



PROJECT No.: TCS/00874/16

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

**POST-CONSTRUCTION MONITORING AND AUDIT
REPORT**

PREPARED FOR
WELCOME CONSTRUCTION CO., LTD.

Quality Index

Date	Reference No.	Prepared By	Certified By
6 January 2022	TCS00874/16/600/R0790v32	 Nicola Hon Environmental Consultant	 T.W. Tam Environmental Team Leader

Revision	Date	Description
1	7 December 2021	First submission
2	24 December 2021	Amended according to the IEC's comments
3	6 January 2022	Amended according to the IEC's comments

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 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 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 will be undertaken to check the performance and health conditions of the planted individuals on month basis.

ES.05 According the EM&A Manual Section 11.4.2, the post-construction phase landscape EM&A will be reported on a bi-monthly basis for a period of one year after completion of the project. As clarified by CEDD, post-construction phase monitoring commenced in September 2021.

ES.06 This is the 1st Post-construction Monitoring and Audit Report presents the result of landscape EM&A and mangrove seedling planting monitoring for 1st September and 30th October 2021 (hereinafter referred as “the Reporting Period”).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.07 The post-construction phase monitoring activities under the EM&A programme in the Reporting Period are summarized in the following table.

Issues	Monitoring Parameters / Inspection	Date
Landscape & Visual	Landscape and visual inspection	8 th & 21 st September 2021 7 th & 22 nd October 2021
Ecology	Mangrove post-monitoring	21 st September 2021 7 th & 22 nd October 2021

ES.08 For the landscape and visual inspection, the Contractor was reminded to follow the observation provided in the checklist with their horticulture sub-contractor.

ES.09 For the mangrove post-monitoring, as the mortality of the mangrove seedling is more than 25%, the monthly monitoring need to be stepped up to bi-weekly monitoring to observe the growth performance of the seedling, until the cause(s) of the event has been identified. The ET had notified CEDD for the mortality mangrove seedling, since this is the first post-construction monitoring, the possible cause of mortality of the mangrove seedling will be reviewed by horticulturist and presented the in next Reporting Period.

ENVIRONMENTAL COMPLAINT

ES.10 No environmental complaint was recorded or received in the Reporting Period.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.11 No environmental summons or successful prosecutions were recorded in the Reporting Period.

REPORTING CHANGE

ES.12 No reporting changes were made in the Reporting Period

FUTURE KEY ISSUES

ES.13 As the mortality of the mangrove seedling is more than 25%, the monthly monitoring need to be stepped up to bi-weekly monitoring to observe the growth performance of the seedling, until the cause(s) of the event has been identified. The possible cause of mortality of the mangrove seedling will be reviewed by horticulturist and presented the in next Reporting Period.

ES.14 The Contractor was reminded that the environmental mitigation measures shall be properly implemented and maintained where applicable, as per the Mitigation Implementation Schedule, in the operational phase.

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1 BACKGROUND	1
2. PROJECT ORGANIZATION AND MONITORING REQUIREMENT	2
2.1 PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE	2
2.2 PARAMETERS AND REQUIREMENTS	2
2.3 EVENT AND ACTION PLAN	2
3. MONITORING RESULTS OF POST-CONSTRUCTION MONITORING	3
3.1 GENERAL	3
3.2 RESULTS OF LANDSCAPE AND VISUAL	3
3.3 RESULTS OF MANGROVE MONITORING	3
3.4 ENVIRONMENTAL COMPLAINT	3
3.5 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS	3
4. CONCLUSIONS AND RECOMMENDATIONS	4
4.1 CONCLUSIONS	4
4.2 RECOMMENDATIONS	4

LIST OF APPENDIX

Appendix A	Layout plan of the Project
Appendix B	Organization structure and contact details
Appendix C	Landscape and Visual Inspection Checklist
Appendix D	Detailed Post-planting Monitoring Reports of Mangrove Seedling Planting

1. INTRODUCTION

1.1 BACKGROUND

- 1.1.1 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”).
- 1.1.2 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).
- 1.1.3 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](#).
- 1.1.4 All civil works under the Project were substantially 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.
- 1.1.5 According to the EM&A Manual Section 9.2, post-construction phase 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 will be undertaken to check the performance and health conditions of the planted individuals on month basis.
- 1.1.6 According the EM&A Manual Section 11.4.2, the post-construction phase landscape EM&A will be reported on a bi-monthly basis for a period of one year after completion of the project. As clarified by CEDD, post-construction phase monitoring commenced in September 2021.
- 1.1.7 This is the **1st** Post-construction Monitoring and Audit Report presents the result of landscape EM&A and mangrove seedling planting monitoring for **1st September** and **30th October 2021**.

2. PROJECT ORGANIZATION AND 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 will be undertaken to check the performance and health conditions of the planted individuals on month basis. Remedial action will be discussed with AFCD in the event of unsuccessful mangrove seedling planting and follow an approved Event and Action Plan.

2.3 EVENT AND ACTION PLAN

2.3.1 Event and Action Plan for Mangrove Seedling Planting under the EM&A Manual Table 7.1 will be followed.

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).	1. Identify and report the cause(s) of the event.
		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.	2. Notify relevant government departments (i.e. EPD and AFCD).
	More than 50 % 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).	1. Identify and report the cause(s) of the event.
		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.	2. Submit proposal to relevant government departments (ie EPD and AFCD) for remedial action and implement the action to solve the event.

3. MONITORING RESULTS OF POST-CONSTRUCTION MONITORING

3.1 GENERAL

- 3.1.1 As clarified by CEDD, post-construction phase monitoring commenced on 1st September 2021. The following sub-section summarized the post-construction monitoring results.

3.2 RESULTS OF LANDSCAPE AND VISUAL

- 3.2.1 The landscape and visual inspection were undertaken on **8th and 21st September 2021 and 7th and 22nd October 2021**. The inspection results in form of checklists are shown in **Appendix C**. The Contractor was reminded to follow the observation provided in the checklist with their horticulture sub-contractor.

3.3 RESULTS OF MANGROVE MONITORING

- 3.3.1 The mangrove post-monitoring of September 2021 was undertaken on **21st September 2021**. All the seedlings in all 3 locations were inspected. As the mortality of the mangrove seedling is more than 25%, the monthly monitoring need to be stepped up to bi-weekly monitoring to observe the growth performance of the seedling, until the cause(s) of the event has been identified. The ET had notified CEDD for the mortality mangrove seedling, since this is the first post-construction monitoring, the possible cause of mortality of the mangrove seedling will be reviewed by horticulturist in coming month.
- 3.3.2 The mangrove post-monitoring of October 2021 were undertaken on **7th and 22nd October 2021**. All the seedlings in all 3 locations were inspected. As the mortality of the mangrove seedling is more than 25%, the monthly monitoring need to be stepped up to bi-weekly monitoring to observe the growth performance of the seedling, until the cause(s) of the event has been identified. The ET had notified CEDD for the mortality mangrove seedling, the possible cause of mortality of the mangrove seedling will be reviewed by horticulturist and presented the in next Reporting Period.
- 3.3.3 Based on the observation from Sep to Oct 2021, there is no sign for the poor health seedlings to re-sprout and is expected to decline over time. It is suspected that the condition of location 1 and location 2, especially the seaward side is not optimal for the seedlings to establish and grow. The contractor is recommended to replant the seedlings and review if the planting location should be moved to a more landward side to improve the survival rate.
- 3.3.4 Detailed post-planting monitoring reports of the mangrove seedling planting are shown in **Appendix D**.
- 3.3.5 The post-monitoring in next Reporting Period is scheduled on 1st and 3rd week of November 2021 (tentative on 2nd & 19th November 2021) and 2nd and 3rd week of December 2021 (tentative on 9th & 22nd December 2021).

3.4 ENVIRONMENTAL COMPLAINT

- 3.4.1 No environmental complaint was recorded or received in the Reporting Period.

3.5 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

- 3.5.1 No environmental summons or successful prosecutions were recorded in the Reporting Period.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

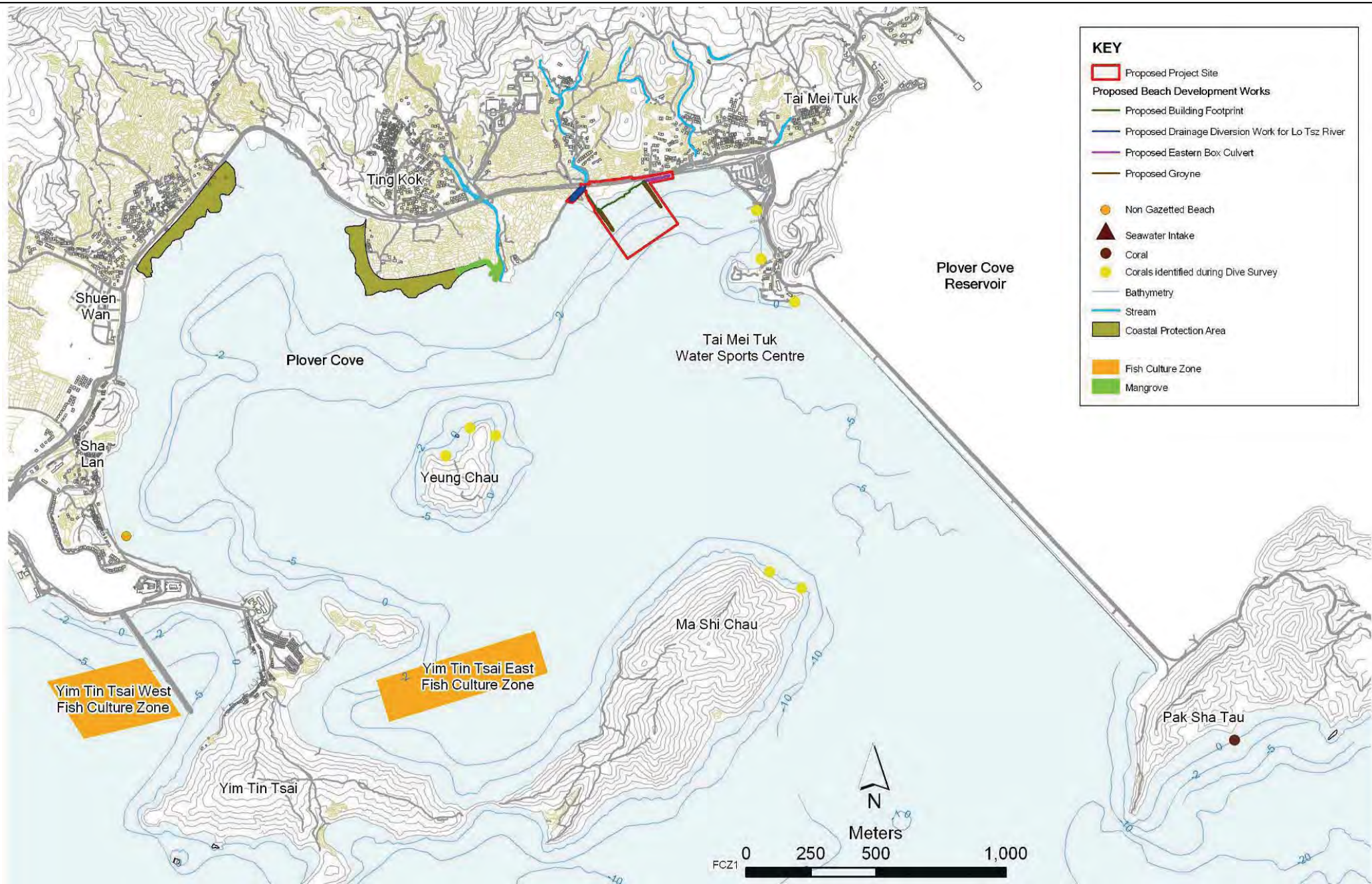
- 4.1.1 This is the 1st Post-construction Monitoring and Audit Report presents the result of landscape EM&A and mangrove seedling planting monitoring for **September and October 2021**.
- 4.1.2 The landscape and visual inspection were undertaken on **8th and 21st September 2021 and 7th and 22nd October 2021**. The Contractor was reminded to follow the observation provided in the checklist with their horticulture sub-contractor.
- 4.1.3 The mangrove post-monitoring was undertaken on **21st September 2021, 7th and 22nd October 2021**. As the mortality of the mangrove seedling is more than 25%, the monthly monitoring need to be stepped up to 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 has been identified. The possible cause of mortality of the mangrove seedling will be reviewed in next Reporting Month.

4.2 RECOMMENDATIONS



- 4.2.1 Based on the observation from Sep to Oct, there is no sign for the poor health seedlings to re-sprout and is expected to decline over time. It is suspected that the condition of location 1 and location 2, especially the seaward side is not optimal for the seedlings to establish and grow. The contractor is recommended to replant the seedlings and review if the planting location should be moved to a more landward side to improve the survival rate.
- 4.2.2 The Contractor was reminded that the environmental mitigation measures shall be properly implemented and maintained where applicable, as per the Mitigation Implementation Schedule, in the operational phase.

Appendix A

Layout Plan of the Project

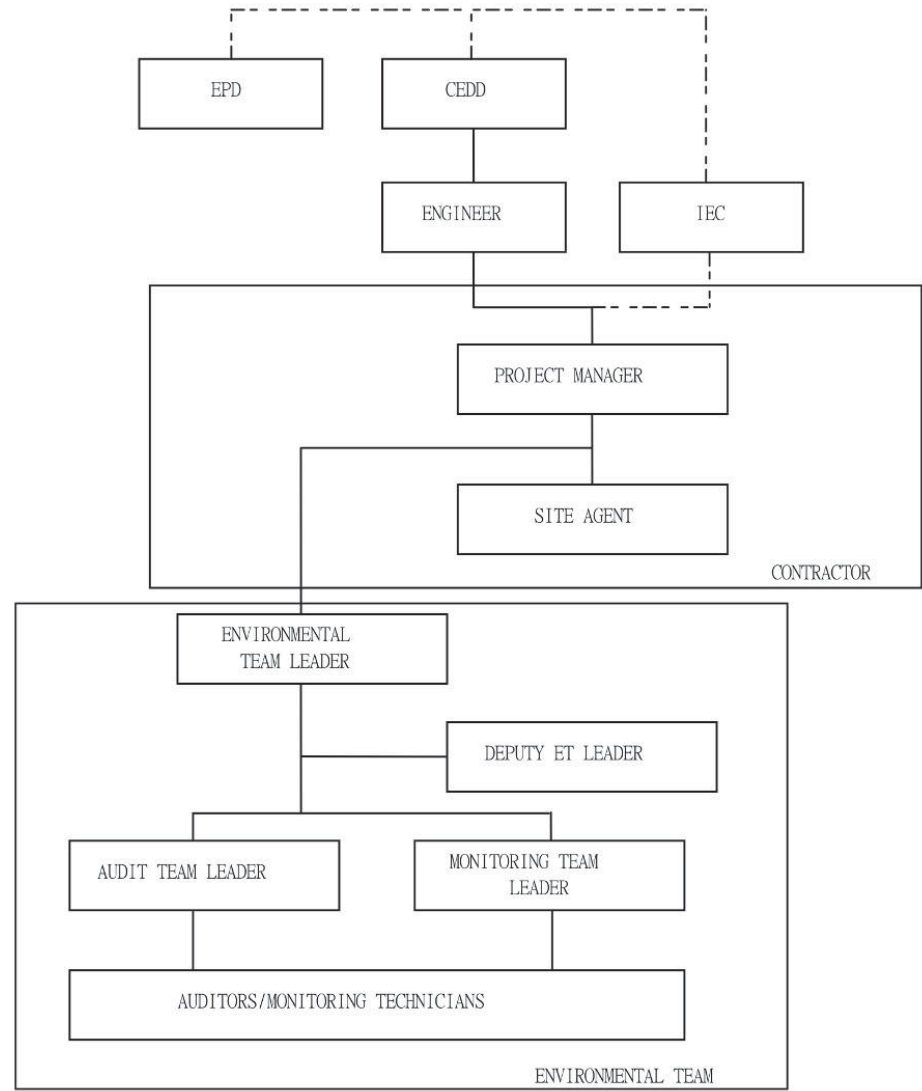


KEY	
	Proposed Project Site
	Proposed Beach Development Works
	Proposed Building Footprint
	Proposed Drainage Diversion Work for Lo Tsz River
	Proposed Eastern Box Culvert
	Proposed Groyne
●	Non Gazetted Beach
▲	Seawater Intake
●	Coral
●	Corals identified during Dive Survey
—	Bathymetry
—	Stream
	Coastal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

 CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	 偉金建築有限公司 Welcome Construction Co., Ltd.	Agreement No.: CE 59/2005(EP)	ENVIRONMENTAL MONITORING AND AUDIT MANUAL		FIGURE 1.1		
		Project Title: DEVELOPMENT OF A BATHING BEACH AT LUNG MEI, TAI PO	Figure Title: PROJECT LOCATION AND ENVIRONMENTAL SENSITIVE RECEIVERS	Checked TF	Scale AS SHOWN	Rev. 1	Designed -

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. K F Chan	2762 5532	2714 2054
ERM	Independent Environmental Checker	Mr. Kelvin So	2271 3156	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 (Contractor) – Welcome Construction Company Limited

ERM (IEC) – Environmental Resources Management

AUES (ET) – Action-United

Appendix C

Landscape and Visual Inspection Checklist



Date/ Time: 8th Sep 2021 Weather: Fine/ Overcast/ Rain/ Windy

Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
1	Vegetation Management				
1.1	Is the irrigation sufficient?	✓			
1.2	Any physical damage observed on the plant?		✓		
1.3	Any potential incursion, fire, pollution, and surface erosion, etc.		✓		
1.4	Is the soil drain well?	✓			
1.5	Are the weeds controlled at an acceptable level?	✓			
1.6	Are the debris controlled at an acceptable level?	✓			
1.7	Are the plants planted in right place according to the landscape plan?		✓		There is no plant in the planter outside the male (Planter P14) and female (Planter P3b) changing room
1.8	Are the planting including species, size and plants quality completed following the landscape plan?		✓		<ul style="list-style-type: none"> ● The plant near the male changing room (Planter P7) is <i>Schefflera arboricola</i> instead of <i>Rhapis excelsa</i> in the plan ● No <i>Bauhinia glauca</i> could be found
2	Protection of trees				
2.1	The physical protection (fencing) is in place?	✓			
2.2	Any poor health condition or dead tree observed?	✓			Two <i>Michelia x alba</i> are dead
2.3	Any poor practice of pruning observed?		✓		
2.4	Are the trees planted in right place according to the landscape plan?	✓			
2.5	The tree supporting system are in good condition?	✓			
2.6	Any event(s) observed may properly hinder the tree growth?		✓		
3	Architectural design and treatment of all structures (where practicable), retaining walls, elevated road structures and other engineering works.				



Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
3.1	Implementation and maintenance of mitigation measures, to ensure conformity with agreed designs?	✓			

Summary / Remarks:

1. Two nos. of new trees (*Michelia x alba*) are found dead, contractor is required to replace the concerned trees. (Photo I)
2. There is no planting with bare soil in the planters outside the male (Planter P14) and female (Planter P3b) changing rooms. (Photo J and Photo K).
3. The contractor is required to plant *Schefflera arboricola* instead of *Rhapis excelsa* as shown on the plan for the planter (Planter P7) close to the male changing room. (Photo L)
4. *Bauhinia glauca* is required to plant as shown on plan but it was not found within the site. The Contractor is required to follow the approved plan and complete all planting including the planting of *Bauhinia glauca* before the next audit checking.

Follow up actions taken by Contractor for previous comments:

N/A

Reminders:

The Contractor(s) is/are reminded to check the guying and staking of all retained/newly planted trees to prevent from damage of the trees by rubbing and girdling from ties and stakes.



Photo Record:

Photo A.



General view (1)

Photo B.



General view (2)

Photo C.



General view (3)

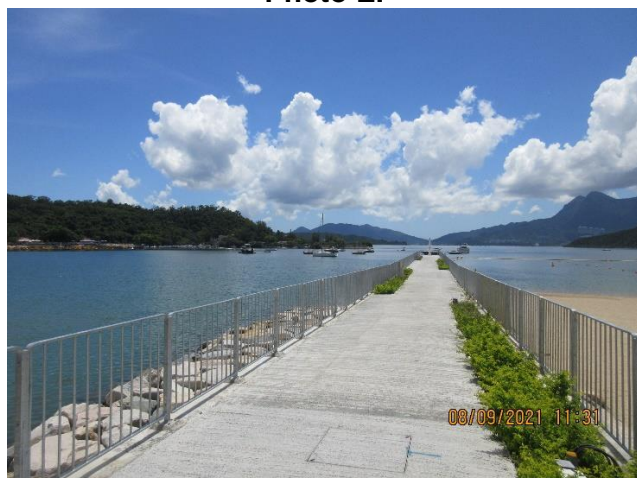
Photo D.



General view (4)



Photo E.



General view (5)

Photo F.



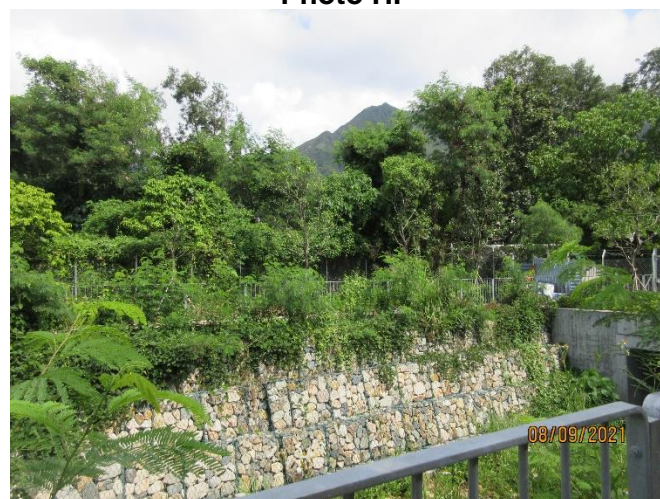
General view (6)

Photo G.



General view (7)

Photo H.



General view (8)



Photo I.



Dead *Michelia x alba*

Photo J.



No plant in the planter outside the male (Planter P14) changing room

Photo K.



No plant in the planter outside the female (Planter P3b) changing room

Photo L.



The plant near the male changing room (Planter P7) is *Schefflera arboricola* instead of *Rhapis excelsa* shown in the plan



Date/ Time: 21st Sep 2021 Weather: Fine/ Overcast/ Rain/ Windy

Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
1	Vegetation Management				
1.1	Is the irrigation sufficient?	✓			
1.2	Any physical damage observed on the plant?		✓		
1.3	Any potential incursion, fire, pollution, and surface erosion, etc.		✓		
1.4	Is the soil drain well?	✓			
1.5	Are the weeds controlled at an acceptable level?	✓			
1.6	Are the debris controlled at an acceptable level?	✓			
1.7	Are the plants planted in right place according to the landscape plan?		✓		There is no plant in the planter outside the male (Planter P14) and female (Planter P3b) changing room
1.8	Are the planting including species, size and plants quality completed following the landscape plan?		✓		<ul style="list-style-type: none"> ● The plant near the male changing room (Planter P7) is <i>Schefflera arboricola</i> instead of <i>Rhapis excelsa</i> in the plan ● No <i>Bauhinia glauca</i> could be found
2	Protection of trees				
2.1	The physical protection (fencing) is in place?	✓			
2.2	Any poor health condition or dead tree observed?	✓			Two <i>Michelia x alba</i> are dead
2.3	Any poor practice of pruning observed?		✓		
2.4	Are the trees planted in right place according to the landscape plan?	✓			
2.5	The tree supporting system are in good condition?	✓			
2.6	Any event(s) observed may properly hinder the tree growth?		✓		
3	Architectural design and treatment of all structures (where practicable), retaining walls, elevated road structures and other engineering works.				
3.1	Implementation and maintenance of mitigation measures, to ensure conformity with agreed designs?	✓			



Summary / Remarks:

1. Two nos. of new trees (*Michelia x alba*) are found dead, contractor is required to replace the concerned trees. (Photo I)
2. There is no planting with bare soil in the planters outside the male (Planter P14) and female (Planter P3b) changing rooms. (Photo J and Photo K).
3. The contractor is required to plant *Schefflera arboricola* instead of *Rhapis excelsa* as shown on the plan for the planter (Planter P7) close to the male changing room. (Photo L)
4. *Bauhinia glauca* is required to plant as shown on plan but it was not found within the site. The Contractor is required to follow the approved plan and complete all planting including the planting of *Bauhinia glauca* before the next audit checking.

Follow up action by contractor:

The Contractor was reminded to follow the observation provided in the checklist with their horticulture sub-contractor.

Reminders:

The Contractor(s) is/are reminded to check the guying and staking of all retained/newly planted trees to prevent from damage of the trees by rubbing and girdling from ties and stakes.



Photo Record:

Photo A.



General view (1)

Photo B.



General view (2)

Photo C.



General view (3)

Photo D.



General view (4)



Photo E.



General view (5)

Photo F.



General view (6)

Photo G.



General view (7)

Photo H.



General view (8)



Photo I.



Dead *Michelia x alba*

Photo J.



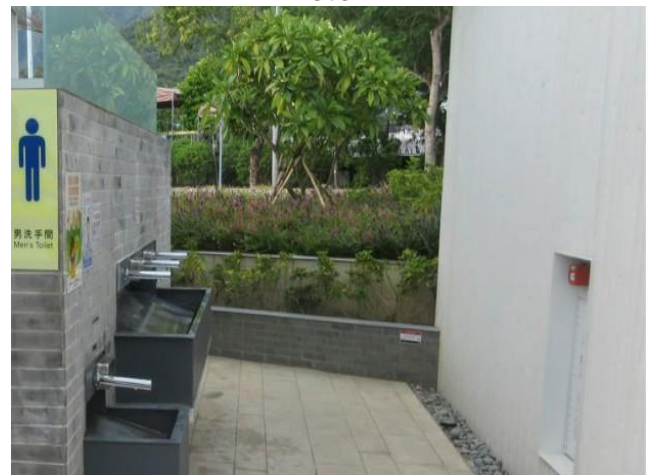
No plant in the planter outside the male (Planter P14) changing room

Photo K.



No plant in the planter outside the female (Planter P3b) changing room

Photo L.



The plant near the male changing room (Planter P7) is *Schefflera arboricola* instead of *Rhapis excelsa* shown in the plan



Date/ Time: 7th Oct 2021 Weather: Fine/ Overcast/ Rain/ Windy

Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
1	Vegetation Management				
1.1	Is the irrigation sufficient?	✓			
1.2	Any physical damage observed on the plant?		✓		
1.3	Any potential incursion, fire, pollution, and surface erosion, etc.		✓		
1.4	Is the soil drain well?	✓			
1.5	Are the weeds controlled at an acceptable level?	✓			
1.6	Are the debris controlled at an acceptable level?	✓			
1.7	Are the plants planted in right place according to the landscape plan?		✓		There is no plant in the planter outside the male (Planter P14) and female (Planter P3b) changing room
1.8	Are the planting including species, size and plants quality completed following the landscape plan?		✓		<ul style="list-style-type: none"> ● The plant near the male changing room (Planter P7) is <i>Schefflera arboricola</i> instead of <i>Rhapis excelsa</i> in the plan ● No <i>Bauhinia glauca</i> could be found
2	Protection of trees				
2.1	The physical protection (fencing) is in place?	✓			
2.2	Any poor health condition or dead tree observed?	✓			Two <i>Michelia x alba</i> are dead
2.3	Any poor practice of pruning observed?		✓		
2.4	Are the trees planted in right place according to the landscape plan?	✓			
2.5	The tree supporting system are in good condition?	✓			
2.6	Any event(s) observed may properly hinder the tree growth?		✓		
3	Architectural design and treatment of all structures (where practicable), retaining walls, elevated road structures and other engineering works.				
3.1	Implementation and maintenance of mitigation measures, to ensure conformity with agreed designs?	✓			



Summary / Remarks:

1. Two nos. of new trees (*Michelia x alba*) are found dead, contractor is required to replace the concerned trees. (Photo I)
2. There is no planting with bare soil in the planters outside the male (Planter P14) and female (Planter P3b) changing rooms. (Photo J and Photo K).
3. The contractor is required to plant *Schefflera arboricola* instead of *Rhapis excelsa* as shown on the plan for the planter (Planter P7) close to the male changing room. (Photo L)
4. *Bauhinia glauca* is required to plant as shown on plan but it was not found within the site. The Contractor is required to follow the approved plan and complete all planting including the planting of *Bauhinia glauca* before the next audit checking.

Follow up action by contractor:

The Contractor was reminded to follow the observation provided in the checklist with their horticulture sub-contractor.

Reminders:

The Contractor(s) is/are reminded to check the guying and staking of all retained/newly planted trees to prevent from damage of the trees by rubbing and girdling from ties and stakes.



Photo Record:

Photo A.



General view (1)

Photo B.



General view (2)

Photo C.



General view (3)

Photo D.



General view (4)



Photo E.



General view (5)

Photo F.



General view (6)

Photo G.



General view (7)

Photo H.



General view (8)



Photo I.



Dead *Michelia x alba*

Photo J.



No plant in the planter outside the male (Planter P14) changing room

Photo K.



No plant in the planter outside the female (Planter P3b) changing room

Photo L.



The plant near the male changing room (Planter P7) is *Schefflera arboricola* instead of *Rhapis excelsa* shown in the plan



Date/ Time: 22nd Oct 2021 Weather: Fine/ Overcast/ Rain/ Windy

Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
1	Vegetation Management				
1.1	Is the irrigation sufficient?	✓			
1.2	Any physical damage observed on the plant?		✓		
1.3	Any potential incursion, fire, pollution, and surface erosion, etc.		✓		Some of the plants in the planters on the Western groyne were wilted and removed
1.4	Is the soil drain well?	✓			
1.5	Are the weeds controlled at an acceptable level?	✓			There are certain amounts of weeds in the planters "p3a", "p4a", "p6a" and "p6b"
1.6	Are the debris controlled at an acceptable level?	✓			
1.7	Are the plants planted in right place according to the landscape plan?		✓		There is no plant in the planter outside the male (Planter P14) and female (Planter P3b) changing room
1.8	Are the planting including species, size and plants quality completed following the landscape plan?		✓		<ul style="list-style-type: none"> ● The plant near the male changing room (Planter P7) is <i>Schefflera arboricola</i> instead of <i>Rhapis excelsa</i> in the plan ● No <i>Bauhinia glauca</i> could be found
2	Protection of trees				
2.1	The physical protection (fencing) is in place?	✓			
2.2	Any poor health condition or dead tree observed?	✓			Two <i>Michelia x alba</i> are dead
2.3	Any poor practice of pruning observed?		✓		
2.4	Are the trees planted in right place according to the landscape plan?	✓			
2.5	The tree supporting system are in good condition?	✓			Some ties and stakes already girdled and affected the growth of the trees
2.6	Any event(s) observed may properly hinder the tree growth?		✓		
3	Architectural design and treatment of all structures (where practicable), retaining walls, elevated road structures and other engineering works.				



Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
3.1	Implementation and maintenance of mitigation measures, to ensure conformity with agreed designs?	✓			

Summary and follow up actions / Remarks:

1. Two nos. of new trees (*Michelia x alba*) are found dead, contractor is required to replace the concerned trees. (Photo I)
2. There is no planting with bare soil in the planters outside the male (Planter P14) and female (Planter P3b) changing rooms. (Photo J and Photo K).
3. The contractor is required to plant *Schefflera arboricola* instead of *Rhapis excelsa* as shown on the plan for the planter (Planter P7) close to the male changing room. (Photo L)
4. *Bauhinia glauca* is required to plant as shown on plan but it was not found within the site. The Contractor is required to follow the approved plan and complete all planting including the planting of *Bauhinia glauca* before the next audit checking.
5. Some of the plants in the planters on the Western groyne were wilted and removed (Photo M)
6. Some ties and stakes already girdled and affected the growth of the trees (Photo N)
7. There are certain amounts of weeds in the planters "p3a", "p4a", "p6a" and "p6b" (Photo O and Photo P)

Follow up action by contractor:

The Contractor was reminded to follow the observation provided in the checklist with their horticulture sub-contractor.

Reminders:

The Contractor(s) is/are reminded to check the guying and staking of all retained/newly planted trees to prevent from damage of the trees by rubbing and girdling from ties and stakes.



Photo Record:

Photo A.



General view (1)

Photo B.



General view (2)

Photo C.



General view (3)

Photo D.



General view (4)

Photo E.

Photo F.



General view (5)

Photo G.



General view (6)

Photo H.



General view (7)

Photo I.



General view (8)

Photo J.



Dead *Michelia x alba*

Photo K.



No plant in the planter outside the female (Planter P3b) changing room

Photo M.



No plant in the planter outside the male (Planter P14) changing room

Photo L.



The plant near the male changing room (Planter P7) is *Schefflera arboricola* instead of *Rhapis excelsa* shown in the plan

Photo N.



Some of the plants in the planters on the Western groyne were wilted and removed

Photo O.



There are certain amounts of weeds in the planters "p3a" and "p4a"

Signature:



Some ties and stakes already girdled and affected the growth of the trees

Photo P.



There are certain amounts of weeds in the planters "p6a" and "p6b"



Signature:

		Signature	Date
Audited by	Registered Landscape Architect		
Checked by	Environmental Team Leader		
	Independent Environmental Checker		

Appendix D

Detailed Post-planting Monitoring Reports of Mangrove Seedling Planting

**INSPECTION REPORT
FOR POST-PLANTING MONITORING OF
THE MANGROVE SEEDLING PLANTING AT
BATHING BEACH AT LUNG MEI**

21ST SEPTEMBER 2021





Contents

1	Introduction	2
2	The site and Mangrove Seedlings Location	2
3	Mangrove Seedlings Description	4
4	Remedial actions	8
5	Appendix A – Location of the planting sites	9



1 Introduction

Saraca Urban Forest (SUF) has been appointed to carry out the post-planting monitoring of the mangrove seedling planting at Bathing Beach at Lung Mei, Tai Po. The mangrove seedlings were inspected by Desmond Tang on 21 September 2021 on the ground during low tide.

The objectives of the report are:

- 1) To evaluation of the current condition, the performance and health conditions of the planted mangrove seedlings; and
- 2) To recommend the remedial actions.

2 The site and Mangrove Seedlings Location

The mangrove seedlings are in 3 planting locations, that are at Portion B near Western Open Channel and Western Groyne and near Eastern Groyne at the tidal zone of 1.2 to 1.6 mPD (Appendix A)



Photo 2.1 General view of the mangrove in location 1



Photo 2.2 General view of the mangrove in location 2



Photo 2.3 General view of the mangrove in location 3



3 Mangrove Seedlings Description

All the seedlings in all 3 locations were inspected. In general, no *Mikania micrantha* and observable pollution in the 3 plantings locations and nearby environment. Only a few seedlings have the sign of pest but which is insignificant to the health of the seedlings. According to the Mangrove Seedling Proposal, the total number of seedlings was 382. However, only 342 seedlings could be found during the initial post-planting monitoring. It is suspected that the missing seedlings were dead, decayed and washed away by the tidal wave between the period of planting and the initial post-planting monitoring.

For location 1, Nearly half of the seedlings were alive, however, only a few of the seedlings on the most landward side have leaves (Photo 3.1). Many of the seedlings were in poor condition (no leaves but still alive (Photo 3.2)) and approximate half of the seedlings were dead (Photo 3.3).

For location 2, A large amount of the seedlings were dead (Photo 3.4), few of the seedlings on the most landward side have leaves (Photo 3.5) and several seedlings are in poor condition (no leaves but still alive)

For location 3, most of the seedlings have leaves and are in good condition (Photo 3.6). A small portion of the seedlings at the seaward side was in poor condition (no leaves but still alive) and dead (Photo 3.7).

General information of the seedlings at the 3 locations is summarized in the table below: (Figures in the table are the actual seedlings number on site, as some of the dead and decayed seedlings were expected to be washed away by the tidal wave, it will be listed as “Suspected decayed and washed away”)

	Location 1	Location 2	Location 3	Total
<i>Aegiceras Corniculatum</i>	16	19	33	68
<i>Avicennia Marina</i>	10	0	35	45
<i>Kandellia Obovata</i>	5	0	31	36
Live (unidentifiable as no leaves)	25	10	10	45
Dead	63	76	9	148
Total	119	45	36	342
Suspected decayed and washed away				382-342=40

Mortality Rate = 49%



Photo 3.1 A few of the seedlings on the most landward side have leaves



Photo 3.2 Seedling with poor condition (no leaves but still alive)



Photo 3.3 Dead Seedling



Photo 3.4 A large amount of the seedlings were dead and in poor condition



Photo 3.5 Few of the seedlings on the most landward side have leaves



Photo 3.6 Seedling with good condition



Photo 3.7 Dead and poor condition seedlings at the seaward side



4 Remedial actions

The ET is reviewing the possible cause of mortality of the mangrove seedlings.

As the mortality of the mangrove seedling is more than 25%, the monthly monitoring need to be stepped up to bi-weekly monitoring to observe the growth performance of the seedlings. The normal monitoring schedule will be resumed if the cause(s) of the event has been identified.

The contractor is recommended to replant the seedlings and review if the planting location should be moved to a more landward side to improve the survival rate.



5 Appendix A – Location of the planting sites



Map 5.1 Location 1 and 2 (near Western Open Channel and Western Groyne)



Map 5.2 Location 3 (Near Eastern Groyne)

**INSPECTION REPORT
FOR POST-PLANTING MONITORING OF
THE MANGROVE SEEDLING PLANTING AT
BATHING BEACH AT LUNG MEI**

7TH OCTOBER 2021





Contents

1	Introduction	2
2	The site and Mangrove Seedlings Location	2
3	Mangrove Seedlings Description	4
4	Remedial actions	8
5	Appendix A – Location of the planting sites	9



1 Introduction

Saraca Urban Forest (SUF) has been appointed to carry out the post-planting monitoring of the mangrove seedling planting at Bathing Beach at Lung Mei, Tai Po. The mangrove seedlings were inspected by Desmond Tang on 7th October 2021 on the ground during low tide.

The objectives of the report are:

- 1) To evaluation of the current condition, the performance and health conditions of the planted mangrove seedlings; and
- 2) To recommend the remedial actions.

2 The site and Mangrove Seedlings Location

The mangrove seedlings are in 3 planting locations, that are at Portion B near Western Open Channel and Western Groyne and near Eastern Groyne at the tidal zone of 1.2 to 1.6 mPD (Appendix A)



Photo 2.1 General view of the mangrove in location 1



Photo 2.2 General view of the mangrove in location 2



Photo 2.3 General view of the mangrove in location 3



3 Mangrove Seedlings Description

All the seedlings in all 3 locations were inspected. In general, no *Mikania micrantha* and observable pollution in the 3 plantings locations and nearby environment. Only a few seedlings have the sign of pest but which is insignificant to the health of the seedlings. According to the Mangrove Seedling Proposal, the total number of seedlings was 382. However, only 342 seedlings could be found during the initial post-planting monitoring. It is suspected that the missing seedlings were dead, decayed and washed away by the tidal wave between the period of planting and the initial post-planting monitoring.

For location 1, Nearly half of the seedlings were alive, however, only a few of the seedlings on the most landward side have leaves (Photo 3.1). Many of the seedlings were in poor condition (no leaves but still alive (Photo 3.2)) and approximate half of the seedlings were dead (Photo 3.3).

For location 2, A large amount of the seedlings were dead (Photo 3.4), few of the seedlings on the most landward side have leaves (Photo 3.5) and several seedlings are in poor condition (no leaves but still alive)

For location 3, most of the seedlings have leaves and are in good condition (Photo 3.6). A small portion of the seedlings at the seaward side was in poor condition (no leaves but still alive) and dead (Photo 3.7).

General information of the seedlings at the 3 locations is summarized in the table below: (Figures in the table are the actual seedlings number on site, as some of the dead and decayed seedlings were expected to be washed away by the tidal wave, it will be listed as “Suspected decayed and washed away”)

	Location 1	Location 2	Location 3	Total
<i>Aegiceras Corniculatum</i>	16	19	33	68
<i>Avicennia Marina</i>	10	0	35	45
<i>Kandellia Obovata</i>	5	0	31	36
Live (unidentifiable as no leaves)	25	8	10	9
Dead	63	78	9	150
Total	119	105	118	342
Suspected decayed and washed away				382-342=40

Mortality Rate = 49%



Photo 3.1 A few of the seedlings on the most landward side have leaves



Photo 3.2 Seedling with poor condition (no leaves but still alive)



Photo 3.3 Dead Seedling



Photo 3.4 A large amount of the seedlings were dead and in poor condition



Photo 3.5 Few of the seedlings on the most landward side have leaves



Photo 3.6 Seedling with good condition



Photo 3.7 Dead and poor condition seedlings at the seaward side



4 Remedial actions

The ET is reviewing the possible cause of mortality of the mangrove seedlings.

As the mortality of the mangrove seedlings is more than 25%, the monthly monitoring need to be stepped up to bi-weekly monitoring to observe the growth performance of the seedlings. The normal monitoring schedule will be resumed if the cause(s) of the event has been identified.

The contractor is recommended to replant the seedlings and review if the planting location should be moved to a more landward side to improve the survival rate.



5 Appendix A – Location of the planting sites



Map 5.1 Location 1 and 2 (near Western Open Channel and Western Groyne)



Map 5.2 Location 3 (Near Eastern Groyne)

**INSPECTION REPORT
FOR POST-PLANTING MONITORING OF
THE MANGROVE SEEDLING PLANTING AT
BATHING BEACH AT LUNG MEI**

22ND OCTOBER 2021





Contents

1	Introduction	2
2	The site and Mangrove Seedlings Location	2
3	Mangrove Seedlings Description	4
4	Remedial actions	9
5	Appendix A – Location of the planting sites	10



1 Introduction

Saraca Urban Forest (SUF) has been appointed to carry out the post-planting monitoring of the mangrove seedling planting at Bathing Beach at Lung Mei, Tai Po. The mangrove seedlings were inspected by Desmond Tang on 22nd October 2021 on the ground during low tide.

The objectives of the report are:

- 1) To evaluation of the current condition, the performance and health conditions of the planted mangrove seedlings; and
- 2) To recommend the remedial actions.

2 The site and Mangrove Seedlings Location

The mangrove seedlings are in 3 planting locations, that are at Portion B near Western Open Channel and Western Groyne and near Eastern Groyne at the tidal zone of 1.2 to 1.6 mPD (Appendix A)



Photo 2.1 General view of the mangrove in location 1



Photo 2.2 General view of the mangrove in location 2



Photo 2.3 General view of the mangrove in location 3



3 Mangrove Seedlings Description

All the seedlings in all 3 locations were inspected. The condition of all the seedlings was comparable to the previous inspection. According to the Mangrove Seedling Proposal, the total number of seedlings was 382. However, only 342 seedlings could be found during the initial post-planting monitoring. It is suspected that the missing seedlings were dead, decayed and washed away by the tidal wave between the period of planting and the initial post-planting monitoring.

The total number of the seedlings was decreased, it may be due to the recent typhoon signal no.8, some of the dead/decayed seedlings were washed away. In general, no *Mikania micrantha* and observable pollution in the 3 plantings locations and nearby environment. Only a few seedlings have the sign of pest but which is insignificant to the health of the seedlings.

For location 1, Nearly half of the seedlings were alive, however, only a few of the seedlings on the most landward side have leaves (Photo 3.1). Many of the seedlings were in poor condition (no leaves but still alive (Photo 3.2)) and approximate half of the seedlings were dead (Photo 3.3).

For location 2, A large amount of the seedlings were dead (Photo 3.4), few of the seedlings on the most landward side have leaves (Photo 3.5) and several seedlings are in poor condition (no leaves but still alive)

For location 3, most of the seedlings have leaves and are in good condition (Photo 3.6). A small portion of the seedlings at the seaward side was in poor condition (no leaves but still alive) and dead (Photo 3.7).



General information of the seedlings at the 3 locations is summarized in the table below:
 (Figures in the table are the actual seedlings number on site, as some of the dead and decayed seedlings were expected to be washed away by the tidal wave, it will be listed as "Suspected decayed and washed away")

	Location 1	Location 2	Location 3	Total
<i>Aegiceras Corniculatum</i>	16	17	33	66
<i>Avicennia Marina</i>	6	0	34	40
<i>Kandellia Obovata</i>	7	0	31	38
Live (unidentifiable as no leaves)	23	8	10	41
Dead	60	74	10	144
Total	112	99	118	329
Suspected decayed and washed away				382-329=53

Mortality Rate = 52%



Photo 3.1 A few of the seedlings on the most landward side have leaves



Photo 3.2 Seedling with poor condition (no leaves but still alive)



Photo 3.3 Dead Seedling



Photo 3.4 A large amount of the seedlings were dead and in poor condition



Photo 3.5 Few of the seedlings on the most landward side have leaves



Photo 3.6 Seedling with good condition



Photo 3.7 Dead and poor condition seedlings at the seaward side



4 Remedial actions

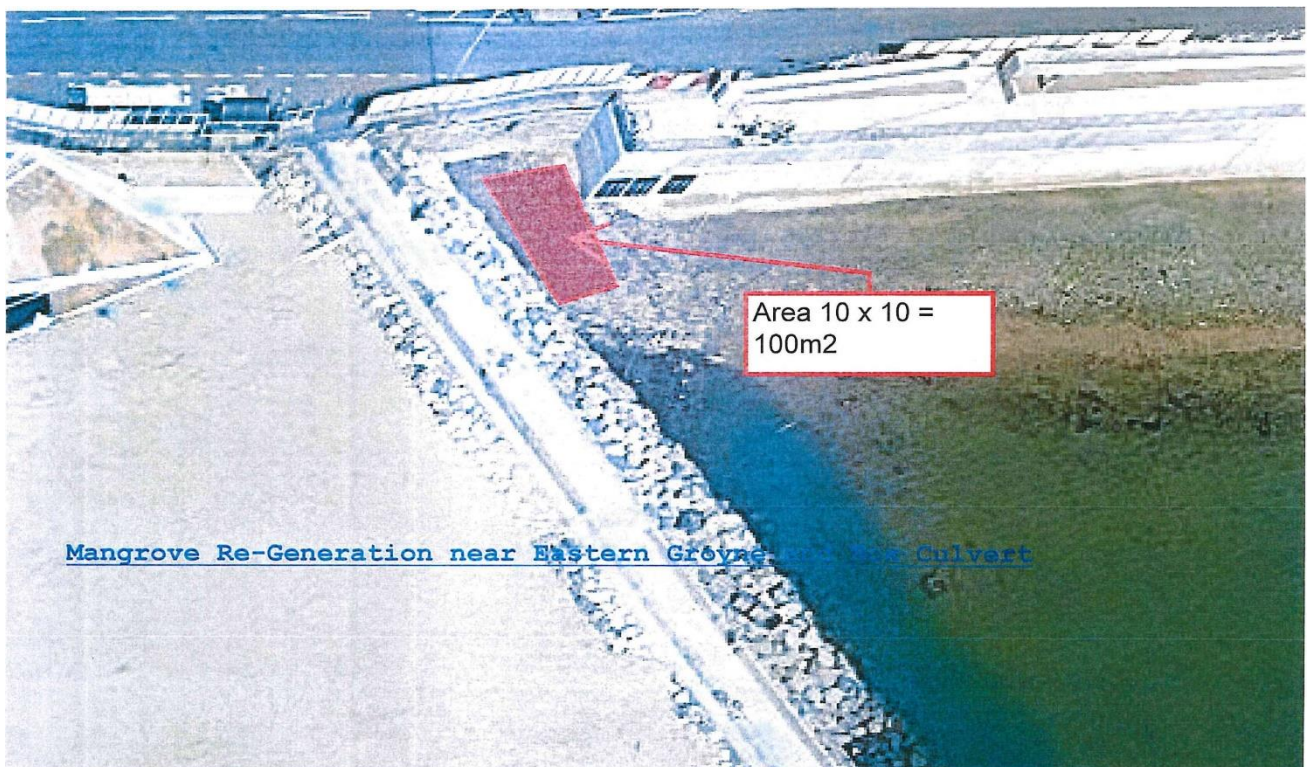
The ET is still reviewing the possible cause of mortality of the mangrove seedlings. Preliminary, based on the observation from Sep to Oct, there is no sign for the poor health seedlings to re-sprout and is expected to decline over time. It is suspected that the condition of location 1 and location 2, especially the seaward side is not optimal for the seedlings to establish and grow. The contractor is recommended to replant the seedlings and review if the planting location should be moved to a more landward side to improve the survival rate.



5 Appendix A – Location of the planting sites



Map 5.1 Location 1 and 2 (near Western Open Channel and Western Groyne)



Map 5.2 Location 3 (Near Eastern Groyne)