

ANewR

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Your reference:

Our reference: HKCEDD15/50/108540

Date: 12 January 2023

Attention: Mr Daniel K Y Leung

BY EMAIL & POST
(email: dkyleung@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 2022)

We refer to emails of 10 and 12 January 2023 from Acuity Sustainability Consulting Limited attaching a Monthly Environmental Monitoring and Audit Report (December 2022).

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 Mr Edric Lau at 2618 2831.

Yours faithfully
ANewR CONSULTING LIMITED



James Choi
Independent Environmental Checker

CPSJ/LCCR/LTKE/lsm

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)



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 2022)

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REVISION HISTORY

REV.	DESCRIPTION OF MODIFICATION	DATE
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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 20th 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 2022.

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
<p><u>Contract No. CV/2020/09</u></p> <ul style="list-style-type: none"> • Rock excavation near sea-side of landing • Construction of sloping seawall (Grid K to Grid L) • Construction of linking structure and pile cap • Structural monitoring for nearby existing structures <p><u>Contract No. SS J521</u></p> <ul style="list-style-type: none"> • Precast Staircase wash granolithic • Installation of the Safety Mat • Demolition works • Backfill the existing sand in Viewing Platform 	

- A6. The major environmental impacts brought by the above construction works include:
 - Impact on water quality during rock excavation at sea-side of landing
 - Construction dust and noise generation from excavation and demolition

- Demolition waste generation

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

- Silt curtains was deployed enclosing all relevant working areas near seaside. Weekly inspection on the silt curtain on the silt curtain condition by the contractor should be carried out.
- Stockpiling area should be provided with covers and water spraying system to prevent materials from being washed away.
- Minimized surface run-off in adjacent marine waters and programmed to minimize soil excavation works during inclement weather.
- Sort out demolition debris and excavated materials from demolition works to recover reusables.
- The dredging rate shall not exceed 100 m³ per hour with a maximum working period of 12 hours per day throughout the construction phase and operation phase.
- Reduction of noise from equipment and machinery on-site
- Sorting and storage of general refuse and construction waste

SUMMARY OF EXCEEDANCE & INVESTIGATION & FOLLOW-UP

- A8. No noise-related exceedance was recorded in the reporting period.
- A9. Water monitoring exceedances were recorded in reporting period. Total of 13 action level and 0 limit level exceedances on suspended solid (SS) on 1, 3, 8, 10, 22 and 31 December 2022. After investigation, the overall exceedances on SS are due to the localized water quality affected by non-project related events.
- A10. Weekly site inspections of the construction work by ET were carried out on 1, 8, 15, 22 and 29 December 2022 to 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
<u>Contract No. CV/2020/09</u>	
Rock excavation near sea-side of landing	Landing Facility
Construction for vertical seawall at landing	Landing Facility
Construction of sloping seawall at landing	Landing Facility
Construction of pile cap at landing facility	Landing Facility
Trim down excessive casing & H-section along at breakwater	Breakwater Area
Construction of pile cap and linking structure at breakwater	Breakwater Area
Structural monitoring for nearby existing structures	Existing Structures to be Potential Effected by Construction Activities
<u>Contract No. SS I521</u>	
Maintenance works	Site

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

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

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

- High loading of SS in site run-off should be prevented through proper site management by the contractor.
- Seawall modification works should be undertaken during low tide, when the water level is low.
- Cover soil stockpiles to prevent materials from being wind-blown or washed away.
- Minimized surface run-off in adjacent marine waters and programmed to minimize soil excavation works during inclement weather.
- Silt curtain deployment zone should surround all relevant working areas including rock excavation zone near seaside. Weekly inspection on the silt curtain condition by the contractor to ensure the performance.
- 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 m³ per hour with a maximum working period of 12 hours per day throughout the construction phase and operation phase.

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), the Works were substantially completed on 31 October 2022. The maintenance period for the above stated Works commenced on 1 November 2022 and will expire on 31 October 2023.

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 20th 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 2022.

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**.

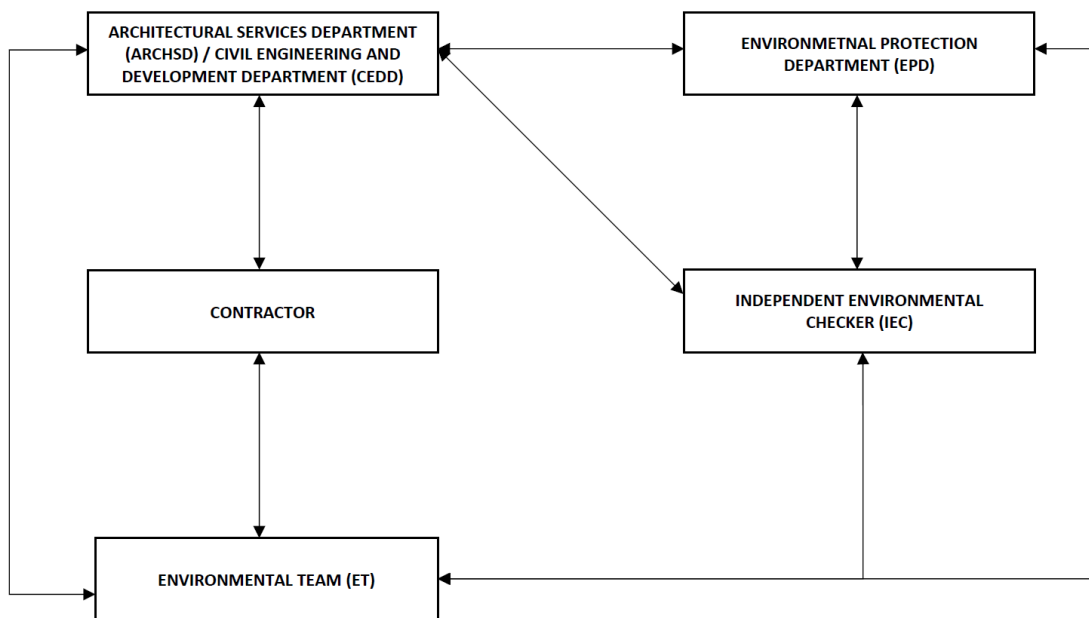


Figure 1.1 Project Organization Chart

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	Mr. Daniel Leung	2760 5737
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	Environmental Officer	Mr. Samson Ho	6335 2008

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 Cheung	2867 3972
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.	Assistant Safety Officer	Mr. Alex Cha	9142 8173

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
<u>Contract No. CV/2020/09</u>	
Rock excavation near sea-side of landing	Landing Facility
Construction of sloing seawall (Grid K to Grid L)	Landing Facility
Construction of linking structure and pile cap	Breakwater Area
Structural monitoring for nearby existing structures	Existing Structures to be Potential Effected by Construction Activities
<u>Contract No. SS J521</u>	
Maintenance works	Site

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
<u>Contract No. CV/2020/09</u>		
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
Discharge Licence under Water Pollution Control Ordinance	WT00040594-2022	Valid to 30 Jun 2027
<u>Contract No. SS I521</u>		
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 L_{eq} , L_{10} and L_{90} levels recorded at each monitoring station between 0700 and 1900 on normal weekdays.

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 (L_{Aeq}). $L_{eq\ 30min}$ 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**.

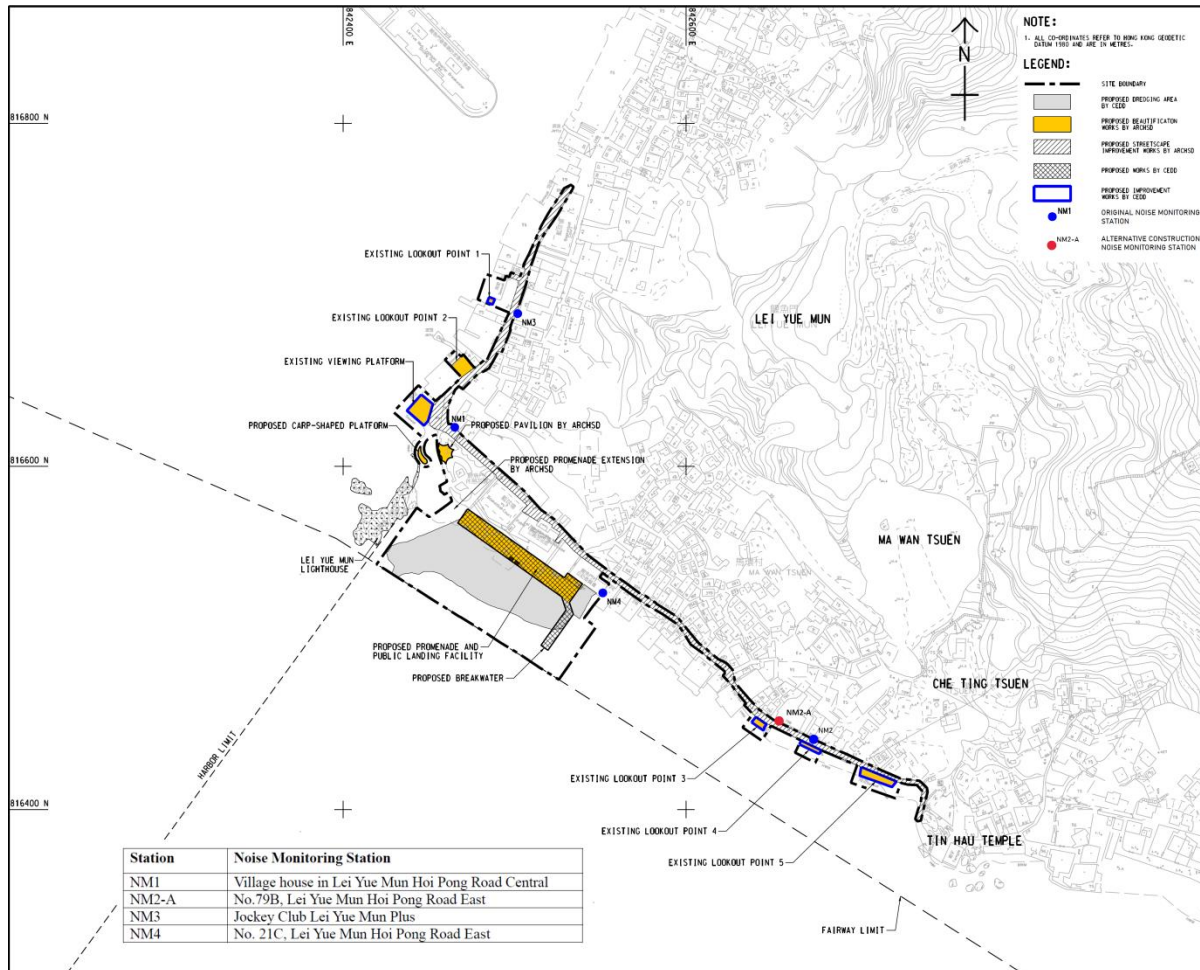


Figure 2.1 Noise Monitoring Locations

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	NTi Audio XL2 (Serial no.: A2A-13548-E0)
Acoustic Calibrator	Scarlet ST-120

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. 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	60.3 - 65.9
NM2-A	56.5 - 63.5
NM3	63.3 - 66.5
NM4	66.1 - 68.6

No noise monitoring exceedance was recorded in the reporting period.

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	°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)

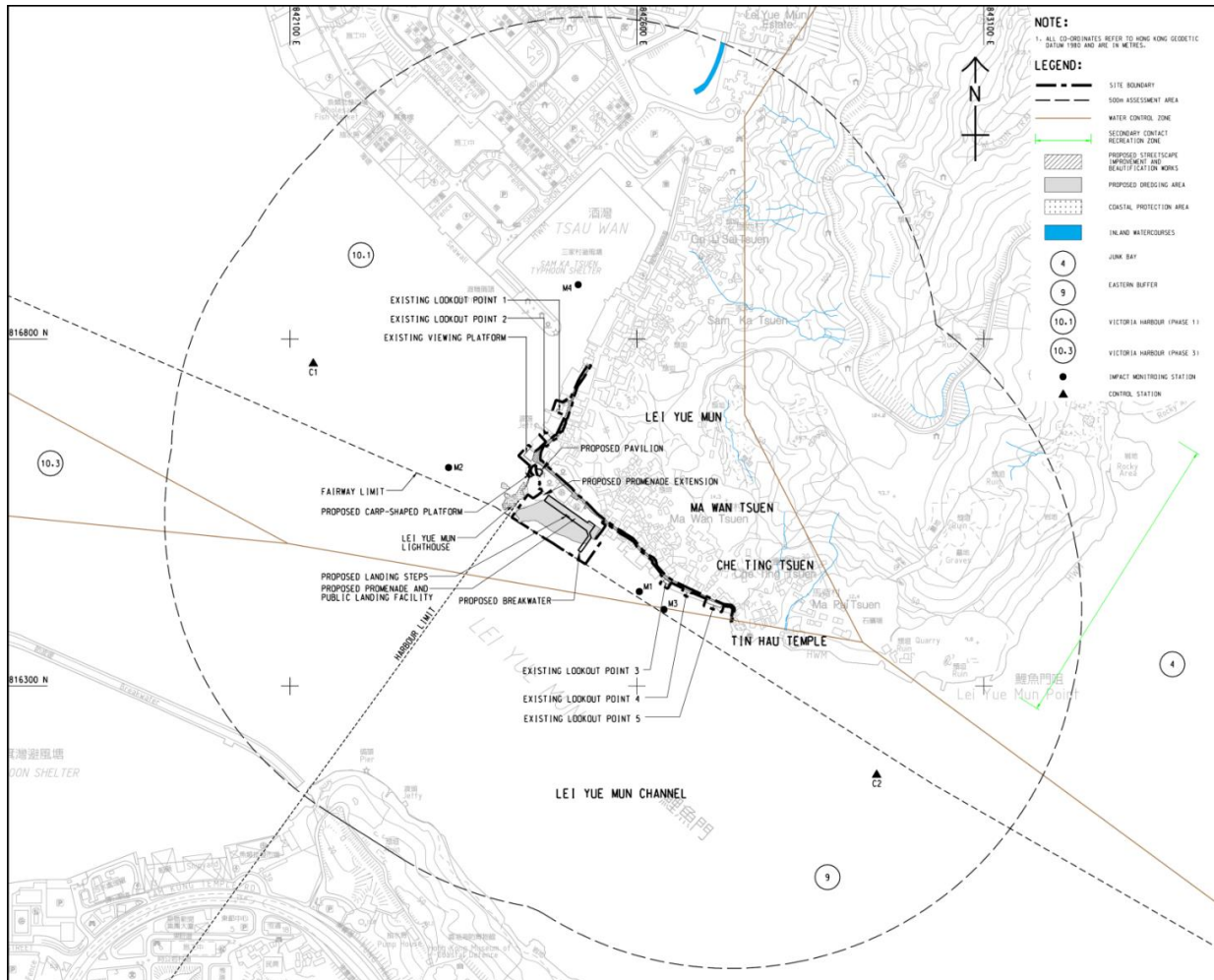


Figure 3.1 Water quality monitoring locations under EM&A Manual

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.

Due to typhoon signal no. 3 (Nalgae) was hoisted from 31 Oct at 16:20 to 2 Nov 2022 at 13:40, typhoon signal no. 8 (Nalgae) was hoisted from 2 Nov at 13:40 to 3 Nov 2022 at 02:40 and typhoon signal no. 3 (Nalgae) was hoisted from 3 Nov at 05:20 to 3 Nov 2022 at 06:20, water quality monitoring was canceled on 1 and 3 Nov 2022.

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	<u>Surface and Middle</u> 7.95 mg L ⁻¹ <u>Bottom</u> 7.91 mg L ⁻¹	<u>Surface and Middle</u> 4 mg L ⁻¹ <u>Bottom</u> 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 was conducted 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.	8.62	8.52	8.62	8.52	4.90	5.50	4	5
	Min.	8.26	8.04	8.26	8.01	3.01	2.98	3	3
	Max.	9.05	9.16	9.05	9.24	6.06	6.81	11	14
C2	Avg.	8.64	8.49	8.63	8.50	5.45	4.84	5	5
	Min.	7.99	8.15	8.04	8.16	3.40	2.75	3	3
	Max.	9.19	9.28	9.12	9.28	6.58	6.54	13	14
M1	Avg.	8.51	8.55	8.52	8.54	4.10	4.00	5	6
	Min.	8.09	8.24	8.10	8.24	2.70	2.62	3	3
	Max.	9.11	9.08	9.08	9.09	5.16	5.75	12	14
M2	Avg.	8.65	8.65	8.65	8.67	4.03	4.25	6	6
	Min.	7.93	8.03	7.94	8.08	2.03	2.56	3	3
	Max.	9.34	9.29	9.30	9.29	5.01	5.41	12	14
M3	Avg.	8.72	8.67	8.71	8.67	4.22	4.15	6	5
	Min.	8.25	8.22	8.22	8.20	2.97	2.52	3	3
	Max.	9.34	9.25	9.41	9.40	5.26	5.51	15	17
M4	Avg.	8.73	8.58	8.72	8.57	4.10	4.40	5	6
	Min.	7.89	8.21	7.92	8.21	2.90	2.64	3	3
	Max.	9.46	9.35	9.53	9.33	5.03	6.10	13	15

Notes:

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

Water quality monitoring exceedances were recorded in the reporting period and summarized below. Total of 13 action level and 0 limit level exceedances on suspended solid (SS) on 1, 3, 8, 10, 22 and 31 December 2022. Mitigation measures are enhanced by provision of additional silt curtain on 25 Nov 2022 and conducted weekly inspection on the silt curtain condition by the contractor.

Date	Tidal	Location	Parameter	Monitoring Result	AL (mg/L)	LL (mg/L)
1/12/2022	Mid-Flood	M2	SS	11.7	6.7	17.6
1/12/2022	Mid-Flood	M3	SS	15.0	6.7	17.6
1/12/2022	Mid-Flood	M4	SS	13.3	6.7	17.6
3/12/2022	Mid-Flood	M2	SS	11.8	11.4	17.6
3/12/2022	Mid-Ebb	M2	SS	11.8	10.6	17.6
8/12/2022	Mid-Ebb	M1	SS	11.5	6.7	17.6
8/12/2022	Mid-Ebb	M2	SS	9.0	6.7	17.6
8/12/2022	Mid-Ebb	M3	SS	7.7	6.7	17.6
8/12/2022	Mid-Ebb	M4	SS	11.8	6.7	17.6
10/12/2022	Mid-Ebb	M4	SS	7.0	6.7	17.6
22/12/2022	Mid-Flood	M3	SS	7.0	6.7	17.6
31/12/2022	Mid-Flood	M3	SS	7.7	6.7	17.6
31/12/2022	Mid-Ebb	M4	SS	7.3	6.7	17.6

Notes: SS: Suspended Solids

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 2021, 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 20 and 21 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 4.2.1**.

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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Discuss monitoring with the ET; 2. Review proposals for additional monitoring and any other measures and advise the main contractor accordingly. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Undertake Steps 1-5 as in the Action Level Exceedance. If further exceedance of Limit Level, propose enhancement measures for consideration. 	<ol style="list-style-type: none"> 1. Discuss monitoring with the ET; 2. Review proposals for additional monitoring and any other measures and advise the main contractor accordingly. 	<ol style="list-style-type: none"> 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

The final session of Post-translocation Monitoring was performed on 26 May 2022 and fulfilled the approved Coral Translocation Plan requirement (i.e. monitoring will be conducted quarterly for one year after the coral translocation work.) and additional monitoring will be conducted after the construction work.


4.4. DISCUSSION AND CONCLUSION

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

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 as of Dec 2022

Department: CEDD																										
Contract : CV/2020/09 - Construction of Lei Yue Mun Public Landing Facility																										
Monthly Summary Waste Flow Table for Year 2022																										
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 '000m ³)		(in '000m ³)		(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)			
	Est.	Act.	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	0.48	0	0	0	0	0	0	0	0.02	0	0	0.48	0	0	0	0	0	0	0	0	0	0	0	0	
Feb	2.02	0	0	0	0	0	0	0	0	0.02	0	2	0	0	0	0	0	0	0	0	0	0	0	0.02	0	
Mar	2.02	0	0	0	0	0	0	0	0	0.02	0	2	0	0	0	0	0	0	0	0	0	0	0	0.01	0	
Apr	2.02	0	0	0	0	0	0	0	0	0.02	0	2	0	0	0	0	0	0	0	0	0	0	0	0.01	0.005	
May	2.02	0	0	0	0	0	0	0	0	0.02	0	2	0	0	0	0	0	0	0	0	0	0	0	0.005	0	
Jun	2.02	0	0	0	0	0	0	0	0	0.02	0	2	0	0	0	0	0	0	0	0	0	0	0.01	0	0.005	
Sub-total	10.12	0.48	0	0	0	0	0	0	0	1.12	0	10	0.48	0	0	0	0	0	0	0	0	0	0.01	0	0.05	0.005
Jul	0.2	0.78	0	0	0	0	0	0	0	0.2	0	0	0.78	0	0	0	0	0	0	0	0	0	0	0.005	0	
Aug	0.3	0.88	0	0	0	0	0	0	0	0.3	0	0.0	0.88	0	0	0	0	0	0	0	0	0	0	0.005	0	
Sep	0.3	0	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	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	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	0.2	0	0.0	0	0	0	0	0	0	0	0	0	0	0.01	0	0.005	
Total	11.52	2.143	0	0	0	0	0	0	0	1.52	0	10.00	2.143	0	0	0	0	0	0	0	0	0	0.02	0	0.08	0.005
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 '000m ³)		(in '000m ³)		(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)				
13.2		0		0		0		2.7		10.0		0		0.1		0.1		0.06		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
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Contract No. / Works Order No.: - SS J521

Waste Flow Table (for Capital Works Contracts NOT subject to EMP 2022 [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)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed of as Public Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	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)
Jan	0.032	0.000	0.000	0.000	0.032	0.000	0.000	0.000	0.000	0.002
Feb	0.009	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.000
Mar	0.029	0.000	0.000	0.000	0.029	0.000	0.000	0.000	0.000	0.000
Apr	0.036	0.000	0.000	0.000	0.036	0.000	0.000	0.000	0.000	0.000
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
Jul	0.000	0.000	0.000	0.000	0.000	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	0.002
Sep	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
Nov	0.021	0.000	0.000	0.000	0.021	0.000	0.000	0.000	0.000	0.000
Total	0.127	0.000	0.000	0.000	0.127	0.000	0.000	0.000	0.000	0.014

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 m³ by volume.

Notes: Works have been completed in November 2022

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 recorded 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 1, 8, 15, 22 and 27 December 2022.

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
<u>Follow-up action of last month site observation(s)</u>		
--	1. Nil.	1. --
<u>Site observation(s) in reporting month</u>		
1 Dec 22	<p><u>CEDD</u> The chemical bottle should be placed on the drip tray.</p> <p>The electric generator should be surrounded with noise barrier to reduce noisy.</p> <p><u>ASD</u> 1. Nil.</p>	<p>1. Rectified.</p> <p>2. Rectified.</p> <p>1. N.A.</p>
8 Dec 22	<p><u>CEDD</u> 1. Materials other than chemical waste was stored in the chemical waste cabinet. Contractor was reminded that the chemical waste should be stored in the chemical waste cabinet.</p> <p><u>ASD</u> 1. Nil.</p>	<p>1. Rectified.</p> <p>1. N.A.</p>
15 Dec 22	<p><u>CEDD</u> 1. (Reminder) Debris should be removed 2. (Reminder) Chemical materials should be placed away from shore</p> <p><u>ASD</u> 1. Nil.</p>	<p>1. N.A.</p> <p>1. N.A.</p>

Date	Environmental Observations	Follow-up Status
22 Dec 22	<p><u>CEDD</u></p> <ol style="list-style-type: none"> (Reminder) Chemical container should be placed on drip try and away from shore. (Reminder) Measures to prevent waste dumping to the water body. <p><u>ASD</u></p> <ol style="list-style-type: none"> Nil. 	<ol style="list-style-type: none"> N.A. N.A.
29 Dec 22	<p><u>CEDD</u></p> <ol style="list-style-type: none"> (Reminder) Enclosure of air compressor. (Reminder) Frequently maintain the rocky berm to avoid loose soil discharge into the sea. <p><u>ASD</u></p> <ol style="list-style-type: none"> Nil. 	<ol style="list-style-type: none"> N.A. N.A.

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
<u>Contract No. CV/2020/09</u>	
Rock excavation near sea-side of landing	Landing Facility
Construction for vertical seawall at landing	Landing Facility
Construction of sloping seawall at landing	Landing Facility
Construction of pile cap at landing facility	Landing Facility
Trim down excessive casing & H-section along at breakwater	Breakwater Area
Construction of pile cap and linking structure at breakwater	Breakwater Area
Structural monitoring for nearby existing structures	Existing Structures to be Potential Effected by Construction Activities
<u>Contract No. SS J521</u>	
Maintenance works	Site

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

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

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

- High loading of SS in site run-off should be prevented through proper site management by the contractor.
- Seawall modification works should be undertaken during low tide, when the water level is low.
- Cover soil stockpiles to prevent materials from being wind-blown or washed away.
- Minimized surface run-off in adjacent marine waters and programmed to minimize soil excavation works during inclement weather.
- Silt curtain deployment zone should surround all relevant working areas including rock excavation zone near seaside. Weekly inspection on the silt curtain condition by the contractor to ensure the performance.
- 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 m³ per hour with a maximum working period of 12 hours per day throughout the construction phase and operation phase.

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 20th 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 2022, 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	60.3 - 65.9
HPRE 75B*	55-75	NM2-A	56.5 - 63.5
LYMP	70	NM3	63.3 - 66.5
HPRE 21C	67-75	NM4	66.1 - 68.6

*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.

