

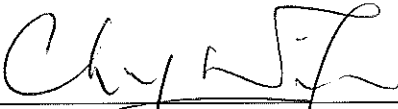
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**Consultancy for Environmental Monitoring on the
Major Restoration of the Residence of Ip Ting-Sz,
Lin Ma Hang Tsuen, Sha Tau Kok**

Monthly Environmental Monitoring and Audit Report

August 2011

(Version 1.0)

Approved By	 Dr. Friscilla Choy (Independent Checker)
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REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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TABLE OF CONTENTS

	Page
1. INTRODUCTION.....	2
Background	2
Project Organizations	3
2. POST-CONSTRUCTION MONITORING.....	4
Monitoring Requirements	4
Monitoring Methodology	4
Reporting.....	5
3. RESULTS.....	6
4. ACTIVITIES ON SITE	7
5. CONCLUSION.....	8
6. REFERENCE	9

LIST OF TABLES

Table 1.1 Key Project Contacts

Table 4.1 Activities on Site

LIST OF FIGURE

Figure 1 Organization Chart of Environmental Team

LIST OF APPENDICES

- A Location Plans & Work Boundary of the Project
- B Photographic Records
- C Activities on Site

1. INTRODUCTION

Background

- 1.1 Cinotech Consultant Limited (CINOTECH) was commissioned by Antiquities and Monuments Office (AMO) to undertake environmental monitoring and audit for the project “Provision of Consultancy for Environmental Monitoring on the Major Restoration to the Residence of Ip Ting-Sz, Lin Ma Hang Tsuen, Sha Tau Kok” (hereinafter called the “the Project”).
- 1.2 The residence of Ip Ting-sz (hereinafter called “the Residence”) is located at Lin Ma Hang Tsuen, Sha Tau Kok, New Territories, within the Closed Area. It was declared as a Monument in November 2009.
- 1.3 Major restoration works were carried out to the Residence from December 2010 to March 2011, which included the complete reconstruction of roof, internal and external redecorations (Location plan showing the project area and work boundary is at **Appendix A**).
- 1.4 There is a small brick-built Annex attached to the Residence, which was used as a kitchen, it is not within the declared monument boundary. Emergency repair was carried out in 2005 to reconstruct the roof at the Annex and covered it with corrugated sheets, minimum repair works were carried out to the Annex, as part of this major renovation project.
- 1.5 A Project Profile was prepared on August 2010 for direct application of Environmental Permit (EP).
- 1.6 An Environmental Permit (EP) (No. EP-400/2010) was issued on 29 September 2010 for Antiquities and Monuments Office, Leisure and Cultural Services Department as the Permit Holder.
- 1.7 Onsite environmental monitoring and audit will be carried out to ensure the proposed mitigation measures in the Project Profile are properly implemented throughout all phases of the project as required in the EP Section 2.8.
- 1.8 Environmental monitoring and audit works for the Project was commenced on 1 December 2010 and monitoring during the construction phase was completed on March 2011.
- 1.9 This monthly EM&A Report summarises the bat survey result for the Project in August 2011.

Project Organizations

- 1.10 Different parties with different levels of involvement in the project organization include:
- Project Proponent–Antiquities and Monuments Office (AMO)
 - Independent Checker (IC) – Cinotech Consultants Limited (Cinotech).
- 1.11 The key contacts of the Project are shown in **Table 1.1** and the organization chart of ET is shown in **Figure 1**.

Table 1.1 Key Project Contacts

Party	Name	Role	Phone No.	Fax No.
AMO	Ms. Candy Chan	Senior Heritage Officer	3910 6608	3691 8185
	Mr. Lau Wing Kit	Heritage Officer	3910 6632	
	Ms. Sophia Mak	Heritage Officer	3910 6636	
Cinotech	Dr. Priscilla Choy	Project Director	2151 2089	3107 1388
	Ms. Betty Choi	Project Coordinator	2151 2072	

2. POST-CONSTRUCTION MONITORING

Monitoring Requirements

- 2.1 A bat-friendly gate was installed in the Kitchen Annex in March 2011.
- 2.2 During the post-construction phase from April 2011 to November 2011, bat survey shall be carried out twice a month in the first three months of the post-construction period when the bats start to return. In later months, monthly monitoring shall be followed.
- 2.3 The aim is to determine the successfulness of the maintained Kitchen Annex as a bat roosting site and the effectiveness of the bat-friendly gate in allowing bat's flight in and out of the Annex.
- 2.4 Necessity for further survey will be reviewed after the proposed monitoring period. If both are found satisfactory, no further monitoring will be required. Subject to the post-construction monitoring and further operation, if further improvement or maintenance to the gate is required, it will be carried out accordingly.

Monitoring Methodology

- 2.5 Daytime counting of bats with night emergence count will be conducted to evaluate the effectiveness of the maintained bat roost and the design of the bat-friendly gate. The survey will be arranged in the evening such that daytime counting and night emergence count can be done on the same day.
- 2.6 The number of bats that has returned to the Kitchen Annex after hibernation and their preference of using the gate will be recorded. Daytime counting will start at least two hours before night fall so that the bats are allowed to recover from disturbance before emergence. Counting of bats will be conducted inside the Annex with the aid of binoculars and torch light.
- 2.7 The abundance will be recorded by direct counting of individuals observed. If the bat number is high and the bats show distress towards visitation, photographs will be taken and counting will be done from the pictures. Estimation can also be made by calculating bat density within a small part of a cluster and then extrapolating the total bat number in the whole cluster. Method to be adopted will be decided based on actual situation during the survey.
- 2.8 Any breeding activity observed will be recorded. Identification will be based on published reference (Shek, 2006).
- 2.9 Disturbance will be minimized by limiting the number of surveyors, visitation time and noise disturbance. If counting has not completed but the bats feel highly uncomfortable, the survey will be stopped. Time will be allowed for the bats to rest. It will only continue after the bats have recovered.

- 2.10 Daytime counting and night emergence count will be done on the same day. The peak activities of bats start within 30 minutes after sunset. So surveyors will be positioned at a spot where the gate can be clearly seen and where the bats will not be disturbed at least one hour before nightfall.
- 2.11 To observe bats under darkness, a camera set at exposure mode will be used to increase light collection and aid observation through the camera. The number of bats leaving the Kitchen Annex at night will be counted and the gate spacing chosen will be recorded. The survey will end when no further emergence can be seen after 30 minutes.

Reporting

- 2.12 Findings on the number of bats that has returned to the Kitchen Annex after hibernation, their preference of using the gate, further recommendations and conclusions of the monitoring will be included in the monthly monitoring and audit report which will be submitted to Environmental Protection Department.

3. RESULTS

- 3.1 Site inspections conducted by AMO in the daytime did not have any sighting of bats in both Main Building and Kitchen Annex.
- 3.2 Bat monitoring was conducted in late afternoon on 15 and 30 August 2011.
- 3.3 The Residence was empty on 15 August 2011. The bat friendly gate remained locked up and some construction materials were found stored within the Kitchen Annex.
- 3.4 Contractors were on site on 30 August 2011. The bat friendly gate was opened but no one was inside the Kitchen Annex. Some construction materials were found stored within the Kitchen Annex.
- 3.5 No bat was found hanging under the roof of the Main Building and the Kitchen Annex in both monitoring.
- 3.6 However, evidence that supported the utilization of the annex as a bat roost could be seen. There were bat faeces and remains of eaten moths. These were located in the inner part of the Kitchen Annex away from the door. This showed bat's preference on the microclimate and the light condition in this area.
- 3.7 Around 200m away from the Ip Ting Sz Residence, there is an Ip's Ancestral Hall in the Lin Ma Hang Tsuen. 1 Himalayan Leaf-nosed Bat (*Hipposideros armiger*) was observed on both days. The presence of bats and juveniles in the past visits showed that the ancestral hall served as an alternative habitat and maternity roost. The location of the ancestral hall can be found in **Appendix A**. The bats might have already adapted to the environment in the ancestral hall so that very few returned to the Ip Ting-Sz Residence this year. This may account for no or low bat count in the Residence.
- 3.8 Further monitoring work shall be done to check the bat's return rate and identify the habitability of the Kitchen Annex in the coming months.
- 3.9 Photographic records showing the survey findings in the Kitchen Annex of the Ip Ting-Sz Residence and the Ip's Ancestral Hall can be found in **Appendix B**.

4. ACTIVITIES ON SITE

- 4.1 The construction phase was ended in March 2011. Water leakage was identified in the Main Building and immediate follow up action was required. As such, the contractor occasionally visited the Residence for rectification of renovation work in recent months. The series of events was summarised in **Table 4.1** below:

Table 4.1 Activities on Site

Date	Event
13.5.2011	Leakage was found from the tiled roof of the Main Building
24.6.2011	Scaffolding was set up for this defect rectification
24.6.2011-22.7.2011	Part of the tiles were re-laid to rectify the leakage problem (a few days of work were carried out over this period)
22.7.2011-10.8.2011	Scaffolding was kept on site for monitoring of roof leaks repair
11.8.2011	Leakage was still found in a few locations
11.8.2011-17.8.2011	Part of the tiles were re-laid to rectify the leakage problem (1-2 days of work were carried out over this period)
18.8.2011-31.8.2011	Scaffolding was kept on site while the leakage problem is under monitoring

- 4.2 Photographs showing water leakage and scaffolding can be found in **Appendix C**.
- 4.3 The contractor was reminded not to disturb any bats roosting in the Kitchen Annex and to minimise noise production. A notice was put up to remind the contractor to turn off the lighting before leaving the site to provide a dark environment for any returning bats.

5. CONCLUSION

- 5.1 No bat was observed on 15 and 30 August 2011 in the Main Building and the Kitchen Annex.
- 5.2 Traits such as bat faeces and moth remains proved that the Kitchen Annex has been used as a bat roost.
- 5.3 The Ip's Ancestral Hall is an alternative habitat for bats.
- 5.4 Further monitoring work shall be done to check the bat's return rate and identify the habitability of the Kitchen Annex.

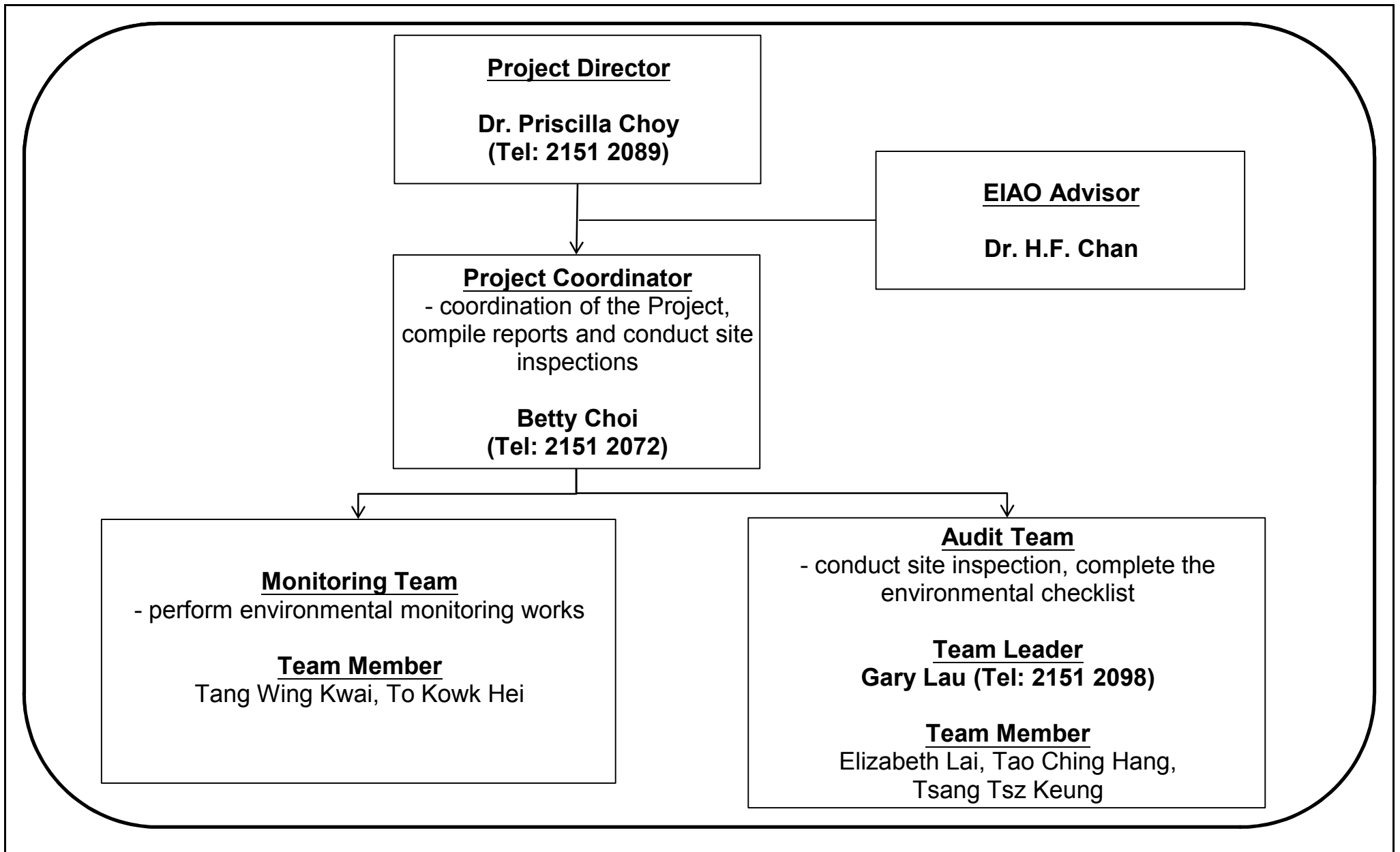
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Shek C.T. & Chan C.S.M.. (2005) Roost Censuses of Cave Dwelling Bats of Hong Kong. AFCD. Hong Kong Biodiversity 10: 1-8.

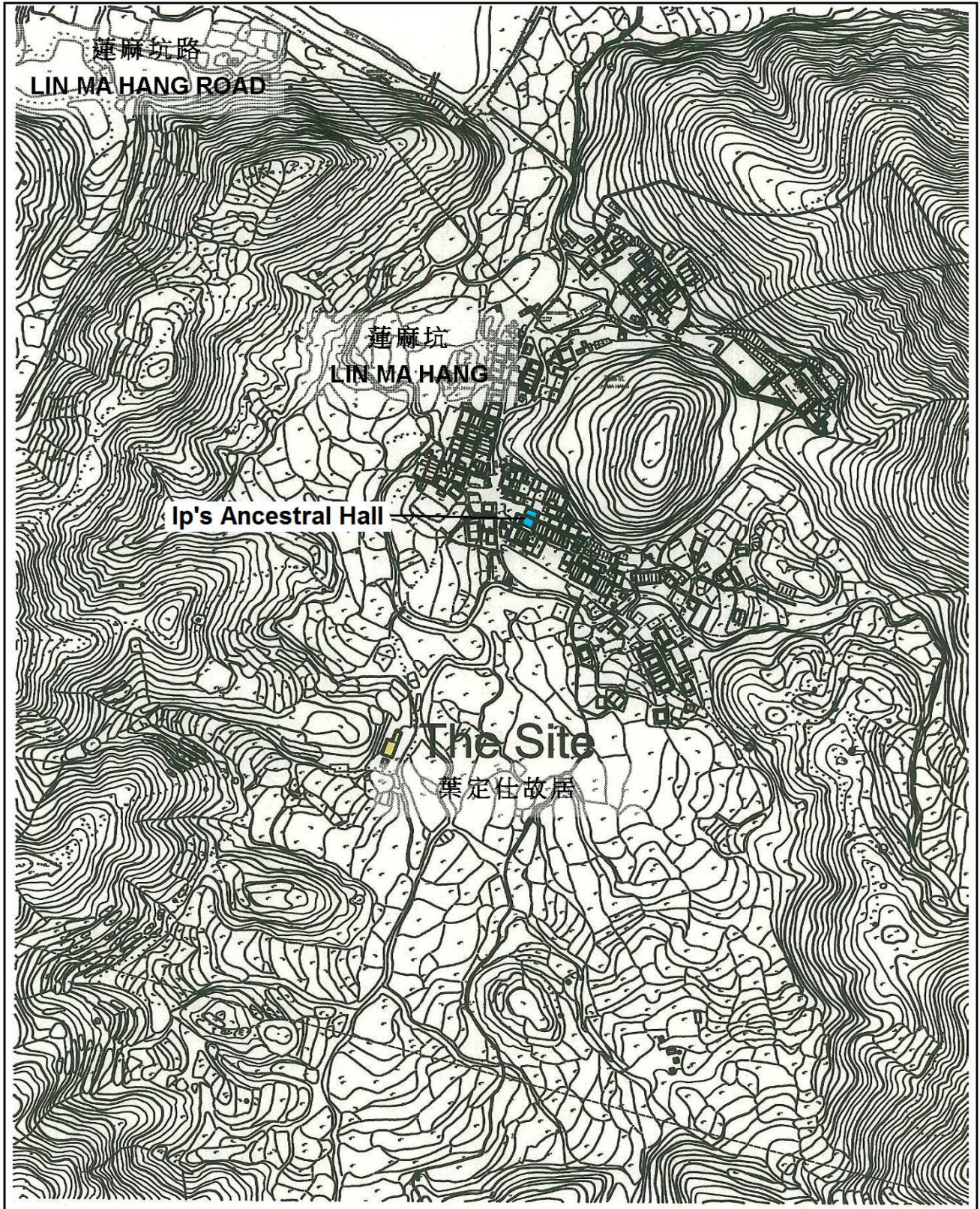
Shek C. T. (2006) A field guide to the terrestrial mammals of Hong. Kong. Friends of Country Park and Cosmos book Limited.

**FIGURE 1
ORGANIZATION CHART OF
ENVIRONMENTAL TEAM**



Title	Provision of Consultancy for Environmental Monitoring on the Major Restoration to the Residence of Ip Ting-sz, Lin Ma Hang Tsuen, Sha Tau Kok		Scale	N.T.S	Project No.	MA0060	CINOTECH
	Organization Chart		Date	Nov-10	Figure	1	

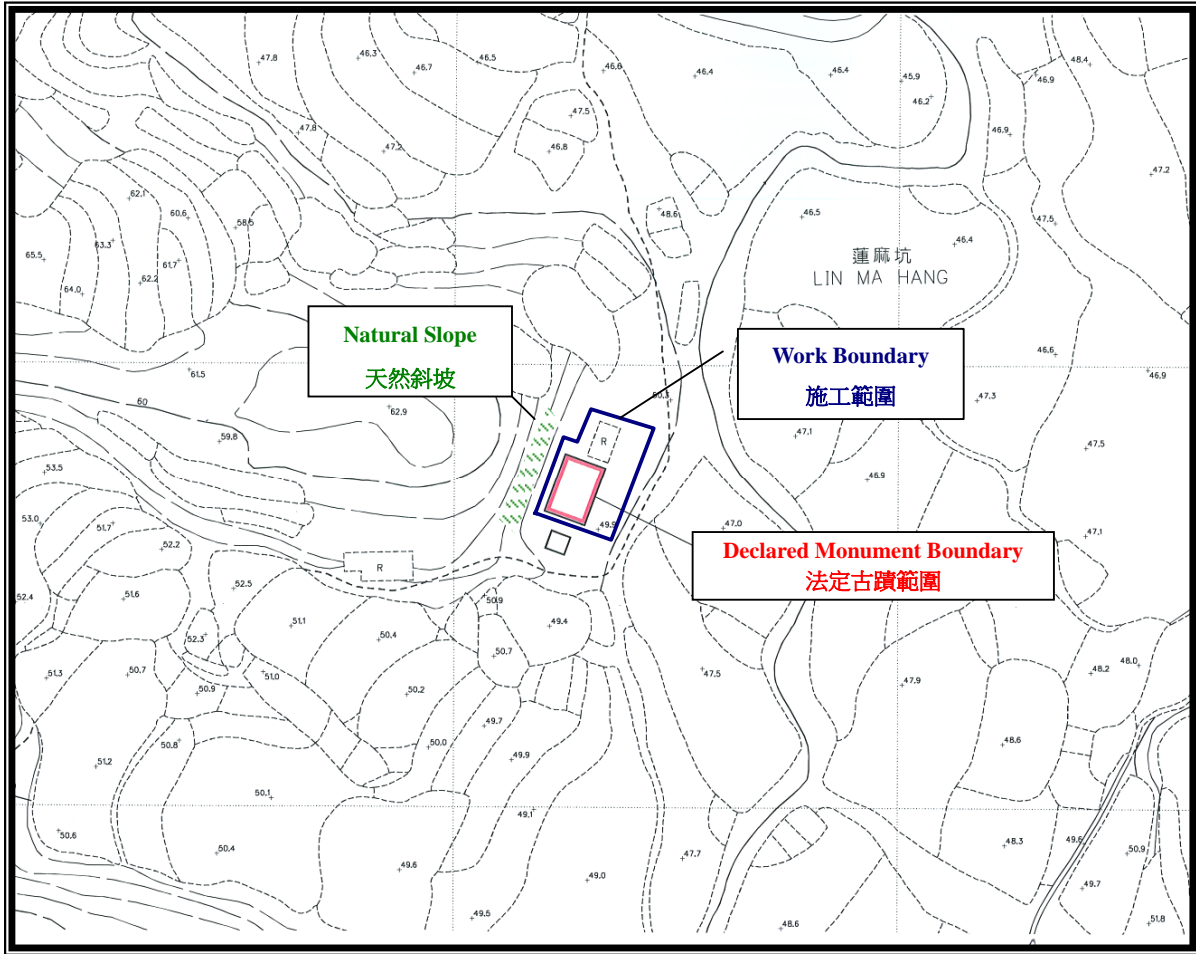
**APPENDIX A
LOCATION PLANS & WORK
BOUNDARY OF THE PROJECT**



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Scale 1:5000

Location Plan
位置圖



只作識別用 FOR IDENTIFICATION PURPOSE ONLY

Work Boundary of the Project 施工範圍

APPENDIX B
PHOTOGRAPHIC RECORDS



Kitchen Annex - Roof (15/8)



Kitchen Annex – Bat Faeces (15/8)



Kitchen Annex – Floor (15/8)



Kitchen Annex – Roof (30/8)



Kitchen Annex – Bat Faeces (30/8)



Kitchen Annex – Floor (30/8)



Ip's Ancestral Hall - Ceiling (30/8)



Ip's Ancestral Hall - Ceiling (30/8)

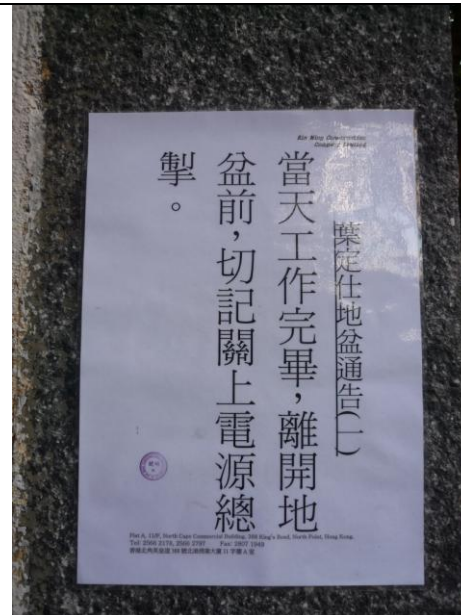
**APPENDIX C
ACTIVITIES ON SITE**



Leakage at Main Building (13/5)



Scaffolding at Main Building (14/7)



Notice to Contractor (15/8)