Tai Shue Wan Development at Ocean Park

Short-nosed Fruit Bat Inspection Report (Rev. B)
Document No. 328011/03/07/E

October 2014
Ocean Park Corporation

Mott MacDonald

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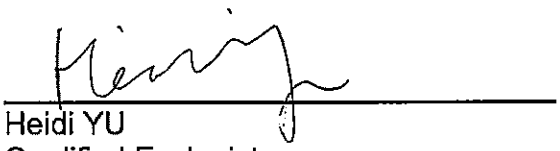
Pursuant to Condition 2.10 of Environmental Permit No. EP-487/2014,

this Short-nosed Fruit Bat Inspection Report (Rev. B) has been prepared by Qualified Ecologist, reviewed and certified by the Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC).

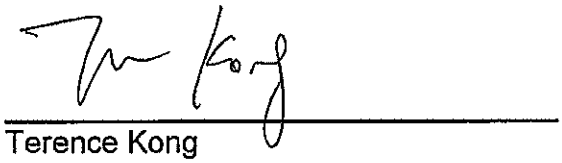
Prepared by:



Heidi YU
Qualified Ecologist
Mott MacDonald Hong Kong Limited

Date 20 October 2014

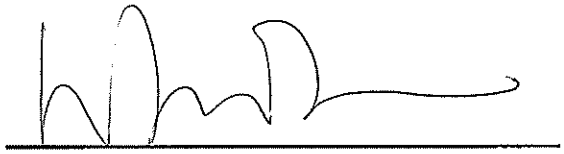
Certified by:



Terence Kong
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Limited

Date 20 October 2014

Verified by:



Winnie Ko
Independent Environmental Checker (IEC)
Environmental Resources Management

Date 28 October 2014

Content

Figures

Appendix

1. Introduction

1.1 Background

In August 2013, Ocean Park Corporation (OPC) commissioned Mott MacDonald Hong Kong Limited (MMHK) to carry out the EIA study for the proposed Tai Shue Wan Development at Ocean Park (hereafter referred as "the Project") for the construction and operation. The EIA report was submitted to EPD on 31 March 2014.

As mentioned in the EIA Report, Chinese Fan-palms were observed within the Project boundary, thus their fronds were inspected for any presence of roosting Short-nosed Fruit Bat during daytime survey. However, no bat roost was found. Nevertheless, for the approach of impact avoidance, the EIA Report has suggested precautionary measure to inspect these palm trees that are potential roosts for Short-nosed Fruit Bat.

The EIA report was approved with condition on 27 August 2014 (Register No. AEIAR-184/2014). EPD issued an Environmental Permit (EP) for the Project (Permit No. EP-487/2014) on 27 August 2014. It was assessed in the EIA report Section 10.6.5 that some individuals of Short-nosed Fruit Bat inhabiting the 500m Buffer Zone may change their roosting location to those palm trees within the Project Site. Therefore a precautionary measure is recommended to inspect the palm trees that are potential roosts fro Short-nosed Fruit Bat to avoid any potential impact on these bat species.

As stipulated in Condition 2.10 of the EP, the Permit Holder is required to carry out monitoring of bat roosting activities and submit an Short-nosed Fruit Bat Inspection Report to EPD no later than one month before the commencement of arboricultural works at the potential roosting location (refer to locations of palm trees in **Figure 1**). This Short-nosed Fruit Bat Inspection Report is prepared to meet this EP condition.

1.2 Objectives of Short-nosed Fruit Bat Inspection

The objectives of this Short-nosed Fruit Bat Inspection Report are as follows:

- To report the findings of inspection the palm trees within Project boundary, particularly the Chinese Fan-palms, for any bat roosting activities;
- To propose mitigation measures as specified in the approved EIA Report if any Short-nosed Fruit Bat is observed roosting on tree.

2. EIA Baseline Information and EM&A Requirements

2.1 Findings of Roost of Short-nosed Fruit Bat during EIA stage

As mentioned in the EIA Report, Short-nosed Fruit Bat was sighted in the tall shrubland within the Project area, shrubland and tall shrubland habitats outside the Project area. It is highly adaptive to urban areas and common and widespread in parks and gardens.

Chinese Fan-palm *Livistona chinensis*, which is commonly utilised by Short-nosed Fruit Bat as roost, was observed within the Project area. The fronds of the Chinese Fan-palm were thus inspected for any presence of roosting Short-nosed Fruit Bat during daytime survey, but no bat roost was found.

2.2 Impact Assessment for Potential Impact on Short-nosed Fruit Bat in the EIA Report

As the Project will not affect the habitat associated with its activity while it is adapted to the urban environment, significance of potential indirect impact on this bat species is therefore considered as negligible. Nevertheless, since Chinese Fan-palms are recorded within the Project boundary, it is possible that some individuals of Short-nosed Fruit Bat inhabiting the 500m EIA Study Area may change their roosting location to those palm trees within the Project boundary. Precautionary measure to inspect these palm trees that are potential roosts for Short-nosed Fruit Bat is therefore recommended in the EIA Report to avoid any potential impact on this bat species.

2.3 Environmental Monitoring and Audit Requirements

Prior to any proposed arboricultural works of the trees, particularly the Chinese Fan-palms, daytime inspection shall be carried out to confirm no Short-nosed Fruit Bat is present on the fronds of the trees. If any Short-nosed Fruit Bat is observed roosting on tree, suitably sized buffer area shall be established around the tree to minimise human or machinery disturbance until the bat has left.

3. Short-nosed Fruit Bat Inspection

3.1 Inspection Period

Short-nosed Fruit Bat inspection was undertaken on 8 August 2014 and 5 September 2014. Inspection was carried out during daytime.

3.2 Methodology

With reference to the methodology by Chan and Shek (2006)[1] on survey for the Short-nosed Fruit Bat, the main hosting plant for the roosts of Short-nosed Fruit Bat is Chinese Fan-palm (*Livistona chinensis*). Therefore, Chinese Fan-palms were the focus for inspections of Short-nosed Fruit Bat whilst other trees or palms within the Project boundary, such as Small Fishtail Palm (*Caryota mitis*), Bamboo Palm (*Dypsis lutescens*), Spiny Date Palm (*Phoenix loureiroi*) and Lady Palm (*Rhapis excelsa*), were not a focus for inspection.

The fronds of the Chinese Fan-palms within the Project boundary were inspected for any presence of roosting Short-nosed Fruit Bat. Inspection was conducted with the aid of 8x42 binoculars. The areas where the Chinese Fan-palms located within the Project boundary are indicated in **Figure 1**.

When roosting Short-nosed Fruit Bat was encountered, number of individuals and tree number of the Chinese Fan-palm where they roosted were recorded with photographs taken.

The Short-nosed Fruit Bat inspection was carried out by a qualified ecologist with more than 5 years of experience in relevant ecological survey. Curriculum vitae of the qualified ecologist is attached in **Appendix A** for reference.

3.3 Inspection Findings

Short-nosed Fruit Bat roosting activities were encountered under the fronds of Chinese Fan-palm during inspections in daytime. Inspection findings are summarised in **Table 3.1**.

Table 3.1: Short-nosed Fruit Bat roosting recorded during inspection

Inspection Date	Tree Number of Chinese Fan-palm	Number of Short-nosed Fruit Bat roosting
8 August 2014	A0231	3
	A0489	4
5 September 2014	A0234	3

Representative photographs of Chinese Fan-palms and the roosting bats are shown in **Plates 1 to 4** in **Appendix B**.

Signs of bitten fronds were also observed on a number of Chinese Fan-palms. These are believed to be abandoned roost of Short-nosed Fruit Bat. Representative photograph is shown in **Plate 5** of **Appendix B**.

[1] Chan, C.S.M. and Shek, C.T. (2006). Survey on the Short-nosed Fruit Bat (*Cynopterus sphinx*) in the urban areas of Hong Kong. *Hong Kong Biodiversity*, Issue No. 11: 8. Agriculture, Fisheries and Conservation Department, Hong Kong.

From the inspections conducted, it can be revealed that the roosting habit of Short-nosed Fruit Bat under the fronds of Chinese Fan-palm is mobile and widespread. The number of Short-nosed Fruit Bat roosting at the palm trees within the TSW Project boundary seems to be unstable and change to different locations from time to time as it is noted from the inspection record that there were two roosts of a total of 7 individuals in August but only one roost (different location to previous two) of 3 individuals in September. Its high adaptation to urban environment and similar environment being readily available in the local context can be possible reasons for the unstable number roosting within the TSW Project boundary.

3.4 Recommendations

The identified Chinese Fan-palm shall be inspected prior to arboricultural works on the tree. Measures specified in the approved EIA report and the EM&A Manual shall be implemented if active bat roost is observed at the frond of the Chinese Fan-palm. A suitably sized buffer area shall be established around the tree and surrounded by temporary orange/green plastic mesh fencing with a minimum of 1000mm in height fixed on fencing pins (refer to **Figure 2** for indicative illustration) to minimise human or machinery disturbance. Suitable signage(s), written in both Chinese and English, should be posted on the temporary mesh fencing with a view to alerting the workers not to disturb the trees and bats. The alignment of the temporary protective fencing can be circular, square or rectangular depending on site condition, and sand bags shall be put alongside of the fence to avoid runoff from construction activities. The buffer area shall be established 3m from the dripline of the palm tree. No construction shall be conducted within the buffer area to avoid disturbance to the roosting bat. The measures taken should be properly recorded in the monthly EM&A report as required in the EP. However, if no Short-nosed Fruit Bat is found at the tree for two consecutive days, the buffer area can be ceased.

4. Conclusion

The Short-nosed Fruit Bat Inspection Report is prepared in accordance with Condition 2.10 of the Environmental Permit for the Project. Site inspections of bat roosting activities were undertaken on 8 August 2014 and 5 September 2014 before commencement of arboricultural works, focusing on the Chinese Fan-palm which is the main hosting plant for roosts of Short-nosed Fruit Bat. Roosting activities of Short-nosed Fruit Bat were encountered under the fronds of Chinese Fan-palm. Indeed, its roosting habit is mobile and widespread, and number of individuals roosting within the TSW Project boundary seems to be unstable. Nevertheless, it is recommended to inspect the identified Chinese Fan-palm prior to arboricultural works on the tree and if active roost of Short-nosed Fruit Bat is present, to establish a suitably sized buffer area to minimise disturbance on it until the bat has left.

Appendix A

Curriculum Vitae of the Qualified Ecologist (Removed)

Appendix B

Photographic Record of Short-nosed Fruit Bat Inspection

Appendix B Photographic Record of Short-nosed Fruit Bat Inspection

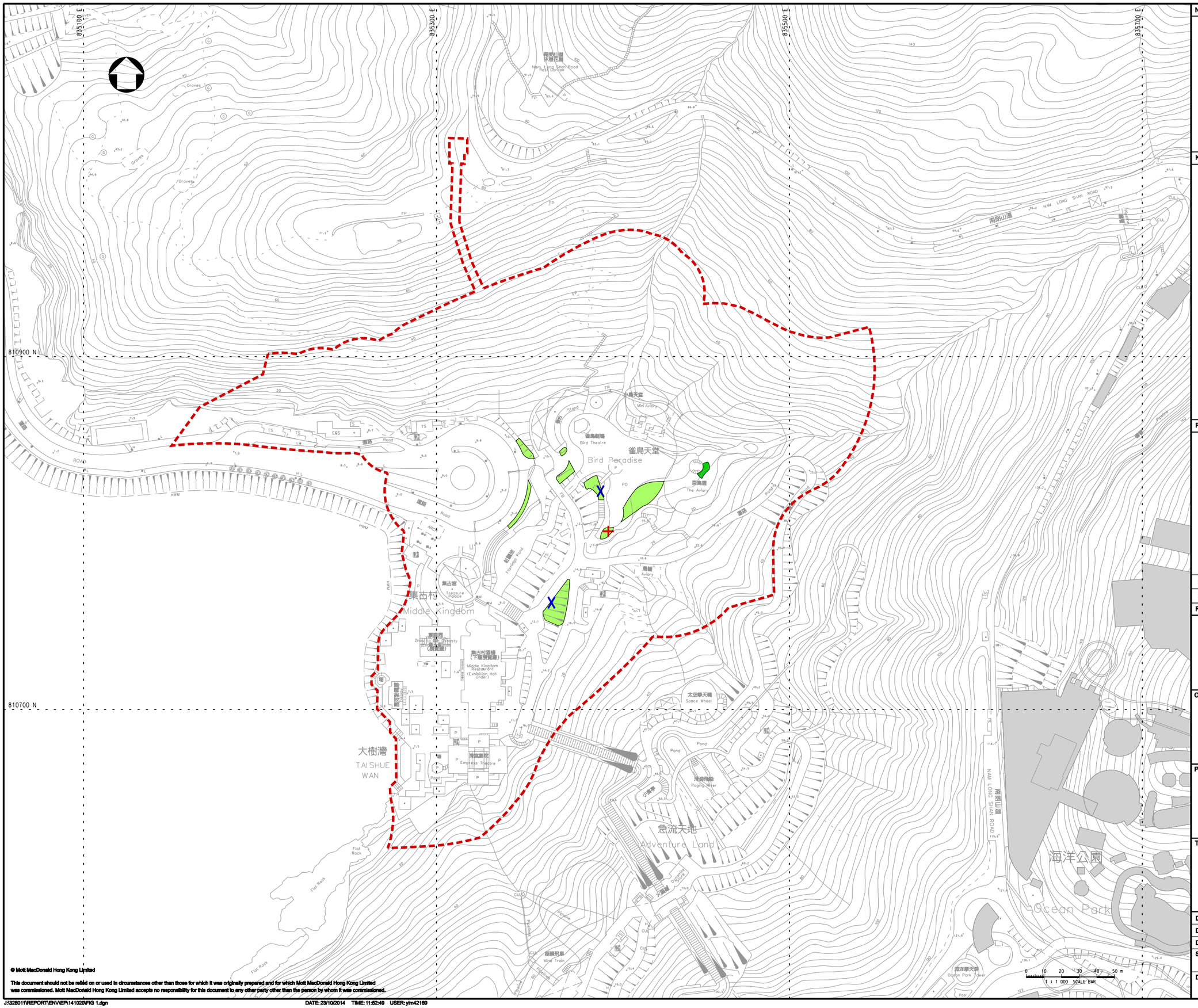
Plate 1: General view of a Chinese Fan-palm tree

Plate 2: Three individuals of Short-nosed Fruit Bat roosting on frond of Chinese Fan-palm (tree no. A0231) on 8 August 2014

Plate 3: Four individuals of Short-nosed Fruit Bat roosting on frond of Chinese Fan-palm (tree no. A0489) on 8 August 2014

Plate 4: Three individuals of Short-nosed Fruit Bat roosting on frond of Chinese Fan-palm (tree no. A0234) on 5 September 2014

Plate 5: Signs of bitten fronds of Chinese Fan-palm



Notes

Key to symbols

- PROJECT BOUNDARY
- INDICATION OF INACCESSIBLE AREA WITH CHINESE FAN-PALM
- AREAS WITH CHINESE FAN-PALM
- X SHORT-NOSED FRUIT BAT ROOSTING (ON 8TH AUG 2014)
- \+ SHORT-NOSED FRUIT BAT ROOSTING (ON 5TH SEP 2014)

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	OCT 14	MING	GENERAL REVISION	HY	AFK
P1	SEP 14	MING	FIRST ISSUE	HY	AFK

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Ocean Park Hong Kong 香港海洋公園

Project

TAI SHUE WAN DEVELOPMENT AT OCEAN PARK

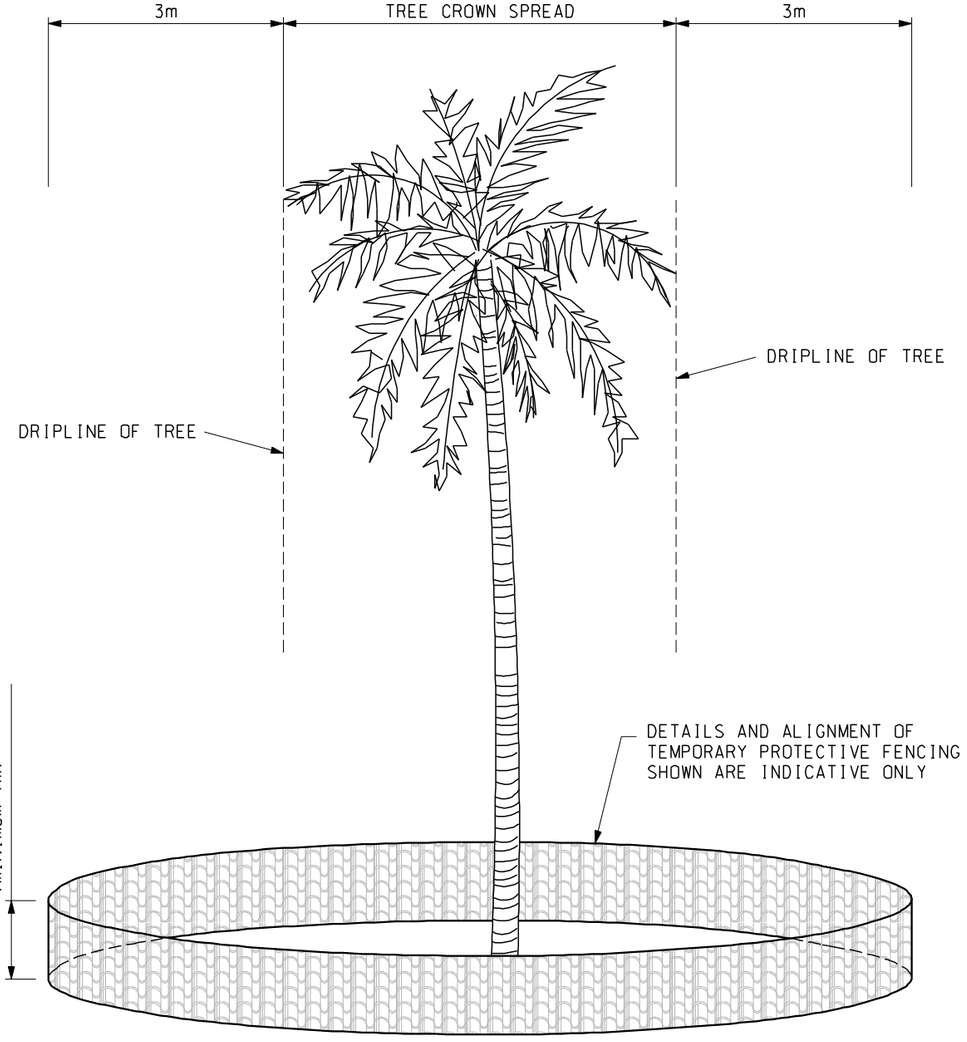
Title

LOCATIONS OF CHINESE FAN-PALM WITHIN THE PROJECT BOUNDARY AND ROOSTING SHORT-NOSED FRUIT BAT

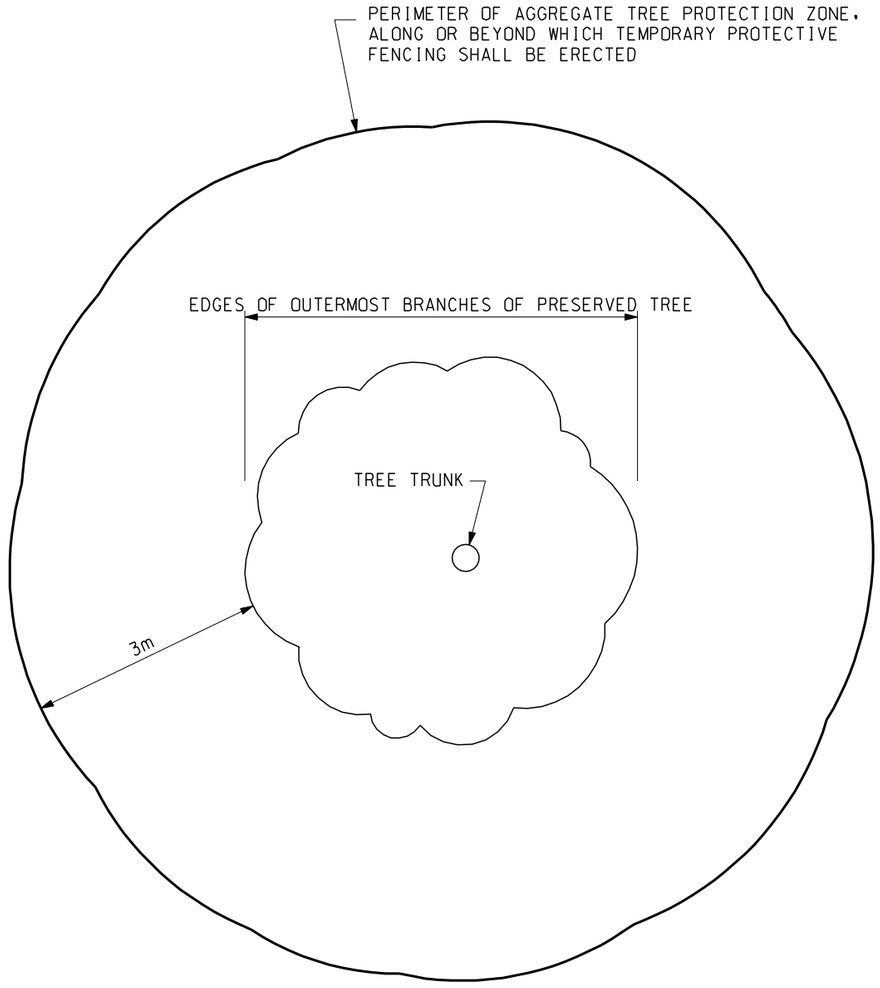
Designed	HY		Eng check	FW	
Drawn	MING		Coordination	FW	
Dwg check	HY		Approved	AFK	
Scale at A1	1:1000	Status	PRE	Rev	P2

Drawing Number

FIGURE 1



PERSPECTIVE - INDIVIDUAL TREE
(DIAGRAMMATIC)



PLAN - INDIVIDUAL TREE
(DIAGRAMMATIC)

Notes

Key to symbols

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	OCT 14	MING	FIRST ISSUE	HY	AFK

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Project

TAI SHUE WAN DEVELOPMENT AT OCEAN PARK

Title

ILLUSTRATION OF INDICATIVE TEMPORARY PROTECTIVE FENCING AROUND A TREE

Designed	HY		Eng check	GC	
Drawn	MING		Coordination	FW	
Dwg check	HY		Approved	AFK	
Scale at A1 1:40		Status PRE		Rev P1	

Drawing Number

FIGURE 2