

Ocean Park Tai Shue Wan Water World Project

Biannual EM&A Report
(June to November 2023)

December 2023

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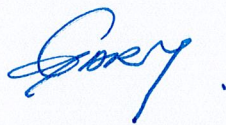
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This Biannual EM&A Report for June to November 2023 has been reviewed and certified by the Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC) as having complied with the requirements as set out in the approved Updated Woodland Compensation Plan in accordance with Condition 2.7 of Environmental Permit No. EP-487/2014/A.

Certified by:

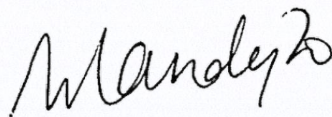


Gary Chow
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Limited

Date:

14 December 2023

Verified by:



Mandy To
Independent Environmental Checker (IEC)
ERM-Hong Kong Limited

Date:

14 December 2023

Information class: Standard

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Executive summary

Mott MacDonald Hong Kong Ltd. (“MMHK”) has been commissioned by the Ocean Park Corporation, to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit (EM&A) for the operation phase of Ocean Park Tai Shue Wan Water World (the Project). The EM&A includes a 3-year monitoring post-planting programme of the woodland compensation area (WCA).

This is the 1st Biannual EM&A Report for the operation phase of the Project summarising the findings of WCA post-planting monitoring from 1 June 2023 to 30 November 2023, and is submitted under the Environmental Permit (No. EP-487/2014/A).

Environmental Monitoring and Audit Progress

WCA post-planting monitoring activities were conducted bi-monthly during the reporting period on 26 June 2023, 24 August 2023, and 20 October 2023.

Exceedance of Trigger/Action Levels

During the reporting period, there was no exceedance of the Trigger and Action Levels for monitoring of the WCA.

1 Introduction

1.1 Background

On 27 August 2014, the Environment Impact Assessment (EIA) Report and Environmental Monitoring and Audit (EM&A) Manual (Register No.: AEIAR-184/2014) for the “Tai Shue Wan Development at Ocean Park” (the Project) was approved and an Environmental Permit (EP) (Permit No.: EP-487/2014) was issued to the Ocean Park Corporation. Based on the Application for Variation of Environmental Permit No. VEP-539/2017, the current valid EP (Permit No.: EP-487/2014/A) was issued on 10 January 2018. The location and layout of the Project are presented in **Appendix A**.

Upon the completion of construction of the Project in May 2021 and the approved termination of construction phase EM&A programme in July 2021, the Water World opened on 21 September 2021. Mott MacDonald Hong Kong Ltd. (“MMHK”) has been commissioned by the Ocean Park Corporation to undertake the Environmental Team (ET) services to carry out operation phase EM&A for the Ocean Park Tai Shue Wan Water World Project.

In Section 10.7.3.2 of the approved EIA report, approximately 1.62 ha of woodland compensation is recommended as a mitigation measure for the loss of approximately 1.53 ha of woodland during construction phase of the Project. In accordance with Condition 2.7 of the EP, a Woodland Compensation Plan (WCP) was submitted to EPD and approved in October 2014, with later two revisions of Updated WCP submitted and approved in July 2022 and May 2023.

1.2 Project Organisation

The project organisation and the contacts of key personnel of the Project are shown in **Appendix B**.

1.3 Environmental Status and Programme

The planting works at WCA were carried out from November 2022 to February 2023. Upon the establishment of the WCA, the 3-year post-planting monitoring and maintenance programme for the WCA was commenced in June 2023 in accordance with the latest Updated WCP. This is the 1st Biannual EM&A Report summarising the WCA monitoring results for the Project during the reporting period from 1 June 2023 to 30 November 2023.

2 Monitoring of Woodland Compensation Area

2.1 Monitoring Requirement

As required Section 8.3.2.5 of the approved EM&A Manual and the approved Updated WCP, the WCA should be monitored throughout the 3-year post-planting period to monitor the health condition and survival rate of the planted whip trees at the WCA. The location of the WCA is presented in **Appendix C**. The frequency of monitoring is bi-monthly during the first year and quarterly during the second and third years of the post-planting period.

The post-planting monitoring was conducted by ET and supervised by a qualified ecologist. The monitoring was carried out by means of inspection walk. Each monitoring event would cover no less than 20% of the WCA planting areas. The general health condition and survival rate of individual species of planted trees would be recorded by direct observation for the WCA. For steep and inaccessible area, the monitoring was conducted with aid of a pair of binoculars. The percentage of individuals in poor health and survival rate for each species of the inspected area would be quantified after each inspection walk, representing the overall health condition of the planted trees in the whole WCA.

The Trigger and Action Levels for the monitoring of WCA stipulated in the Updated WCP are presented in **Table 2.1**.

Table 2.1: Trigger and Action Levels for Monitoring of the WCA

Parameters	Trigger and Action Levels	Action Plan
General health condition	Trigger Level: % of individual plant species in poor health condition >20%	<ul style="list-style-type: none"> the ET should inform OPC / Contractor appointed by OPC and IEC immediately; identify the cause(s) of the increased % in poor condition; advise OPC / Contractor appointed by OPC the necessity of replanting; Should replanting be considered necessary, OPC / Contractor appointed by OPC should start the replanting works within one month or in the appropriate planting season.
	Action Level: % of individual plant species in poor health condition >30%	<ul style="list-style-type: none"> the ET should inform OPC / Contractor appointed by OPC and IEC immediately; identify the cause(s) of the increased % in poor condition; advise remedial action and work out solution including change of species in replanting; and seek acceptance from AFCD; Once the remedial action has been accepted by AFCD, OPC / Contractor appointed by OPC should start implementing the remedial action within two weeks or as agreed with AFCD.
Survival of plants	Trigger Level: Survival rate of individual plant species < 80%	<ul style="list-style-type: none"> the ET should inform OPC / Contractor appointed by OPC and IEC immediately; identify the cause(s) of the drop in survival rate; advise OPC / Contractor appointed by OPC the necessity of replanting; Should replanting be considered necessary, OPC / Contractor appointed by OPC should start the replanting works within one month or in the appropriate planting season.

Parameters	Trigger and Action Levels	Action Plan
	Action Level: Survival rate of individual plant species < 70%	<ul style="list-style-type: none"> the ET should inform OPC / Contractor appointed by OPC and IEC immediately; identify the cause(s) of the drop in survival rate; advise remedial action and work out solution including change of species in replanting; and seek acceptance from AFCD; Once the remedial action has been accepted by AFCD, OPC / Contractor appointed by OPC should start implementing the remedial action within two weeks or as agreed with AFCD.

2.2 Monitoring Findings

During the reporting period, inspection walks for WCA monitoring were conducted on 26 June 2023, 24 August 2023 and 20 October 2023. More than 20% of the WCA planting areas were covered during each monitoring event. The percentages of individuals in poor health and the survival rates of individual plant species are summarised in **Table 2.2**. There was no specific site observation and recommendations during the WCA monitoring. Representative photos of the plant species inspected are provided in **Appendix D**.

Table 2.2: Summary of WCA Monitoring Parameters

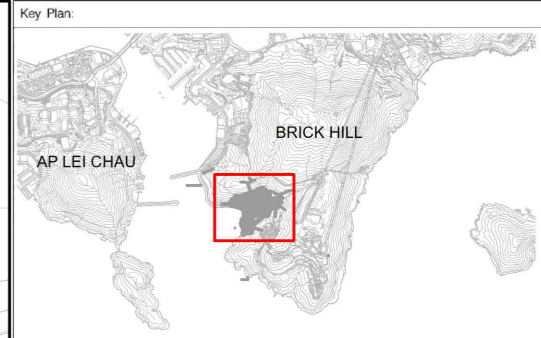
Inspection Month	June 2023		August 2023		October 2023	
	% in poor health condition	Survival rate (%)	% in poor health condition	Survival rate (%)	% in poor health condition	Survival rate (%)
Species						
Pioneer species						
<i>Acacia confusa</i>	0	100	0	100	0	100
<i>Ficus hispida</i>	0	100	0	100	0	100
<i>Pinus massoniana</i>	6.9	95.7	0	95.7	0	95.7
Sub-climax species						
<i>Brucea javanica</i>	0	100	0	100	0	100
<i>Cratoxylum cochinchinense</i>	0	100	0	100	0	100
<i>Ficus variegata</i>	0	100	0	100	0	100
<i>Macaranga tanarius var. tomentosa</i>	0	100	0	100	0	100
<i>Mallotus paniculatus</i>	0	100	0	100	0	100
<i>Polyspora axillaris</i>	0	100	0	100	0	100
<i>Rhus succedanea</i>	0	100	0	100	0	100
<i>Schefflera heptaphylla</i>	0	100	0	100	0	100
<i>Sterculia lanceolata</i>	5	100	0	100	0	100
Climax species						
<i>Celtis sinensis</i>	0	100	0	100	0	100
<i>Choerospondias axillaris</i>	0	100	0	100	0	100
Percentage of planting area inspected (%):	70		50		50	

During the reporting period, there was no exceedance of the Trigger and Action Levels. The health conditions of the planted tree species were generally observed to be fair to good.

3 Conclusions

Post-planting monitoring of WCA was conducted during the reporting period in accordance with the EM&A Manual and approved Updated WCP. During this reporting period, inspection walks were conducted bi-monthly on 26 June 2023, 24 August 2023, and 20 October 2023. The general health conditions of planted tree species were in fair to good conditions. There was no exceedance of the Trigger and Action Levels.


Appendix A Project Layout



Notes:

Key to symbols:

LEGEND

 PROJECT AREA



Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 2021	KN		HL	GC

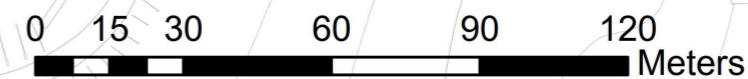
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**TAI SHUE WAN DEVELOPMENT
AT OCEAN PARK**

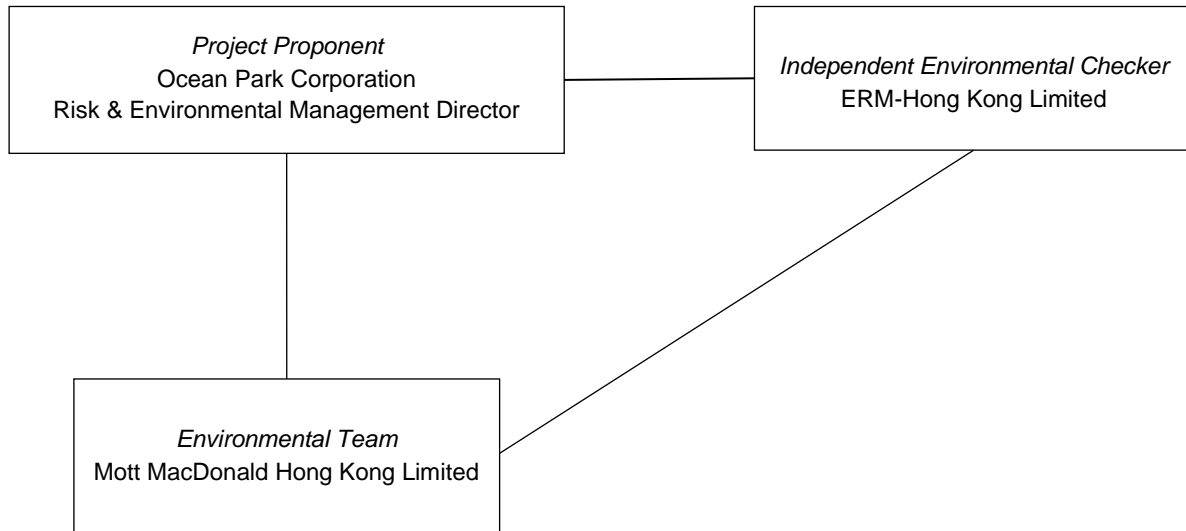
LOCATION OF THE PROJECT

Designed		Eng check	
Drawn		Coordination	
Dwg check		Approved	
Scale at A3	Status	Rev	



Drawing Number **APPENDIX A**

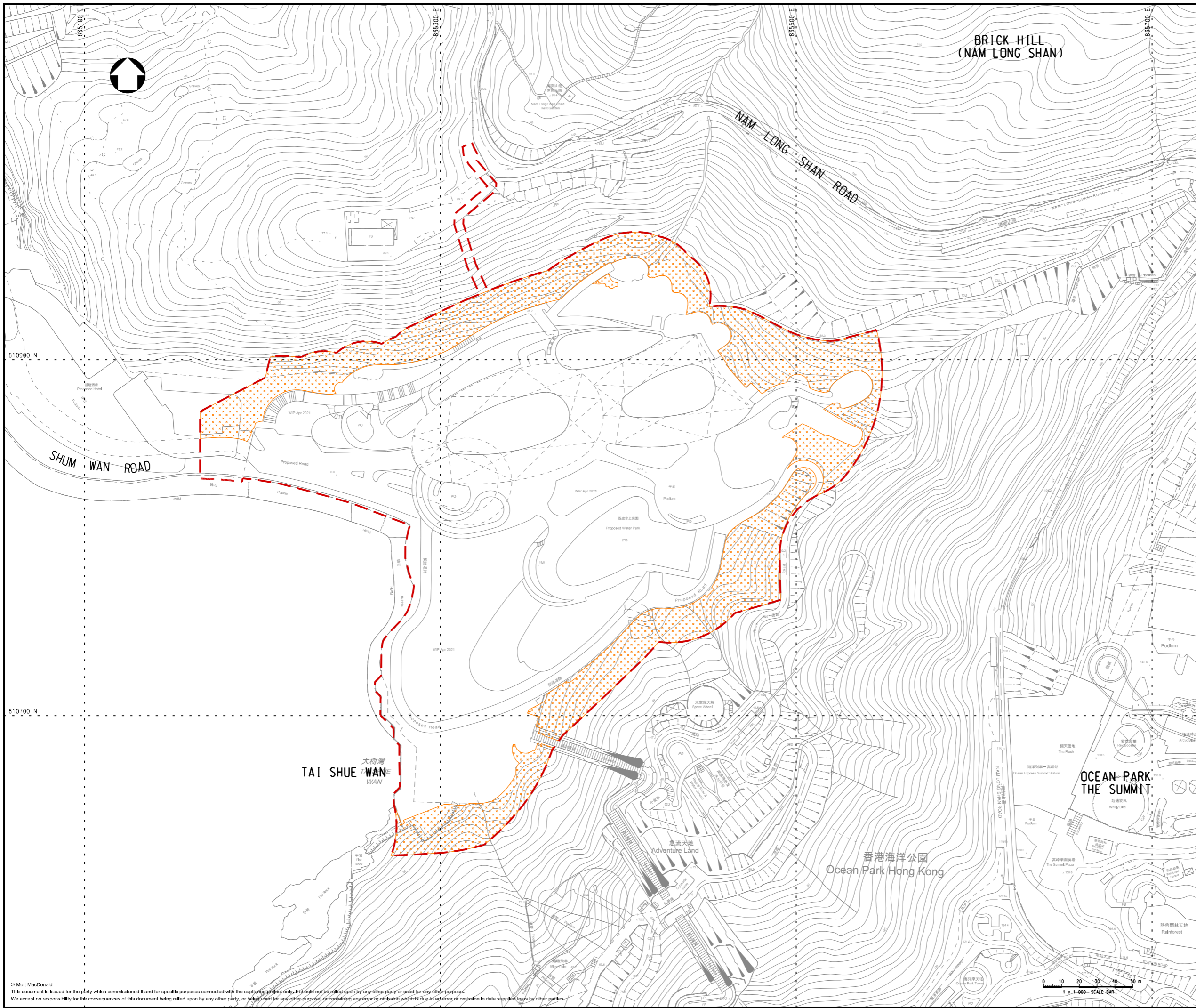
Appendix B Project Organisation



Contact information

Company / Department	Position	Name	Telephone / Mobile	Fax No.
Ocean Park Corporation	Risk & Environmental Management Director	Mr Frankie Hau	3923 2528	2518 4738
ERM-Hong Kong Ltd.	Independent Environmental Checker	Ms Mandy To	2271 3113	3015 8052
Mott MacDonald Hong Kong Ltd.	Environmental Team Leader	Mr Gary Chow	2828 5874	2827 1823

Appendix C Location of Woodland Compensation Area



Notes

Key to symbols

- PROJECT BOUNDARY
- PROPOSED WOODLAND COMPENSATION AREA

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	SEP 21	MING	FIRST ISSUE	HY	EC

M M
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Client

Project
TAI SHUE WAN DEVELOPMENT AT OCEAN PARK

Title
LOCATIONS OF WOODLAND COMPENSATION AREA

Designed	HY	Eng check	GC
Drawn	MING	Coordination	HY
Dwg check	HY	Approved	EC
Scale at A1 1:1000	Status PRE	Rev P1	
Drawing Number APPENDIX C			

Appendix D Representative Photos of Planted Tree Species Inspected



Photo 1 – *Acacia confusa*

Photo 2 – *Ficus hispida*



Photo 3 – *Pinus massoniana*

Photo 4 – *Brucea javanica*



Photo 5 – *Cratogeomys cochinchinense*



Photo 6 – *Ficus variegata*



Photo 7 – *Macaranga tanarius var. tomentosa*



Photo 8 – *Mallotus paniculatus*

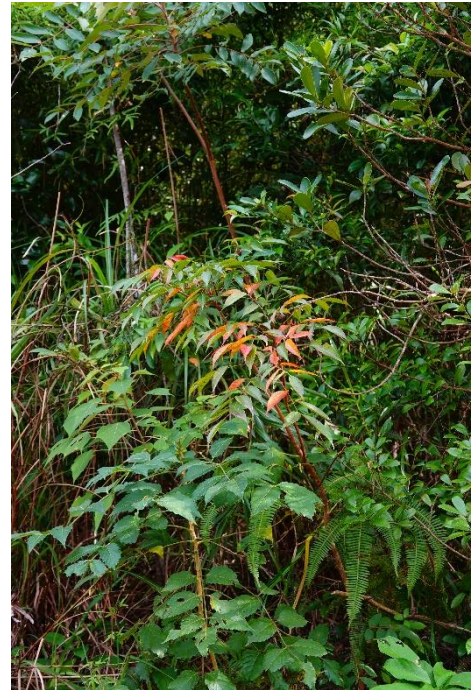


Photo 9 – *Polyspora axillaris*

Photo 10 – *Rhus succedanea*



Photo 11 – *Schefflera heptaphylla*

Photo 12 – *Sterculia lanceolata*



Photo 13 – *Celtis sinensis*



Photo 14 – *Choerospondias axillaris*

