



PROJECT No.: TCS/00874/16

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

**POST-CONSTRUCTION MONITORING AND AUDIT
REPORT (JULY TO AUGUST 2022)**

PREPARED FOR
WELCOME CONSTRUCTION CO., LTD.

Quality Index

Date	Reference No.	Prepared By	Certified By
30 September 2022	TCS00874/16/600/R0801v2	 Nicola Hon Environmental Consultant	 T.W. Tam Environmental Team Leader

Revision	Date	Description
1	28 September 2022	First submission
2	30 September 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 monthly 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 6th Post-construction Monitoring and Audit Report presents the result of landscape EM&A and mangrove seedling planting monitoring for 1st July and 31st August 2022 (hereinafter referred as “the Reporting Period”). Post-construction phase Landscape and Visual auditing for 12-month establishment period and one year monitoring of mangrove seedling planting was completed on 31st August 2022.

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	11 th and 25 th July 2022 12 th and 29 th August 2022
Ecology	Mangrove post-monitoring	25 th July 2022 29 th August 2022

- ES.08 The bi-weekly landscape and visual inspection were undertaken in the Reporting Period. There were several reminders provided in the checklist for necessary follow up. The Contractor advised that handover inspection and meeting with 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 hand overed to HyD and ASD. No further follow up is required under this Contract.

- ES.09 As remedial action for mortality of the mangrove seedling more than 50% in previous month, 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”. The condition of existing and newly planted mangrove seedlings would be closely monitored, until the end of establishment period in the end of August 2022.
- ES.10 Mangrove post-monitoring was undertaken on **25th July 2022 and 29th August 2022**. All the seedlings in all 4 locations were inspected. The condition of all the seedlings in locations 1 to 3 was comparable to the previous inspection. The mortality rate of mangrove seedlings was 5.6% and 10.2% in July 2022 and August 2022 respectively. No remedial action is therefore required according to the Event and Action Plan.

ENVIRONMENTAL COMPLAINT

- ES.11 No environmental complaint was recorded or received in the Reporting Period.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

- ES.12 No environmental summons or successful prosecutions were recorded in the Reporting Period.

REPORTING CHANGE

- ES.13 No reporting changes were made in the Reporting Period

FUTURE KEY ISSUES

- ES.14 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.15 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 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 monthly 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 6th Post-construction Monitoring and Audit Report presents the result of landscape EM&A and mangrove seedling planting monitoring for **1st July** and **31st August 2022**. Post-construction phase Landscape and Visual auditing for 12-month establishment period and one year monitoring of mangrove seedling planting was completed on 31st August 2022.

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 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.

2.3 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 **11th & 25th July 2022 and 12th & 29th August 2022**. The inspection results in form of checklists are shown in **Appendix C**.
- 3.2.2 There were several reminders provided in the checklist for necessary follow up. The Contractor advised that handover inspection and meeting with 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. LCSD raised only two defects to rectify including i) guying of all trees to be adjusted; and ii) the planters at the eastern groyne to be weeded again. All the above defects were completed in August 2022.
- 3.2.3 For the replanted plants at the Eastern box culvert planter after modification of the planter by HyD, maintenance for those revised planting is not responsible under this Contract anymore. Besides, the planting between Ting Kok Road and the ASD building have not been planted and maintained under this Contract. No follow up is required under this Contract.

3.3 RESULTS OF MANGROVE MONITORING

- 3.3.1 As remedial action for mortality of the mangrove seedling more than 50% in previous months, 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”.
- 3.3.2 Mangrove post-monitoring was undertaken on **25th July 2022 and 29th August 2022**. All the seedlings in all 4 locations were inspected. The condition of all the seedlings in locations 1 to 3 was comparable to the previous inspection. In general, no *Mikania micrantha* and observable pollution in the 4 plantings locations and nearby environment. Only a few seedlings have the sign of pest but which is insignificant to the health of the seedlings.
- 3.3.3 The total number of seedlings during the inspection was 462 after the replanting at locations 3 and 4. Since after the replanting, the baseline is changed and will be reset, all the previously washed away seedlings are not included in the counting
- 3.3.4 The mortality rate of mangrove seedlings was 5.6% and 10.2% in July 2022 and August 2022 respectively. No remedial action is therefore required according to the Event and Action Plan.
- 3.3.5 Detailed post-planting monitoring reports of the mangrove seedling planting are shown in **Appendix D**.

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

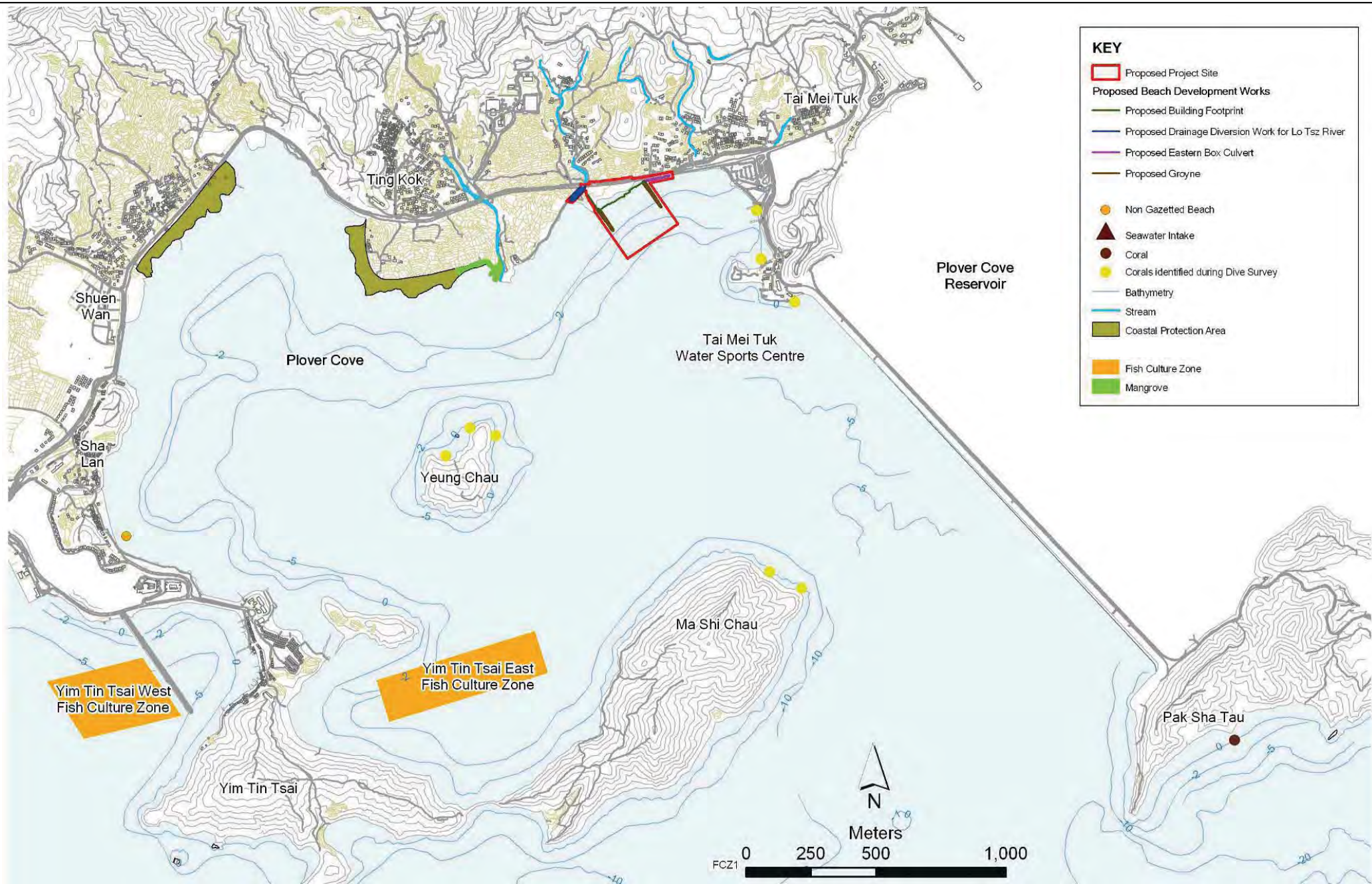
- 4.1.1 This is the 6th Post-construction Monitoring and Audit Report presents the result of landscape EM&A and mangrove seedling planting monitoring for 1st July and 31st August 2022
- 4.1.2 The landscape and visual inspection were undertaken on 11th & 25th July 2022 and 12th & 29th August 2022. There were several reminders provided in the checklist for necessary follow up. The Contractor advised that handover inspection and meeting with 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 hand overed to HyD and ASD. No further follow up is required under this Contract.
- 4.1.3 Mangrove post-monitoring was undertaken on 25th July 2022 and 29th August 2022. All the seedlings in all 4 locations were inspected. The condition of all the seedlings in locations 1 to 3 was comparable to the previous inspection. The mortality rate of mangrove seedlings was 5.6% and 10.2% in July 2022 and August 2022 respectively. No remedial action is therefore required according to the Event and Action Plan.

4.2 RECOMMENDATIONS



- 4.2.1 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.
- 4.2.2 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

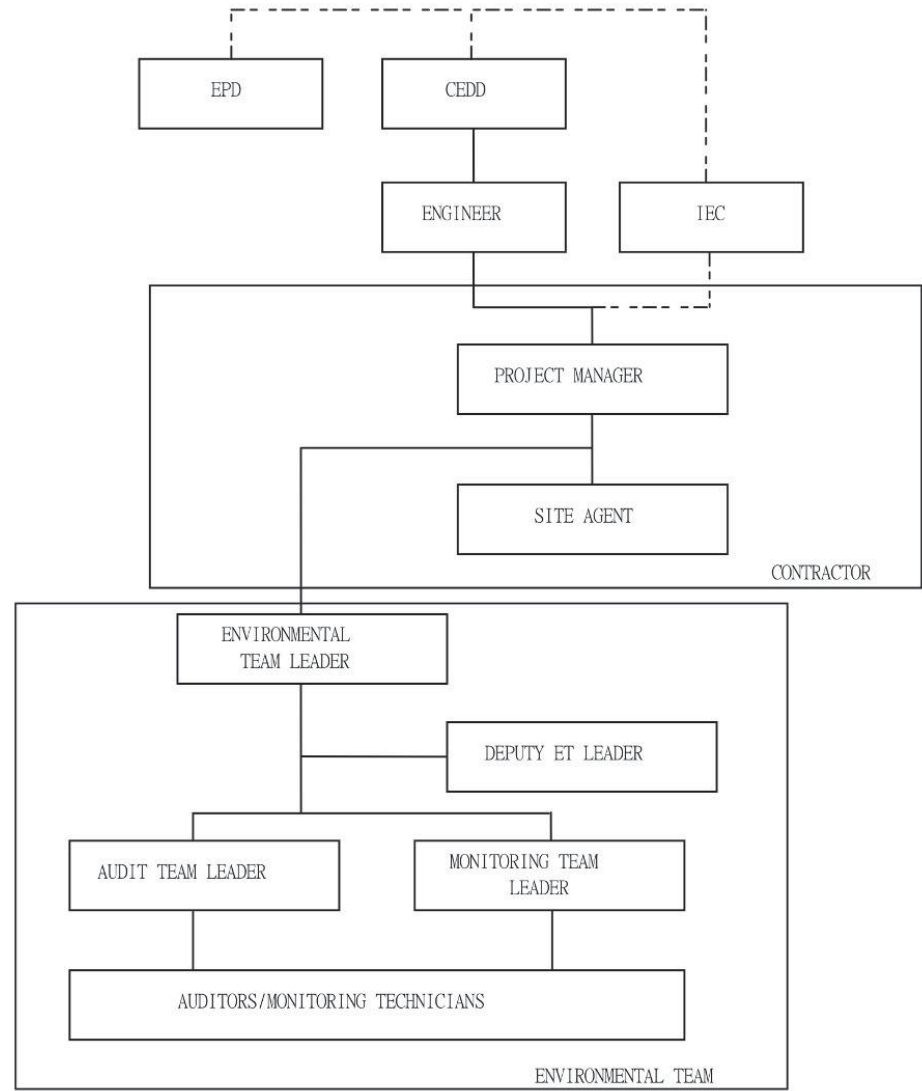


KEY	
	Proposed Project Site
Proposed Beach Development Works	
	Proposed Building Footprint
	Proposed Drainage Diversion Work for Lo Tsz River
	Proposed Eastern Box Culvert
	Proposed Groyne
●	Non Gazetted Beach
▲	Seawater Intake
●	Coral
●	Corals identified during Dive Survey
—	Bathymetry
—	Stream
	Coastal 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: -	Drawn: AM	Date: 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 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: 11th July 2022 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?	✓			<ul style="list-style-type: none"> ● The plants in the Eastern box culvert planter were removed for several months without replacement. ● The Railing & debris damage the planters at the planter near Ting Kok Road
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?	✓			
1.8	Are the plantings including species, size and plants quality completed following the landscape plan?	✓			Some of <i>Angelonia angustifolia</i> in the planters along the Ting Kok Road were still missing.
2	Protection of trees				
2.1	The physical protection (fencing) is in place?	✓			
2.2	Any poor health condition or dead tree observed?		✓		
2.3	Any poor practice of pruning observed?		✓		
2.4	Are the trees planted in right place according to the landscape plan?	✓			



Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
2.5	The tree supporting system are in good condition?		✓		<ul style="list-style-type: none"> Some ties and stakes were detached at the Western box culvert. 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.				
3.1	Implementation and maintenance of mitigation measures, to ensure conformity with agreed designs?	✓			

Summary and follow up actions / Remarks:

- The plants in the Eastern box culvert planter were removed without replacement (Photo I).
- Some ties and stakes were detached at the Western box culvert (Photo J).
- Some ties and stakes already girdled and affected the growth of the trees (Photo K and Photo L).
- Some of *Angelonia angustifolia* in the planters along the Ting Kok Road were still missing (Photo M).
- The Railing & debris damage the planters at the planter near Ting Kok Road (Photo S)
- The Contractor should handle the prolonged outstanding follow-up works as soon as possible.

Follow up action by contractor:

- Plants in the planters on the Western groyne were replaced (Photo N).
- No water logging is observed in the planters on the Eastern groyne (Photo O).
- Some ties and stakes were removed at the Western box culvert (Photo P).
- Undesirable species like *Mikania micrantha* and weeds were removed in the planters on the Western groyne (Photo Q).
- Some *Angelonia angustifolia* were replanted in the planters along the Ting Kok Road (Photo R).
- The Contractor was seriously reminded to urgently follow up in accordance with the above mentioned observations/remarks provided in the checklist with their horticulture sub-contractor.

Reminders:

- Trunk Girdling by the ties and stakes was observed on some of the trees. The Contractor(s) is/are required to adjust the ties and remove the unnecessary ties to avoid damage to the tree as a matter of urgency or tree replacement may be required before rejection from maintenance authority during handover.
- The Contractor(s) is/are reminded to adjust or remove if necessary the guying and staking of all retained/newly planted trees to ensure the tree supporting systems are properly installed, in order



- to avoid further damage of newly planted trees or the final maintenance department(s) will not accept during handover stage.
3. The Contractor(s) is/are reminded to replant *Scaevola taccada* in the Eastern box culvert planters following the landscape plan.
 4. The Contractor(s) is/are reminded to keep replanting *Angelonia angustifolia* at the planters along the Ting Kok Road following the landscape plan.
 5. The Contractor(s) is/are reminded to clear and re-arrange the railing & debris at the planter near Ting Kok Road.
 6. Urgent rectification by the Contractor(s) is required to achieve sufficient establishment for plantings



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.



No plants in the Eastern box culvert planter.

Photo J.



Some ties and stakes were detached at the Western box culvert.

Photo K.



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

Photo L.



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



Photo M.



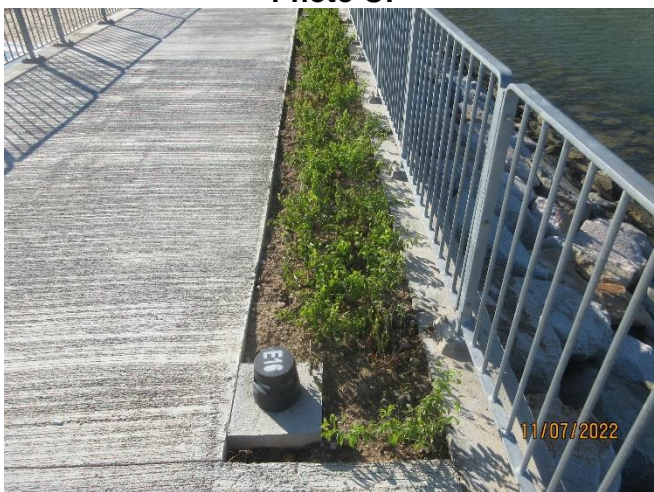
Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were still missing.

Photo N.



Plants in the planters on the Western groyne were replaced.

Photo O.



No water logging is observed in the planters on the Eastern groyne.

Photo P.



Some ties and stakes were removed at the Western box culvert.



Photo Q.



Undesirable species like *Mikania micrantha* and weeds were removed in the planters on the Western groyne.

Photo R.



Some *Angelonia angustifolia* were replanted in the planters along the Ting Kok Road.

Photo S



The Railing & debris damage the planters at the planter near Ting Kok Road



Date/ Time: 25th July 2022 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?	✓			<ul style="list-style-type: none"> ● The plants in the Eastern box culvert planter were removed for several months without replacement. ● The Railing & debris damage the planters at the planter near Ting Kok Road
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?	✓			
1.8	Are the plantings including species, size and plants quality completed following the landscape plan?	✓			
2	Protection of trees				
2.1	The physical protection (fencing) is in place?	✓			
2.2	Any poor health condition or dead tree observed?		✓		
2.3	Any poor practice of pruning observed?		✓		
2.4	Are the trees planted in right place according to the landscape plan?	✓			



Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
2.5	The tree supporting system are in good condition?		✓		Some ties and stakes still 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.				
3.1	Implementation and maintenance of mitigation measures, to ensure conformity with agreed designs?	✓			

Summary and follow up actions / Remarks:

1. The ties and stakes issue is partly resolved as some staking was removed, but some staking still affects the growth of the trees (Photo I).
2. The plants in the Eastern box culvert planter were removed without replacement (Photo J).
3. *Pennisetum alopecuroides* in the outdoor shower was replaced with *Bougainvillea spectabilis* (Photo K and Photo L).
4. The Railing & debris damage the planters at the planter near Ting Kok Road (Photo Q).
5. The Contractor should handle the prolonged outstanding follow-up works as soon as possible.

Follow up action by contractor:

1. Some of the ties and stakes were removed at the Western box culvert (Photo M) and along the Ting Kok Road Photo N).
2. Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were replaced with *Ophiopogon jaburan* and *Schefflera arboricola*. (Photo O and Photo P).
3. The Contractor was seriously reminded to urgently follow up in accordance with the above mentioned observations/remarks provided in the checklist with their horticulture sub-contractor.

Reminders:

1. Trunk Girdling by the ties and stakes was observed on some of the trees. The Contractor(s) is/are required to adjust the ties and remove the unnecessary ties to avoid damage to the tree as a matter of urgency or tree replacement may be required before rejection from maintenance authority during handover.
2. The Contractor(s) is/are reminded to adjust or remove if necessary the guying and staking of all retained/newly planted trees to ensure the tree supporting systems are properly installed, in order to avoid further damage of newly planted trees or the final maintenance department(s) will not accept during handover stage.



3. The Contractor(s) is/are reminded to replant *Scaevola taccada* in the Eastern box culvert planter following the landscape plan.
4. The Contractor(s) is/are reminded to clear and re-arrange the railing & debris at the planter near Ting Kok Road.
5. Urgent rectification by the Contractor(s) is required to achieve sufficient establishment for plantings



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.



Some ties and stakes still girdled and affected the growth of the trees.

Photo J.



No plants in the Eastern box culvert planter.

Photo K.



Pennisetum alopecuroides at outdoor shower was replaced with *Bougainvillea spectabilis*.

Photo L.



Pennisetum alopecuroides at outdoor shower was replaced with *Bougainvillea spectabilis*.



Photo M.



Some ties and stakes were removed at the Western box culvert.

Photo N.



Some ties and stakes were removed along the Ting Kok Road.

Photo O.



Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were replaced with *Ophiopogon jaburan* and *Schefflera arboricola*.

Photo P.



Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were replaced with *Ophiopogon jaburan*.



Photo Q.



The Railing & debris damage the planters at the planter near Ting Kok Road



Date/ Time: 12th August 2022 **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?	✓			<ul style="list-style-type: none"> ● The plants in the Eastern box culvert planter were removed for several months without replacement. ● The Railing & debris damage the planters at the planter near Ting Kok Road
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?	✓			
1.8	Are the plantings including species, size and plants quality completed following the landscape plan?	✓			
2	Protection of trees				
2.1	The physical protection (fencing) is in place?	✓			
2.2	Any poor health condition or dead tree observed?		✓		
2.3	Any poor practice of pruning observed?		✓		
2.4	Are the trees planted in right place according to the landscape plan?	✓			



Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
2.5	The tree supporting system are in good condition?		✓		Some ties and stakes still 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.				
3.1	Implementation and maintenance of mitigation measures, to ensure conformity with agreed designs?	✓			

Summary and follow up actions / Remarks:

1. The ties and stakes issue is partly resolved as some staking was removed, but some staking still affects the growth of the trees (Photo I).
2. The plants in the Eastern box culvert planter were removed without replacement (Photo J).
3. *Pennisetum alopecuroides* in the outdoor shower were replaced with *Bougainvillea spectabilis* (Photo K and Photo L).
4. The Railing & debris damage the planters at the planter near Ting Kok Road (Photo O and Photo P)
5. The Contractor should handle the prolonged outstanding follow-up works as soon as possible.

Follow up action by contractor:

1. Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were replaced with *Ophiopogon jaburan* and *Schefflera arboricola*. (Photo M and Photo N).
2. The Contractor was seriously reminded to urgently follow up in accordance with the above mentioned observations/remarks provided in the checklist with their horticulture sub-contractor.

Reminders:

1. Trunk Girdling by the ties and stakes was observed on some of the trees. The Contractor(s) is/are required to adjust the ties and remove the unnecessary ties to avoid damage to the tree as a matter of urgency or tree replacement may be required before rejection from maintenance authority during handover.
2. The Contractor(s) is/are reminded to adjust or remove if necessary the guying and staking of all retained/newly planted trees to ensure the tree supporting systems are properly installed, in order to avoid further damage to newly planted trees or the final maintenance department(s) will not accept during handover stage.



3. The Contractor(s) is/are reminded to replant *Scaevola taccada* in the Eastern box culvert planter following the landscape plan.
4. The Contractor(s) is/are reminded to clear and re-arrange the railing & debris at the planter near Ting Kok Road.
5. Urgent rectification by the Contractor(s) is required to achieve sufficient establishment for plantings



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.



Some ties and stakes still girdled and affected the growth of the trees.

Photo J.



No plants in the Eastern box culvert planter.

Photo K.



Pennisetum alopecuroides in the outdoor shower were replaced with *Bougainvillea spectabilis*.

Photo L.



Pennisetum alopecuroides in the outdoor shower were replaced with *Bougainvillea spectabilis*.



Photo M.



Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were replaced with *Ophiopogon jaburan* and *Schefflera arboricola*.

Photo N.



Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were replaced with *Ophiopogon jaburan*.

Photo O.



The Railing & debris damage the planters at the planter near Ting Kok Road

Photo P.



The Railing & debris damage the planters at the planter near Ting Kok Road



Date/ Time: 29th August 2022 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?	✓			<ul style="list-style-type: none"> ● The plants in the Eastern box culvert planter were removed for several months without replacement. ● The Railing & debris damage the planters at the planter near Ting Kok Road
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?	✓			Some weeds were found in the planters along the Ting Kok Road.
1.6	Are the debris controlled at an acceptable level?	✓			
1.7	Are the plants planted in right place according to the landscape plan?	✓			
1.8	Are the plantings including species, size and plants quality completed following the landscape plan?	✓			Some of the newly planted <i>Ophiopogon jaburan</i> were found dead
2	Protection of trees				
2.1	The physical protection (fencing) is in place?	✓			
2.2	Any poor health condition or dead tree observed?		✓		
2.3	Any poor practice of pruning observed?		✓		
2.4	Are the trees planted in right place according to the landscape plan?	✓			



Item	Mitigation Measures				Actions/ Remarks
		Yes	No	N/A	
2.5	The tree supporting system are in good condition?		✓		<ul style="list-style-type: none"> ● Some ties and stakes still girdled and affected the growth of the trees. ● Some unnecessary ties and stakes are attached between the trees. ● Some stakes were broken. ● A <i>Michelia x alba</i> (T047) in the car park was found slightly tilted.
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 and follow up actions / Remarks:

1. The ties and stakes issue is partly resolved as some staking was removed, but some staking still affects the growth of the trees (Photo I).
2. Some unnecessary ties and stakes are attached between the trees (Photo J).
3. Some stakes were broken (Photo K).
4. A *Michelia x alba* (T047) in the car park was found slightly tilted (Photo L).
5. The plants in the Eastern box culvert planter were removed without replacement (Photo M).
6. *Pennisetum alopecuroides* in the outdoor shower were replaced with *Bougainvillea spectabilis* (Photo N).
7. Some of the newly planted *Ophiopogon jaburan* were found dead (Photo Q).
8. Some weeds were found in the planters along the Ting Kok Road (Photo R).
9. Some *Pueraria sp.* were found in planters and extending to the footpath in the Western box culvert (Photo S).
10. Reverted variegated leaves are observed on a *Terminalia mantaly variegata* along the Ting Kok Road (Photo T).
11. The Railing & debris damage the planters at the planter near Ting Kok Road (Photo U)
12. The Contractor should handle the prolonged outstanding follow-up works as soon as possible.

Follow up action by contractor:

1. Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were replaced with *Ophiopogon jaburan* and *Schefflera arboricola*. (Photo O and Photo P).
2. The Contractor was seriously reminded to urgently follow up in accordance with the above mentioned observations/remarks provided in the checklist with their horticulture sub-contractor.



Reminders:

1. Trunk Girdling by the ties and stakes still observed on some of the trees. The Contractor(s) is/are required to adjust the ties and remove the unnecessary ties to avoid damage to the tree as a matter of urgency or tree replacement may be required before rejection from maintenance authority during handover.
2. The Contractor(s) is/are reminded to adjust or remove if necessary the guying and staking of all retained/newly planted trees to ensure the tree supporting systems are properly installed, in order to avoid further damage to newly planted trees or the final maintenance department(s) will not accept during handover stage.
3. The Contractor(s) is/are reminded to replant *Scaevola taccada* in the Eastern box culvert planter following the landscape plan.
4. The Contractor(s) is/are reminded to remove the weeds and dead plants in the planters along the Ting Kok Road and replant following the landscape plan.
5. The Contractor(s) is/are reminded to clear and re-arrange the railing & debris at the planter near Ting Kok Road.
6. Urgent rectification by the Contractor(s) is required to achieve sufficient establishment for plantings



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.



Some ties and stakes still girdled and affected the growth of the trees.

Photo J.



Some unnecessary ties and stakes are attached between the trees.

Photo K.



Some stakes were broken.

Photo L.



A *Michelia x alba* was found slightly tilted.



Photo M.



No plants in the Eastern box culvert planter.

Photo N.



Pennisetum alopecuroides in the outdoor shower were replaced with *Bougainvillea spectabilis*.

Photo O.



Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were replaced with *Ophiopogon jaburan* and *Schefflera arboricola*.

Photo P.



Some of the *Angelonia angustifolia* in the planters along the Ting Kok Road were replaced with *Ophiopogon jaburan*.



Photo Q.



Some of the newly planted *Ophiopogon jaburan* were found dead.

Photo R.



Some weeds were found in the planters along the Ting Kok Road.

Photo S.



Some *Pueraria sp.* were found in planters and extending to footpath in the Western box culvert.

Photo T.



Reverted variegated leaves were observed on a *Terminalia mantaly variegata*.



Photo U.



The Railing & debris damage the planters at the planter near Ting Kok Road



Signature:

		Signature	Date
Audited by	Registered Landscape Architect	 	13/9/2022
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**

25TH JUL 2022





Contents

1	Introduction	2
2	The site and Mangrove Seedlings Location	2
3	Mangrove Seedlings Description	5
4	Summary and 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 25th Jul 2022 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 remedial actions.

2 The site and Mangrove Seedlings Location

The mangrove seedlings are in 4 planting locations. One more location - Location 4, a new location next to the eastern side of the original Location 3 is added as a replanting site. As informed by the contractor, the replanting was carried out on 28th June 2022 at location 4. All the mangrove seedlings locations 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



Photo 2.4 General view of the mangrove in location 4



3 Mangrove Seedlings Description

All the seedlings in all 4 locations were inspected. The condition of all the seedlings in locations 1 to 3 was comparable to the previous inspection. In general, no *Mikania micrantha* and observable pollution in the 4 plantings locations and nearby environment. Only a few seedlings have the sign of pest but which is insignificant to the health of the seedlings.

The total number of seedlings during the inspection was 462 after the replanting at locations 3 and 4. Since after the replanting, the baseline is changed and will be reset, all the previously washed away seedlings are not included in the counting

For location 1, only the seedlings on the most landward side have leaves (Photo 3.1). The poor health seedlings (no leaves but still alive) are gradually declining.

For location 2, similar to location 1, only the seedlings on the most landward side have leaves (Photo 3.2) and several poor health seedlings (very few leaves but still alive (Photo 3.3)) are also gradually declining.

For location 3, most of the seedlings have normal foliage density and are in good condition (Photo 3.4). The replanting seedlings are in fair condition (Photo 3.5).

For location 4, Nearly all of the seedlings have normal foliage density and are in fair condition (Photo 3.6). Only a few of them are declining or dead (Photo 3.7 and 3.8).

General information about the seedlings at the 4 locations is summarized in the table below:

	Location 1	Location 2	Location 3	Location 4	Total
<i>Aegiceras Corniculatum</i>	13	14	40	92	159
<i>Avicennia Marina</i>	4	0	41	92	137
<i>Kandellia Obovata</i>	4	0	43	90	137
Live (unidentifiable as no leaves)	1	0	1	1	3
Dead	11	0	2	13	26
Total	33	14	127	288	462

*Mortality Rate = 5.6%

*The baseline used for the calculation of mortality rate is reset after the replanting, so the total number of the seedlings after replanting is 462.



Photo 3.1 The seedling on the most landward side has leaves and is in good condition



Photo 3.2 The seedling on the most landward side has leaves



Photo 3.3 The seedling with very few leaves but still alive



Photo 3.4 The seedling is in good condition



Photo 3.5 The replanting seedling is in fair condition



Photo 3.6 The replanting seedling is in fair condition



Photo 3.7 Declining seedling



Photo 3.8 Dead seedling



4 Summary and Remedial actions

Based on the observation from Sep 2021 to Jul 2022, only the seedlings on the landward side thrive. Those poor health seedlings with no sign of re-sprout and expected to decline and be washed away by the tidal over time, which could be concluded in the recent inspections. There are some dead seedlings at location 4 which is considered normal and acceptable in this season, and the environmental condition is not favouring for seedlings to grow, the temperature is quite high and have a thunderstorm or even typhoons. Further monitoring is needed to monitor the growth of the seedlings.



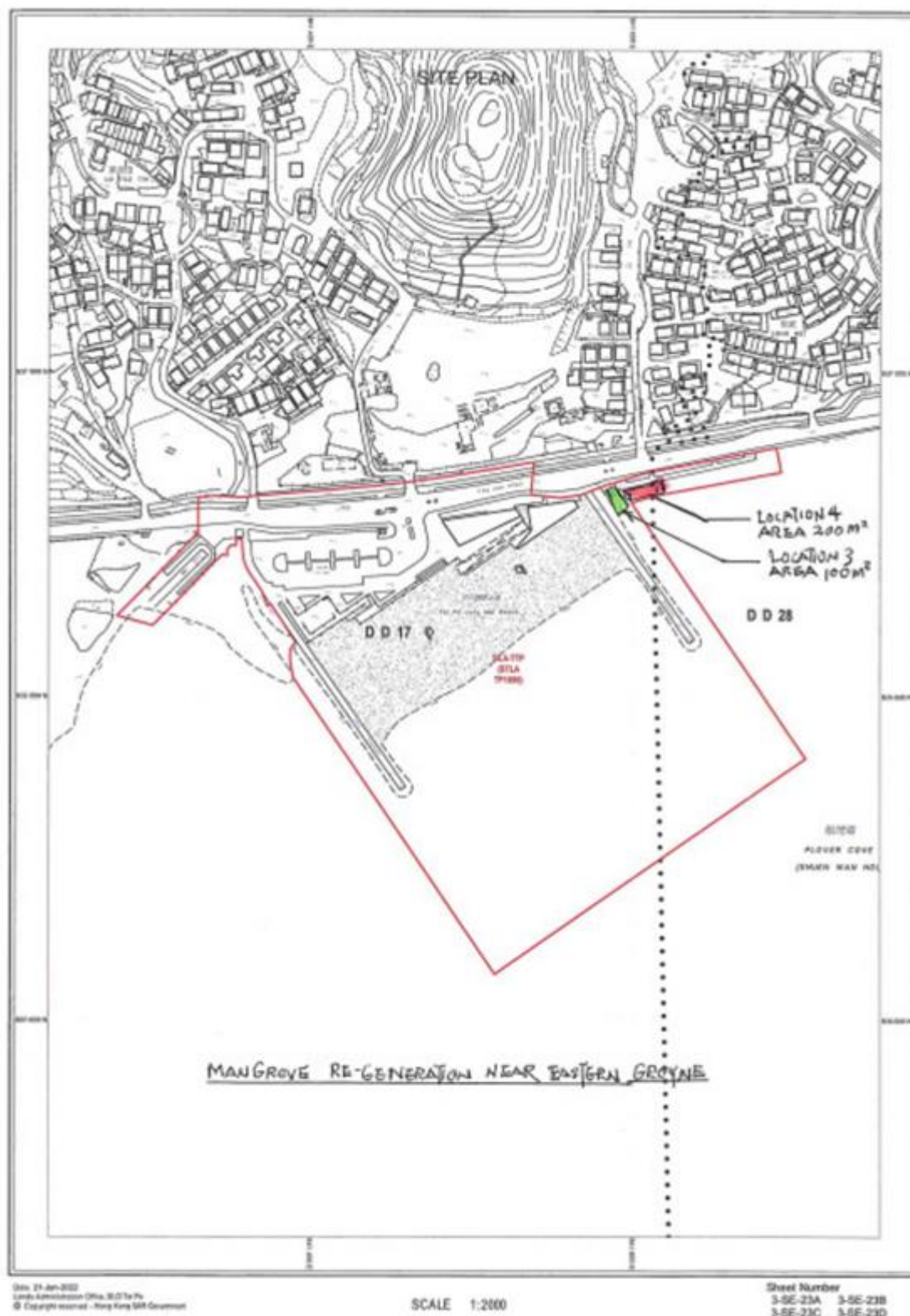
5 Appendix A – Location of the planting sites



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



Map 5.2 Location 3 (Near Eastern Groyne)



Map 5.3 Location 4 (Next to location 3 Near Eastern Groyne)

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

29TH AUG 2022





Contents

1	Introduction	2
2	The site and Mangrove Seedlings Location	2
3	Mangrove Seedlings Description	5
4	Summary and 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 29th Aug 2022 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 remedial actions.

2 The site and Mangrove Seedlings Location

The mangrove seedlings are in 4 planting locations. One more location - Location 4, a new location next to the eastern side of the original Location 3 is added as a replanting site. As informed by the contractor, the replanting was carried out on 28th June 2022 at location 4. All the mangrove seedlings locations 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



Photo 2.4 General view of the mangrove in location 4



3 Mangrove Seedlings Description

All the seedlings in all 4 locations were inspected. The condition of all the seedlings in locations 1 to 3 was comparable to the previous inspection. In general, no *Mikania micrantha* and observable pollution in the 4 plantings locations and nearby environment. Only a few seedlings have the sign of pest but which is insignificant to the health of the seedlings.

The total number of seedlings during the inspection was 462 after the replanting at locations 3 and 4. Since after the replanting, the baseline is changed and will be reset, all the previously washed away seedlings are not included in the counting

For location 1, only the seedlings on the most landward side have leaves (Photo 3.1). The poor health seedlings (no leaves but still alive) are gradually declining.

For location 2, similar to location 1, only the seedlings on the most landward side have leaves (Photo 3.2) and several poor health seedlings (very few leaves but still alive (Photo 3.3)) are also gradually declining.

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For location 4, Nearly all of the seedlings have normal foliage density and are in fair condition (Photo 3.6). Only a few of them are declining or dead (Photo 3.7 and 3.8).

General information about the seedlings at the 4 locations is summarized in the table below:

	Location 1	Location 2	Location 3	Location 4	Total
<i>Aegiceras Corniculatum</i>	13	13	38	73	137
<i>Avicennia Marina</i>	4	0	40	68	112
<i>Kandellia Obovata</i>	4	0	42	81	127
Live (unidentifiable as no leaves)	1	0	3	35	39
Dead	6	1	4	23	34
Washed away by the tidal wave	-	-	-	-	13
Total	28	14	127	280	462

*Mortality Rate = 10.2%

*The baseline used for the calculation of mortality rate is reset after the replanting, so the total number of the seedlings after replanting is 462.



Photo 3.1 The seedling on the most landward side has leaves and is in good condition

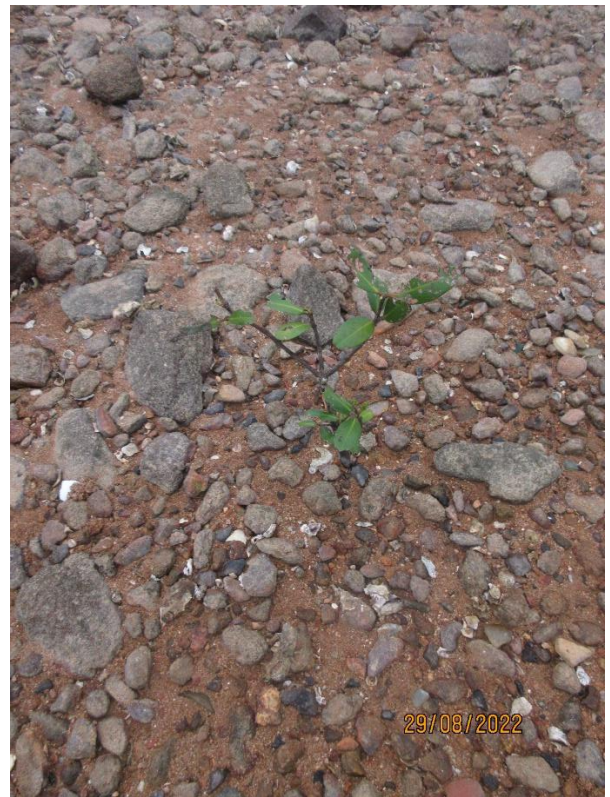


Photo 3.2 The seedling on the most landward side has leaves

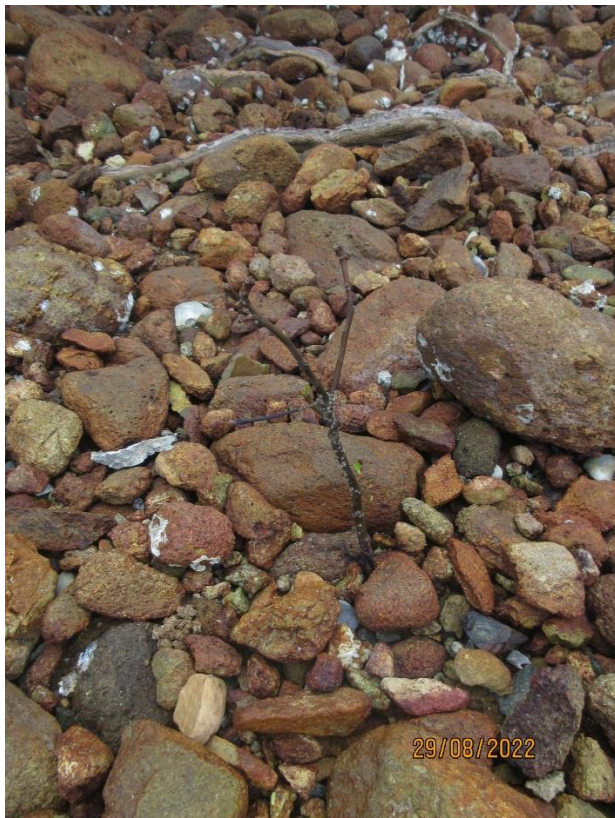




Photo 3.3 The seedling with very few leaves but still alive



Photo 3.5 The replanting seedling is in fair condition

Photo 3.4 The seedling is in good condition



Photo 3.6 The replanting seedling is in fair condition



Photo 3.7 Declining seedling

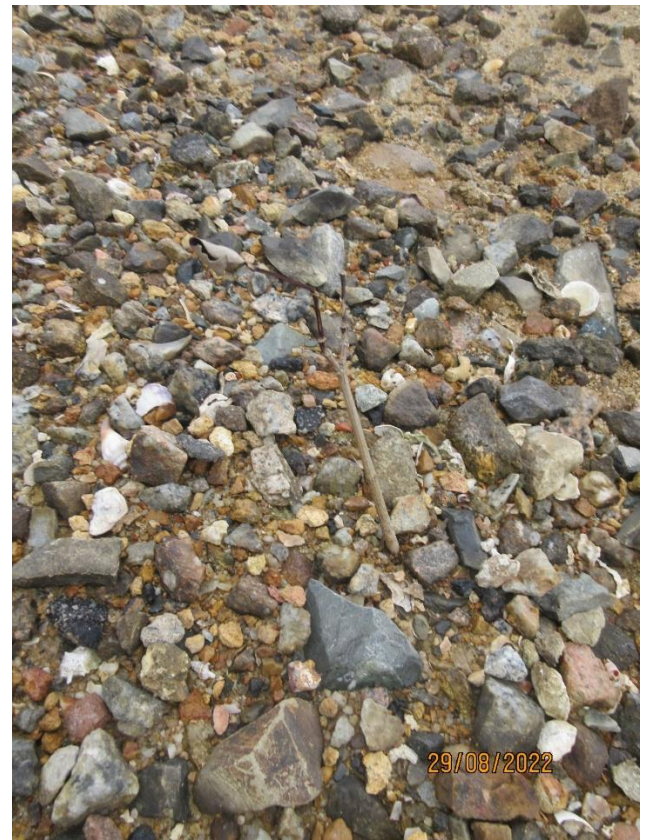


Photo 3.8 Dead seedling

4 Summary and Remedial actions

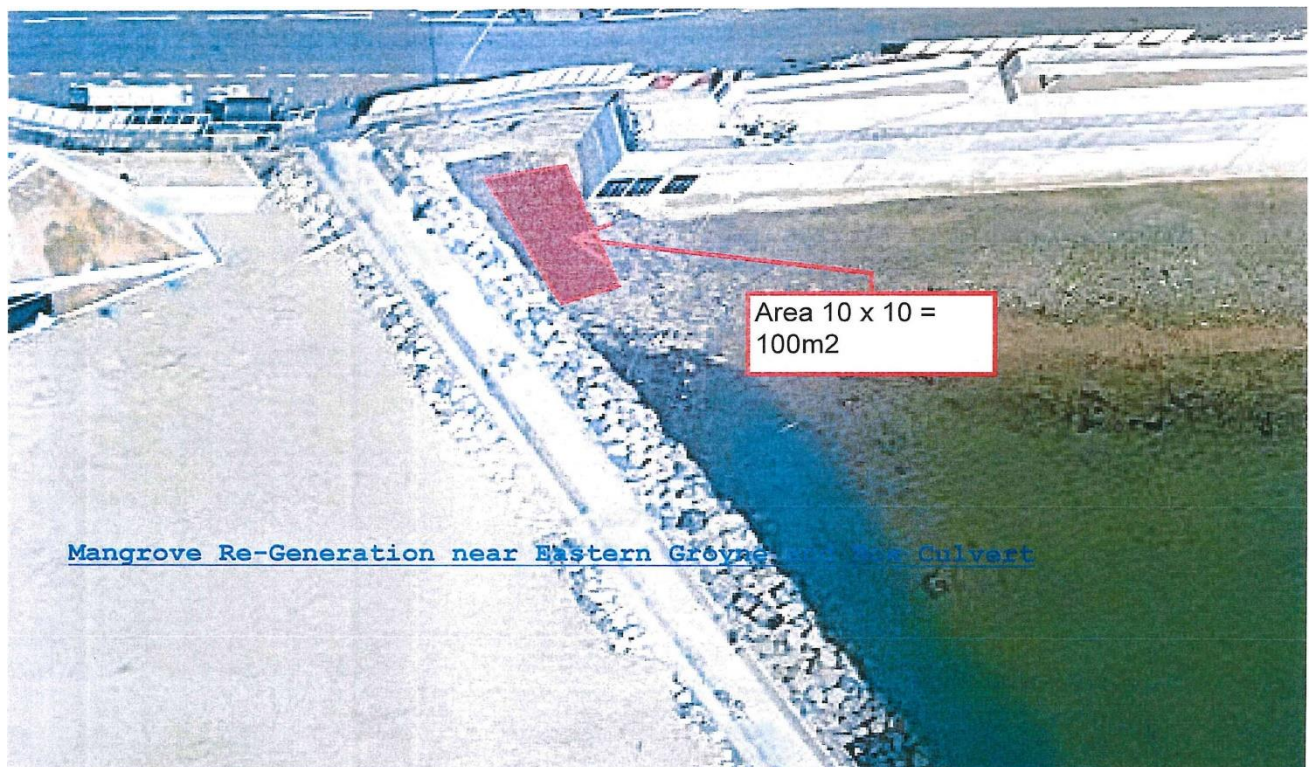
Based on the observation from Sep 2021 to Aug 2022, only the seedlings on the landward side thrive. Those poor health seedlings with no sign of re-sprout and expected to decline and be washed away by the tidal over time, which could be concluded in the recent inspections. More dead seedlings at location 4 were observed in this inspection, which is expected in this season, as the environmental condition is not favouring for seedlings to grow, the temperature is quite high and has the thunderstorm or even typhoons. Further monitoring is needed and highly recommended to monitor the growth and condition of the seedlings.



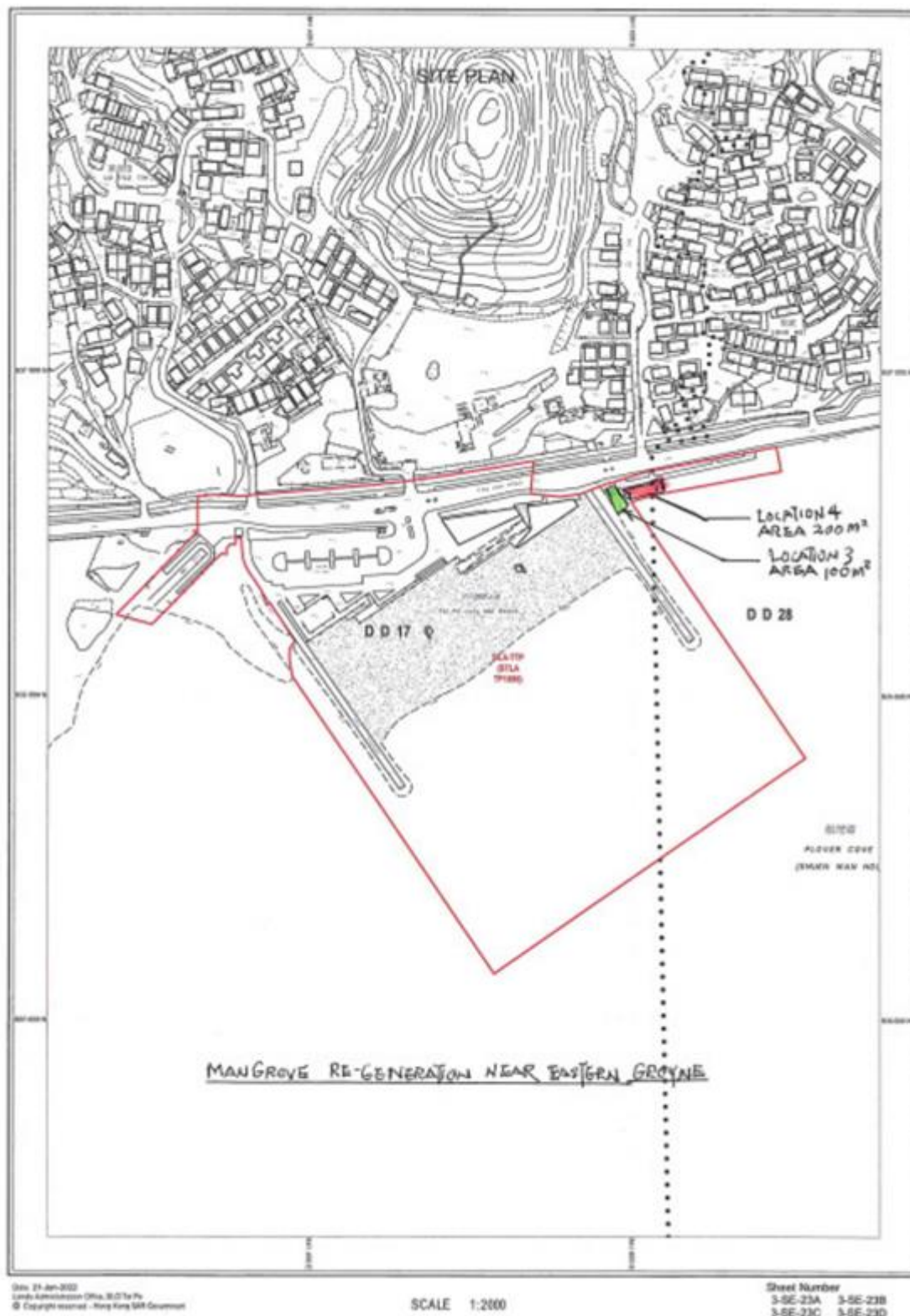
5 Appendix A – Location of the planting sites



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



Map 5.2 Location 3 (Near Eastern Groyne)



Map 5.3 Location 4 (Next to location 3 Near Eastern Groyne)