



JOB No.: TCS00874/16

**CEDD CONTRACT NO. CV/2012/05
DEVELOPMENT OF A BATHING BEACH AT LUNG MEI,
TAI PO**

**FINAL REVIEW ENVIRONMENTAL MONITORING AND
AUDIT REPORT FOR
OPERATIONAL PHASE**

**PREPARED FOR
WELCOME CONSTRUCTION CO., LTD**

Date	Reference No.	Prepared By	Certified By
2 February 2023	TCS00874/16/600/R0803v3	 Nicola Hon (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

Version	Date	Remarks
1	5 January 2023	First Submission
2	27 January 2023	Amended according to the IEC's comment
3	2 February 2023	Amended according to the IEC's comment

Environmental Permit No. EP-388/2010

Development of a Bathing Beach at Lung Mei, Tai Po

Independent Environmental Checker Verification


Reference Document/Plan

Document/Plan to be Certified/ Verified:	Final Review Environmental Monitoring and Audit Report for Operational Phase
Date of Report:	2 February 2023
Date received by IEC:	2 February 2023

Reference EP Condition / Updated EM&A Manual Requirement

Environmental Permit Condition / Updated EM&A Manual Reference	Section 11.8
A Final Review EM&A report will be prepared by the ET at the end of each of the construction and operational phases.	

IEC Verification

I hereby verify that the above referenced document/ plan complies with the above referenced condition / section of EP-388/2010 / Updated EM&A Manual	
Mr Kelvin So	Date: 2 February 2023
Independent Environmental Checker	

Our ref: P:\Projects\0206709 IEC for Lung Mei EM&A\07_ET Submission\50_Final EM&A Review for Operation

EXECUTIVE SUMMARY

- ES.01 Civil Engineering and Development Department (hereafter referred as “CEDD”) is the Project Proponent and the Permit Holder of *Agreement No. CE 59/2005 (EP) Development of a Bathing Beach at Lung Mei, Tai Po* (hereinafter referred as “the Project”), which is a Designated Project to be implemented under Environmental Permit number EP-388/2010 (hereinafter referred as “the EP-388/2010” or “the EP”).
- ES.02 Welcome Construction CO., Ltd is a Main Contractor (hereinafter referred as “Contractor”) responsible for construction of the Project. Action-United Environmental Services & Consulting (hereinafter referred as “AUES”) has been commissioned by the Contractor as the Environmental Team for the Project (hereinafter referred as “the ET”) to perform relevant Environmental Monitoring and Audit (EM&A) programme for construction and operation phases, in accordance with the EM&A Manual approved under the Environmental Impact Assessment Ordinance (EIAO).
- ES.03 All civil works under the Project were substantial completed in late August 2020 with substantial completion of works/substantial completion certificate issued by CEDD. According to the updated EM&A Manual (Jan 2018) S.2.2, cessation of EM&A programme is subject to the satisfactory completion of the EM&A Final Review Report, agreement with the IEC and approval from EPD. The Final Review EM&A Report for Construction Phase prior verified by IEC was submitted EPD on 7 July 2021.
- ES.04 According to the EM&A Manual Section 9.2, post-construction phase of Landscape and Visual auditing is required during a 12-month establishment period. Moreover, mangrove seedling planting was implemented according to the approved Mangrove Seedling Planting Proposal before the operation of the beach. After planting, 1 year monitoring was undertaken to check the performance and health conditions of the planted individuals on monthly basis.
- ES.05 Post-construction phase EM&A including Landscape and Visual auditing and monitoring of mangrove seedling planting commenced in September 2021 and completed on 31st August 2022. The findings were reported on the submitted post-construction Monitoring and Audit Report on bi-monthly basis, in according with EM&A Manual Section 11.4.2
- ES.06 This is the Final Review EM&A Report for Operational Phase summarizing the performance and health conditions of the planted individuals of inspection findings during post-construction period of *September 2021* to *August 2022* (hereinafter ‘the Reporting Period).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES IN THE OPERATION PHASE

- ES.07 The EM&A programme for the operational phase of the Project commenced in September 2021 and completed on 31st August 2022. The monitoring activities are summarized in the following table:

Issues	Parameter Monitoring / Inspection	Monitoring / Inspection of Date	Total Occasions
Landscape & Visual	Landscape and visual inspection	• 8 th & 21 st September 2021	24
		• 7 th & 22 nd October 2021	
		• 2 nd & 19 th November 2021	
		• 9 th & 22 nd December 2021	
		• 12 th & 26 th January 2022	
		• 10 th & 24 th February 2022	
		• 4 th & 31 st March 2022	

Issues	Parameter Monitoring / Inspection	Monitoring / Inspection of Date	Total Occasions
		<ul style="list-style-type: none"> • 11th & 21st April 2022 • 13th & 30th May 2022 • 9th & 25th June 2022 • 11th & 25th July 2022 • 12th & 29th August 2022 	
Ecology	Mangrove monitoring	<ul style="list-style-type: none"> • 21st September 2021 • 7th & 22nd October 2021(*) • 2nd & 19th November 2021(*) • 9th & 22nd December 2021 (*) • 26th January 2022 • 24th February 2022 • 31st March 2022 • 21st April 2022 • 30th May 2022 • 25th June 2022 • 25th July 2022 • 29th August 2022 	15

Remark () : As the mortality of the mangrove seedling is more than 25%, the monthly monitoring stepped up to bi-weekly monitoring to observe the growth performance of the seedling, until the cause(s) of the event has been identified.*

ES.08 A total of 24 occasions of landscape and visual inspection were undertaken throughout the Reporting Period. The deficiencies in relation to landscape and visual observed during the inspection have all been followed up by the Contractor. Handover inspection and meeting among the Contractor and LCSD was conducted on 20 July 2022, and LCSD had no objection to take over all the planting after expiry of maintenance period on 5 August 2022. All the defects raised by LCSD were completed in August 2022. Besides, other concerned areas have been handover to HyD and ASD. No further follow up is required under this Contract.

ES.09 A total of 15 occasion of mangrove post-monitoring were undertaken throughout the Reporting Period, including 3 additional monitoring in Oct to Dec 21 due to mortality of the mangrove seedling were found more than 25% and 50%. The monitoring frequency from Jan 2022 was resumed to monthly as agreed by AFCD via email on 6th January 2022.

ES.10 According to Event and Action Plan for Mangrove Seedling Planting, as the mortality of the mangrove seedling were found more than 25% and 50% in Oct to Dec 21, a Proposal of Mangrove Seedling Replanting for remedial action and implement the action to solve the event was submitted to EPD and AFCD in late April 2022 for agreement. As remedial action, the Contractor replanted the mangrove seedlings on 28th June 2022 at more landward side locations to improve the survival rate, according to the agreed “Proposal of Mangrove Seedling Replanting”.

ES.11 After the mangrove seedlings replanted on **28th June 2022** at more landward side locations, the survival rate respectively was 94.4% and 89.8 % in July 2022 and August 2022 and compliance with the requirements.

NON-COMPLIANCE OF ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

ES.12 During the 12 months Post-Construction monitoring, non-compliances were triggered in the reporting month of September 2021 to June 2022 as the mortality of the mangrove seedling more than 25% to 50%.

ES.13 Remediate measures were proposed to EPD and AFCD and mangrove seedlings replanting were conducted on 28th June 2022 by the Contractor. After the replanting work, the survival rate of mangrove seedlings were 94.4% and 89.8 % in *July 2022* and *August 2022* were respectively. No remedial action is therefore required according to the Event and Action Plan.

ENVIRONMENTAL COMPLAINT

ES.14 No environmental complaint was recorded or received in the Reporting Period.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.15 No environmental summons or successful prosecutions were recorded in the Reporting Period.

REPORTING CHANGE

ES.16 No reporting changes were made in the Reporting Period

FUTURE KEY ISSUES

ES.17 Post-construction phase Landscape and Visual auditing for 12-month establishment period and one year monitoring of mangrove seedling planting were completed on 31st August 2022. The Contractor was reminded to liaise with the relevant department for handover issue, if necessary.

ES.18 It is reminded that the environmental mitigation measures shall be properly implemented and maintained where applicable, as per the Mitigation Implementation Schedule and EP, for the entire operational phase.

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1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Welcome Construction CO., Ltd is a Main Contractor (hereinafter referred as “Contractor”) responsible for construction of the Project. Action-United Environmental Services & Consulting (hereinafter referred as “AUES”) has been commissioned by the Contractor as the Environmental Team for the Project (hereinafter referred as “the ET”) to perform relevant Environmental Monitoring and Audit (EM&A) programme in accordance with the EM&A Manual approved under the Environmental Impact Assessment Ordinance (EIAO).

1.1.2 The major construction activities of the Project comprise construction of 200-metre long bathing beach with a groyne at each end, a shark prevention net; a public car park; retaining walls; and the associated roadworks, drainage and sewerage works. Layout plan of the Project is shown in [Appendix A](#).

1.1.3 All civil works under the Project were substantial completed in late August 2020 with substantial completion of works/substantial completion certificate issued by CEDD. According to the updated EM&A Manual (Jan 2018) S.2.2, cessation of EM&A programme is subject to the satisfactory completion of the EM&A Final Review Report, agreement with the IEC and approval from EPD. The Final Review EM&A Report for Construction Phase prior verified by IEC was submitted EPD on 7 July 2021.

1.1.4 According to the EM&A Manual Section 9.2, post-construction phase of Landscape and Visual auditing is required during a 12-month establishment period. Moreover, mangrove seedling planting was implemented according to the approved Mangrove Seedling Planting Proposal before the operation of the beach. After planting, 1 year monitoring was undertaken to check the performance and health conditions of the planted individuals on monthly basis.

1.1.5 Post-construction phase EM&A including Landscape and Visual auditing and monitoring of mangrove seedling planting commenced in September 2021 and completed on 31st August 2022. The findings were reported on the submitted post-construction Monitoring and Audit Report on bi-monthly basis, in according with EM&A Manual Section 11.4.2

1.1.6 This is the Final Review EM&A Report for Operational Phase summarizing the performance and health conditions of the planted individuals and Landscape and Visual inspection findings during post-construction period of September 2021 to August 2022 (hereinafter ‘the Reporting Period).

1.2 REPORT STRUCTURE

1.2.1 The Final Review EM&A Report for operational phase is structured into the following sections:-

Section 1	Introduction
Section 2	Project Organization and Post-construction Phase Monitoring Requirement
Section 3	Summary of Post-Construction Monitoring Results
Section 4	Environmental Complaint and Non-Compliance
Section 5	Conclusion and Recommendations

2. PROJECT ORGANIZATION AND POST-CONSTRUCTION PHASE MONITORING REQUIREMENT

2.1 PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

2.1.1 Organization structure and contact details of relevant parties with respect to on-site environmental management are shown in *Appendix B*.

2.2 PARAMETERS AND REQUIREMENTS

2.2.1 Landscape mitigation are detailed in the Landscape Plan which approved by EPD on 14 July 2021. According to the EM&A Manual Section 9.2, measures undertaken by both the Contractor(s) and the specialist Landscape Sub-Contractor during the construction phase and first year post-construction will be audited by the Registered Landscape Architect of the ET, to ensure compliance with the intended aims of the measures. Site inspections should be undertaken at least once every two weeks throughout the landscaping plants establishment period when planting works are being undertaken.

2.2.2 Mangrove seedling planting was implemented according to the approved Mangrove Seedling Planting Proposal before the operation of the beach. After planting, 1 year monitoring was undertaken to check the performance and health conditions of the planted individuals on monthly basis. Remedial action will be discussed with AFCD in the event of unsuccessful mangrove seedling planting and follow an approved Event and Action Plan.

2.2.3 Post-construction phase EM&A including Landscape and Visual auditing and monitoring of mangrove seedling planting commenced in September 2021 and completed on 31st August 2022. The findings were reported on the submitted post-construction Monitoring and Audit Report on bi-monthly basis, in according with EM&A Manual Section 11.4.2

2.3 EVENT AND ACTION PLAN

2.3.1 Event and Action Plan for Mangrove Seedling Planting under the EM&A Manual Table 7.1 to be followed as below:

Table 2-1 Event and Action Plan for Mangrove Seedling Planting

Monitoring Criteria	Event	Action	
		Environmental Team Leader/ Environmental Manager (Employed by CEDD)	CEDD
Mangrove Seedling Survival	More than 25 % of mortality of mangrove seedling recorded during the establishment of planting.	1. Notify CEDD and check with horticulturist to find out the cause of the event(s). 2. Undertake bi-weekly monitoring to observe the growth performance of the seedling. The normal monitoring schedule will be resumed if the cause(s) of the event have been identified.	1. Identify and report the cause(s) of the event. 2. Notify relevant government departments (i.e. EPD and AFCD).

Monitoring Criteria	Event	Action	
		Environmental Team Leader/ Environmental Manager (Employed by CEDD)	CEDD
	More than 50 % of mortality of mangrove seedling recorded during the establishment of planting.	<ol style="list-style-type: none"> 1. Notify CEDD and check with horticulturist to find out the cause of the event(s). 2. Undertake weekly monitoring to observe the growth performance of the seedling. The normal monitoring schedule will be resumed if the cause(s) of the event have been identified. 	<ol style="list-style-type: none"> 1. Identify and report the cause(s) of the event. 2. Submit proposal to relevant government departments (ie EPD and AFCD) for remedial action and implement the action to solve the event.

3. SUMMARY OF POST-CONSTRUCTION MONITORING RESULT

3.1 GENERAL

3.1.1 Post-construction phase EM&A including Landscape and Visual auditing and monitoring of mangrove seedling planting commenced in September 2021 and completed on 31st August 2022 for a total of 12 months. The following sub-section summarized the post-construction monitoring results for the entire post-construction phase.

3.2 LANDSCAPE AND VISUAL INSPECTION

3.2.1 During the Reporting Period, landscape and visual inspection were carried on bi-weekly basis and there were a total of 24 occasions undertaken as listed *Table 3-1*.

Table 3-1 Summary of Post-construction Phase Landscape and Visual Inspection

Reporting Month	Inspection Date	Submitted Report
September 2021	8 th and 21 st September 2021	Post-construction Monitoring and Audit Report (Sep to Oct 2021)
October 2021	7 th and 22 nd October 2021	
November 2021	2 nd and 19 th November 2021	Post-construction Monitoring and Audit Report (Nov to Dec 2021)
December 2021	9 th and 22 nd December 2021	
January 2022	12 th and 26 th January 2022	Post-construction Monitoring and Audit Report (Jan to Feb 2022)
February 2022	10 th and 24 th February 2022	
March 2022	4 th and 31 st March 2022	Post-construction Monitoring and Audit Report (Mar to Apr 2022)
April 2022	11 th and 21 st April 2022	
May 2022	13 th and 30 th May 2022	Post-construction Monitoring and Audit Report (May to Jun 2022)
June 2022	9 th and 25 th June 2022	
July 2022	11 th and 25 th July 2022	Post-construction Monitoring and Audit Report (Jul to Aug 2022)
August 2022	12 th and 29 th August 2022	

3.2.2 The inspection findings in form of checklists were enclosed in Appendix C of the corresponding bi-monthly post-construction monitoring and audit reports.

Recommendation

3.2.3 According to inspection findings, some general reminder were provided to the Contractor for necessary follow up and they including the following:-

- To replace the dead concerned trees;
- To check the guying and staking of the tree to prevent the damage of the tree by rubbing and girdling from ties and stakes;
- To remove the wilted plants located the Western Groyne; and
- To update the planting plan if any tree replacement or change.

3.2.4 The deficiencies in relation to landscape and visual observed during the inspection have all been followed up by the Contractor. Handover inspection and meeting among the Contractor and LCSD was conducted on 20 July 2022, and LCSD had no objection to take over all the planting after expiry of maintenance period on 5 August 2022. All the defects raised by LCSD were completed in August 2022. Besides, other concerned areas have been handover to HyD and ASD. No further follow up is required under this Contract.

3.3 MANGROVE MONITORING

3.3.1 During the Reporting Period, 1-year mangrove post-monitoring monitoring were undertaken to check the performance and health conditions of the planted individuals on monthly basis.

- 3.3.2 Since the mortality of the mangrove seedling were found more than 25% in Sep 21 and Oct 21 and more than 50% in Nov 21 and Dec 21, the monthly monitoring stepped up to bi-weekly in Oct to Dec 21 according to the Event and Action Plan. Although the mortality of the mangrove seedling were more than 50% during Jan to Jun 22, the cause(s) of the event has been identified in the report of Nov to Dec 21. The monitoring frequency from January 2022 was resumed to monthly as agreed by AFCD via email on 6th January 2022. Therefore, a total of 15 occasion of mangrove post-monitoring were undertaken throughout the Reporting Period.
- 3.3.3 Subsequently, a Proposal of Mangrove Seedling Replanting for remedial action and implement the action to solve the event was submitted to EPD and AFCD in late April 2022 for agreement. As remedial action for mortality of the mangrove seedling more than 50%, the Contractor replanted the mangrove seedlings on 28th June 2022 at more landward side locations to improve the survival rate, according to the agreed “Proposal of Mangrove Seedling Replanting”.
- 3.3.4 The summary of mangrove post-monitoring is shown in **Table 3-2**. The detailed post-planting monitoring reports were enclosed in Appendix C of the corresponding bi-monthly post-construction monitoring and audit reports.

Table 3-2 Summary of Mangrove Post-Monitoring

Reporting Month	Inspection Date	Mangrove Seedling Mortality %
September 2021	21 st September 2021	49%
October 2021	7 th October 2021	49%
	22 nd October 2021	52%
November 2021	2 nd November 2021	52%
	19 th November 2021	55%
December 2021	9 th December 2021	57%
	22 nd December 2021	59%
January 2022	26 th January 2022	60%
February 2022	24 th February 2022	60%
March 2022	31 st March 2022	62%
April 2022	21 st April 2022	63%
May 2022	30 th May 2022	63%
June 2022	25 th June 2022	64%
July 2022	25 th July 2022	5.6%
August 2022	29 th August 2022	10.2%

- 3.3.5 Based on the observation from Sep 2021 to May 2022, only the seedlings at the landward side thrive. The seedlings at the seaward side showed poor health and death, even Location #3 at the seaward side which usually provide the best result for the growth of the seedlings among all three locations, the seedlings showed poor health and death. For the poor health seedlings, there is no sign to re-sprout and is expected to decline and be washed away by the tidal over time. In the Proposal of Mangrove Seedling Replanting, it was recommended to replant the seedlings and review if the planting location should be moved to a more landward side or other locations (like next to location 3 which the current condition of the seedlings is good) to improve the survival rate.
- 3.3.6 After the mangrove seedlings replanted on **28th June 2022** at more landward side locations, the survival rate was 94.4% and 89.8 % in July 2022 and August 2022 respectively. No remedial action is therefore required according to the Event and

Action Plan.

3.4 COMPARISON OF THE EM&A DATA WITH THE EIA PREDICTIONS

- 3.4.1 The environmental impact assessment (covering air quality, noise, waste management, water quality, ecology, fisheries and landscape and visual) has concluded that no unacceptable environmental impacts are envisaged due to the construction and operation of the Proposed Beach Development.
- 3.4.2 There were no unacceptable environmental impacts are envisaged during the 1-year operation phase which is in line with the EIA predictions. The environmental mitigation measures are considered effective.
- 3.4.3 The environmental acceptability of the project with reference to specific impact hypotheses is envisaged and returned to ambient and/or the predicted scenario as the EIA findings.

4. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

4.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

4.1.1 Throughout the Reporting Period, no environmental complaint, summons or successful prosecutions was recorded or received.

4.1.2 The statistical summary table of environmental complaint, summons and prosecution are presented in *Tables 4-1, 4-2 and 4-3*.

Table 4-1 Statistical Summary of Environmental Complaints

Construction Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
Sep 21 – Aug 22	0	0	NA

Table 4-2 Statistical Summary of Environmental Summons

Construction Period	Environmental Summons Statistics		
	Frequency	Cumulative	Summons Nature
Sep 21 – Aug 22	0	0	NA

Table 4-3 Statistical Summary of Environmental Prosecution

Construction Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Prosecution Nature
Sep 21 – Aug 22	0	0	NA

5. IMPLEMENTATION STATUS OF MITIGATION MEASURES

5.1 GENERAL

5.1.1 The environmental mitigation measures that recommended in the Implementation Schedule environmental mitigation measures (ISEMM) in the approved EM&A Manual are presented in [Appendix C](#).

5.1.2 The implemented agent should properly implement and maintained the environmental mitigation measures as per the Mitigation Implementation Schedule and EP, for the entire operational phase.

5.1.3 [Table 5-1](#) summarized environmental mitigation measures generally implementation by the Contractor during the operational phase.

Table 5-1 Environmental Mitigation Measures in the Operational Period

Issues	Environmental Mitigation Measures
Water Quality	<p><u>Surface Runoff from Project Site</u></p> <ul style="list-style-type: none"> • A petrol interceptor should be provided in the drainage system and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Where appropriate, the design should follow or of similar functions as stated in the <i>ProPECC PN 1/94</i>. • Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the <i>Waste Disposal Ordinance</i>.
Ecology	<ul style="list-style-type: none"> • A total of approximately 382 mangrove seedlings will be provided. Detailed mangrove seedling planting proposal providing information of planting methodology, recipient sites, planting species and mix, implementation programme, post-planting monitoring and personal involved shall be submitted to and approved by EPD and AFCD. • Mangrove seedling planting should be undertaken and supervised by a suitably qualified botanist/ horticulturist. After planting, one year monitoring should be undertaken to check the performance and health conditions of the planted individuals on a monthly basis. Remedial actions should be discussed with AFCD in the event of unsuccessful mangrove seedling planting and follow an approved Event and Action Plan as indicated in Table 8.30 of the EIA Report. • Mangrove seedling planting location is proposed along the outer sides of the groyne and western drainage channel at a level of about 1.2 to 1.6 mPD with a total size of 300 m². After planting, one year monitoring will be undertaken to check the performance and health conditions of the planted individuals on a monthly basis. Regular monitoring and removal of the weed plant <i>Mikania micrantha</i> during the establishment and maintenance period.
Landscape and Visual Impact	<ul style="list-style-type: none"> • Plant Maintenance. All installed plant material to be maintained to the relevant Hong Kong standard for the life of the Proposed Beach Development.

6. CONCLUSIONS AND RECOMMENTATIONS

6.1 CONCLUSIONS

- 6.1.1 All civil works under the Project were substantial completed in late August 2020 with substantial completion of works/substantial completion certificate issued by CEDD. According to the updated EM&A Manual (Jan 2018) S.2.2, cessation of EM&A programme is subject to the satisfactory completion of the EM&A Final Review Report, agreement with the IEC and approval from EPD. The Final Review EM&A Report for Construction Phase prior verified by IEC was submitted EPD on 7 July 2021.
- 6.1.2 According to the EM&A Manual Section 9.2, post-construction phase of Landscape and Visual auditing is required during a 12-month establishment period. Moreover, mangrove seedling planting was implemented according to the approved Mangrove Seedling Planting Proposal before the operation of the beach. After planting, 1 year monitoring was undertaken to check the performance and health conditions of the planted individuals on monthly basis.
- 6.1.3 The EM&A programme for the operational phase of the Project including Landscape and Visual auditing and monitoring of mangrove seedling planting commenced in September 2021 and completed on 31st August 2022. The findings were reported on the submitted post-construction Monitoring and Audit Report on bi-monthly basis, in according with EM&A Manual Section 11.4.2
- 6.1.4 This is the Final Review EM&A Report for Operational Phase summarizing the performance and health conditions of the planted individuals and Landscape and Visual inspection findings during post-construction period of September 2021 to August 2022.
- 6.1.5 A total of 24 occasions of landscape and visual inspection were undertaken throughout the Reporting Period. The deficiencies in relation to landscape and visual observed during the inspection have all been followed up by the Contractor. Handover inspection and meeting among the Contractor and LCSD was conducted on 20 July 2022, and LCSD had no objection to take over all the planting after expiry of maintenance period on 5 August 2022. All the defects raised by LCSD were completed in August 2022. Besides, other concerned areas have been handover to HyD and ASD. No further follow up is required under this Contract.
- 6.1.6 A total of 15 occasion of mangrove post-monitoring were undertaken throughout the Reporting Period, which included 3 additional monitoring in Oct to Dec 21 due to mortality of the mangrove seedling found more than 25% and 50%. The monitoring frequency from Jan 2022 was resumed to monthly as agreed by AFCD via email on 6th January 2022.
- 6.1.7 Proposal of Mangrove Seedling Replanting for remedial action and implement the action to solve the event was submitted to EPD and AFCD in late April 2022 for agreement. As remedial action for mortality of the mangrove seedling more than 50%, the Contractor replanted the mangrove seedlings on 28th June 2022 at more landward side locations to improve the survival rate, according to the agreed “Proposal of Mangrove Seedling Replanting”.
- 6.1.8 After the mangrove seedlings replanted on **28th June 2022** at more landward side locations, the survival rate respectively was 94.4% and 89.8 % in July 2022 and August 2022 and compliance with the requirements.

- 6.1.9 No environmental complaint was recorded or received in the Reporting Period.
- 6.1.10 No environmental summons or successful prosecutions were recorded in the Reporting Period.

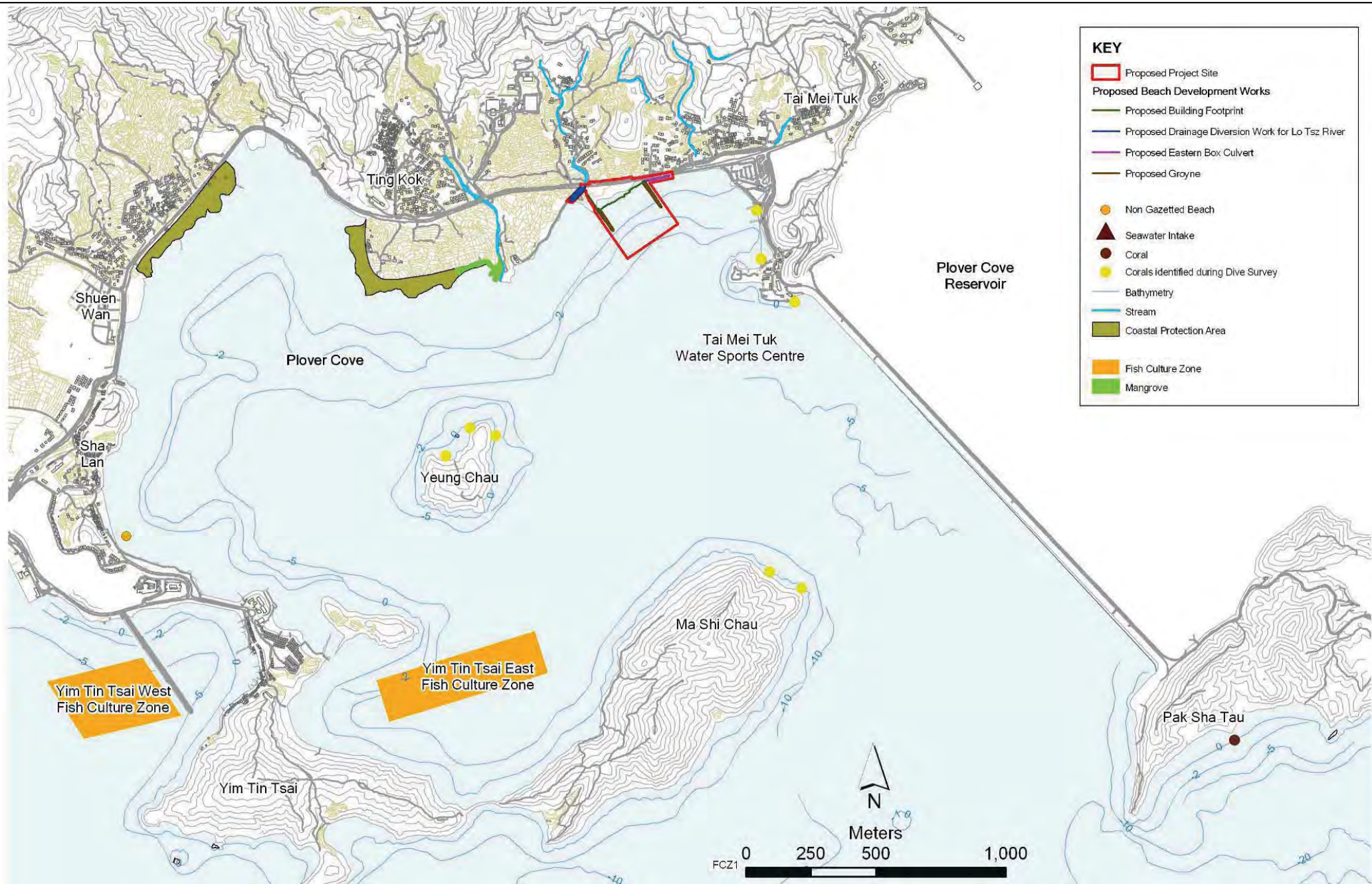
6.2 RECOMMENDATIONS

- 6.2.1 Post-construction phase Landscape and Visual auditing for 12-month establishment period and one year monitoring of mangrove seedling planting were completed on 31st August 2022. The Contractor was reminded to liaise with the relevant department for handover issue, if necessary.
- 6.2.2 It is reminded that the environmental mitigation measures shall be properly implemented and maintained where applicable, as per the Mitigation Implementation Schedule and EP, for the entire operational phase.

Appendix A

Layout plan of the Project

(The content of Appendix A is modified from the previous EM&A Manual - Development of a Bathing Beach at Lung Mei, Tai Po (Register No. AEIAR-123/2008): Environmental Monitoring and Audit (EM&A) Manual (November 2007))



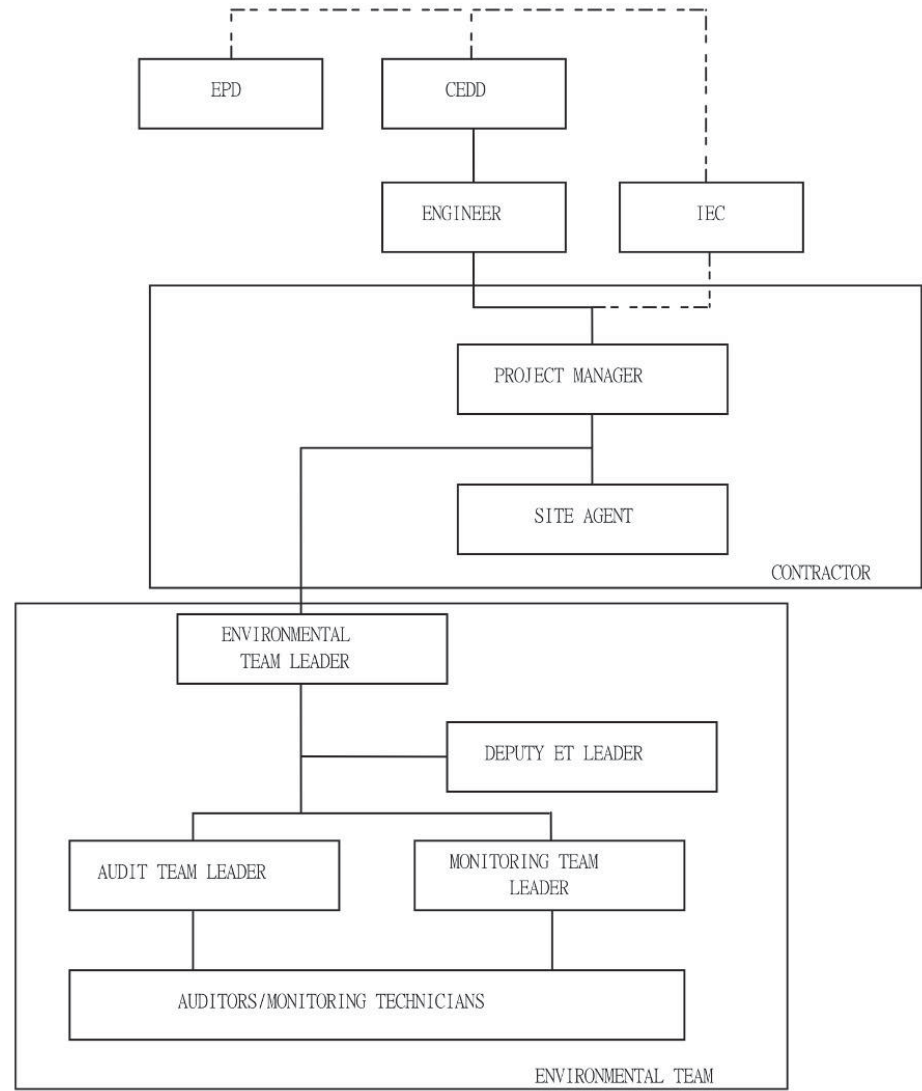
KEY

- Proposed Project Site
- Proposed Beach Development Works
- Proposed Building Footprint
- Proposed Drainage Diversion Work for Lo Tsz River
- Proposed Eastern Box Culvert
- Proposed Groyne
- Non Gazetted Beach
- ▲ Seawater Intake
- Coral
- Corals identified during Dive Survey
- Bathymetry
- Stream
- Coastal Protection Area
- Fish Culture Zone
- Mangrove

Client CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	Main Contractor 偉金建築有限公司 Welcome Construction Co., Ltd.	Agreement No.: CE 59/2005(EP) Project Title: DEVELOPMENT OF A BATHING BEACH AT LUNG MEI, TAI PO	ENVIRONMENTAL MONITORING AND AUDIT MANUAL Figure Title: PROJECT LOCATION AND ENVIRONMENTAL SENSITIVE RECEIVERS	FIGURE 1.1 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Checked</td> <td style="width: 33%;">Scale</td> <td style="width: 33%;">Rev.</td> </tr> <tr> <td style="text-align: center;">TF</td> <td style="text-align: center;">AS SHOWN</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Designed</td> <td>Drawn</td> <td>Date</td> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">AM</td> <td style="text-align: center;">13/03/2007</td> </tr> </table>	Checked	Scale	Rev.	TF	AS SHOWN	1	Designed	Drawn	Date	-	AM	13/03/2007
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-	AM	13/03/2007														

Appendix B

Organization Structure and Contact Details



* EPD may contact any parties if necessary

KEY
 - - - - COMMUNICATION CHANNEL
 ——— LINE OF PROJECT MANAGEMENT RESPONSIBILITY

Client



CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

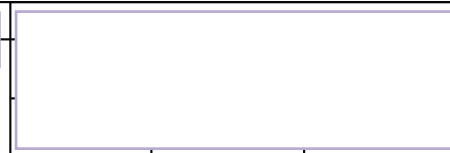
Main Contractor



偉金建築有限公司
Welcome Construction Co., Ltd.

Agreement No.: CE 59/2005(EP)
 Project Title:
 DEVELOPMENT OF A BATHING BEACH AT LUNG MEI, TAI PO

ORGANISATION STRUCTURE



Contact Details of Key Personnel – CV/2012/05

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
CEDD	Engineer's Representative	Mr. Lam Chi Kuen, Leo	2762 5556	2714 2054
ERM	Independent Environmental Checker	Mr. Kelvin So	2271 3113	2723 5660
Welcome	Project Manager	Mr. Frankie Lui	9420 4834	2682 3222
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079

Legend:

CEDD (Engineer) – Civil Engineering and Development Department

Welcome (Main Contractor) – Welcome Construction Company Limited

ERM (IEC) – Environmental Resources Management

AUES (ET) – Action-United Environmental Services & Consulting

Appendix C

**Implementation Schedule for
Environmental Mitigation Measures**

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
Water Quality – Operational Phase										
6.6.2	-	<p><u>Surface Runoff from Project Site</u></p> <p>A petrol interceptor should be provided in the drainage system and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Where appropriate, the design should follow or of similar functions as stated in the <i>ProPECC PN 1/94</i>.</p>	To prevent contamination to nearby environment	Beach Park area / During operation	Operator	✓		✓		<i>Water Pollution Control Ordinance and ProPECC PN 1/94</i>
6.6.2	-	<p>Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the <i>Waste Disposal Ordinance</i>.</p>	To prevent contamination to nearby environment	Beach Building Facility / During operation	Operator	✓		✓		<i>Waste Disposal Ordinance</i>
Ecology – Operational Phase										
8.10.3	-	<p>A total of approximately 382 mangrove seedlings will be provided. Detailed mangrove seedling planting proposal providing information of planting methodology, recipient sites, planting species and mix, implementation programme, post-planting monitoring and personal involved shall be submitted to and approved by EPD and AFCD.</p> <p>Mangrove seedling planting should be undertaken and supervised by a suitably qualified botanist/ horticulturist. After</p>	To monitoring the conditions of mangroves after re-planting	Next to Eastern Box Culvert / After plantation works	ET/ Qualified Ecologist			✓		-

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
8.10.3 and 8.12.2	7.2	<p>planting, one year monitoring should be undertaken to check the performance and health conditions of the planted individuals on a monthly basis. Remedial actions should be discussed with AFCD in the event of unsuccessful mangrove seedling planting and follow an approved Event and Action Plan as indicated in Table 8.30 of the EIA Report.</p> <p>Mangrove seedling planting location is proposed along the outer sides of the groynes and western drainage channel at a level of about 1.2 to 1.6 mPD with a total size of 300 m². After planting, one year monitoring will be undertaken to check the performance and health conditions of the planted individuals on a monthly basis. Regular monitoring and removal of the weed plant <i>Mikania micrantha</i> during the establishment and maintenance period.</p>	To monitoring the conditions of mangroves after re-planting	Next to Eastern Box Culvert / After plantation works	ET/ Qualified Ecologist/Contractor		✓			-

Landscape and Visual Impact – Operational Phase

10.6.10	-	<p><i>Tree and shrub planting.</i> All planting of trees and shrubs is to be carried out in accordance with the relevant best practice guidelines. Plant densities are to be provided in future detailed design documents and are to be selected so as to achieve a finished landscape that matches the surrounding, undisturbed, equivalent landscape types. Regular monitoring and removal of the weed plant <i>Mikania micrantha</i> during the establishment and maintenance period.</p>	To improve the appearance of the development	Project Site / During construction	Contractor		✓			-
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EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
10.6.10	-	<i>Inter-Tidal Re-generation.</i> It is likely that a build up of sediment and sand will occur at the outer edges of the rock groyne. This is a natural process and the development proponent has no control over the implementation of this mitigation measure.	To improve the appearance of the development	Adjacent areas	Nil			✓		-
11.10.2	-	<i>Plant Maintenance.</i> All installed plant material to be maintained to the relevant Hong Kong standard for the life of the Proposed Beach Development	To improve the appearance of the development.	Proposed Beach Development / During operation	Operator			✓		-

Remark: Des – Design; C – Construction; O – Operation; Dec – Decommissioning