4 dB (k=2)

Environment conditions:

Air temperature: 25 ℃

Relative humidity: 50 %

Static pressure: 100.6 kPa

References:

IEC 61672-3 Sound Level Meters Part 3: Periodic tests

SCARLET | TECH

CERTIFICATE OF CALIBRATION

NO. 20200519040

Name of Product:	Sound Level Meter
Model:	ST-11D
Serial Number:	820200
Specification:	Class 1
Conclusion:	Pass
Date of calibration:	2021-01-18
Due Date:	2022-01-17

Calibrated by: SCARLET TECH CO., LTD. 翻嵘科技有限公司 SCARLET | TECH

I. This report certifies that all calibration equipment used in the test is traceable with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass then, and applies only to the unit identified above.

II. This certificate is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.

III. This certificate of calibration shall not be reproduced except in full, without written permission of the Scarlet Tech Co Ltd Taiwan.

1. Preliminary inspection： OK

2. Type & serial No. of Microphone： AWA14425-27998

3. Adjustments to indicated sound levels：

Type of Calibrator B&K 4231

Sound Pressure Level 93.8 dB

Equivalent Free-field Sound Level (reference environment conditions) 93.8 dB

4. Measuring up limit： 140 dBA

5. Frequency weightings (Acoustic signal tests for Z weighting, other electric signal tests.)

Nominal frequency /Hz	Frequency weighting / dB			Nominal frequency /Hz	Frequency weighting / dB		
	A	C	Z		A	C	Z
10	-71.0	-14.4	-0.9	**1000**	0.0	-0.1	-0.3
20	-50.4	-6.1	-0.1	**2000**	1.2	-0.2	0.2
31.5	-39.8	-3.1	0.0	**4000**	1.0	-0.9	0.3
63	-26.2	-0.9	0.3	**8000**	-1.0	-3.2	-0.5
125	-16.0	-0.3	0.1	**12500**	-4.5	-6.4	-0.7
250	-8.6	-0.1	0.1	**16000**	-9.6	-11.5	-1.3
500	-3.2	-0.1	0.1	**20000**	-23.9	-25.9	-0.8

6. Self-generated noise

Microphone replaced by electrical input signal device

8.9 dB(A)	16.6 dB(C)	19.8 dB(Z)

7. F&S Weighting

Rate of the F weighting decrease（dB/s）	35.2
Rate of the S weighting decrease（dB/s）	4.4
Deviation of F&S	0.0

8. Level Linearity (A-weighting at frequency 1 kHz)

Reference sound level 90.0 dB

Max error at 10dB steps upper reference sound level -0.1 dB

Max error at 1dB steps within 5dB of the upper limit linear operating range 0.0 dB

Max error at 10dB steps below reference sound level 0.1 dB

Max error at 1dB steps within 5dB upper the lower limit linear operating range 0.2 dB

9. Tone burst response（A Weighting）：

Single Toneburst duration /ms	Toneburst response /dB			
	L_{AFmax}-L_A	L_{ASmax}-L_A	L_{AE}-L_A	L_{AeqT}-L_A
500	0.0	-4.0	-2.9	-7.0
200	-1.0	-7.4	-6.9	-7.0
50	-18.0	-26.9	-26.9	-7.0
10	-27.2	/	-36.0	-7.0

10. Peak C sound level （500Hz）：

Cycle	One cycle	nominal value	Positive half	nominal value	Negative half	nominal value
LCpeak-LC(dB)	3.5	3.5	2.3	2.4	2.3	2.4

11. Overload indication： Pass

12. Statistical analysis function

Sweep signal maximum indicated sound level: 112.8 dB

Sweep amplitude: 40 dB

Scan cycle time: 60 S; Measurement period: 180 S.

Items	Measured value/dB	Theoretical calculated value/dB	Error/dB
LAeq,T	103.2	103.2	0.0

L5	110.8	110.8	0.0
L10	108.8	108.8	0.0
L50	92.9	92.8	0.1
L90	76.9	76.8	0.1
L95	75.0	74.8	0.2

Uncertainty of measurement results: 0.4 dB (k=2)

Environment conditions:

Air temperature: 20 °C

Relative humidity: 50 %

Static pressure: 100.6 kPa

References:

IEC 61672-3 Sound Level Meters Part 3: Periodic tests

SCARLET | TECH

CERTIFICATE OF CALIBRATION

NO. 20200608004

Name of Product:	Sound Level Meter
Model:	ST-11D
Serial Number:	820204
Specification:	Class 1
Conclusion:	Pass
Date of calibration:	2020-12-31
Due Date:	2021-12-30

SCARLET TECH CO., LTD. SCARLET | TECH 思炫科技有限公司

Calibrated by:

I. This report certifies that all calibration equipment used in the test is traceable with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass then, and applies only to the unit identified above.
II. This certificate is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
III. This certificate of calibration shall not be reproduced except in full, without written permission of the Scarlet Tech Co Ltd Taiwan.

1. Preliminary inspection: OK

2. Type & serial No. of Microphone: AWA14425-40698

3. Adjustments to indicated sound levels:

Type of Calibrator B&K 4231

Sound Pressure Level 94.0 dB

Equivalent Free-field Sound Level (reference environment conditions) 93.8 dB

4. Measuring up limit: 140 dBA

5. Frequency weightings (Acoustic signal tests for Z weighting, other electric signal tests.)

Nominal frequency /Hz	Frequency weighting / dB			Nominal frequency /Hz	Frequency weighting / dB		
	A	C	Z		A	C	Z
10	-70.9	-14.4	-0.6	1000	0.0	0.0	-0.1
20	-50.4	-6.2	-0.1	2000	1.2	-0.2	0.4
31.5	-39.4	-3.0	0.1	4000	1.1	-0.8	0.3
63	-26.3	-0.9	0.2	8000	-1.1	-3.1	0.0
125	-16.0	-0.3	0.1	12500	-6.0	-8.0	-0.9
250	-8.7	-0.1	0.2	16000	-11.9	-13.9	-0.7
500	-3.2	-0.1	0.2	20000	-24.0	-26.0	-0.6

6. Self-generated noise

Microphone replaced by electrical input signal device

13.2 dB(A)	16.6 dB(C)	19.8 dB(Z)

7. F&S Weighting

Rate of the F weighting decrease（dB/s）	35.2
Rate of the S weighting decrease（dB/s）	4.4
Deviation of F&S	0.0

8. Level Linearity (A-weighting at frequency 1 kHz)

Reference sound level 90.0 dB

Max error at 10dB steps upper reference sound level -0.1 dB

Max error at 1dB steps within 5dB of the upper limit linear operating range 0.0 dB

Max error at 10dB steps below reference sound level -0.1 dB

Max error at 1dB steps within 5dB upper the lower limit linear operating range -0.1 dB

9. Tone burst response（A Weighting）:

Single Toneburst duration /ms	Toneburst response /dB			
	L_{AFmax}-L_A	L_{ASmax}-L_A	L_{AE}-L_A	L_{AeqT}-L_A
500	0.0	-4.0	-2.9	-7.0
200	-1.0	-7.4	-6.9	-7.0
50	-18.0	-26.9	-26.9	-7.0
10	-27.2	/	-36.0	-7.0

10. Peak C sound level （500Hz）:

Cycle	One cycle	nominal value	Positive half	nominal value	Negative half	nominal value
LCpeak-LC(dB)	3.5	3.5	2.3	2.4	2.3	2.4

11. Overload indication: Pass

12. Statistical analysis function

Sweep signal maximum indicated sound level: 112.8 dB

Sweep amplitude: 40 dB

Scan cycle time: 60 S; Measurement period: 180 S.

Items	Measured value/dB	Theoretical calculated value/dB	Error/dB
LAeq,T	103.2	103.2	0.0

L5	110.8	110.8	0.0
L10	108.8	108.8	0.0
L50	92.9	92.8	0.1
L90	76.9	76.8	0.1
L95	75.0	74.8	0.2

Uncertainty of measurement results: 0.4 dB (k=2)

Environment conditions:

Air temperature: 25 °C

Relative humidity: 50 %

Static pressure: 100.6 kPa

References:

IEC 61672-3 Sound Level Meters Part 3: Periodic tests

SCARLET | TECH

CERTIFICATE OF CALIBRATION

NO. 20200519066

Name of Product:	Sound Level Meter
Model:	ST-11D
Serial Number:	820346
Specification:	Class 1
Conclusion:	Pass
Date of calibration:	2021-01-18
Due Date:	2022-01-17

Calibrated by:

SCARLET TECH CO., LTD. SCARLET | TECH 有限公司

I. This report certifies that all calibration equipment used in the test is traceable with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass then, and applies only to the unit identified above.

II. This certificate is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.

III. This certificate of calibration shall not be reproduced except in full, without written permission of the Scarlet Tech Co Ltd Taiwan.

1. Preliminary inspection: OK

2. Type & serial No. of Microphone: AWA14425-14607

3. Adjustments to indicated sound levels:

Type of Calibrator B&K 4231

Sound Pressure Level 94.0 dB

Equivalent Free-field Sound Level (reference environment conditions) 93.8 dB

4. Measuring up limit: 140 dBA

5. Frequency weightings (Acoustic signal tests for Z weighting, other electric signal tests.)

Nominal frequency /Hz	Frequency weighting / dB			Nominal frequency /Hz	Frequency weighting / dB		
	A	C	Z		A	C	Z
10	-71.3	-14.3	-0.9	1000	0.0	0.0	-0.2
20	-50.3	-6.2	0.1	2000	1.2	-0.2	0.3
31.5	-39.4	-3.1	-0.1	4000	1.1	-0.8	0.4
63	-26.3	-0.9	0.3	8000	-1.2	-3.1	-0.3
125	-16.0	-0.3	0.1	12500	-5.9	-7.9	-0.6
250	-8.7	-0.1	0.2	16000	-11.8	-13.8	-0.2
500	-3.2	-0.1	0.1	20000	-23.9	-25.9	0.1

6. Self-generated noise

Microphone replaced by electrical input signal device

10.4 dB(A)	11.5 dB(C)	19.7 dB(Z)

7. F&S Weighting

Rate of the F weighting decrease（dB/s）	35.2
Rate of the S weighting decrease（dB/s）	4.4
Deviation of F&S	0.0

8. Level Linearity (A-weighting at frequency 1 kHz)

Reference sound level 90.0 dB

Max error at 10dB steps upper reference sound level -0.1 dB

Max error at 1dB steps within 5dB of the upper limit linear operating range 0.0 dB

Max error at 10dB steps below reference sound level 0.1 dB

Max error at 1dB steps within 5dB upper the lower limit linear operating range 0.2 dB

9. Tone burst response（A Weighting）：

Single Toneburst duration /ms	Toneburst response /dB			
	L_{AFmax}-L_A	L_{ASmax}-L_A	L_{AE}-L_A	L_{AeqT}-L_A
500	0.0	-4.0	-2.9	-7.0
200	-1.0	-7.4	-6.9	-7.0
50	-18.0	-26.9	-26.9	-7.0
10	-27.2	/	-36.0	-7.0

10. Peak C sound level （500Hz）：

Cycle	One cycle	nominal value	Positive half	nominal value	Negative half	nominal value
LCpeak-LC(dB)	3.5	3.5	2.3	2.4	2.3	2.4

11. Overload indication： Pass

12. Statistical analysis function

Sweep signal maximum indicated sound level: 112.8 dB

Sweep amplitude: 40 dB

Scan cycle time: 60 S; Measurement period: 180 S.

Items	Measured value/dB	Theoretical calculated value/dB	Error/dB
LAeq,T	103.2	103.2	0.0

L5	110.8	110.8	0.0
L10	108.8	108.8	0.0
L50	92.9	92.8	0.1
L90	76.9	76.8	0.1
L95	75.0	74.8	0.2

Uncertainty of measurement results: 0.4 dB (k=2)

Environment conditions:

Air temperature: 20 °C

Relative humidity: 50 %

Static pressure: 100.6 kPa

References:

IEC 61672-3 Sound Level Meters Part 3: Periodic tests

MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue	7-Aug-2021	**Certificate Number**	MLCN212053S

Customer Information

Company Name	Acuity Sustainability Consulting Limited
Address	Unit C, 11/F., Ford Glory Plaza, Nos. 37-39 Wing Hing Street, Cheung Sha Wan, Kowloon, HK

Equipment-under-Test (EUT)

Description	Acoustic Calibrator
Manufacturer	Pulsar
Model Number	105
Serial Number	63705
Equipment Number	--

Calibration Particular

Date of Calibration	7-Aug-2021		
Calibration Equipment	4231(MLTE008) / AV200063 / 23-Jun-23 1357(MLTE190) / MLEC21/05/02 / 26-May-22		
Calibration Procedure	MLCG00, MLCG15		
Calibration Conditions	Laboratory	Temperature	23 °C ± 5 °C
		Relative Humidity	55% ± 25%
	EUT	Stabilizing Time	Over 3 hours
		Warm-up Time	Not applicable
		Power Supply	Internal battery
Calibration Results	Calibration data were detailed in the continuation pages. All calibration results were within EUT specification.		

Approved By & Date

K.O. Lo 7-Aug-2021

Statements

* Calibration equipment used for this calibration are traceable to national / international standards.
* The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the EUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement.
* MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the EUT.
* The copy of this Certificate is owned by MaxLab Calibration Centre Limited. No part of this Certificate may be reproduced without the prior written approval of MaxLab Calibration Centre Limited.

萬儀校正中心有限公司
MaxLab Calibration Centre Limited
香港新界葵涌華星街 16-18 號保盈工業大廈 9 樓 B 室
Unit B, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

MAXLAB

Certificate No. MLCN212053S

Calibration Data				
EUT Setting	**Standard Reading**	**EUT Error from Setting**	**Calibration Uncertainty**	**EUT Specification**
94 dB	93.9 dB	-0.1 dB	0.20 dB	± 0.2 dB

- END -

Calibrated By : Keneth
Date : 7-Aug-21

Checked By : K.O. Lo
Date : 7-Aug-21

萬儀校正中心有限公司
MaxLab Calibration Centre Limited
香港新界葵涌華星街 16-18 號保盈工業大廈 9 樓 B 室
Unit B, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

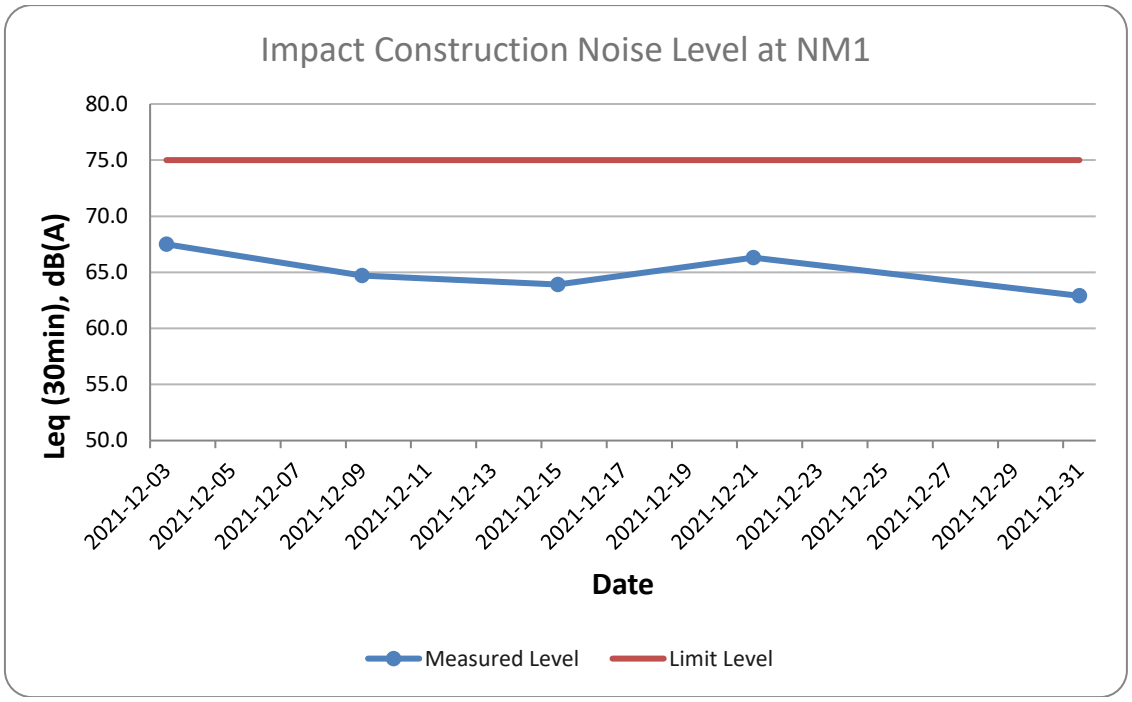
Appendix F
Noise Monitoring Results

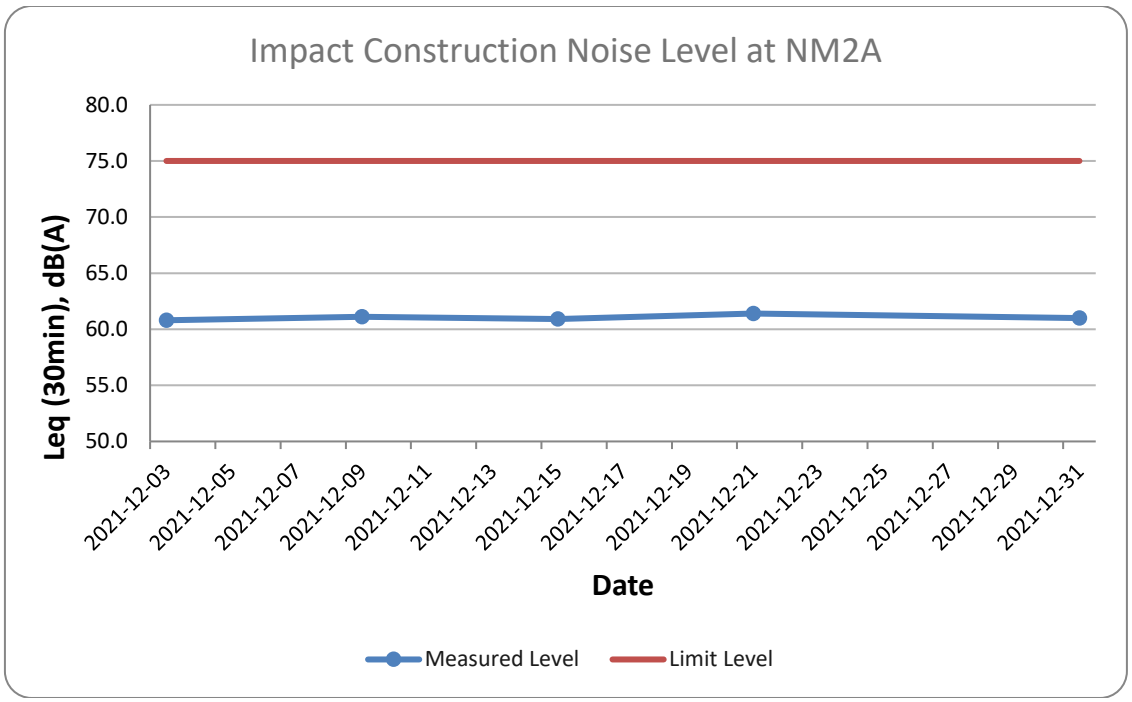
Location NM1 - Village house in Lei Yue Mun Hoi Pong Road Central					
Date	Time	Weather	Unit: dB (A) (30-mins) Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
2021-12-03	13:44	Sunny	67.5	70.3	64.2
2021-12-09	9:40	Sunny	64.7	67.0	62.0
2021-12-15	13:44	Cloudy	63.9	67.2	53.9
2021-12-21	13:47	Fine	66.3	68.7	60.6
2021-12-31	13:43	Sunny	62.9	65.8	55.4

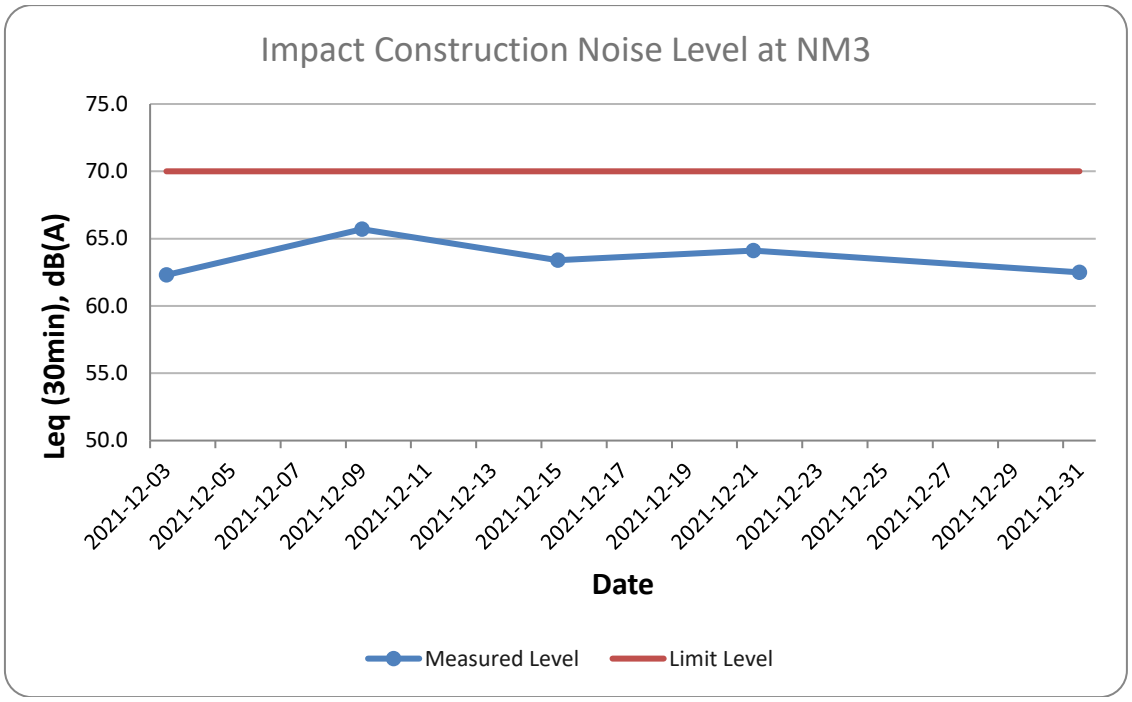
Location NM2A - No.79B, Lei Yue Mun Hoi Pong Road East					
Date	Time	Weather	Unit: dB (A) (30-mins) Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
2021-12-03	14:57	Sunny	60.8	62.7	58.0
2021-12-09	10:53	Sunny	61.1	63.0	58.1
2021-12-15	14:55	Cloudy	60.9	62.1	59.7
2021-12-21	15:01	Fine	61.4	63.3	59.3
2021-12-31	14:57	Sunny	61.0	62.2	59.5

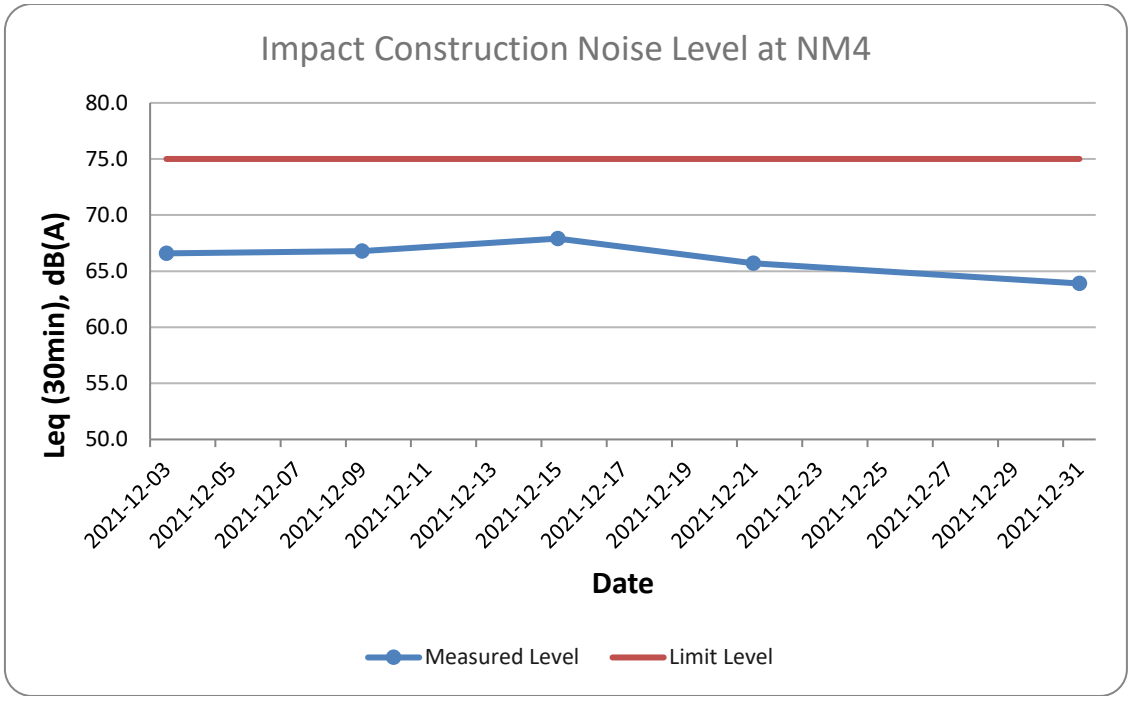
Location NM3 - Jockey Club Lei Yue Mun Plus					
Date	Time	Weather	Unit: dB (A) (30-mins) Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
2021-12-03	13:07	Sunny	62.3	65.5	59.9
2021-12-09	9:03	Sunny	65.7	67.7	64.7
2021-12-15	13:08	Cloudy	63.4	65.0	60.8
2021-12-21	13:12	Fine	64.1	65.9	61.0
2021-12-31	13:07	Sunny	62.5	64.3	60.9

Location NM4 - No. 21C, Lei Yue Mun Hoi Pong Road East					
Date	Time	Weather	Unit: dB (A) (30-mins) Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
2021-12-03	14:21	Sunny	66.6	70.0	63.6
2021-12-09	10:17	Sunny	66.8	70.0	65.3
2021-12-15	14:19	Cloudy	67.9	71.6	62.0
2021-12-21	14:22	Fine	65.7	69.1	60.9
2021-12-31	14:20	Sunny	63.9	65.8	61.3









Appendix G
Event/Action Plan for Water Quality Exceedance

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plants, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. (The above actions should be taken within 1 working day after the exceedance is identified) 7. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented. 3. Assess the effectiveness of the implemented mitigation measures 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plants and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)
Action level being exceeded by more than one consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plants, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. (The above actions should be taken within 1 working day after the exceedance is identified) 9. Repeat measurement on next working day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plants and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures. 7. (The above actions should be taken within 1 working day after the exceedance is identified)

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plants, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level. 8. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures. 5. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plants and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and Propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures
Limit level being exceeded by more than one consecutive sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify reasons for non-compliance and source(s) of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plants, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for 2 consecutive days. 8. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 4. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures. 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the dredging and sand filling work until no exceedance of Limit level. 6. (The above actions should be taken within 1 working day after the exceedance is identified)	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plants and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and Propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by the ER, to slow down or stop all or part of the dredging and sand filling work.

Appendix H
Water Quality Monitoring Equipment Calibration Certificate

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

Report No. : BA100064
Date of Issue : 02 November 2021

PART A – CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit C, 11/F, Ford Glory Plaza
37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, Hong Kong
Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment	:	HORIBA U-53 Multi Parameters
Manufacturer	:	HORIBA
Serial Number	:	S2A98W8H
Date of Received	:	Oct 26, 2021
Date of Calibration	:	Oct 26, 2021
Date of Next Calibration[a]	:	Jan 25, 2022

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H^+ B
Dissolved Oxygen	APHA 21e 4500-O G
Salinity	APHA 21e 2520 B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS[b,c]

(1) pH at 25°C

Target (pH unit)	Displayed Reading[d] (pH Unit)	Tolerance[e](pH Unit)	Results
4.00	4.03	0.03	Satisfactory
7.42	7.46	0.04	Satisfactory
10.01	10.19	0.18	Satisfactory

Tolerance of pH should be less than ±0.20 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
16	16.24	0.24	Satisfactory
25	25.10	0.10	Satisfactory
33	32.95	-0.05	Satisfactory

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

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

[a] *The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.*
[b] *The results relate only to the calibrated equipment as received*
[c] *The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.*
[d] *"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.*
[e] *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.*

LEE Chun-ning
Senior Chemist

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

Report No. : BA100064
Date of Issue : 02 November 2021

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
2.96	3.30	0.34	Satisfactory
3.41	3.76	0.35	Satisfactory
4.87	5.12	0.25	Satisfactory
7.92	8.00	0.08	Satisfactory

Tolerance limit of dissolved oxygen should be less than ±0.50 (mg/L)

(4) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.47	4.70	Satisfactory
20	21.32	6.60	Satisfactory
30	32.20	7.33	Satisfactory

Tolerance limit of salinity should be less than ±10.0 (%)

(5) Turbidity

Expected Reading (NTU)	Displayed Reading[f] (NTU)	Tolerance[g] (%)	Results
0	0.30	--	Satisfactory
10	10.8	8.0	Satisfactory
20	21.8	9.0	Satisfactory
100	109	9.0	Satisfactory
800	790	-1.3	Satisfactory

Tolerance limit of turbidity should be less than ±10.0 (%)

~ END OF REPORT ~

Remark(s): -

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

(g) 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.

Appendix I
Water Quality Monitoring Results

Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	8:56	8.37	8.19	33.07	23.76	8.68	5	0.299	SE	/
C1	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	8:56	8.31	8.14	33.00	23.71	8.55	5	0.293	SE	/
C1	20211202	Sunny	Moderate	Mid-Ebb	Middle	9.9	8:55	8.12	8.12	32.47	23.84	7.99	5	0.281	SE	/
C1	20211202	Sunny	Moderate	Mid-Ebb	Middle	9.9	8:55	8.15	8.16	32.53	23.86	8.74	5	0.285	SE	/
C1	20211202	Sunny	Moderate	Mid-Ebb	Bottom	18.8	8:54	8.25	8.16	32.46	23.74	8.22	6	0.280	E	/
C1	20211202	Sunny	Moderate	Mid-Ebb	Bottom	18.8	8:54	8.11	8.12	32.50	23.78	8.40	5	0.270	SE	/
C2	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	9:54	9.19	8.34	33.28	23.75	6.80	2.5	0.270	SE	/
C2	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	9:54	9.18	8.34	33.22	23.79	6.86	2.5	0.278	SE	/
C2	20211202	Sunny	Moderate	Mid-Ebb	Middle	12.55	9:53	8.15	8.19	32.60	23.80	6.93	10	0.267	E	/
C2	20211202	Sunny	Moderate	Mid-Ebb	Middle	12.55	9:53	9.19	8.32	33.13	23.84	6.87	12	0.292	SE	/
C2	20211202	Sunny	Moderate	Mid-Ebb	Bottom	24.1	9:52	8.87	8.09	32.98	23.87	6.24	4	0.275	SE	/
C2	20211202	Sunny	Moderate	Mid-Ebb	Bottom	24.1	9:52	9.12	8.09	32.97	23.74	6.30	4	0.289	SE	/
M1	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	9:26	8.66	8.25	33.34	23.86	5.38	3	0.285	SE	/
M1	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	9:26	7.97	8.17	33.69	23.73	5.55	3	0.290	SE	/
M1	20211202	Sunny	Moderate	Mid-Ebb	Middle	3.9	9:25	8.83	8.23	33.48	23.78	6.06	4	0.271	SE	/
M1	20211202	Sunny	Moderate	Mid-Ebb	Middle	3.9	9:25	8.70	8.26	33.38	23.83	5.64	3	0.297	SE	/
M1	20211202	Sunny	Moderate	Mid-Ebb	Bottom	6.8	9:24	9.17	8.39	31.95	23.75	5.78	3	0.286	SE	/
M1	20211202	Sunny	Moderate	Mid-Ebb	Bottom	6.8	9:24	8.70	8.25	33.43	23.74	5.98	3	0.283	SE	/
M2	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	9:13	9.22	8.33	31.96	23.86	6.01	7	0.282	SE	/
M2	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	9:13	9.08	8.36	32.03	23.86	6.17	7	0.277	E	/
M2	20211202	Sunny	Moderate	Mid-Ebb	Middle	7.05	9:12	8.48	8.12	32.59	23.75	5.61	5	0.275	SE	/
M2	20211202	Sunny	Moderate	Mid-Ebb	Middle	7.05	9:12	8.95	8.29	32.05	23.78	5.90	5	0.279	E	/
M2	20211202	Sunny	Moderate	Mid-Ebb	Bottom	13.1	9:11	8.39	8.09	33.10	23.87	5.49	5	0.273	E	/
M2	20211202	Sunny	Moderate	Mid-Ebb	Bottom	13.1	9:11	8.35	8.13	33.12	23.80	5.30	6	0.286	E	/
M3	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	9:38	9.05	8.14	32.94	23.89	7.13	3	0.297	E	/
M3	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	9:38	9.10	8.07	33.12	23.82	6.98	3	0.286	SE	/
M3	20211202	Sunny	Moderate	Mid-Ebb	Middle	4.05	9:37	9.12	8.40	33.33	23.89	5.78	5	0.286	SE	/
M3	20211202	Sunny	Moderate	Mid-Ebb	Middle	4.05	9:37	9.12	8.31	33.23	23.77	5.99	4	0.265	E	/
M3	20211202	Sunny	Moderate	Mid-Ebb	Bottom	7.1	9:36	9.20	8.36	33.31	23.83	6.32	3	0.296	SE	/
M3	20211202	Sunny	Moderate	Mid-Ebb	Bottom	7.1	9:36	9.18	8.35	33.24	23.84	6.45	5	0.268	SE	/
M4	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	10:19	8.55	8.29	33.63	23.69	3.70	6	0.286	E	/
M4	20211202	Sunny	Moderate	Mid-Ebb	Surface	1	10:19	8.02	8.32	31.90	23.76	3.91	7	0.288	E	/
M4	20211202	Sunny	Moderate	Mid-Ebb	Bottom	4.5	10:18	9.07	8.30	33.26	23.76	4.44	4	0.284	SE	/
M4	20211202	Sunny	Moderate	Mid-Ebb	Bottom	4.5	10:18	8.53	8.33	33.62	23.82	4.36	6	0.301	SE	/
C1	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	10:35	9.80	8.21	34.09	24.29	7.85	11	0.274	E	/
C1	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	10:35	9.83	8.23	34.05	24.31	7.65	10	0.278	SE	/
C1	20211204	Sunny	Moderate	Mid-Ebb	Middle	10.7	10:34	9.40	8.14	33.96	24.31	8.33	7	0.284	SE	/
C1	20211204	Sunny	Moderate	Mid-Ebb	Middle	10.7	10:34	9.53	8.20	33.99	24.27	8.05	7	0.295	SE	/
C1	20211204	Sunny	Moderate	Mid-Ebb	Bottom	20.4	10:33	9.50	8.15	33.97	24.29	8.36	11	0.268	SE	/
C1	20211204	Sunny	Moderate	Mid-Ebb	Bottom	20.4	10:33	9.47	8.24	33.91	24.31	7.87	11	0.292	E	/
C2	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	11:50	9.60	8.39	33.84	24.35	5.62	8	0.286	SE	/
C2	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	11:50	9.48	8.42	33.85	24.44	5.92	8	0.264	SE	/
C2	20211204	Sunny	Moderate	Mid-Ebb	Middle	12.65	11:49	9.90	8.22	34.23	24.33	5.85	6	0.271	E	/
C2	20211204	Sunny	Moderate	Mid-Ebb	Middle	12.65	11:49	9.48	8.36	33.85	24.43	5.61	7	0.290	SE	/
C2	20211204	Sunny	Moderate	Mid-Ebb	Bottom	24.3	11:48	9.74	8.17	34.12	24.27	6.03	9	0.287	E	/
C2	20211204	Sunny	Moderate	Mid-Ebb	Bottom	24.3	11:48	9.68	8.16	34.09	24.36	5.57	9	0.290	SE	/
M1	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	11:13	8.41	8.16	34.31	24.42	5.79	5	0.266	SE	/
M1	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	11:13	9.87	8.36	33.02	24.42	5.90	5	0.276	SE	/
M1	20211204	Sunny	Moderate	Mid-Ebb	Middle	3.85	11:12	8.34	8.22	34.39	24.44	5.96	7	0.287	SE	/
M1	20211204	Sunny	Moderate	Mid-Ebb	Middle	3.85	11:12	8.33	8.20	34.40	24.42	6.06	8	0.282	SE	/
M1	20211204	Sunny	Moderate	Mid-Ebb	Bottom	6.7	11:11	9.59	8.41	33.79	24.26	6.37	9	0.278	SE	/
M1	20211204	Sunny	Moderate	Mid-Ebb	Bottom	6.7	11:11	8.32	8.13	34.27	24.28	6.18	9	0.288	SE	/
M2	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	10:55	9.21	8.39	34.05	24.33	5.77	7	0.271	SE	/
M2	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	10:55	9.26	8.42	34.08	24.43	6.06	10	0.285	SE	/
M2	20211204	Sunny	Moderate	Mid-Ebb	Middle	6.9	10:54	9.42	8.23	34.35	24.35	6.24	7	0.280	E	/
M2	20211204	Sunny	Moderate	Mid-Ebb	Middle	6.9	10:54	9.42	8.29	34.33	24.34	5.89	8	0.295	SE	/
M2	20211204	Sunny	Moderate	Mid-Ebb	Bottom	12.8	10:53	9.40	8.27	34.35	24.40	5.94	9	0.291	E	/
M2	20211204	Sunny	Moderate	Mid-Ebb	Bottom	12.8	10:53	9.41	8.31	34.22	24.33	5.93	8	0.277	SE	/
M3	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	11:28	9.35	8.28	34.24	24.35	3.81	4	0.286	SE	/
M3	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	11:28	9.20	8.27	34.29	24.44	4.06	5	0.293	E	/
M3	20211204	Sunny	Moderate	Mid-Ebb	Middle	4.1	11:27	8.60	8.37	33.37	24.36	3.84	6	0.269	SE	/
M3	20211204	Sunny	Moderate	Mid-Ebb	Middle	4.1	11:27	9.34	8.21	34.30	24.26	3.79	7	0.265	E	/
M3	20211204	Sunny	Moderate	Mid-Ebb	Bottom	7.2	11:26	9.26	8.39	34.00	24.41	4.51	7	0.289	E	/
M3	20211204	Sunny	Moderate	Mid-Ebb	Bottom	7.2	11:26	9.27	8.39	34.16	24.43	4.33	6	0.264	SE	/
M4	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	12:16	8.72	8.23	33.35	24.31	4.84	11	0.281	E	/
M4	20211204	Sunny	Moderate	Mid-Ebb	Surface	1	12:16	9.01	8.36	34.26	24.37	4.60	10	0.264	SE	/
M4	20211204	Sunny	Moderate	Mid-Ebb	Bottom	4.3	12:15	9.24	8.25	34.22	24.35	4.79	7	0.292	SE	/
M4	20211204	Sunny	Moderate	Mid-Ebb	Bottom	4.3	12:15	8.71	8.20	33.47	24.35	4.80	7	0.295	E	/
C1	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	12:50	8.34	8.20	32.27	24.44	7.38	25	0.299	SE	/
C1	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	12:50	8.40	8.21	32.39	24.48	7.46	30	0.284	E	/
C1	20211207	Cloudy	Moderate	Mid-Ebb	Middle	9.55	12:49	9.23	8.17	30.85	24.41	8.05	16	0.269	SE	/
C1	20211207	Cloudy	Moderate	Mid-Ebb	Middle	9.55	12:49	9.08	8.20	31.09	24.41	7.89	15	0.277	SE	/
C1	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	18.1	12:48	9.13	8.15	31.10	24.38	7.89	19	0.291	SE	/
C1	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	18.1	12:48	9.12	8.15	31.22	24.40	7.60	16	0.283	E	/
C2	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	13:55	8.58	8.18	32.72	24.40	6.66	8	0.285	SE	/
C2	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	13:55	8.67	8.21	32.41	24.49	6.23	9	0.267	E	/
C2	20211207	Cloudy	Moderate	Mid-Ebb	Middle	11.55	13:54	9.33	8.31	31.77	24.44	6.31	7	0.296	SE	/
C2	20211207	Cloudy	Moderate	Mid-Ebb	Middle	11.55	13:54	8.63	8.22	32.61	24.47	6.47	6	0.276	SE	/
C2	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	22.1	13:53	8.28	8.21	32.21	24.45	6.83	7	0.291	E	/
C2	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	22.1	13:53	8.27	8.20	32.45	24.46	6.49	9	0.286	E	/
M1	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	13:22	8.91	8.35	31.29	24.51	5.66	12	0.286	E	/
M1	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	13:22	8.32	8.36	31.29	24.38	5.39	14	0.301	E	/
M1	20211207	Cloudy	Moderate	Mid-Ebb	Middle	3.55	13:21	9.10	8.34	31.39	24.39	5.17	10	0.289	E	/
M1	20211207	Cloudy	Moderate	Mid-Ebb	Middle	3.55	13:21	8.99	8.41	31.47	24.42	5.18	14	0.263	E	/
M1	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	6.1	13:20	8.63	8.19	32.67	24.44	5.13	9	0.297	E	/
M1	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	6.1	13:20	9.01	8.42	31.18	24.46	4.82	12	0.290	SE	/
M2	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	13:08	9.24	8.18	31.13	24.45	4.03	4	0.268	SE	/
M2	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	13:08	9.33	8.19	31.05	24.43	4.09	5	0.278	E	/
M2	20211207	Cloudy	Moderate	Mid-Ebb	Middle	6.75	13:07	8.32	8.17	32.06	24.41	4.40	17	0.284	E	/
M2	20211207	Cloudy	Moderate	Mid-Ebb	Middle	6.75	13:07	8.28	8.19	31.94	24.43	4.53	14	0.282	E	/
M2	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	12.5	13:06	8.49	8.16	32.12	24.42	4.51	13	0.270	SE	/
M2	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	12.5	13:06	8.49	8.24	32.07	24.38	4.57	10	0.295	SE	/
M3	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	13:39	8.58	8.21	32.06	24.51	5.66	5	0.269	E	/
M3	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	13:39	8.71	8.26	32.05	24.38	5.39	4	0.280	E	/
M3	20211207	Cloudy	Moderate	Mid-Ebb	Middle	4	13:38	8.67	8.33	32.32	24.42	5.26	7	0.293	E	/
M3	20211207	Cloudy	Moderate	Mid-Ebb	Middle	4	13:38	8.60	8.18	32.12	24.49	5.38	9	0.271	SE	/
M3	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	7	13:37	9.37	8.24	31.42	24.41	5.63	10	0.301	E	/
M3	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	7	13:37	9.35	8.22	31.41	24.41	5.70	12	0.278	E	/
M4	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	14:12	8.51	8.34	32.50	24.40	3.99	8	0.279	SE	/
M4	20211207	Cloudy	Moderate	Mid-Ebb	Surface	1	14:12	8.86	8.27	32.34	24.41	3.93	10	0.300	SE	/
M4	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	4.3	14:11	8.65	8.26	31.85	24.46	4.33	8	0.266	SE	/
M4	20211207	Cloudy	Moderate	Mid-Ebb	Bottom	4.3	14:11	8.33	8.30	32.40	24.43	4.48	7	0.294	E	/

Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	14:05	8.35	8.45	32.97	23.25	1.69	18	0.298	SE	/
C1	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	14:05	8.33	8.44	33.05	23.32	1.62	24	0.299	SE	/
C1	20211209	Sunny	Moderate	Mid-Ebb	Middle	10.5	14:04	8.33	8.41	33.23	23.29	2.09	27	0.292	SE	/
C1	20211209	Sunny	Moderate	Mid-Ebb	Middle	10.5	14:04	8.41	8.44	33.23	23.32	2.26	27	0.271	SE	/
C1	20211209	Sunny	Moderate	Mid-Ebb	Bottom	20	14:03	8.35	8.46	33.11	23.15	3.38	15	0.277	E	/
C1	20211209	Sunny	Moderate	Mid-Ebb	Bottom	20	14:03	8.40	8.48	33.39	23.22	3.30	13	0.289	SE	/
C2	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	15:23	8.56	8.42	33.30	23.21	4.24	26	0.272	SE	/
C2	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	15:23	8.58	8.42	33.26	23.20	4.08	26	0.290	SE	/
C2	20211209	Sunny	Moderate	Mid-Ebb	Middle	12	15:22	8.34	8.63	32.05	23.22	3.77	21	0.291	E	/
C2	20211209	Sunny	Moderate	Mid-Ebb	Middle	12	15:22	8.56	8.37	33.33	23.35	3.65	20	0.270	SE	/
C2	20211209	Sunny	Moderate	Mid-Ebb	Bottom	23	15:21	8.24	8.40	32.99	23.23	3.89	17	0.288	SE	/
C2	20211209	Sunny	Moderate	Mid-Ebb	Bottom	23	15:21	8.29	8.44	33.03	23.29	4.14	21	0.277	SE	/
M1	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	14:49	9.02	8.54	32.12	23.19	3.90	10	0.299	SE	/
M1	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	14:49	8.10	8.43	33.35	23.26	4.17	12	0.296	SE	/
M1	20211209	Sunny	Moderate	Mid-Ebb	Middle	3.95	14:48	9.05	8.52	32.02	23.21	4.60	9	0.273	SE	/
M1	20211209	Sunny	Moderate	Mid-Ebb	Middle	3.95	14:48	9.14	8.56	32.19	23.20	4.43	12	0.276	E	/
M1	20211209	Sunny	Moderate	Mid-Ebb	Bottom	6.9	14:47	8.55	8.43	33.13	23.22	4.90	10	0.288	E	/
M1	20211209	Sunny	Moderate	Mid-Ebb	Bottom	6.9	14:47	9.10	8.57	32.03	23.11	4.48	12	0.291	SE	/
M2	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	14:27	8.09	8.70	32.72	23.40	3.21	7	0.288	SE	/
M2	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	14:27	8.18	8.69	32.63	23.42	2.89	7	0.293	E	/
M2	20211209	Sunny	Moderate	Mid-Ebb	Middle	7	14:26	8.79	8.43	33.19	23.26	3.18	8	0.294	E	/
M2	20211209	Sunny	Moderate	Mid-Ebb	Middle	7	14:26	8.67	8.44	33.31	23.13	2.99	7	0.283	SE	/
M2	20211209	Sunny	Moderate	Mid-Ebb	Bottom	13	14:25	8.77	8.44	33.10	23.22	2.77	5	0.264	E	/
M2	20211209	Sunny	Moderate	Mid-Ebb	Bottom	13	14:25	8.62	8.40	33.28	23.12	2.45	4	0.298	E	/
M3	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	15:07	9.02	8.72	33.47	23.34	4.39	6	0.301	SE	/
M3	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	15:07	8.99	8.71	33.55	23.52	3.99	9	0.297	SE	/
M3	20211209	Sunny	Moderate	Mid-Ebb	Middle	3.9	15:06	8.77	8.41	33.63	23.16	4.75	10	0.282	SE	/
M3	20211209	Sunny	Moderate	Mid-Ebb	Middle	3.9	15:06	8.91	8.65	33.47	23.33	4.70	7	0.271	SE	/
M3	20211209	Sunny	Moderate	Mid-Ebb	Bottom	6.8	15:05	8.17	8.67	32.54	23.34	3.54	9	0.295	E	/
M3	20211209	Sunny	Moderate	Mid-Ebb	Bottom	6.8	15:05	8.08	8.68	32.69	23.32	3.88	8	0.301	SE	/
M4	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	15:42	8.17	8.46	33.07	23.25	3.12	9	0.298	E	/
M4	20211209	Sunny	Moderate	Mid-Ebb	Surface	1	15:42	9.14	8.65	33.54	23.24	2.94	10	0.275	SE	/
M4	20211209	Sunny	Moderate	Mid-Ebb	Bottom	4.7	15:41	8.96	8.71	33.53	23.46	3.55	8	0.277	SE	/
M4	20211209	Sunny	Moderate	Mid-Ebb	Bottom	4.7	15:41	8.19	8.46	32.87	23.12	3.36	8	0.279	SE	/
C1	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	16:48	8.96	8.29	34.71	23.33	4.10	6	0.285	E	/
C1	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	16:48	8.91	8.29	34.82	23.43	4.15	7	0.281	SE	/
C1	20211211	Sunny	Moderate	Mid-Ebb	Middle	10.35	16:47	8.06	8.55	34.22	23.21	3.78	9	0.286	SE	/
C1	20211211	Sunny	Moderate	Mid-Ebb	Middle	10.35	16:47	8.01	8.52	34.35	23.06	3.78	9	0.286	SE	/
C1	20211211	Sunny	Moderate	Mid-Ebb	Bottom	19.7	16:46	8.06	8.51	34.32	23.16	4.97	12	0.293	E	/
C1	20211211	Sunny	Moderate	Mid-Ebb	Bottom	19.7	16:46	8.06	8.49	34.22	23.18	4.87	14	0.289	SE	/
C2	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	17:42	8.77	8.52	33.84	23.41	3.69	3	0.278	E	/
C2	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	17:42	8.77	8.51	33.69	23.38	3.45	4	0.269	SE	/
C2	20211211	Sunny	Moderate	Mid-Ebb	Middle	11.95	17:41	8.68	8.29	34.52	23.18	3.79	4	0.293	SE	/
C2	20211211	Sunny	Moderate	Mid-Ebb	Middle	11.95	17:41	8.77	8.54	33.81	23.41	3.89	3	0.268	E	/
C2	20211211	Sunny	Moderate	Mid-Ebb	Bottom	22.9	17:40	8.89	8.37	34.78	23.26	3.68	5	0.272	E	/
C2	20211211	Sunny	Moderate	Mid-Ebb	Bottom	22.9	17:40	8.97	8.36	34.73	23.29	3.80	5	0.295	E	/
M1	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	17:13	8.11	8.54	33.70	23.30	2.76	4	0.295	E	/
M1	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	17:13	8.23	8.49	35.11	23.23	2.73	4	0.288	E	/
M1	20211211	Sunny	Moderate	Mid-Ebb	Middle	3.65	17:12	8.06	8.52	33.59	23.33	3.02	4	0.272	SE	/
M1	20211211	Sunny	Moderate	Mid-Ebb	Middle	3.65	17:12	8.07	8.59	33.69	23.30	3.11	4	0.297	E	/
M1	20211211	Sunny	Moderate	Mid-Ebb	Bottom	6.3	17:11	8.69	8.54	33.81	23.29	2.59	6	0.293	SE	/
M1	20211211	Sunny	Moderate	Mid-Ebb	Bottom	6.3	17:11	8.13	8.50	33.60	23.37	2.89	7	0.295	SE	/
M2	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	17:01	8.07	8.40	33.53	23.06	3.32	6	0.295	SE	/
M2	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	17:01	8.02	8.39	33.48	23.19	3.26	7	0.299	SE	/
M2	20211211	Sunny	Moderate	Mid-Ebb	Middle	6.35	17:00	8.02	8.45	34.22	23.32	2.49	4	0.281	SE	/
M2	20211211	Sunny	Moderate	Mid-Ebb	Middle	6.35	17:00	8.02	8.46	34.23	23.30	2.34	4	0.275	SE	/
M2	20211211	Sunny	Moderate	Mid-Ebb	Bottom	11.7	16:59	8.13	8.49	34.30	23.17	3.33	6	0.269	E	/
M2	20211211	Sunny	Moderate	Mid-Ebb	Bottom	11.7	16:59	8.16	8.44	34.22	23.31	3.27	6	0.268	SE	/
M3	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	17:25	8.35	8.41	34.36	23.30	2.90	7	0.269	SE	/
M3	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	17:25	8.26	8.41	34.26	23.38	2.56	7	0.280	E	/
M3	20211211	Sunny	Moderate	Mid-Ebb	Middle	3.6	17:24	8.20	8.52	35.02	23.22	1.85	6	0.292	E	/
M3	20211211	Sunny	Moderate	Mid-Ebb	Middle	3.6	17:24	8.31	8.36	34.42	23.30	2.00	8	0.270	SE	/
M3	20211211	Sunny	Moderate	Mid-Ebb	Bottom	6.2	17:23	8.08	8.39	33.34	23.03	2.22	4	0.291	SE	/
M3	20211211	Sunny	Moderate	Mid-Ebb	Bottom	6.2	17:23	8.09	8.40	33.49	23.11	2.48	3	0.285	SE	/
M4	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	18:04	8.38	8.41	34.95	23.21	4.32	9	0.301	SE	/
M4	20211211	Sunny	Moderate	Mid-Ebb	Surface	1	18:04	8.22	8.48	35.09	23.22	4.47	13	0.265	E	/
M4	20211211	Sunny	Moderate	Mid-Ebb	Bottom	4.4	18:03	8.29	8.42	34.28	23.34	3.02	8	0.278	E	/
M4	20211211	Sunny	Moderate	Mid-Ebb	Bottom	4.4	18:03	8.33	8.43	34.88	23.19	3.30	6	0.296	SE	/
C1	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	8:55	8.18	8.24	31.89	22.53	2.29	26	0.289	SE	/
C1	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	8:55	8.23	8.38	31.82	22.44	2.53	25	0.290	E	/
C1	20211214	Sunny	Moderate	Mid-Ebb	Middle	9.4	8:54	8.39	8.26	32.37	23.30	2.48	25	0.275	SE	/
C1	20211214	Sunny	Moderate	Mid-Ebb	Middle	9.4	8:54	8.33	8.33	32.47	23.25	2.67	25	0.265	SE	/
C1	20211214	Sunny	Moderate	Mid-Ebb	Bottom	17.8	8:53	8.38	8.36	32.49	23.34	2.88	27	0.277	E	/
C1	20211214	Sunny	Moderate	Mid-Ebb	Bottom	17.8	8:53	8.44	8.37	32.44	23.32	2.68	25	0.299	SE	/
C2	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	9:59	8.72	8.35	33.41	23.37	3.05	25	0.297	SE	/
C2	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	9:59	8.70	8.35	33.24	23.30	2.88	28	0.294	SE	/
C2	20211214	Sunny	Moderate	Mid-Ebb	Middle	11.05	9:58	8.12	8.45	33.11	22.49	2.24	5	0.295	SE	/
C2	20211214	Sunny	Moderate	Mid-Ebb	Middle	11.05	9:58	8.59	8.32	33.30	23.37	2.23	5	0.266	E	/
C2	20211214	Sunny	Moderate	Mid-Ebb	Bottom	21.1	9:57	8.15	8.36	31.93	22.51	2.69	11	0.279	SE	/
C2	20211214	Sunny	Moderate	Mid-Ebb	Bottom	21.1	9:57	8.20	8.36	31.82	22.46	2.47	10	0.266	E	/
M1	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	9:28	8.01	8.40	32.57	23.34	1.91	5	0.281	E	/
M1	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	9:28	8.50	8.31	31.83	23.04	1.83	5	0.274	SE	/
M1	20211214	Sunny	Moderate	Mid-Ebb	Middle	3.95	9:27	7.93	8.34	32.64	23.36	1.24	5	0.271	SE	/
M1	20211214	Sunny	Moderate	Mid-Ebb	Middle	3.95	9:27	8.06	8.41	32.73	23.37	1.10	5	0.268	E	/
M1	20211214	Sunny	Moderate	Mid-Ebb	Bottom	6.9	9:26	8.65	8.38	33.31	23.40	1.44	14	0.285	SE	/
M1	20211214	Sunny	Moderate	Mid-Ebb	Bottom	6.9	9:26	8.02	8.30	32.62	23.34	1.70	14	0.271	SE	/
M2	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	9:15	8.42	8.28	31.69	22.66	1.51	6	0.300	SE	/
M2	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	9:15	8.25	8.40	31.66	22.67	1.65	4	0.286	SE	/
M2	20211214	Sunny	Moderate	Mid-Ebb	Middle	6.3	9:14	8.27	8.30	32.88	22.73	1.78	6	0.298	SE	/
M2	20211214	Sunny	Moderate	Mid-Ebb	Middle	6.3	9:14	8.30	8.36	32.98	22.76	1.87	6	0.281	E	/
M2	20211214	Sunny	Moderate	Mid-Ebb	Bottom	11.6	9:13	8.31	8.39	32.95	22.77	1.72	4	0.299	E	/
M2	20211214	Sunny	Moderate	Mid-Ebb	Bottom	11.6	9:13	8.31	8.36	33.05	22.68	1.87	5	0.290	E	/
M3	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	9:42	8.35	8.44	32.06	23.02	1.92	4	0.294	SE	/
M3	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	9:42	8.32	8.44	32.12	22.98	2.13	4	0.291	E	/
M3	20211214	Sunny	Moderate	Mid-Ebb	Middle	3.9	9:41	7.96	8.45	32.33	22.90	1.67	6	0.273	SE	/
M3	20211214	Sunny	Moderate	Mid-Ebb	Middle	3.9	9:41	8.30	8.46	32.13	23.07	1.89	6	0.275	SE	/
M3	20211214	Sunny	Moderate	Mid-Ebb	Bottom	6.8	9:40	8.43	8.36	31.75	22.67	1.99	10	0.275	SE	/
M3	20211214	Sunny	Moderate	Mid-Ebb	Bottom	6.8	9:40	8.28	8.39	31.59	22.60	2.02	10	0.287	SE	/
M4	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	10:22	8.02	8.27	33.01	23.28	0.92	7	0.271	SE	/
M4	20211214	Sunny	Moderate	Mid-Ebb	Surface	1	10:22	8.80	8.29	32.76	23.05	0.89	7	0.284	E	/
M4	20211214	Sunny	Moderate	Mid-Ebb	Bottom	4.3	10:21	8.38	8.39	32.10	23.07	1.26	5	0.267	E	/
M4	20211214	Sunny	Moderate	Mid-Ebb	Bottom	4.3	10:21	8.03	8.31	32.99	23.37	1.28	4	0.279	SE	/

Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	9:25	7.92	8.53	33.61	22.86	2.90	12	0.285	SE	/
C1	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	9:25	7.92	8.52	33.60	22.84	2.97	12	0.289	SE	/
C1	20211216	Cloudy	Moderate	Mid-Ebb	Middle	10.1	9:24	7.96	8.67	32.80	22.59	3.67	13	0.286	E	/
C1	20211216	Cloudy	Moderate	Mid-Ebb	Middle	10.1	9:24	7.94	8.64	32.86	22.59	3.65	13	0.286	E	/
C1	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	19.2	9:23	7.99	8.68	32.85	22.58	3.36	4	0.295	SE	/
C1	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	19.2	9:23	7.97	8.62	32.92	22.58	3.50	4	0.298	SE	/
C2	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	10:41	7.94	8.68	33.10	22.77	2.59	5	0.269	E	/
C2	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	10:41	7.99	8.64	33.08	22.71	2.38	5	0.295	SE	/
C2	20211216	Cloudy	Moderate	Mid-Ebb	Middle	10.65	10:40	8.12	8.64	34.09	22.73	2.79	7	0.290	SE	/
C2	20211216	Cloudy	Moderate	Mid-Ebb	Middle	10.65	10:40	8.02	8.71	33.21	22.72	2.74	7	0.276	E	/
C2	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	20.3	10:39	8.01	8.52	33.67	22.81	3.14	3	0.295	E	/
C2	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	20.3	10:39	7.92	8.48	33.67	22.87	3.28	3	0.284	SE	/
M1	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	10:08	8.57	8.62	32.60	22.88	2.65	11	0.292	E	/
M1	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	10:08	8.16	8.60	32.55	22.87	2.64	11	0.273	SE	/
M1	20211216	Cloudy	Moderate	Mid-Ebb	Middle	3.6	10:07	8.61	8.62	32.60	22.91	2.21	4	0.291	SE	/
M1	20211216	Cloudy	Moderate	Mid-Ebb	Middle	3.6	10:07	8.60	8.65	32.59	22.88	2.34	5	0.285	E	/
M1	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	6.2	10:06	8.07	8.68	33.18	22.72	2.44	4	0.296	E	/
M1	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	6.2	10:06	8.56	8.61	32.59	22.85	2.11	3	0.274	E	/
M2	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	9:54	7.93	8.55	33.23	22.72	2.33	5	0.282	E	/
M2	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	9:54	8.06	8.53	33.23	22.74	2.13	4	0.266	E	/
M2	20211216	Cloudy	Moderate	Mid-Ebb	Middle	6.75	9:53	8.19	8.53	33.26	22.81	2.71	7	0.298	E	/
M2	20211216	Cloudy	Moderate	Mid-Ebb	Middle	6.75	9:53	8.21	8.52	33.23	22.86	2.76	7	0.296	SE	/
M2	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	12.5	9:52	8.23	8.49	33.13	22.82	2.54	5	0.265	E	/
M2	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	12.5	9:52	8.24	8.49	33.10	22.80	2.53	5	0.286	SE	/
M3	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	10:27	8.81	8.52	32.45	22.81	1.92	3	0.291	E	/
M3	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	10:27	8.73	8.54	32.62	22.80	2.04	3	0.286	SE	/
M3	20211216	Cloudy	Moderate	Mid-Ebb	Middle	3.75	10:26	8.02	8.61	34.08	22.66	2.40	4	0.270	SE	/
M3	20211216	Cloudy	Moderate	Mid-Ebb	Middle	3.75	10:26	8.78	8.55	32.65	22.77	2.58	4	0.282	SE	/
M3	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	6.5	10:25	8.09	8.51	33.21	22.74	1.86	5	0.265	SE	/
M3	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	6.5	10:25	8.08	8.57	33.34	22.69	1.94	5	0.281	SE	/
M4	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	11:01	7.95	8.60	33.99	22.79	2.30	3	0.287	SE	/
M4	20211216	Cloudy	Moderate	Mid-Ebb	Surface	1	11:01	8.19	8.60	33.38	22.71	2.35	2.5	0.282	SE	/
M4	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	3.7	11:00	8.77	8.53	32.54	22.81	2.52	4	0.266	SE	/
M4	20211216	Cloudy	Moderate	Mid-Ebb	Bottom	3.7	11:00	7.96	8.54	33.88	22.75	2.63	4	0.268	E	/
C1	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	9:55	8.79	8.17	34.67	22.83	2.84	21	0.301	E	/
C1	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	9:55	8.78	8.24	34.68	22.73	2.72	21	0.300	E	/
C1	20211218	Sunny	Moderate	Mid-Ebb	Middle	10.85	9:54	8.84	8.32	33.13	22.82	2.21	7	0.280	SE	/
C1	20211218	Sunny	Moderate	Mid-Ebb	Middle	10.85	9:54	8.87	8.33	33.08	22.93	2.40	9	0.292	E	/
C1	20211218	Sunny	Moderate	Mid-Ebb	Bottom	20.7	9:53	8.83	8.32	33.18	22.87	2.85	10	0.283	SE	/
C1	20211218	Sunny	Moderate	Mid-Ebb	Bottom	20.7	9:53	8.85	8.33	33.21	22.79	2.39	8	0.266	SE	/
C2	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	11:08	8.46	8.24	34.63	22.65	2.58	3	0.297	SE	/
C2	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	11:08	8.48	8.22	34.53	22.68	2.33	5	0.278	SE	/
C2	20211218	Sunny	Moderate	Mid-Ebb	Middle	12.45	11:07	9.06	8.43	33.78	22.65	2.74	4	0.297	E	/
C2	20211218	Sunny	Moderate	Mid-Ebb	Middle	12.45	11:07	8.48	8.24	34.56	22.83	2.87	4	0.270	SE	/
C2	20211218	Sunny	Moderate	Mid-Ebb	Bottom	23.9	11:06	8.76	8.17	34.65	22.75	2.68	3	0.291	E	/
C2	20211218	Sunny	Moderate	Mid-Ebb	Bottom	23.9	11:06	8.75	8.17	34.53	22.83	3.00	5	0.292	E	/
M1	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	10:24	8.51	8.33	34.11	22.83	1.76	8	0.279	SE	/
M1	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	10:24	8.45	8.38	33.91	22.78	1.82	8	0.284	SE	/
M1	20211218	Sunny	Moderate	Mid-Ebb	Middle	3.25	10:23	8.51	8.33	34.21	22.88	2.09	5	0.270	SE	/
M1	20211218	Sunny	Moderate	Mid-Ebb	Middle	3.25	10:23	8.50	8.37	34.09	22.73	1.99	4	0.301	E	/
M1	20211218	Sunny	Moderate	Mid-Ebb	Bottom	5.5	10:22	8.43	8.29	34.60	22.72	2.23	2.5	0.281	E	/
M1	20211218	Sunny	Moderate	Mid-Ebb	Bottom	5.5	10:22	8.54	8.33	34.19	22.85	2.11	3	0.296	E	/
M2	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	10:10	9.13	8.38	32.97	22.84	1.95	3	0.295	E	/
M2	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	10:10	9.09	8.40	32.86	22.84	2.08	2.5	0.281	SE	/
M2	20211218	Sunny	Moderate	Mid-Ebb	Middle	6	10:09	8.35	8.27	33.64	22.77	2.18	3	0.284	SE	/
M2	20211218	Sunny	Moderate	Mid-Ebb	Middle	6	10:09	8.38	8.31	33.73	22.77	1.90	3	0.291	E	/
M2	20211218	Sunny	Moderate	Mid-Ebb	Bottom	11	10:08	8.38	8.26	33.70	22.83	1.95	3	0.284	E	/
M2	20211218	Sunny	Moderate	Mid-Ebb	Bottom	11	10:08	8.36	8.27	33.60	22.75	2.11	4	0.280	SE	/
M3	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	10:41	8.01	8.26	34.59	22.62	2.35	5	0.275	E	/
M3	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	10:41	8.15	8.31	34.48	22.60	2.09	3	0.273	SE	/
M3	20211218	Sunny	Moderate	Mid-Ebb	Middle	3.6	10:40	9.00	8.41	34.58	22.72	1.82	6	0.265	SE	/
M3	20211218	Sunny	Moderate	Mid-Ebb	Middle	3.6	10:40	8.06	8.30	34.53	22.65	1.94	5	0.287	E	/
M3	20211218	Sunny	Moderate	Mid-Ebb	Bottom	6.2	10:39	9.07	8.39	33.01	22.99	1.74	4	0.273	SE	/
M3	20211218	Sunny	Moderate	Mid-Ebb	Bottom	6.2	10:39	9.11	8.35	33.07	22.82	1.97	3	0.280	E	/
M4	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	11:30	9.24	8.25	34.73	22.70	1.70	5	0.278	SE	/
M4	20211218	Sunny	Moderate	Mid-Ebb	Surface	1	11:30	8.56	8.32	33.59	22.62	1.78	5	0.268	E	/
M4	20211218	Sunny	Moderate	Mid-Ebb	Bottom	4.4	11:29	8.02	8.33	34.48	22.61	1.93	2.5	0.300	SE	/
M4	20211218	Sunny	Moderate	Mid-Ebb	Bottom	4.4	11:29	9.22	8.20	34.75	22.70	2.05	3	0.286	E	/
C1	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	11:49	9.36	8.21	32.91	22.33	11.5	5	0.297	SE	/
C1	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	11:49	9.38	8.22	32.96	22.29	11.9	4	0.27	E	/
C1	20211221	Cloudy	Moderate	Mid-Ebb	Middle	10.7	11:48	8.36	8.35	33.27	22.41	12.8	12	0.285	SE	/
C1	20211221	Cloudy	Moderate	Mid-Ebb	Middle	10.7	11:48	8.41	8.31	33.37	22.42	12.5	15	0.291	E	/
C1	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	20.4	11:47	8.41	8.31	33.29	22.39	14.9	17	0.276	E	/
C1	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	20.4	11:47	8.37	8.3	33.35	22.46	13.4	13	0.271	SE	/
C2	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	12:51	8.14	8.36	32.08	22.52	7.86	9	0.276	SE	/
C2	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	12:51	8.15	8.33	32.11	22.44	8.14	7	0.293	E	/
C2	20211221	Cloudy	Moderate	Mid-Ebb	Middle	12.7	12:50	8.19	8.43	32.9	22.5	7.93	8	0.28	E	/
C2	20211221	Cloudy	Moderate	Mid-Ebb	Middle	12.7	12:50	8.19	8.38	32.11	22.41	7.65	7	0.28	SE	/
C2	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	24.4	12:49	9.33	8.23	32.99	22.36	7.92	6	0.278	SE	/
C2	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	24.4	12:49	9.38	8.22	32.92	22.27	7.88	8	0.281	SE	/
M1	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	12:18	8.12	8.26	32.51	22.38	8.22	9	0.291	SE	/
M1	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	12:18	8.97	8.28	33.26	22.43	8.53	6	0.283	SE	/
M1	20211221	Cloudy	Moderate	Mid-Ebb	Middle	3.25	12:17	8.11	8.27	32.5	22.41	8.03	8	0.295	SE	/
M1	20211221	Cloudy	Moderate	Mid-Ebb	Middle	3.25	12:17	8.11	8.27	32.49	22.37	7.95	6	0.286	E	/
M1	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	5.5	12:16	8.18	8.38	32.06	22.41	7.78	4	0.276	SE	/
M1	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	5.5	12:16	8.16	8.28	32.49	22.36	7.61	4	0.3	E	/
M2	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	12:02	9.27	8.47	32.63	22.59	8.17	4	0.297	E	/
M2	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	12:02	9.29	8.42	32.56	22.55	8.03	4	0.267	SE	/
M2	20211221	Cloudy	Moderate	Mid-Ebb	Middle	6.85	12:01	8.74	8.18	33.04	22.36	7.54	3	0.27	E	/
M2	20211221	Cloudy	Moderate	Mid-Ebb	Middle	6.85	12:01	8.75	8.2	33.08	22.32	7.49	4	0.277	E	/
M2	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	12.7	12:00	8.74	8.19	33.05	22.33	7	3	0.284	SE	/
M2	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	12.7	12:00	8.73	8.21	33.07	22.28	7.24	3	0.263	SE	/
M3	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	12:32	8.9	8.39	32.87	22.47	8.76	4	0.299	SE	/
M3	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	12:32	8.88	8.39	32.83	22.55	8.49	4	0.29	E	/
M3	20211221	Cloudy	Moderate	Mid-Ebb	Middle	3.35	12:31	9.41	8.42	33.41	22.52	9.02	5	0.299	SE	/
M3	20211221	Cloudy	Moderate	Mid-Ebb	Middle	3.35	12:31	8.87	8.39	32.95	22.53	9.1	7	0.275	SE	/
M3	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	5.7	12:30	9.29	8.45	32.54	22.57	8.47	6	0.276	SE	/
M3	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	5.7	12:30	9.31	8.47	32.54	22.5	8.53	6	0.264	E	/
M4	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	13:13	9.43	8.28	32.74	22.44	6.53	11	0.284	E	/
M4	20211221	Cloudy	Moderate	Mid-Ebb	Surface	1	13:13	9.4	8.24	32.13	22.3	6.95	11	0.289	E	/
M4	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	4.4	13:11	8.84	8.41	32.85	22.5	7.88	8	0.269	E	/
M4	20211221	Cloudy	Moderate	Mid-Ebb	Bottom	4.4	13:11	9.41	8.28	32.73	22.36	7.9	6	0.281	E	/

Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	12:43	7.93	8.32	34.8	22.12	4.56	6	0.292	SE	/
C1	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	12:43	7.93	8.28	34.9	22.09	5.01	7	0.285	SE	/
C1	20211223	Cloudy	Moderate	Mid-Ebb	Middle	9.35	12:42	8.23	8.36	33.29	22	4.8	8	0.265	E	/
C1	20211223	Cloudy	Moderate	Mid-Ebb	Middle	9.35	12:42	8.11	8.31	33.31	21.98	4.52	8	0.278	E	/
C1	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	17.7	12:41	8.22	8.36	33.35	22	3.97	7	0.271	SE	/
C1	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	17.7	12:41	8.26	8.32	33.12	21.99	4.39	8	0.295	SE	/
C2	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	13:44	8.67	8.31	34.56	22.14	2.74	10	0.298	SE	/
C2	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	13:44	8.69	8.31	34.44	22.11	2.86	8	0.269	SE	/
C2	20211223	Cloudy	Moderate	Mid-Ebb	Middle	12.3	13:43	8.14	8.32	34.2	21.98	2.53	8	0.295	E	/
C2	20211223	Cloudy	Moderate	Mid-Ebb	Middle	12.3	13:43	8.68	8.29	34.44	22.16	2.62	7	0.278	E	/
C2	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	23.6	13:42	7.92	8.29	34.86	22.08	2.45	6	0.287	SE	/
C2	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	23.6	13:42	7.99	8.33	34.74	22.1	2.35	6	0.295	SE	/
M1	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	13:13	8.43	8.28	33.9	22.2	3.72	8	0.296	SE	/
M1	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	13:13	9	8.48	33.17	22.03	3.77	7	0.288	SE	/
M1	20211223	Cloudy	Moderate	Mid-Ebb	Middle	3.9	13:12	8.25	8.31	33.76	22.13	3.61	10	0.264	SE	/
M1	20211223	Cloudy	Moderate	Mid-Ebb	Middle	3.9	13:12	8.41	8.29	33.62	22.21	3.88	9	0.28	E	/
M1	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	6.8	13:11	8.68	8.32	34.34	22.11	3.14	7	0.285	E	/
M1	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	6.8	13:11	8.28	8.32	33.76	22.2	3.21	9	0.286	SE	/
M2	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	13:00	9.05	8.31	34.68	22.14	2.48	9	0.299	E	/
M2	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	13:00	9.13	8.38	34.65	22.14	2.49	8	0.272	E	/
M2	20211223	Cloudy	Moderate	Mid-Ebb	Middle	5.95	12:59	8.58	8.52	34.79	22.17	2.7	7	0.292	E	/
M2	20211223	Cloudy	Moderate	Mid-Ebb	Middle	5.95	12:59	8.54	8.49	34.86	22.17	2.67	8	0.283	SE	/
M2	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	10.9	12:58	8.57	8.49	34.64	22.21	2.73	7	0.274	SE	/
M2	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	10.9	12:58	8.41	8.5	34.74	22.2	2.87	6	0.27	E	/
M3	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	13:28	8.07	8.24	33.81	21.96	3.7	7	0.298	SE	/
M3	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	13:28	8.02	8.18	33.95	21.94	3.64	5	0.292	SE	/
M3	20211223	Cloudy	Moderate	Mid-Ebb	Middle	3.65	13:27	8.06	8.32	34.06	22.1	3.04	7	0.275	SE	/
M3	20211223	Cloudy	Moderate	Mid-Ebb	Middle	3.65	13:27	8.01	8.21	33.99	21.96	3.51	6	0.29	SE	/
M3	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	6.3	13:26	9.12	8.31	34.5	22.1	3.18	6	0.295	E	/
M3	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	6.3	13:26	9.01	8.35	34.43	22.13	2.86	8	0.274	E	/
M4	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	14:10	8.03	8.35	33.78	22.22	3.77	5	0.3	E	/
M4	20211223	Cloudy	Moderate	Mid-Ebb	Surface	1	14:10	8.34	8.38	33.56	22	3.7	6	0.289	SE	/
M4	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	4.5	14:09	8.08	8.22	33.7	21.95	4.38	7	0.268	SE	/
M4	20211223	Cloudy	Moderate	Mid-Ebb	Bottom	4.5	14:09	8.06	8.42	33.57	22.26	4.02	8	0.287	SE	/
C1	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	14:47	8.26	8.32	33.99	22.24	4.29	11	0.285	E	/
C1	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	14:47	8.28	8.26	33.86	22.28	4.32	11	0.264	SE	/
C1	20211225	Sunny	Moderate	Mid-Ebb	Middle	10.7	14:46	8.32	8.25	33.99	22.15	4.93	10	0.275	SE	/
C1	20211225	Sunny	Moderate	Mid-Ebb	Middle	10.7	14:46	8.22	8.32	33.92	22.18	4.79	7	0.267	SE	/
C1	20211225	Sunny	Moderate	Mid-Ebb	Bottom	20.4	14:45	8.31	8.25	33.86	22.13	4.27	10	0.299	SE	/
C1	20211225	Sunny	Moderate	Mid-Ebb	Bottom	20.4	14:45	8.22	8.3	33.85	22.14	3.85	10	0.294	SE	/
C2	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	15:59	8.31	8.25	33.99	22.04	5.11	7	0.295	SE	/
C2	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	15:59	8.25	8.26	33.9	22.07	4.76	7	0.281	SE	/
C2	20211225	Sunny	Moderate	Mid-Ebb	Middle	12.15	15:58	8.27	8.31	33.87	22.28	4.94	9	0.286	E	/
C2	20211225	Sunny	Moderate	Mid-Ebb	Middle	12.15	15:58	8.27	8.26	33.85	22.05	5.08	9	0.274	E	/
C2	20211225	Sunny	Moderate	Mid-Ebb	Bottom	23.3	15:57	8.2	8.32	33.86	22.29	4.97	6	0.301	SE	/
C2	20211225	Sunny	Moderate	Mid-Ebb	Bottom	23.3	15:57	8.22	8.3	33.86	22.27	4.82	4	0.268	SE	/
M1	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	15:27	8.25	8.32	33.99	22.34	4.79	2.5	0.285	E	/
M1	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	15:27	8.31	8.29	33.93	22.29	5.12	2.5	0.268	E	/
M1	20211225	Sunny	Moderate	Mid-Ebb	Middle	3.5	15:26	8.21	8.28	33.89	22.43	4.39	8	0.264	E	/
M1	20211225	Sunny	Moderate	Mid-Ebb	Middle	3.5	15:26	8.31	8.27	33.88	22.37	4.15	9	0.3	SE	/
M1	20211225	Sunny	Moderate	Mid-Ebb	Bottom	6	15:25	8.25	8.29	33.88	22.15	4.29	10	0.287	E	/
M1	20211225	Sunny	Moderate	Mid-Ebb	Bottom	6	15:25	8.3	8.3	33.93	22.33	4.62	10	0.267	E	/
M2	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	15:10	8.21	8.28	33.99	22.12	5.14	9	0.276	SE	/
M2	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	15:10	8.31	8.33	33.85	22.14	5.16	9	0.283	E	/
M2	20211225	Sunny	Moderate	Mid-Ebb	Middle	6.9	15:09	8.24	8.3	33.87	22.32	4.5	12	0.298	SE	/
M2	20211225	Sunny	Moderate	Mid-Ebb	Middle	6.9	15:09	8.31	8.27	33.96	22.37	4.49	9	0.288	E	/
M2	20211225	Sunny	Moderate	Mid-Ebb	Bottom	12.8	15:08	8.23	8.31	33.88	22.32	4.26	13	0.29	SE	/
M2	20211225	Sunny	Moderate	Mid-Ebb	Bottom	12.8	15:08	8.32	8.27	33.88	22.32	4.39	13	0.277	SE	/
M3	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	15:42	8.29	8.31	33.92	22.17	4.61	10	0.287	SE	/
M3	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	15:42	8.28	8.27	33.97	22.12	4.7	10	0.297	SE	/
M3	20211225	Sunny	Moderate	Mid-Ebb	Middle	3.65	15:41	8.18	8.25	33.85	22.26	4.68	12	0.297	SE	/
M3	20211225	Sunny	Moderate	Mid-Ebb	Middle	3.65	15:41	8.17	8.31	33.85	22.18	4.64	10	0.289	SE	/
M3	20211225	Sunny	Moderate	Mid-Ebb	Bottom	6.3	15:40	8.21	8.26	33.97	22.16	3.84	10	0.264	SE	/
M3	20211225	Sunny	Moderate	Mid-Ebb	Bottom	6.3	15:40	8.19	8.33	33.96	22.19	3.95	11	0.267	SE	/
M4	20211225	Sunny	Moderate	Mid-Ebb	Surface	1	16:19	8.23	8.3	33.93	22.34	4.46	4	0.293	SE	/
M4	20211225	Sunny	Moderate	Mid-Ebb	Middle	1	16:19	8.31	8.33	33.87	22.4	4.29	5	0.298	E	/
M4	20211225	Sunny	Moderate	Mid-Ebb	Bottom	4.6	16:18	8.32	8.27	33.99	22.13	4.74	4	0.296	SE	/
M4	20211225	Sunny	Moderate	Mid-Ebb	Bottom	4.6	16:18	8.26	8.26	33.98	22.32	4.91	4	0.277	SE	/
C1	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	17:36	8.6	8.21	35.01	21.34	10.1	6	0.285	E	/
C1	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	17:36	8.62	8.18	34.88	21.44	9.85	5	0.269	E	/
C1	20211228	Cloudy	Moderate	Mid-Ebb	Middle	11.3	17:35	8.18	8.36	34.98	21.45	9.23	6	0.287	SE	/
C1	20211228	Cloudy	Moderate	Mid-Ebb	Middle	11.3	17:35	8.15	8.38	34.91	21.36	9.89	8	0.284	SE	/
C1	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	21.6	17:34	8.08	8.34	34.85	21.4	8.61	7	0.295	SE	/
C1	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	21.6	17:34	8.08	8.42	34.96	21.34	8.98	9	0.291	SE	/
C2	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	18:35	9.14	8.25	34.49	21.43	1.92	3	0.277	E	/
C2	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	18:35	9.16	8.26	34.52	21.41	2.24	2.5	0.281	SE	/
C2	20211228	Cloudy	Moderate	Mid-Ebb	Middle	10.95	18:34	8.88	8.39	34.66	21.36	2.8	26	0.287	SE	/
C2	20211228	Cloudy	Moderate	Mid-Ebb	Middle	10.95	18:34	9.16	8.27	34.51	21.35	2.78	26	0.266	SE	/
C2	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	20.9	18:33	8.47	8.18	34.93	21.45	7.52	16	0.301	SE	/
C2	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	20.9	18:33	8.48	8.23	34.89	21.36	7.63	15	0.287	E	/
M1	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	18:06	8.55	8.29	34.17	21.46	5.67	4	0.301	E	/
M1	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	18:06	8.35	8.33	34.46	21.45	5.91	4	0.276	SE	/
M1	20211228	Cloudy	Moderate	Mid-Ebb	Middle	3.8	18:05	8.51	8.26	34.15	21.46	6.19	5	0.298	SE	/
M1	20211228	Cloudy	Moderate	Mid-Ebb	Middle	3.8	18:05	8.5	8.33	34.21	21.4	5.75	6	0.267	E	/
M1	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	6.6	18:04	9.08	8.28	34.54	21.39	5.58	5	0.283	SE	/
M1	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	6.6	18:04	8.55	8.29	34.19	21.37	5.52	5	0.296	SE	/
M2	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	17:53	8.53	8.41	34.83	21.45	5.24	5	0.275	SE	/
M2	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	17:53	8.58	8.39	34.9	21.36	4.96	4	0.288	SE	/
M2	20211228	Cloudy	Moderate	Mid-Ebb	Middle	5.85	17:52	8.05	8.28	33.79	21.44	5.72	6	0.276	E	/
M2	20211228	Cloudy	Moderate	Mid-Ebb	Middle	5.85	17:52	8	8.27	33.79	21.47	6.33	6	0.296	SE	/
M2	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	10.7	17:51	7.99	8.3	33.81	21.33	6.14	5	0.274	SE	/
M2	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	10.7	17:51	8.02	8.31	33.86	21.41	6.2	5	0.263	E	/
M3	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	18:17	8.54	8.21	33.66	21.36	6.88	4	0.299	E	/
M3	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	18:17	8.49	8.17	33.67	21.44	6.93	6	0.282	SE	/
M3	20211228	Cloudy	Moderate	Mid-Ebb	Middle	3.9	18:16	8.43	8.23	33.95	21.43	6.85	5	0.282	SE	/
M3	20211228	Cloudy	Moderate	Mid-Ebb	Middle	3.9	18:16	8.59	8.22	33.61	21.43	6.88	4	0.299	SE	/
M3	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	6.8	18:15	8.64	8.39	34.91	21.35	6.61	5	0.285	E	/
M3	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	6.8	18:15	8.67	8.39	34.93	21.37	6.47	7	0.264	SE	/
M4	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	18:53	8.88	8.21	34.63	21.45	4.95	5	0.289	SE	/
M4	20211228	Cloudy	Moderate	Mid-Ebb	Surface	1	18:53	8.39	8.36	34.49	21.38	5.05	5	0.263	SE	/
M4	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	4.2	18:52	8.61	8.21	33.63	21.46	5.61	4	0.287	SE	/
M4	20211228	Cloudy	Moderate	Mid-Ebb	Bottom	4.2	18:52	8.96	8.27	34.55	21.39	5.9	4	0.288	SE	/

Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	8:53	8.1	8.31	32.07	21.71	8.02	5	0.3	E	/
C1	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	8:53	8.08	8.39	32.09	21.58	7.77	5	0.297	SE	/
C1	20211230	Sunny	Moderate	Mid-Ebb	Middle	9.35	8:52	7.93	8.41	33.18	21.59	7.48	6	0.301	SE	/
C1	20211230	Sunny	Moderate	Mid-Ebb	Middle	9.35	8:52	8.04	8.35	33.07	21.65	7.13	5	0.296	E	/
C1	20211230	Sunny	Moderate	Mid-Ebb	Bottom	17.7	8:51	8.98	8.36	33.17	21.57	8.25	7	0.288	SE	/
C1	20211230	Sunny	Moderate	Mid-Ebb	Bottom	17.7	8:51	8.02	8.35	33.16	21.74	7.87	9	0.264	SE	/
C2	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	10:00	8.14	8.38	32.52	21.64	6.47	6	0.269	SE	/
C2	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	10:00	7.99	8.37	32.4	21.57	6.63	4	0.301	SE	/
C2	20211230	Sunny	Moderate	Mid-Ebb	Middle	11	9:59	8.05	8.32	33.52	21.65	7.18	5	0.296	SE	/
C2	20211230	Sunny	Moderate	Mid-Ebb	Middle	11	9:59	8.16	8.33	32.51	21.54	7.2	4	0.271	E	/
C2	20211230	Sunny	Moderate	Mid-Ebb	Bottom	21	9:58	8.23	8.38	32.36	21.62	6.74	4	0.296	SE	/
C2	20211230	Sunny	Moderate	Mid-Ebb	Bottom	21	9:58	8.27	8.31	32.36	21.75	6.73	5	0.268	E	/
M1	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	9:25	8.18	8.37	32.16	21.72	6.12	6	0.274	SE	/
M1	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	9:25	8.05	8.37	32.34	21.41	5.93	6	0.267	SE	/
M1	20211230	Sunny	Moderate	Mid-Ebb	Middle	3.2	9:24	8.26	8.34	32.17	21.62	5.76	6	0.287	SE	/
M1	20211230	Sunny	Moderate	Mid-Ebb	Middle	3.2	9:24	8.21	8.36	32.19	21.73	5.75	4	0.3	E	/
M1	20211230	Sunny	Moderate	Mid-Ebb	Bottom	5.4	9:23	8	8.4	32.41	21.52	6.35	5	0.276	SE	/
M1	20211230	Sunny	Moderate	Mid-Ebb	Bottom	5.4	9:23	8.16	8.34	32.13	21.54	6.16	5	0.293	SE	/
M2	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	9:10	8.09	8.32	33.16	21.44	5.24	4	0.268	SE	/
M2	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	9:10	8.04	8.32	32.96	21.39	5.17	5	0.297	SE	/
M2	20211230	Sunny	Moderate	Mid-Ebb	Middle	6.55	9:09	8.2	8.33	33.72	21.45	4.57	12	0.294	SE	/
M2	20211230	Sunny	Moderate	Mid-Ebb	Middle	6.55	9:09	8.12	8.39	33.5	21.46	4.83	12	0.285	E	/
M2	20211230	Sunny	Moderate	Mid-Ebb	Bottom	12.1	9:08	8.21	8.3	33.57	21.45	5.42	6	0.276	SE	/
M2	20211230	Sunny	Moderate	Mid-Ebb	Bottom	12.1	9:08	8.2	8.37	33.62	21.55	5.46	6	0.297	SE	/
M3	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	9:44	8.18	8.39	33.11	21.4	5.61	6	0.287	SE	/
M3	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	9:44	8.32	8.3	32.83	21.5	5.71	6	0.299	SE	/
M3	20211230	Sunny	Moderate	Mid-Ebb	Middle	3.25	9:43	8.67	8.35	32.65	21.51	5.11	4	0.263	E	/
M3	20211230	Sunny	Moderate	Mid-Ebb	Middle	3.25	9:43	8.2	8.39	32.88	21.45	4.8	3	0.285	E	/
M3	20211230	Sunny	Moderate	Mid-Ebb	Bottom	5.5	9:42	8.03	8.3	33.12	21.42	4.78	4	0.293	SE	/
M3	20211230	Sunny	Moderate	Mid-Ebb	Bottom	5.5	9:42	7.99	8.33	33.11	21.4	4.74	4	0.281	E	/
M4	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	10:18	8.81	8.28	33.82	21.5	5.28	4	0.276	SE	/
M4	20211230	Sunny	Moderate	Mid-Ebb	Surface	1	10:19	8.39	8.43	33.38	21.52	5.12	5	0.273	SE	/
M4	20211230	Sunny	Moderate	Mid-Ebb	Bottom	4	10:17	8.15	8.37	33.12	21.54	5.31	4	0.276	SE	/
M4	20211230	Sunny	Moderate	Mid-Ebb	Bottom	4	10:17	8.78	8.28	33.65	21.49	5.48	6	0.294	SE	/

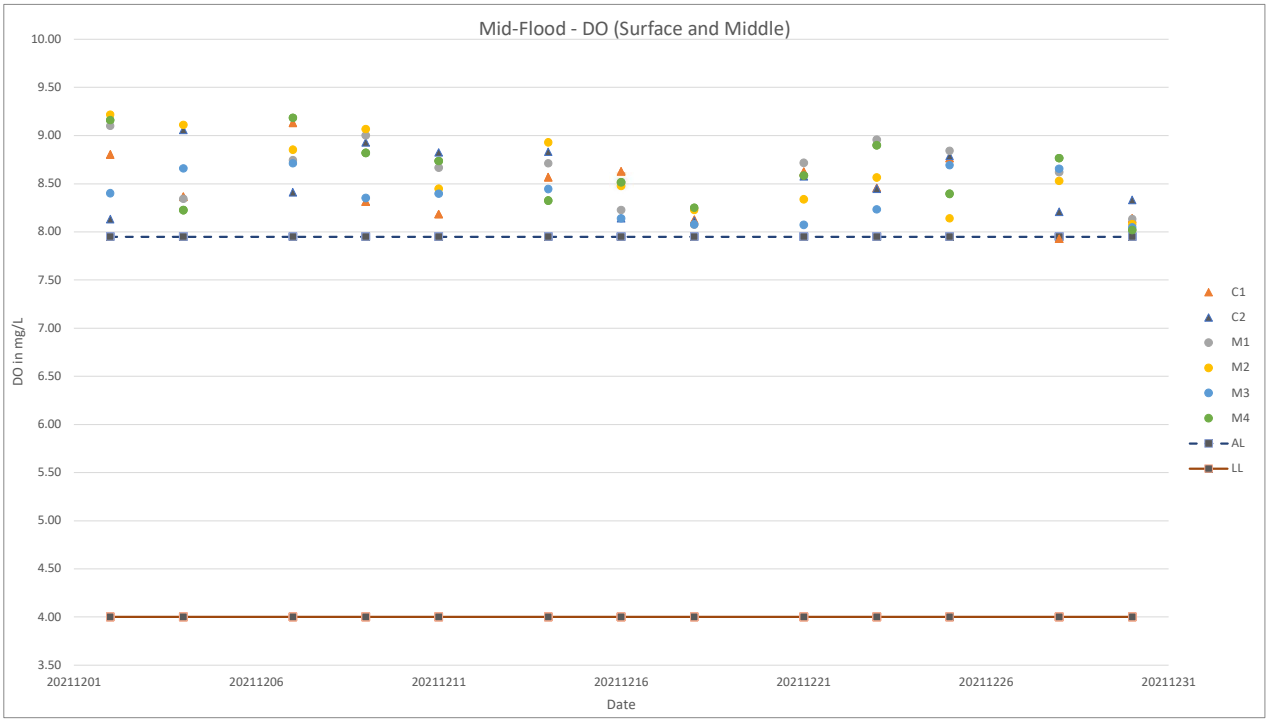
Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211202	Sunny	Moderate	Mid-Flood	Surface	1	15:56	8.14	8.34	31.53	24.22	6.68	5	0.268	SE	/
C1	20211202	Sunny	Moderate	Mid-Flood	Surface	1	15:56	8.22	8.44	31.47	24.26	6.27	6	0.300	E	/
C1	20211202	Sunny	Moderate	Mid-Flood	Middle	10.05	15:55	9.37	8.50	31.71	24.32	5.86	6	0.297	SE	/
C1	20211202	Sunny	Moderate	Mid-Flood	Middle	10.05	15:55	9.48	8.42	31.69	24.21	6.33	6	0.301	E	/
C1	20211202	Sunny	Moderate	Mid-Flood	Bottom	19.1	15:54	9.49	8.48	31.63	24.28	6.03	4	0.292	SE	/
C1	20211202	Sunny	Moderate	Mid-Flood	Bottom	19.1	15:54	9.23	8.49	31.63	24.16	6.17	5	0.292	SE	/
C2	20211202	Sunny	Moderate	Mid-Flood	Surface	1	14:51	8.19	8.48	31.51	24.25	8.33	6	0.304	SE	/
C2	20211202	Sunny	Moderate	Mid-Flood	Surface	1	14:51	8.14	8.41	31.58	24.30	8.45	5	0.309	SE	/
C2	20211202	Sunny	Moderate	Mid-Flood	Middle	11.9	14:50	8.03	8.42	31.66	24.24	7.64	4	0.303	E	/
C2	20211202	Sunny	Moderate	Mid-Flood	Middle	11.9	14:50	8.17	8.45	31.52	24.18	8.17	6	0.292	E	/
C2	20211202	Sunny	Moderate	Mid-Flood	Bottom	22.8	14:49	8.18	8.38	31.54	24.30	8.18	5	0.308	E	/
C2	20211202	Sunny	Moderate	Mid-Flood	Bottom	22.8	14:49	8.05	8.41	31.45	24.33	7.85	7	0.298	E	/
M1	20211202	Sunny	Moderate	Mid-Flood	Surface	1	15:18	9.23	8.59	32.68	24.23	4.95	4	0.281	SE	/
M1	20211202	Sunny	Moderate	Mid-Flood	Surface	1	15:18	8.62	8.50	32.20	24.19	4.83	6	0.276	E	/
M1	20211202	Sunny	Moderate	Mid-Flood	Middle	3.6	15:17	9.21	8.49	32.59	24.32	5.81	5	0.266	SE	/
M1	20211202	Sunny	Moderate	Mid-Flood	Middle	3.6	15:17	9.34	8.59	32.53	24.18	5.36	5	0.291	E	/
M1	20211202	Sunny	Moderate	Mid-Flood	Bottom	6.2	15:16	8.08	8.49	31.50	24.20	5.04	5	0.293	E	/
M1	20211202	Sunny	Moderate	Mid-Flood	Bottom	6.2	15:16	9.28	8.54	32.63	24.17	5.68	7	0.265	E	/
M2	20211202	Sunny	Moderate	Mid-Flood	Surface	1	15:35	9.03	8.26	32.86	24.32	4.30	5	0.266	E	/
M2	20211202	Sunny	Moderate	Mid-Flood	Surface	1	15:35	9.17	8.30	32.92	24.23	4.08	5	0.290	E	/
M2	20211202	Sunny	Moderate	Mid-Flood	Middle	5.95	15:34	9.31	8.53	31.79	24.30	3.70	6	0.301	SE	/
M2	20211202	Sunny	Moderate	Mid-Flood	Middle	5.95	15:34	9.36	8.49	31.86	24.20	4.07	4	0.273	E	/
M2	20211202	Sunny	Moderate	Mid-Flood	Bottom	10.9	15:33	9.39	8.56	31.89	24.28	3.68	7	0.292	E	/
M2	20211202	Sunny	Moderate	Mid-Flood	Bottom	10.9	15:33	9.17	8.56	31.81	24.16	4.02	7	0.266	SE	/
M3	20211202	Sunny	Moderate	Mid-Flood	Surface	1	15:04	8.09	8.51	32.13	24.15	5.00	4	0.308	SE	/
M3	20211202	Sunny	Moderate	Mid-Flood	Surface	1	15:04	8.06	8.46	32.13	24.19	5.60	7	0.287	SE	/
M3	20211202	Sunny	Moderate	Mid-Flood	Middle	3.95	15:03	9.32	8.46	33.26	24.33	5.80	6	0.305	SE	/
M3	20211202	Sunny	Moderate	Mid-Flood	Middle	3.95	15:03	8.13	8.47	32.17	24.27	6.65	7	0.283	SE	/
M3	20211202	Sunny	Moderate	Mid-Flood	Bottom	6.9	15:02	9.14	8.24	32.85	24.20	6.05	7	0.276	E	/
M3	20211202	Sunny	Moderate	Mid-Flood	Bottom	6.9	15:02	9.21	8.24	32.77	24.29	5.95	6	0.308	SE	/
M4	20211202	Sunny	Moderate	Mid-Flood	Surface	1	16:12	9.24	8.55	32.77	24.16	4.88	3	0.263	E	/
M4	20211202	Sunny	Moderate	Mid-Flood	Surface	1	16:12	9.08	8.52	32.28	24.31	4.95	5	0.282	SE	/
M4	20211202	Sunny	Moderate	Mid-Flood	Bottom	4.5	16:11	8.06	8.43	32.06	24.18	4.24	5	0.299	SE	/
M4	20211202	Sunny	Moderate	Mid-Flood	Bottom	4.5	16:11	9.33	8.52	32.94	24.34	3.67	5	0.274	SE	/
C1	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:43	8.59	8.41	33.88	24.29	6.67	4	0.295	SE	/
C1	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:43	8.65	8.48	33.80	24.13	6.83	6	0.281	SE	/
C1	20211204	Sunny	Moderate	Mid-Flood	Middle	10	16:42	8.11	8.35	32.83	24.13	6.75	5	0.268	E	/
C1	20211204	Sunny	Moderate	Mid-Flood	Middle	10	16:42	8.11	8.37	32.92	24.24	6.50	7	0.300	SE	/
C1	20211204	Sunny	Moderate	Mid-Flood	Bottom	19	16:41	8.11	8.41	32.93	24.18	6.67	4	0.296	SE	/
C1	20211204	Sunny	Moderate	Mid-Flood	Bottom	19	16:41	8.08	8.41	32.81	24.17	7.03	5	0.287	SE	/
C2	20211204	Sunny	Moderate	Mid-Flood	Surface	1	15:50	9.38	8.28	33.86	24.29	7.14	5	0.308	SE	/
C2	20211204	Sunny	Moderate	Mid-Flood	Surface	1	15:50	9.29	8.33	33.69	24.20	6.89	4	0.267	E	/
C2	20211204	Sunny	Moderate	Mid-Flood	Middle	12.55	15:49	8.20	8.38	33.28	24.24	6.68	5	0.302	SE	/
C2	20211204	Sunny	Moderate	Mid-Flood	Middle	12.55	15:49	9.37	8.31	33.81	24.24	7.08	6	0.309	SE	/
C2	20211204	Sunny	Moderate	Mid-Flood	Bottom	24.1	15:48	8.56	8.41	33.88	24.24	7.14	3	0.278	E	/
C2	20211204	Sunny	Moderate	Mid-Flood	Bottom	24.1	15:48	8.57	8.41	33.76	24.17	6.73	4	0.311	SE	/
M1	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:14	8.30	8.26	33.58	24.26	4.77	5	0.296	SE	/
M1	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:14	8.60	8.30	33.77	24.29	5.11	5	0.295	SE	/
M1	20211204	Sunny	Moderate	Mid-Flood	Middle	3.7	16:13	8.25	8.26	33.53	24.31	5.04	8	0.302	SE	/
M1	20211204	Sunny	Moderate	Mid-Flood	Middle	3.7	16:13	8.22	8.22	33.52	24.29	5.00	6	0.303	SE	/
M1	20211204	Sunny	Moderate	Mid-Flood	Bottom	6.4	16:12	9.38	8.33	33.79	24.27	4.95	6	0.304	E	/
M1	20211204	Sunny	Moderate	Mid-Flood	Bottom	6.4	16:12	8.13	8.28	33.53	24.28	5.13	7	0.287	E	/
M2	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:27	9.13	8.33	34.30	24.30	4.63	6	0.265	E	/
M2	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:27	9.07	8.32	34.43	24.24	5.12	5	0.298	SE	/
M2	20211204	Sunny	Moderate	Mid-Flood	Middle	6.95	16:26	9.15	8.32	33.60	24.25	4.77	5	0.266	E	/
M2	20211204	Sunny	Moderate	Mid-Flood	Middle	6.95	16:26	9.10	8.36	33.73	24.28	5.03	6	0.293	SE	/
M2	20211204	Sunny	Moderate	Mid-Flood	Bottom	12.9	16:25	9.03	8.39	33.63	24.16	5.06	5	0.287	SE	/
M2	20211204	Sunny	Moderate	Mid-Flood	Bottom	12.9	16:25	9.17	8.38	33.66	24.16	5.12	6	0.288	SE	/
M3	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:02	8.61	8.47	34.53	24.20	4.74	6	0.278	SE	/
M3	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:02	8.68	8.44	34.57	24.13	4.90	6	0.299	SE	/
M3	20211204	Sunny	Moderate	Mid-Flood	Middle	3.65	16:01	8.65	8.15	33.02	24.28	4.91	6	0.305	SE	/
M3	20211204	Sunny	Moderate	Mid-Flood	Middle	3.65	16:01	8.70	8.41	34.51	24.19	4.65	6	0.278	SE	/
M3	20211204	Sunny	Moderate	Mid-Flood	Bottom	6.3	16:00	9.06	8.34	34.37	24.25	4.86	6	0.266	E	/
M3	20211204	Sunny	Moderate	Mid-Flood	Bottom	6.3	16:00	9.01	8.36	34.42	24.31	4.67	5	0.275	SE	/
M4	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:59	8.44	8.43	33.45	24.18	4.38	5	0.299	SE	/
M4	20211204	Sunny	Moderate	Mid-Flood	Surface	1	16:59	8.01	8.39	34.37	24.17	4.27	4	0.292	SE	/
M4	20211204	Sunny	Moderate	Mid-Flood	Bottom	4.1	16:58	8.61	8.40	34.62	24.24	3.89	6	0.306	E	/
M4	20211204	Sunny	Moderate	Mid-Flood	Bottom	4.1	16:58	8.49	8.44	33.47	24.18	4.06	3	0.308	SE	/
C1	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	9:26	9.18	8.31	31.43	24.26	6.08	6	0.301	SE	/
C1	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	9:26	9.21	8.38	31.60	24.34	6.02	7	0.287	SE	/
C1	20211207	Cloudy	Moderate	Mid-Flood	Middle	9.95	9:25	9.03	8.40	31.18	24.24	6.12	7	0.308	E	/
C1	20211207	Cloudy	Moderate	Mid-Flood	Middle	9.95	9:25	9.11	8.41	31.27	24.48	6.09	9	0.304	E	/
C1	20211207	Cloudy	Moderate	Mid-Flood	Bottom	18.9	9:24	8.99	8.39	31.26	24.35	6.13	5	0.294	E	/
C1	20211207	Cloudy	Moderate	Mid-Flood	Bottom	18.9	9:24	9.10	8.39	31.26	24.35	6.06	6	0.282	SE	/
C2	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	8:23	8.49	8.39	31.24	24.49	7.65	12	0.302	E	/
C2	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	8:23	8.37	8.34	31.55	24.35	7.64	13	0.278	SE	/
C2	20211207	Cloudy	Moderate	Mid-Flood	Middle	11.65	8:22	8.31	8.25	32.27	24.35	7.77	7	0.274	SE	/
C2	20211207	Cloudy	Moderate	Mid-Flood	Middle	11.65	8:22	8.48	8.38	31.23	24.39	7.89	6	0.293	E	/
C2	20211207	Cloudy	Moderate	Mid-Flood	Bottom	22.3	8:21	9.24	8.31	31.61	24.41	8.38	9	0.290	SE	/
C2	20211207	Cloudy	Moderate	Mid-Flood	Bottom	22.3	8:21	9.19	8.33	31.58	24.47	8.20	9	0.270	E	/
M1	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	8:59	8.61	8.36	31.07	24.47	4.92	6	0.289	SE	/
M1	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	8:59	8.96	8.29	32.30	24.41	5.20	6	0.270	E	/
M1	20211207	Cloudy	Moderate	Mid-Flood	Middle	3.55	8:58	8.73	8.36	31.33	24.48	5.00	6	0.268	SE	/
M1	20211207	Cloudy	Moderate	Mid-Flood	Middle	3.55	8:58	8.68	8.40	31.16	24.36	5.07	6	0.310	SE	/
M1	20211207	Cloudy	Moderate	Mid-Flood	Bottom	6.1	8:57	8.38	8.35	31.30	24.34	4.74	6	0.272	SE	/
M1	20211207	Cloudy	Moderate	Mid-Flood	Bottom	6.1	8:57	8.62	8.38	31.39	24.40	4.83	7	0.275	E	/
M2	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	9:14	9.08	8.21	31.58	24.25	5.11	6	0.283	SE	/
M2	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	9:14	9.03	8.28	31.62	24.42	5.17	5	0.276	SE	/
M2	20211207	Cloudy	Moderate	Mid-Flood	Middle	6.85	9:13	8.65	8.20	32.86	24.33	5.29	8	0.266	E	/
M2	20211207	Cloudy	Moderate	Mid-Flood	Middle	6.85	9:13	8.65	8.21	32.67	24.34	5.44	9	0.294	SE	/
M2	20211207	Cloudy	Moderate	Mid-Flood	Bottom	12.7	9:12	8.60	8.20	32.83	24.26	5.47	6	0.302	SE	/
M2	20211207	Cloudy	Moderate	Mid-Flood	Bottom	12.7	9:12	8.57	8.14	32.82	24.37	4.98	7	0.288	SE	/
M3	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	8:42	8.82	8.23	32.07	24.32	4.88	7	0.265	E	/
M3	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	8:42	8.82	8.20	31.95	24.29	5.13	10	0.278	SE	/
M3	20211207	Cloudy	Moderate	Mid-Flood	Middle	3.85	8:41	8.53	8.24	32.40	24.36	5.44	7	0.292	SE	/
M3	20211207	Cloudy	Moderate	Mid-Flood	Middle	3.85	8:41	8.68	8.24	32.30	24.28	5.50	7	0.307	E	/
M3	20211207	Cloudy	Moderate	Mid-Flood	Bottom	6.7	8:40	8.91	8.27	31.55	24.38	5.97	7	0.284	SE	/
M3	20211207	Cloudy	Moderate	Mid-Flood	Bottom	6.7	8:40	9.01	8.28	31.79	24.35	5.76	5	0.273	E	/
M4	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	9:41	9.22	8.30	31.99	24.26	4.32	10	0.308	E	/
M4	20211207	Cloudy	Moderate	Mid-Flood	Surface	1	9:41	9.15	8.41	31.95	24.26	4.09	13	0.300	E	/
M4	20211207	Cloudy	Moderate	Mid-Flood	Bottom	4.1	9:40	8.74	8.24	32.13	24.35	3.94	8	0.294	SE	/
M4	20211207	Cloudy	Moderate	Mid-Flood	Bottom	4.1	9:40	9.28	8.26	32.17	24.36	3.89	7	0.307	SE	/

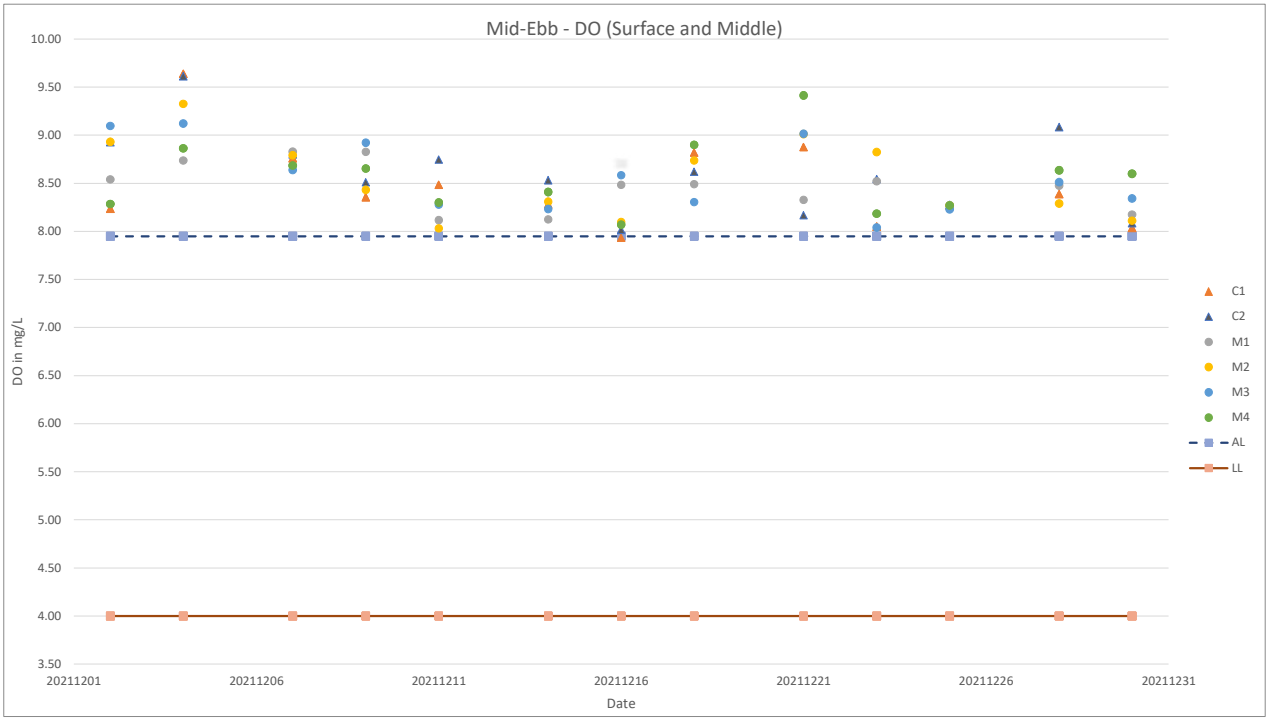
Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211209	Sunny	Moderate	Mid-Flood	Surface	1	10:32	8.44	8.36	33.35	23.03	3.44	7	0.266	SE	/
C1	20211209	Sunny	Moderate	Mid-Flood	Surface	1	10:32	8.43	8.43	33.30	23.25	3.61	7	0.302	SE	/
C1	20211209	Sunny	Moderate	Mid-Flood	Middle	9.55	10:31	8.18	8.47	32.51	22.99	3.87	10	0.271	SE	/
C1	20211209	Sunny	Moderate	Mid-Flood	Middle	9.55	10:31	8.20	8.44	32.39	23.15	4.29	12	0.302	E	/
C1	20211209	Sunny	Moderate	Mid-Flood	Bottom	18.1	10:30	8.15	8.48	32.49	22.94	3.26	10	0.308	SE	/
C1	20211209	Sunny	Moderate	Mid-Flood	Bottom	18.1	10:30	8.20	8.52	32.50	23.01	3.38	12	0.299	SE	/
C2	20211209	Sunny	Moderate	Mid-Flood	Surface	1	9:05	8.97	8.39	32.63	23.30	8.35	29	0.273	SE	/
C2	20211209	Sunny	Moderate	Mid-Flood	Surface	1	9:05	8.98	8.38	32.64	23.15	8.16	31	0.272	SE	/
C2	20211209	Sunny	Moderate	Mid-Flood	Middle	12.55	9:04	8.89	8.38	34.26	23.03	7.88	30	0.306	SE	/
C2	20211209	Sunny	Moderate	Mid-Flood	Middle	12.55	9:04	8.88	8.40	32.66	23.36	8.33	30	0.275	SE	/
C2	20211209	Sunny	Moderate	Mid-Flood	Bottom	24.1	9:03	8.30	8.36	33.38	23.02	7.70	27	0.300	SE	/
C2	20211209	Sunny	Moderate	Mid-Flood	Bottom	24.1	9:03	8.31	8.41	33.31	23.29	7.40	26	0.302	SE	/
M1	20211209	Sunny	Moderate	Mid-Flood	Surface	1	9:50	8.97	8.60	33.15	23.30	5.44	16	0.274	E	/
M1	20211209	Sunny	Moderate	Mid-Flood	Surface	1	9:50	8.99	8.40	32.74	23.01	5.16	14	0.284	SE	/
M1	20211209	Sunny	Moderate	Mid-Flood	Middle	4.9	9:49	9.04	8.59	33.12	23.08	5.96	13	0.267	SE	/
M1	20211209	Sunny	Moderate	Mid-Flood	Middle	4.9	9:49	9.01	8.55	33.13	23.13	4.99	13	0.269	E	/
M1	20211209	Sunny	Moderate	Mid-Flood	Bottom	8.8	9:48	8.88	8.38	32.53	23.05	5.56	14	0.281	E	/
M1	20211209	Sunny	Moderate	Mid-Flood	Bottom	8.8	9:48	8.96	8.56	33.12	23.08	5.33	10	0.286	E	/
M2	20211209	Sunny	Moderate	Mid-Flood	Surface	1	10:08	8.85	8.36	33.26	22.97	7.30	9	0.268	E	/
M2	20211209	Sunny	Moderate	Mid-Flood	Surface	1	10:08	8.75	8.38	33.16	23.08	6.76	9	0.296	SE	/
M2	20211209	Sunny	Moderate	Mid-Flood	Middle	5.6	10:07	9.28	8.57	33.77	23.03	6.98	9	0.269	SE	/
M2	20211209	Sunny	Moderate	Mid-Flood	Middle	5.6	10:07	9.39	8.57	33.82	22.99	6.77	8	0.303	SE	/
M2	20211209	Sunny	Moderate	Mid-Flood	Bottom	10.2	10:06	9.27	8.54	33.84	22.92	7.33	16	0.295	SE	/
M2	20211209	Sunny	Moderate	Mid-Flood	Bottom	10.2	10:06	9.34	8.55	33.84	23.07	7.40	16	0.309	SE	/
M3	20211209	Sunny	Moderate	Mid-Flood	Surface	1	9:25	8.39	8.28	33.61	23.17	5.88	20	0.284	SE	/
M3	20211209	Sunny	Moderate	Mid-Flood	Surface	1	9:25	8.23	8.28	33.64	23.20	5.96	21	0.274	SE	/
M3	20211209	Sunny	Moderate	Mid-Flood	Middle	4.8	9:24	8.52	8.50	33.82	23.12	6.11	18	0.284	SE	/
M3	20211209	Sunny	Moderate	Mid-Flood	Middle	4.8	9:24	8.27	8.33	33.65	22.98	6.46	16	0.299	SE	/
M3	20211209	Sunny	Moderate	Mid-Flood	Bottom	8.6	9:23	8.94	8.38	33.16	23.11	6.30	17	0.274	SE	/
M3	20211209	Sunny	Moderate	Mid-Flood	Bottom	8.6	9:23	8.94	8.33	33.13	23.10	6.43	15	0.280	SE	/
M4	20211209	Sunny	Moderate	Mid-Flood	Surface	1	10:48	8.50	8.59	34.11	23.05	4.40	10	0.298	E	/
M4	20211209	Sunny	Moderate	Mid-Flood	Surface	1	10:48	9.14	8.54	33.73	23.13	4.29	11	0.309	SE	/
M4	20211209	Sunny	Moderate	Mid-Flood	Bottom	4.6	10:47	8.35	8.35	33.62	23.27	4.61	9	0.295	SE	/
M4	20211209	Sunny	Moderate	Mid-Flood	Bottom	4.6	10:47	8.58	8.53	34.15	23.17	4.40	7	0.308	SE	/
C1	20211211	Sunny	Moderate	Mid-Flood	Surface	1	12:46	8.07	8.63	33.89	23.17	2.06	25	0.308	SE	/
C1	20211211	Sunny	Moderate	Mid-Flood	Surface	1	12:46	8.21	8.66	33.82	23.15	2.33	24	0.281	SE	/
C1	20211211	Sunny	Moderate	Mid-Flood	Middle	11.05	12:45	8.19	8.46	33.88	23.20	1.92	25	0.310	SE	/
C1	20211211	Sunny	Moderate	Mid-Flood	Middle	11.05	12:45	8.26	8.39	33.86	23.34	2.06	24	0.299	SE	/
C1	20211211	Sunny	Moderate	Mid-Flood	Bottom	21.1	12:44	8.14	8.35	33.86	23.35	1.59	25	0.287	SE	/
C1	20211211	Sunny	Moderate	Mid-Flood	Bottom	21.1	12:44	8.17	8.40	33.87	23.22	1.80	24	0.271	SE	/
C2	20211211	Sunny	Moderate	Mid-Flood	Surface	1	11:35	8.91	8.38	35.53	23.27	5.73	22	0.306	SE	/
C2	20211211	Sunny	Moderate	Mid-Flood	Surface	1	11:35	9.06	8.40	35.55	23.27	5.56	25	0.306	SE	/
C2	20211211	Sunny	Moderate	Mid-Flood	Middle	12.45	11:34	8.38	8.55	35.12	23.13	6.22	28	0.275	SE	/
C2	20211211	Sunny	Moderate	Mid-Flood	Middle	12.45	11:34	8.95	8.43	35.56	23.12	6.13	25	0.297	SE	/
C2	20211211	Sunny	Moderate	Mid-Flood	Bottom	23.9	11:33	8.20	8.65	33.88	23.24	6.54	26	0.305	E	/
C2	20211211	Sunny	Moderate	Mid-Flood	Bottom	23.9	11:33	8.08	8.56	33.81	23.12	6.79	29	0.279	SE	/
M1	20211211	Sunny	Moderate	Mid-Flood	Surface	1	12:03	8.69	8.42	34.60	23.16	5.89	24	0.272	E	/
M1	20211211	Sunny	Moderate	Mid-Flood	Surface	1	12:03	8.60	8.57	34.69	23.23	5.63	25	0.263	SE	/
M1	20211211	Sunny	Moderate	Mid-Flood	Middle	3.65	12:02	8.70	8.43	34.63	23.17	5.98	25	0.278	E	/
M1	20211211	Sunny	Moderate	Mid-Flood	Middle	3.65	12:02	8.68	8.48	34.69	23.30	5.79	22	0.293	SE	/
M1	20211211	Sunny	Moderate	Mid-Flood	Bottom	6.3	12:01	8.94	8.40	35.46	23.21	5.77	21	0.285	SE	/
M1	20211211	Sunny	Moderate	Mid-Flood	Bottom	6.3	12:01	8.67	8.38	34.67	23.36	6.26	25	0.285	SE	/
M2	20211211	Sunny	Moderate	Mid-Flood	Surface	1	12:24	8.72	8.72	34.00	23.19	2.88	23	0.308	E	/
M2	20211211	Sunny	Moderate	Mid-Flood	Surface	1	12:24	8.75	8.62	34.06	23.14	2.62	24	0.293	E	/
M2	20211211	Sunny	Moderate	Mid-Flood	Middle	6.3	12:23	8.09	8.50	33.71	23.30	2.91	2.5	0.297	SE	/
M2	20211211	Sunny	Moderate	Mid-Flood	Middle	6.3	12:23	8.23	8.42	33.70	23.17	3.05	2.5	0.266	E	/
M2	20211211	Sunny	Moderate	Mid-Flood	Bottom	11.6	12:22	8.09	8.47	33.75	23.14	3.11	6	0.309	SE	/
M2	20211211	Sunny	Moderate	Mid-Flood	Bottom	11.6	12:22	8.10	8.48	33.73	23.30	2.87	6	0.308	E	/
M3	20211211	Sunny	Moderate	Mid-Flood	Surface	1	11:53	8.43	8.44	35.25	23.04	3.27	3	0.274	E	/
M3	20211211	Sunny	Moderate	Mid-Flood	Surface	1	11:53	8.46	8.46	35.26	23.10	3.65	2.5	0.292	SE	/
M3	20211211	Sunny	Moderate	Mid-Flood	Middle	3.75	11:52	8.22	8.55	34.50	23.27	3.36	4	0.267	E	/
M3	20211211	Sunny	Moderate	Mid-Flood	Middle	3.75	11:52	8.48	8.38	35.25	23.24	3.27	4	0.272	SE	/
M3	20211211	Sunny	Moderate	Mid-Flood	Bottom	6.5	11:51	8.84	8.67	34.00	23.13	3.57	6	0.303	SE	/
M3	20211211	Sunny	Moderate	Mid-Flood	Bottom	6.5	11:51	8.77	8.64	34.09	23.24	3.50	5	0.276	E	/
M4	20211211	Sunny	Moderate	Mid-Flood	Surface	1	13:10	9.24	8.63	35.26	23.21	1.49	6	0.291	E	/
M4	20211211	Sunny	Moderate	Mid-Flood	Surface	1	13:10	8.23	8.41	34.25	22.95	1.66	6	0.311	SE	/
M4	20211211	Sunny	Moderate	Mid-Flood	Bottom	3.9	13:09	8.44	8.36	35.30	23.18	2.48	3	0.264	E	/
M4	20211211	Sunny	Moderate	Mid-Flood	Bottom	3.9	13:09	9.29	8.61	35.26	23.20	2.63	3	0.280	SE	/
C1	20211214	Sunny	Moderate	Mid-Flood	Surface	1	14:50	8.71	8.28	33.47	23.09	3.02	10	0.273	SE	/
C1	20211214	Sunny	Moderate	Mid-Flood	Surface	1	14:50	8.72	8.31	33.50	23.03	2.84	8	0.295	E	/
C1	20211214	Sunny	Moderate	Mid-Flood	Middle	10.2	14:49	8.48	8.56	32.81	23.20	2.96	3	0.278	SE	/
C1	20211214	Sunny	Moderate	Mid-Flood	Middle	10.2	14:49	8.36	8.47	32.79	23.13	2.85	4	0.305	SE	/
C1	20211214	Sunny	Moderate	Mid-Flood	Bottom	19.4	14:48	8.41	8.55	32.87	23.01	2.88	3	0.279	E	/
C1	20211214	Sunny	Moderate	Mid-Flood	Bottom	19.4	14:48	8.40	8.47	32.88	23.21	2.95	4	0.263	SE	/
C2	20211214	Sunny	Moderate	Mid-Flood	Surface	1	13:43	8.69	8.58	32.58	23.59	3.28	8	0.302	SE	/
C2	20211214	Sunny	Moderate	Mid-Flood	Surface	1	13:43	8.64	8.52	32.70	23.59	3.16	8	0.278	E	/
C2	20211214	Sunny	Moderate	Mid-Flood	Middle	12.05	13:42	9.36	8.33	33.66	22.43	3.16	10	0.280	SE	/
C2	20211214	Sunny	Moderate	Mid-Flood	Middle	12.05	13:42	8.64	8.51	32.63	23.52	3.12	10	0.290	E	/
C2	20211214	Sunny	Moderate	Mid-Flood	Bottom	23.1	13:41	8.70	8.29	33.42	23.16	3.67	4	0.298	SE	/
C2	20211214	Sunny	Moderate	Mid-Flood	Bottom	23.1	13:41	8.69	8.32	33.57	23.09	3.33	3	0.270	SE	/
M1	20211214	Sunny	Moderate	Mid-Flood	Surface	1	14:13	8.57	8.35	33.01	23.14	1.75	4	0.278	E	/
M1	20211214	Sunny	Moderate	Mid-Flood	Surface	1	14:13	8.97	8.46	32.44	22.73	2.05	4	0.273	SE	/
M1	20211214	Sunny	Moderate	Mid-Flood	Middle	3.75	14:12	8.69	8.38	32.93	23.12	2.15	4	0.306	SE	/
M1	20211214	Sunny	Moderate	Mid-Flood	Middle	3.75	14:12	8.62	8.35	33.03	23.22	2.12	3	0.284	SE	/
M1	20211214	Sunny	Moderate	Mid-Flood	Bottom	6.5	14:11	8.79	8.56	32.58	23.51	2.34	6	0.267	SE	/
M1	20211214	Sunny	Moderate	Mid-Flood	Bottom	6.5	14:11	8.58	8.33	33.00	23.15	2.42	3	0.304	SE	/
M2	20211214	Sunny	Moderate	Mid-Flood	Surface	1	14:31	9.32	8.33	32.40	22.65	1.97	7	0.270	SE	/
M2	20211214	Sunny	Moderate	Mid-Flood	Surface	1	14:31	9.38	8.35	32.45	22.65	2.14	7	0.271	E	/
M2	20211214	Sunny	Moderate	Mid-Flood	Middle	6.9	14:30	8.53	8.53	33.73	23.38	2.02	3	0.305	SE	/
M2	20211214	Sunny	Moderate	Mid-Flood	Middle	6.9	14:30	8.49	8.44	33.58	23.26	1.89	5	0.286	E	/
M2	20211214	Sunny	Moderate	Mid-Flood	Bottom	12.8	14:29	8.64	8.45	33.65	23.28	2.20	4	0.269	E	/
M2	20211214	Sunny	Moderate	Mid-Flood	Bottom	12.8	14:29	8.57	8.49	33.72	23.40	2.58	5	0.300	SE	/
M3	20211214	Sunny	Moderate	Mid-Flood	Surface	1	13:58	8.15	8.28	34.00	24.11	1.92	4	0.280	E	/
M3	20211214	Sunny	Moderate	Mid-Flood	Surface	1	13:58	8.29	8.32	33.93	24.10	2.20	7	0.277	SE	/
M3	20211214	Sunny	Moderate	Mid-Flood	Middle	3.8	13:57	9.06	8.50	33.80	23.42	1.85	6	0.311	SE	/
M3	20211214	Sunny	Moderate	Mid-Flood	Middle	3.8	13:57	8.28	8.26	33.96	23.96	2.10	5	0.311	SE	/
M3	20211214	Sunny	Moderate	Mid-Flood	Bottom	6.6	13:56	9.30	8.29	32.30	22.71	2.55	4	0.287	SE	/
M3	20211214	Sunny	Moderate	Mid-Flood	Bottom	6.6	13:56	9.36	8.28	32.45	22.78	2.45	6	0.271	SE	/
M4	20211214	Sunny	Moderate	Mid-Flood	Surface	1	15:07	8.39	8.50	32.52	22.90	2.47	6	0.264	SE	/
M4	20211214	Sunny	Moderate	Mid-Flood	Surface	1	15:07	8.26	8.42	33.02	23.94	2.19	8	0.268	SE	/
M4	20211214	Sunny	Moderate	Mid-Flood	Bottom	4.3	15:06	8.22	8.31	34.07	23.93	2.67	7	0.274	SE	/
M4	20211214	Sunny	Moderate	Mid-Flood	Bottom	4.3	15:06	8.26	8.50	32.35	22.82	2.62	8	0.266	SE	/

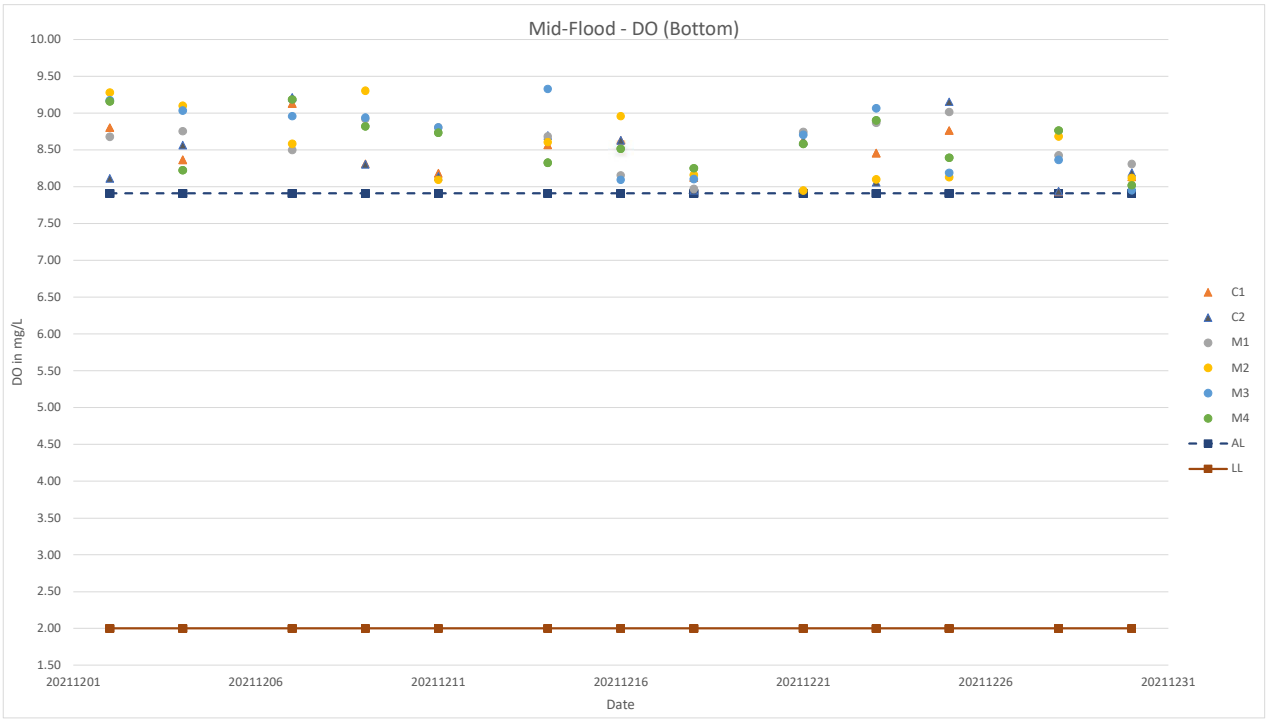
Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	15:28	8.48	8.50	33.05	22.89	2.13	2.5	0.295	SE	/
C1	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	15:28	8.59	8.59	33.15	22.92	2.12	4	0.293	SE	/
C1	20211216	Cloudy	Moderate	Mid-Flood	Middle	11.8	15:27	8.65	8.51	33.38	23.06	2.43	3	0.307	SE	/
C1	20211216	Cloudy	Moderate	Mid-Flood	Middle	11.8	15:27	8.79	8.47	33.49	23.13	2.48	4	0.284	SE	/
C1	20211216	Cloudy	Moderate	Mid-Flood	Bottom	22.6	15:26	8.83	8.53	33.42	23.05	2.63	5	0.285	SE	/
C1	20211216	Cloudy	Moderate	Mid-Flood	Bottom	22.6	15:26	8.81	8.50	33.48	23.07	2.83	4	0.308	SE	/
C2	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	14:37	7.91	8.60	33.21	23.06	2.71	12	0.274	SE	/
C2	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	14:37	7.91	8.61	33.13	23.02	2.93	12	0.297	SE	/
C2	20211216	Cloudy	Moderate	Mid-Flood	Middle	11.7	14:36	8.79	8.49	32.12	22.99	3.12	4	0.303	E	/
C2	20211216	Cloudy	Moderate	Mid-Flood	Middle	11.7	14:36	7.95	8.63	33.12	23.10	3.14	4	0.267	SE	/
C2	20211216	Cloudy	Moderate	Mid-Flood	Bottom	22.4	14:35	8.63	8.54	33.15	22.86	2.80	22	0.284	SE	/
C2	20211216	Cloudy	Moderate	Mid-Flood	Bottom	22.4	14:35	8.63	8.54	33.20	22.85	2.68	22	0.304	E	/
M1	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	15:03	8.30	8.64	33.26	23.01	2.51	3	0.286	SE	/
M1	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	15:03	7.98	8.53	33.43	22.83	2.50	3	0.311	E	/
M1	20211216	Cloudy	Moderate	Mid-Flood	Middle	3.5	15:02	8.34	8.64	33.27	23.06	2.62	3	0.271	E	/
M1	20211216	Cloudy	Moderate	Mid-Flood	Middle	3.5	15:02	8.29	8.68	33.12	23.07	2.63	3	0.293	SE	/
M1	20211216	Cloudy	Moderate	Mid-Flood	Bottom	6	15:01	7.93	8.57	33.22	23.04	2.24	2.5	0.309	SE	/
M1	20211216	Cloudy	Moderate	Mid-Flood	Bottom	6	15:01	8.38	8.62	33.12	23.00	2.03	3	0.288	SE	/
M2	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	15:16	7.93	8.58	33.50	23.08	2.52	9	0.300	SE	/
M2	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	15:16	7.95	8.56	33.60	23.04	2.54	9	0.286	SE	/
M2	20211216	Cloudy	Moderate	Mid-Flood	Middle	5.8	15:15	8.97	8.65	32.53	23.12	2.58	2.5	0.265	SE	/
M2	20211216	Cloudy	Moderate	Mid-Flood	Middle	5.8	15:15	9.06	8.62	32.49	23.14	2.17	2.5	0.279	SE	/
M2	20211216	Cloudy	Moderate	Mid-Flood	Bottom	10.6	15:14	9.02	8.68	32.55	23.08	2.51	3	0.271	E	/
M2	20211216	Cloudy	Moderate	Mid-Flood	Bottom	10.6	15:14	8.90	8.68	32.51	23.08	2.21	4	0.301	SE	/
M3	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	14:51	8.04	8.63	32.14	23.09	2.33	2.5	0.266	E	/
M3	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	14:51	8.02	8.51	32.13	23.07	2.34	4	0.267	E	/
M3	20211216	Cloudy	Moderate	Mid-Flood	Middle	3.6	14:50	8.43	8.64	33.52	22.85	2.20	3	0.308	E	/
M3	20211216	Cloudy	Moderate	Mid-Flood	Middle	3.6	14:50	8.07	8.61	32.16	23.04	2.24	3	0.311	SE	/
M3	20211216	Cloudy	Moderate	Mid-Flood	Bottom	6.2	14:49	8.07	8.63	33.60	23.06	2.08	5	0.269	SE	/
M3	20211216	Cloudy	Moderate	Mid-Flood	Bottom	6.2	14:49	8.12	8.67	33.61	23.03	2.05	5	0.270	SE	/
M4	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	15:41	8.86	8.50	32.15	22.98	1.65	2.5	0.292	SE	/
M4	20211216	Cloudy	Moderate	Mid-Flood	Surface	1	15:41	8.17	8.55	32.12	23.08	1.94	2.5	0.278	SE	/
M4	20211216	Cloudy	Moderate	Mid-Flood	Bottom	4.7	15:40	8.14	8.64	32.11	23.02	2.30	3	0.271	SE	/
M4	20211216	Cloudy	Moderate	Mid-Flood	Bottom	4.7	15:40	8.85	8.55	32.13	22.92	1.92	4	0.307	SE	/
C1	20211218	Sunny	Moderate	Mid-Flood	Surface	1	16:25	7.98	8.32	32.51	23.14	2.01	3	0.305	E	/
C1	20211218	Sunny	Moderate	Mid-Flood	Surface	1	16:25	7.96	8.33	32.38	23.07	2.13	3	0.281	E	/
C1	20211218	Sunny	Moderate	Mid-Flood	Middle	11.5	16:24	8.40	8.35	32.62	23.08	2.28	3	0.266	SE	/
C1	20211218	Sunny	Moderate	Mid-Flood	Middle	11.5	16:24	8.17	8.29	32.57	23.04	1.97	5	0.299	SE	/
C1	20211218	Sunny	Moderate	Mid-Flood	Bottom	22	16:23	8.02	8.34	32.58	23.03	2.24	4	0.274	E	/
C1	20211218	Sunny	Moderate	Mid-Flood	Bottom	22	16:23	8.41	8.28	32.54	22.97	2.17	4	0.292	E	/
C2	20211218	Sunny	Moderate	Mid-Flood	Surface	1	15:15	8.14	8.35	32.45	23.12	2.67	13	0.285	SE	/
C2	20211218	Sunny	Moderate	Mid-Flood	Surface	1	15:15	8.36	8.34	32.64	22.98	2.42	13	0.311	E	/
C2	20211218	Sunny	Moderate	Mid-Flood	Middle	11.15	15:14	7.99	8.29	32.50	23.00	2.85	12	0.270	SE	/
C2	20211218	Sunny	Moderate	Mid-Flood	Middle	11.15	15:14	7.96	8.28	32.33	23.02	3.05	12	0.294	SE	/
C2	20211218	Sunny	Moderate	Mid-Flood	Bottom	21.3	15:13	7.91	8.35	32.42	22.96	2.80	14	0.273	SE	/
C2	20211218	Sunny	Moderate	Mid-Flood	Bottom	21.3	15:13	8.00	8.35	32.34	23.00	3.01	14	0.310	E	/
M1	20211218	Sunny	Moderate	Mid-Flood	Surface	1	15:44	8.30	8.34	32.49	23.02	1.97	4	0.300	SE	/
M1	20211218	Sunny	Moderate	Mid-Flood	Surface	1	15:44	7.95	8.35	32.55	22.93	2.00	5	0.266	SE	/
M1	20211218	Sunny	Moderate	Mid-Flood	Middle	3.3	15:43	8.12	8.30	32.35	23.07	1.92	4	0.309	SE	/
M1	20211218	Sunny	Moderate	Mid-Flood	Middle	3.3	15:43	7.93	8.34	32.65	23.09	2.06	4	0.273	SE	/
M1	20211218	Sunny	Moderate	Mid-Flood	Bottom	5.6	15:42	7.97	8.35	32.51	23.13	2.00	4	0.273	E	/
M1	20211218	Sunny	Moderate	Mid-Flood	Bottom	5.6	15:42	7.97	8.27	32.40	22.95	2.03	3	0.299	SE	/
M2	20211218	Sunny	Moderate	Mid-Flood	Surface	1	16:03	8.19	8.27	32.49	23.04	2.11	5	0.311	E	/
M2	20211218	Sunny	Moderate	Mid-Flood	Surface	1	16:03	8.30	8.35	32.53	23.09	1.85	5	0.274	E	/
M2	20211218	Sunny	Moderate	Mid-Flood	Middle	6	16:02	8.02	8.27	32.58	23.02	2.00	4	0.282	SE	/
M2	20211218	Sunny	Moderate	Mid-Flood	Middle	6	16:02	8.40	8.32	32.42	23.13	2.09	4	0.310	SE	/
M2	20211218	Sunny	Moderate	Mid-Flood	Bottom	11	16:01	8.33	8.34	32.46	23.10	1.80	3	0.303	E	/
M2	20211218	Sunny	Moderate	Mid-Flood	Bottom	11	16:01	7.99	8.30	32.34	23.03	2.06	3	0.308	SE	/
M3	20211218	Sunny	Moderate	Mid-Flood	Surface	1	15:30	8.09	8.33	32.46	22.99	2.04	3	0.303	SE	/
M3	20211218	Sunny	Moderate	Mid-Flood	Surface	1	15:30	7.93	8.32	32.63	22.94	1.96	2.5	0.277	SE	/
M3	20211218	Sunny	Moderate	Mid-Flood	Middle	3.2	15:29	8.38	8.32	32.62	23.05	1.77	2.5	0.287	E	/
M3	20211218	Sunny	Moderate	Mid-Flood	Middle	3.2	15:29	7.91	8.35	32.40	23.00	1.84	3	0.287	E	/
M3	20211218	Sunny	Moderate	Mid-Flood	Bottom	5.4	15:28	7.97	8.31	32.56	22.96	1.83	4	0.280	E	/
M3	20211218	Sunny	Moderate	Mid-Flood	Bottom	5.4	15:28	8.24	8.31	32.61	23.13	1.91	5	0.272	SE	/
M4	20211218	Sunny	Moderate	Mid-Flood	Surface	1	16:42	8.49	8.32	32.64	23.10	1.86	13	0.293	SE	/
M4	20211218	Sunny	Moderate	Mid-Flood	Surface	1	16:42	8.01	8.27	32.44	23.14	1.72	13	0.274	SE	/
M4	20211218	Sunny	Moderate	Mid-Flood	Bottom	4.6	16:41	8.01	8.28	32.57	23.04	2.14	12	0.287	E	/
M4	20211218	Sunny	Moderate	Mid-Flood	Bottom	4.6	16:41	8.46	8.32	32.55	22.97	1.95	12	0.293	E	/
C1	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:56	8.62	8.4	33.68	22.28	5.89	6	0.272	E	/
C1	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:56	8.59	8.42	33.57	22.36	5.84	8	0.294	SE	/
C1	20211221	Cloudy	Moderate	Mid-Flood	Middle	11.7	8:55	8.65	8.4	32.22	22.36	6.3	7	0.287	SE	/
C1	20211221	Cloudy	Moderate	Mid-Flood	Middle	11.7	8:55	8.64	8.44	32.36	22.36	6.46	6	0.27	SE	/
C1	20211221	Cloudy	Moderate	Mid-Flood	Bottom	22.4	8:54	8.68	8.39	32.29	22.39	5.43	6	0.305	E	/
C1	20211221	Cloudy	Moderate	Mid-Flood	Bottom	22.4	8:54	8.65	8.42	32.26	22.39	5.99	6	0.272	SE	/
C2	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:05	8.5	8.29	33.41	22.15	9.45	5	0.273	E	/
C2	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:05	8.46	8.25	33.47	22.25	9.42	7	0.28	SE	/
C2	20211221	Cloudy	Moderate	Mid-Flood	Middle	12.85	8:04	8.84	8.18	33.93	22.12	9.93	12	0.288	SE	/
C2	20211221	Cloudy	Moderate	Mid-Flood	Middle	12.85	8:04	8.51	8.24	33.39	22.25	9.13	12	0.267	E	/
C2	20211221	Cloudy	Moderate	Mid-Flood	Bottom	24.7	8:03	8.64	8.41	33.68	22.37	10.6	15	0.277	E	/
C2	20211221	Cloudy	Moderate	Mid-Flood	Bottom	24.7	8:03	8.59	8.36	33.62	22.36	10.1	16	0.265	E	/
M1	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:30	8.91	8.32	33.61	22.23	6.76	5	0.274	SE	/
M1	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:30	8.08	8.44	33.71	22.37	6.62	7	0.275	SE	/
M1	20211221	Cloudy	Moderate	Mid-Flood	Middle	3.5	8:29	8.94	8.35	33.76	22.25	6.77	11	0.28	E	/
M1	20211221	Cloudy	Moderate	Mid-Flood	Middle	3.5	8:29	8.94	8.28	33.72	22.23	6.5	13	0.275	E	/
M1	20211221	Cloudy	Moderate	Mid-Flood	Bottom	6	8:28	8.53	8.27	33.48	22.25	7.26	6	0.266	E	/
M1	20211221	Cloudy	Moderate	Mid-Flood	Bottom	6	8:28	8.96	8.32	33.81	22.3	6.9	5	0.3	SE	/
M2	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:43	8.69	8.36	32.46	22.33	7.98	16	0.299	E	/
M2	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:43	8.71	8.38	32.4	22.33	7.8	12	0.285	SE	/
M2	20211221	Cloudy	Moderate	Mid-Flood	Middle	6.25	8:42	7.97	8.39	33.46	22.31	7.91	6	0.279	SE	/
M2	20211221	Cloudy	Moderate	Mid-Flood	Middle	6.25	8:42	7.98	8.45	33.32	22.4	8.09	6	0.303	SE	/
M2	20211221	Cloudy	Moderate	Mid-Flood	Bottom	11.5	8:41	7.95	8.38	33.52	22.31	7.94	7	0.296	SE	/
M2	20211221	Cloudy	Moderate	Mid-Flood	Bottom	11.5	8:41	7.95	8.43	33.33	22.39	8.14	6	0.278	SE	/
M3	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:19	7.93	8.23	33.42	22.25	6.98	3	0.285	SE	/
M3	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	8:19	7.93	8.27	33.48	22.21	6.91	3	0.291	SE	/
M3	20211221	Cloudy	Moderate	Mid-Flood	Middle	3.5	8:18	8.38	8.29	33.01	22.25	7.85	5	0.279	SE	/
M3	20211221	Cloudy	Moderate	Mid-Flood	Middle	3.5	8:18	8.05	8.29	33.43	22.25	7.59	4	0.304	SE	/
M3	20211221	Cloudy	Moderate	Mid-Flood	Bottom	6	8:17	8.73	8.3	32.35	22.24	7.44	4	0.283	SE	/
M3	20211221	Cloudy	Moderate	Mid-Flood	Bottom	6	8:17	8.68	8.32	32.31	22.32	7.66	4	0.301	E	/
M4	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	9:14	8.18	8.28	33.25	22.22	6.33	12	0.281	SE	/
M4	20211221	Cloudy	Moderate	Mid-Flood	Surface	1	9:14	8.99	8.34	33.14	22.3	6.52	8	0.303	E	/
M4	20211221	Cloudy	Moderate	Mid-Flood	Bottom	4.5	9:12	8.09	8.28	33.38	22.24	6.45	7	0.278	SE	/
M4	20211221	Cloudy	Moderate	Mid-Flood	Bottom	4.5	9:12	8.22	8.29	33.28	22.29	6.6	6	0.297	E	/

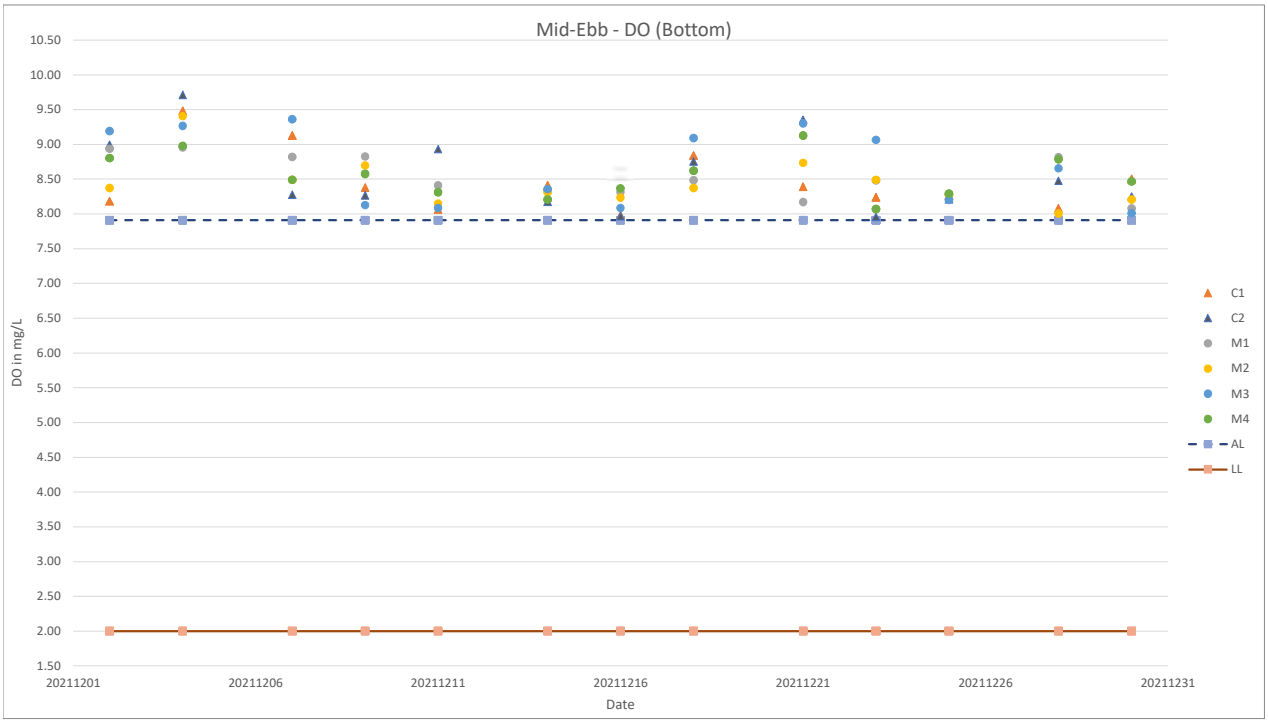
Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	9:21	7.91	8.34	32.44	22.04	3.64	5	0.265	E	/
C1	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	9:21	7.95	8.31	32.52	21.98	3.69	5	0.294	SE	/
C1	20211223	Cloudy	Moderate	Mid-Flood	Middle	11.4	9:20	8.85	8.33	33.77	22.07	2.92	5	0.28	SE	/
C1	20211223	Cloudy	Moderate	Mid-Flood	Middle	11.4	9:20	9.12	8.27	33.69	22.07	3.17	7	0.294	SE	/
C1	20211223	Cloudy	Moderate	Mid-Flood	Bottom	21.8	9:19	9.16	8.28	33.63	22.08	3.14	8	0.263	E	/
C1	20211223	Cloudy	Moderate	Mid-Flood	Bottom	21.8	9:19	8.83	8.3	33.66	22.13	3.22	6	0.295	SE	/
C2	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	8:12	8.43	8.3	32.24	21.95	5.17	6	0.283	E	/
C2	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	8:12	8.5	8.32	32.2	21.93	5.36	7	0.31	SE	/
C2	20211223	Cloudy	Moderate	Mid-Flood	Middle	11.6	8:11	8.28	8.36	33.53	21.82	6.8	9	0.271	E	/
C2	20211223	Cloudy	Moderate	Mid-Flood	Middle	11.6	8:11	8.58	8.3	32.2	21.97	6.72	7	0.306	SE	/
C2	20211223	Cloudy	Moderate	Mid-Flood	Bottom	22.2	8:10	8.09	8.36	32.52	21.99	5.9	8	0.271	SE	/
C2	20211223	Cloudy	Moderate	Mid-Flood	Bottom	22.2	8:10	8.03	8.34	32.4	21.99	6.07	6	0.296	SE	/
M1	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	8:42	9.12	8.37	32.61	22.08	5.04	8	0.268	SE	/
M1	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	8:42	8.62	8.32	32.23	21.87	4.8	6	0.296	SE	/
M1	20211223	Cloudy	Moderate	Mid-Flood	Middle	3.95	8:41	8.89	8.32	32.6	22.06	5.52	7	0.269	SE	/
M1	20211223	Cloudy	Moderate	Mid-Flood	Middle	3.95	8:41	9.2	8.37	32.74	22.08	5.64	7	0.285	SE	/
M1	20211223	Cloudy	Moderate	Mid-Flood	Bottom	6.9	8:40	8.65	8.28	32.14	21.92	5.23	9	0.272	SE	/
M1	20211223	Cloudy	Moderate	Mid-Flood	Bottom	6.9	8:40	9.09	8.39	32.73	22.01	5.54	11	0.307	E	/
M2	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	9:00	9.03	8.27	32.43	21.9	4.69	10	0.297	E	/
M2	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	9:00	9.18	8.25	32.52	21.89	4.68	11	0.286	SE	/
M2	20211223	Cloudy	Moderate	Mid-Flood	Middle	6.55	8:59	8.02	8.34	32.31	21.98	4.17	5	0.279	SE	/
M2	20211223	Cloudy	Moderate	Mid-Flood	Middle	6.55	8:59	8.03	8.36	32.31	22.03	3.53	6	0.269	E	/
M2	20211223	Cloudy	Moderate	Mid-Flood	Bottom	12.1	8:58	8.07	8.33	32.47	21.96	4.3	7	0.287	SE	/
M2	20211223	Cloudy	Moderate	Mid-Flood	Bottom	12.1	8:58	8.13	8.38	32.37	21.99	4.67	6	0.308	SE	/
M3	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	8:27	8.09	8.28	33.5	22.03	5.08	6	0.269	SE	/
M3	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	8:27	8.15	8.22	33.54	22.03	5.21	6	0.306	E	/
M3	20211223	Cloudy	Moderate	Mid-Flood	Middle	4.05	8:26	8.55	8.31	32.78	21.85	4.66	5	0.265	E	/
M3	20211223	Cloudy	Moderate	Mid-Flood	Middle	4.05	8:26	8.14	8.24	33.53	22.07	4.75	6	0.308	E	/
M3	20211223	Cloudy	Moderate	Mid-Flood	Bottom	7.1	8:25	9.06	8.27	32.52	21.9	5.31	5	0.293	SE	/
M3	20211223	Cloudy	Moderate	Mid-Flood	Bottom	7.1	8:25	9.07	8.21	32.59	21.9	4.83	5	0.307	E	/
M4	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	9:42	8.89	8.39	32.76	21.83	4.12	10	0.272	SE	/
M4	20211223	Cloudy	Moderate	Mid-Flood	Surface	1	9:42	8.91	8.22	32.44	21.91	3.82	10	0.301	SE	/
M4	20211223	Cloudy	Moderate	Mid-Flood	Bottom	4.8	9:41	8.01	8.26	33.54	22.08	4.35	6	0.283	SE	/
M4	20211223	Cloudy	Moderate	Mid-Flood	Bottom	4.8	9:41	8.92	8.34	32.74	21.84	4.22	5	0.294	SE	/
C1	20211225	Sunny	Moderate	Mid-Flood	Surface	1	10:38	9.02	8.41	34.45	22.18	3.87	10	0.279	E	/
C1	20211225	Sunny	Moderate	Mid-Flood	Surface	1	10:38	9.35	8.41	34.49	22.21	3.94	10	0.295	E	/
C1	20211225	Sunny	Moderate	Mid-Flood	Middle	9.6	10:37	8.36	8.38	34.9	21.99	4.05	8	0.276	SE	/
C1	20211225	Sunny	Moderate	Mid-Flood	Middle	9.6	10:37	8.33	8.35	34.82	22.02	3.95	9	0.297	E	/
C1	20211225	Sunny	Moderate	Mid-Flood	Bottom	18.2	10:36	8.12	8.44	34.94	22.03	3.39	7	0.305	SE	/
C1	20211225	Sunny	Moderate	Mid-Flood	Bottom	18.2	10:36	8.21	8.37	34.93	22.04	3.91	7	0.298	E	/
C2	20211225	Sunny	Moderate	Mid-Flood	Surface	1	9:37	8.92	8.43	35.35	21.94	4.95	9	0.295	E	/
C2	20211225	Sunny	Moderate	Mid-Flood	Surface	1	9:37	8.67	8.41	35.36	21.98	4.85	7	0.264	SE	/
C2	20211225	Sunny	Moderate	Mid-Flood	Middle	12.6	9:36	8.84	8.39	35.35	22.08	5.1	10	0.275	E	/
C2	20211225	Sunny	Moderate	Mid-Flood	Middle	12.6	9:36	8.72	8.38	35.39	21.99	5	10	0.29	SE	/
C2	20211225	Sunny	Moderate	Mid-Flood	Bottom	24.2	9:35	9.27	8.41	34.48	22.21	4.83	12	0.307	E	/
C2	20211225	Sunny	Moderate	Mid-Flood	Bottom	24.2	9:35	9.04	8.42	34.41	22.18	4.71	12	0.284	SE	/
M1	20211225	Sunny	Moderate	Mid-Flood	Surface	1	10:09	9.01	8.36	33.89	22.04	4.03	6	0.307	SE	/
M1	20211225	Sunny	Moderate	Mid-Flood	Surface	1	10:09	8.48	8.22	34.88	22.15	4.05	6	0.289	E	/
M1	20211225	Sunny	Moderate	Mid-Flood	Middle	3.25	10:08	8.84	8.34	33.85	22.05	4.37	13	0.307	SE	/
M1	20211225	Sunny	Moderate	Mid-Flood	Middle	3.25	10:08	9.04	8.39	33.93	22.04	3.98	13	0.269	E	/
M1	20211225	Sunny	Moderate	Mid-Flood	Bottom	5.5	10:07	8.98	8.38	35.35	22.02	3.78	6	0.307	E	/
M1	20211225	Sunny	Moderate	Mid-Flood	Bottom	5.5	10:07	9.05	8.39	33.96	22.1	3.52	6	0.307	SE	/
M2	20211225	Sunny	Moderate	Mid-Flood	Surface	1	10:23	8.26	8.4	34.39	22.16	4	3	0.302	SE	/
M2	20211225	Sunny	Moderate	Mid-Flood	Surface	1	10:23	8.13	8.39	34.5	22.1	4.02	3	0.268	E	/
M2	20211225	Sunny	Moderate	Mid-Flood	Middle	7	10:22	8.16	8.3	35.37	22.17	4.78	7	0.302	SE	/
M2	20211225	Sunny	Moderate	Mid-Flood	Middle	7	10:22	8.01	8.32	35.32	22.17	4.56	7	0.284	SE	/
M2	20211225	Sunny	Moderate	Mid-Flood	Bottom	13	10:21	8.08	8.33	35.33	22.27	4.57	3	0.289	E	/
M2	20211225	Sunny	Moderate	Mid-Flood	Bottom	13	10:21	8.18	8.27	35.43	22.17	4.63	3	0.284	SE	/
M3	20211225	Sunny	Moderate	Mid-Flood	Surface	1	9:53	8.96	8.33	34.61	22.04	4.26	6	0.27	SE	/
M3	20211225	Sunny	Moderate	Mid-Flood	Surface	1	9:53	8.96	8.4	34.52	22.02	3.89	6	0.275	SE	/
M3	20211225	Sunny	Moderate	Mid-Flood	Middle	3.55	9:52	8.04	8.37	35.22	21.99	4.28	10	0.306	SE	/
M3	20211225	Sunny	Moderate	Mid-Flood	Middle	3.55	9:52	8.81	8.41	34.54	21.99	4.9	10	0.266	E	/
M3	20211225	Sunny	Moderate	Mid-Flood	Bottom	6.1	9:51	8.13	8.36	34.47	22.17	4.22	3	0.301	SE	/
M3	20211225	Sunny	Moderate	Mid-Flood	Bottom	6.1	9:51	8.25	8.39	34.41	22.16	4.64	4	0.278	SE	/
M4	20211225	Sunny	Moderate	Mid-Flood	Surface	1	10:53	8.32	8.36	35.47	22.12	4.55	12	0.287	SE	/
M4	20211225	Sunny	Moderate	Mid-Flood	Surface	1	10:53	8.47	8.24	34.43	22.21	4.28	9	0.278	E	/
M4	20211225	Sunny	Moderate	Mid-Flood	Bottom	4.7	10:52	8.77	8.38	34.59	21.94	4.65	6	0.308	SE	/
M4	20211225	Sunny	Moderate	Mid-Flood	Bottom	4.7	10:52	8.41	8.4	35.45	22.1	4.31	6	0.267	SE	/
C1	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	13:00	7.85	8.38	34.1	21.59	7.86	3	0.263	SE	/
C1	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	13:00	7.92	8.35	34.27	21.55	7.48	4	0.296	SE	/
C1	20211228	Cloudy	Moderate	Mid-Flood	Middle	10.3	12:59	8	8.26	34.71	21.56	8.27	9	0.265	E	/
C1	20211228	Cloudy	Moderate	Mid-Flood	Middle	10.3	12:59	7.95	8.22	34.58	21.57	8.28	10	0.288	E	/
C1	20211228	Cloudy	Moderate	Mid-Flood	Bottom	19.6	12:58	7.93	8.3	34.81	21.6	8.97	3	0.274	E	/
C1	20211228	Cloudy	Moderate	Mid-Flood	Bottom	19.6	12:58	7.99	8.27	34.62	21.55	8.7	4	0.267	E	/
C2	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	11:56	8.26	8.35	33.68	21.74	8.84	8	0.282	E	/
C2	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	11:56	8.32	8.31	33.32	21.69	8.65	11	0.28	SE	/
C2	20211228	Cloudy	Moderate	Mid-Flood	Middle	11.55	11:55	8.04	8.44	33.53	21.59	9.3	4	0.305	SE	/
C2	20211228	Cloudy	Moderate	Mid-Flood	Middle	11.55	11:55	8.22	8.31	33.51	21.66	8.95	4	0.288	E	/
C2	20211228	Cloudy	Moderate	Mid-Flood	Bottom	22.1	11:54	7.92	8.39	34.14	21.53	9.93	9	0.302	E	/
C2	20211228	Cloudy	Moderate	Mid-Flood	Bottom	22.1	11:54	7.96	8.4	34.1	21.57	8.9	11	0.309	SE	/
M1	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	12:26	8.8	8.41	34.22	21.67	6.18	6	0.279	E	/
M1	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	12:26	8.17	8.39	32.92	21.46	6.68	8	0.264	SE	/
M1	20211228	Cloudy	Moderate	Mid-Flood	Middle	3.65	12:25	8.77	8.35	34.28	21.62	6.93	7	0.272	E	/
M1	20211228	Cloudy	Moderate	Mid-Flood	Middle	3.65	12:25	8.74	8.37	34.27	21.7	6.77	10	0.311	SE	/
M1	20211228	Cloudy	Moderate	Mid-Flood	Bottom	6.3	12:24	8.18	8.3	33.44	21.73	7.66	4	0.288	SE	/
M1	20211228	Cloudy	Moderate	Mid-Flood	Bottom	6.3	12:24	8.67	8.37	34.4	21.7	7.1	4	0.268	E	/
M2	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	12:40	8.4	8.3	34.32	21.59	7.33	4	0.285	SE	/
M2	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	12:40	8.36	8.29	34.28	21.67	7.39	5	0.284	E	/
M2	20211228	Cloudy	Moderate	Mid-Flood	Middle	5.95	12:39	8.64	8.28	33.35	21.58	6.55	3	0.287	SE	/
M2	20211228	Cloudy	Moderate	Mid-Flood	Middle	5.95	12:39	8.72	8.28	33.14	21.63	6.66	4	0.277	SE	/
M2	20211228	Cloudy	Moderate	Mid-Flood	Bottom	10.9	12:38	8.68	8.23	33.39	21.63	6.11	8	0.294	E	/
M2	20211228	Cloudy	Moderate	Mid-Flood	Bottom	10.9	12:38	8.69	8.28	33.19	21.58	6.15	11	0.309	SE	/
M3	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	12:12	8.86	8.36	33.36	21.7	7.15	3	0.27	E	/
M3	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	12:12	8.91	8.33	33.4	21.7	6.55	4	0.28	E	/
M3	20211228	Cloudy	Moderate	Mid-Flood	Middle	3.7	12:11	8.02	8.24	34.59	21.68	6.69	6	0.299	SE	/
M3	20211228	Cloudy	Moderate	Mid-Flood	Middle	3.7	12:11	8.83	8.35	33.59	21.72	7.04	7	0.274	E	/
M3	20211228	Cloudy	Moderate	Mid-Flood	Bottom	6.4	12:10	8.39	8.28	34.35	21.66	7.49	4	0.288	SE	/
M3	20211228	Cloudy	Moderate	Mid-Flood	Bottom	6.4	12:10	8.34	8.32	34.51	21.59	7.4	4	0.276	SE	/
M4	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	13:17	8.49	8.33	34.82	21.56	8.81	6	0.278	E	/
M4	20211228	Cloudy	Moderate	Mid-Flood	Surface	1	13:17	9.04	8.35	34.75	21.73	8.28	8	0.293	SE	/
M4	20211228	Cloudy	Moderate	Mid-Flood	Bottom	4	13:16	8.93	8.41	33.39	21.71	7.31	7	0.295	E	/
M4	20211228	Cloudy	Moderate	Mid-Flood	Bottom	4	13:16	8.46	8.3	34.74	21.49	7.66	10	0.301	SE	/

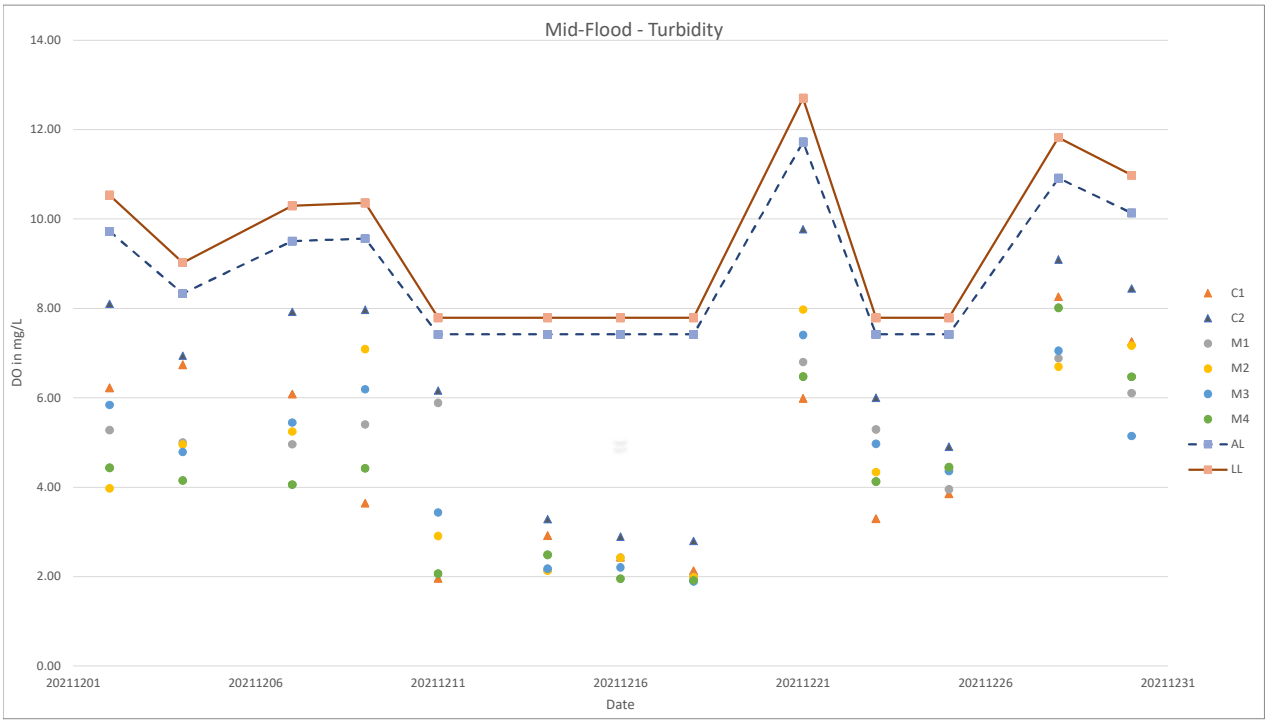
Location	Date	Weather	Sea Condition	Tidal	Water Level	Depth (m)	Time	DO (mg/L)	pH	Sal (ppt)	Temp (?)	Turbidty (NTU)	SS	Current Velocity (m/s)	Current Direction	Remark
C1	20211230	Sunny	Moderate	Mid-Flood	Surface	1	14:23	8.22	8.36	35.02	22.04	6.95	4	0.3	SE	/
C1	20211230	Sunny	Moderate	Mid-Flood	Surface	1	14:23	8.22	8.28	35.04	22.04	6.85	5	0.289	SE	/
C1	20211230	Sunny	Moderate	Mid-Flood	Middle	10.7	14:22	8.09	8.37	34.8	21.86	7.57	7	0.309	E	/
C1	20211230	Sunny	Moderate	Mid-Flood	Middle	10.7	14:22	8.02	8.37	34.9	21.88	7.78	5	0.277	SE	/
C1	20211230	Sunny	Moderate	Mid-Flood	Bottom	20.4	14:21	7.99	8.37	34.89	21.9	7.13	6	0.286	E	/
C1	20211230	Sunny	Moderate	Mid-Flood	Bottom	20.4	14:21	7.98	8.38	34.88	21.9	7.24	6	0.299	E	/
C2	20211230	Sunny	Moderate	Mid-Flood	Surface	1	13:11	8.56	8.36	33.83	21.83	8.03	7	0.303	E	/
C2	20211230	Sunny	Moderate	Mid-Flood	Surface	1	13:11	8.06	8.36	33.8	21.88	8.55	7	0.277	SE	/
C2	20211230	Sunny	Moderate	Mid-Flood	Middle	11	13:10	8.16	8.32	33.6	21.77	9.08	4	0.28	E	/
C2	20211230	Sunny	Moderate	Mid-Flood	Middle	11	13:10	8.55	8.44	33.8	21.92	8.88	5	0.306	E	/
C2	20211230	Sunny	Moderate	Mid-Flood	Bottom	21	13:09	8.18	8.34	34.99	22.08	8.27	5	0.296	E	/
C2	20211230	Sunny	Moderate	Mid-Flood	Bottom	21	13:09	8.21	8.34	34.93	22.05	7.87	6	0.288	E	/
M1	20211230	Sunny	Moderate	Mid-Flood	Surface	1	13:40	7.96	8.4	34.97	21.88	5.88	4	0.27	E	/
M1	20211230	Sunny	Moderate	Mid-Flood	Surface	1	13:40	8.55	8.43	35.15	21.96	5.99	5	0.309	E	/
M1	20211230	Sunny	Moderate	Mid-Flood	Middle	3.35	13:39	8.07	8.41	35.02	21.9	6.28	18	0.307	SE	/
M1	20211230	Sunny	Moderate	Mid-Flood	Middle	3.35	13:39	7.95	8.4	35.02	21.87	6.32	18	0.31	SE	/
M1	20211230	Sunny	Moderate	Mid-Flood	Bottom	5.7	13:38	8.55	8.36	33.75	21.91	6.04	19	0.311	SE	/
M1	20211230	Sunny	Moderate	Mid-Flood	Bottom	5.7	13:38	8.07	8.36	35	21.93	6.13	19	0.3	SE	/
M2	20211230	Sunny	Moderate	Mid-Flood	Surface	1	13:59	8	8.33	34.37	21.76	7.02	8	0.294	SE	/
M2	20211230	Sunny	Moderate	Mid-Flood	Surface	1	13:59	7.98	8.37	34.43	21.84	7.37	8	0.285	E	/
M2	20211230	Sunny	Moderate	Mid-Flood	Middle	6.25	13:58	8.19	8.45	34.51	21.96	6.84	3	0.298	SE	/
M2	20211230	Sunny	Moderate	Mid-Flood	Middle	6.25	13:58	8.15	8.37	34.51	22.04	6.94	4	0.281	E	/
M2	20211230	Sunny	Moderate	Mid-Flood	Bottom	11.5	13:57	8.11	8.39	34.58	21.96	7.61	4	0.266	E	/
M2	20211230	Sunny	Moderate	Mid-Flood	Bottom	11.5	13:57	8.13	8.44	34.59	22.05	7.24	4	0.302	SE	/
M3	20211230	Sunny	Moderate	Mid-Flood	Surface	1	13:25	8.01	8.32	33.57	22.07	5.16	4	0.267	SE	/
M3	20211230	Sunny	Moderate	Mid-Flood	Surface	1	13:25	8.04	8.31	33.6	22.02	4.98	6	0.311	SE	/
M3	20211230	Sunny	Moderate	Mid-Flood	Middle	3.9	13:24	8.11	8.29	34.09	21.85	4.76	6	0.269	SE	/
M3	20211230	Sunny	Moderate	Mid-Flood	Middle	3.9	13:24	8.03	8.32	33.6	22.07	5.02	5	0.293	SE	/
M3	20211230	Sunny	Moderate	Mid-Flood	Bottom	6.8	13:23	7.94	8.28	34.47	21.78	5.35	7	0.264	SE	/
M3	20211230	Sunny	Moderate	Mid-Flood	Bottom	6.8	13:23	7.97	8.37	34.4	21.75	5.61	5	0.303	E	/
M4	20211230	Sunny	Moderate	Mid-Flood	Surface	1	14:40	8.09	8.39	33.61	21.75	6.08	9	0.305	SE	/
M4	20211230	Sunny	Moderate	Mid-Flood	Surface	1	14:40	7.95	8.43	34.87	22.01	6.38	9	0.266	E	/
M4	20211230	Sunny	Moderate	Mid-Flood	Bottom	4.7	14:39	8.08	8.32	33.6	21.98	6.73	36	0.305	SE	/
M4	20211230	Sunny	Moderate	Mid-Flood	Bottom	4.7	14:39	8.07	8.45	33.58	21.76	6.7	36	0.308	SE	/

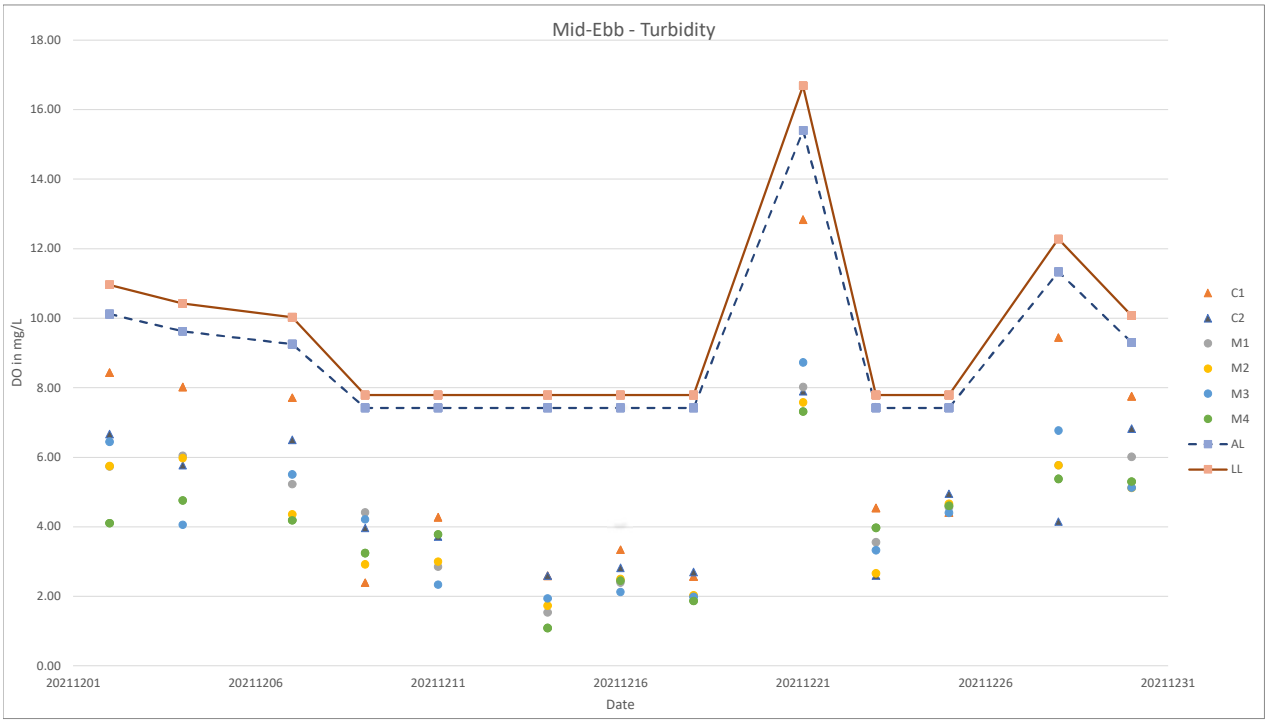

Mid-Flood - DO (Surface and Middle)
DO in mg/L
10.00
9.50
9.00
8.50
8.00
7.50
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50
20211201
20211206
20211211
20211216
20211221
20211226
20211231
Date
C1
C2
M1
M2
M3
M4
AL
LL

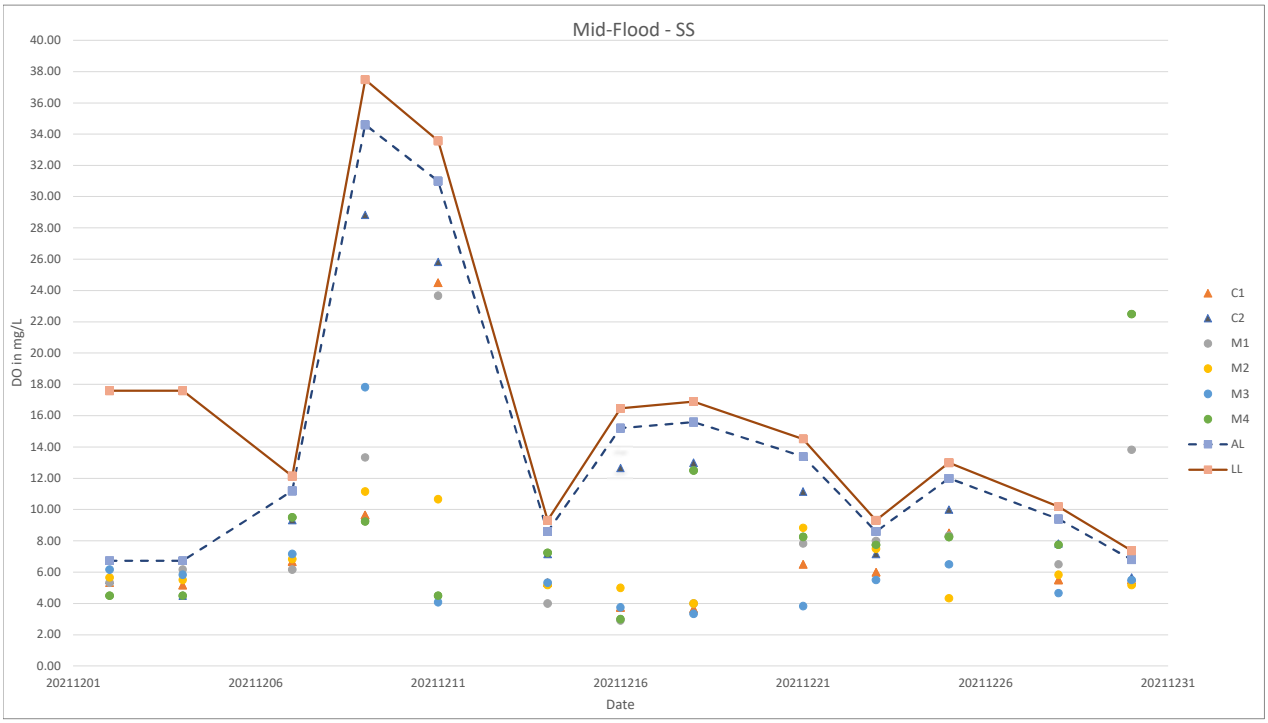

Mid-Ebb - DO (Surface and Middle)
DO in mg/L
10.00
9.50
9.00
8.50
8.00
7.50
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50
20211201
20211206
20211211
20211216
20211221
20211226
20211231
Date
C1
C2
M1
M2
M3
M4
AL
LL

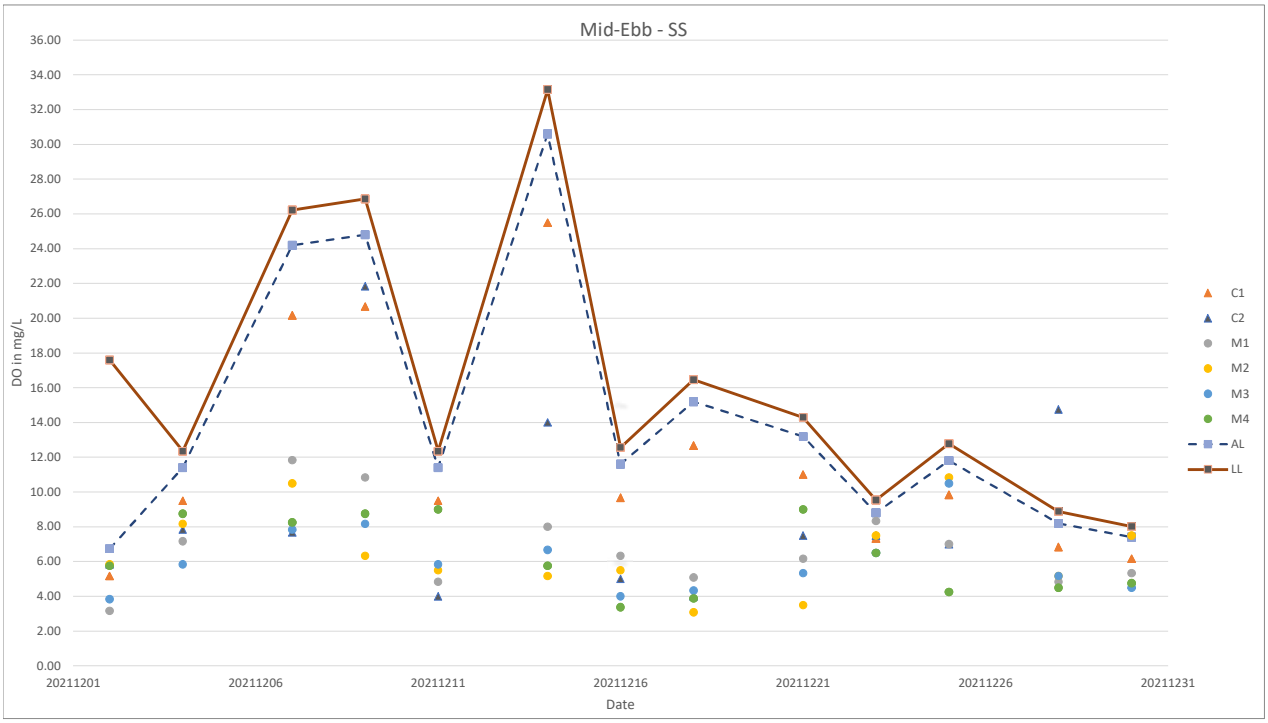

Mid-Flood - DO (Bottom)
DO in mg/L
10.00
9.50
9.00
8.50
8.00
7.50
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
20211201
20211206
20211211
20211216
20211221
20211226
20211231
Date
C1
C2
M1
M2
M3
M4
AL
LL


Mid-Ebb - DO (Bottom)
DO in mg/L
10.50
10.00
9.50
9.00
8.50
8.00
7.50
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
20211201
20211206
20211211
20211216
20211221
20211226
20211231
Date
C1
C2
M1
M2
M3
M4
AL
LL


Mid-Flood - Turbidity
DO in mg/L
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
20211201
20211206
20211211
20211216
20211221
20211226
20211231
Date
C1
C2
M1
M2
M3
M4
AL
LL


Mid-Ebb - Turbidity
DO in mg/L
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
20211201
20211206
20211211
20211216
20211221
20211226
20211231
Date
C1
C2
M1
M2
M3
M4
AL
LL


Mid-Flood - SS
DO in mg/L
40.00
38.00
36.00
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
20211201
20211206
20211211
20211216
20211221
20211226
20211231
Date
C1
C2
M1
M2
M3
M4
AL
LL


Mid-Ebb - SS
DO in mg/L
36.00
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
20211201
20211206
20211211
20211216
20211221
20211226
20211231
Date
C1
C2
M1
M2
M3
M4
AL
LL

Appendix J
Complaint Log

Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
December 2021	0	0	N/A

Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Details
December 2021	0	0	N/A

Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Details
December 2021	0	0	N/A