

Issue No. : Issue 3  
Issue Date : May 2019  
Project No. : 1626

**MUI WO LAI CHI YUEN  
EXTENSION**

**VEGETATION SURVEY AND  
TRANSPLANTATION PROPOSAL**

Prepared By:  
**ALLIED ENVIRONMENTAL CONSULTANTS LTD.**

**IN ASSOCIATION WITH**

**CHINA HONG KONG ECOLOGY CONSULTANTS  
LTD.**

**COMMERCIAL-IN-CONFIDENCE**

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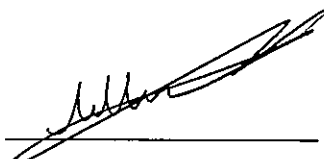
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Certified by:



Grace. M. H. KWOK  
Environmental Team Leader

Verified by:



Arthur LO  
Independent Environmental Checker

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Author:  (CHKEC)  
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Ms. Grace M. H. KWOK

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## TABLE OF CONTENTS

<b>1. INTRODUCTION</b> .....	<b>3</b>
1.1 BACKGROUND .....	<b>3</b>
1.2 OBJECTIVE OF VEGETATION SURVEY .....	<b>3</b>
1.3 PERSONNEL .....	<b>4</b>
<b>2. SURVEY METHODOLOGY</b> .....	<b>4</b>
<b>3. RESULTS</b> .....	<b>5</b>
<b>4. TRANSPLANTATION PROPOSAL</b> .....	<b>9</b>
4.1 FLORA SPECIES OF CONSERVATION INTEREST WITHIN THE PROJECT SITE .....	<b>9</b>
4.2 IMPLEMENTATION PROGRAMME OF TRANSPLANTATION.....	<b>10</b>
4.3 POST- TRANSPLANTATION MONITORING AND MAINTENANCE PROGRAMME.....	<b>11</b>
<b>5. CONCLUSIONS</b> .....	<b>12</b>
<b>6. REFERENCES</b> .....	<b>13</b>

## LIST OF APPENDICES

- Appendix A The Curriculum Vitae of the Qualified Ecologist
- Appendix B List of Flora Species Recorded
- Appendix C Photos Record

## LIST OF FIGURES

- Figure 1 Habitat Map
- Figure 2 Zoom-in Habitat Map for Project Site
- Figure 3 Location Plans of of Compensatory Planting and Transplantation

## LIST OF TABLES

- Table 1 Sizes of Habitats Recorded within the Assessment Area and Project Site
- Table 2 Flora Species of Conservation Interest Recorded during Vegetation Survey
- Table 3 Summary of the Assessment of the Flora Species of Conservation Interest within the Project Site

## 1 INTRODUCTION

### 1.1 BACKGROUND

- 1.1.1 The Food and Environmental Hygiene Department (FEHD) proposed an extension of the Mui Wo Lai Chi Yuen Cemetery to construct an elevated platform within the existing Lai Chi Yuen Cemetery boundary to accommodate the outdoor niches and the ancillary facilities. The Project was classified as a Designated Project (DP) under Category Q.1-the Project is wholly within an existing country park, Part 1 in Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO).
- 1.1.2 Pursuant to the EIAO, the Director of Environmental Protection (DEP) granted the Environmental Permit (No. EP-532/2017) to FEHD to construct and operate the designated project. Upon the requirement of the Environmental Permit, a qualified Ecologist was commissioned to prepare a vegetation survey report and transplantation proposal to present the baseline vegetation condition for flora species with conservation interest and transplantation programme for the Project and submit to the DEP for approval no later than one month prior to commencement of the construction of the Project.
- 1.1.3 The EIA report (Register No. AEIAR-211/2017) was approved by Environmental Protection Department in June 2017. As recommended in the approved EIA report, approximately 0.0232ha of natural and plantation woodland would be affected due to the construction works. Within the affected woodland, 1 young tree of *Aquilariasinensis* was found within the project site and would be subject to direct impact.

### 1.2 OBJECTIVE OF VEGETATION SURVEY

- 1.2.1 The objective of this survey is to minimize the potential impact to existing flora species with conservation interest/ important within the works area.
- 1.2.2 This vegetation survey report forms the basis to guide the implementation of the proposed mitigation measures as recommended in the approved EIA report to transplant flora species with conservation interest/important and propose

transplantation programme to ensure the general health condition and survival rate of the transplanted plant.

- 1.2.3 As stipulated in Clause No.2.6 of the EP, the vegetation survey report shall report the presence, as well as update the conditions, number, locations and habitat types of any identified floral species of conservation importance within the works area. The survey shall also identify the number and locations of the individuals of floral species of conservation importance to be affected by the Project and evaluate the suitability and/or practicability of transplantation.

### **1.3 PERSONNEL**

- 1.3.1 In accordance with Condition 2.2 of the EP, the preparation of this vegetation survey report has been carried out by a qualified ecologist who has at least 5 years of experience in vegetation survey. The qualifications and experience of the Qualified Ecologist has been certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC). The curriculum vitae of the qualified ecologist is provided in **Appendix A**.

## **2 SURVEY METHODOLOGY**

- 2.1 The vegetation survey was carried out on 19<sup>th</sup> November 2018. Habitats within the Assessment Area were identified, sized and mapped. Ecological characteristics of each habitat type including size, vegetation type, and species present, dominant species found, species diversity and abundance, community structure and inter-dependence of the habitats and species, and presence of any features of ecological importance were defined and characterised. Representative photographs of the habitat types and of important ecological features identified were taken. A desktop review of aerial photographs developed habitat maps of a suitable scale (1:1000 to 1:5000) showing the types and locations of habitats in the Assessment Area. The habitat maps were then verified during ground-truthing.
- 2.2 Vegetation surveys were, also, conducted in parallel by direct observation to record diversity and dominance of plant species present in different habitat types within the Assessment Area. Particular attention was paid to the area within and in proximity to the proposed project site. Areas with similar vegetation composition were categorized under the same habitat type. The location of any plant species of conservation interest was recorded. Nomenclature and conservation status of plant species follow Xing et al. (2000), Wu & Lee (2000) and Siu (2000).

### 3 RESULTS

3.1 Six habitats were identified in the Assessment Area, including developed area, plantation woodland, natural woodland, shrubland, inactive agricultural land and stream. The Assessment Area is mainly made up of shrubland, follows by natural woodland. Only plantation woodland and natural woodland are present in the Project Site. A summary of the sizes of the identified habitat types in the Assessment Area and Project Site is shown in **Table 1** below. A habitat map of the Assessment Area is shown in **Figure 1** and the representative photographs of the identified habitat types are provided in **Appendix C**. Based upon the information obtained during the surveys, a summary of each habitat type is detailed in the following sections.

**Table 1** Sizes of Habitats Recorded within the Assessment Area and Project Site

Habitat Type	Approximate Habitat Size in the Assessment Area (ha)	Approximate Habitat Size in the Project Site (ha)
Developed Area	3.8	0
Plantation Woodland	8.1	0.004
Natural Woodland	24.7	0.0192
Shrubland	45.7	0
Inactive Agricultural Land	1.6	0
Stream	3400m	0
<b>Overall</b>	<b>83.9</b>	<b>0.0232</b>

3.2 199 vegetation species were recorded during the surveys (**Appendix B**) and three of them are of conservation interests. They are *Aquilariasinensis*, *Gmelinachinensis* and *Nepenthes mirabilis*. Their protection status and photographs are shown in **Table 2** and **Appendix C**, respectively.

#### Developed Area (Photo 1)

3.3 Developed areas include roads and villages. This habitat supported a total of 30 exotic and native plant species. Most recorded flora species were either weeds or planted for landscaping purpose. *Acacia confusa* and fruit tree of *Dimocarpuslongan* were commonly recorded species from this habitat. This habitat was highly disturbed in nature with limited ecological interest. No rare or protected species was recorded within this habitat.

#### Plantation Woodland (Photo 2)

- 3.4 Plantation woodland mainly comprised orchard, landscape plantation on engineered slope and hillside slope for amenity purpose. *Lophostemon confertus* and *Acacia confusa* were the dominant tree species at this habitat, while other species such as *Acacia mangium*, *Litchi chinensis*, *Dimocarpus longan*, *Cratogeomys cochinchinense*, *Microcos paniculata*, *Macaranga tanarius*, *Mallotus paniculatus* and *Ficus hispida* were commonly recorded within this habitat. Except *Aquilariasinensis*, most recorded species were common and widespread. *Aquilariasinensis* was recorded distributed surrounding the existing Lai Chi Yuen Cemetery. *Aquilariasinensis* is considered with conservation interest in Mainland China and their conservation status was shown in **Table 2**. In total, 77 floral species were recorded in this habitat type.

#### Natural Woodland (Photo 3)

- 3.5 Natural woodland was mainly distributed at the northern side and at the valley within the Assessment Area. These woodlands supported a moderate diversity of plant species with a total of 78 flora species recorded. Flora species such as *Mallotus paniculatus* and *Schefflera heptaphylla* were commonly recorded within this habitat. Some individuals of *Aquilariasinensis* were located within this habitat. The conservation value of *Aquilariasinensis* is given in **Table 2**.

#### Shrubland (Photo 4)

- 3.6 Shrubland covered most hillside slope of the Assessment Area. In total, 81 floral species were recorded in this habitat type. *Dicranopteris pedata* is the dominated species within this habitat while *Rhodomyrtus tomentosa*, *Cymbopogon tortilis*, *Helicteres angustifolia*, *Phyllanthus cochinchinensis*, *Cratogeomys cochinchinense* and *Arundinella nepalensis* were commonly recorded within this habitat. *Aquilariasinensis*, *Nepenthes mirabilis* and *Gmelinachinensis* were recorded on hillside slope at south of the project site. They were with conservation interest and their details are given in **Table 2**.

#### Inactive Agricultural Land (Photos 5)

- 3.7 Inactive agricultural land was located at southern side of the project site which is the lowland area. In total, 44 floral species were recorded in this habitat type. *Mikania micrantha*, *Microcos paniculata* and *Hedychium coronarium* were



commonly recorded within this habitat. No rare or protected species was recorded within this habitat.

Stream (Photos 6)

3.8 Several stream courses were recorded within Assessment Area. These stream courses were generally flowing in south direction and eventually joining together before ends at Chi Ma Wan. One of them was found close to project site locating about 90m at northern side and 160m at western side away from the project site. In total, 36 floral species were recorded in this habitat type. *Microstegiumciliatum* was commonly recorded within this habitat. No rare or protected species was recorded within this habitat.

Project Site (Photos 7-8)

3.9 The Project Area is located at eastern side of the existing cemetery and covered by plantation woodland and natural woodland. Moreover, tree density was observed to be low at natural woodland within the project site. In total, 38 flora species were recorded within project site, in which most of them were common shrubs and weeds in Hong Kong. An individual of *Aquilariasinensis* was recorded within project site which is a small tree with dimension of 0.03m of DBH and 3.5m height. The conservation value of *Aquilariasinensis* is given in **Table 2**.

**Table 2 Flora Species of Conservation Interest Recorded During Vegetation Surveys**

Fauna / Flora Species	Protection status	Distribution	Locations Recorded in this study	Rarity
<b>Flora</b>				
<i>Aquilariasinensis</i> (Photo 9)	<ul style="list-style-type: none"> <li>- Listed as "Vulnerable" in IUCN Red List</li> <li>- Listed as "Near Threatened" in Rare and Precious Plants of Hong Kong (Status in China)</li> <li>- Recorded in China Red Data Book and Under State protection (Category II)</li> <li>- Listed under Protection of Endangered Species of Animals and Plants Ordinance (Cap 586)</li> </ul>	Guangdong, Hainan, Guangxi, Yunnan and Hong Kong	Plantation woodland, shrubland and natural woodland	Common (Xing et al., 2000)

<b>Fauna / Flora Species</b>	<b>Protection status</b>	<b>Distribution</b>	<b>Locations Recorded in this study</b>	<b>Rarity</b>
<i>Gmelinachinensis</i> (Photos 10)	- Listed as “Vulnerable” in Rare and Precious Plants of Hong Kong (Status in China)	South China	Shrubland	Common (Xing et al., 2000)
<i>Nepenthes mirabilis</i> (Photo 11)	<ul style="list-style-type: none"> <li>- Listed under Protection of Endangered Species of Animals and Plants Ordinance (Cap 586)</li> <li>- Protected under Forests and Countryside Ordinance (Cap 96)</li> <li>- Listed as “Vulnerable” in Rare and Precious Plants of Hong Kong (Status in China)</li> </ul>	South China and South Asia	Shrubland	Common (Xing et al., 2000)

#### 4 TRANSPLANTATION PROPOSAL

##### 4.1 FLORA SPECIES OF CONSERVATION INTEREST WITHIN THE PROJECT SITE

4.1.1 According to the vegetation survey, 1 individual seedling of *Aquilaria sinensis* were recorded at the upper level of the project area where has been classified as natural woodland. The location of the plant is shown in **Figure 1**. **Table 3** summarizes the assessment of this species. This species is listed as “Vulnerable” at IUCN Red List and “Near Threatened” in Rare and Precious Plants of Hong Kong. It was also recorded in China Red Data Book. It is under threat due to habitat destruction and over- exploitation for medical use in China. It is under State protection (Category II) and under protection of Endangered Species of Animals and Plants Ordinance (Cap 586).

**Table 3 Summary of the Assessment of the Flora Species of Conservation Interest within the Project Site**

Tree Tag No.	Scientific name	Size			Conditions
		Height (m)	DBH (mm)	Crown Spread (m)	
T00	<i>Aquilaria sinensis</i>	3.5	30	1	<ul style="list-style-type: none"> <li>● Located in natural woodland</li> <li>● Fair health and structural conditions</li> <li>● Upright tree form</li> </ul>

4.1.2 The specimen of *Aquilaria sinensis* is small in size with diameter 30mm, fair healthy condition and upright grown formation. It is considered suitable for transplantation. It will be transplanted to the receptor site (same receptor site for tree compensation site nearby, location shown in **Figure 3**) within the existing cemetery boundary. Minimal site clearance at the proposed receptor site will be carried out before transplanting the flora species.

## 4.2 IMPLEMENTATION PROGRAMME OF TRANSPLANTATION

- 4.2.1 The individual seedling of *Aquilaria sinensis* will be transplanted to the receptor site before commencement of project site clearance. Crown pruning and root pruning are not needed for transplantation. The uplifted root ball should be wrapped in damp Hessian and galvanized chicken wire and will be transplanted directly to the proposed receptor site on the same day immediately after uplifted. Site clearance such as removing herbs and wood debris at the receptor site will be carried out before transplanting the uplifted root ball. When digging out the seedling by shovel, special care will be taken not to damage the fine root system of the seedling.
- 4.2.2 A root ball of 1.5m horizontal diameter and 1.0m vertical diameter is proposed for the *Aquilaria sinensis* to be transplanted that has a tree crown of 1m. The proposed size of root ball is referenced to the existing drip line of the *Aquilaria sinensis*, which has not undergone root or crown pruning, so that the proposed size of root ball would cover the entire root system without damage. In addition, the soil surrounding the *Aquilaria sinensis* shall be in moist condition in view of the shading provided by the tall trees adjacent to the *Aquilaria sinensis*. The roots are not expected to extend vertically into deep soil for absorption of water/nutrients. Therefore, the proposed depth of root ball (i.e. 1.0m) is anticipated to be sufficient to cater for the worst case scenario. With the provision of a root ball of 1.5m horizontal diameter and 1.0m vertical diameter, potential damage to the roots of the *Aquilaria sinensis* is not anticipated, and root pruning is thus considered not required for the transplantation. A planting hole of at least the same size of root ball (i.e. 1.5m horizontal diameter and 1.0m vertical diameter) will be prepared.
- 4.2.3 Any compacted soil and rock around the hole shall be loosened or removed with a spade to facilitate air penetration. The uplifted root ball will be transported and planted in the prepared planting hole. The dug seedling should be kept moist during the transportation and protected from sun, wind and excessive drying. The bottom of the trunk flare of the species shall be at or slightly above the finished grade to avoid suffocation of the trunk flare. The planting hole shall be backfilled with soil mix, which shall be compacted in layers around the root ball until level with the surrounding ground to limit future settling and prevent air pockets. The backfill shall not be compacted to a

density that inhabits root growth. A shallow depression shall be formed around the trunk base to facilitate water retention.

#### **4.3 POST- TRANSPLANTATION MONITORING AND MAINTENANCE PROGRAMME**

- 4.3.1 The transplanted species should be well watered to soak the root ball and soil mix immediately after planting. Mulch shall be placed around the species to retain moisture. Monitoring of transplanted plant will be conducted after transplantation. Any observations and recommendations will be reported in monthly EM&A reports.
- 4.3.2 Regular preventive pesticide, pest checking, litter cleaning, weed removal and watering should be implemented during the 12-month post-transplantation maintenance period of the transplanted *Aquilaria sinensis*. Regular monitoring of the transplanted *Aquilaria sinensis* should be carried out by landscape contractor during the same maintenance period. Health condition and growth of the transplanted *Aquilaria sinensis* shall be assessed and photographic records shall be undertaken.
- 4.3.3 Fresh water shall be used for watering the transplanted *Aquilaria sinensis* daily as needed after transplantation. Watering frequency during the wet season shall be adjusted according to weather condition.
- 4.3.4 The transplantation site should be kept free from weeds throughout the post-transplantation maintenance period. Any unwanted weeds found in the transplantation site should be removed by landscape contractor every two months. Any removed weeds, litter and debris should be disposed appropriately by the Contractor.
- 4.3.5 The landscape contractor shall quarterly check for any insect attack and diseased plantparts of the transplanted *Aquilaria sinensis*. Apply appropriate pest control treatment such as use of pesticide or removal of diseased plant parts if necessary.
- 4.3.6 Robust protective fencing should be used for protecting the newly transplanted *Aquilaria sinensis* from the impact of construction works. It can protect the tree from avoiding further stress added to it so as to facilitate recovery of tree from transplanting shock. Also, shade cloth can be used to protect the transplanted *Aquilaria sinensis* by reducing the evapotranspiration rate of the plant. It can keep

the sun off of the plant's leaves and help the surrounding soil retain moisture. Moreover, surrounding the transplanted plant with shade cloth, the fabric will serve as a windbreak to protect the plant. Below are some reference photos of shade cloth protection.



4.3.7 During the construction period, implementation of the recommended mitigation measures shall be regularly inspected and audited monthly by Environmental Team throughout the construction phase to ensure proper implementation.

## 5 CONCLUSIONS

5.3 Vegetation survey for the project site and its vicinity area have been conducted in November 2018. The project site is covered by plantation woodland and natural woodland habitat. Approximately 0.0232ha of these habitats within the proposed works areas would be directly affected. An individual of *Aquilaria sinensis* with conservation interest located within the project foot print and cannot be retained.

5.4 As recommended in the approved EIA report, transplanting flora species with conservation interest/important will be adopted. It is proposed to transplant the *Aquilaria sinensis* to a nearby tree compensation planting site. With implementation of proposed transplantation measure, the impacts on plant with conservation interest will be mitigated.

## 6 REFERENCES

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## **Appendix A**

### The Curriculum Vitae of the Qualified Ecologist



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**CURRICULUM VITAE****Personal Details**

Surname : SHEA  
First Name : She-sang, Mark 余書生  
Sex : Male  
National : Chinese  
Language : Chinese (Native speaker), English (fluent in writing and speaking)  
E-mail address : ecology2002@netvigator.com  
Current Position: Principal Ecology Consultant - China Hong Kong Ecology Consultants Ltd.  
Mail Address : 1/F., No. 96, Chai Kek, Lam Tsuen, Tai Po, N.T., Hong Kong  
(Tel.+852 2529 9593; Fax. +852 3747 5938)

**Education, Professional Qualifications and Memberships**

B.Sc. Biology, Hunan Normal College, PRC, 1981  
M.Sc. Zoology, Nanjing Normal University, PRC, 1987  
Ph.D. Ecology/Environmental Science, The University of Hong Kong, 1995

Certified Arborist of International Society of Arboriculture (2011-2014)  
Member of China Flower Association (2008-)  
Council member of Southern China Palm Plants Association (2001-)  
Member of The Institution of Hong Kong Environmental Impact Assessment (1995-)  
Member of The Marine Biological Association of Hong Kong 1989 - 2006  
Member of International Association for Landscaping Ecology (1996-2004)  
Member of International Association of Impact Assessment (2002-2005, 2013-2018)  
Member of Zoological Society of China (1994-)  
Member of Ecological Society of China (1995-)

**Key Qualifications**

Dr. Mark Shea is an ecology consultant with over 25 years of experience in the field of biology, ecology and environmental impact assessment in Hong Kong, China and the region. He has undertaken over 250 projects with ecological component dealing with terrestrial ecology, wetland ecology, insect taxonomy, pollution biology, mangrove, heperto-fauna, avi-fauna, terrestrial vertebrates, fishery, benthic community ecology in Hong Kong's stream, river, coast, marine and terrestrial environments. During last fifteen years, he conducted and led over 200 tree survey projects and a number of tree risk assessment projects. Dr. Shea is a Certified Arborist of International Society of Arboriculture. In addition, he has experience for ecology related projects in Mainland China, Taiwan and Macau.

**Employment History**

**1997.4-present: Senior Ecology Consultant, China Hong Kong Ecology Consultants.**  
**1995.5 – 1997.3 Senior Ecology Consultant, Hyder (former Axis and Acer) Consulting Ltd.**  
**1993.7 – 1995.4 Ecology Consultant, Binnie Consulting Ltd.**  
**1988. 9- 1993.6 Ph.D Research Student and Demonstrator, The University of Hong Kong**

**Project Experience Records** (*Selected projects*):

Agreement No. CE 50/2014 (GE) Landslip Prevention and Mitigation Programme, 2014, Package G, Landslip Prevention and Mitigation Works - Investigation, Design and Construction, Study Area No.11SW-B/HPSA4, Below Magazine Gap Road and Above Bowen Road, Full Time Residential Ecologist for Ground Investigation Works: Client: CEDD/CMA, 2018-2019.

Architectural Services Department Quotation Contract No. CPM301\_13/18: Mui Wo Lai Chi Yuen Extension. Ecological survey, plant transplantation proposal and other related ET tasks. Client: AEC, 2018-2020.

BEAM Plus SA 5-Ecological Site Appraisal Report For Proposed Residential Development at N.K.I.L. 6549, Off Hing Wah Street West, Cheung Sha Wan, Kowloon. Client: AEC, 2018.

BREEAM (UK) LE02 & LE04 -Ecological Site Appraisal Report For Refurbishment Works at International Commerce Centre (ICC): Ecological survey and preparing required submissions.

Section 12A Rezoning Application Proposed Rezoning For An Extension Of The Ling To Monastery, Including A Temple, Columbarium And Access Road, At San Wai, Ha Tsuen, Yuen Long: Ecological Impact Assessment. Client: Man Fung Industries Holding Ltd., 2018.

BREEAM (UK) LE02 & LE04 -Ecological Site Appraisal Report For Refurbishment Works at 4 Headland Road, Repulse Bay: Ecological survey and preparing required submissions. Client: AEC, 2018.

Planning Consultancy Services for Sassoon Road Campus Expansion for the Hong Kong University: Ecological impact assessment. Client: BMT, 2018.

Wanke (萬科) Building renovation project in Xiong An (雄安), He Bei Province, China: Ecological Baseline Survey/Condition Report and Suggestion on Plants for Green Design: Client: Biodiversity by Design (UK), 2018.

Section 12A rezoning application site from "Agriculture", "Village Type Development" to "Residential (Group C)": Ecological Impact Assessment. Aikon Planning, 2018.

Contract No. NDO/02/2018 Baseline Survey for Golden-Headed Cisticola for Site Formation and Infrastructure Works for Police Facilities In Kong Nga Po: Ecological Baseline Survey and report. Client: CEDD/AECOM, 2017-2018.

Ecological Impact Assessment for Section 16 Application To Allow Columbarium Use At Lot Nos. 879, 880A1, 880B1, 881, 882, 883, 884, 885, 889RP (Part), 891(Part), 1318, 1326 and 1344(Part) all in D.D. 115 and adjoining Government Land, Au Tau, Yuen Long. Client: Ramboll 2018.

Agreement No. CE 51/2016 (HY): Route 11 (between North Lantau and Yuen Long – Feasibility Study. Responsible for ecological survey and reporting. Client: Meinhardt. 2018 – 2020.

Agreement No. CE 36/2011 (HY): Further Study and Preliminary Design for Improvement of Hiram's Highway from Marina Cove to Sai Kung Town – Investigation Addition Service No.4 – Ecology Survey and Ecology Impact Assessment. Responsible for ecological survey and reporting. Client: Meinhardt. 2018 – 2020.

Project title.: ([RFQ-EMD14033VW]) Consultancy Services on Provision of Ecological Baseline Survey and Monitoring at Ma On Kong river. Responsible for ecological survey, monitoring and reporting. Client: Hong Kong Productivity Council. 2018 – 2020.

Contract No. CV/2017/04: Environmental Monitoring of Sediment Disposal to the South of Brothers, East of Sha Chau and East of Tung Lung Chau: diving monitoring of coral and sea bottom; demersal trawling samples of fishes and invertebrates. In supporting of EGS/Lam, responsible for on-board sampling supervision, sorting, taxonomic identification, tissue preparation for chemical testing, data analysis and reporting. Sub-consultant of EGS. 2018-2022.

Contract No. CM 14/2016: Environmental Team for Operational Environment Monitoring and Audit for Siu Ho Wan Sewage Treatment Plant. Responsible for undertaking bi-monthly marine benthic sampling, sorting, identification and reporting. Client: Fugro / DSD, 2018-2023.

Mountain Bike Training Gound & Expansion of Mountain Bike Trail Net Works in Mui Wo and Chi Ma Wan, S.L. Employed as independent ecologist responsible for ecological survey, eco report updating, supporting mountain bike specialist in ecology aspects. Client: Sheung Moon Construction Ltd., / CEDD, HKSAR, 2016-2019.

Contract No.: CV/2012/05. Bathing Beach at Lung Mei, Tai Po, Role of qualified ecologist responsible for ecological baseline surveys, rat snake capture survey, marine benthic, fish and intertidal fauna monitoring, mangrove plantation, fauna relocation. Client: Welcome Construction / CEDD, HKSAR, 2016-2019.

Landscape Consultancy Service Campus Landscape Master Plan : Ecological Enhancement Proposal; Client: Earth Asia / The Chinese University of Hong Kong, 2014-2018.

Application for Small House Re-Development of Lot 966 RP in D.D. 22 Pan Chung San Tsuen, Tai Po. Site Investigation and Landscape Proposal. Client: Ms. Peggy Wong, 2016-2017.

Rezoning proposal for Various lots at Ha Wo Hang, Sha Tau Kok: Ecological impact assesement and mitigation. Client: Eton Properties Agency Co Ltd, 2016-2018.

Contract No. DP 01/2016 Drainage Improvement Works at North District –Package B – Investigation: Ecology, Client: DSD, HKSAR, 2016-2018.

Section 12A Application for Proposed Amendments to the Ma On Shan Outline Zoning Plan in Support of Private Residential Development and Primary School at Various Lots and Adjoining Government Land in DD 167, Nai Chung, Ma On Shan: Ecological Impact Assessment, Client/leading consultant: Ramboll Environ Hong Kong Limited, 2016-2017.

BEAM Plus V1.2 SA5 Ecological Assessment for Shum Shui Po building site, Client/leading consultant: Fugro, 2016.

Contract WQ/053/15: Consultancy Study on Strategic Street Ecology for Hong Kong. Client, LCSD/ HKSAR, Leading consultant: Earth Asia Ltd. 2016-2017.

BEAM Plus V1.2 SA5 Ecological Assessment for Proposed Factory Development at 95-99 Fuk Hi Street, Yuen Long Industrial Estate, Yuen Long, Client/leading consultant: Hip Hing, 2016.

BEAM Plus V1.2 SA5 Ecological Assessment for Proposed building at Wai Yip Street, Knowloon Bay, Client/leading consultant: Hip Hing, 2016.

AGREEMENT NO. CE 13/2009 (WS) IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS – SOUTH WORKS, Ecology: site investigation and woodland compensation plan. Client, DSD/ HKSAR, Leading consultant: Acumen Environment Ltd. 2015-2016,

BEAM Plus V1.2 SA5 Ecological Assessment for proposed property development at Tsuen Wan Town, Client/leading consultant: Acumen Environment Ltd., 2016.

Tree survey at a proposed property development at Tai Po. Client/leading consultant: SCENIC Landscape Studio Ltd. 2016.

Programme No.: 085MM: Consulting engineer services in connection with Preliminary Environmental Review, Traffic Impact Assessment and Drainage & Sewerage Impact Assessment for Hospital Authority Supporting Services Centre in Tin Shui Wai. Ecological Impact Assessment, Client/leading consultant: ASD/HKSAR / Parsons Brinckerhoff (Asia) Limited, 2016.

Improvement to sharp bend of Keung Shan Road near shek pik reservoir service access road (slope works): Preliminary Ecological Assessment. Client/leading consultant: HyD/HKSAR / Maurice Lee Limited, 2015.

BEAM Plus V1.2 SA5 Ecological Assessment for proposed property development at Kwun Tong, Client/leading consultant: Meinhardt Environment Ltd., 2015.

Application for Proposed Low Density Residential Development at Various Lots in D.D. 433, Chuen Lung, New Territories. Conducting full scale of ecological surveys including habitat, flora and fauna and ecological impact assessment. Client: Environ, 2015.

Ecological Impact Assessment for the Proposed Development at STTL 601 Yiu Sha Road Whitehead Ma On Shan. Conducting ecological surveys including habitat, flora and fauna and ecological impact assessment. Client: AEC, 2015.

Agreement No. CE9/2006 (DS) Tolo Harbour Sewerage of Unsewered Areas, Stage II-Investigation, Design and Construction: Conducting full scale of ecological surveys including habitat, flora, diving monitoring of coral and sea bottom; and fauna and ecological impact assessment. Client: DSD/AECOM, 2015.

Ecological consultation for a site at Ka Wai Man Road and Ex-Mount Davis Cottage Area, Kennedy Town: Conducting ecological surveys including habitat, flora and fauna and ecological impact assessment. Client: Environ, 2015.

Contract No. 12-06337: Provision of Services for the Post Project Monitoring of HATS 2A (also named as Performance Verification of Discharge of HATS 2A). Undertaken marine benthic sampling, sorting, identification, data analysis and reporting. Sub-consultant of EGS. 2014-2016.

Site Formation and Infrastructural Works for Eight Housing Sites in Ma On Shan Feasibility Study, Conducting ecological surveys including habitat, flora and fauna and ecological impact assessment. Client: Environ, 2015-2016.

Environmental Consultancy Services For Planning, Supervision And Management Of The Proposed Fish Fry Release Scheme By Ecologist/Biologist For Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities. Sub-consultant of AEC. 2014.

Agreement No. CE65/2013(EP) Post-Construction Ecological Monitoring of River Improvement Work in Upper Lam Tsuen River, She Shan River and Upper Tai Po River – Investigation. Client: AEC/DSD, 2014-2017.

Contract No. 2013/11: Environmental Monitoring of Sediment Disposal to the South of Brothers, East of Sha Chau and East of Tung Lung Chau: diving monitoring of coral and sea bottom; demersal trawling samples of fishes and invertebrates. In supporting of EGS/Lam, responsible for on-board sampling

supervision, sorting, taxonomic identification, tissue preparation for chemical testing, data analysis and reporting. Sub-consultant of EGS. 2014-2017.

Theme Park and Resort Hotel Development in Macau - Ecological Impact Assessment: Responsible for ecological consultancy services including eco impact assessment and mitigation. Client: BMT, 2014.

Agreement No. CE16/2012 (CE) Engineering Feasibility Study for Kong Nga Po - Feasibility Study: Ecological field survey and reporting. Conducting full scale of ecological surveys including habitat, flora and fauna. Client: CEDD/Mott MacDonald, 2013.

Agreement No. LD01/2012 Eco-hydraulics Study on Green Channels – Stage 1 Provision of Services of Ecological Field Survey. Conducting full scale of ecological surveys including habitat, flora and fauna for 12 drainage channels. Client: DSD/Mott MacDonald, 2012-2013.

Contract No. SPW 03/2012 Ecological Survey for Relocation of Sha Tin Sewage Treatment Works to Caverns – Feasibility Study. Conducting full scale of ecological surveys including habitat, flora and fauna of terrestrial and marine environment (benthic survey, scuba diving coral survey and intertidal survey). Client: DSD, 2012-2013.

Proposed Student Hostel of The City University of Hong Kong within “CDA(1)” Zone, South of Yiu Sha Road Whitehead, Ma On Shan, The New Territories: Environmental Assessment - Responsible for ecological consultancy services including eco impact assessment and mitigation. Client: Environ, 2013 - 2014.

Residential cum Recreational Development at Kam Tsin Road, Kwu Tung: Environmental Assessment: Responsible for ecological consultancy services including eco impact assessment and mitigation. Client: Environ, 2013-2014.

Construction of Public Rental Housing at Ex-Au Tau Departmental Quarters at Yuen Long (Contract No : 20120746) Trade : Independent Tree Specialist, responsible for tree survey, tree risk assessment and tree protections, and other arborist consultancy. Client: Housing Authority / Hsin Chong Construction Co. Ltd. 2014-2016.

Architectural Services Department – Consultancy Agreement No. 9AA 115 for Provision of Columbarium at Wo Hop Shek Cemetery –Phase I. Responsible for ecological consultancy services including eco-assessment and mitigation. Client: DLN, 2013-2014.

Contract 823B – Shek Kong Stabling Sidings & Emergency Rescue Siding: Sub-Contract for Provision of Consultancy Services for Stream Habitat Restoration Works (M50/153), provision of wetland construction specialist and wetland plant botanist for the project. Client: MTR / Maeda – China State Construction JV, 2011-2016.

Agreement No. DP/01/2010 Services as Independent Environmental Checker for Drainage Improvement Works in Shatin and Tai Po: Responsible for ecology aspects for transplanted projected plants, ecological mitigation wetland, ecological monitoring in areas under Contract 1 & 2. 2011 – 2014. Client: DSD / Environ Hong Kong Ltd.

Contract No. CV 2005/06, Contract No. CV 2008/07 & Contract No. 2009/16: Field Sampling and Laboratory Testing for Contaminated Mud Pit IV and V East of Sha Chau -- Demersal trawling samples of fishes and invertebrates. In supporting of Lamlab Ltd. And EGS, responsible for on-board sampling supervision, sorting, taxonomic identification, tissue preparation for chemical testing, data analysis and reporting. Sub-consultant of Lam Lab and EGS. March 2006- February 2009; and 2010-2014.

Contract No. CV 2008/07 & Contract No. 2009/16: Testing and Sampling for Contaminated Mud Pits IV and V at East of Sha Chau, - Benthic Survey, sorting, taxonomy and reporting. Sub-consultant of EGS (Asia) Ltd. 2009 - 2014.

Contract No. DC/2007/06 River Improvement Works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River. Employed by Contractor (Chiu Hing Construction & Transportation Co. Ltd.) as ecology specialist responsible for conducting ecological baseline survey (flora and fauna), impact monitoring, mitigation, part of post-construction monitoring and as well as capture surveys. The project also required to capture and relocate some rare fish and amphibian species with conservation value to unaffected river sections to reduce adverse impact by the river works construction period. 2007 - 2014.

澳門“小潭山旅遊休憩計劃”項目，生態及景觀初步評估研究。顧主：澳門瑞峰工程顧問有限公司 / SMEC；2013.

Construction of public house at Tuen Mun Area 18: Independent tree specialist responsible for tree monitoring, tree risk assessment, mitigation and protection. Client: Housing Authority / Shui On Construction. 2010-2013.

Contract No. DC/2006/09: Drainage Improvement Works in Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang Areas and Construction of Ping Kong Drainage Channels. Employed by Contractor (Chiu Hing Construction & Transportation Co. Ltd.) as ecology specialist responsible for conducting ecological baseline survey, impact monitoring, fish relocation operation and mitigation/post monitoring. The project also required to capture and relocate some rare fish species with conservation value to temporal constructed fish aquarium and to unaffected river sections to reduce adverse impact by the river works during construction period. The fish will be released back to new river channel after completion of river works. Committed in April 2007 and estimated completion in 2013.

Residential cum Recreational Development at Various Lots and Adjoining Government Land in Pine Hill, Tai Po: Environmental Assessment. Conducting full scale of ecological surveys including habitat, flora and fauna of terrestrial and coastal environment. Client: sub-consultant with Environ HK Ltd. 2013.

Proposed Residential Development at Nai Chung, Ma On Shan: Ecological Impact Assessment. Conducting full scale of ecological surveys including habitat, flora and fauna of terrestrial and coastal environment. Client: sub-consultant with Environ HK Ltd. 2013.

CE58/2011(HY) Widening of Castle Peak Road – Castle Peak Bay – Investigation: Conducting full scale of ecological surveys including habitat, flora and fauna of terrestrial and coastal environment. Client: Highway Department/Scott Wilson. 2012-13.

Application for Amendment to the Draft Tai Tong Outline Zoning Plan No. S/YL-TT/15 from “Agriculture” and “Open Storage” to “Village Type Development”, Various Lots in D.D. 177 and Adjoining Government Land, Tai Tong, Yuen Long. Responsible for ecological survey and impact assessment. Client: City Development Ltd, 2012.

Agreement No. CE 38/2010 (CE) Liantang / Heung Yuen Wai Boundary control Point and associated Works (Site formation and Infrastructures) - Design and Construction – conducted brush and detailed tree surveys. Client: AECOM, 2012-2013.

Contract No. DC/2007/08 Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang. Responsible for ecological impact monitoring during late stage of construction. Client: DSD/Chiu Hing, 2012.

Construction of public house at Shatin Area 4C: Independent tree specialist responsible for tree risk assessment, mitigation and protection. Client: Housing Authority / Hsin Chong Construction. 2013.

Proposed Nam Sang Wai development: tree survey and visual assessment field survey. Client: Belt Collins. 2012.

NENT Landfill EM & A – Vegetation/ tree Monitoring: yearly contracted with Sita, 2010-2014.

Section 16 application for P1258 DD129 Mong Tseng Tsuen, Yuen Long: Further ecological survey and impact assessment. Client: Axon Consultancy Ltd., 2012.

Proposed residential development at Fung Lok Wai, Yuen Long: Firefly survey and impact assessment. Client: supporting leading consultant Environs, 2011.

Proposed Hung Shui Kui Town Concept Ecomasterplan New Territories, Hong Kong: conducted preliminary ecological review, rapid field survey and comments on eco-masterplan. Client: Biodiversity by Design. 2012.

Ecological surveys for some slope features along Shing Mun Catchwater, Tai Lam Catchwater and Golden Hill Catchwater. Client: AECOM, 2012.

Agreement No. CE19/2010 (TP) Greening Master Plans for New Territories North East – Investigation, Design and Construction in Shatin District: Responsible for ecological review and background study, Client: Hyder-ACLA Joint Venture, 2011-2012.

Agreement No. CE20/2010 (TP) Greening Master Plans for New Territories North West – Investigation, Design and Construction in Tuen Mun District: Responsible for ecological review and background study, Client: Hyder-ACLA Joint Venture, 2011-2012.

Proposed development at Sha Po North: conducting ecological survey and reporting. Client: supporting leading consultant Environs, 2011.

WENT Landfill, New Territories: Conducting vegetation survey, Client: SITA, 2011.

Agreement No. CE 65/2006 (DS) Port Shelter Sewerage Stage 2 and Stage 3 Design and Construction Land Features, Manhole & Trees Survey & Baseline Noise Monitoring (Package 3): conducting tree surveys, Client: DSD / EGS, 2011-2012.

Agreement NO. DP 06/2011 Environmental Impact Assessment for Drainage Improvement Works at Ngong Ping: Conducting ecological baseline surveys in wet season 2011 and ecological impact assessment. Scope of ecological survey including flora and fauna. Major terrestrial faunal groups were surveyed including mammals, birds, herpetofauna, butterfly, dragonfly and stream organisms. The consultancy lasted from September 2011 to March 2012. Dr. Mark Shea led a team performed comprehensive field surveys and prepared section of ecological impact assessment report with recommended mitigations. Sub-consultant to Meinhardt.

Project Contract No. HK1100393 Application Of Lease Modification / Land Exchange Various Sections of Lot 723 in DD 137Lung Kwu Tan, Tuen Mun: Ecological Survey and Impact Assessment. Client: Environs, 2011- 2012.

Contract No. GE/22011/19. Landslip Prevention and Mitigation Programme, 2008, Package N, Natural Terrain Hazard Mitigation Works, West Lantau – Topographic and Tree survey for Tai O West, Nam Chung, Shum Wat, Keung Shan Road, and Wang Hang. Conducting tree surveys, Client, Sam Mak & Associates Surveyors (HK) Ltd. 2011-2012.

Revitalization of Old Tai Po Police Station: Ecological consultancy service for Preliminary Ecological Review of the project including ecological surveys and assessment. Client: Hyder Consulting, 2011.

Construction of public house at Shek Kei Mei phase 5: Independent tree specialist responsible for routine tree monitoring and tree risk assessment. Client: Housing Authority / Shui On Construction. 2011-2012.

Ecological Baseline Monitoring for DSD Drainage Improvement Works at Ping Che, Fanning. Conducting ecological surveys on habitat, flora, fauna including aquatic fauna, amphibians, butterfly, odonates, mammals, 2011. Client: DSD / Meinhardt; 2011-2012.

Construction of Secondary Boundary Fence (SBF) and New Sections of Primary Boundary Fence and Boundary Patrol Road: EM & A, responsible for preparing landscape plan for Lok Ma Chau Section. Client: Architect Department / AEC; 2010-2012.

Kai Tak Nullah and Sha Tin Waste Water Treatment Plant: Plant trial. Responsible as independent ecologist for plant monitoring and arborist consulting in supporting of contractor, 2010-2011. Client: DSD / Lam Construction 2011-2012.

Section 16 application for proposed village house development at Nam Sang Wai, Yuen Long: Ecological impact assessment. Client: Troika Engineering, 2011.

Section 16 application for proposed housing development at Au Tau, Yuen Long: Ecological impact assessment. Client: Environ Hong Kong Ltd., 2010.

Macau C&D Waste transfer facilities. Ecological impact assessment, 2011. Client: Macau Government / Scott Wilson. 2011.

Section 16 application for proposed housing development at Tung Shing Lei, Yuen Long: Ecological impact assessment. Client: Environ Hong Kong Ltd., 2010.

Macau Phase 1 LRT System Tunnel Alignment Option - Ecological Impact Assessment for the Barra Station at Macau. Ecological impact assessment. 2010. Clients: Macau Government / Scott Wilson.

Section 16 application for proposed housing development at Pak Lap, Sai Kung: Ecological impact assessment. Client: Hyder Consulting Ltd., 2010-2011.

Proposed residential development at Dalajia Island, Dapeng Bay, Shenzhen. Ecological survey and reporting, 2010. Client: Vanke Property / Buro Happold.

Contract No. DC/2006/01 Drainage Improvement Works in Sai Kung – Design and Construction: Undertaken ecological monitoring during EIA stage, construction and post-construction. 2003- 2012. Client: DSD / Maunsell; Sunkee Construction.

Macau Phase 1 LRT System Tunnel Alignment Option - Ecological Impact Assessment for the Nan Van Lake and Sai Van Lake. Responsible for undertaken flora, fauna including fish, benthic and general ecological surveys in two seasons, and reporting. March to July 2010. Clients: Macau Government / Scott Wilson.

Agreement No. CE3/2006 (DS) Kai Tak Nullah (Ecology) : Preparation of Specification for ecological survey and bio-contamination testing by fish. Client: ScottWilson. 2008-2009.

Strategic cooperative study on contaminated sediments of Shenzhen River – Benthic organism investigation. 深圳河污染底泥治理策略合作研究底泥特徵調查專題工作-底棲生物調查 (BENTHIC SURVEY) ; Client: 深圳治河辦 Shenzhen River Administration Office / EGS (HK) Ltd., 2010.



Verification of animal species purchased from USA laboratory supplier for eco-toxic testing of contaminated sediments. Employed by ALS Laboratory as benthic specialist consultant, committed in March 2010.

Wo Hop Shek Creamatorium Construction – Monitoring of transplanted plants. One year contract with AEC Ltd. August 2009 to August 2010.

Additional Tree Survey for Agreement No.NEX2212 of MTR's Shatin to Central Railway Line. Client: MTR/China ARSC, 2009.

Shatin Union Hospital Development project: Tree Survey, Client: Ted and Chen Associates, 2009.

Fire Services Training School cum Driving Training School At Pak Shing Kok, Area 78, Tseung Kwan O. Ecological impact assessment. Client: FSD/Hyder Consulting. 2009.

Lantau – Tuen Mun Link Project: ecological baseline surveys. Client, Meinhardt Infrastructure and Environment Ltd. Scope of works including terrestrial, inter-tidal, mangrove, stream flora and fauna surveys. 2008-2009.

Agreement No. CE 65/2006 (DS) Port Shelter Sewerage Stage 2 and Stage 3 – Design and Construction– Ecological Survey. Client, DSD/Black and Veatch Consultants. Scope of works: conducting terrestrial, intertidal and marine ecological surveys including coral diving surveys. 2008-2009.

Contract No. DC/2008/07, Lam Tsuen Valley Sewerage – Investigation, Design & Construction. Conducting ecological wet season baseline survey. Client: DSD/Ove Arup. October to December 2008

Contract No. DC/2008/07, Lam Tsuen Valley Sewerage – Investigation, Design & Construction. Conducting tree survey. Client: China ARSC. 2008.

Mangrove Survey in North West New Territories. Conducted field survey of mangrove community structure, diversity, growth formation. The collected data was used in modeling of drainage flood risk assessment and mitigation. Client: DSD/MottConell. October to December 2008.

Ma On Shan Development, Engineering Works At Whitehead and Lok Wo Sha phase 1: Design and Construction. Scope of works: Vegetation Surveys and Transplantation Scheme. Client: Maunsell. January to August 2009.

Agreement No. CE 7/2008 (EP) Organic Waste Treatment Facilities, Phase I, Lantau – Feasibility Study. Client: ENSR Asia (HK) Ltd. Conduct tree survey. February 2009.

Construction and Development Office of Macau SAR: Macau Nature Reserve Ecological Monitoring. Conduct monthly ecological monitoring activities including fish, benthic fauna (Mangrove habitat), insect, amphibians, reptiles, mammals, micro-algae sampling at wetland habitat, inter-tidal, mangrove habitats. Also responsible for produce monthly and annual monitoring reports. Client: Macau Government/Macau ecology consultant. Completed two contracts with extensions from 2004 to 2010.

Repositioning and Long Term Operation Plan of Ocean Park. EM & A practice. Conduct vegetation survey to identify and locate some protected plants for transplantation. Plant transplantation and monitoring. Supporting Contractor / Dragages-Bouygues JV, Committed in February 2007 and completed in September 2008.

Express Rail Link project (Client: MTR/China ARSC): Tree Survey Services – Conduct tree surveys and reporting for areas of West Knowloon, Sheng Monk Road, Lok On Pak, Siu Lam and Shek Kong Nursery site. September to December 2008.

10-year Extended LPM Project Landslip Preventive Works on Government Slopes and Related Studies: Ecological survey and impact assessment for slope No. 7NW-D/C-126 and 3SE-D/C135 at Tai Po. Conduct field flora and fauna surveys and reporting. Supporting C M Wong & Associates Ltd. November 2007 to March 2008.

10-year Extended LPM Project Landslip Preventive Works on Government Slopes and Related Studies: Ecological Assessment for Feature No. 11SW-C/F50, The Peak, Hong Kong West. Conduct field flora and fauna surveys and reporting. Supporting C M Wong & Associates Ltd. October 2007 to March 2008.

Civil Engineering and Development Department: Contract No. CV / 2002 / 04 Penny's Bay Reclamation Stage 2 Environmental Monitoring and Audit: White-bellied Sea Eagle monitoring at Penny's Bay for the Disneyland Theme Park project on Lantau. 2005 – 2008.

Bat Survey and Impact Assessment at The Chik Kwai Study Hall, Sheung Tsuen, Pat Heung, Yuen Long. The scope of work include bat field surveys in daytime and night time, impact assessment and propose of mitigation measures; bat box design, installation and monitoring. Client: AMO; in supporting AEC Ltd., 2007-2009.

### ***Completed Projects (before 2008)***

Proposed development at Pak Kung, Sai Kung: tree surveys. Client: Belt Collins Hong Kong Ltd., committed and completed in 2007.

Proposed development at So Kwun Wat, Tuen Mun: tree survey. Client: Sun Hung Kai Architects & Engineering Ltd., committed and completed in 2007.

Proposed residential re-development at Severn Road, Hong Kong island: tree survey. Client: Sun Hung Kai Architects & Engineering Ltd., committed and completed in 2007.

Agreement No. CE69/2001 (HY) Tsuen Wan Road Upgrading – Investigation: EIA – vegetation and habitat surveys. In supporting Scott Wilson Limited, committed and completed in November 2007.

Proposed development at Fairview Park, Yuen Long: bird surveys at various habitats including fish ponds, cultivation and urban land. Supporting Environ Hong Kong Limited, committed and completed in 2007.

Feature No. 11SW-C/F50, Peak Road and Harlech Road, The Peak, Hong Kong: conduct ecological Surveys, impact assessment and report in September 2007. Client: CED / CM Wong & Associate Ltd.

Ecological Survey for North District Sewerage Stage 2 Phase 1: ecological baseline survey and reporting, including fish and stream benthic surveys at Kowloon Hang stream. Committed in October 2006 and completed in 2007.

Monthly bird monitoring at a site of wind turbine station at Lamma. In supporting of Enviro Natural Ltd./Hong Kong Electric Ltd. 2006 -2007.

Agreement No. CE 28/2004 (GE), Landslide Preventive Works at Po Shan, Mid-levels - Design and Construction. Ecological survey and impact assessemnt. In supporting of Maunsell Environmental Management Consultants Ltd. Committed in 2006 and competed in December 2006.

Ecological Impact Assessment for TWGHs Proposed Youth Holiday Camp at Tai O, Lantau. Ecological surveys (covered terrestrial, inter-tidal channel, mangrove, marsh habitats) and impact assessment in supporting AEC Ltd. 2006.

Residential Development in DD99, DD105, San Tin Yuen long: Conducting tree surveys, Committed in September 2006 and completed in December 2006.

Proposed village house development at Tai Mong Tsai, Sai Kung. Conducted ecological surveys, impact assessment in supporting AEC Ltd. Completed in August 2006.

Tsang Kun O Central Park Development and Sha Ha, Sai Kung Development: Tree surveys. Completed in August 2006.

Planning study for costal region of Xun Liao, Hui Yang County, Guang Dong Province. Conducted ecological (flora nad fauna) surveys and impact assesement including varous habitats such as sea shore, river estuarine, mangrove, agricultural land, woodlands, and etc. Completed in September 2006.

Assessment of the conservation study at Tai Po Kau Headland, conducted ecological rapid surveys in suporting Hyder Consultants in September 2006.

Ecological impact assesement at Wo Sang Wai development site. Involving ecological surveys including, birds, bats, amphibians, reptiles, insects, aquatic animals and flora. In supporting MottConnell Consulting Ltd. Committed in 2004 and completed in June 2006.

Lantau Cable Car Project (Ngong Ping 360): Tree surveys, EM & A – responsible for tree surveys, ecological baseline surveys, impact monitoring and ecological mitigation during stage of construction period, and as well as fauna and flora relocation and transplantation. Client: MTR Corporation, sub-contractor of MottConnell, 2002 - 2007.

Lantau Cable Car Project (Ngong Ping 360): Stream diversion – responsible for ecological restoration of newly constructed stream channel with ecologically friendly design; involved stream bank vegetation restoration by transplanting natural vegetation from old stream bank (to be demolished) and monitoring of plant and fauna establishment and pest control (red ants). Client: MTR Corporation, sub-contractor of MottConnell, 2004 - 2006.

Lantau Cable Car Project (Ngong Ping 360): Feasibility study – responsible for ecological surveys, Client: MTR Corporation, sub-contractor of BMT, 1999-2000.

Repositioning and Long Term Operation Plan of Ocean Park. Conduct vegetation survey to identify and locate some protected plants for transplantation. Proposal of plant transplantation plan. 2006-2007.

Ocean Park Corporation – Master Redevelopment Project: Contract No. CI 03 – Parkwide Tree Identification and Condition Survey; vegetation surveys to identify protected plant species. 2006.

Highways Department: Reconstruction and Improvement of Tuen Mun Road, Design and Construction. Tree survey. In supporting EDAW Ltd. Committed in March 2006 and completed in May 2006.

EIA Study for Provision of Crematorium at Wo Hop Shek Crematorium: Ecological survey and impact assessment; Tree survey, compensation planting proposal and reporting. In supporting Hyder Consultants Ltd. Client: Architect Services Department. 2006 - 2008.

Consultancy Agreement No. 9SN005 Construction of a Secondary Boundary Fence - Ecological Impact Assessment for the Project Profile; Tree Surveys, In supporting Mott Connel Ltd., 2005-2006.

Agreement No. CE 11/2004. Tree Survey on masonry wall at Hong Kong Island. In supporting ADI Limited. Committed in 2004 and completed in 2005.

Term Consultancy for Minor Works to Government Properties – Region I Contract No. P1000179 (PM1.31) Slope Upgrading Works at Kennedy Town Bus Terminals, Victoria Road. Involved advise on preservation of significant tree for slope engineering works and monitoring tree health. Client: ASD / ADI / L&O, committed in October 2003 and completed in 2005 .

Territory Development Department, HKSAR, Agreement No. CE 59/94 Main Drainage Channels for Fanling, Sheung Shui and Hinterland: EM & A: ecological monitoring for River Beas and Indus River, N.T.. Scope of monitoring: vegetation, fish, dragonfly, benthic invertebrates, amphibians and birds. Monthly monitoring committed in April 2002 and completed in 2005.

Civil Engineering Department: Contract No. CV/2000/09 Infrastructure for Penny's Bay Development - Contract 1 Impact Environmental Monitoring and Audit (EM&A): White-bellied Sea Eagle monitoring at Penny's Bay for Contract of the Disneyland Theme Park project on Lantau.

Agreement No. CE 25/2002 (DS) Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel Environmental Impact Assessment: Ecological Baseline Survey. The job also involved stream faunal surveys for several streams. Client: DSD / Black & Veatch Hong Kong Limited; committed in August 2003 and completed in 2005.

Contract No. HY/2000/18 Construction of Kam Tin Bypass - Constructed wetland. Being appointed as wetland specialist involving wetland surveys, monitoring, advise on construction of wetland habitats and design, sourcing, verification and supervision of wetland plant plantation. (Client: Highway Department;

Employer: ZHUHAI International Economic & Technical Cooperation Corporation, committed in June 2001 and completed in 2006).

Ecological Monitoring at NENT landfill - Vegetation monitoring on selected tree species and natural vegetation adjacent to operational landfill. (Client: Far East Landfill Technology Ltd.; sub-contracted to BMT Asia Ltd., commissioned in March 1999 and completed in 2005.).

Feasibility Study for Proposed Resort and Residential Development at Hai Tung Bay, Sanya, Hainan, China: Involving field ecological surveys and reporting in 2005. Client: Henderson Land / Belt Collins.

Proposed Residential Development at Various Lots in DD 129, Deep Bay Road, Lau Fau Shan, Yuen Long. Ecological Review and impact assessment for proposed Access Road and Stream Wiedning Works. 2004.

S16 Application for site at Tin Fook Wai, Yuen Long: Ecological supporting works including pond benthic plagic sampling, sorting, identification in 2001-2002. Ecological baseline updating involving birds, amphibians, mammals and Odonata surveys in 2005. Client: Henderson Land / EcoSchemes / BMT.

Section 16 application: Proposed Residential Development at Ha Wo Hang, Sha Tau Kok – Ecological Impact Assessment. Scope of ecological surveys and assessment: Flora and fauna in Fung Shui woodland, woodland, shrubland, stream course, agricultural land, pond. Client: Eton Property; Committed in July 2003 and completed in 2004.

Tree survey and assessment for residential development site at Tao Fung Shan, Sha Tin, N.T., completed in December 2004. Client: Hong Chui Landscaping Ltd.

Tree survey and assessment for residential development site at Beacon Hill No. 1., Kowloon, completed in December 2004. Client: Wing Hong Construction Ltd.

Residential Re-development at No. 12 Headland Road, Hong Kong Island: Tree Survey/Updating (Client: Belt Collins Hong Kong Ltd., completed in February 2005 ).

Marine Surveys and Performance Verification of Cyberport Sewage Outfall - Investigation- Benthic Sampling, Sorting and Identification, committed in March 2004 and completed in October 2004 (sub-contractor of LamGeotechnical).

Agreement No. PW 02/2003. Engineering Feasibility and Environmental Assessment Study for Restoration of the East Lamma Channel Marine Borrow Area – Investigation: Fish Fry Survey, conducted in 2004.

Quotation Contract No. UB 038-04 Routine Maintenance Inspection to 114 Nos. of Slope Features in Tai Po New Territories. Manage and partially conduct tree surveys for all 114 slopes completed in November 2004. In support of Hyder / ADI.

Agreement No. PW 02/2003. Engineering Feasibility and Environmental Assessment Study for Restoration of the East Lamma Channel Marine Borrow Area – Investigation: Fish Fry Survey, conducted in 2004 (sub-contractor of Scott Wilson).

Ecological Study and Impact Assessment of Kau To Hang within a Village Small House Development, in supporting Section 16 application. Client: Ove Arup. 2002 – 2003.

Section 16 application: ecological assessment for a open car storage for sale at Kam Tin, Yuen Long. Client: Sharp Gain Limited. Committed in October 2003 and completed in 2004.

Section 16 application for proposed residential development at Nam Sang Wai, Yuen Long - Tree Survey, appointed by Belt Collins Ltd. 2004 .

Section 16 application for proposed Comprehensive Hotel (Mega Hotel)/Residential Redevelopment on Land Zoned OU-CRA, O and R(A), Site on Kennedy Road and Ship Street, Wan Chai - Tree Survey, appointed by Townland Consultants Ltd. 2002-2004.

Drainage Diversion Works for Comprehensive Residential Development at Various Lots in DD 227 & DD 229, Tai Po Tsai, Sai Kung. Conduct ecology study for the site in response to AFCD's comments on ecology issues. 2002 – 2003. Client: New World Development.

Proposed hotel development at the Old Marine Police Head Quarters at Tsim Sha Tsui, Kowloon: Tree Survey. July 2003.

Proposed Development at Sai Sha, Ma An Shan: tree survey. Client: Belt Collins Asia Limited. 2003.

Tree survey for slope works at Llyon Path, Hong Kong Island. Client: ASD / L & O Architect. 2003

Planning study of Bo An, Shenzhen, China: Ecological surveys for identify ecological degradation areas and proposal of mitigations. A joint project with Beijing University. Completed in October 2003.

Proposed HKYWCA Guesthouse and Conference Centre at San Shek Wan, Lantau - Tree Survey, Tree Felling Application and Tree Compensation. Client: HKYWCA, Committed in August 2003.

Proposed Cable Car project at Lantau: tree surveys (Client: MTRC; Sub-contracted with Mott Connell Ltd. Committed in 2002.)

Residential Development on NKIL 6277 at Beacon Hill Road, Kowloon Tong: tree checking. Client: ADI Ltd., in August 2003.

Agreement No. CE 50/2001 (DS) Drainage Improvement in Sha Tin and Tai Po – Design and Construction - Ecology Survey. Being appointed by Maunsell Consultants to carry out ecological surveys of habitats, flora and fauna for the project. Scope of surveys include terrestrial, freshwater and marine environment. Committed in August 2002 and completed in July 2003.

Agreement No. CE 11/2002 (DS) Drainage Improvement in Sai Kung – Design and Construction: Ecology Survey. Being appointed by Maunsell Consultants to carry out ecological surveys of habitats, flora and fauna for the project. Scope of surveys include terrestrial, freshwater and marine environment. Committed in October 2002 and completed in July 2003.

Agreement No. CE 11/2002 (DS) Drainage Improvement in Sai Kung – Design and Construction: Tree Survey. Being appointed by Ted & Chan Associates to carry out all surveys for the project. Completed in June 2003.

Development at Ting Kok: Rezoning Application and Section 16 Application – Tree Survey. Appointed by ADI Limited. Completed in 2003.

Proposed development at Lo Lau Uk, Tai Po: Stream ecological survey. Sub-consultant of Ecosystem Asia Limited. Completed in 2002.

Ecological Monitoring at WENT landfill - Vegetation monitoring on selected tree species and natural vegetation adjacent to operational landfill; Maine benthic in-fauna identification; bio-monitoring by oyster population, growth, health, survive rate and as well as metal/organic contamination. (Client: SWIRE SITA Waste Services Ltd.; 2001-2002).

Proposed extension of Discovery Golf Course, Lantau: stream ecological survey (contract with Atkins China, 2002)

Tree survey for a development site at Greg Road, Tai Koo Shin, Hong Kong. (sub-contract to Belt Collins Hong Kong Ltd. 2003)

Re-zoning application for proposed development at Kau To Shan, Shatin – ecological survey, assessment and reporting. Appointed by Ove Arup in 2002.

Agreement No. CE 109/98, Deep Bay Link Investigation and Preliminary Design - EIA - Specialist Ecological Survey and Impact Assessment. Involved in two season ecological surveys on mangrove, inter-tidal in-fauna/epi-fauna surveys, stream fauna, mammal, reptile, amphibian surveys and fishery impact assessment. Completed in August 2002. (sub-contracted to EcoSchemes Asia Ltd.; Leading consultants: Ove Arup/EML)

Agreement No. CE 109/98, Deep Bay Link Investigation and Preliminary Design. Tree survey, completed part of the tree surveys. Appointed by EcoSchemes Asia Limited in 2002.

Proposed Development at Fung Lok Wai, Yuen Long at Lot 1457 R.P. in D.D. 123. - Tree Survey, Appointed by ADI Limited.

Ecological assessment of the proposed Theme Park project at Ma Wan – report revising and re-submission. Appointed by CH2M Hill (China) Limited in 2002.

Agreement No. CE 31/98, Lantau North-South Road Link between Tai Ho Wan and Mui Wo - Specialist Ecological Survey and Impact Assessment. Responsible for four season ecological surveys and ecological impact assessment and was commissioned in August 1998. The scope of work include terrestrial flora, fauna including avi-fauna, stream fauna, marine flora/fauna and estuarine fishes. (sub-contracted to Mouchel Asia Ltd., completed in March 2001)

Ecological impact assessment and damage quantification for AMORGOS Oil Spill in Kenting, Taiwan. (Client: confidential, commissioned in 2001 and completed in 2002).

Plant Inventory/Surveys for CLP 11k voltage power lines – (Client: Belt Collins Ltd., 2001- 2002).

Vegetation Inventory/Surveys for proposed CLP 11k voltage power line renovation between Tung Chung and Cheung Sha Wan, Lantau – (Client: CLP/BMT Asia Ltd., 2002).

Ecological review and preliminary impact assessment for a project of low density residential/recreational development of various lots in DD104 Yeun Long. The project involved design of mitigation wetland habitats. Appointed by Ove Arup in 2001.

Route Ten Project: Tree Survey, commissioned in November 2000 and completed in 2002.

Review of ecology issues in Tuen Mun Area 54 Government Farm. (Client: TDD; sub-contracted to Scott Wilson Ltd., Completed in November 2000).

Tree Survey at R.B.L.1138 Stanley, Hong Kong, July 2001.

Tree survey at RBL. No.801 No.3 South Bay Close, Hong Kong, July 2001.

Agreement No. CE 17/2000 10 Year Extended LPM Project Phase 2, Package F – Shatin Works – Tree Survey at 11 slope sites, August, 2001.

Tree survey at Shatin section for Route nine project. May to July 2001.

Tree surveys at 11 slope sites on Hong Kong Island for Slope project. July 2001.

Tree survey at a proposed slope work site at Yau Tong, Knowloon. October 2000.

Tree survey at a proposed slope work site at San Shek Village, Tuen Mun. October 2000.

Tree survey at a proposed build restore site at No 30 Peak Road, Hong Kong Island. September 2000.

Tree survey at a electronic sub-station site at Cyberport, Telegraphy Bay, Hong Kong Island. September 2000.

Tree identification at construction site at Tai Po Kau, New Territories, Hong Kong. September 2000.

Agreement No CE 2/98 Performance Verification of Stanley and Shek O Outfalls. Responsible for benthic sieving, sorting, identification and preliminary data analysis. In total 168 grab samples were taken from seabed for each season (dry and wet season). Over 180 taxa were recorded from each sampling season (Client: EPD; sub-contracted to ERM Ltd., Completed in August 2000).

Tree survey at a proposed development site at Tin Kau, Hong Kong. July 2000.

Ecological impact assessment for a re-zoning project of residential development at Au Tau, Yeun Long. Completed in June 2000 (Appointed by Hyder Consulting Limited).

Proposed Theme Park Project at Ma Wan: Tree survey, involved over 3000 trees survey work. Completed in March 2000.

Proposed development at Lau Fau Shan, Yuen Long: Tree survey. February 2000 and May 2000.

Tree survey at a proposed development site at Leighton Hill, Hong Kong. June and July 2000.

Agreement No. CE 73/98. Investigation Assignment for Widening of Tolo Highway/ Fanling Highway between Island House Interchange and Fanling- Ecological survey and impact assessment. Ecological surveys covered vegetation, mammals, birds, reptiles, amphibians, large inveterbrates and stream fauna. (sub-contracted to Environs Hong Kong Ltd., Completed in March 2000).

Agreement No. CE 17/98 Development of an Ecological Monitoring Programme for the Mai Po and Inner Deep Bay Ramsar Site. (Client: AFD; sub-consultant of Hyder Environmental Ltd.) Involving the Study as benthic specialist. (2000).

Proposed development at Tong Fu, Lantau Island: Ecological survey and impact assessment. Ecological survey covered vegetation, birds, reptiles and large inveterbrates. sub-contracted to ERM Hong Kong Ltd., 2000.

Sludge Treatment and Disposal Strategy Study – Site Specific Feasibility Study: Ecology Study at Nim Wan Site. Ecological surveys covered vegetation, mammals, birds, reptiles, amphibians, large inveterbrates and stream fauna. (Client: EPD; sub-contracted to ERM Hong Kong Ltd., Completed in 2000).

Wetland off-site compensation study at out Deep Bay for site selection study of Waste to Energy Incinerator Facilities (Ha Pak Nai site). Ecological surveys covered vegetation, mammals, birds, reptiles, amphibians, large invertebrates and stream fauna. Client: EPD, Sub-consultant of CDM International, Completed in 2000.

Strategic Master Plan for Expansion of the Main Campus of The University of Hong Kong. Preliminary ecology survey and impact assessment for PPFS. . Ecological surveys covered vegetation, mammals,



birds, reptiles, amphibians, large invertebrates and stream fauna. (Client: The University of Hong Kong; sub-contracted to Over Arup & Partners Hong Kong Ltd., completed in 1999).

Agreement No. CE 5/96: Sludge Treatment and Disposal Strategy Study – Site Specific Feasibility Study: Terrestrial Ecology Surveys and impact assessment at Siu Ho Wan and Nim Wan site. (Client: EPD; sub-contracted to ERM Ltd., completed in 1999).

Preliminary Project Feasibility Study of the Proposed Lantau Cable Car between Tung Chung and Ngong Ping. Botanical and mammal surveys. (Client: MTR Corporation; sub-contracted to an environmental consultant firm, 1999).

Agreement No. CE 64/98 Study on Wetland Compensation. (Client: AFD; sub-consultant to Binnie Black & Veatch Hong Kong Ltd.) Involving the Study as a team leader in conducting wetland field surveys. (completed in 1999).

Waste-to-Energy Incineration Feasibility Study: Ecological habitat survey, stream fauna and riparian flora surveys at Ha Pak Nai. Habitat surveys at Tim Chim Chau and Black Point. (sub-contracted to CDM International Inc., completed in 1999)

Preliminary ecological survey at East and West Lake (constructed brackish water lake/or wetland) in Nanwan, **Macau**. (Client: Nanwan Development Ltd., completed in 1999).

Long Term Ecological Monitoring at SENT landfill - Mammal live-trapping: monitoring population of small mammals in the natural habitats adjacent to operational landfill. (sub-contracted to EcoSchemes Ltd., January to December 1998)

Nam Sang Wai Development - Ecological Monitoring: Benthic sample sorting, identification and biomass estimation. (sub-contracted to EcoSchemes Ltd., January to December 1998)

Proposed private development at Pak Kong, Sai Kung, conducting onsite tree surveys, responsible for tree identification and measuring over 1500 trees on site. (Completed in October 1998)

Agreement No. CE 24/97 Desilting and Renovation of Impounding Reservoirs on Hong Kong Island and Lantau Island Investigation Study, undertaking ecological surveys on flora and fauna. (sub-contracted to Enviros Hong Kong Ltd.; Completed in Jan. 1999)

Agreement No. CE 92/97 - Engineering Feasibility Study for Infrastructure Works for Housing Development at Telegraph Bay (cyber port site). Responsible for ecological surveys including flora and fauna. (sub-contracted to Enviros Hong Kong Ltd.; Completed in Jan. 1999)

Ecological recourse review of Shenzhen coastal line. Client: Shenzhen Land Bureau. (sub-consultant of Atkins China Ltd., Completed in November 1998)

Agreement CE 6/97 Feasibility Study for Housing Sites in Sha Tin District - Shing Mun Valley-undertaken the Additional Ecological Survey and Impact Assessment (main consultant: Binnie Black & Veatch Hong Kong Ltd.). (Completed in September 1998)

Agricultural expert's opinion on ten agricultural products of Hong Kong - a report for Henderson Land Development Co. Ltd. (completed in August 1998)

Agreement No. CE 66/96, Planning and Development Study on North West New Territory - conduct specialist ecological survey at a variety of areas in the New Territories in Hong Kong. (completed in June 1998)

Tree survey at Tai Lam Chung, involving species identification, photographing and recording (completed in July 1998).

Tree survey at Ngong Ping, Lantau, involving species identification, photographing, mapping and recording. (completed in August 1998)

Proposed private development at Pak Kong, Sai Kung, conducting on-site tree surveys, responsible for tree identification and measuring over 1500 trees on site, 1998.

Tree Survey at Ping Shan, Yuen Long, involving species identification, photographing and recording, 1998.

Tree Survey for a proposed governmental building renovation site at Aberdeen, Hong Kong Island , involving species identification, photographing, recording, evaluation and reporting, 1999.

Tree Survey for a proposed bus station site at Stanely, Hong Kong Island , involving species identification, photographing, recording and reporting, 1999.

Renewal of Hong Kong Federation of Youth Clubs, Tai Mong Tsai Outdoor Training Camp, Sai Kung: EIA - Botanical survey and impact assessment; tree survey; mangrove and intertidal zone survey; and butterfly survey. 1998.

Agreement CE 52/97. Planning & Engineering Feasibility Study for Redevelopment of Mount Davis Cottage Area & Kennedy Town Police Married Quarters.- Ecological Survey and Impact Assessment.

Proposed Residential Development at Shek Wu Wai Village, north N.T.: Stream survey, impact assessment and reporting.

Proposed Residential Development at DD 92; Development at DD 92; Lot Nos.D 92; Lot Nos. 2558, 915sC and 947;8, 915sC and 9Kam Tsin Tsuen, Sheung Shui, N. T.: Ecological survey and impact assessment.

Planning and Development Study on Hong Kong Island South and Lamma Island. Responsible for fauna surveys (birds, reptile, amphibians, stream benthos and large terrestrial insects) at a number sites including Fok Fu Lam area. Sub-contract to Atkins China Ltd, completed in 2001.

Proposed Section 16 Planning Application, Planning Application for Residential Development at Lot 101 & DD111, Yuen Long N. T.: Ecological survey and impact assessment.

Engineering Feasibility Study for Proposed Housing Development at North of Pamela Youde Hospital, Chai Wan: Ecological survey, impact assessment and reporting.

Route 9, Detailed Feasibility Study: Ecological Surveys (fauna) and Reporting.

Discovery Bay Development: shoreline/habitats survey and marine resources review.

EIA for Tin Kau Development: benthic ecologist responsible for identifying invertebrates collected from the stream and the estuarine.

Ecological Impact Assessment for a proposed resort development at Ngong Ping, Lantau Island: responsible for site surveying, stream benthic sampling, sorting, identifying, evaluating, assessing impacts and propose of ecological mitigation 1998.

**1995.7-1997.3 Senior Environmental Consultant - Hyder Environmental Ltd. (formerly AXIS Environmental Consultants Ltd. Projects involved:**

Deep Bay Water Quality Regional Control Strategy: Project Co-ordinator for a large study developing a management strategy for Deep Bay which borders Hong Kong and the PRC.

Shenzhen River Regulation Project Phase I: Environmental Monitoring and Audit Programme: Project Manager and specialist for the benthic and sediment sampling and sample processing at the Mai Po mudflats.

Shenzhen River Regulation Project Phase II Stage II Works: Project manager and specialist supporting Atkins Haswell Ltd. with environmental aspects especially ecological mitigation.

Community Impact Assessment for West Railway Project: Responsible for identification of ecological sensitive receivers along the proposed railway and stations; recommendation on mitigation measures on relevant ecological component.

Upgrading of Water Quality and Hydraulic Mathematical Models: Responsible for assisting the leading consultant - Delft Hydraulics - in data collection for modelling purpose.

ECCI Calcium Carbonate Grinding Facility, Nanling, Wuhu, PRC: Site investigation, scoping of environmental impact assessment, costing and liaison with local environmental protection/regulation authorities for a British invested factory.

Revised Sha Lo Tung Development EIA: Responsible for the ecological survey of three stream courses in the Sha Lo Tung valley.

Discovery Bay Development - Environmental Consultancy Services for Mangrove Restoration: Specialist to organise and carry out habitat, mangrove and rock shore surveys; supervise and undertake stream channel, mudflat design and nursery construction.

Literature Review on Chinese White Dolphin (*Sousa chinensis*): Supporting study for Hyder Consultants to provide information on spatial distribution and population of white dolphins; and to provide information on status and views of biological conservation of the species.

Part-time Tutor for Environmental Impact Assessment Course: Employed by Hong Kong Open Learning Institute as a Part-time tutor during April 1995 to April 1996 and October 1996 to April 1997.

**1993 - 1995 Binnie Consultants - Environmental Scientist and Benthic Ecologist, Projects involved:**

Tai Po and Butterfly Valley Additional Water Treatment Works EIA: Responsible for ecological surveys of terrestrial and freshwater flora and fauna, 1994.

Proposed Explosive Storage Development, Kau Shek Wan, Lantau: Responsible for the ecological survey of the site of the proposed explosive storage depot, 1994.

Ting Kau Bridge EIA: Ecological survey and impact assessment (terrestrial and freshwater flora and fauna) of proposed Ting Kau Bridge project.

North Lantau Port Development EIA: Ecological survey and EIA of the proposed port development site at Tsing Chau, Lantau.

Kwu Tung Residential Development EIA: Ecological survey and impact assessment (terrestrial and freshwater flora and fauna) of a proposed residential development at North and South of Kwu Tung, North New Territories.

Hoi Ha Wan Ecological Study: Studied benthic communities in streams and the estuary at Hoi Ha Wan, Hong Kong.

Along Bay Resort Development: undertaken a preliminary ecological assessment at Along Bay, a proposed national resort development in Hainan, PRC.

WENT Landfill EIA: Involved in the ecological studies for the supplementary EIA and ecological monitoring at the WENT landfill site on the edge of Deep Bay.

NENT Landfill Environmental Review: Performed an ecological survey of the NENT landfill site as part of the Environmental Review of the project.

East Sha Chau Contaminated Mud Pit Environmental Monitoring: Benthic ecologist and team leader responsible for long-term benthic monitoring for the East Sha Chau contaminated mud pits during 1993-1995. Work included sampling, sample sorting, identification, data analysis and reporting.

South Cheung Chau Spoil Disposal Site Monitoring: Benthic ecologist and team leader responsible for benthic faunal sampling, sorting, identification and reporting.

Seabed Ecology Study: Conducted part of the Remote Seabed Survey (REMOTS) and also a benthic ecologist and team leader (of Binnie Consulting Ltd) undertook the 'Remote Ground Truthing' of benthic communities in west, south and east waters of Hong Kong. Work included project co-ordination, grab sampling, sorting, identification, data analysis and reporting 1993-1995.

Fill Management EIA of Ninepin Islands: Benthic ecologist and team leader undertook a baseline benthic study and impact assessment of the proposed dredging site near the Ninepin Islands. 1994.

Environmental Audit of Dredging in the Lamma Channel: Benthic ecologist and team leader carried out the baseline ecological study and impact assessment of dredging on benthic fauna in the Lamma Channel. 1994.

**1991 - 1993 - Freelance ecological consultant, Project involved:**

Team 73, Townland consultants and New World Development. Independent undertaken or involved the following projects:

Sha Lo Tung Development EIA: Ecological survey of proposed golf course development at Sha Lo Tung.

Mai Po Tsuen, Yuen Long and Tai Po Kau Development EIAs

**1988 - 1993 The University of Hong Kong - Ph.D. candidate and part-time demonstrator for a variety of biological and ecological courses.**

River/Stream Benthic Community and Water Chemistry Studies: Ph.D project studying macroinvertebrate communities in both polluted and unpolluted streams in Hong Kong. The project focused on the various environmental factors influencing animal communities and community structure. Both biotic (e.g. algae and riparian vegetation) and abiotic factors (e.g. water chemistry, substrate, hydraulics and organic pollution) were studied. A relatively new multivariate statistical analysis technique (CANOCO) was used to analyse large community data sets with multivariate environmental parameters. The data on the benthic community and some identified sensitive species could be applied to aquatic environmental stress assessment in Hong Kong.

1984 - 1987 Study for Master of Science degree at the Biology Department of Nanjing Normal University: Research on animal taxonomy.

1987 - 1988 Biology teacher at Nanjing Normal School: Teaching biology and Human Physiology.

1978 - 1981 Undergraduate at the Biology Department of Hunan Normal University: Project research on animal taxonomy. Undertaken plant phenology record of a variety of trees and shrubs.

### **Publications and Thesis (not including technical reports)**

Shea She Sang (junior editor), 1986. Proceedings of Nature Calendar of China. Sinica Science press. 421 pp.

Shea She Sang and You, D., 1988. A new species of *Isonychia* from China (Ephemeroptera: Oligoneuriidae). *Pan-Pacific Entomologist*. 64(1): 29-31.

Shea She Sang, 1992. Benthic community transitions from freshwater to sea water at Hoi Ha Wan, Hong Kong. In *The marine flora and fauna of Hong Kong and Southern China III* (ed. B. Morton). Proceedings of the Fourth International Marine Biological Workshop, Hong Kong, 11-29 April 1989. Hong Kong University Press. pp. 801-814.

Shea She Sang, 1993. Determinants of macroinvertebrate community structure in stone surfaces in Hong Kong streams. Ph.D thesis. The University of Hong Kong.

Shea She Sang, 1994. The effects of water quality, epilithic algae and organic matter on the communities of stone-dwelling macroinvertebrates in a Hong Kong river. *Mitt. Internat. Verein. Limnol.* 24: 327-336.

Shea She Sang and Gui Hong, 1995. Studies on Ephemeroptera (Insecta) of Hainan Province. *Acta Nanjing Normal University*.

Shea She Sang, Lynn Smith and Pamela Sanders, 1995. Ecological Impact Assessment and Ecological Monitoring of a Strategic Landfill: A Case Study in Hong Kong. Proceedings of The First Symposium of Chinese Zoologist in Southeast Asian, Guangzhou, 14-17 December 1994. In Supplement to The Journal of Sun Yatsen University. 1995 (3): 30 - 39.

Cai Lizhe, Lin Peng, She Shusheng (Mark Shea) and Lawman Law, 1998. Studies on polychaete ecology on the mudflat of the intertidal zone in Shenzhen Esturay. *Marine Environmental Science*. Vol. 17 (1): 41-47.

Zhou Weichuan, She Shu-Sheng (Mark Shea) etc. 2006. STUDY ON GEOGRAPHY DISTRIBUTION MODEL OF *HEMIBERLESIA PITYSOPHILA*. (周卫川, 余书生 等: 松突圆蚶地理分布模型的研究). To be published.

Zhou Weichuan, She Shu-Sheng (Mark Shea) etc. 2007. A study on the land and freshwater mollusks as hosts of *Angiostrongylus cantonensis* Chen. (周卫川, 余书生 等: 广州管圆线虫中间宿主- 软体动物概述). *Chinese Journal of Zoonoses* Vol. 23. No. 4; P. 401-408.

WEI ji-ling, ZHOU Wei-chuan, SHAO Bi-ying, SHE Shu-sheng (Mark Shea), WANG Shou-kun, CHEN Wen-bing, CHEN Shou-ling. 2008. Establishment of a PCR assay for detection of snail infected with *Angiostrongylus cantonensis*. PCR 检测螺类感染广州管圆线虫方法的建立与应用. *Chinese Journal of Zoonoses* Vol. 24. No. 12; P. 1136-1140.

Mark Shea and Sun Jie. 2013. Hong Kong Incense Tree *Aquilaria sinensis*, Incense Product and Incense Culture (in Chinese) 香港土沉香, 香文化及保育。 . Published by China Hong Kong Ecology Consultants Limited, July, 2013. ISBN:978-988-12644-0-4.

SHE Shu-sheng (Mark Shea), SUN Jie. 2017. Bottom trawl survey on molluscs resources of the Pearl River Estuary near Hong Kong waters (in Chinese) 珠江口香港海域底拖網貝類資源研究. Science Press of China. Marine Science Vol. 41, No. 11 / 2017. page 119-124.

## **Appendix B**

### List of flora species recorded

Appendix B: List of flora species recorded and the relative abundance within the Assessment Area

Flora information				Assessment Area						Project site
Family	Species	中文名	Native/Exotic	Developed area	Plantation Woodland	Inactive agricultural land	Shrubland	Stream	Natural Woodland	
Actinidiaceae	<i>Saurauia tristyla</i>	水東哥	Native						+	
Adiantaceae	<i>Adiantum capillus-veneris</i>	鐵線蕨	Native		+				+	
Agavaceae	<i>Sansevieria trifasciata</i>	虎尾蘭	Exotic		+					
Alangiaceae	<i>Alangium chinense</i>	八角楓	Native		+					
Amaranthaceae	<i>Achyranthes aspera</i>	倒扣草	Native						+	
Amaranthaceae	<i>Amaranthus viridis</i>	野苋	Native	+	+	+				
Anacardiaceae	<i>Rhus hypoleuca</i>	白背漆	Native				+		+	
Anacardiaceae	<i>Rhus succedanea</i>	野漆樹	Native			+				
Anacardiaceae	<i>Mangifera indica</i>	杧果	Exotic		+			+	+	
Annonaceae	<i>Desmos chinensis</i>	假鷹爪	Native					+		
Annonaceae	<i>Uvaria macrophylla</i>	紫玉盤	Native						+	
Apocynaceae	<i>Strophanthus divaricatus</i>	羊角拗	Native				+			
Aquifoliaceae	<i>Ilex asprella</i>	梅葉冬青	Native		+		+		+	+
Araceae	<i>Epipremnum aureum</i>	綠蘿	Exotic		+					
Araceae	<i>Syngonium podophyllum</i>	合果芋	Exotic		+					
Araceae	<i>Alocasia macrorrhiza</i>	海芋	Native					+		
Araceae	<i>Colocasia esculenta</i>	芋	Exotic			+		+		
Araliaceae	<i>Aralia chinensis</i>	楸木	Native		+					
Araliaceae	<i>Schefflera heptaphylla</i>	鴨腳木	Native		+		+		++	+
Asclepiadaceae	<i>Gymnema sylvestre</i>	匙羹藤	Native				+			
Asclepiadaceae	<i>Tylophora ovata</i>	娃兒藤	Native				+		+	+
Asteraceae	<i>Ageratum conyzoides</i>	勝紅薊	Exotic				+			
Asteraceae	<i>Aster baccharoides</i>	白舌紫菀	Native				+			
Asteraceae	<i>Duhaldea cappa</i>	羊耳菊	Native				+			
Asteraceae	<i>Elephantopus scaber</i>	地膽草	Native				+			
Asteraceae	<i>Vernonia cinerea</i>	夜香牛	Native	+	+		+			+
Asteraceae	<i>Wedelia chinensis</i>	蟛蜞菊	Native			+				
Asteraceae	<i>Gynura divaricata</i>	白子菜	Native			+	+			
Asteraceae	<i>Synedrella nodiflora</i>	金腰箭	Exotic		+					
Asteraceae	<i>Bidens alba</i>	白花鬼針草	Exotic	+	+		+			
Asteraceae	<i>Mikania micrantha</i>	薇甘菊	Exotic			++		+		
Asteraceae	<i>Emilia sonchifolia</i>	一點紅	Native	+	+	+	+			
Asteraceae	<i>Elephantopus tomentosus</i>	白花地膽草	Native		+		+		+	
Basellaceae	<i>Basella alba</i>	潺菜	Exotic					+		
Blechnaceae	<i>Blechnum orientale</i>	烏毛蕨	Native				+	+		
Caesalpiniaceae	<i>Caesalpinia crista</i>	華南雲實	Native						+	
Caesalpiniaceae	<i>Senna alata</i>	翅莢決明	Exotic		+			+		
Caprifoliaceae	<i>Lonicera japonica</i>	忍冬	Native						+	
Casuarinaceae	<i>Casuarina equisetifolia</i>	木麻黃	Exotic	+	+					



Appendix B: List of flora species recorded and the relative abundance within the Assessment Area

Flora information				Assessment Area						Project site
Family	Species	中文名	Native/Exotic	Developed area	Plantation Woodland	Inactive agricultural land	Shrubland	Stream	Natural Woodland	
Celastraceae	<i>Celastrus hindsii</i>	青江藤	Native						+	
Clusiaceae	<i>Garcinia oblongifolia</i>	嶺南山竹子	Native		+				+	
Commelinaceae	<i>Floscopa scandens</i>	聚花草	Native			+				
Commelinaceae	<i>Commelina diffusa</i>	節節草	Native			+		+		
Convolvulaceae	<i>Ipomoea nil</i>	牽牛	Exotic					+		
Convolvulaceae	<i>Merremia quinata</i>	指葉山豬菜	Native				+			
Cucurbitaceae	<i>Solena amplexicaulis</i>	茅瓜	Native						+	
Cyperaceae	<i>Fimbristylis nutans</i>	垂穗飄拂草	Native				+			
Cyperaceae	<i>Scleria sp.</i>	珍珠茅	N.A.			+		+		
Cyperaceae	<i>Kyllinga polyphylla</i>	水蜈蚣	Exotic		+				+	
Daphniphyllaceae	<i>Daphniphyllum calycinum</i>	牛耳楓	Native		+		+		+	+
Dilleniaceae	<i>Tetracera asiatica</i>	錫葉藤	Native						+	
Dioscoreaceae	<i>Dioscorea alata</i>	參薯	Exotic						+	
Dioscoreaceae	<i>Dioscorea sp.</i>	薯蕷	N.A.						+	
Euphorbiaceae	<i>Euphorbia hirta</i>	大飛揚草	Exotic		+					
Euphorbiaceae	<i>Glochidion wrightii</i>	白背算盤子	Native			+				
Euphorbiaceae	<i>Glochidion zeylanicum</i>	香港算盤子	Native					+		
Euphorbiaceae	<i>Phyllanthus reticulatus</i>	爛頭碎	Native			+				
Euphorbiaceae	<i>Sapium sebiferum</i>	烏柏	Native			+				
Euphorbiaceae	<i>Glochidion eriocarpum</i>	毛果算盤子	Native				+		+	
Euphorbiaceae	<i>Phyllanthus emblica</i>	餘甘子	Native			+	+			+
Euphorbiaceae	<i>Sapium discolor</i>	山烏柏	Native			+	+			
Euphorbiaceae	<i>Breynia fruticosa</i>	黑面神	Native			+	+		+	+
Euphorbiaceae	<i>Bridelia tomentosa</i>	土蜜樹	Native		+			+		+
Euphorbiaceae	<i>Phyllanthus cochinchinensis</i>	越南葉下珠	Native				++			+
Euphorbiaceae	<i>Aporosa dioica</i>	銀柴	Native		+		+		+	+
Euphorbiaceae	<i>Macaranga tanarius</i>	血桐	Native	+	++	+	+		+	
Euphorbiaceae	<i>Mallotus paniculatus</i>	白楸	Native		++		+		++	+
Fabaceae	<i>Desmodium tortuosum</i>	南美山螞蝗	Exotic				+			
Fabaceae	<i>Pueraria lobata</i>	野葛	Native			+			+	
Fabaceae	<i>Tadehagi triquetrum</i>	葫蘆茶	Native		+		+			
Fabaceae	<i>Millettia nitida</i>	亮葉雞血藤	Native						+	
Fabaceae	<i>Millettia speciosa</i>	美麗崖豆藤	Native				+			
Fabaceae	<i>Dalbergia millettii</i>	香港黃檀	Native				+	+		
Fabaceae	<i>Desmodium heterocarpon</i>	假地豆	Native		+		+			
Fagaceae	<i>Castanopsis fissa</i>	蠟蕈	Native	+	+				+	
Flacourtiaceae	<i>Homalium cochinchinensis</i>	天料木	Native			+				
Gleicheniaceae	<i>Dicranopteris pedata</i>	芒萁	Native			+	+++			
Gramineae	<i>Eremochloa ciliaris</i>	蜈蚣草	Native	+	+		+		+	+

Appendix B: List of flora species recorded and the relative abundance within the Assessment Area

Flora information				Assessment Area						Project site
Family	Species	中文名	Native/Exotic	Developed area	Plantation Woodland	Inactive agricultural land	Shrubland	Stream	Natural Woodland	
Guttiferae	<i>Cratogeomys cochinchinensis</i>	黃牛木	Native		++		++			+
Haloragaceae	<i>Gonocarpus chinensis</i>	黃花小二仙草	Native				+			
Lauraceae	<i>Cassytha filiformis</i>	無根藤	Native				+			
Lauraceae	<i>Cinnamomum parthenoxylum</i>	黃樟	Native		+					
Lauraceae	<i>Litsea cubeba</i>	山蒼樹	Native						+	
Lauraceae	<i>Machilus chekiangensis</i>	浙江潤楠	Native		++				+	
Lauraceae	<i>Litsea glutinosa</i>	潺槁樹	Native				+		+	+
Lauraceae	<i>Litsea rotundifolia</i>	豺皮樟	Native				+		+	+
Liliaceae	<i>Dianella ensifolia</i>	山菅蘭	Native		+		+		+	+
Liliaceae	<i>Liriope spicata</i>	麥門冬	Native						+	+
Lycopodiaceae	<i>Palhinhaea cernua</i>	鋪地蜈蚣	Native				+			
Lygodiaceae	<i>Lygodium japonicum</i>	海金沙	Native				+		+	
Malvaceae	<i>Urena lobata</i>	肖梵天花	Native					+		
Melastomataceae	<i>Melastoma dodecandrum</i>	地稔	Native				+			
Melastomataceae	<i>Melastoma sanguineum</i>	毛稔	Native				+			
Melastomataceae	<i>Melastoma candidum</i>	野牡丹	Native			+	+	+		
Meliaceae	<i>Melia azedarach</i>	楝	Native							+
Menispermaceae	<i>Cocculus orbiculatus</i>	木防己	Native					+		
Menispermaceae	<i>Cyclea hypoglauca</i>	粉葉輪環藤	Native						+	
Menispermaceae	<i>Pericampylus glaucus</i>	細圓藤	Native	+	+		+		+	+
Mimosaceae	<i>Acacia auriculiformis</i>	耳果相思	Exotic	+	+					
Mimosaceae	<i>Acacia mangium</i>	大葉相思	Exotic	+	++					
Mimosaceae	<i>Mimosa pudica</i>	含羞草	Exotic	+		+	+			
Mimosaceae	<i>Acacia confusa</i>	台灣相思	Exotic	++	+++					+
Mimosaceae	<i>Archidendron clypearia</i>	猴耳環	Native				+		+	
Mimosaceae	<i>Leucaena leucocephala</i>	銀合歡	Exotic	+	+		+			
Mimosaceae	<i>Archidendron lucidum</i>	亮葉猴耳環	Native							+
Moraceae	<i>Artocarpus macrocarpus</i>	波羅蜜	Exotic		+					
Moraceae	<i>Ficus elastica</i>	印度橡樹	Exotic		+					
Moraceae	<i>Ficus pumila</i>	薜荔	Native		+					
Moraceae	<i>Ficus variegata</i>	青果榕	Native				+		+	
Moraceae	<i>Morus alba</i>	桑	Native		+				+	
Moraceae	<i>Ficus hispida</i>	對葉榕	Native	+	++			+	+	
Moraceae	<i>Ficus simplicissima</i>	五指毛桃	Native		+				+	
Moraceae	<i>Ficus microcarpa</i>	細葉榕	Native	+	+				+	
Musaceae	<i>Musa paradisiaca</i>	大蕉	Exotic		+			+		
Myricaceae	<i>Myrica rubra</i>	楊梅	Exotic		+					
Myrsinaceae	<i>Ardisia crenata</i>	朱砂根	Native			+				
Myrsinaceae	<i>Maesa perliarius</i>	鯽魚胆	Native						+	

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Flora information				Assessment Area						Project site
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Myrsinaceae	<i>Embelia laeta</i>	酸藤果	Native		+				+	+
Myrsinaceae	<i>Embelia ribes</i>	白花酸藤子	Native				+		+	
Myrtaceae	<i>Rhodomyrtus tomentosa</i>	桃金娘	Native				++			+
Myrtaceae	<i>Lophostemon confertus</i>	紅膠木	Exotic		+++					+
Myrtaceae	<i>Psidium guajava</i>	番石榴	Exotic		+				+	
Myrtaceae	<i>Syzygium jambos</i>	蒲桃	Exotic					+	+	
Myrtaceae	<i>Syzygium levinei</i>	山蒲桃	Native				+		+	+
Nepenthaceae	<i>Nepenthes mirabilis</i>	豬籠草 (2, 4, 5)	Native				+			
Onagraceae	<i>Ludwigia hyssopifolia</i>	草龍	Native			+				
Onagraceae	<i>Ludwigia perennis</i>	細花丁香蓼	Native			+				
Oxalidaceae	<i>Oxalis corniculata</i>	酢醬草	Native	+	+	+		+		
Pandanaceae	<i>Pandanus tectorius</i>	露兜樹	Native			+			+	
Passifloraceae	<i>Passiflora foetida</i>	龍珠果	Exotic				+			
Piperaceae	<i>Peperomia pellucida</i>	草胡椒	Exotic						+	
Plantaginaceae	<i>Plantago major</i>	車前草	Native	+	+	+				
Poaceae	<i>Coix lacryma-jobi</i>	薏苡	Native					+		
Poaceae	<i>Setaria pumila</i>	金色狗尾草	Native				+			
Poaceae	<i>Cymbopogon hamatulus</i>	扭鞘香茅	Native				+			
Poaceae	<i>Panicum maximum</i>	大黍	Exotic	+						
Poaceae	<i>Rhynchelytrum repens</i>	紅毛草	Exotic	+						
Poaceae	<i>Cymbopogon tortilis</i>	扭鞘香茅	Native				++			
Poaceae	<i>Eleusine indica</i>	牛筋草	Native	+	+	+		+		
Poaceae	<i>Paspalum distichum</i>	雙穗雀稗	Native			+				
Poaceae	<i>Setaria palmifolia</i>	棕葉狗尾草	Native				+			
Poaceae	<i>Chloris barbata</i>	虎尾草	Native	+			+			
Poaceae	<i>Lophatherum gracile</i>	淡竹葉	Native		+				+	
Poaceae	<i>Paspalum conjugatum</i>	兩耳草	Native		+			+		
Poaceae	<i>Arundinella nepalensis</i>	石珍芒	Native	+	+		++			+
Poaceae	<i>Cyrtococcum patens</i>	弓果黍	Native						+	
Poaceae	<i>Microstegium ciliatum</i>	剛秀竹	Native		+	+		++		
Polygonaceae	<i>Polygonum chinense</i>	火炭母	Native	+				+		
Pteridaceae	<i>Pteris sp.</i>	鳳尾蕨	N.A.					+		
Pteridaceae	<i>Pteris semipinnata</i>	半邊旗	Native		+				+	
Rosaceae	<i>Eriobotrya japonica</i>	枇杷	Exotic		+					
Rosaceae	<i>Rubus reflexus</i>	蛇泡薊	Native		+		+		+	
Rosaceae	<i>Rhaphiolepis indica</i>	車輪梅	Native		+		+		+	+
Rubiaceae	<i>Catunaregam spinosa</i>	山石榴	Native				+			
Rubiaceae	<i>Gardenia jasminoides</i>	梔子	Native				+		+	+
Rubiaceae	<i>Hedyotis acutangula</i>	方骨草	Native				+			

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Rubiaceae	<i>Morinda parvifolia</i>	雞眼藤	Native				+			
Rubiaceae	<i>Mussaenda pubescens</i>	玉葉金花	Native				+			+
Rubiaceae	<i>Paederia scandens</i>	雞矢藤	Native	+			+			
Rubiaceae	<i>Hedyotis corymbosa</i>	傘房花耳草	Native			+				
Rubiaceae	<i>Borreria stricta</i>	豐花草	Native			+			+	
Rubiaceae	<i>Psychotria asiatica</i>	九節	Native					+	+	+
Rutaceae	<i>Acronychia pedunculata</i>	降真香	Native		+		+		+	
Rutaceae	<i>Citrus reticulata</i>	柑橘	Exotic		+					
Rutaceae	<i>Clausena lansium</i>	黃皮	Exotic	+	+					
Rutaceae	<i>Tetradium glabrifolium</i>	棟葉吳茱萸	Native			+			+	
Rutaceae	<i>Zanthoxylum nitidum</i>	兩面針	Native			+			+	+
Rutaceae	<i>Zanthoxylum avicennae</i>	筍欖花椒	Native				+		+	+
Sapindaceae	<i>Litchi chinensis</i>	荔枝	Exotic	+	++					
Sapindaceae	<i>Dimocarpus longan</i>	龍眼	Exotic	++	++				+	
Scrophulariaceae	<i>Adenosma glutinosum</i>	毛麝香	Native				+			
Scrophulariaceae	<i>Scoparia dulcis</i>	冰糖草	Native	+		+	+	+		
Scrophulariaceae	<i>Lindernia anagallis</i>	長蒴母草	Native			+	+			
Simaroubaceae	<i>Brucea javanica</i>	鴉膽子	Native			+	+			
Smilacaceae	<i>Heterosmilax japonica</i>	肖菝葜	Native						+	
Smilacaceae	<i>Smilax glabra</i>	光葉菝葜	Native				+		+	
Smilacaceae	<i>Smilax china</i>	菝葜	Native							+
Smilacaceae	<i>Smilax glabra</i>	土茯苓	Native		+		+		+	+
Sterculiaceae	<i>Helicteres angustifolia</i>	山芝麻	Native			+	++			
Sterculiaceae	<i>Sterculia lanceolata</i>	假蒨婆	Native		+	+		+	+	+
Theaceae	<i>Eurya nitida</i>	細齒葉柃	Native		+		+		+	+
Theaceae	<i>Schima superba</i>	木荷	Native		+					
Thelypteridaceae	<i>Cyclosorus acuminatus</i>	漸尖毛蕨	Native			+		+		
Thelypteridaceae	<i>Cyclosorus parasiticus</i>	華南毛蕨	Native	+	+			+	+	
Thymelaeaceae	<i>Aquilaria sinensis</i>	土沉香 (1, 3, 5, 6, 7)	Native		+		+		+	+
Tiliaceae	<i>Microcos paniculata</i>	布渣葉	Native		++	++			+	+
Ulmaceae	<i>Celtis timorensis</i>	樟葉朴	Native						+	
Ulmaceae	<i>Celtis sinensis</i>	朴樹	Native						+	
Urticaceae	<i>Boehmeria nivea</i>	苧麻	Native						+	
Urticaceae	<i>Gonostegia hirta</i>	糯米團	Native					+		
Urticaceae	<i>Pilea microphylla</i>	透明草	Exotic		+					
Urticaceae	<i>Pouzolzia zeylanica</i>	霧水葛	Native		+	+				
Verbenaceae	<i>Callicarpa nudiflora</i>	裸花紫珠	Native						+	
Verbenaceae	<i>Duranta erecta</i>	假連翹	Exotic		+					

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Verbenaceae	<i>Gmelina chinensis</i>	石梓 (2)	Native				+			
Verbenaceae	<i>Vitex quinata</i>	山牡荊	Native						+	
Verbenaceae	<i>Lantana camara</i>	馬纓丹	Exotic					+		
Zingiberaceae	<i>Alpinia zerumbet</i>	艷山薑	Native					+		
Zingiberaceae	<i>Hedychium coronarium</i>	薑花	Exotic		+	++		+		
<b>Total</b>				30	77	44	81	36	78	38

Note:

"1" - Listed as "Vulnerable" at IUCN Red List

"2" - "Vulnerable" in Rare and Precious Plants of Hong Kong (Status in China)

"3" - Under State protection (Category II)

"4" - Protection under Forests and Countryside Ordinance (Cap 96)

"5" - Protection of Endangered Species of Animals and Plants Ordinance (Cap 586)

"6" - "Near Threatened" in Rare and Precious Plants of Hong Kong (Status in China)

"7" - Recorded in China Red Data Book

+ ' represent species exist within Assessment Area

++ ' represent species commonly recorded within Assessment Area

+++ ' represent recorded species is a dominant species within Assessment Area

## **Appendix C**

### **Photos Record**

Appendix C–Photos Record







 A dirt path winds through a lush, green area with large trees and dense foliage, suggesting a developed or semi-developed area.	 A wide view of a plantation woodland on a hillside, showing rows of young trees and a dense canopy of green vegetation.
<p>Photo 1. General View of Developed area</p>	<p>Photo 2. General View of Plantation Woodland</p>
 A dense, natural woodland covering a hillside, with a thick canopy of various green trees.	 A view of a shrubland area with dense, low-lying green vegetation and some larger plants in the foreground.
<p>Photo 3. General View of Natural Woodland</p>	<p>Photo 4. General View of Shrubland</p>
 A view of inactive agricultural land, showing a grassy field with a cow grazing in the distance and some muddy patches in the foreground.	 A close-up view of a stream flowing through a lush, green area, with bamboo poles visible in the foreground.
<p>Photo 5. General View of Inactive Agricultural Land</p>	<p>Photo 6. General View of Stream</p>



Photo 7. General View of Project Site (inside Natural Woodland)



Photo 8. General View of Project Site (inside Plantation Woodland)



Photo 9. A View of *Aquilaria sinensis*, to be transplanted.



Photo 10. General View of *Gmelina chinensis*

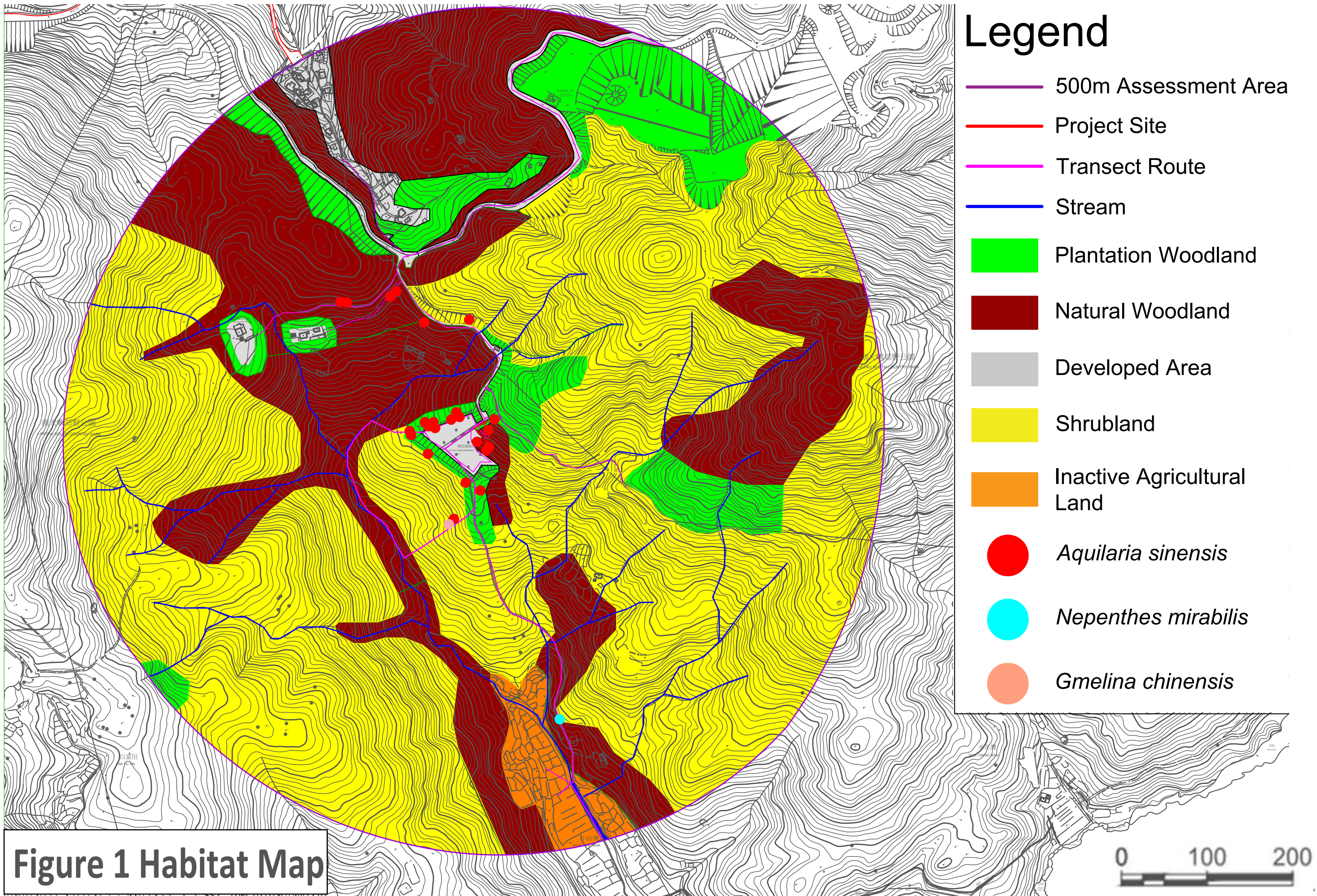


Photo 11. General View of *Nepenthes mirabilis*



## **FIGURE 1**

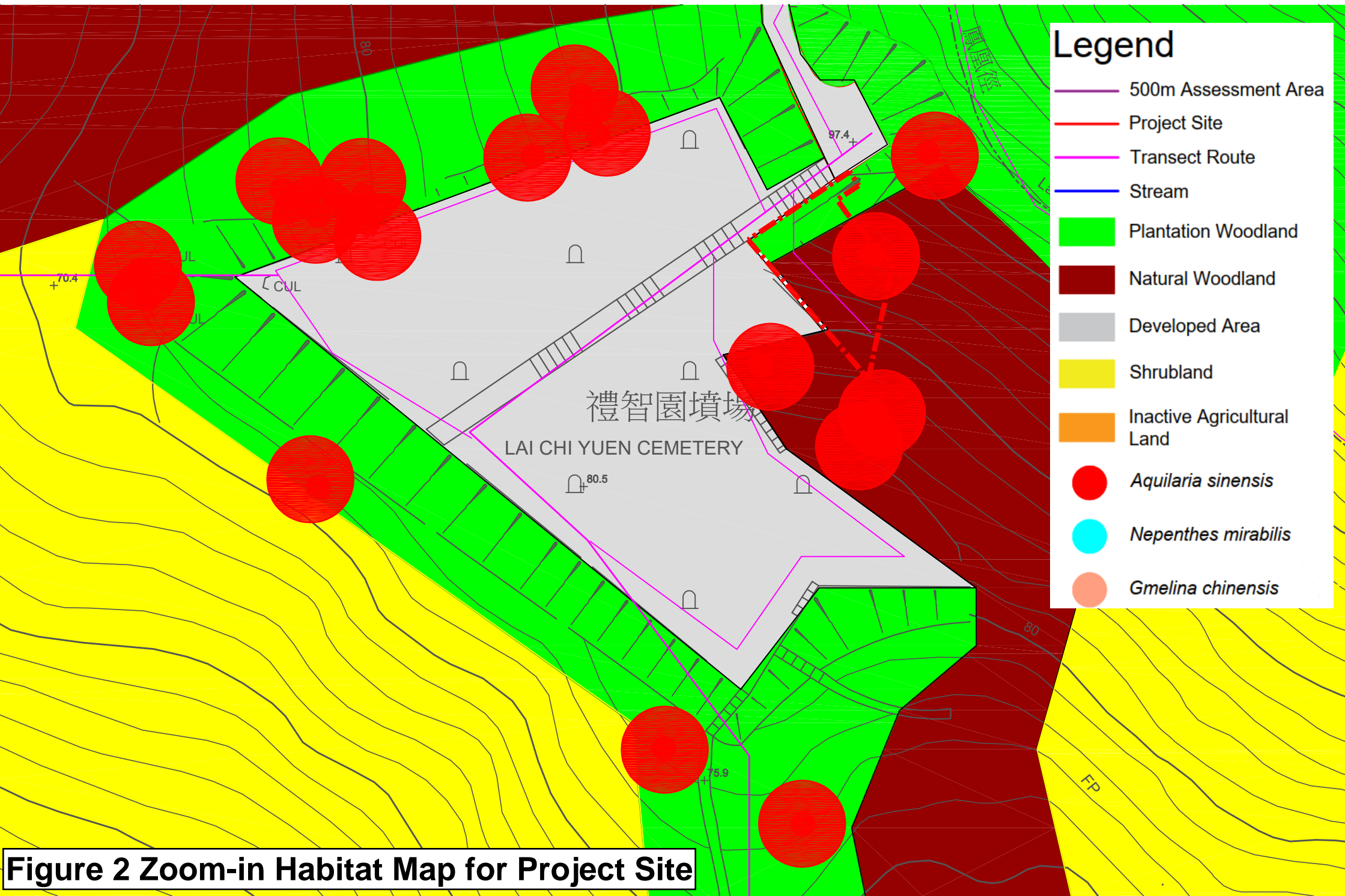
### Habitat Map



**Figure 1 Habitat Map**

## **FIGURE 2**

Zoom-in Habitat Map for Project Site



**Figure 2 Zoom-in Habitat Map for Project Site**



## **FIGURE 3**

### Location Plans of Compensatory Planting and Transplantation

**PROPOSED PLANTING SCHEDULE**

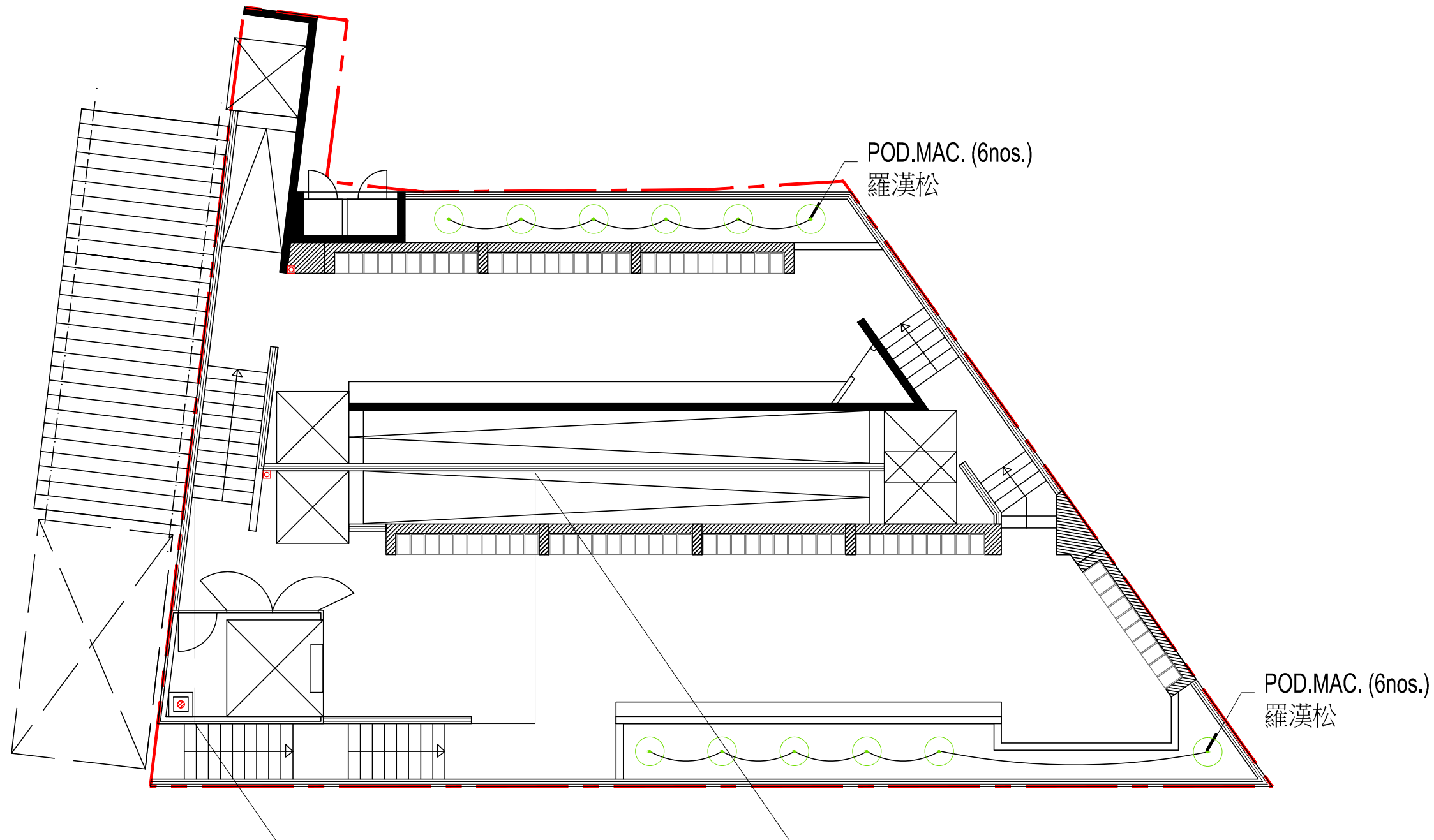
Code	Species		Height (mm)	Spread (mm)	DBH (mm)	Spacing (mm)	Quantity (Nos.)	Remarks
	Scientific Name	Chinese Name						
POD.MAC.	<i>Podocarpus macrophyllus</i>	羅漢松	3500	600	75	NA	12	HEAVY STANDARD STRAIGHT TRUNK

**LEGEND**

CODE	DESCRIPTION
	PROPOSED COMPENSATORY TREE
	WORKING BOUNDARY

GENERAL NOTES :  
DO NOT SCALE DRAWING, FIGURED DIMENSIONS ARE TO BE FOLLOWED.  
READ THIS DRAWING IN CONNECTION WITH GENERAL ARCHITECTURAL PLANS, STRUCTURAL PLANS AND OTHER RELATED DRAWINGS. THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY FOUND THEREIN.  
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NOTES :



1 COMPENSATORY TREE PLANTING PLAN SCALE 1:100 @ A3 PAPER

Rev.	Date	Description	Initial

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QUANTITY SURVEYOR CONSULTANT  
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101 & 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

E & M CONSULTANT  
**talent** Mechanical & Electrical Engineers Ltd.

LANDSCAPE DESIGN CONSULTANT  
**earthwise limited**

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Designed	DT		APR 18
Drawn	DT		APR 18
Checked	SSL		APR 18
Approved	RL		APR 18

Contract No.

File No.

Project No. 262ZX






Contract  
MJ1 WO LAI CH YUEN EXTENSION

Drawing Title  
COMPENSATORY TREE PLANTING PLAN 01

Drawing No.	Scale
PMB/8281/CP-1.01	1:100
Office	Revision
PROJECT MANAGEMENT BRANCH	-

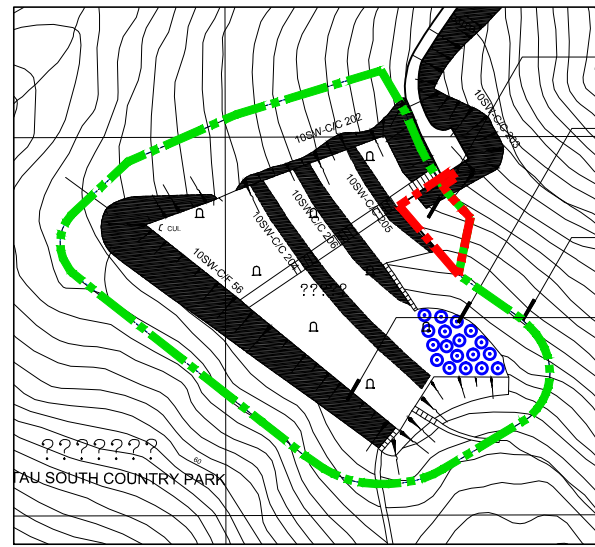
**ARCHITECTURAL SERVICES DEPARTMENT**



-  PROPOSED COMPENSATORY TREE
-  TRANSPLANTED TREE
-  REGISTERED SLOPE
-  WORKING BOUNDARY
-  BOUNDARY OF LAI CHI YUEN CEMETERY

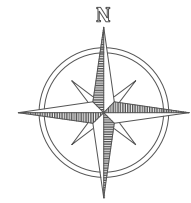
STERCULIA LANCEOLATA (18 nos.)

AQUILARIA SINENSIS (1 no.)



1 KEY PLAN SCALE N.T.S.

- WORKING SITE
- RECEPTOR SITE OF THE COMPENSATORY TREE
- EXISTING SITE BOUNDARY
- REGISTERED SLOPE



GENERAL NOTES :  
DO NOT SCALE DRAWING, FIGURED DIMENSIONS ARE TO BE FOLLOWED.  
READ THIS DRAWING IN CONNECTION WITH GENERAL ARCHITECTURAL PLANS, STRUCTURAL PLANS AND OTHER RELATED DRAWINGS. THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY FOUND THEREIN.  
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NOTES :

Rev.	Date	Description	Initial

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**earthis** limited

	Name	Signed	Date
Designed	DT		APR 18
Drawn	DT		APR 18
Checked	SSL		APR 18
Approved	RL		APR 18

Contract No.

File No.

Project No. 262ZX

Contract  
LAI WO LAI CHI YUEN EXTENSION

Drawing Title  
TREE TRANSPLANTATION PLAN

Drawing No.  
PMB/8281/TT-1.2

Scale  
1:200

Office  
PROJECT MANAGEMENT BRANCH

Revision  
-





Photo of Proposed Transplantation Site