香港青年協會
the hongkong federation of youth groups

Phase III Redevelopment of The Hong Kong Federation of Youth Groups Jockey Club Sai Kung Outdoor Training Camp

Mangrove Planting Plan

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Ecosystems Limited
生態系統顧問有限公司
2/F, Kingsun Computer Building,
40 Shek Pai Wan Road,
Aberdeen, Hong Kong
香港香港仔石排灣道 40 號金山電腦大廈 2 樓
Tel. 電話: (852) 25530468
Fax 傳真: (852) 25529191
Email 電郵: ecosys@pacific.net.hk

	Name	Signature	Date
Prepared by	Mee-Ling Yau		9/3/2011
Checked by ET Leader	Vincent Lai		9/3/2011
Verified by IEC	Grace Kwok		11/3/2011

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1. INTRODUCTION

1.1.1 An Environmental Impact Assessment (EIA) has been conducted for the construction and operation of the Project, namely "Phase III Redevelopment of The Hong Kong Federation of Youth Groups Jockey Club Sai Kung Outdoor Training Camp" (hereinafter referred to as "the Project"). The Project Proponent is the Hong Kong Federation of Youth Groups (HKFYG). The EIA was approved in December 2010 and the Environmental Permit (EP) is issued in January 2011. The tentative date of site clearance and preparation will begin in early April 2011 while the commencement of construction will be early May 2011.

1.1.2 According to the EIA and EM&A Manual, one of the ecological impacts included loss of 0.01 ha of mangrove under the proposed Platform Deck at Area B, and mitigation measures included compensatory planting monitoring of 0.01 ha of mangrove droppers on the sandflat near existing established mangrove stands of Tai Mong Tsai Stream estuary. Survival and growth of the planting will be monitored for one year.

1.1.3 According to the EP, the Permit Holder (HKFYG) shall, at least one month before any compensatory planting, submit 3 hard copies and one electronic copy of the detailed Planting Plan including details such as location, maintenance requirement and programme, of the compensatory mangrove planting to the Director for approval. Compensatory mangrove planting shall only be carried out in March and April.

1.1.4 The purpose of this paper is to outline the details of the mangrove planting plan and monitoring procedures in accordance to the requirements set in the EIA and EP. Experience from previous mangrove planting activities at the camp site and also local examples of mangrove planting experience were reviewed and incorporated into the planting plan.

2. METHODOLOGY

2.1 Planting Location

2.1.1 About 100 m^2 of The bare, sheltered areas along the intertidal zone near the existing mangrove trees on the sandflat are identified as the site for mangrove planting (**Figure 1**). Due to the elongated nature of the site, planting areas will be partitioned by 1m x 1m grids which form a narrow belt along the sand flat. The planting area will be labelled by number tags and strings to ease planting and monitoring. The planting location was further confirmed during the baseline monitoring of the EM&A programme in early March 2011.

2.2 Collection of Droppers

2.2.1 Mangrove droppers, mainly of *Kandelia obovata* begin to ripe during late winter to spring season at Area B, Tai Mong Tsai estuary and the vicinity (**Figure 2**). Ripen droppers will be collected by camp site staffs at these existing mangrove sites between March and April, about 1-2 week before planting. The droppers will be stored in buckets and immersed in freshwater to enhance the germination rate before planting. The buckets will be placed in shaded areas in the camp site to prevent desiccation, and water will be changed daily. For an

average planting distance of 30cm[1], about 1500-2000 no. (including spare) of droppers will be collected for the planting programme.

2.2.2 The quality of the droppers collected will be screened before planting. Only droppers of healthy and robust conditions will be selected for planting. Droppers in poor conditions (for example, desiccated, damaged, moldy, rotten, premature, or mal-formed droppers) will be discarded back in the surrounding waters to allow natural decomposition.

2.3 Mangrove Planting

2.3.1 The mangrove planting exercise will be organised by camp operators as part of the conservation education activities for campers, in particular students, and camp staffs. Planting will be scheduled in low tide period during day time in mid-late April of 2011. The exact dates of planting is to be confirmed by the camp operator at least one week before planting, and it is aniticipated that one to two late afternoons will be arranged for the planting activities. It is expected that 3-5 groups of campers/staffs will participate the planting activities. An orientation will be given by site staffs to each group about the purpose and technique of planting, while the ET will oversee the planting activities on-site.

3. MONITORING

3.1 Mangrove Monitoring

3.1.1 The survival and growth of the planted mangroves will be monitored monthly for the first three months and quarterly thereafter for one year. The mangrove seedlings planted at selective grid/stand will be sampled, and height and percentage survival measured. The results of mangrove planting monitoring will be included in the EM&A reports which will be verified by the Independent Environmental Checker (IEC).

3.2 Event and Action Plans for Mangrove Planting during Construction Phase

3.2.1 According to the EM&A manual, should non-compliance of the ecological impacts occur, actions in accordance with the action plan stated in **Table 1** below should be carried out.

[1] The planting distance of 30cm is proposed based on:
1) the mangrove planting experience at Kau Sai Chau, where 4500 Kandelia droppers were planted by directly seeding at 30cm spacing in 1995. Up-to-date monitoring result (2010) showed a desirable survival rate in terms of number (>100% due to natural recruitment). The average height is about 100cm, fairly dwarf but is common in the eastern waters.
2) information from Chinese literature and also local experience that for 40-50 day potted seedlings, a larger planting distance (0.5 – 0.6 m) is commonly adopted.
3) the ultimate density for Kandelia plantation would be about 5000-10000 no./ha (i.e. 1 – 1.5 m spacing). Higher initial planting density aims to reduce risk such as mortality due to predation by snails and smothering by algae.

Table 1*
Event and Action Plan for Ecological Impact - Construction Phase

Action Level	Environmental Team (ET) Leader	Independent Environmental Checker (IEC)	Camp operator/ Landscape Contractor
Poor survival or health of mangrove planting	1. Identify source 2. Inform the IEC 3. Discuss remedial actions with the IEC and Camp operator 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Discuss with the Camp operator on possible remedial measures 4. Advise the Camp operator on effectiveness of proposed remedial measures	1. Amend planting programme and replant as necessary

* extracted from Table 5.1 of the EM&A Manual.

4. REFERENCES

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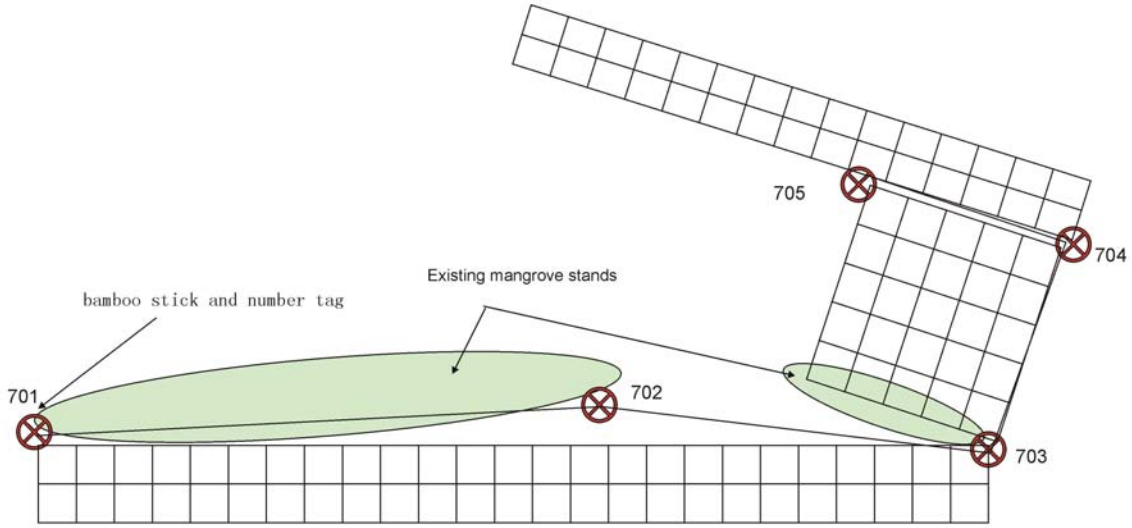
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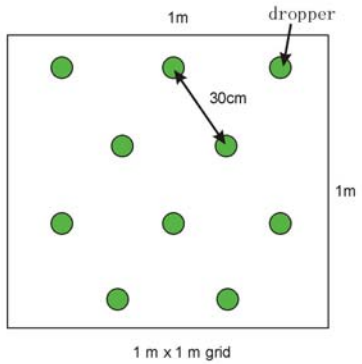
FIGURE 1 Mangrove Planting Location Plan



mangrove planting site marked by number tags, bamboo sticks and strings



approximate locations of the 1m x 1m grid for Kandelia dropper planting



planting distance for Kandelia dropper
(ca. 30cm staggered spacing)

Figure 2 Locations for Mangrove Dropper Collection

