

**NEW TERRITORIES NORTH DEVELOPMENT OFFICE
TERRITORY DEVELOPMENT DEPARTMENT
THE GOVERNMENT OF THE HONG KONG SPECIAL
ADMINISTRATIVE REGION**

**AGREEMENT NO. CE3/74
PWP ITEM NO. 471CL (PART)
LAU FAU SHAN DEVELOPMENT, REMAINING ENGINEERING WORKS
PHASE 1 - HANG HAU TSUEN CHANNEL AND ASSOCIATED WORKS**

PROJECT PROFILE

NOVEMBER 2001

Report Authorized For
Issue By:

.....
For and on Behalf of
Binnie Black & Veatch Hong Kong Limited

**Binnie Black & Veatch Hong Kong Limited
11th Floor, New Town Tower
Pak Hok Ting Street
Sha Tin
New Territories**

**New Territories North Development Office
Territory Development Department
1/F, Sha Tin Government Offices
6 Tung Lo Wan Hill Road
Sha Tin
New Territories**

**PROJECT PROFILE FOR PWP ITEM NO. 471 CL (PART), LAU FAU SHAN
DEVELOPMENT, REMAINING ENGINEERING WORKS - PHASE 1 HANG HAU
TSUEN CHANNEL AND ASSOCIATED WORKS**

TABLE OF CONTENTS

	Page
<i>1. BASIC INFORMATION</i>	1
1.1 Project Title	1
1.2 Purpose and Nature of the Project	1
1.3 Name of the Project Proponent	1
1.4 Location and Scale of Project, and History of Site	1
1.5 The Type of Designated Project Covered in the Profile	2
1.6 Name and Telephone Numbers of Contact Persons	2
<i>2. PLANNING AND IMPLEMENTATION PROGRAMME</i>	3
2.1 Responsibilities of Parties	3
2.2 Project Time Table	3
2.3 Considerations on Programme Requirements and Interactions with Other Projects	3
<i>3. POSSIBLE IMPACT ON THE ENVIRONMENT</i>	4
3.1 Ecology	4
3.2 Contaminated Materials	4
3.3 Contaminated Land	4
3.4 Generation of Solid Waste	4
3.5 Generation of Effluents and Contaminated Runoff	5
3.6 Dust and Odour	5
3.7 Noise	5
3.8 Archaeology and Cultural Heritage	5
3.9 Landscape and Visual Impact	5

	Name	Signature	Date
Prepared by			
Checked by			
Reviewed by			

CONTENTS

(continued)

	Page
4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT	6
4.1 Existing and Planned Sensitive Receivers	6
4.2 Natural Environment	6
4.3 Existing and Past Land Uses of the Project Site	7
5. ENVIRONMENTAL PROTECTION MEASURES TO BE IMPLEMENTED	7
5.1 Ecology	7
5.2 Solid Waste Management Measures	8
5.3 Effluents and Runoff Management	8
5.4 Dust Mitigation Measures	8
5.5 Noise Mitigation Measures	8
5.6 Archaeological and Cultural Heritage Mitigation Measures	8
5.7 Visual and Landscape Mitigation Measures	8
6. FURTHER ENVIRONMENTAL IMPLICATIONS	9
6.1 Beneficial Effects	9
6.2 Severity of Adverse Effects	9

END OF TEXT

Appendix 1

- 1 The 2001 Archaeological Survey & Assessment for the Proposed Channel at Hang Hau Tsuen, Lau Fau Shan

List of Figures

- 1 Lau Fau Shan Development - Remaining Engineering Works Phase 1 Hang Hau Tsuen Channel and Associated Works General Layout
- 2 Potential Worst Affected Noise, Construction Dust, Visual Impact, Water Quality, Sensitive Receivers / Archaeological Sites and Declared Monuments within 500 m of Project.
- 3 Potential Ecological Sensitive Receivers

1. BASIC INFORMATION

1.1 Project Title

The title of this Project is:

Lau Fau Shan Development – Remaining Engineering Works, Phase 1 - Hang Hau Tsuen Channel and Associated Works”, hereafter referred to as the “Project”.

1.2 Purpose and Nature of the Project

The squatter area in the vicinity of the existing Hang Hau Tsuen stream was cleared in 1997. The poor hydraulic performance of the Hang Hau Tsuen stream is attributed partly to the siltation of the watercourse by the remains of the former squatter structures, and also to the meandering watercourse and the presence of an under-sized box culvert at Deep Bay Road. A total of about 43 hectares of land is flood prone as a result of the inadequate drainage capacity of the Hang Hau Tsuen stream. The purpose of the channel project is to alleviate flooding occurred in the catchment by converting the existing Hang Hau Tsuen stream between Deep Bay and Deep Bay Road to an engineered channel that will meet the required flood protection standards.

The project comprises the following development:

- Rehabilitation of Hang Hau Tsuen stream including construction of a 380 m long trapezoidal channel (with 6 m wide channel base and approximately overall width of 25 m)
- Construction of a 25 m long twin cell box culvert (5.5 m (w) x 3 m (H)) beneath the Deep Bay Road and 3 nos. of footbridges across the channel.
- Provision of a 3.5 m wide access road with passing bays on one side of the channel and 1.6 m wide footpath on both sides of the channel and associated drainage system.

1.3 Name of the Project Proponent

The Project Proponent is the Project Manager, New Territories North Development Office, Territory Development Department.

1.4 Location and Scale of Project, and History of Site

The location of the Project within Northwest New Territories and its preliminary layout is shown in Figure 1.

Hang Hau Tsuen is situated at the southern part of Lau Fau Shan bordering the Hang Hau Tsuen stream. The area is mostly characterised by wooden sheet-metal clad squatter dwellings that has accumulated on Government Land. Some of the structures lying outside the present watercourse, were built with brick and concrete. A large part of the village is classified by the Government as squatter areas. To the north of the stream there used to be areas covered by paddy fields and fish ponds. Farming and livestock rearing has been abandoned leaving the area and its temporary structures mostly derelict. The area is generally low-lying and storm water is discharged to Deep Bay or to the stream through small cross drains under the embankments along the shore and the stream. Serious flooding was recorded in June 2001.

1.5 The Type of Designated Project Covered in the Profile

The Project is a Designated Project (DP) according to Item I.1 (b) (vi) of Part I, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO). The proposed drainage channel will drain into an area which is less than 300m from a coastal protection area.

1.6 Name and Telephone Numbers of Contact Persons

2. PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Responsibilities of Parties

The Project Proponent, PM/NTN of TDD, will be responsible for implementing the proposed works, together with all the environmental mitigation measures, the environmental monitoring and audit requirements as specified in the approved Environmental Impact Assessment (EIA) Report of this Project.

Specialist Environmental Consultants under Agreement No. CE 3/74 will be responsible for undertaking the EIA according to the Brief to be issued by the Director of Environmental Protection and to respond on behalf of the Project Proponent on issues related to the EIA.

2.2 Project Time Table

The tentative programme for implementing the Project is from 2004 to 2007.

2.3 Considerations on Programme Requirements and Interaction with Other Projects

In order to alleviate the flooding risk to Hang Hau Tsuen and the upstream area, the Project had to be implemented as soon as possible after completing the necessary statutory and administrative procedures.

Concurrent public works projects within North West New Territories include the construction of Deep Bay Link (2003-2006), Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Improvement Stage 1 (2001 to 2007). The works areas of these projects, however, are all located over 500m from the Project and cumulative environmental impact is unlikely.

3. POSSIBLE IMPACT ON THE ENVIRONMENT

3.1 Ecology

Channelization of the Hang Hau Tsuen Stream will remove part of the mud of the watercourse floor and recently established mangrove habitats at the tidal part of the Stream and at the Stream outfall. Most of these mangroves were established after the clearance of the squatter in 1997. Initial observations show these mangrove habitats currently to be quite active ecologically, supporting some of crabs and providing feeding opportunities for wading birds.

3.2 Contaminated Materials

The Project will include excavation in the Hang Hau Tsuen Stream bed, and the amount of excavated sediment is expected to be approximately 15,000 m³. The sediments can be mechanically excavated in the dry within a system of temporary bunds and will not require dredging as such. The wet spoil will be side-cast for drying before loading and dispatch to the approved dump. The sediment of the Hang Hau Tsuen Stream bed was found to be heavily contaminated in December 1997 with high levels of copper and zinc, and high cadmium contamination was also identified in the upstream sediment, under the then applicable EPD Circular No.1-1-92. The excavated sediments will have to be tested, re-classified and managed according to the procedures given in the Works Bureau Technical Circular No. 3/2000 on Management of Dredged/Excavated Sediment.

3.3 Contaminated Land

There is no recorded past history of contaminating land use in the Project works area. The stream bed contamination is likely to be a product of hinterland activities rather than along the immediate stream banks.

3.4 Generation of Solid Waste

Small quantity of scrap metal, wood and other building material will result from demolishing of squatter huts during site clearance. These materials are mostly in an advanced stage of decay and considered unsuitable for recycling. Any inert materials which could be separated from the non inert detritus will be sent to public filling area. Such non inert refuse will be sent to landfill.

3.5 Generation of Effluents and Contaminated Runoff

Inadvertent site runoff discharged to Deep Bay during the construction phase is possible, but the impact can be avoided by diverting the regular stream flow into a temporary channel during construction phase and implementing water quality control measures for pumped discharge from the works. There is no operational phase water quality issue associated with the Project.

3.6 Dust and Odour

Minimum construction dust impact is expected as there will be very little moving of dry earth during the site formation phase. Construction of confining bunds will employ imported suitable material for which regular dust suppression measures will be applied. There is no operational phase air quality impact associated with the Project apart from temporary odour issue while mud is excavated from the channel bed during construction works. Possible odour issue may also arise during maintenance excavation, although the likelihood depends on the future stream water and sediment quality.

3.7 Noise

Construction noise impact is likely due to the proximity of works from potential noise sensitive receivers including a kindergarten, but the number of receivers is low. Construction is not required during restricted hours to complete the Project. There is no operational phase noise impact associated with this Project.

3.8 Archaeology and Cultural Heritage

PM/NTN had commissioned the Hong Kong Institute of Archaeology (HKIOArch) through the Antiquities and Monuments Office of the Leisure and Cultural Services Department to undertake an archaeological survey and assessment for the Project. The HKIOArch issued the *2001 Archaeological Survey & Assessment for the Proposed Channel at Hang Hau Tsuen, Lau Fau Shan* in February 2001. It has concluded that the proposed works, as laid out in Figure 1, will not create any adverse impact on the archaeological or historic remains, as any of these remains will be outside the Project site area. A copy of this report is attached in Appendix I.

3.9 Landscape and Visual Impact

Part of the natural mud flats, mangrove habitat and the natural stream course will be lost through the Project which will create a landscape and visual impact to the residents of Hang Hau Tsuen. A positive impact is possible in terms of removing some of the rubbish in the stream.

4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1 Existing and Planned Sensitive Receivers

Figure 2 gives the locations of all the existing and planned noise, air and water quality sensitive receivers within 300m of the Project boundary. Representative sensitive receivers for each issue are identified on this figure.

Potential noise and air quality impacts of this Project are confined to construction phase only. Construction noise and dust sensitive receivers include the squatter housing along the banks of Hang Hau Tsuen Stream. Potential water quality sensitive receivers include Hang Hau Tsuen Stream and Deep Bay during construction phase. There is unlikely to be water quality impact during the operational phase.

Figure 3 presents the potential ecological sensitive receivers of this Project. Ecological sensitive receivers include:

- The Hang Hau Tsuen Stream which may be affected in terms of water quality due to site runoff and due to excavation of the contaminated bottom sediment in the Stream.
- The scattered mangrove species along the tidal portion of the Hang Hau Stream and part of the mud flats and mangrove habitats at the mouth of this Stream will be lost through this Project. Site visits and photographs of the Stream indicate some of crabs in these habitats. The area of mangroves to be lost through the Project is however a small part of the recently established, extensive mangrove flourishing along the Deep Bay coastline between Lau Fau Shan and Pak Nai.

4.2 Natural Environment

The topography of the Project works area is flat, with two small knolls lying 150 m south of the south bank of the Stream. The site is 250 m south of Lau Fau Shan, the two separated by abandoned agricultural land interspersed with groves of mature trees and abandoned structures. The site is flanked by the Deep Bay Road to the east and the Deep Bay to the west. Mangrove covered mud flats characterise the mouth of streams entering the Deep Bay and in the case of Hang Hau Tsuen Stream the mud flat is one of the more substantial in size along the Deep Bay coastline.

The Hang Hau Tsuen Stream proposed for channelization under this Project is a natural muddy bottomed stream course with a width of approximately 20 m at its widest and considerably less at other points along its alignment. The deepest invert level is approximately 1.5 m below ground surface although dry weather flow amounts to just 0.1 m deep. The Stream falling within the works area is tidal. Its mouth is flanked by extensive mudflats which have been colonised by mangrove species since some of the squatter huts at the Stream mouth and over the Stream were demolished in 1997.

Water quality and sediment quality data of Hang Hau Tsuen Stream had been obtained by sampling and analysis in December 1997. The data indicated the levels of ammonia, E.coli, suspended solids, and biological oxygen demand in the Stream water are higher than those of the water quality objectives for Deep Bay. The stream bed sediment within and upstream of the works area contained copper and zinc of levels high enough to be classified as Class C under the EPD Technical Circular No.1-1-92 at the time. Sediments obtained upstream of the work area also contained enough cadmium for them to be classified as Class C. This reflects pollution from the container yards runoff upstream and the untreated domestic and livestock sewage discharged into the hinterland of the Stream at that time.

4.3 Existing and Past Land Uses of the Project Site

The Hang Hau Tsuen Stream is a natural stream course covered extensively with squatter huts constructed on stilts. There are only a few legal houses of the original Hang Hau Village among these squatter huts. Some of the huts, along the alignment of the natural stream course and around the mouth of the Hang Hau Tsuen Stream were cleared in 1997 as part of a rural improvement scheme. Marine sediments have been trapped along the tidal portion of the Stream to form mudflats. Mangrove species now colonise the intertidal part of the Stream. The area was traditionally used as farming and fish ponds although agriculture is now entirely abandoned and none of the remaining ponds are managed. Apart from the residences taken up along the stream banks the area is mostly derelict.

5. ENVIRONMENTAL PROTECTION MEASURES TO BE IMPLEMENTED

5.1 Ecology

The floor of the new channel cannot be re-established so as to permit substantial re-growth of the mangrove which will inhibit hydraulic performance. Off site mitigation measures for the mangrove may have to be considered under this Project. Opportunity exists for enhancement of existing mangrove community along the shore between Lau Fau Shan and Pak Nai by active planting mangrove and related species.

5.2 Solid Waste Management Measures

The sediments to be excavated from the stream bed are likely to be contaminated. The sediments will be tested and managed according to the requirements under the Works Bureau Technical Circular No. 3/2000.

5.3 Effluents and Runoff Management

During the construction phase, sediment in wheel wash effluent will be settled and reused as far as practicable. Any remaining sediment will be disposed of appropriately in a public fill. As each fishpond is already bunded, sediment loaded runoff will be contained within the site. Sediment will be settled before runoff is released .

5.4 Dust Mitigation Measures

Wheel washing facilities will be provided for construction vehicles. Sediments in the effluent from wheel wash facilities and site runoff will be settled and removed before discharge to storm water facilities. If stockpiles are required they will be covered. Exposed earth surfaces will be watered to minimise generation of fugitive dust as far as practicable.

5.5 Noise Mitigation Measures

The number of construction equipment will be minimised and turned off when not in use, and careful choice of work method will be required.

5.6 Archaeological and Cultural Heritage Mitigation Measures

No archaeological mitigation measures are required. Contract clauses will however be included to instruct Contractors on the procedures for conserving and notification should any artifacts be discovered during construction phase.

5.7 Visual and Landscape Mitigation Measures

Grasscrete or gabion walling will be used for the slopes of the channels to obviate glare and increase greenery. Visual and landscape considerations will be incorporated into the channel design, such as planting of native species along the channel bunds. Clearing of rubbish from stream may constitute a positive impact.

6. FURTHER ENVIRONMENTAL IMPLICATIONS

6.1 Beneficial Effects

Beneficial effects of the Project include the prevention of flooding within the catchment, the removal of rubbish and contaminated sediments from the stream.

6.2 Severity of Adverse Effects

Potential transient construction noise, dust, water quality and waste impacts, visual and landscape impacts, contaminated mud, and archaeological and cultural heritage impacts can be prevented and mitigated in each case by including and enforcing the appropriate specification clauses in the construction contract.

Mitigation measures for some potential ecological impacts may have to be implemented offsite or immediately adjacent to the Site and will require agreement from relevant authorities.

Eco-friendly design of the channel bed and the confining bunds will be employed to uphold the function and health of the intertidal community. The EIA study will define the ecology asset and provide an ecological design memorandum for the creation and management of intertidal bottom and the channel confining bunds.

END OF TEXT

Appendix 1

The 2001 Archaeological Survey & Assessment for the Proposed Channel at Hang Hau Tsuen, Lau Fau Shan

The 2001 Archaeological Survey and Assessment
For the Proposed Channel at Hang Hau Tsuen, Lau Fau Shan

Hong Kong Institute of Archaeology

February 2001

Contents

1. INTRODUCTION	1
2. GEOGRAPHICAL CONDITIONS AND HISTORICAL BACKGROUND	1
3. ARCHAEOLOGICAL SURVEY OF HANG HAU TSUEN AREA	3
1) FIELD SURVEY	3
2) AUGERING SURVEY	4
4. TRIAL PIT EXCAVATION IN THE SAND DUNE AT THE NORTH OF HANG HAU TSUEN	5
1) EXCAVATION	6
2) STRATIFICATION OF LAYERS	6
3) THE KILN REMAINS	7
4) THE AGE AND PROPERTIES OF THE KILN REMAINS	7
5. CONCLUSION	8
6. NOTES	9
7. APPENDICES	10
1) TABLES	11
<i>Table 1 Field Walking Record Sheet at Hang Hau Tsuen in Lau Fau Shan</i>	12
<i>Table 2 Auger Holes Record Sheet</i>	13
<i>Table 3 Trial Pit Excavation Record Sheet</i>	17
2) FIGURES	
<i>Fig 1 The topography and survey areas of Hang Hau Tsuen</i>	18
<i>Fig 2 The physiognomy, soil type and the distribution of the auger holes and trial pit</i>	19
<i>Fig 3 Drawing of stratigraphic section of the Northern Wall of the Trial Pit T1</i>	20
3) PHOTOS	
<i>Photo 1 Overview of Hang Hau Tsuen (from the southeast to the northwest)</i>	21
<i>Photo 2 Hang Hau Tsuen stream</i>	22
<i>Photo 3 Hang Hau Tsuen houses on stilts (pile-dwelling suspended structures)</i>	22
<i>Photo 4 Hang Hau Tsuen residents are processing oysters at the seaside</i>	22
<i>Photo 5 Abandoned Taoka Tsuen</i>	23
<i>Photo 6 Iron bell in the Tin Hau Temple at Sha Kong Tsuen dated the 45th year of Kangxi Period (1706) of Qing Dynasty</i>	23
<i>Photo 7 Wong's ancestral hall in San Hing Tsuen</i>	23
<i>Photo 8 Celadon of Song Yuan Period unearthed at Hang Hau Tsuen by field walking and augering survey</i>	24
<i>Photo 9 The location and stratigraphy of the trial pit T1 in the north of Hang Hau Tsuen</i>	25
<i>Photo 10 The kiln remains from trial pit T1</i>	26

1. Introduction

Commissioned by the Antiquities and Monuments Office of the Leisure and Cultural Services Department, HKSAR government, Hong Kong Institute of Archaeology carried out an archaeological survey and assessment around the proposed channel at Hang Hau Tsuen in Lau Fau Shan area of Tin Shui Wai. It is hoped that the potential impacts of the proposed channel construction on the archaeological remains can be assessed and mitigated. The surveying period is from January to February 2001 and the surveyed area is about 0.5 square kilometer.

The approaches applied for this field survey included field walking, auger survey and trial pit excavation. During the field walking, celadon pieces of Song Yuan Dynasties, segmental cloth grain tiles of Ming Dynasty and blue and white porcelain sherds were collected. 38 auger holes were drilled and remains of aforementioned period were found as well. One trial pit was excavated and the remains of a ceramic kiln with some bricks with kiln perspiration of no later than Song Yuan Period were unearthed.

This report firstly introduced the geographical conditions and historical background of the surveyed area, the results of field walking and auger survey are then presented. Finally, some information on trial pit, including the details of the excavation, stratification of the layers, remains of the kiln and the date and properties of the remains were illustrated.

The field survey, information collection and report writing were conducted by LIU Mao, WANG Wenjian, WANG Fei and YIU Kam-lung.

Thanks for the Territory Development Department of the HKSAR Government, who financed this survey. We shall also express our thanks to Mr. CHAU Hing-wah and LAM Kam-yuen of the Antiquities and Monuments Office, who provided a great deal of support and help to this survey.

2. Geographical conditions and historical background

Hang Hau Tsuen (HHT) is a coastal village at the northwest end of New Territories, with Lau Fau Shan lying in the north, Sha Kong Tsuen neighboring in the south, Deep Bay Road passing through in the east and Deep Bay in the west (Figure 1, Photo 1). HHT is surrounded by low lands with ponds, water fields and wetlands. The altitude is a bit higher in the east with large area of modern fill. In the south of HHT, a small stream from the hills in the east passes the Deep Bay Road westward, then goes through HHT and flows into Deep Bay (Photo 2). The stream can be divided into two segments. To the east of the Deep Bay Road, the stream has been constructed into an artificial channel. From the west of the Deep Bay Road to the outfall into the sea, the segment, with the total length of some 400m, is the proposed HHT Channel. The area along both northern and southern banks of the channel is the extent of this archaeological survey area.

HHT is a modern immigration village. Few strong buildings could be seen there. Most of the structures are temporary houses made from iron sheets and wooden plates. Due to the low and wet land conditions, some houses are supported by stilts. This forms a

kind of pile-dwelling structure (Photo 3). As the villager has little arable area, most of the villagers subsist on oyster farming along the seaside, which supplies local market (Photo 4).

Although HHT is a modern village, the area where the village locates has a long historical and cultural background. About 100m south of the stream of HHT, there was a village, named Taoka Tsuen or the village of Tao's family. Though the villagers had moved to other places, the existing house remains show that there should be around 10 households in the village (Photo 5). The Tao's clan has a long history in Hong Kong. According to the merit-recording plate in Wu Liu Hall in Yuen Long Tuen Tsz Wai.¹ Tao's family originated from TAO Yuanming of Eastern Jin Dynasty. Because Tao Yuanming preferred beautiful landscape to fame and gain, he retreated from officialdom to the foot of Southern Hill. He called the house where he lived *Wu Liu Hall (Hall of Five Willows)*. Therefore, his offspring called their ancestral temple *Wu Liu*. Tao's family in Yuen Long are his offspring and they immigrated to Hong Kong at the end of Song Dynasty or beginning of Yuan Dynasty. Originally they lived in Nai Wai. His offspring became more and more and they established the villages as Tsing Tsuen Wai, Sha Kong Wai and Tuen Tsz Wai. Most likely, the Tao's family in Taoka Tsuen is the offspring from Nai Wai. From the auger drilling results of the survey at the original Taoka Tsuen site, a piece of celadon of Song or Yuan Dynasty was collected, indicating the possibilities of existing remains of Song Yuan period in this location.

Sha Kong Tsuen, a village set up by Tang's clan, is located at several hundred meters south of HHT stream. According to Hong Kong historical literatures, Tang's family of New Territories started to settle in Kam Tin during Northern Song Dynasty. By the time of Southern Song Dynasty, Tang's offspring had extended to many places of the New Territories. In the northwest New Territories area, where HHT is located, several villages like Ha Tsuen, Mong Tseng, Tung Tau and Ping Shan were established by Tang's Family.²

Sha Kong Tsuen is just by the side of Deep Bay. Tang's Family built a temple for Tin Hau as to offer sacrifice to Tin Hau and the God of Sea. Tin Hau is also named "Tin Fei", legend of whom could be dated back to Song Dynasty.³ By the time of Ming Qing Dynasties, Temples for Tin Hau were widely built in the coastal areas of Guangdong, Fujian, Hong Kong, Macao and Taiwan, that become the main temples where the local people prayed for good fortune and avoiding disaster. Inside the Tin Hau Temple at Sha Kong Tsuen, there is an iron bell (Photo 6), with an inscription of "*The nation is prosperous and the people live in safety*" as a token of merits of the villagers. The bell was cast in 45th Year of the Kangxi Period of Qing Dynasty (Year 1706). This proves the Tin Hau Temple was built no later than the early years of Qing Dynasty, or could be as early as Ming Dynasty, and the history of Sha Kong Tsuen itself therefore could be dated just as long.

The land and field property of HHT all belong to Wong's clan of San Hing Tsuen. San Hing Tsuen is located about 1 km northeast of HHT. It was told by the old people in the village that Wong's clan immigrated from Shatou area of Shenzhen. In the Wong's ancestral hall in San Hing, there is a couplet, praising their ancestor "political achievement famous by Han Dynasty to glorify one's ancestors and academic brilliance (public examination) one in Song Dynasty from Sha Kong started in"

(Photo 7). From this couplet, it may prove that the history of Wong's clan could be dated back to Song Dynasty or a bit later (Photo 7).

From the literature or information mentioned above, the history of HHT area could be traced back to Song Dynasty and the archaeological survey data even shows that the culture background here could be linked to the prehistoric times. Along the seaside from Ha Pak Nai to Lau Fau Shan in the west of Yuen Long, archaeologists have found 12 sites from the Neolithic Age to the Bronze Age and two groups of remains from Song Dynasty to Ming Dynasty. On the hill near Tao Ka Tsuen, south of the HHT stream, six surveys were conducted by archaeologists from 1982 to 2000 and some coarse corded pottery sherds and hard pottery sherds with cloud and thunder pattern were collected. Therefore, the area is identified as HHT Archaeological Site, which may be dated to the late period of the Neolithic Age to the early period of the Bronze Age.⁴

3. Archaeological Survey of Hang Hau Tsuen Area

1) Field Survey

The scope of the field survey may include collecting relics, recording the land use purpose and interviewing the local people. Based on the data collected, further detailed surveying plan was then proposed. Whenever necessary, the land owner or manager shall be contacted, as part of the preparation of auger drilling or trial pit excavation.

The main areas of this survey are marked on Figure 1. The location, current situation and results of this survey are recorded in Table 1. The surface characteristics of the surveyed areas are marked and listed in Figure 2. To the east of the HHT Stream is a large stockyard of concrete or gravel floor with numerous containers on it. The west end of the stream is the outfall into the sea. Along the coastline, there are piles of oyster shells, a bit further from the sea bank, there are many modern houses and other buildings. Close to the southern and northern sides of the stream, there are continuous wetlands. Further, there are fish ponds, modern buildings and fills. No ancient remain was found during aforementioned field walking. It was also not possible to drill in these areas.

Because the surface conditions by the two banks of the HHT Stream are not in favour of archaeological survey, the working area is then extended to 100 meters away from the southern and northern banks of the stream. Since HHT Archaeological site was identified in the previous archaeological survey, the southern side of the stream became the key area of this survey.

The place where HHT Archaeological Site is located is a round hill with altitude of 10m, which is the hill at the foot to the very northwestern end of Castle Peak. The hilltop has been occupied by Wing Jan Kindergarten and Deep Bay Road. During the surveys in 1999 and 2000, only some coarse corded pottery sherds and hard pottery sherds with thunder pattern were collected. Besides, a green glazed ceramic pot of Shiwan kiln of late Ming Dynasty was found but no drilling was conducted to get the information of the stratification layers. In this archaeological survey, the survey team

searched HHT Archaeological Site and hill slope areas for several times. Neither the remains of ancient times nor the stratification layers of ancient culture were found.

At the foot of the hill, within the area close to Tao Ka Tsuen, the survey team collected some celadon of Song Yuan period, some blue and white porcelain sherds of Ming Qing Dynasties and some brown glazed ceramics and incised mortar (or called 'grinder') of the same period.

The broken piece of the celadon bowl bottom is, sample HHT2001 surface collection:1 (hereinafter omitted "HHT2001" when the serial number of the historical remains and relics are mentioned), low foot ring with diameter of 6cm, 0.8cm for the width of the rim of the foot bottom; hoar body, dark and yellowish green glaze, with cracked ice pattern at the surface of the glaze; no glaze at the low part of the surface and the foot ring, but a rotary scar left by a knife-cut could be seen at the surface; at the joint of the inner wall and foot, a single line of circle (Photo 8:1) was engraved. This sample should be dated around Song Yuan period. For detailed discussion of this, please refer to Section 4 of Chapter 4.

In the areas to the north of the stream, the survey team collected several red cloth grain segmental tiles in the dene around 50m to the northwest of HHT. This kind of red cloth grain segmental tiles had been used in Hong Kong for a quite long time and it was found in the remains of Song and Ming Dynasties. With these several broken pieces, it is difficult to further conclude the accurate age.⁵

2) Augering Survey

As both sides of the stream are either wetlands and ponds, or modern buildings and fill coverage, it was impossible to conduct drilling survey. Hence, the auger holes for this survey were distributed a bit further to the HHT stream. In the south of the stream, 27 auger holes were distributed on the slope or at the foot of the hill. In the north of the stream, there were 11 auger holes around the sand dune, northwest of the village. With a total of 38 auger holes, the survey data indicate that there are three types of deposits in the study area- they are weathered soil, sandy soil, weathered soil with sand deposit (Table 2 and Figure 2).

Weathered soil This kind of deposit is distributed at the hill slope and at the hill foot of the southern stream. The auger holes of this area included K4-7, K10-12 and K35-38. Of those, at K7, further drilling was stopped after surface soil as the rock was hit.

The augering survey data show that the stratification layers and the properties for different auger holes of such deposit are similar. The deposit sequence from the earth surface downwardly is surface soil, which is gray or black soil with grass roots and tree skins; modern deposit layer, ochre soil with some modern refuse; in one or two holes (K10-11), there is a layer of yellow-gray clay with some neoteric tile pieces and white ceramics; the lowest layer is red-yellow clay with a lot of stone blocks and stone flakes, which should be weathered deposit of rock surface.

Within such kind of deposit, at auger hole K4, a layer of clay in snuff colour was found, which contains broken pieces of pottery pots and segmental tiles. Under the surface layer at auger hole K10, some broken pieces of blue and white porcelain

sherds, pottery sherds and terra-cotta segmental tiles were collected. At auger hole K11, some residual red tiles, white ceramics and black glazed jar remains were unearthed. These unearthed cultural relics could be dated to Ming Qing Period.

Sandy soil deposit This type of layer is distributed at the outer rim of the wetlands and ponds along the stream banks. The altitude of these areas is a piece of flat land between the hill foot and wetland. Such deposit is usually underneath the surface soil and is of multi-layer of sea sand. The colour and size of sand grain are different at different layers. Within this area, water comes out 1 meter below the surface. The auger holes were K1-3, K8-9, K13-25 and K33-34. Among those holes, some pottery and ceramics residual were collected at the holes of K1, K3, K13, K16-17, K21, and K34. In the south of the stream, a piece of celadon of Song Yuan period was unearthed at the auger hole of K1. While at the auger hole of K16, north of the stream, a piece of kiln brick with characteristic of “perspiration” remain was found on the third layer C54. At the auger hole of K17, a piece of celadon of Song Yuan period was also unearthed. The unearthed remains from other auger holes were from Ming Qing Period.

The broken piece of the celadon bowl bottom, sample number K1C4:1, has a low foot ring with diameter of 6cm, the bottom of the foot ring is quite wide, about 0.85cm wide; the body colour, glaze colour and glazing method are the same as for the collected celadon sample mentioned above. Clear rotational cutting scars can be found on the outer surface and foot ring. A convex can be seen at the center of inner bowl surface, resulting from rotational cutting. No pattern was seen. (Photo 8:2). The hole of K1 is located at aforementioned Tao Ka Tsuen site.

The broken piece of celadon, sample K17C56:1, has gray body, green glazed, that is lighter than the two samples aforementioned. There are fine cracked ice pattern on the glaze surface. A bow-string pattern was found below the outer rim (Photo 8:3).

Weathered sandy soil deposit This deposit was only found at the rim of the western end of the hill foot, south of the stream. The auger holes of K26-32 were distributed in this area. For the auger hole of K27, drilling was stopped after the surface soil as bed rock was hit. For this type of deposit, there is usually a 15-20cm thick red-yellow hard soil layer below the surface soil, with the same property of the soil as the weathered soil deposit and underneath is a multi-layer sandy soil. Water table is normally located at 1 m below surface. This deposit is located between weathered soil deposit and the sandy soil deposit. The sandy soil underneath is part of the aforementioned sandy soil deposit which was formed by coastal sedimentation. The upper layer of weathered soil should be resulted from nearby slope erosion.

In the area of such deposit, a piece of red colour hard pottery sherd of gray body was unearthed at auger hole K26, and a piece of red segmental tile at the auger hole of K30, a piece of red segmental tile and broken sherds of pottery jar at auger hole K32 were found. The period of these remains is around Ming Qing Dynasties.

4. Trial pit excavation in the sand dune at the north of Hang Hau Tsuen

1) Excavation

The excavation location is at the sand dune, that is 50m northeast of the HHT and is covered with plantation. The area of the sand hill is about 50m×100m. The level of the sand hill is 2-3m higher than HHT (Photo 9:1). Because some celadon pieces and red kiln bricks with perspiration remain were found here during augering survey, the survey team decided to conduct an excavation of a trial pit so as to find more remains.

The trial pit was numbered as T1 and had the dimension about 2m×2m. Because the pit was located on the sand dune, the pit sides crumpled as excavation was carried out. The shape of the pit opening was not neat and the bottom of the pit was smaller than the opening because of this constraint.

As the kiln brick with kiln perspiration remain were found at auger hole K16, a trench of 1.5m long and 0.5m wide was excavated, with the auger hole K16 as the centre. When excavation reached the depth of 1.2m, some scattered bricks were found on the western wall of the trial trench. There was perspiration of glaze remained on some bricks. Then the excavation was done westward till the whole kiln was exposed. After the trial pit T1 was cleaned up, some brick samples were taken out and the excavated soil was backfilled so as to protect the integrity of the kiln features.

2) Stratification of Layers

Soil layers of trial pit T1 is illustrated by the drawing of stratigraphic section of its northern wall (Figure 3, Photo 9:2).

The first layer (Context C1001): modern surface soil, 50cm thick, black, with little sand, blue and white porcelain sherds and modern material were unearthed.

Blue and white porcelain bowl bottom, sample No.T1C1001:1, has the yellow-gray base, bluish but opaque glaze. The exterior surface near the bottom and the part of the foot ring was not glazed. Only the central part of the interior surface of the bowl was glazed. The foot ring is 8cm in diameter and its section is an inverse triangle. The rim of the foot bottom is pointed but round. The exterior bottom of the bowl (inner part of the ring) is flat at the rim and protruding in the center, known as the “chicken heart shape”. The exterior surface was painted with blue and white decorations - looking like grass blade pattern. The colour was not even and some what lighter (Photo 9:3). Such style with the exterior surface of the foot ring inclining to the inner side, and “chicken heart” exterior foot should be the characteristic of blue and white porcelain of Ming Dynasty, which can be seen in the Jingdezhen wares of early or middle Ming Dynasty⁶, which can also be seen in the blue and white porcelain of Ming Dynasty unearthed at the Wun Yiu of Tai Po, in northeast New Territories of Hong Kong.⁷

The second layer (Context C1002): snuff-colored sand soil, 50cm thick. Some celadon pieces but no remains of recent period were unearthed.

Four celadon pieces from different vessels but with same light green glaze were found. There are ice crackles on the glaze, which is similar as the celadon sample (K17C56:4) from drilling. The sample T1C1002:2 is the remains from lower half of the vessel, of which the exterior surface of the bottom was not glazed. Sample T1C1002:3 is the remains of straight vessel rim. Its outer rim was thickened, forming an arch lip.

Sample T1C1002:4, is the remains of the middle of a vessel, of which the exterior surface was incised with bow-string pattern. Sample T1C1002:5 is the remains of vessel brim, which is straight with cusp lips pointing outward (Photo 9:4). These four samples should be dated back to Song Yuan Period. Section 4 of this chapter has detailed discussion of the samples.

The third layer (Context C1004): gray-brown sandy soil, containing much of burned black soil powder of 50cm thick. This layer contains nearly 10 red or sooty kiln bricks. This place should be the remains of kiln, which can be regarded as an independent unit, numbered as C1003 (Photo 9:5).

The fourth layer (Context C1005), dark-brown sandy soil layer, 100cm thick, loose and dry. No remains were found.

The fifth layer (Context C1006): light-yellow sandy soil, 70cm thick, containing some tiny plant roots.

The sixth layer (Context C1007): gray-white sandy soil layer. No remains were found when down to 20cm deep, where water table was hit.

3) The Kiln Remains

Surrounded by gray-brown sandy soil, the kiln remains C1003 is located at the bottom of the third layer of trial pit T1. This is only the remains of part of the kiln. The remains were distributed over an area of about 40cm×70cm within the trial pit (Photo 10:1). Besides some carbon dust, there were over ten kiln bricks inside. The kiln bricks were all coarse bricks with sand content, in different shapes, at different baking degree and with various surface colours.

The kiln brick with kiln perspiration, sample T1C1003:1 has irregular shape and was partly smoked, with a lot of sand or grit inclusions. There is a patch of semi-transparent green glazing crystal, so called as *kiln perspiration*, on the brick surface. When the brick was just unearthed, it was larger at the dimension of 20cm×30cm. Then the brick broke up. Due to the low incomplete baking used to manufacture the brick, it coupled after being unearthed. (Photo10:2).

The smoked kiln brick with burned surface, sample T1C1003:2, has the red body. The skin was smoked to black. The brick was completely baked and therefore hard and solid, in regular shape. The remained brick is 30cm long, 15-17cm wide and 7-8cm thick. (Photo 10:3).

4) The age and properties of the kiln remains

No ceramic was unearthed in the kiln remains C1003 and the layer where the kiln is located C1004. No dating of thermoluminescence was conducted on the kiln bricks. Hence, it is impossible to conclude the age of remains directly. The relative age of the kiln can only be concluded by the age of the second layer above C1003 and C1004.

In the second layer, C1002, no later remains but several pieces of celadon were unearthed. These celadon pieces are of gray body, light glaze with fine and dense ice

like cracks (so called *hacking*). The underpart of the vessel was not glazed. The lines of the incised patterns were deep and thick. The vessel edge has either an outward lip or thickened lips in arch shape. Some pieces of celadon collected by field walking around the HHT and augering survey are quite similar in the features of body and glaze. Thus, they should be the remains of same period. Two pieces of bowl bottom samples (Photo 8:1-2) indicate that such celadon has wider rim of foot ring and there are obvious scars due to inclined rotary cut. The characteristics of the figures, glazes and incised patterns on these vessels can either be seen from the Song celadon unearthed in Guangdong⁸ or the Song celadon in the archaeological site near Pat Heung Temple in Hong Kong.⁹ These vessels can obviously be distinguished from those celadon pieces of Tang and Ming Period unearthed in Hong Kong.¹⁰ Therefore, the second layer of the HHT trial pit T1 can be concluded as the cultural deposits of Song Yuan Period according to the celadon and the latest age limit of the kiln remains in unit C1003 shall no later than Song Yuan period.

There were some unearthed kiln bricks with kiln perspiration in unit C1003. Kiln perspiration is formed by the condensation of vaporized glaze. Thus, C1003 should be the kiln remains for baking the ceramic. In Hong Kong, similar kiln remains with kiln perspiration were found in Siu Lam Archaeological Site of Tang Dynasty in Tuen Mun¹¹. However, the number of bricks contained in C1003 is limited and the bricks are scattered. The bottom and surrounding area of the remains are full of sandy soil. No kiln foundation or other kiln remains have been found. Therefore, these kiln bricks may just be some scattered piles after the kiln being abandoned. Most probably, this deposit is not located at the place where the kiln used to be and it had been moved either by natural forces or manpower. However, the site of the remains shall not be far away from the original kiln site because of the weight and larger volume of the kiln bricks.

5. Conclusion

According to the land features and the deposition of the soil layers, it can be concluded that HHT area has been an estuary, experience successive rise and fall of sea level in the prehistory or early history. Through out this time people inhabited the hills nearby. During the mid and late period of historic time, no later than Song & Yuan period, due to the rise of sea level, villages were constructed around the foot hills and higher sand dune areas and there was a kiln and associated production activities. On the other hand, 30m on either side of the existing HHT stream have always been low lying, water logged areas, and is not a likely area for cultural deposits. Therefore, the proposed channel will have no impact upon ancient cultural remains and the construction can be carried out according to the schedule.

However, further from river, at the hill side or sand dune area, there exist some archaeological remains, including the remains of kiln in relation to ceramics production, of no later than Song Yuan period. Thus, the potential impacts upon these archaeological remains must be considered when development projects are proposed in this area in the future and necessary mitigation measures must be proposed to avoid any adverse impact to the archaeological remains discovered at the site.

6. Notes

¹ Hong Kong Institute of Archaeology, The Survey and Impact Assessment of Historical Building and Graves in the Scope of the Deep Bay Link Express Way Project – Preliminary Report of First-stage Work (Chinese Version). It is now stored in *Environment Management Limited*.

² SIU Kwok-kin, A History of Ancient Hong Kong, (Hong Kong: Chung Hwa Book Co. (H.K.) Ltd., 1996), pp. 26-29.

³ “Writing from the Temple of the Heaven Queen” in Vol. 23(2) of Xinan County Gazetteer, written by WANG Chongxi and edited by SHU Maoguan, the 24th year of Jiaqing Period (1819) of Qing Dynasty edition. Reprinted by CHAN Yat-sun in 1979.

⁴ AU Ka-fat, Territory-wide Archaeological Survey Report of Hong Kong: First Region (Yuen Long Area 1997). Copy held by the Antiquities and Monuments Office. AU Ka-fat, Archaeological Re-survey Report for the Western Part of Yuen Long Area 1999. Report held by the Antiquities and Monuments Office.

⁵ Regarding the discussion on the continuity and statistically morphological change of the red cloth grain tiles, please refer to Hong Kong Institute of Archaeology, The 2000 Archaeological Survey and Assessment Around the Drainage Channels at Sha Chau Lei, San Wai and Tung Tau Tsuen in Yuen Long. Report held by the Antiquities and Monuments Office.

⁶ Ma Xigui, The Chinese Blue and White Porcelain Wares, (Shanghai: Shanghai Ancient Book Press, 1999), pp. 84-171.

⁷ AU Ka-fat, Zhou Shirong, etc., The Investigation and Studies on Blue and White Ceramic Kiln in Wun Yiu, Tai Po, (Hong Kong: Regional Council, 1997), pp. 23-46.

⁸ Ceramics Finds from Tang and Song Kilns in Guangdong (Hong Kong: Fung Ping Shan Museum, University of Hong Kong, 1985), photo page 81-90. In addition, please also refer to Guangzhou Municipal Antiquity Management Committee and Art Museum of the Chinese University of Hong Kong ed., Xicun Kiln in Guangzhou, (Hong Kong: Centre for Chinese Archaeology and Art, The Chinese University of Hong Kong, 1987).

⁹ Hong Kong Institute of Archaeology, The 1999 Archaeological Survey in Kam Tin Road Area, Yuen Long. Report held by the Antiquities and Monuments Office.

¹⁰ Discussion on the Celadon Age of Hong Kong region. (see note 5)

¹¹ Liu Mao, “Excavation of Ceramic Kiln of Tang Dynasty in Siu Lam, Hong Kong”, China Antiquity News, No. 71 in 1998 (Published on 9 September 1998). For more details, please refer to Liu Mao, The Rescue Excavation Report at Siu Lam Archaeological Site, Tuen Mun 1997. Report held by the Antiquities and Monuments Office.

7. APPENDICES

Table 1 Field Walking Record Sheet at Hang Hau Tsuen in Lau Fau Shan

No.	Location	Current Situation	Preliminary Assessment	Further Results
1	816 350E 836 100N	Wetland	At the eastern end of river sides, impossible to drill	
2	816 300E 836 050N	Landfill area	Told by a worker of Wing Jan Kindergarten that there was a pond and it had been filled for drainage construction. Impossible to drill.	
3	816 320E 836 050N	Wing Jan Camp	Fenced and covered with concrete floor. Impossible to drill	
4	816 300E 836 000N	Wing Jan Kindergarten	Floor covered by concrete slab and impossible to drill.	
5	816 250E 835 970N	Abandoned houses	At the foot of the hill. Concrete floor. Piled with a lot of modern refuse like CD discs and plastic bags.	Auger hole K11, in front of the house; Auger holes K9, K10, K13, in the grass land
6	816 150E 836 000N	Abandoned pig farm	Large patches of concrete floor. Burned and some houses in the risk of collapse.	
7	816 150E 836 040N	Pond	Impossible to drill	
8	816 075E 836 000N	Pond	Impossible to drill	
9	816 050E 836 025N	Pond	Impossible to drill	
10	816 060E 835 970N	Vegetable field	Vegetable field in front of Mr. Watt's house. Possible to drill.	Auger hole K1, a piece of celadon bowl bottom unearthed
11	816 070E 835 930N	Some ruined houses in a nearby woods	Land for litchi trees at back of Mr. Watt's house. Possible to drill	Auger holes K2-8, K26-32
12	816 130E 835 960N	A half of hundred of ruined houses	Told by Mr. Watt that it used to be the Village of Tao's Family. All residents had been emigrated. Two new families there. Watt's is one of the two.	Auger holes K14, K33, K34
13	816 100E 836 100N	HHT	All villagers are not indigenes. Land leased for farming from the landlords in San Hing Village. Houses on stilts and formed as a kind of pile-dwelling suspended structures are located near the stream. Impossible to drill.	
14	816 250E 836 150N	Pond	Impossible to drill.	
15	816 300E 836 150N	Pond	Impossible to drill.	
16	816 300E 836 200N	Landfill area	Told by villagers that there used to be ponds. Lands was bought and filled by the developer. Impossible to drill.	
17	816 165E 836 215N	Small sand dune	A tomb with a tombstone with writing "Tomb of Wong Kam Tat and his wife,	

No.	Location	Current Situation	Preliminary Assessment	Further Results
			nee' Tang ". Built in Nov. 1922, rehabilitation in Nov. 1990. Belong to the villagers of San Hing Village.	
18	816 180E 836 200N	South of the small sand dune		Auger hole K15-24 Trial pit T1 excavation. Kiln remains unearthed.
19	816 100E 836 200N	A patch of abandoned wetland	100m north of the stream. Impossible to drill because water seeped.	
20	816 025E 836 100N	Outfall of the stream, Deep Bay	Houses of Lau Fau Shan village. Concrete floor, a large quantity of oyster shells. Some houses on the oyster shell hash. Impossible to drill.	

Table 2 Auger Holes Record Sheet

Soil Type	AL T. (m)	Auger Hole No.	Unit No.	Thick. (cm)	Soil features description	Addition Description
WEATHERED SOIL AREA	5	K4	C17	20	Black cultivated soil	
			C18	30	Yellowish brown clay	Broken pieces of pottery pot (C18:1,2) and tiles (C18:3-8) unearthed
			C19	>10	Hard Reddish-yellow soil	Stopped drilling when rock was hit
	8	K5	C20	10	Gray surface soil	
			C21	>30	Reddish-yellow tessellated soil	Pure and granular, from weathered rock. Stopped drilling
	8	K6	C22	15	Gray surface soil	Similar to C20
			C23	>30	Reddish-yellow tessellated soil	Similar to C21. Pure and granular, from weathered rock. Stopped drilling
	4.4	K7	C24	20	Gray surface soil	
			C25	>20	Yellowish brown clay soil	Stopped drilling when rock was met
	6	K10	C32	20	Black cultivated soil	
			C33	20	Taupe clay soil	30cm below the top soil, pieces of blue and white porcelain sherds, gray pottery sherds and red tiles (C33:1-3) unearthed
			C34	40	Yellowish brown clay soil	
			C35	30	Gray-yellow clay soil	
			C36	>50	Hard reddish-yellow soil	Stopped drilling because of hard soil
	6	K11	C37	5	Concrete surface	
			C38	20	Taupe clay soil	
			C39	40	Yellowish brown clay soil	
			C40	30	Gray-yellow clay soil	Pieces of red tile-end, white ceramic, and black glazed pottery (C40:1-3) unearthed
			C41	>20	Hard reddish-yellow soil	Stopped drilling because of hard soil
	6	K12	C42	10	Black cultivated soil	
			C43	>30	Hard reddish-yellow soil	Stopped drilling when hard rock was hit
16	K35	C109	30	Black cultivated soil	With oyster shells and modern refuse	
		C110	30	Yellowish brown clay soil		
		C111	>70	Reddish-yellow tessellated soil	Stopped drilling when hard rock was hit	
16	K36	C112	20	Black cultivated soil	With oyster shells and modern refuse	
		C113	40	Yellowish brown clay soil		
		C114	>100	Reddish-yellow tessellated soil	Stopped drilling when hard rock was hit	

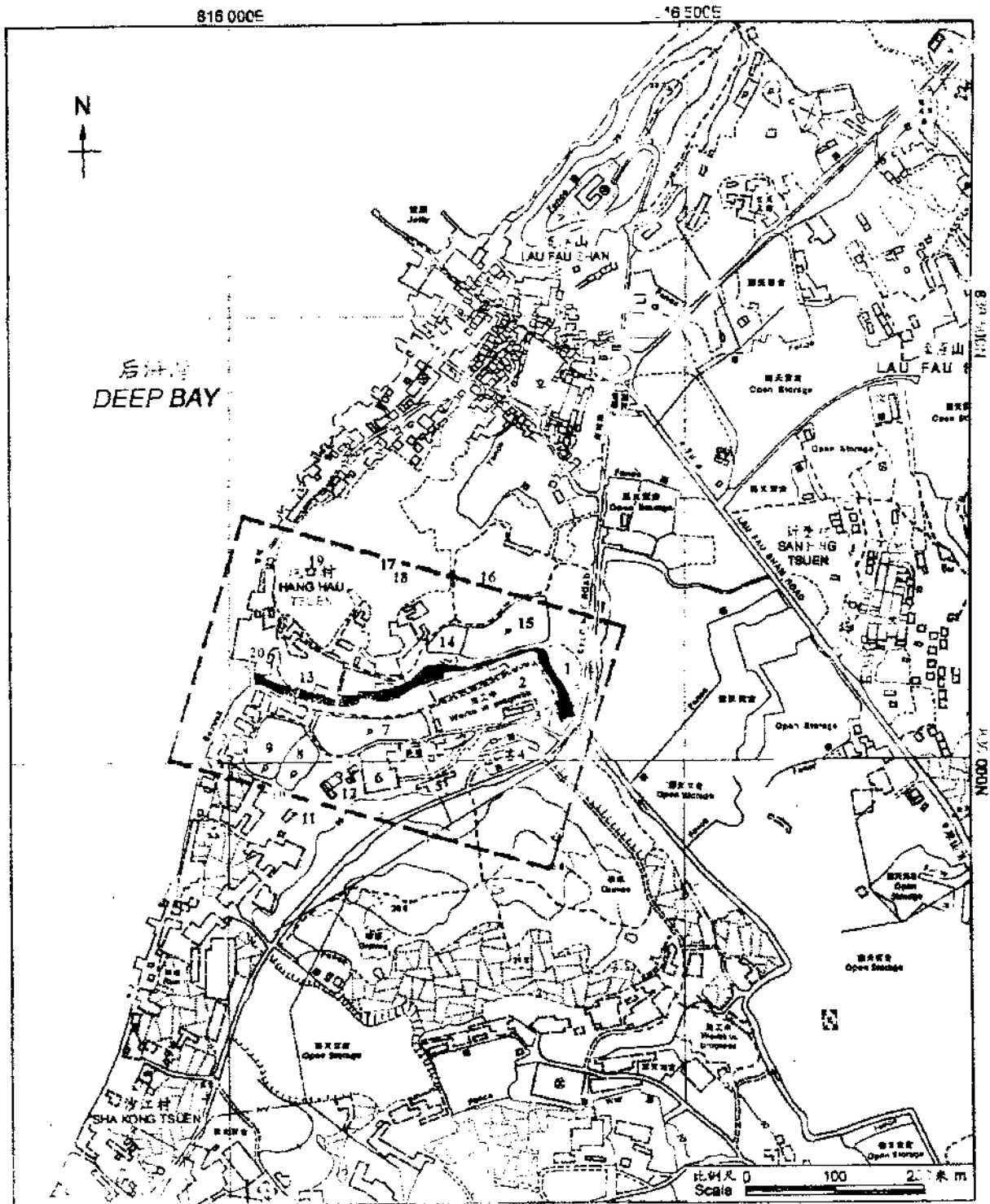
Soil Type	AL T. (m)	Auger Hole No.	Unit No.	Thick. (cm)	Soil features description	Addition Description
	16	K37	C115	20	Black surface soil	With oyster shells and modern refuse
			C116	100	Yellowish brown clay soil	
			C117	>40	Reddish-yellow tessellated soil	Stopped drilling when hard rock was hit
	14	K38	C118	20	Black surface soil	With oyster shells and modern refuse
			C119	>10	Red-yellow tessellated soil	Stopped drilling when hard rock was hit
Weathered sandy soil deposit	5	K26	C75	15	Black cultivated soil	With modern refuse
			C76	20	Hard reddish-yellow soil	
			C77	15	Dark-gray sand	Red pottery sherds (C77:1) unearthed 40cm deep from the surface
			C78	60	Yellowish brown sand	
			C79	40	Ash-gray sand	
			C80	>30	Mixture of yellow and white sands	Stopped drilling to the depth of 145cm below the surface when water seeped
	5	K27	C81	20	Black cultivated soil	
			C82	>20	Hard reddish-yellow soil	Stopped drilling when hard rock was hit
	5	K28	C83	15	Black cultivated soil	
			C84	15	Hard reddish-yellow soil	
			C85	30	Yellowish brown sand	
			C86	70	Ash-gray sand	
			C87	>40	Mixture of yellow and white sands	Stopped drilling to the depth of 145cm below the surface
	6	K29	C88	10	Black cultivated soil	
			C89	10	Red-yellow hard soil	
			C90	60	Yellowish brown sand	Incised mortar No. C90:1 unearthed at 40cm below the top soil
			C91	50	Ash-gray sand	
			C92	>50	Mixture of yellow and white sands	Stopped drilling to the depth of 140cm below the surface when water seeped
	6	K30	C93	15	Black cultivated soil	
			C94	20	Hard reddish-yellow soil	Tile No. C94:1 unearthed
			C95	>70	Yellowish brown sand	Stopped drilling when hard rock was hit
	6	K31	C96	20	Black cultivated soil	
			C97	10	Hard reddish-yellow soil	
			C98	>80	Yellowish brown sand	
5	K32	C99	20	Black cultivated soil		
		C100	10	Hard reddish-yellow soil		
		C101	60	Yellowish brown sand	Pieces of segmental tile and pottery pot (C101:1-3) unearthed	
		C102	>30	Ash-gray sand	Water seeped 110cm deep below the surface	

Soil Type	AL T. (m)	Auger Hole No.	Unit No.	Thick. (cm)	Soil features description	Addition Description
Sandy soil zone	4.4	K1	C1	15	Black cultivated soil	
			C2	50	Refuse layer	With plastic bags
			C3	15	Deep-gray sand	
			C4	15	Yellowish brown sand	Pieces of celadon bowl bottom No. C4:1 unearthed at 85cm deep from the top soil
			C5	>60	Ash-gray sand	Pieces of pottery pot (C5:1) unearthed, stopped drilling when water seeped 110cm deep from the surface
	5	K2	C6	40	Black cultivated soil	
			C7	10	Reddish-yellow soil	
			C8	30	Deep-gray sand	
			C9	80	Yellowish brown sand	Granular and pure
			C10	30	Ash-gray sand	
			C11	>50	Yellow and white sand mixture	Stopped drilling 220cm below the surface.
	5	K3	C12	10	Black cultivated soil	
			C13	10	Hard reddish-yellow soil	
			C14	70	Yellowish brown sand	White pottery segmental tile unearthed 25cm deep from the surface, No. C14:1
			C15	80	Ash-gray sand	Granular, pure. Stopped drilling when water seeped
			C16	>50	Mixture of yellow and white sands	Water seeped 200cm deep from the surface.
	4.4	K8	C26	20	Brown surface soil	
			C27	40	Yellowish brown sand	Pure, similar to C9
			C28	>100	Ash-gray sand	Pure, similar to C10
	6	K9	C29	15	Brown surface soil	
			C30	35	Yellowish brown sand	
			C31	>120	Ash-gray sand	Water seeped 80cm deep from the surface
	5	K13	C44	20	Brown surface soil	
			C45	30	Yellowish brown clay soil	
			C46	>40	Ash-gray sand	Similar to C31. Broken pieces of brown glazed pot (C46:1) unearthed. Water seeped 80cm deep from the surface.
	5	K14	C47	15	Brown surface soil	
			C48	30	Yellowish brown sand	
			C49	>45	Ash-gray sand	Stopped drilling 70cm deep below the surface when water seeped
5.8	K15	C50	60	Taupe sand	With dog bones	
		C51	>100	Yellowish brown sand	Pure and granular	
5.8	K16	C52	40	Taupe sand	Similar to C50	
		C53	60	Yellowish brown sand	Similar to C51	
		C54	>20	Hard reddish yellow sand	Soil sample bag no. 10. Kiln brick with kiln perspiration unearthed. Bag no. 9	
5.8	K17	C55	50	Taupe sand	Similar to C50	
		C56	>110	Yellowish brown sand	Similar to C51. Broken piece of celadon rim (C56:1) unearthed 140cm deep below the surface.	

Soil Type	AL T. (m)	Auger Hole No.	Unit No.	Thick. (cm)	Soil features description	Addition Description
	5.8	K18	C57	40	Taupe sand	Similar to C50
			C58	>120	Yellowish brown sand	Similar to C51
	5.8	K19	C59	50	Taupe sand	Similar to C50
			C60	>110	Yellowish brown sand	Similar to C51
	5.8	K20	C61	50	Taupe sand	Similar to C50
			C62	>110	Yellowish brown sand	Similar to C51
	5.8	K21	C63	40	Taupe sand	Similar to C50
			C64	>120	Yellowish brown sand	Similar to C51. Broken pieces of red brick unearthed 120cm deep below the surface. Sample bag no. 12
	5.8	K22	C65	55	Taupe sand	Similar to C50
			C66	>105	Yellowish brown sand	Similar to C51
	5.8	K23	C67	40	Taupe sand	Similar to C50
			C68	>120	Yellowish brown sand	Similar to C51
	5	K24	C69	20	Black cultivated soil	
			C70	90	Taupe sand	Similar to C50
			C71	>50	Yellowish brown sand	Similar to C51
	3.8	K25	C72	20	Black cultivated soil	
			C73	50	Yellowish brown clay soil	With sand
			C74	>40	Yellowish brown sand	Water seeped 100cm deep below the surface
4.4	K33	C103	20	Black cultivated soil	With refuse	
		C104	10	Reddish yellow soil		
		C105	>80	Yellowish brown sand	Water seeped 90cm deep below the surface	
5	K34	C106	20	Black cultivated soil		
		C107	60	Yellowish brown sand	White pottery segmental tile pieces (C107:1) unearthed 50cm deep from the surface	
		C108	>50	Ash-gray sand	Water seeped 110cm deep from the surface	

Table 3 Trial Pit Excavation Record Sheet

Location	Trial Pit No.	Context No.	Remains Properties	Thickness (cm)	Layer Sequencer	Soil Type	Sample Bag No.	Characteristics and archaeological finds
Hang Hau Tsuen HHT 2001	T1	C1001	Stratum	50	1 st	Black surface soil		Blue and white porcelain sherds (C1001:1), broken pieces of brown glazed pottery pot pieces (C1002:2) and broken pieces of black glazed pottery pot (C1001:3)
		C1002	Stratum	50	2 nd	Yellowish brown sand		Hard grey pottery pieces (C1002:1), bluish white porcelain sherds (C1002:2-5)
		C1004	Stratum	40	3 rd	Grayish brown sand	15	Red bricks with green glaze perspiration (C1003:1) and smoked sooty kiln brick (C1003:2-3) unearthed at 120cm deep below the top soil
		C1005	Stratum	100	4 th	Deep brown sand		Loose and clean
		C1006	Stratum	70	5 th	Paleyellow sand	16	With small roots of plantation.
		C1007	Stratum	>20	6 th	Gray sand		Loose and clean. When 320cm deep below the top soil, water seeped



Study area and location of field walking record

Fig 1 - The topography and survey areas of Hang Hau Tsuen

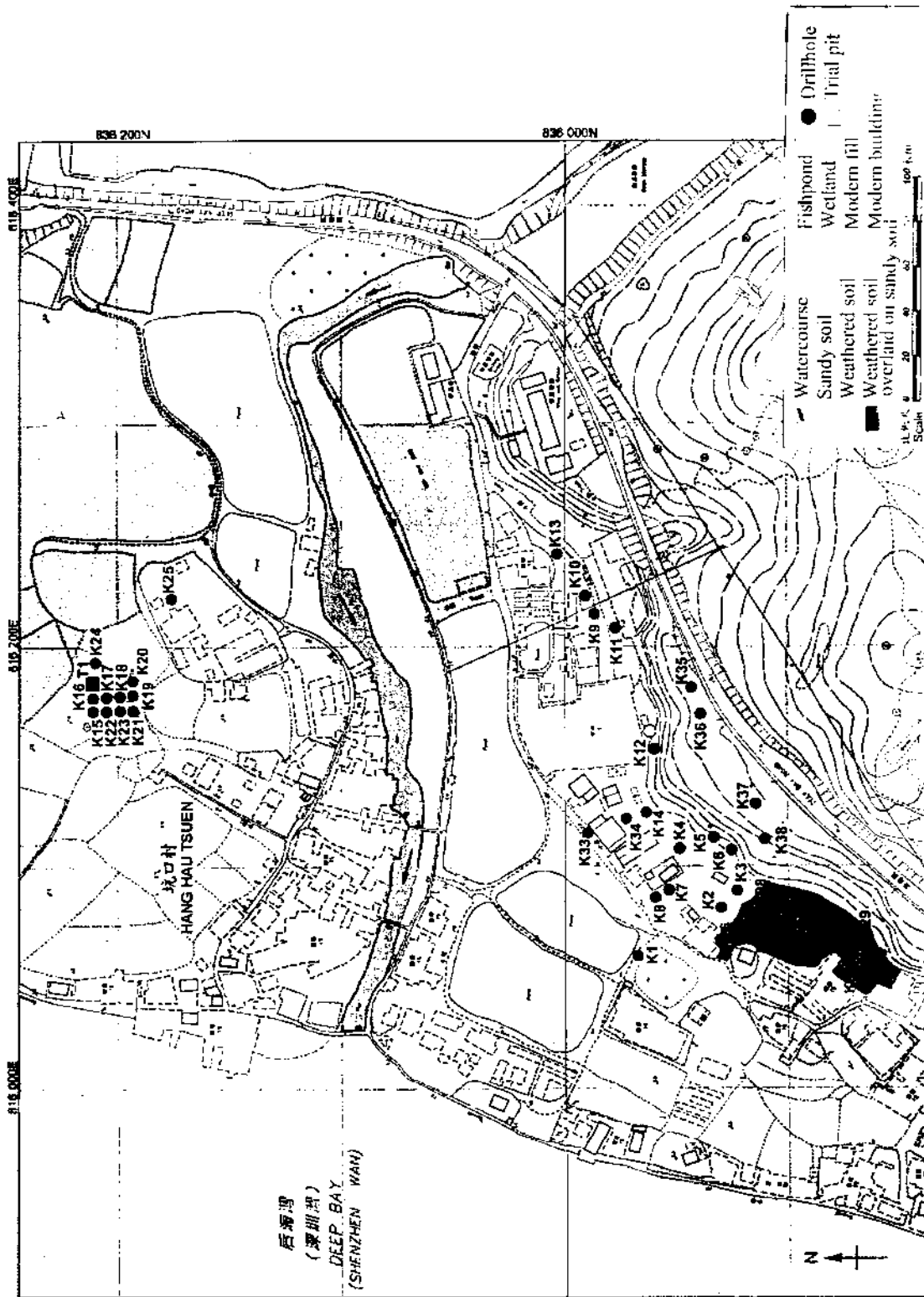


Fig 2 - The physiognomy, accumulation type and the distribution of the drilling holes and trial pit

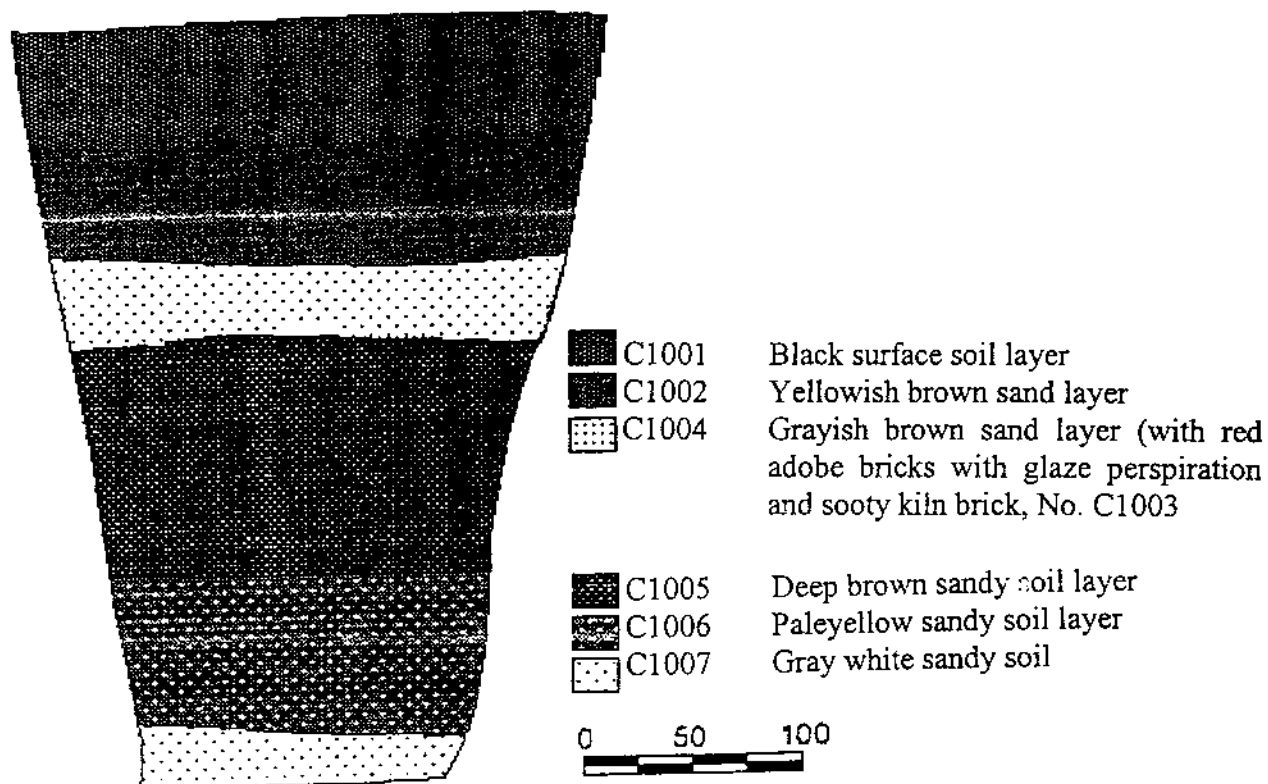


Fig 3 Drawing of stratigraphic section of the Northern Wall of the Trail Pit T1



Photo 1 - Overview of Hang Hau Tsuen (from the southeast to the northwest)



Photo 2 - Hang Hau Tsuen Stream



Photo 3 - Hang Hau Tsuen housed on stilts



Photo 4 - Hang Hau Tsuen residents are processing oysters at the seaside



Photo 5 - Abandoned Tao Ka Tsuen



Photo 6 - Iron bell in the Tin Hau Temple at Sha Kong Tsuen dated the 45th year of Kangxi Period of Qing Dynasty

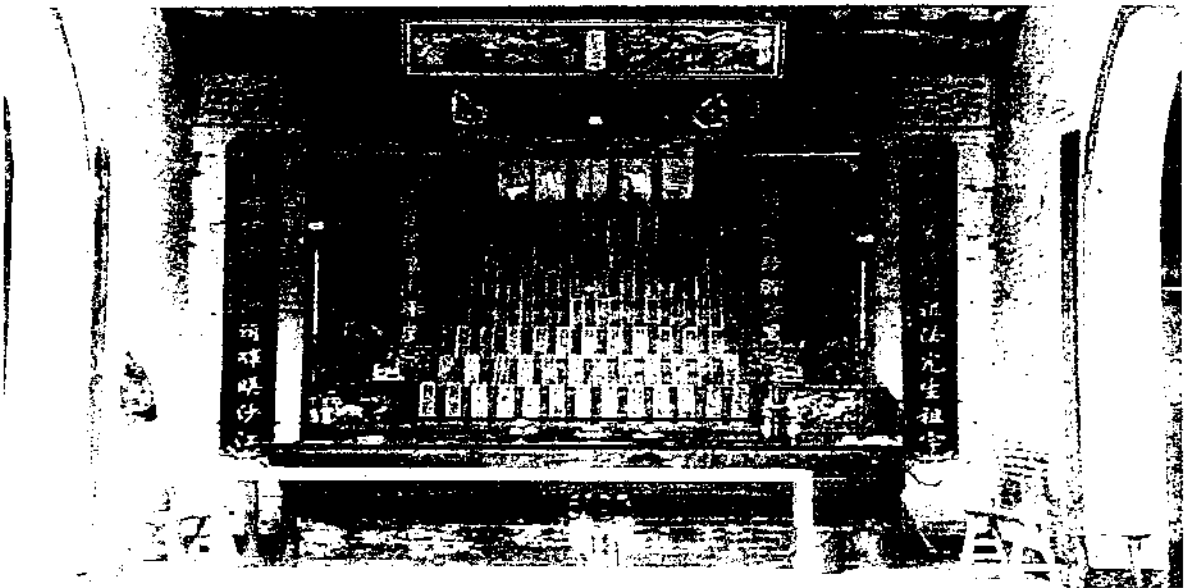


Photo 7 - Wong's ancestral hall in San Hing Tsuen



1



2



3

Photo 8 - Celadon of Song Yuan Period unearthed at Hang Hau Tsuen by field walking and augering survey

1. Broken piece of green glazed bowl bottom with incised line pattern (HHT Surface Collection:1)
2. Broken piece of green glazed bowl bottom
3. Broken piece of light green glazed rim



1. Trial pit T1 located at northern sand hill of Hang Hau Tsuen



2. Cross section of southern wall of trial pit T1



3. Blue and white porcelain shred unearthed at the first layer (T1C1001:1)



4. Celadon pieces unearthed at the second layer (T1C1002:2-5)

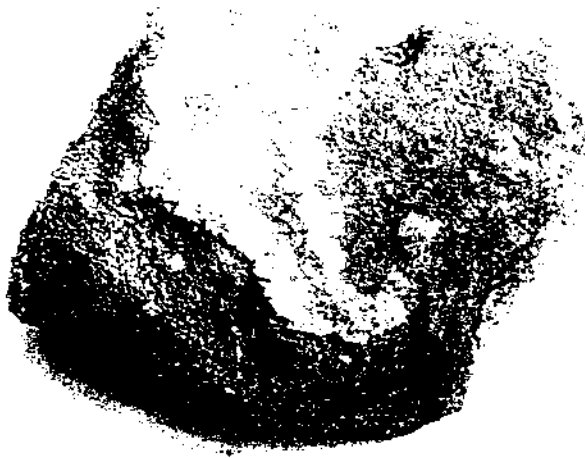


5. The kiln remains at the third layer

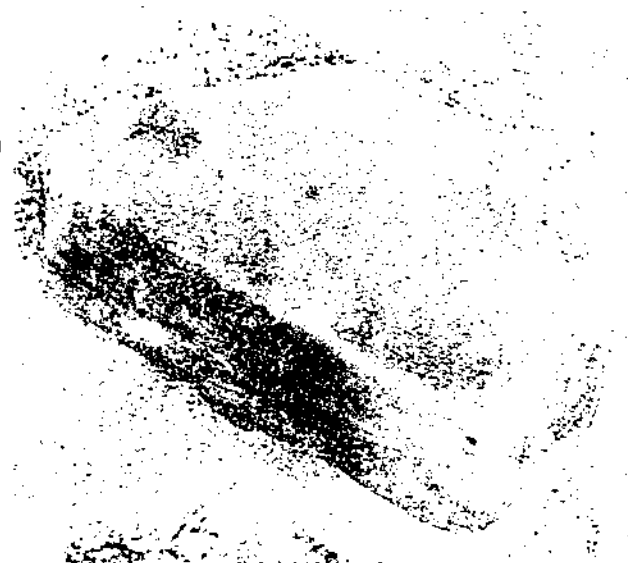
Photo 9 The location and cultural deposits of the trial in the north of Hang Hau Tsuen



1. Kiln remains (T1C1003)



2. Kiln bricks with kiln perspiration (T1C1003:1)



3. Smoked kiln bricks with burned surface (T1C1003:2)

Photo 10 - The kiln remains from trial pit T1

FIGURES

NOTES:
 1. 所有尺寸量度均以毫米計算。
 All dimensions are in millimeters unless otherwise specified.

LEGEND:

- 工區界線
Limit of Works Area
- 潛在的噪音、施工塵埃及建築物料等問題
Potential noise, dusts and visual impact sensitive receivers
- 潛在的水質敏感受體
Potential water quality sensitive receivers
- 考古地質界線
Archaeological site boundary

WORKS:
 流浮山發展計劃餘下工程第一期
 LAU FAU SHAN DEVELOPMENT
 坑口村排水道及相關工程
 - REMAINING ENGINEERING WORKS
 PHASE 1
 HANG HAU TSUEN CHANNEL AND ASSOCIATED WORKS

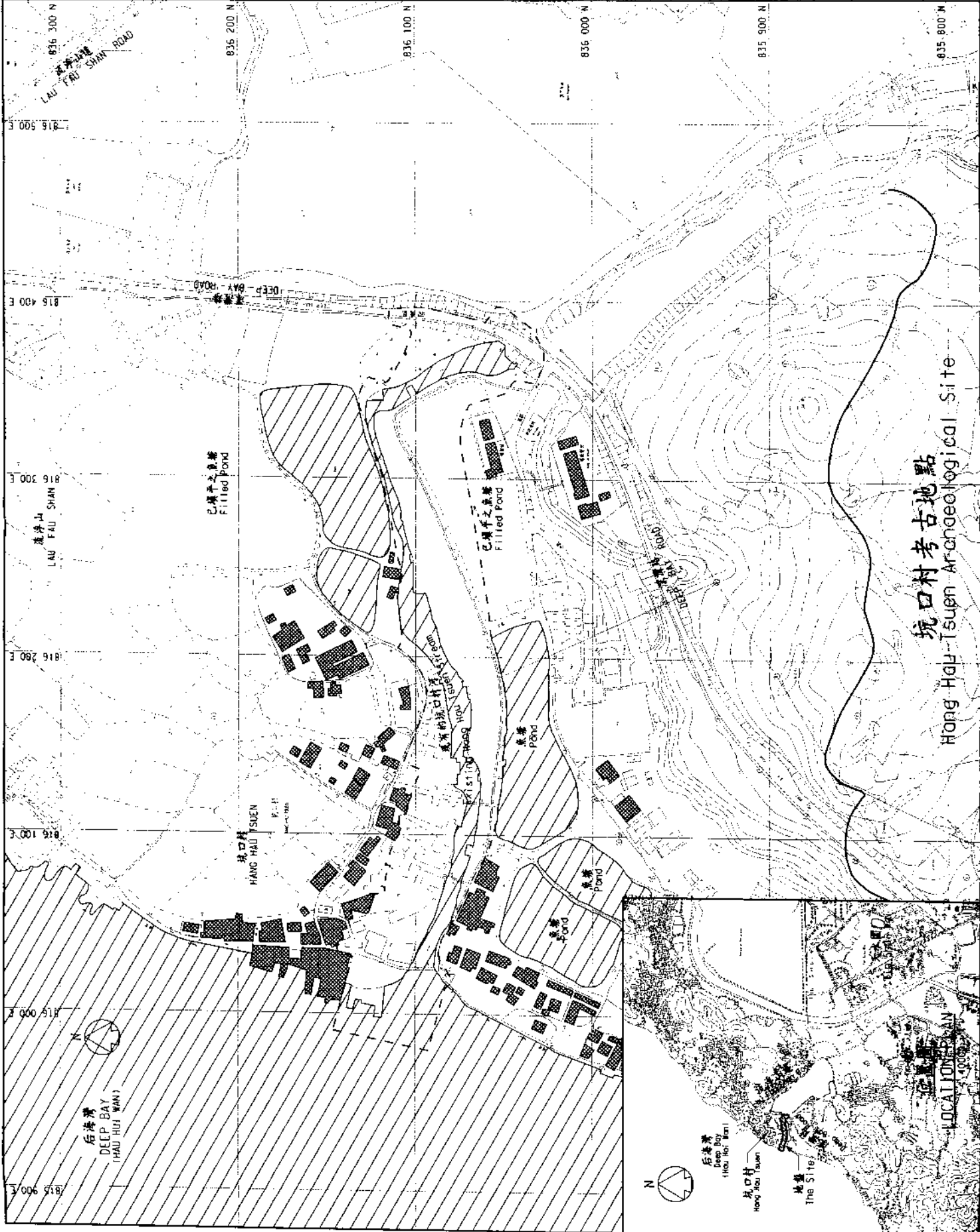
POTENTIAL IMPACTS:
 潛在最受影響的噪音、施工塵埃、視覺、水質敏感受體及考古地質地點
 POTENTIAL WORST AFFECTED NOISE, CONSTRUCTION DUST, VISUAL IMPACT, WATER QUALITY SENSITIVE RECEIVER AND ARCHAEOLOGICAL SITES

SCALE:
 1 : 1000

PROJECT:
 地政總署
 Territorial Development Department

CLIENT:
 怡和洋行
 Jardines

DATE:
 2008



坑口村考古地點
 Hong Hai Tsuen Archaeological Site

LOCALITY MAP

NOTES:
 1. 所有尺寸單位均按香港計算。
 All dimensions are in metric unless otherwise specified.
 2. 所有單位均以香港測量師公會註冊為準。
 All units are in metric above or the local datum of Hong Kong.

- LEGEND:
- 工程區界線
Limit of Works Area
 - 紅線地帶
Red line areas
 - 現有渠務
Existing drains
 - 濕草地 (高於基準)
Wet Grassland (Irrigated from ponds)
 - 草地
Grassland
 - 泥灘
Mudflats
 - 填高地
Built-up areas
 - 樹木
Trees
 - 渠
Ditches
 - 堤壩
Dikes

圖則編號: CE 3/74
 圖則編號: CE 3/74
 圖則編號: CE 3/74

流浮山發展計劃地下工程第 1 期
 坑口村排水道及相關工程
 LAU FAU SHAN DEVELOPMENT
 - REMAINING ENGINEERING WORKS
 PHASE 1
 HANG HAU TSUEN CHANNEL AND
 ASSOCIATED WORKS

潛在的水質敏感區
 POTENTIAL ECOLOGICAL
 SENSITIVE RECEIVERS

拓展署
 Territory Development
 Department

Blonnie
 Bruce Black & Veitch Hong Kong Limited
 測量工程師有限公司
 Surveyors

