



Agreement No. CE 32/2021 (CE)  
Improvement Works at Lai Chi Wo Pier and  
Tung Ping Chau Public Pier  
- Design and Construction

Monthly EM&A Report No. 11 for Lai Chi Wo Pier  
(5207869-OR102k-00)


16 January 2023

**Agreement No. CE 32/2021 (CE) Design Consultancy  
for Improvement Works at Lai Chi Wo Pier  
and Tung Ping Chau Public Pier  
- Design and Construction**


**Environmental Permit No. EP-586/2021  
Environmental Certification Sheet**

**Monthly EM&A Report No. 11 for Lai Chi Wo Pier  
[Period from 1 to 31 December 2022]**

**ET Certification**

	
Ms. Grace Yang, Environmental Team Leader	Date: <u>13 January 2023</u>

**IEC Verification**

	
Mr. Morgan Cheng, Independent Environmental Checker	Date: <u>13 January 2023</u>

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## Executive Summary

Civil Engineering and Development Department (CEDD) commissioned an Investigation Study (IS), “Study for Pier Improvement at Lai Chi Wo and Tung Ping Chau – Investigation” (Agreement No. CE 2/2018 (CE), hereafter “the Agreement”), in June 2018 to verify the technical feasibility of improving the pier items located within Yan Chau Tong Marine Park and Tung Ping Chau Marine Park. The EIA Report of the Pier Improvement at Lai Chi Wo (the Project) was approved by DEP under the EIAO on 29 December 2020 and an Environmental Permit (EP) for construction and operation of the improvement works was granted on 19 February 2021.

The SI works for detailed design of the pier improvement at Lai Chi Wo commenced on 16 February 2022. And thus, the construction phase under the Environmental Permit commenced on 16 February 2022. The SI works were completed in March 2022 and no construction activities have been being conducted after the plant demobilization by the SI works Contractor on 14 March 2022.

This is the 11<sup>th</sup> Monthly EM&A Report prepared under Condition 4.4 of EP-586/2021. This report summarises the findings on EM&A during the period from 1 to 31 December 2022.

### Exceedance of Action and Limit Levels

The water quality monitoring and seagrass bed monitoring have been being temporarily suspended since the completion of SI works. No marine works will be carried out under the Project until commencement of the main works.

The coral post-translocation monitoring is conducted quarterly after the coral translocation in January 2022, followed by three post-translocation monitoring events on 27 April, 27 July and 24 October 2022. No exceedance of Action or Limit Level was recorded. The next post-translocation monitoring, which would also be the last post-translocation monitoring event, is scheduled in January 2023.

### Implementation of Mitigation Measures

No site inspection was conducted in the reporting period since no construction activities were carried out under the Project. No significant environmental issues were reported during the reporting period.

### Environmental Complaints, Notification of Summons and Successful Prosecutions

There were no environmental complaints, notification of summons, or successful prosecutions recorded in the reporting period.

### Reporting Changes

Part of the pier head and two vertical faces of the catwalk of the existing Lai Chi Wo Pier were severely damaged in September 2022. As the damage may pose imminent risk to public safety, the Maintenance Term Contractor of Port Works Division under CEDD carried out emergency repair works to the existing Lai Chi Wo Pier. The works, which are not within the scope of the Agreement, were carried out from mid-October 2022 to November 2022. No more repair works were conducted in the reporting month. A site photo showing the existing condition of the pier is provided in **Appendix F**.

## Future Key Issues

When construction activities under this Agreement commence, environmental mitigation measures will be implemented on site as stipulated in the EP, approved EIA Report and EM&A Manual. Weekly site audits will be carried out to ensure that the environmental conditions are acceptable during the construction of this Project.

*Not Used*

# 1. Introduction

## 1.1 Background

- 1.1.1 Hong Kong is an international metropolis and comprises many natural scenic spots, rare geological features, attractions with traditional culture and heritage, and hiking trails with rich biological diversity. The famous Hong Kong UNESCO Global Geopark (Geopark), Marine Parks, old temples, eco-tourism sites and beautiful beaches in coastal areas are some examples. Many attractions are located at remote rural areas without land access and rely on marine transport. In recent years, number of local and non-local visitors attracted to these remote destinations has been constantly increasing.
- 1.1.2 Public piers play an important role in accessing these remote destinations. There are about 120 public piers in Hong Kong. Majority of these piers are built, maintained and managed by the Government.
- 1.1.3 Although regular inspections and maintenance for the remote public piers are carried out by the Government to ensure its structural integrity, some public piers at remote rural areas have been in place for many years and cannot cope with the current needs / usages, such as:
- a) small or primitive piers leading to safety concerns during berthing and unsatisfactory boarding conditions especially for kids and elderly;
  - b) inadequate depth of water for berthing during low tide;
  - c) limited berthing space or narrow accesses which cannot cater for the fluctuating utilization during festive times or weekends; and
  - d) aged pier structures with a need for improvement works.
- 1.1.4 Civil Engineering and Development Department (CEDD) commissioned an Investigation Study (IS), “Study for Pier Improvement at Lai Chi Wo and Tung Ping Chau – Investigation” (Agreement No. CE 2/2018 (CE)), in June 2018 to verify the technical feasibility of improving two potential pier items located within Yan Chau Tong Marine Park and Tung Ping Chau Marine Park in the northeast region of Hong Kong. The improvement works of these two piers are designated projects under Item Q.1, Part 1 of Schedule 2 of the EIAO.
- 1.1.5 An EIA study has been carried out in accordance with the requirement of the EIA Study Briefs including assessment of the potential environmental impacts, in particular water quality impact and ecological impact, and specified environmental monitoring and audit requirements to ensure the effective implementation of the recommended environmental protection and mitigation measures. The EIA Reports of the two piers were approved by DEP under the EIAO on 29 December 2020 and Environmental Permits (EPs) for construction and operation of the improvement works were granted on 19 February 2021. The EIA study made recommendations on the scope of improvement to the Lai Chi Wo Pier and Tung Ping Chau Public Pier with preliminary engineering studies for individual pier taking into account public aspiration and other constraints, prepared preliminary engineering layouts, and evaluated the feasibility of adopting innovative design elements for the piers.



1.1.6 Atkins China Ltd. (ATK) was commissioned by the Civil Engineering and Development Department (CEDD) of the Hong Kong Government Special Administrative Region on 16 September 2021 to provide consultancy services for Agreement No. CE 32/2021 (CE) Design Consultancy for Improvement Works at Lai Chi Wo Pier and Tung Ping Chau Public Pier - Design and Construction (hereinafter called “the Assignment”).

## 1.2 Project Description

1.2.1 Pier Improvement at Lai Chi Wo (the Project) is governed by the Environmental Permit (EP), EP-586/2021, under the EIAO. The scale and scope of the Project includes:

- Modification of the existing pier and construction of new pier structures. The improved pier would be of approximately 155m long and 6m to 15m wide;
- Construction and removal of a temporary pier of approximately 70m long and 3m wide;
- Site investigation (SI) works for detailed design; and
- Associated facilities (e.g. barrier-free access, canopy, seats) and landscaping works, etc. under the Project.

1.2.2 The Project Site is located in the vicinity of Lai Chi Wo Pier, which falls within the Yan Chau Tong Marine Park. Its location is shown in **Figure 1**.

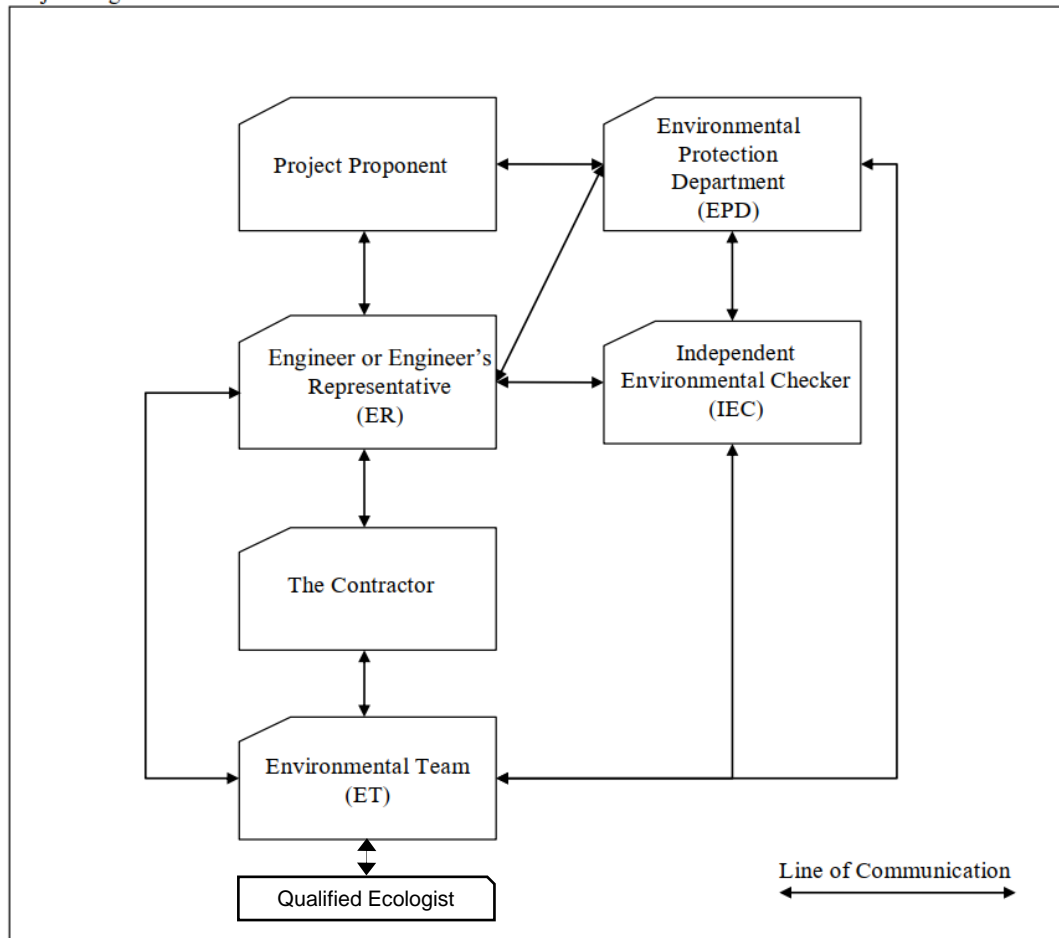
1.2.3 According to the programme, the SI works for detailed design commenced on 16 February 2022 to collate necessary engineering and sediment quality information for the study for pier improvement at Lai Chi Wo. And thus, the construction phase under the Environmental Permit commenced on 16 February 2022. The locations of the 4 drillholes under the SI works are provided in **Figure 2**. The SI works were completed in March 2022 and no construction activities have been being conducted after the plant demobilization by the SI works Contractor on 14 March 2022.

1.2.4 According to EP Condition 4.4, the Monthly EM&A Report shall be submitted to the Director within 10 working days after the end of the reporting month. This report summarises the findings during the period from 1 to 31 December 2022.

## 1.3 Project Organisation

1.3.1 The project organization structure and lines of communication with respect to the environmental management structure is shown below:

Project Organisation for Environmental Works



1.3.2 The key personnel contact names and numbers are summarized in **Table 1.1**.

**Table 1.1 Contact Information of Key Personnel**

Party	Position	Name	Telephone	Fax
Engineer's Representative (Atkins China Limited)	Project Manager	Sean Wong	2972 1000	2890 6343
Wilson Acoustics Limited	Independent Environmental Checker	Morgan Cheng	2637 0623	3422 8117
Contractor (i.e. SI works) <sup>1</sup> (CHEC – CWE Joint Venture)	Project Manager	K. M. Mok	2727 0128	2379 5931
	Site Agent	C. K. Li		
Environmental Team (Atkins China Limited)	Environmental Team Leader	Grace Yang	2972 1000	2890 6343
	Qualified Ecologist	Keith Kei		

Remarks:

1. The SI works were completed in March 2022 and no construction activities were conducted after the plant demobilization by the SI works Contractor on 14 March 2022. Currently, the Contractor for main works has not been confirmed and their contact information shall be provided in due course.

## 1.4 Summary of Construction Activities

1.4.1 Up to the end of the reporting month, no construction activities have been conducted after the plant demobilization by the SI works Contractor on 14 March 2022. The construction programme for main works of the Project will be provided once the Contractor for the main works is on board.

## 1.5 Summary of EM&A Programme Requirements

1.5.1 The status of EM&A Programme for all environmental aspects required under the EM&A Manual are presented in **Table 1.2**. The water quality monitoring and seagrass bed monitoring have been temporarily suspended since completion of the SI works until commencement of the main works (i.e. pier construction). The coral post-translocation monitoring is currently conducted quarterly after the coral translocation in January 2022. The requirements of relevant environmental monitoring, including monitoring parameters, Action and Limit Levels, Event and Action Plan(s), environmental mitigation measures, etc. are presented in **Section 2**.

**Table 1.2: Summary of Status of EM&A Programme**

Parameter	Description	Location	Frequency	Status
Water Quality	Dissolved oxygen (DO), dissolved oxygen saturation (DO%), temperature, turbidity, salinity, pH and suspended solids (SS)	WM1, WM2, C1, C2	3 days per week	Temporarily Suspended
Ecology	Seagrass Bed	Lai Chi Wo Beach SSSI	Monthly (i.e. weekly during the first 2 weeks of construction phase and start of piling works)	Temporarily Suspended
	Coral Post-translocation Monitoring	Coral Translocation Recipient Site	Quarterly (i.e. for 1 year after translocation on 28 Jan 2022)	Ongoing
Environmental Site Inspection	Air Quality, Noise, Waste Management and Landscape and Visual	Project Area	Weekly (i.e. Twice a month for Landscape and Visual)	Temporarily Suspended

## 1.6 Status of Other Statutory Environmental Requirements

1.6.1.1. The EP conditions, environmental licenses and permits which are currently valid in the reporting period are presented in **Table 1.3**. No non-compliance with environmental statutory requirements was identified in the reporting period.

**Table 1.3: Latest Status of Submissions required under EP-586/2021**

Item	Description	Ref. No.	Date of Expiry	Status <sup>1</sup>
1	Environmental Permit (EP) under EIA Ordinance	EP-586/2021	N/A	Issued by EPD on 19 Feb 2021.
2a	Notification of the Commencement of Construction (Site Investigation)	EP Condition 1.12	N/A	Notified EPD on commencement of the site investigation works on 16 Nov 2021.
2b	Notification of the Commencement of Construction (Main Works)	EP Condition 1.12	N/A	Notified EPD on commencement of the main works on 5 Jul 2022.
3	Notification of the Commencement of Operation	EP Condition 1.14	N/A	To be submitted no later than 2 months prior to commencement of the operation of the Project.
4	EP Submission Schedule	EP Condition 2.8	N/A	Updated EP Submission Schedule submitted to EPD on 23 August 2022. EPD provided comments on 26 August 2022.
5a	Management Organisation (Site Investigation)	EP Condition 2.9	N/A	Submitted to EPD on 20 Dec 2021.
5b	Management Organisation (Main Works)	EP Condition 2.9	N/A	To be submitted at least 1 month prior to commencement of the main works of the Project.
6a	Construction Works Schedule and Location Plans (Site Investigation)	EP Condition 2.10	N/A	Updated Plan submitted to EPD on 20 May 2022.
6b	Construction Works Schedule and Location Plans (Main Works)	EP Condition 2.10	N/A	Updated Plan submitted to EPD on 24 October 2022. EPD provided comments on 21 December 2022.
7a	Pier Design Plan – Part 1	EP Condition 2.11	N/A	Agreed by EPD on 15 Feb 2022.
7b	Pier Design Plan – Part 2 (i.e. a complete plan with specification of the use of locally manufactured/ recycled eco-materials)	EP Condition 2.11	N/A	Submitted to EPD on 24 August 2022.
8a	Emergency Spillage Plan (Site Investigation)	EP Condition 2.12	N/A	Agreed by EPD on 25 May 2022.
8b	Emergency Spillage Plan (Main Works)	EP Condition 2.12	N/A	Submitted to EPD on 24 August 2022. EPD provided comments on 6 October 2022.
9a	Works Vessel Travel Route Plan (Site Investigation)	EP Condition 2.13	N/A	Updated Plan submitted to EPD on 24 May 2022.

Item	Description	Ref. No.	Date of Expiry	Status <sup>1</sup>
9b	Works Vessel Travel Route Plan (Main Works)	EP Condition 2.13	N/A	To be submitted at least 1 month prior to commencement of the main works.
10	Silt Curtain Deployment Plan	EP Condition 2.14	N/A	To be submitted at least 1 month prior to commencement of the main works.
11	Pre-construction Dive Survey Report & Translocation Proposal <sup>2</sup>	EP Condition 3.4	N/A	Agreed by EPD on 26 Jul 2022.
12	Baseline Monitoring Report	EP Condition 4.3	N/A	Agreed by AFCD and EPD on 4 Mar 2022.
13	Dedicated Internet Website	EP Condition 5.2	N/A	Set up on 15 Mar 2022. Notified EPD by email on 31 Mar 2022, notification letter issued on 11 Apr 2022.

Remarks:

1. This table only shows the latest submission date for the items listed during the reporting month.
2. The previous version of Pre-construction Dive Survey & Translocation Proposal submitted on 24 Jan 2022 was agreed by AFCD and EPD on 27 Jan 2022. The updated version was submitted in order to address the updates of recipient site for translocated coral.

## 2. Environmental Monitoring and Audit

### 2.1 Water Quality

#### 2.1.1 Summary of EM&A Manual's Requirements

2.1.1.1. In accordance with Section 7.8 of the EM&A Manual under the Project, impact monitoring shall be conducted during construction phase when there are marine works. The purpose of impact monitoring is to ensure the implementation of the recommended mitigation measures, provide effective control of any malpractices, and provide continuous improvements to the environmental conditions. The interval between two sets of monitoring shall not be less than 36 hours with a frequency of 3 days in a week, at mid-floor and mid-ebb tides. The water quality parameters specified in Section 7.3 of the EM&A Manual, including dissolved oxygen (DO), dissolved oxygen saturation (DO%), temperature, turbidity, salinity, pH and suspended solids (SS) in the water body at all designated monitoring station shall be measured for the Project. Further details of the water quality impact monitoring under this Project shall be presented in the following sections.

#### 2.1.2 Monitoring Locations

2.1.2.1. Water quality impact monitoring will be carried out at four locations at Yan Chau Tong Marine Park near the hard coral community and seagrass and mangrove at Lai Chi Wo Beach SSSI. The water quality monitoring locations are presented in **Figure 3**. The coordinates and description of monitoring stations are summarised in **Table 2.1**.

**Table 2.1: Proposed Water Quality Monitoring Locations during Construction Phase**

Monitoring Station ID	Description	Easting	Northing
WM1 <sup>1</sup>	Lai Chi Wo Beach SSSI	845220	843133
WM2	Hard Coral Community	845344	843628
C1	Control Station 1	845855	843613
C2 <sup>1</sup>	Control Station 2	845230	843211

Remarks:

1. WM1 and C2 are too shallow for monitoring vessel to access since the commencement of the Baseline Water Quality Monitoring on 7 December 2021. The nearest accessible points for WM1 (E845298, N843185) and C2 (E845190, N843273) were used for monitoring.

#### 2.1.3 Monitoring Methodology

##### Monitoring Parameters and Frequency

2.1.3.1. The monitoring shall be established by measuring the dissolved oxygen (DO), dissolved oxygen saturation (DO%), temperature, turbidity, salinity, pH and suspended solids (SS) in the water body at all designated monitoring station listed in **Table 2.1**.

2.1.3.2. **Table 2.2** summarises the monitoring parameters, monitoring period and frequencies of the water quality monitoring. The measurement of monitoring parameters followed the standard methods and detection limit requirements as stated in Sections 7.4 and 7.5 of the EM&A Manual.

**Table 2.2: Proposed Water Quality Monitoring Details during Construction Phase**

Monitoring Station	Parameter (Detection/Reporting Limit)	Depth	Frequency and Replication
<u>Impact Stations</u> WM1, WM2  <u>Control Stations</u> C1, C2	<ul style="list-style-type: none"> <li>Dissolved Oxygen (DO) (mg/L) (Detection Limit: 0-20 mg/L)</li> <li>Dissolved Oxygen Saturation (DOS) (%) (Detection Limit: 0-200% saturation)</li> <li>Temperature (°C) (Detection Limit: 0-45 degree Celsius)</li> <li>pH (Detection Limit: 0.0-14.0)</li> <li>Turbidity (NTU) (Detection Limit: 0-1000 NTU)</li> <li>Salinity (ppt) (Detection Limit: 0-40 ppt)</li> <li>Water depth (m)</li> <li>Suspended Solid (SS) (mg/L) (Reporting limit: 0.5 mg/L)</li> </ul>	<ul style="list-style-type: none"> <li>Three water depths (i.e. one sampling / measurement event): 1 m below sea surface, mid-depth and 1 m above seabed.</li> <li>If the water depth is less than 3 m, mid-depth sampling only.</li> <li>If water depth less than 6 m, mid-depth would be omitted.</li> </ul>	<ul style="list-style-type: none"> <li>Three days per week, at mid-flood and mid-ebb tides</li> <li>Two in-situ measurements and 3 replicate water samples at each depth at each station.</li> </ul>

2.1.3.3. In addition to the water quality parameters, other relevant data were also measured and recorded in Water Quality Monitoring Logs, including monitoring location / position, time, water depth, tidal stages, weather conditions and any special phenomena or work undertaken around the monitoring and works area that may influence the monitoring results.

Monitoring Equipment

2.1.3.4. **Table 2.3** summarises the equipment used in the impact monitoring works. All of the monitoring equipment complies with the requirements set out in the EM&A Manual.

**Table 2.3: Water Quality Monitoring Equipment**

Equipment	Brand and Model
Water Sampling Equipment	Rosette multibottle array water sampler with Niskin 2L samplers; Wildlife Supply Company, 2.2L water sampler
Positioning Device	Garmin, eTrex series
Water Depth Gauge	Garmin, Striker series
Equipment for Dissolved Oxygen, Temperature, Turbidity, pH and Salinity measurements	YSI ProDSS S/N: 16H104233, 16H104234, 17E100747, 21G105356



### Operational/ Analytical Procedures

2.1.3.5. At each monitoring station, two consecutive measurements of DO level, DO Saturation, Temperature, Turbidity, Salinity and pH were taken at each sampling depth. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken. Three water samples were collected for laboratory analysis of SS content. Following sample collection, water samples were stored in high density polythene bottles (1L) with no preservatives added, packed in ice (cooled to 4°C without being frozen) and kept in dark during both on-site temporary storage and transfer to the testing laboratory. The samples were delivered to the laboratory as soon as possible and the laboratory determination works started within 24 hours after collection of the water samples. The testing of SS for all monitoring stations was conducted by a Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory, ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066). Comprehensive quality assurance and control procedures were in place in order to ensure quality and consistency in results.

### 2.1.4 **QA/QC Requirements**

#### Calibration of In-situ Instruments

2.1.4.1. The pH meter, DO meter and turbidimeter were checked and calibrated before use. DO meter and turbidimeter were certified by a laboratory accredited under HOKLAS, and subsequently re-calibrated on quarterly basis throughout all stages of the water quality monitoring. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring station. Copies of the calibration certificates for the measuring equipment for DO, Temperature, Turbidity, pH and Salinity will be provided when water quality monitoring is conducted during a reporting month.

#### Decontamination Procedures

2.1.4.2. Water sampling equipment used during the course of the impact monitoring was decontaminated by manual washing and rinsed with clean seawater/distilled water after each sampling event. All disposable equipment was discarded after sampling.

#### Sampling Management and Supervision

2.1.4.3. All sampling bottles were labelled with the sample ID (including the indication of sampling station and tidal stage, e.g. IM1\_ME\_S\_R1), laboratory number and sampling date. All water samples were handled under chain of custody protocols and relinquished to the laboratory representatives at locations specified by the laboratory.

#### Quality Control Measures for Sample Testing

2.1.4.4. The sample testing was performed by ALS Technichem (HK) Pty Ltd. The following quality control programme was performed by the laboratory for every batch of 20 samples:

- One method blank; and



- One set of quality control (QC) samples (including method QC and sample duplicate).

## 2.1.5 Monitoring Results

- 2.1.5.1. The water quality monitoring has been temporarily suspended after the water quality monitoring on 15 March 2022 due to the absence of marine works under the Project after the plant demobilization by the SI works Contractor on 14 March 2022. The water quality impact monitoring will be resumed to fulfil the EM&A requirements after commencement of the main works for the pier construction.

## 2.1.6 Action and Limit Levels

- 2.1.6.1. The established Action and Limit levels for Construction Phase Marine Water Monitoring based on the baseline water quality monitoring results at the designated impact stations in accordance with the EM&A Manual are shown in **Table 2.4**.

**Table 2.4: Calculated Action and Limit levels for Construction Phase Marine Water Quality Monitoring**

Parameter	Action Level	Limit Level
DO is mg/L (Surface, Middle & Bottom)	<u>Surface and Middle</u> 7.15 mg/L. <sup>[1]</sup> <u>Bottom</u> 6.85 mg/L. <sup>[1]</sup>	<u>Surface and Middle</u> 4 mg/L except 5 mg/L for fish culture zone; or 7.13 mg/L. <sup>[1]</sup> <u>Bottom</u> 2 mg/L or 6.43 mg/L. <sup>[1]</sup>
SS in mg/L (depth-averaged) <sup>[3]</sup>	3.94 mg/L / 120% of upstream control stations' results. <sup>[2]</sup>	4.81 mg/L / 130% of upstream control stations' results. <sup>[2]</sup>
Turbidity in NTU (depth-averaged) <sup>[3]</sup>	2.13 NTU / 120% of upstream control stations' results. <sup>[2]</sup>	4.01 NTU / 130% of upstream control stations' results. <sup>[2]</sup>

Notes:

[1] For DO, non-compliance occurs when monitoring results is lower than the limits.

[2] For SS and turbidity, non-compliance occurs when monitoring results is larger than the limits.

[3] "Depth-averaged" is calculated by taking the arithmetic means of readings of all three depth.

## 2.1.7 Event and Action Plan

- 2.1.7.1. Should any non-compliance of the criteria occur, actions in accordance with the Event and Action Plan in the **Appendix C** will be carried out.
- 2.1.7.2. Summary of exceedances of Action and Limit Levels for water quality monitoring in the reporting period and the follow-up actions in accordance with the Event and Action Plan are presented in **Section 2.6**.

## 2.2 Ecology

### 2.2.1 Seagrass Bed

#### Summary of EM&A Manual Requirements for Seagrass Bed Monitoring

- 2.2.1.1. According to Section 10.3.1.6 of the EM&A Manual, due to the importance and rarity of seagrass bed in Lai Chi Wo Beach SSSI, construction phase monitoring shall be conducted for the seagrass bed adjacent to the mangrove at the south of the 500m assessment area as identified in the EIA Report (Register No. AEIAR-225/2020).

The seagrass bed is primarily composed of *Zostera japonica*, which is of conservation importance. Construction phase monitoring will be carried out weekly during the first two weeks of the construction phase and start of piling works. If no exceedance of water quality due to the construction works is recorded, the monitoring schedule will be changed to monthly until the construction works are finished. In addition, an ad-hoc inspection of seagrass bed is required if the water quality data indicate any exceedance due to the construction works.

- 2.2.1.2. Since no seagrass was recorded during the baseline survey, construction phase seagrass monitoring will be carried out after commencement of the construction works in order to monitor any presence of seagrass during the whole construction period. Should any seagrass species be identified during the construction phase monitoring, the extent of the seagrass bed, the coverage percentage and health conditions of seagrasses will be recorded.

### **Methodology of Seagrass Bed Monitoring**

#### Walk-through Survey

- 2.2.1.3. A walk-through survey will be conducted by two surveyors, including the AFCD approved Qualified Ecologist, along the three identified seagrass zones (**Appendix D1**) for measuring the extend of the seagrass bed. The extent and species composition of the seagrass bed will be recorded during the walk-through survey.

#### Transect Survey

- 2.2.1.4. Should there be any seagrass species recorded during the walk-through survey, a transect survey will be carried out to examine the condition of seagrass for future reference.
- 2.2.1.5. One 50m to 100m transect will be laid horizontally to the shore, covering the three seagrass beds. Five 50cm x 50cm quadrats will be laid randomly along the transect.
- 2.2.1.6. Percentage cover, species composition and health condition of the seagrass bed will be recorded in each quadrat during the transect survey.

### **Findings of Seagrass Bed Monitoring**

- 2.2.1.7. The seagrass bed monitoring has been temporarily suspended after the seagrass bed monitoring on 8 March 2022 since no marine works have been carried out under the Project after the plant demobilization by the SI works Contractor. It will be resumed after the commencement of the main works for pier construction.

## **2.2.2 Coral**

### **Summary of EP Requirements for Coral Translocation**

- 2.2.2.1. Pursuant to Condition 3.4 of EP-586/2021, the Permit Holder shall undertake a pre-construction dive survey to verify the conditions of the small coral colonies on the existing Lai Chi Wo pier; and shall deposit with the DEP a pre-construction dive survey report no later than 1 month before the commencement of any construction works. If the pre-construction dive survey report concluded that those coral colonies have grown to a size suitable for translocation or other corals of higher conservation

value have newly colonised on the pier, the Permit Holder shall submit a Translocation Proposal no less than 1 month before commencement of coral translocation to the Director for approval. The Translocation Proposal shall include the following information:

- Coral translocation methodology, including the stabilization of the translocated corals, identification of coral recipient site; and
- Post-translocation monitoring methodology.

### **Reporting of Coral Translocation**

2.2.2.2. Following the submission of Pre-construction Dive Survey Report & Translocation Proposal in January 2022 under EP Condition 3.4, the translocation activities were performed on 27 and 28 January 2022. The updated Pre-construction Dive Survey Report & Translocation Proposal was subsequently submitted in order to address the update of recipient site for translocated coral. Details of the translocation activities are presented in the Coral Translocation Report, which was also included in the first Monthly EM&A Report of February 2022 for reference.

2.2.2.3. In accordance with the Pre-construction Dive Survey Report & Translocation Proposal, the translocated coral colonies as well as the tagged natural coral colonies at the recipient site are now being monitored quarterly for one year following the coral translocation in the recipient site.

### **Methodology of Coral Post-translocation Monitoring**

2.2.2.4. In order to monitor the health of all translocated coral colonies, post-translocation monitoring needs to be conducted after the translocation works. All translocated colonies need to be monitored during the monitoring period.

2.2.2.5. Following coral translocation to the recipient site, the translocated coral colonies as well as the tagged natural coral colonies at the recipient site are monitored quarterly for one year (i.e. a total of four times of post-translocation monitoring). The monitoring records the parameters including size, presence, survival, health condition (percentage of mortality/bleaching) and percentage of sediment of each translocated coral colony and each tagged natural colony. The general environmental conditions including weather, sea, and tidal conditions of the coral recipient site are also monitored.

2.2.2.6. Photographic records of the translocated and natural coral colonies are taken as far as possible from the same aspect and orientation as those of the 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.

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

2.2.2.8. If observations of any die-off / abnormal conditions of the translocated corals are made during the post-translocation monitoring, the Environmental Team (ET) will

inform the Contractor, Independent Environmental Checker (IEC), EPD and AFCD, and liaise with AFCD to investigate any mitigation measures, if necessary.

- 2.2.2.9. Post-translocation monitoring results are evaluated against Action and Limit Levels. Evaluation is based on recorded changes in percentage of partial mortality of the corals. The action and Limit Levels are defined in **Table 2.5**. If the defined Action Level or Limit Level for coral monitoring as listed in **Table 2.5** is exceeded, the actions set out in **Appendix C** will be implemented.

<b>Parameter</b>	<b>Action Level Definition</b>	<b>Limit Level Definition</b>
Mortality	If during Impact 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 Impact Monitoring a 25% 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 Limit Level is exceeded.

### **Findings of Coral Post-translocation Monitoring**

- 2.2.2.10. The third post-translocation monitoring was conducted on 24 October 2022. The health condition of all the translocated coral colonies was observed to be good. No partial mortality, sediment or bleaching in the general condition of translocated coral colonies was observed during the monitoring. In terms of the ten tagged natural coral colonies existing at the recipient site, all of them were in good condition. No partial mortality, sediment or bleaching in the general condition of the tagged coral colonies was observed during the monitoring. No exceedance of Action or Limit Level for coral post-translocation monitoring was recorded. Details of the third post-translocation monitoring were presented in the Monthly EM&A Report for October 2022.
- 2.2.2.11. The next coral post-translocation monitoring, which would also be the last post-translocation monitoring event, is scheduled in January 2023.

## **2.3 Waste Management**

- 2.3.1 The SI works were completed in March 2022 and no construction activities have been conducted after the plant demobilization by the SI works Contractor on 14 March 2022. No inert or non-inert C&D material, and no general refuse were generated during the reporting period. Waste management audits will be performed with reference to the EM&A Manual during the regular environmental site inspections after commencement of the main works.

## **2.4 Environmental Site Inspection**

- 2.4.1 The SI works were completed in March 2022 and no construction activities have been conducted since the plant demobilization was completed by the SI works Contractor on 14 March 2022. No site inspection was conducted in the reporting period since no construction activities were carried out under the Project, and thus, no significant environmental issues were reported during the reporting period.

2.4.2 Regular environmental site inspections will be carried out by the ET with the Contractor and ER after commencement of the main works to confirm the implementation of appropriate environmental protection and pollution control/mitigation measures for air quality, noise, water quality, waste management and ecology under the Project. Audits for landscape and visual will also be carried out after commencement of the main works to ensure that all the recommended mitigation measures in the EIA are properly and effectively implemented and to ensure compliance with the intended aims of the measures. In the event of any non-compliance, actions in accordance with the Event and Action Plan in **Appendix C** will be carried out.

## 2.5 Emergency Repair Works at Lai Chi Wo Pier

2.5.1 In September 2022, part of the existing Lai Chi Wo pier head and its two vertical faces of the catwalk were severely damaged by an accident, which may pose imminent risk to public safety. The Maintenance Term Contractor of Port Works Division under CEDD carried out emergency repair works to the existing Lai Chi Wo Pier. The works, which are not within the scope of the Agreement, were carried out from mid-October 2022 to November 2022. No more repair works were conducted in the reporting month. A site photo showing the existing condition of the pier is provided in **Appendix F**.

## 2.6 Implementation Status of Environmental Mitigation Measures

2.6.1 A summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in **Appendix E**. The necessary mitigation measures have been implemented properly for the Project by the end of this reporting period.

## 2.7 Summary of Exceedances of the Environmental Quality Performance Limit

2.7.1 The water quality monitoring and seagrass bed monitoring have been being temporarily suspended since the completion of SI works. No marine works will be carried out under the Project until commencement of the main works.

2.7.2 The coral post-translocation monitoring is conducted quarterly after the coral translocation in January 2022, followed by three post-translocation monitoring events on 27 April, 27 July and 24 October 2022. No exceedance of Action or Limit Level was recorded. The next post-translocation monitoring, which would also be the last post-translocation monitoring event, is scheduled in January 2023.

2.7.3 Cumulative statistics on environmental monitoring exceedance are provided in **Appendix G**.

## 2.8 Summary of Environmental Complaints, Notification of Summons and Successful Prosecutions

2.8.1 There were no environmental complaints, notification of summons or successful prosecutions recorded in the reporting period.

2.8.2 Statistics on environmental complaints, notification of summons and successful prosecutions are summarised in **Appendix G**.

### 3. Forecast for the Next Reporting Period

#### 3.1 Works Programme for the Next Reporting Period

3.1.1 No construction activities are scheduled to be undertaken under the Project in the next reporting period of January 2023.

3.1.2 The ET will keep track on the EM&A programme / construction activities to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

#### 3.2 Monitoring Schedule for Next Reporting Period

3.2.1 The 4<sup>th</sup> coral post-translocation monitoring, which would also be the last post-translocation monitoring event, will be conducted in the next reporting period of January 2023. The tentative monitoring schedule for the next reporting period is provided in **Appendix B2**.

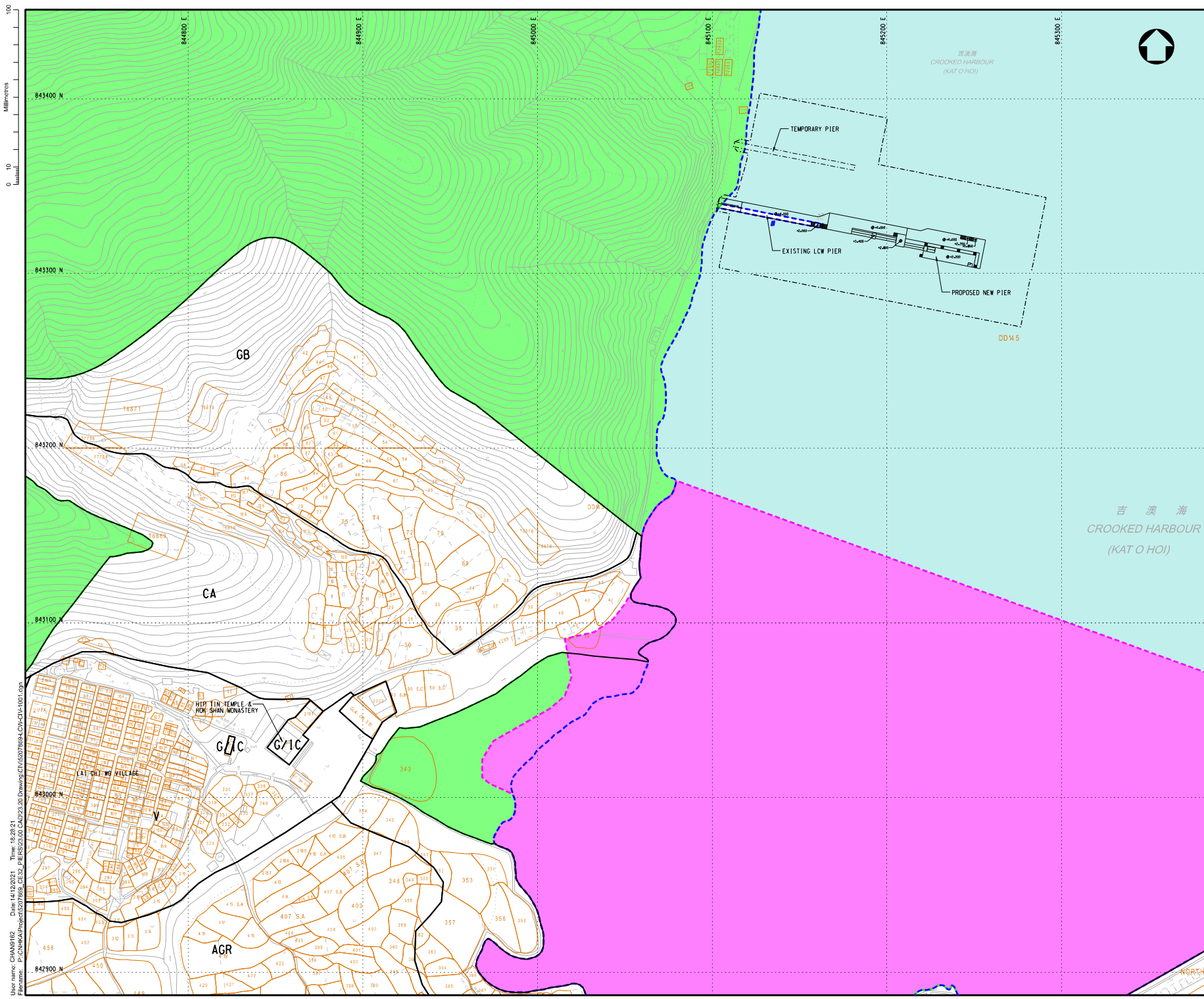


## 4. Conclusion and Recommendation

- 4.1.1 This Monthly EM&A Report presents the key findings of the EM&A works during the reporting period from 1 to 31 December 2022 for the construction phase of the Project in accordance with the EM&A Manual and the requirements of the EP.
- 4.1.2 The SI works were completed in March 2022 and no construction activities have been conducted after the plant demobilization by the SI works Contractor on 14 March 2022.
- 4.1.3 The water quality monitoring and seagrass bed monitoring have been temporarily suspended since no marine works will be carried out under the Project after the completion of SI works until commencement of the main works.
- 4.1.4 The coral post-translocation monitoring is conducted quarterly after the coral translocation in January 2022. The first three post-translocation monitoring were conducted on 27 April, 27 July and 24 October 2022. No exceedance of Action or Limit Level for coral post-translocation monitoring was recorded. The next post-translocation monitoring, which would also be the last post-translocation monitoring event, is scheduled in January 2023.
- 4.1.5 There was no non-compliance with environmental statutory requirements, environmental complaint, notification of summons and successful prosecution recorded in the reporting period.
- 4.1.6 Part of the pier head and two vertical faces of the catwalk of the existing Lai Chi Wo Pier were severely damaged in September 2022. As the damage may pose imminent risk to public safety, the Maintenance Term Contractor of Port Works Division under CEDD carried out emergency repair works to the existing Lai Chi Wo Pier. The works, which are not within the scope of the Agreement, were carried out from mid-October 2022 to November 2022. No more repair works were conducted in the reporting month. A site photo showing the existing condition of the pier is provided in the this Report for record.
- 4.1.7 The ET will keep track on the EM&A programme / construction activities under this Agreement to confirm compliance with environmental requirements and proper implementation of all necessary mitigation measures as stipulated in the EP, approved EIA Report and EM&A Manual.



# Figure



**KEY PLAN**  
SCALE 1:10000

**NOTES:**  
1. THE ENTIRE SITE IS SITUATED INSIDE THE AREA OF HONG KONG UNESCO GLOBAL GEOPARK.

- LEGEND:**
- MARINE PARK
  - COUNTRY PARK
  - SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
  - LAND LOT W/LAND LOT NO.
  - V VILLAGE TYPE DEVELOPMENT
  - AGR AGRICULTURE
  - CA CONSERVATION AREA
  - G/IC GOVERNMENT, INSTITUTION OR COMMUNITY
  - GB GREEN BELT

Rev.	Date	Description	By	Chk'd	Appr'd	
A	DEC 2021	FIRST ISSUE		KLC	JC	SW

Drawing Status: **DESIGN**      Status: **SW**

**ATKINS**  
Member of the SNC-Lavalin Group

Client: 土木工程拓展署  
Civil Engineering and Development Department

土木工程處  
**CIVIL ENGINEERING OFFICE**

Project Title: **AGREEMENT NO. CE 32/2021 (CE) IMPROVEMENT WORKS AT LAI CHI WO PIER AND TUNG PING CHAU PUBLIC PIER - DESIGN AND CONSTRUCTION**

Drawing Title: **Location Plan of Lai Chi Wo Pier**

Scale	Design	Drawn	Checked	Authorized
1:1000	SC	KLC	JC	SW
Original Date	Date	Date	Date	Date
A1	DEC 2021	DEC 2021	DEC 2021	DEC 2021
Drawing Number	Figure 1			Revision
				A

User name: CHANM82 Date: 14/12/2021 Time: 16:28:21  
Drawing Title: IMPROVEMENT WORKS AT LAI CHI WO PIER AND TUNG PING CHAU PUBLIC PIER - DESIGN AND CONSTRUCTION



**KEY PLAN**  
SCALE 1:10000

**NOTES:**  
1. ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN METRES WITH REFERENCE TO HONG KONG PRINCIPAL DATUM (mPD) UNLESS NOTED OTHERWISE.

- LEGEND:**
- GAZETTED COUNTRY PARK BOUNDARY
  - PROPOSED WORKS AREA
  - SEABED LEVEL
  - EXISTING BOREHOLE
  - EXISTING VIBROCORE
  - PROPOSED BOREHOLE

**TENTATIVE COORDINATES FOR PROPOSED GROUND INVESTIGATION**

BOREHOLE MARK	EASTING	NORTHING
LBH1	845230.962	843308.443
LBH2	845199.719	843327.221
LBH3	845166.256	843344.433
LBH4	845252.779	843305.946

Rev.	Date	Description	By	Chkd	App'd	Submittal
-	OCT 2021	FIRST ISSUE		MD	IW	SW

Drawing Status: **DESIGN**



Client: 土木工程拓展署  
Civil Engineering and Development Department

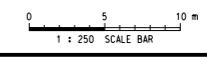
土木工程處  
CIVIL ENGINEERING OFFICE

Project Title: AGREEMENT NO. CE 32/2021 (CE) IMPROVEMENT WORKS AT LAI CHI WO PIER AND TUNG PING CHAU PUBLIC PIER - DESIGN AND CONSTRUCTION

Drawing Title: LAI CHI WO PIER - GROUND INVESTIGATION LOCATION PLAN

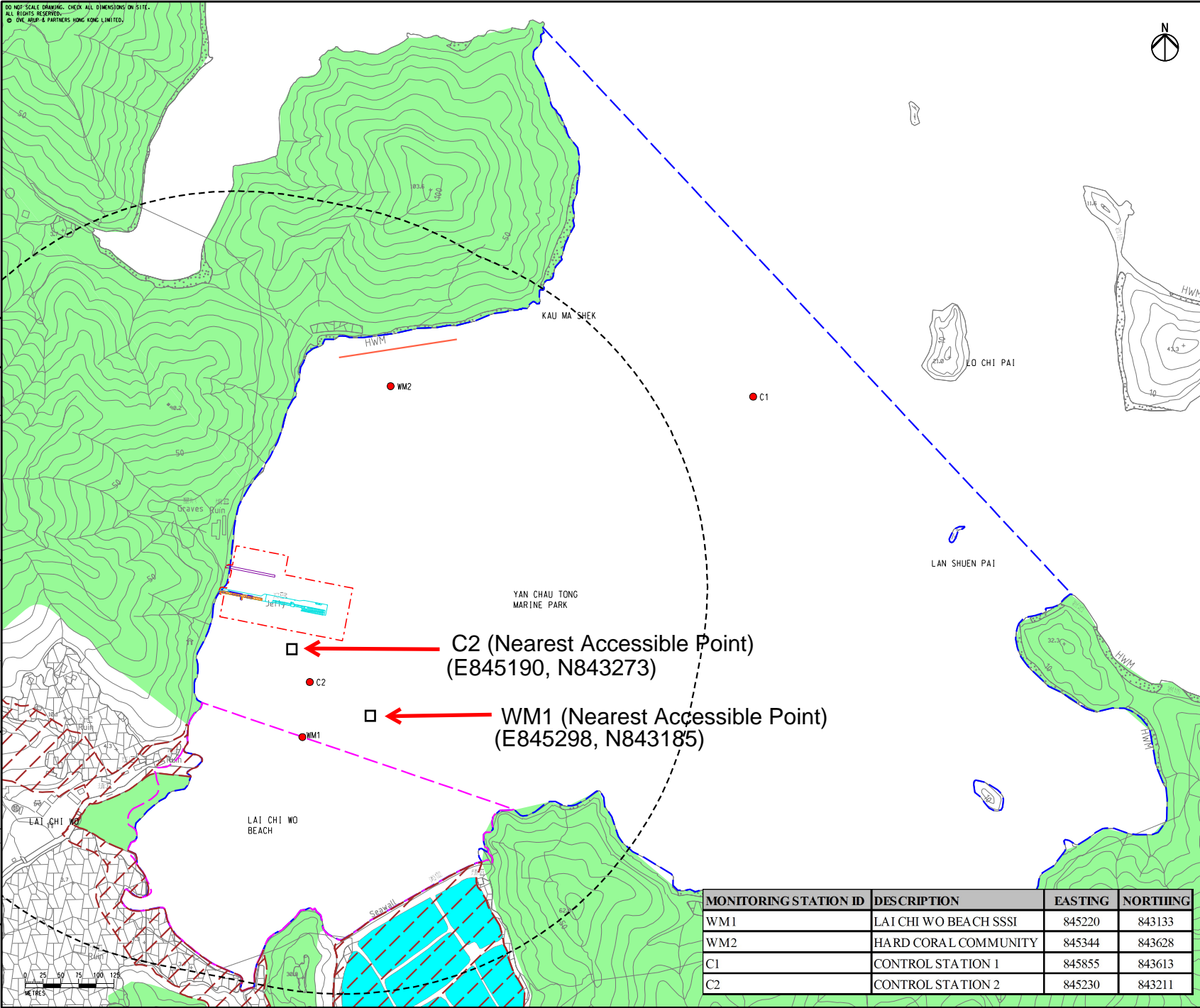
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1:250	MD	WMC	IW	SW
Original Size	Date	Date	Date	Date
A1	OCT 2021	OCT 2021	OCT 2021	OCT 2021

Drawing Number: **Figure 2**



User name: CHOW6266 Date: 03-Jan-22 Time: 06:00:32 PM  
Filename: P:\CN\KAI\Project\207669\_CE32\_PIER\207669\_CAD\2023.00 CAD\2023.00 Drawing\CV\5207669A\_CW\GEO-1001.dgn

7/27/2020  
 Printed by : HKGTAD04  
 Filename : \\hkmts2\c:\env\env\project\282145\13 Drawing Deliverables\Reports\08 EMB\ALCW\Figure 7.1-Locations of Water Quality Monitoring Stations.dgn



**LEGEND**

- - - PROPOSED WORKS AREA
- PROPOSED NEW PIER
- EXISTING LAI CHI WO PIER
- TEMPORARY PIER
- 500m ASSESSMENT AREA
- WATER SENSITIVE RECEIVER
- YAN CHAU TONG MARINE PARK
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI) CONSERVATION AREA
- PLOVER COVE COUNTRY PARK
- POND
- CORAL
- WATER QUALITY MONITORING STATION

B	SECOND ISSUE	SF	01/20
A	FIRST ISSUE	SF	11/19
Rev	Description	By	Date

Consultant  
**ARUP**

Project title  
 Pier Improvement at Lai Chi Wo

Drawing title  
**LOCATIONS OF WATER QUALITY MONITORING STATIONS DURING CONSTRUCTION PHASE**

Drawing no. **Figure 3** Rev. **B**

Drawn	Date	Checked	Approved
SF	07/20	AF	FC
Scale	1:5000 @ A3	Status	PRELIMINARY

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MONITORING STATION ID	DESCRIPTION	EASTING	NORTHING
WM1	LAI CHI WO BEACH SSSI	845220	843133
WM2	HARD CORAL COMMUNITY	845344	843628
C1	CONTROL STATION 1	845855	843613
C2	CONTROL STATION 2	845230	843211

土木工程拓展署  
 Civil Engineering and Development Department

# Appendix A

*(Not used)*

# Appendix B1

*(Not used)*



# Appendix B2

# Environmental Monitoring Schedule

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	PTMC	27	28
					<b>Lai Chi Wo Environmental Monitoring Schedule (January 2023)</b>	
30	31					

Remark:  
WQM: Water Quality Monitoring  
SBM: Seagrass Bed Monitoring  
PTMC: Post-translocation Monitoring for Coral



# Appendix B3

*(Not used)*

# Appendix C

## Event and Action Plan

## Event and Action Plan for Water Quality

Event	Action			
	ET	IEC	ER	Contractor
Action level exceedance for one sampling day	<ol style="list-style-type: none"> <li>1. Inform IEC, Contractor and ER;</li> <li>2. Check monitoring data, all plant, equipment and Contractor's working methods; and</li> <li>3. Discuss remedial measures with IEC and Contractor and ER.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET, ER and Contractor on the implemented mitigation measures;</li> <li>2. Review proposals on remedial measures submitted by Contractor and advise the ER accordingly; and</li> <li>3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IEC, ET and Contractor on the implemented mitigation measures;</li> <li>2. Make agreement on the remedial measures to be implemented;</li> <li>3. Supervise the implementation of agreed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) of impact;</li> <li>2. Inform the ER and confirm notification of the non-compliance in writing;</li> <li>3. Rectify unacceptable practice;</li> <li>4. Check all plant and equipment;</li> <li>5. Consider changes of working methods;</li> <li>6. Discuss with ER, ET and IEC and propose remedial measures to IEC and ER; and</li> <li>7. Implement the agreed mitigation measures.</li> </ol>
Action level exceedance for more than one consecutive sampling days	<ol style="list-style-type: none"> <li>1. Repeat in-situ measurement on next day of exceedance to confirm findings;</li> <li>2. Inform IEC, contractor and ER;</li> <li>3. Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>4. Discuss remedial measures with IEC, contractor and ER</li> <li>5. Ensure remedial measures are implemented</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET, Contractor and ER on the implemented mitigation measures;</li> <li>2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and</li> <li>3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET, IEC and Contractor on the proposed mitigation measures;</li> <li>2. Make agreement on the remedial measures to be implemented; and</li> <li>3. Discuss with ET, IEC and Contractor on the effectiveness of the implemented remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) of impact;</li> <li>2. Inform the ER and confirm notification of the non-compliance in writing;</li> <li>3. Rectify unacceptable practice;</li> <li>4. Check all plant and equipment and consider changes of working methods;</li> <li>5. Discuss with ET, IEC and ER and submit proposal of remedial measures to ER and IEC within 3 working days of notification; and</li> <li>6. Implement the agreed mitigation measures.</li> </ol>

Event	Action			
	ET	IEC	ER	Contractor
Limit level exceedance for one sampling day	<ol style="list-style-type: none"> <li>1. Repeat measurement on next day of exceedance to confirm findings;</li> <li>2. Inform IEC, contractor and ER;</li> <li>3. Rectify unacceptable practice;</li> <li>4. Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>5. Consider changes of working methods;</li> <li>6. Discuss mitigation measures with IEC, ER and Contractor; and</li> <li>7. Ensure the agreed remedial measures are implemented</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET, Contractor and ER on the implemented mitigation measures;</li> <li>2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and</li> <li>3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET, IEC and Contractor on the implemented remedial measures;</li> <li>2. Request Contractor to critically review the working methods;</li> <li>3. Make agreement on the remedial measures to be implemented; and</li> <li>4. Discuss with ET, IEC and Contractor on the effectiveness of the implemented remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) of impact;</li> <li>2. Inform the ER and confirm notification of the non-compliance in writing;</li> <li>3. Rectify unacceptable practice;</li> <li>4. Check all plant and equipment and consider changes of working methods;</li> <li>5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC within 3 working days of notification; and</li> <li>6. Implement the agreed remedial measures.</li> </ol>
Limit level exceedance for more than one consecutive sampling days	<ol style="list-style-type: none"> <li>1. Inform IEC, contractor and ER;</li> <li>2. Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>3. Discuss mitigation measures with IEC, ER and Contractor; and</li> <li>4. Ensure mitigation measures are implemented; and</li> <li>5. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET, Contractor and ER on the implemented mitigation measures;</li> <li>2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and</li> <li>3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET, IEC and Contractor on the implemented remedial measures;</li> <li>2. Request Contractor to critically review the working methods;</li> <li>3. Make agreement on the remedial measures to be implemented;</li> <li>4. Discuss with ET and IEC on the effectiveness of the implemented mitigation measures; and</li> <li>5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the relevant</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) of impact;</li> <li>2. Inform the ER and confirm notification of the non-compliance in writing;</li> <li>3. Rectify unacceptable practice;</li> <li>4. Check all plant and equipment and consider changes of working methods;</li> <li>5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC within 3 working days of notification;</li> <li>6. Implement the agreed remedial measures; and</li> <li>7. As directed by the ER, to slow down or stop all or part of the relevant construction activities until no exceedance of Limit level.</li> </ol>

Event	Action			
	ET	IEC	ER	Contractor
			construction activities until no exceedance of Limit level.	

Notes:

ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer’s Representative

Each step of actions required shall be implemented within 1 working days unless otherwise specified or agreed with EPD.

## Event and Action Plan for Landscape and Visual

Event	Action			
	ET	IEC	ER	Contractor
Design Check	1. Check final design conforms to the requirements of EP and prepare report.	1. Check report. 2. Recommend remedial design if necessary.	1. Undertake remedial design if necessary.	N/A
Non-conformity on one occasion	1. Inform the IEC, ER and the Contractor 2. Discuss remedial actions with IEC, ER and Contractor 3. Monitor remedial actions until rectification has been completed	1. Check report. 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures. 4. Advise ER on effective of proposed remedial measures. 5. Check implementation of remedial measures	1. Confirm receipt of notification of non-conformity in writing 2. Review and agree on the remedial measures proposed by the Contractor 3. Ensure remedial measures are properly implemented	1. Identify source and investigate the non-conformity 2. Amend working methods agreed with ER as appropriate 3. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify sources 2. Inform the Contractor, IEC and ER 3. Discuss inspection frequency 4. Discuss remedial actions with IEC, ER and Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures	1. Identify source and investigate the non-conformity 2. Amend working methods agreed with ER as appropriate 3. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by ER until the non-conformity is abated.

Notes:

ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer's Representative

### Event and Action Plan for Coral Post-translocation Monitoring

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level Exceedance	<ol style="list-style-type: none"> <li>1. Check monitoring data;</li> <li>2. Inform the IEC, ER and Contractor of the findings;</li> <li>3. Increase the monitoring to at least once a month to confirm findings; and</li> <li>4. Propose mitigation measures for consideration.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss monitoring with the ET and the Contractor; and</li> <li>2. Review proposals for additional monitoring and any other measures submitted by the Contractor and advise the ER accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with the IEC on the additional monitoring requirements and any other measures proposed by the ET; and</li> <li>2. Make an agreement on the measures to be implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification of non-compliance in writing;</li> <li>2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; and</li> <li>3. Implement the agreed measures.</li> </ol>
Limit Level Exceedance	<ol style="list-style-type: none"> <li>1. Undertake Steps 1-4 as for the Action Level exceedance. If there is further exceedance of Limit Level, propose enhancement measures for consideration.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss monitoring with the ET and the Contractor; and</li> <li>2. Review proposals for additional monitoring and any other measures submitted by the Contractor and advise the ER accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with the IEC on the additional monitoring requirements and any other measures proposed by the ET; and</li> <li>2. Make an agreement on the measures to be implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification of non-compliance in writing;</li> <li>2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; and</li> <li>3. Implement the agreed measures.</li> </ol>

Notes:

ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer’s Representative

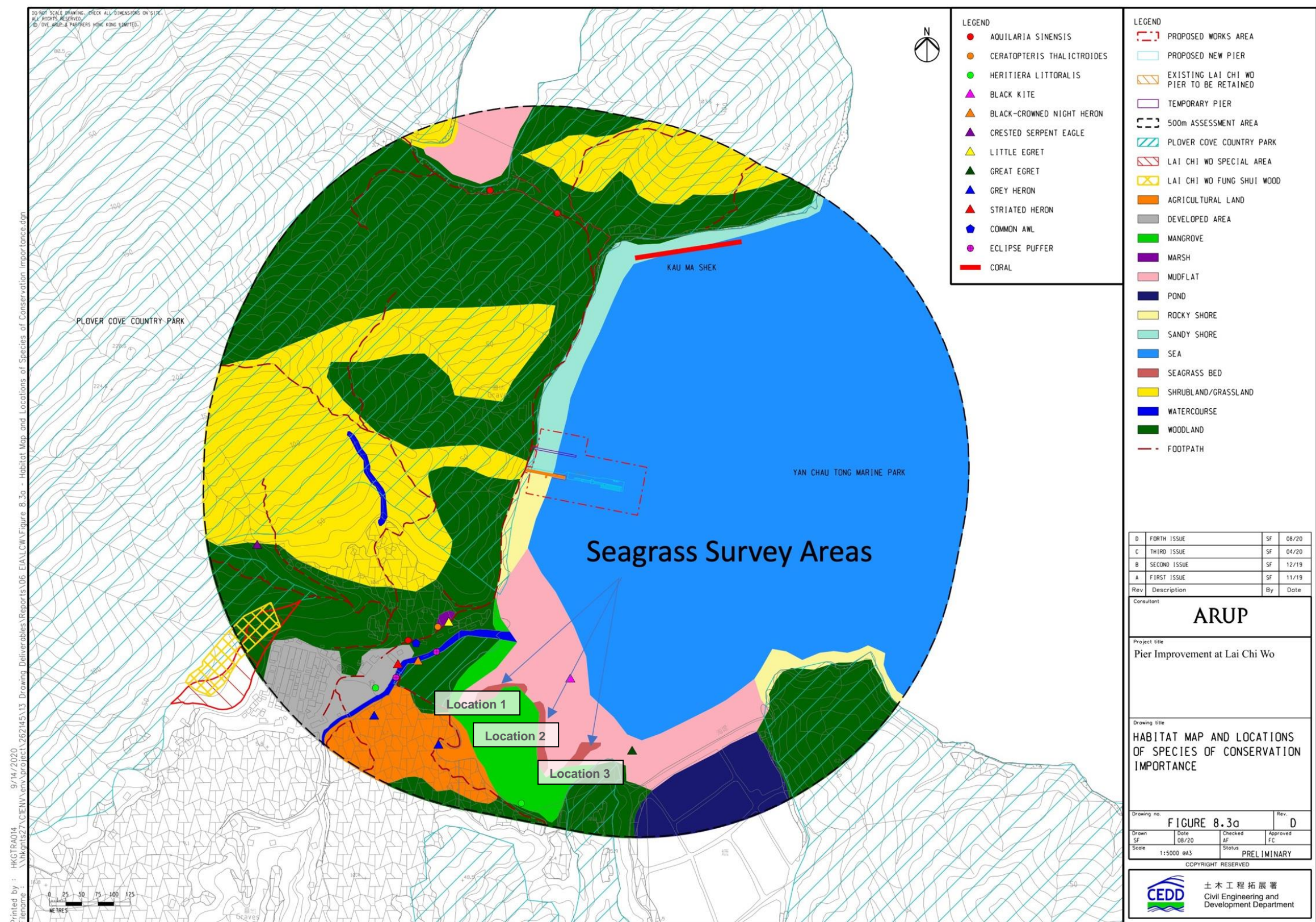
# Appendix D1

## Identified Seagrass Bed in EIA Report



Appendix D1

Identified Seagrass Bed in EIA Report





# Appendix D2

*(Not used)*

# Appendix E

## Environmental Mitigation Implementation Schedule (EMIS)

## Implementation Schedule of Environmental Mitigation Measures

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Implementation Status
<b>Construction Air Quality Impact</b>							
S3.4.4	A1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation.	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	N/A
S3.4.4	A2	The following dust suppression measures/practices should be incorporated to control the dust nuisance throughout the construction phase: <ul style="list-style-type: none"> <li>• Spray water regularly as required at the surrounding pier area, access and working barges.</li> <li>• Cover or shelter any stockpile of dusty materials on working barges.</li> <li>• Cover any dusty load by impervious sheeting on the construction barges during delivery and before they leave the site.</li> </ul>	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	N/A
S3.4.4	A3	Powered Mechanical Equipment (PME) used in the construction site should be registered under Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation with the NRMM label displayed at a conspicuous position of the registered item.	Minimise the air pollution impact from the PME on the nearby sensitive receivers	Contractor	All construction sites	Construction stage	N/A
S3.4.4	A4	Routing of barges should be as far away from the identified ASRs as practicable.	Minimise the air pollution impact from the barges on the nearby sensitive receivers	Contractor	All construction sites	Construction stage	N/A
S3.4.4	A5	The number of boat trips should be minimised as far as practicable by appropriate planning.	Maximise the utilisation of each trip traveling to	Contractor	All construction sites	Construction stage	N/A

**Legends:**

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

			and from the nearest pier in other district and the Project site				
<b>Operational Air Quality Phase</b>							
S3.5.4	A6	No significant air quality impact is anticipated during the operational phase, mitigation measures are therefore not required.	-	-	-	-	N/A
<b>Construction Noise</b>							
S4.4.3	N1	<p>The following good site practice and noise management techniques should be practised during each phase of construction:</p> <ul style="list-style-type: none"> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme.</li> <li>• Machines and plant (such as crane and generator) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.</li> <li>• Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby Noise Sensitive Receivers (NSRs).</li> <li>• Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works.</li> <li>• Mobile plant should be sited as far away from NSRs as possible and practicable.</li> <li>• Material stockpiles, site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>	Minimise noise impact from construction site activities	Contractor	All construction sites	Construction stage	N/A
S4.4.3	N2	Use of quality powered mechanical equipment.	Minimise the noise levels of construction plants	Contractor	All construction sites	Construction stage	N/A

### Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

S4.4.3	N3	Use of temporary noise barriers to screen noise from relatively static powered mechanical equipment.	Minimise the construction noise levels through screening	Contractor	All construction sites	Construction stage	N/A
S4.4.3	N4	Alternative use of plant items within one worksite, wherever practicable.	Operate sequentially within the same work site to reduce the construction noise	Contractor	All construction sites	Construction stage	N/A
<b>Operational Noise</b>							
S4.5	N5	No noise impact is anticipated during the operational phase, mitigation measures are therefore not required.	-	-	-	-	N/A
<b>Water Quality (Construction Phase)</b>							
S5.6	W1	Water Quality Monitoring	Ensure the water quality of the marine park during construction	Environmental Team	Selected locations in EM&A Manual	Construction stage	N/A
S5.4.4	W2	<p><u>Working in Marine Park</u></p> <p>For any works in the marine park, the following good site practices and mitigation measures shall be followed:</p> <ul style="list-style-type: none"> <li>• Observe and obey the guidelines stipulated under the Marine Parks Ordinance (Cap. 476) and the Marine Parks and Marine Reserves Regulation (Cap. 476A);</li> <li>• The power-driven vessel shall not exceed a speed of 10 knots at any time inside the marine park;</li> <li>• Restrict anchor or moor except under and in accordance with a permit or at mooring sites provided by the Authority;</li> <li>• Obstruct the pollution of the water body or discharge of waste; and</li> </ul>	Minimise water quality and ecological impact during working in marine park	Contractor	All construction sites	Construction stage	N/A

Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

		<ul style="list-style-type: none"> <li>Restrict the collection of any marine life and resources in or from the marine park.</li> </ul>					
S5.4.4	W3	<p><u>Marine-based Site Investigation Works</u></p> <p>A number of good practices and mitigation measures are recommended for site investigation works are given as below:</p> <ul style="list-style-type: none"> <li>Before commencement of drilling works, all drill rig, circulation tank and equipment shall be thoroughly cleaned off-site;</li> <li>Throughout the drilling process, seawater shall be used for flushing medium and no lubricant, hydraulic fluid or other additives shall be introduced;</li> <li>The drilling fluid shall be circulated within the system through the circulation tank, where the recycled fluid with small amount of sediment shall be settled and collected in the tank;</li> <li>Prior to actual sampling, an outer casing shall be placed on the seabed level to avoid the spillage of sediment and water containing SS;</li> <li>After the completion of sampling work, casing shall be cleaned by the recycled water and collected back to the circulation tank. The inner and outer casing shall then be extracted slowly to the barge deck and the sediment collected in the tank during the drilling process shall be delivered to the depot of the Contractor;</li> <li>Final disposal of the drilling fluid should be discharged offsite and outside the Country Park, Marine Park, SSSI and other WSRs with a valid discharge license under the WPCO with the provision of silt removal facilities, or to the depot of the Contractor; and</li> <li>To ensure all geotechnical and environmental samples will be collected within the casing without any contact with the surrounding waterbodies.</li> </ul>	Minimise water quality impact from site investigation works	Contractor	All SI sites	Construction stage	N/A

Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

S5.4.4	W4	<p><u>Marine-based Foundation Works</u></p> <p><b>Pre-drilling works</b></p> <ul style="list-style-type: none"> <li>• Good site practices and mitigation measures shall be referred to that of marine-based Site Investigation Works (see W2)</li> </ul> <p><b>Pile construction works</b></p> <p>A number of good practices are recommended for foundation works are given as below:</p> <ul style="list-style-type: none"> <li>• Silt curtains should be deployed to surround active marine works areas prior to starting marine-based foundation works of water quality impact. The Contractor shall prepare a Silt Curtain Deployment Plan to the approval of EPD prior to the commencement of works to ensure the implementation of the silt curtains would be effective and compatible with the aquatic environment (e.g. considering the tidal effect, wind and current speed, etc.). They should only be removed when all marine-based works are completed.</li> <li>• Pile casing should be used for the construction of foundations;</li> <li>• Excavation should only be conducted inside pile casing. Only one grab should be used for excavation at the same time;</li> <li>• All vessels deployed should have adequate clearance from the seabed at all tide levels to ensure no undue turbidity is generated from propeller wash;</li> <li>• There should only be 1-2 piles to be constructed at the same time;</li> <li>• Drilling fluid in the pile casing should be continuously pumped out to the circulation tanks on the barge to avoid muddy water overflow from the casing to the sea directly. The circulation tanks shall be provided with</li> </ul>	Minimise water quality impact from foundation works	Contractor	All construction sites	Construction stage	N/A
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Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable



## Implementation Schedule of Environmental Mitigation Measures

		adequate capacity to avoid if any overflow of drilling fluid; <ul style="list-style-type: none"> <li>• The drilling fluid shall be circulated within the system through the circulation tank, where the recycled fluid with small amount of sediment shall be settled and collected in the tank; and</li> <li>• Final disposal of the drilling fluid should be discharged offsite and outside the Country Park, Marine Park, SSSI and other WSRs with a valid discharge license under the WPCO with the provision of silt removal facilities, or to the depot of the Contractor.</li> </ul>					
S5.4.4	W5	<u>Above-water Construction Works</u>  A number of mitigation measures are proposed for above-water construction works: <ul style="list-style-type: none"> <li>• Prefabrication method should first be considered when designing superstructures.</li> <li>• If in-situ concrete casting is required, formworks should be designed to be water-tight and concrete should be poured into the formwork slowly and evenly.</li> <li>• Silt curtain will also be deployed to surround the waters where the construction works take place above to control any residual release.</li> </ul>	Minimise water quality impact from above-water construction works	Contractor	All construction sites	Construction stage	N/A
S5.4.4	W6	<u>Site Run-off from General Site Operation</u>  To reduce the potential water quality impact due to construction site runoff, the following good site practices in accordance to Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN 1/94) should be implemented to avoid potential adverse water quality impacts: <ul style="list-style-type: none"> <li>• The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of</li> </ul>	Minimise water quality impact from construction site runoff, soil erosion and general construction activities	Contractor	All construction sites	Construction stage	N/A

Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

		<p>the sand/silt traps should be undertaken by the contractor prior to the commencement of construction.</p> <ul style="list-style-type: none"> <li>• Schedule construction works to minimise surface construction works during the rainy seasons (April to September).</li> <li>• Inspect and maintain all drainage facilities and erosion and sediment control structures regularly to ensure proper and efficient operation at all times and particularly following rainstorms.</li> <li>• Cover all construction materials at temporary storage area with tarpaulin or similar fabric during rainstorms and implementation of measures to prevent the washing away of construction materials, soil, silt or debris into any drainage system.</li> <li>• Cover manholes (including newly constructed ones), if any, adequately and seal temporarily to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.</li> <li>• Take precautions at any time of year when rainstorms are likely. The actions to be taken based on the guidelines in Appendix A2 of ProPECC PN 1/94.</li> <li>• Collect, handle and dispose construction solid waste, debris and rubbish on site to avoid water quality impacts.</li> <li>• Provide locks for all fuel tanks and storage areas and locate on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.</li> <li>• Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be</li> </ul>					
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Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

		posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the water bodies, marsh and ponds.					
S5.4.4	W7	<p><u>Accidental Spillage of Chemicals</u></p> <p>To reduce the potential water quality impact due to accidental spillage of chemicals, the following mitigation measures should be implemented to avoid potential adverse water quality impacts:</p> <ul style="list-style-type: none"> <li>• Properly store and contain the chemicals used during construction, such as fuel, oil, solvents and lubricants in a designated area with secondary containment to prevent spillage and contamination of the nearby water environment.</li> <li>• Preferably carry out any maintenance activities and workshops with chemicals use outside the Project site given the advantage that machineries located on barges can be easily re-located.</li> <li>• The Contractor shall register as a chemical waste producer and employ licensed collector for collection of chemical waste from the construction site. Any chemical waste generated shall be managed in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</li> <li>• The Contractor shall prepare an Emergency Spillage Plan to detail the responses in case of spillage.</li> </ul>	To minimise water quality impact from accidental spillage of chemicals	Contractor	All construction sites	Construction stage	N/A
S5.4.4	W8	<p><u>Sewage from workforce</u></p> <p>To mitigate the water quality impacts of sewage arising from the on-site construction workers, the following measures should be implemented:</p> <ul style="list-style-type: none"> <li>• Provide temporary sanitary facilities, e.g. portable chemical toilets and sewage holding</li> </ul>	To minimise water quality impact from sewage from workforce	Contractor	All construction sites	Construction stage	N/A

Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

		tanks with adequate capacity to collect the sewage. <ul style="list-style-type: none"> <li>• Post notices at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment during the construction phase of the Project.</li> </ul>					
<b>Water Quality (Operational Phase)</b>							
S5.5.3	W9	No water quality impact is anticipated during the normal operation of the pier, mitigation measures are therefore not required.	To minimise water quality impact from maintenance dredging	Contractor	The dredged area	Operational stage	N/A
<b>Waste Management (Construction Phase)</b>							
S6.3.7	WM1	<u>Good Site Practices</u>  The following good site practices are recommended throughout the construction activities: <ul style="list-style-type: none"> <li>• Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.</li> <li>• Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling.</li> <li>• Provision of sufficient waste disposal points and regular collection for disposal.</li> <li>• Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering barges or by transporting wastes in enclosed containers.</li> <li>• Prepare an Environmental Management Plan (EMP), which includes a Waste Management Plan, in accordance with the requirements set out in the ETWB TC(W) 19/2005</li> </ul>	Ensure proper waste management system throughout the construction	Contractor	All construction sites	Construction stage	N/A

Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

		Environmental Management on Construction Site, which include the mitigation measures proposed in the EIA and EM&A Manual, and submit to the Engineer for approval.					
S6.3.7	WM2	<p><u>Waste Reduction Measures</u></p> <p>Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction:</p> <ul style="list-style-type: none"> <li>• Segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal.</li> <li>• Proper storage and site practices to minimise the potential for damage and contamination of construction materials.</li> <li>• Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> <li>• Sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.)</li> <li>• Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.</li> </ul>	Reduce waste generation	Contractor	All construction sites	Construction stage	N/A
S6.3.7	WM3	<p><u>Storage, Collection and Transportation of Waste</u></p> <p>The following recommendation should be implemented to minimise the impacts from storage, collection and transportation of waste:</p> <ul style="list-style-type: none"> <li>• Non-inert C&amp;D materials should be handled and stored well to ensure secure containment of the materials.</li> <li>• Stockpiling area should be provided with covers and water spraying system to prevent</li> </ul>	Minimise impact to the environment due to storage, collection and transport of waste	Contractor	All construction sites	Construction stage	N/A

Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

		<p>materials from wind-blown or being washed away.</p> <ul style="list-style-type: none"> <li>• Different locations on barges should be designated to stockpile each material to enhance reuse.</li> <li>• Remove waste in timely manner.</li> <li>• Employ the vessels with cover or enclosed containers for waste transportation.</li> <li>• Obtain relevant waste disposal permits from the appropriate authorities.</li> <li>• Disposal of waste should be done at licensed waste disposal facilities.</li> </ul>					
S6.3.7	WM4	<p><u>C&amp;D Materials</u></p> <p>Wherever practicable, C&amp;D materials should be segregated from other wastes to avoid contamination and ensure acceptability at public fill reception facilities areas or reclamation sites. The following mitigation measures should be implemented in handling the C&amp;D materials:</p> <ul style="list-style-type: none"> <li>• Carry out on-site sorting.</li> <li>• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate.</li> <li>• Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials is properly documented and verified.</li> </ul> <p>The recommended C&amp;D materials handling should include:</p> <ul style="list-style-type: none"> <li>• On-site sorting of C&amp;D materials.</li> <li>• Reuse of C&amp;D materials.</li> </ul>	Minimise waste impacts from C&D materials	Contractor	All construction sites	Construction stage	N/A
S6.3.7	WM5	<p><u>Specification of Inert C&amp;D Materials to be Disposed of Off-site</u></p> <p>In case there are surplus inert C&amp;D materials generated in the Project and are required to be disposed of at the public fill reception facilities,</p>	Reduce waste generation	Contractor	All construction sites	Construction stage	N/A

Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

		<p>the inert C&amp;D materials should fulfil the following requirements:</p> <ul style="list-style-type: none"> <li>• Reclaimed asphalt pavement will not be mixed with other materials when delivered to the public fill reception facilities.</li> <li>• Moisture content of inert C&amp;D materials will be lowered to 25% max. when delivered to the public fill reception facilities.</li> <li>• Inert C&amp;D materials delivered to the public fill reception facilities should be a size less than 250mm.</li> <li>• Inert construction waste shall not be in liquid form such that it can be contained and delivered by water-tight containers. Inert C&amp;D materials in liquid form shall be solidified before delivering to the public fill reception facilities.</li> </ul> <p>The acceptance criteria of inert C&amp;D materials to public fill reception facilities are subject to the fill management authority of CEDD.</p>					
S6.3.7	WM6	<p><u>Use of Standard Formwork and Planning of Construction Materials purchasing</u></p> <ul style="list-style-type: none"> <li>• Standard formwork should also be used as far as practicable to minimise the arising of non-inert C&amp;D materials.</li> <li>• Use of more durable formwork (e.g. metal hoarding) or plastic facing should be encouraged in order to enhance the possibility of recycling.</li> <li>• Purchasing of construction materials should be carefully planned in order to avoid over ordering and wastage.</li> </ul>	Reduce waste generation	Contractor	All construction sites	Construction stage	N/A
S6.3.7	WM7	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> <li>• General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling.</li> <li>• Preferably enclosed and covered areas should</li> </ul>	Minimise production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	N/A

### Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

		<p>be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean.</p> <ul style="list-style-type: none"> <li>• A waste collector should be employed to remove general refuse on a daily basis.</li> <li>• Future contractor will be required to collect floating refuse within the Project site regularly.</li> </ul>					
S6.3.7	WM8	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> <li>• Reduce the generation quantities or select a chemical type of less impact on environment, health and safety as far as possible.</li> <li>• If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producer. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste collector. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</li> </ul>	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	All construction sites	Construction stage	N/A
S6.3.7	WM9	<p><u>Marine Sediment</u></p> <p>The following good management practices for handling and disposal of marine sediments at dedicated marine disposal sites should be implemented:</p> <ul style="list-style-type: none"> <li>• All construction plant and equipment shall be designed and maintained to minimise the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location.</li> <li>• All vessels shall be sized such that adequate</li> </ul>	Minimise impact caused by transportation and disposal of marine sediment	Contractor	All construction sites	Construction stage	N/A

Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable



## Implementation Schedule of Environmental Mitigation Measures

		<p>draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.</p> <ul style="list-style-type: none"> <li>• Before moving the vessels which are used for transporting marine sediment, excess material shall be cleaned from the decks and exposed fittings of vessels and the excess materials shall never be dumped into the sea except at the approved locations.</li> <li>• Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action.</li> <li>• The Contractors shall monitor all vessels transporting material to ensure that no dumping outside the approved location takes place. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the Engineers.</li> <li>• The Contractors shall comply with the conditions in the dumping licence.</li> <li>• All bottom dumping vessels (hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material.</li> <li>• The material shall be placed into the disposal pit by bottom dumping.</li> <li>• Contaminated marine mud shall be transported by split barge of not less than 750m<sup>3</sup> capacity and capable of rapid opening and discharge at the disposal site.</li> <li>• Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Material adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.</li> </ul>					
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Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

<b>Waste Management (Operational Phase)</b>							
S6.4.3	WM10	<p><b>General Refuse</b></p> <ul style="list-style-type: none"> <li>• Sufficient number of trash bins and recycling bins have already been provided for the collection of general refuse generated by visitors and pier users along the existing footpath to Lai Chi Wo. No bin will be provided as no general refuse is anticipated by the Project during the operational phase.</li> <li>• Nevertheless, recycling containers are recommended to be provided at suitable locations to encourage recycling of waste such as aluminium cans and plastics.</li> </ul>	Minimise production of the general refuse and avoid odour, pest and litter impacts	Operator	The Project Site	Operational stage	N/A
<b>Land Contamination</b>							
S7.5	LC1	No land contamination is anticipated, mitigation measures are therefore not required.	-	-	-	-	N/A
<b>Ecology (Construction Phase)</b>							
S8.9	E1	Seagrass monitoring	To monitor the health of seagrass bed in the vicinity of the Project	Design Team / Contractor / Ecologist	Seagrass bed in LCW Beach SSSI	Construction phase and operational phase	N/A
S8.6.3	E2	Pre-construction dive survey	To verify the conditions of the small coral colonies on the existing LCW pier before any construction works	Design Team / Contractor / Ecologist	Marine works area	Prior to construction phase	√
S8.6.2	E3	Preparation of Emergency Spillage Plan	To prevent or reduce risks to sensitive receivers	Contractor	Marine works area / marine habitats	Construction phase	√
S8.6.2	E4	Adoption of piling method	To minimize seabed loss and reduce the water quality impact	Design Team / Contractor	Marine works area	Design phase and construction phase	N/A

### Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

S8.6.2	E5	Adoption of silt curtain	To confine the sediment to prevent the release of muddy water	Contractor	Marine works area	Construction phase	N/A
S8.6.2	E6	Treatment of wastewater from the grouting of piles before discharging offsite	To protect the water quality	Contractor	Marine works area	Construction phase	N/A
S8.6.2	E7	No dumping policy	To protect marine habitats	Contractor	Marine works area / marine habitats	Construction phase	N/A
S8.6.2	E8	Good site practices for water quality	To protect the water quality	Design Team / Contractor	Marine works area	Construction phase	N/A
<b>Ecology (Operational phase)</b>							
S8.6.1	E9	Lighting in the new pier head should be kept to minimal.	To minimize the effect of light on wildlife	Design Team / Contractor	New pier head	Design phase and construction phase	N/A
S8.6.3	E10	Priority using eco-tiles or eco-concrete for the surface of the foundation to promote seamless integration of biodiversity into the pier design	To enhance biodiversity of the site	Design Team / Contractor	Pier structure	Design phase and construction phase	N/A
<b>Landscape (Construction Phase)</b>							
S9.9.1	CM1	Minimise construction area	To minimise the footprint of the improved pier so as to minimise the potential landscape and visual impact	Project Architect/ Landscape Architects (Detailed Design Consultant)/ Contractor	The Project Site	Design and planning stage, construction stage	N/A
S9.9.1	CM2	Install site hoarding	To screen the pedestrian level views into the construction area from visually sensitive receivers	Contractor	The Project Site	Construction stage	N/A
S9.9.1	CM3	Employ practicable construction techniques to streamline construction programme, minimise the duration of plant operations. Consider	To minimise the duration of	Contractor	The Project Site	Construction stage	N/A

### Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

		prefabrication of building elements offsite to minimise on site works and construction period.	construction on-site				
S9.9.1	CM4	Adopt water quality control measures, e.g. avoiding directly discharge into the sea.	To protect the nearby seascape resources and avoid marine ecological impact	Contractor	The Project Site	Construction stage	N/A
S9.9.1	CM5	Provide a suitable colour scheme of construction machines and plants where practicable	To reduce the visual impact in the presence of construction machine	Contractor	The Project Site	Construction stage	N/A
S9.9.1	CM6	Control construction day and night-time lighting	To minimise the glare impact	Contractor	The Project Site	Construction stage	N/A
<b><i>Landscape (Operational Phase)</i></b>							
S9.9.2	OM1	Sensitive design and disposition of the pier structure should be adopted. The proposed hard structures of the pier should be sensitively designed to become compatible with the existing landscape context. The orientation of the proposed hard structures of the pier should aim at minimising visual intrusion to visually sensitive receivers (VSRs) as far as practicable. Additional lights in the new pier will be kept to as minimal for safety purpose. Night-time lighting of the pier shall also be controlled to minimise glare impact to adjacent VSRs during the operation phase. If solar panels are to be installed as renewable energy source, non-reflective solar panels should be installed to avoid glare from direct or reflected sunlight.	To enhance the visual compatibility to the neighbouring environment	Project Architect/ Landscape Architects (Detailed Design Consultant)/ Contractor	The Project Site	Design and planning stage	N/A
<b><i>Fisheries</i></b>							
S10.7.2	F1	Measures to control water quality impact	Control water quality impact, especially on suspended solid level	Design Team / Contractor	Marine works area	Construction phase	N/A

### Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

## Implementation Schedule of Environmental Mitigation Measures

<b><i>Cultural Heritage (Construction Phase)</i></b>							
S11.8	CH1	No marine archaeological impact is expected from the construction of the Project, mitigation measures are therefore not required.	-	-	-	-	N/A
<b><i>Cultural Heritage (Operational Phase)</i></b>							
S11.9	CH2	As the Project would not generate or induce any additional cultural heritage impact during the operational phase, mitigation measures are considered not necessary.	-	-	-	-	N/A
<b><i>EM&amp;A Project</i></b>							
S12.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	The Project Site	Construction stage	√
S12.2 – S12.7	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	To ensure compliance of relevant environmental legislation, standards and guidelines	Project Proponent	The Project Site	Construction stage	√

Legends:

- √ Implemented
- X Not Implemented
- P Partially Implemented
- N/A Not Applicable

# Appendix F

## Status of Emergency Repair Works at Lai Chi Wo Pier

### **Status of Emergency Repair Works (Completed) at Lai Chi Wo Pier**



All repair works were completed in November 2022. Passenger pontoon has been deployed adjacent to the existing Lai Chi Wo Pier as temporary landing facility since 22 July 2022.

# Appendix G

## Summary of Exceedances, Environmental Complaints, Notification of Summons and Successful Prosecutions



**Table G.1. Cumulative Statistics on Exceedances for the Project**

Monitoring Parameter	Level Exceedance	Total No. Recorded in Current Reporting Period (1 to 31 December 2022)	Total No. Recorded since Project Commencement
Water Quality (DO) (surface & middle)	Action	0	0
	Limit	0	0
Water Quality (DO) (bottom)	Action	0	0
	Limit	0	0
Water Quality (Turbidity) (depth-averaged)	Action	0	0
	Limit	0	0
Water Quality (SS) (depth-averaged)	Action	0	2
	Limit	0	0
Coral Post-translocation Monitoring	Action	0	0
	Limit	0	0

**Table G.2. Cumulative Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions for the Project**

Reporting Period	Cumulative Statistics		
	Environmental Complaints	Notification of Summons	Successful Prosecutions
This Reporting Period (1 to 31 December 2022)	0	0	0
Total No. recorded since Project commencement	0	0	0

**Table G.3. Cumulative Summary of the Non-compliance (Exceedances), Complaints, and Notifications of Summons and Successful Prosecutions**

Nature	Date of Record	Description	Project Related?
Exceedance: Water Quality (SS) - Action Level	26 Feb 2022	During February 2022, one Action Level exceedance of SS was recorded on 26 February 2022 at impact station WM1. From investigation, no construction activities were conducted on the day of exceedances, and also, Action Level exceedances of SS and turbidity were recorded at control station C2. It is possible that this SS exceedance at WM1 was due to localised natural variations. No Project-related Action or Limit Level exceedance were recorded.	No
Exceedance: Water Quality (SS) - Action Level	3 Mar 2022	During March 2022, one Action Level exceedance of SS was recorded at mid-ebb tide on 3 March 2022 at impact station WM1. From investigation, the borehole drilling at LBH1 was schedule to be commenced on 3 March 2022 after finishing the borehole drilling at LBH4 on 2 March 2022. During the water sampling time (i.e. 11:49AM) of the concerned SS exceedance, no drilling works but only plant mobilization and silt curtain deployment was conducted on site. In addition, the monitoring results of SS and turbidity were also recorded high at control stations C1 and C2 at mid-ebb tide on 3 March 2022. It is possible that this SS exceedance at WM1 was due to localised natural variations. No Project-related Action or Limit Level exceedance were recorded.	No

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