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INFORMATION

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 THE HONG KONG INSTITUTE OF
SURVEYORS
香港測量師學會

Suite 801, 8/F, Jardine House,
1 Connaught Place, Central, Hong Kong
香港中環康樂廣場1號怡和大廈8樓801室

Telephone 電話 : (852) 2526 3679
Website 網址 : www.hkis.org.hk

Fax 傳真 : (852) 2868 4612
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CONTENTS

Editorial	5-7
Articles	
War and Peace: Economic Rationales for Preserving War Relics <i>by Frank T. Lorne</i>	8-11
Chinese Eyes on British Tanks: Historical Verification of a War Heritage <i>by Ho-yin Lee</i>	12-20
Decoding the Enigma of the Fall of the Shing Mun Redoubt Using Line of Sight Analysis <i>by Lawrence W.C. Lai, Stephen N.G. Davies, Ken S.T. Ching and Castor T.C. Wong</i>	21-42
“Pillbox 3 did not open fire!” Mapping the Arcs of Fire of Pillboxes at Jardine’s Lookout and Wong Nai Chung Gap <i>by Lawrence W.C. Lai, Ken S.T. Ching, Tim Ko and Y.K. Tan</i>	43-57
The Gin Drinkers Line: Its Place in the History of Twentieth Century Fortifications <i>by Bernard Lowry</i>	58-68
Location of Pillboxes and Other Structures of the Gin Drinker’s Line Based on Aerial Photo Evidence <i>by Lawrence W.C. Lai, Y.K. Tan, Ken S.T. Ching and Stephen N.G. Davies</i>	69-70
Pillbox above Shing Mun Road <i>by Y.K. Tan</i>	71-77
Survey Findings on Japanese World War II Military Installations in Hong Kong <i>by Lawrence W.C. Lai, Ken S.T. Ching and Y.K. Tan</i>	78-94
Australian, Canadian and Hong Kong Connections: Memoir of a Hong Kong Person <i>by David K. Manning</i>	95-108

EDITORIAL

These three post-war photos of scenes in the New Territories, which form part of the collective memory of many Hong Kong people, illustrate the ease with which historical heritage can be glossed over or identified.

The first photo (**Figure 1**), taken during the 1960s, shows the misty scene of Shatin Cove, now reduced to the “Shing Mun River”. The big house in the upper left hand portion across Tai Chung Kiu (the bridge) was not a Chinese farmhouse, but Pillbox (PB) 213.¹

The second photo (**Figure 2**)², taken in 1976 and appearing in Chan’s work (2011: p.119), is dominated by the image of a Kowloon Canton Railway train, then

powered by diesel, crossing Tai Wai railway bridge, which was under repair after a heavy rainstorm. It also reveals the rear entrance of PB 304 behind a small bulldozer.

The third photo(**Figure 3**)³, taken from Castle Peak Road looking towards Tai Mo Shan during the 1950s, shows three pillboxes built as if they were Chinese farmhouses.

It was through mapping and surveying information on the locations of several pillboxes along the Gin Drinker’s Line, first mapped by Lai, Tan, Davies, and Yung (2009), that these “out of focus” relics so commonly found in daily scenes can be rediscovered one by one.



Figure 1: PB 213, Gin Drinker’s Line, Shatin Cove, 1960s



Figure 2: PB 304, Gin Drinker’s Line, Tai Wai Railway Bridge, 1976

¹ For an aerial view of the pillbox and its searchlight shelter, see Plate 6 in Lai et al. (2009: p.28).

² Photo courtesy of Mr. Danny C.Y. Chan. For aerial photo corroboration, see Hong Kong Government photo 16106 of 4 November 1976.

³ Photo courtesy of Mr. Tim Ko. This photo appeared first in Cheng (2002: p.29).

In memory of the 70th anniversary of the Battle of Hong Kong as an integral part of World War II, this special issue gathers nine pieces of scholarly and specialist work of different, but related, interest.

Frank Lorne's paper on war and peace offers an economist's perspective of the value of heritage, a tricky topic, which has no satisfactory solutions. For further reading on the valuation of heritage buildings using surveying techniques, see Yung (2007) and Zheng (2011).

In a sense, World War II was the sequel to World War I, which was punctuated by the unsatisfactory Treaty of Versailles. Both China and Japan were Allies during the earlier war. Ho-yin Lee's work about the impression of Chinese eyes on Allied tanks in France

has an interesting Hong Kong twist.

Two key fights during the Battle of Hong Kong were the contests for the Shing Mun Redoubt along the Gin Drinker's Line and at Wong Nai Chung Gap, both of which featured pillboxes. Two papers address several tactical questions about these contests, manifesting the indispensable value of surveying techniques and archive research in heritage study. A broader context of the Gin Drinker's Line is provided by Bernard Lowry, the specific locations of the pillboxes and related structures of the Line are provided in a map in a technical note that follows, and a detailed account of a Gin Drinker's Line pillbox (PB 419) before its demolition for highway work is documented by Y.K. Tan.

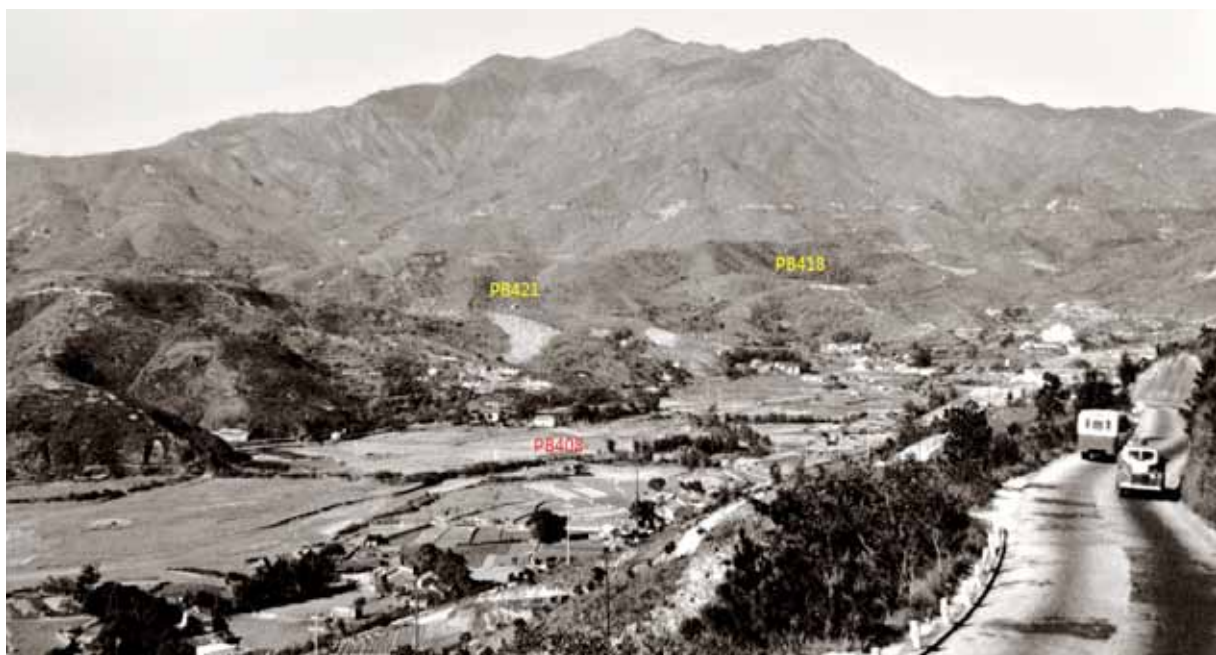


Figure 3: Pillboxes 408, 418, and 421, Gin Drinker's Line, Kwai Chung, 1950s

The Battle of Hong Kong did not end the fighting, as the Japanese occupation forces were harassed by Allied air raids, the British Army Aid Group (BAAG), and Chinese guerrillas. Therefore, the Japanese carried out a lot of military construction in Hong Kong until the end of war on 15 August 1945. Some of these structures survive to this day, and a technical note gives an account of several that were identified from aerial photo interpretation backed, where possible, by field surveys.

How does an “expatriate” look at war relics? The memoir of Dave Manning, who grew up in our multicultural and open society, has given us a glance of one such view.

To a person who regards Hong Kong as his/her home,

a better knowledge of the signs and symbols found in building heritage means a fuller picture of reality. For those familiar with English place names inscribed on the cement tunnels and bunkers in the Shing Mun Redoubt, the scene of a street in London, as shown in the photo below (**Figure 4**)⁴, taken during Summer 2008, should ring a bell.

The putting together of the papers and notes in this special issue would have been impossible but for the helpful advice of referees including Mr. Chohong Choi, Mr. Bishop W.K. Chung, Dr. Peter Cunich, Dr. Stephen Davies, Dr. Bruce Harvey, and Mr. Bernard Lowry.

Professor Lawrence WC Lai
24 October 2011

⁴ Photo courtesy of Mr. Y.K. Tan.



Figure 4: Strand Palace Hotel, London

REFERENCES

Chan DCY (2011), “One hundred years of railway operations in Hong Kong,” in Danny C.Y. Chan ed. (2011), *Hong Kong Buses Yearbook 2011*. Northcord Transport, Hong Kong, 118-123.

Cheng PH (2002), *A Century of New Territories Roads and Streets*, Joint Publishing, Hong Kong (Chinese publication).

Lai LWC, Tan YK, Davies SNG, and Ping Y (2009), The Gin Drinker’s Line: Reconstruction of a British Colonial Defence Line in Hong Kong Using Aerial Photo Information, *Property Management*, 27:1, 16-41.

Yung HKE (2007), *Architectural Heritage Conservation in Hong Kong: an Empirical Analysis*, unpublished Ph.D thesis, Department of Real Estate and Construction, Faculty of Architecture, University of Hong Kong.

Zheng MQ (2011), *Architectural Heritage Conservation in China*, unpublished Ph.D thesis, Department of Real Estate and Construction, Faculty of Architecture, University of Hong Kong.

War and Peace: Economic Rationales for Preserving War Relics

Frank T. Lorne*

ABSTRACT

A support for preserving war relics has often been thought of as a support for war. This thought is an incorrect presumption. Reflecting on the techniques and the reasoning behind a war can reveal why a war was fought in the first place. This exercise can provide valuable learning lessons for a reflection on how society transforms, as well as pragmatic development prospects for contemplation for the future. An understanding of the economic rationales behind war and peace generally reveals that wars are a necessary part of how humans manage or fail to manage to live with one another. This second order reasoning is required to explain any act of violence, be it offense or defense, from the point of view of economics even if there is a default supposition that a zero incidence is the optimum solution.

It has been said that sweetness is only meaningful when there is bitterness. The same may be true for happiness and sadness, for success and failure, and for good and evil. The contrast certainly can be true for war and peace. Yet, the existence of opposites goes beyond a mere balancing force, beyond Yin-Yang as it were. It possibly goes beyond any duality theorem one can concoct.

However, there exist economic rationales for war as well as for peace. Thomas Schelling won an economic Nobel Prize for his *Strategy of Conflict*.¹ He was credited with having reduced this complex problem to an abstract level of game playing. But a war, for the right or the wrong reason, has more profound consequence than a game of winning or losing. It is always followed by a strengthening or a changing of what I shall call 'a regime'.

A regime in this sense is a set of laws. Laws imply a system of sanctions which citizens of a regime will bear if laws are broken. Wars are often fought because the representative of one regime will not accept the imposition of the laws of another regime. Whether the status quo set of laws or the imposed set of laws

would have been sustainable or not is a different question, but the question can affect whether a war would have started in the first place. All of these issues can ultimately be perceived as an economic question, whether for individuals or a nation as a whole.²

The influence of economic factors in analyzing war and peace can be more extensive than the calculus of a cost/benefit analysis. Peace certainly does not imply the absence of conflict. Markets, democracies, and various sporting events are typical institutions where humans have found ways to deal with their conflicts. It is easy to condemn war on the basis that deaths are involved in this particular method of resolving conflict. But a death-free mechanism is a desired riskless mechanism. Traffic lights reduce conflicts at road intersections, but traffic deaths nevertheless exist, often due to aggressive driving. Thus, the definition and the extent of war cannot be based on a body count. It is the execution of violence, a purposeful infliction of damage to enemies, via a combination of offense and defense, that characterizes wars.³

This essay is written in memory of a battle fought in Hong Kong during World War II, but the analysis could

* Professor, School of Management, New York Institute of Technology - Vancouver

¹ The 2005 Economic Nobel Prize was shared between Thomas Schelling and Robert Aumann, Schelling's work was cited as "having enhanced our understanding of conflict and cooperation through game-theory analysis."

² Earlier Nobel Prize (1993) winning works by Douglass C. North have provided a pioneer direction to this line of thinking about institutions and wars. The reversal in chronological order in referring to these two monumental works by economists does not imply which is a more important approach, as some recent work seems to be an integration of the two.

³ Fighting for the purpose of providing entertainment to spectators emphasizes the skill in the combination of offense and defense. While that can provide a reason for studying war relics, this is not the emphasis in this essay. In that sense, readers interested in that may find insights in Schelling's approach to the problem.

have been written for World War I or any other war. In that sense, the magnitude of the battle of Hong Kong in 1941 is rather immaterial, so is the fact that it was a battle in which the defender lost. Casualties who fought for a winning battle are heroes. Those who fought a losing battle are not merely human sacrifices, and can point towards a higher order of reality. Remembering a losing war in the form of preserving war relics and built heritage may be considered to be meaningless by many, but it is the purpose of this essay to provide the opposite argument.

In the battle of Hong Kong, there were 4,413 casualties (2,112 died in action) among the defenders and 2,096 casualties (683 died in action) among the aggressors.⁴ Properly put into perspective, preserving war relics, studying built heritage, veteran day remembrances, etc. are not endorsements of human sacrifice and violence. On the contrary, studying and preserving these historical moments can reveal the intricacies of rational violence. ‘Rational violence’ may seem to be an oxymoron since from an economist’s perspective if the violence is rational then it cannot be violence because there are alternative, lower cost methods to resolve conflicts. But war presumably will lead to peace. So in a macro-sense, considered from the point of view of regime sustainability, it is therefore a process of violence that leads to no violence. A set of laws supported by the threat of penalty (violence) without occasion to exercise it is *rational violence*, i.e. peace. However the process of getting to that state of affairs may require undertaking various forms of *organized violence*, i.e. war.

PEACE: RATIONAL VIOLENCE

To be sure, peace refers to a state of mind for individuals as well as for a society collectively. Greif (2005) characterized that theoretically as a Nash equilibrium in a game-theoretical framework exhibiting “concordant mutual expectations” among players. This characterization suits many stable institutions.⁵ At the heart of the concept is the theoretical notion that behaviors and thoughts are governed by an institutional structure, which can broadly include structures of rights, rules, regulations, cultures, and ideologies; and that regularities in behaviors within that structure reproduce and reaffirm the institutional structure. That’s peace.

At its simplistic level, violence does not have a role to play in the peace model. Equilibria exist because they are self-enforcing. Not even the neoclassical concept of economic efficiency needs a role to play in this model; and thus peace can exist for a long time without markets. The existence of multiple equilibria implies that peace and economic efficiency are two different things; and indeed, much thinking in this methodology

has been diverted to identifying the role of economic efficiency, examining the changes in equilibrium, i.e. how institutional changes and innovation can come about in the context of self-enforcing equilibria.

Yet, it is the rationalization of violence in a peace model that is of interest here. The road example mentioned in the introduction may serve to illustrate how this may come about. Keeping left versus keeping right as a rule for road traffic illustrates the multiple equilibria concept in that either habit can be seen in different regimes. In each equilibrium (regime), however, there can be accidents like speeding or drunken driving that can cause temporary disruptions to the equilibrium. For that, the society wants those found responsible to be fined, jailed, or even caned. Those responsible for rule deviant conduct may want to avoid penalties by exiting the system, but permitting such behavior may lead to the road (the system) losing sustainability in citizenship participation. Society therefore may want to say, “If someone resists penalty, the penalty will be harsher”. We can easily see how this may lead to physical violence, both in terms of police enforcement and rule breaker resistance. Society accepts such violence as a component of the peace model provided it is not executed randomly and too often. Indeed, the self-enforcing model can incorporate courts, judges, police into an equilibrium as features. Thus, violence can be rationalized, though a perfect rationalization would mean its execution is zero.

The peace problem can be complicated by assuming a regime of “keeping left” runs north-south while a regime of “keeping right” runs east-west. In other words, the two roads of different driving habits intersect at a crossroad. This will obviously cause a lot of problems; it is less of a problem if traffic is light, but the issue can become insurmountable if traffic picks up when accidents are likely to increase. The road regime conflict may be resolved by many methods, including bringing in technology (i.e. traffic lights), but if road users cannot adjust to change in expectation depending on whether the person is driving east-west or north-south, the use of violence is likely to increase regardless.⁶

This is where the peace model can turn rather intriguing. The two regimes may want to jointly hire traffic police specifically assigned to that intersection. But doing so will only be effective if the traffic police can simultaneously manage the conflicting expectations of the two regimes at the intersection. The police also needs to manage it with a greater threat of violence than, to challenge police management, the level of countervailing violence that potential rule breakers are prepared to mount. This solution obviously will not be easy, but it can be perceived as possible, and thus

⁴ See Lai (2001).

⁵ Broadly speaking, ‘an institution’ is a concept wider than that of ‘a regime’ as defined in this essay.

⁶ It is also possible that the other extreme of a complete abandonment of the intersection can happen. It will be then a ghost town. Perhaps that will be of interest to a built-heritage remembrance also.

the peace model can be preserved by rationalizing violence, even for conflicting regimes. Again, rationalizing violence completely would mean that acts of violence fall to zero.

There is a different angle to addressing the peace model that can serve as a prelude to the next section in the discussion of violence. That is, with the exception of small communities where self-enforcing equilibria are of the simplest type, most communities do require specialists of violence.⁷ Like any profession, some specialists are born to be skillful at things they can do, some need to be trained to become specialists. Regardless, the existence of certain humans in the species with ability to visit violence on other humans can be analyzed not only in terms of the genes of Cain (according to the *Bible*), but as the necessary result of the economists' notion of comparative advantage in specialization.

WAR: ORGANIZED VIOLENCE

Specialization implies that the execution of violence can be treated as a *profession* like any other activity in a society. Those who do not wish to (or do not have a comparative advantage in) use violence will want to seek protection from those who are able and willing to do so. The gain from trade in the forming of this exchange is mutually beneficial; and as such, sustainable from the point of view of the human species as a whole, as well as possibly for other species. Economists have often characterized exchanges in terms of the demand and supply of goods and services being exchanged. There is no reason why the same analysis cannot be applied for violence as a profession. War can thus be analyzed as a market in the demand and supply of violence; or, the flip side of the same problem, the demand and supply of protection.⁸

Viewing wars as outcomes of the demand and supply of protection can provide a way to view war as organized violence. A subfield in economics called industrial organization (IO) emphasizes how firms and industries are organized. Applying the IO concept to the market for protection can tell us a lot about how organized violence can be structured. Basically, the market structure depends on the cost structure of organizing protection, which has a fixed cost and a variable cost component. The fixed cost is invariant to the number of people and assets being protected. The variable cost increases as number of people and assets being protected increase. Military forces, together with other regime services which are often viewed as *public goods*, are the fixed cost components in providing violence. Yet, it is the marginal cost that varies with the number, size, and the type of assets being protected that will determine the scope and the size of a protector — a regime. A rising marginal cost of protection

will result in a competitive market in protection. A competitive market in protection will make war more likely to happen. A perfect competitive market is going to lead to chaos, or complete anarchy. That is why we might want to think of war as organized violence — a structured method for managing aggression and protection efficiently.

It is useful to think of organized violence as a problem in industrial organization because we can also use it to analyze why some regimes can grow while others may stagnate and indeed disappear. This approach can potentially generate more interesting results than a game-theoretical approach, because the 'market in protection' approach can analyze growth in demand (increase in population, size and type of assets), while a game theoretical approach is constrained by a fixed number of participants — thus may not be particularly suitable for analyzing the relationship between regime, growth, and economic efficiencies.

Aside from increases in population and assets, changes to organized violence can also come about via military technology (affecting fixed costs more) as well as civilian organization of regimes, including how different cultures and value systems can be integrated (affecting variable costs more). Efficiency in military technology can lower the average fixed cost of protection, but it does no good if the marginal costs of protection have a steeply upward slope, i.e. the regime is not sufficiently inclusive and welcoming to an increase in population and assets. All these suggest that the supply side of the market in protection is as important to analyze as the demand side in its relationship to growth and sustainability.

Putting the demand and supply of protection into dynamic analysis can reveal the cyclical nature of wars and changes of regimes. Innovation in military technology, communication, and methods of resolving non-military conflicts can lower both average and marginal costs of protection. This leads to a concentration of protection (i.e. a smaller number of protectors). But increasing demand for protection and increasing diversity of people and assets can lead to a further rising cost of protection that can only be alleviated by another wave of innovation. This may indeed be the problem that Usher (1989) was after. We shall not further complicate the implications of this in this essay.

Economists are known to be good with abstract theorizing of socio-political-economic problems. To them, seeking a theoretical foundation to divergent phenomena consistent with their basic assumptions is important. For general readers, however, the theorizing can be excessive and even counter-productive. Articulating the problem of war and peace at a level where practitioners may be more comfortable with understanding, consider again the road example used

⁷ Consider, for example, the institution of the *podesteria* and the *podestà* in Genoa in 1194, as described Greif (2005).

⁸ Dixit (1994) summarizes much of the work done in this area, extending economic inquiries into the field of political science, anthropology, or even biology. Yu, et.al.(2007), describes a market in protection for the warlord period in early 20th century China.

earlier, but suppose the conflict in the regimes is not between driving left versus driving right (admittedly a rather unrealistic example), but between a bicycle culture and a car culture on public roads. In many cities of the world, bike lanes are increasingly seen as a method for reducing conflicts between the two forms of commuting. Some cities have been able to handle this efficiently to the envy of others. Yet, we can imagine the conflict between manners of commuting getting out of hand, particularly if bike activists who, in addition to their personal interest, advocate more strenuous action in the name of climate change. The physical take-over of streets by bikers is a form of violence, whether as a demonstration, or as a platform to further organize among themselves. Such 'in your face' forms of 'violence' can potentially lead to organized violence. Of course, that is not war, but how an "all-or-nothing" solution may lead to war will help us contemplate the subject matter of this essay.

CONCLUSION

Most religions of the world advocate non-violence. Yet, many religious wars have been fought. If religion is to be analyzed as an institution, this dilemma can be resolved by resorting to an economic inquiry. Certainly, an implicit cost-benefit calculus extended beyond the single generation life horizon with infinite future-periods, such as offered by an eschatology, can make religion a stronger basis for war than the mere incentive of some immediate gain or loss. Likewise, pirates fight to rob, but soldiers fight to expand or to preserve a regime, so often have some sense of justice or rightfulness in mind, more or less reflected in terms of the constitution of the regime under which they serve.

This essay recaps some of the underlying economic arguments in war and peace. An economic approach provides a framework that traces a commonality between two diametrically opposite entities. Both entities can be rationalized. Yet, it is because of peace that today we can think about these issues over a cup of coffee. It is much easier to think about war at peace, than to think about peace while at war. For the latter, rationalization can become too expensive a luxury, and thus from a practical point of view an emphasis on organized violence is given priority. Indeed, intellectuals (and their exercises such as we are engaging in here) can survive only because of peace. Peace is a blessing. Intellectuals may want to thank this blessing by choosing a mission for turning a systemic liability, i.e. war, into assets, i.e. relics, generating values at peace. Paradoxically, it is only through this transformation that sustainable development of a society can be practiced.

At a practical level, the reflections in this essay invite social planners to rethink their influence on a society's transformation along the following dimensions:

- Their power to act as a locus for reflection on the role of war in human affairs

- Their power to act as a locus for reflection on the specificities of each war relic, its origins and history, the lives of those involved in its design, construction and life cycle, the lives of those who were involved in any actual battle of which the structure is a relic
- Their power to assist in bringing sustainable development in various ways, critical or supportive, in shaping community identity through time
- Their power to act as a lens to focus our thought on the sense or non-sense of organized violence as a route to resolve inter-communal and intra-communal disputes
- Their ability, well-preserved and well-presented, to generate useful income to pay for their preservation

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REFERENCES

- Buchanan JM (1975), *The Limits of Liberty: Between Anarchy and Leviathan*, University of Chicago Press, Chicago.
- Dixit AK (2004), *Lawlessness and Economics: Alternative Modes of Governance*, Princeton University Press, Princeton, New Jersey.
- Greif A (2005), *Institutions and the Path to the Modern Economy*, Cambridge University Press, Cambridge.
- Lai LWC (2001), The Battle of Hong Kong 1941: a note on the literature and the effectiveness of the defense, *Journal of the Hong Kong Branch of the Royal Asiatic Society*, 39, 115-136.
- North DC (1990), *Institutions, Institutional Change and Performance*, Cambridge University Press, Cambridge.
- Schelling TC (1960), *The Strategy of Conflict*, Harvard University Press, Cambridge.
- Usher D (1989), The Dynastic Cycle and the Stationary State, *American Economic Review*, 79:5, 1031-1044.
- Yu BT, Chen QQ and Lai LWC (2007), The Demand and Supply of Protection: a Framework for Understanding the Emergence of Governments in Modern China, Unpublished manuscript.

Chinese Eyes on British Tanks: Historical Verification of a War Heritage

Ho-yin Lee*

ABSTRACT

This paper is about a British military tradition with a Chinese connection. It has taken the author several years of research to dispel the myth that has long shrouded the true origins of a regimental tradition of the 1st Royal Tank Regiment of the British Army. This tradition is of a pair of eyes, known as the “Chinese Eyes,” painted on the bows or turrets of British tanks from World War I to the present day. As such, the “Chinese Eyes” can be regarded as intangible heritage expressed on the tangible hardware of the British Army. Using the research methodology for architectural conservation, the author attempts to rediscover obscure historical evidence, using it to chronologically reconstruct the events leading to the creation of this tradition.

KEYWORDS

Military heritage, historical research, interpretation, authenticity.

INTRODUCTION: METHODOLOGY AND ORIGINS OF RESEARCH

It is a little known fact that British tanks, produced in the thousands during World War I, were cared for by the skillful hands of the Chinese Labour Corps. (Fawcett 2001: 43-44). Who would have thought that there is such a seemingly improbable connection between Chinese men and British war machines? More incredibly, who would have thought that a Chinese individual – an individual with an indirect link to Hong Kong – was responsible for creating a famous military tradition for British tanks – a pair of eyes, known as the “Chinese Eyes” that have been painted on the tanks of one of the battalions of the Royal Tank Regiment of the British army since World War I. The research leading to this paper was focused on finding out the origins of this military tradition. For this purpose, the research methodology is borrowed from that for architectural conservation, and specifically, from the *Burra Charter*, one of the most often used international charters for the conservation of heritage buildings and sites of cultural

significance,

To understand what makes a place special, you will usually need to know about its history – why was it created, was it extraordinary, why was it put in that location, how was it used, and how has it changed. (Marquis-Kyle and Walker 1992: 12)

While the above methodology caters specifically to architectural heritage, it can equally be applicable to such military tradition as the “Chinese Eyes.” Hence, echoing the words of the *Burra Charter*, to understand what makes the “Chinese Eyes” tradition special, we will need to know about its history – why it was created, whether it was extraordinary, why it was put on a tank, and how it has changed. The why and how of the “Chinese Eyes” essentially define the research questions, the answer of which is what this paper is about.

The research on the history of the “Chinese Eyes” began in May 2006, when the author came upon the website hosted by Mr. Douglas Greville, a New South Wales-based armour enthusiast and collector. On the website, there is an account of a fellow tank collector

*Associate Professor, Department of Architecture; Director, Architectural Conservation Programme (ACP), Faculty of Architecture, The University of Hong Kong.
E-mail: hoyin@hku.hk

in the United Kingdom who attempted to restore a Scorpion tank with the livery of the 4th Royal Tank Regiment (RTR)¹, popularly thought to be the ancestral owner of the “Chinese Eyes” tradition. However, research shows that the genealogy of the “Chinese Eyes” does not begin with the 4th RTR. In fact, the direct predecessor of the 4th RTR, the 4th Battalion of the Royal Tank Corps (originally designated the D Battalion) *inherited* the tradition from the 6th Battalion (originally the F Battalion) when the latter was disbanded in May 1918, shortly before the end of World War I.² When the 4th RTR was amalgamated with the 1st RTR in 1993, the “Chinese Eyes” tradition was passed on to the new host unit. This confusion prompted the author to contact Mr. Greville to point out the mistaken genealogical ownership of the “Chinese Eyes” tradition.³ Through the correspondence, it was realized that the amount of information on the subject matter was not only insufficient, but also raised more questions than provided answers. This became the catalyst for the research on the history of the “Chinese Eyes,” which eventually led to the writing of this paper.

The author believes that there are three key circumstances that have contributed to the popular

but mistaken belief the “Chinese Eyes” tradition originated from the 4th RTR. The first circumstance is simply because the 4th RTR was the unit that had painted the “Chinese Eyes” on their tanks for the longest period, the 75 years from 1918 to 1993, and this has left the impression that the tradition originated with the unit. The second circumstance is that the 4th RTR Association has reinforced the 4th RTR origin of the tradition by stating on its website that a Mark IV tank donated by a Chinese philanthropist “issued to D Battalion [of the] Tank Corps [the beginning of the 4th RTR lineage], duly had eyes painted on it,” and “the tradition was born.”⁴ The third circumstance is a key exhibit in London’s Imperial War Museum. In it a World War I-vintage Mark V tank has been restored to depict a tank belonging to the 4th Battalion of the Royal Tank Corps [the post-World War I re-designation of D Battalion of the Tank Corps] and sports a prominent pair of “Chinese Eyes” and the name “Devil” (by tradition, British tanks were given names with a letter matching the battalion letter from the days when battalion designations were alphabetical not numerical; thus D for the 4th battalion, and so on). This particular exhibit has further reinforced the impression that the “Chinese Eyes” originated with the 4th RTR (**Figure 1**).



Figure 1: The Mark V tank exhibited at the Imperial War Museum, which has been restored to depict a tank of the 4th Battalion sporting the “Chinese Eyes” and a name that begins with “D” (the fourth letter in the alphabet, denoting ‘D’ or the 4th Battalion). (Photo by Lee Ho Yin)

The history of the “Chinese Eyes”, already an obscure matter, has become further obscure by the passage of time. As such, the research references for this paper are expectedly scarce in terms of published sources. The author has met with little success in searching such potential sources of primary documentation as the archives of the Imperial War Museum in London, the archives of The Tank Museum in Bovington, and

the birthplace of the tank, the Lincolnshire Archives in Lincoln. In this regard, the author was fortunate to have chanced upon perhaps the most primary of all research sources – Mr. Richard Eu (余義明), the grandson of the very Chinese individual responsible for creating the tradition of the “Chinese Eyes.” Mr. Eu’s graciousness in sharing original information – contents of official letters relating to the “Chinese Eyes” – has

¹ 4th X Regiment in normal usage means the 4th Battalion of the X Regiment and in abbreviated form is written, e.g. 4RTR.

² Although the 6th Battalion was re-formed in 1933 and existed until 1959, it did not regain the “Chinese Eyes.”

³ An account of the correspondence between the author and Mr. Greville is featured in the story “Restoring a Scorpion – the Saga” in Douglas Greville’s ‘Heavy Metal’ Gallery website: <http://www.livesteammodels.co.uk/dhmg/scorp-01.html>.

⁴ See: <http://4and7royaltankregiment.com/1916-1918.html>.

enabled the author to reconstruct, for the first time, a complete story of how the tradition was created.

The Chinese individual in question was Eu Tong Sen (余東璇) (1877-1941)⁵, a Singapore-based businessman who inherited a modest family herbal medicine shop and developed it into a thriving regional business providing traditional medicine to Chinese communities in the British colonies of Hong Kong, Malaya and Singapore. Today, the business has grown into an international holding company with Eu Tong Sen's grandson, Richard Eu, serving as the Group Chief Executive Officer. In Hong Kong, the company is as much an institution as a heritage, and its name is recognized by almost every local Chinese – “Eu Yan Sang” (余仁生) medicine shop. Its historic main shop on Queen's Road Central is a local landmark particularly memorable for its whimsical window display of a life size model of a horse, on which sits a suit of replica medieval armour, a perhaps unintentional but fitting tribute to the creator of a tradition for the armoured units of the British Army.

A RUMOUR OF WAR: FACTS AND MYTHS OF THE “CHINESE EYES”

The commonly known story of how the “Chinese Eyes” tradition was created is as follows. In early March of 1917, Mr. Eu Tong Sen, a respected Chinese philanthropic businessman based in the British colonial city of Singapore, and a Permanent Unofficial Member of the Federal Council of the Malay States, prevailed upon the council to contribute funds towards Britain's war effort. Part of the funds, worth £6,000, would be used for buying a tank of the latest Mark IV model for the British Army. To honour this special war donation, a pair of eyes was painted on the bow of the tank, in accordance with the Chinese maritime tradition of painting eyes on the bow of boats as a talisman for safe seafaring⁶. The gesture was intended to be a one-off, but the idea caught on, and it was adopted after the war by successive tank regiments as its unit symbol, and became famously known as the “Chinese Eyes.”

The source of this familiar narrative is most likely from one of the earliest post-World War I publications on the development of the tank – the memoir of Lieutenant-Colonel Albert Gerald Stern, *Tanks 1914-1918: The Log-book of a Pioneer* (1919). This is a publication authored by arguably the most authoritative military figure involved in the creation of British tanks – Lieutenant-Colonel Stern, a former banker turned

military officer, who took a leadership role in the development and production of British tanks in World War I. In Stern's memoir, there is also a brief mention on why the “Chinese Eyes” were created:

All Chinese ships and boats, large or small, have a large “eye” painted at each side of the bow. The Chinese explanation of the custom is, “No have eyes, how can see?” It seemed only right that this “Landship,” [referring to the tank purchased and donated by Eu Tong Sen] also, should see, and accordingly an eye was painted on each side of its bow. (Stern 1919: pp128-129)

This sketchy story of the origin of the “Chinese Eyes” has become the basis of so many re-interpretations that the factual basis has been lost through erroneous and embellished retelling. However, thanks to previously unknown information provided by Eu Tong Sen's grandson, Mr. Richard Eu – as well as newly emerged historical materials on individual British tanks used in World War I⁷, a detailed and historically accurate account of the origins of the “Chinese Eyes” can now be told.

THE REDISCOVERY: HISTORICAL ORIGINS OF THE “CHINESE EYES”

After Eu's offer of a battle tank was duly accepted by the Army Council, the War Office decided to exploit the propaganda value of this patriotic act by decorating the tank in a special way, and consulted Sir Frank Swettenham (1846-1950) for suggestions. Swettenham had been the Resident-Governor of the Straits Settlements (the collective name for the British colonial cities of Malacca, Penang and Singapore in the Malay Peninsula) from 1896-1901 and he was now the Joint Director of the Official Press Bureau at Whitehall, a post he held from 1915 to 1919. The Official Press Bureau was responsible for controlling news and managing the media during the war, or, in other words, it was a propaganda unit. Being an “old Malay hand,” Swettenham certainly was aware of the tradition of painting eyes on the bows of boats by local ethnic Chinese seafarers of Fujianese descent. With this in mind, he suggested to the War Office that the two motifs he thought would be most identified with the Chinese culture were: the clichéd dragon and, more creatively, eyes that were often painted on the bow of Chinese boats in the Straits Settlement (Figure 2). It appears that the War Office originally approved only the dragon but not the eye motif, and the evidence for

⁵ Editors' note: Eucliffe castle, where the massacre of at least 54 surrendered defenders by their captors occurred during the Battle of Hong Kong, was a property owned by the Eu Tong Sen.

⁶ Editors' note: It is important to note that this is by no means exclusively a Chinese tradition and is very probably not originally one, having probably come to China with Arab seafarers in the 7th century CE. The origin is the ‘eye of Horus’ of the Egyptians - the original of all the ‘evil eyes’ (i.e. eyes that avert evil) of the Mediterranean (q.v. the Maltese luzzu) and of the Catholic, non-pagan replacement by a star, the Stella Maris (a sobriquet of the Blessed Virgin Mary). They are referred to by maritime historians and ethnographers as ‘oculi’ (plural) and ‘an oculus’ (singular), from the Latin for ‘eye’. Reference to the discussion of this and the Chinese usage can be found in Needham's *Science & Civilization in China*.

⁷ These materials include excerpts of official letters documented in the manuscript of an unpublished biography of Eu Tong Sen, provided Mr. Richard Y. M. (see: Eu 2008), and Cambrai battle records on the Landships website at <http://sites.google.com/site/landships/>.

this comes from a number of letters from Swettenham's office, dated after the official presentation ceremony on

10 March 1917, arguing for the adoption of the Chinese boat eyes.



Figure 2: Drawing of a traditional cargo barge operated by ethnic Chinese in Singapore and Malaysia from the 19th century until the end of the 20th century, when the type was made obsolete by the introduction of container ports. Known by the local Malay name of *tongkang*, the bows of these barges are painted with colourful patterns that invariably include a pair of eyes. The practical rationale of these bow patterns is a safety measure in the crowded waterways by rendering the boat more conspicuous and its direction of travel more obvious. (Original drawing by Lee Ho Yin)

Before we examine the Swettenham letters, we first turn to the vehicle presentation ceremony held on 10 March 1917. The vehicle chosen for the honour was a Mark IV, freshly rolled out from the tank factory William Foster & Company Limited located in Lincoln. The Mark IV was significant as the world's first mass-produced battle tank, with over 1,000 vehicles manufactured. Its predecessors, the Mark II and Mark III, were unarmoured training vehicles clad in boilerplate (mild steel sheet used in the construction of boilers), while the original Mark I was essentially a prototype, all of which were produced in relatively small numbers (150 Mark Is, and 50 Mark IIs and 50 Mark IIIs). The Mark IV was produced in two variants, which were assigned genders: the "male" tank armed with two six-pounder guns as primary weapons, and the "female" tank armed only with machine guns. Curiously, some Mark IV tanks were armed with machine guns as well as a single six-pounder gun, and they were descriptively referred to as "hermaphrodites." (Stern 1919:128-129)

The chosen Mark IV tank was a male version with the War Department assigned serial number 2341, and it was decorated with the dragon motif (presumably in red, based on the tone in the few surviving black-and-white photographs)⁸ painted on the front glacis plate. Mounted above the dragon symbol is a commemorative brass plate inscribed with the words that indicate that the tank was a donation of "Mr. Eu Tong Sen, Unofficial Member of the Federal Council of the Federated Malay States." Curiously, the dragon depicted was not of the Chinese variety, but closely resembled the Welsh symbol, which indicates that the design was obviously not the handiwork of Chinese hands. Soon, this patriotic gift of war by a Chinese

individual from a far-flung corner of the British Empire was on its way to France, where thousands of Chinese had been sent to this equally far-flung foreign land.

Swettenham was not satisfied that only one of his two suggestions had been taken up. Determined to have his brainchild realized, and he delegated one of his subordinates, J. Arthur Turnham, to pressure the War Office through the Colonial Office, which was responsible for matters relating to the colonies of the British Empire. On 22 March, Turnham wrote to the Under-Secretary of State at the Colonial Office, Edmund Phipps, hard-selling Swettenham's boat-eyes idea:

It occurs to me that as all Chinese ships or boats, large or small, invariably have large eyes painted on each side of the bow, this Tank, when built, might be similarly distinguished. The Chinese explanation of the custom is, "No have eyes, how can see?" Having regard to the construction of the Tank it would seem very appropriate to give it eyes. (Eu 2008: 8)

Relentlessly, Turnham followed up with another letter on 31 March, with a none-too-subtle attempt to put pressure on the most senior person in charge of coordinating the development and production of tanks to take up Swettenham's suggestion. That person was none other than Lieutenant-Colonel Albert Gerald Stern, who in 1917 had risen to the appointment of Director-General of the Mechanical Warfare Supply Department under the Ministry of Munitions. In his letter, Turnham wrote,

I hope Colonel Stern will carry out the suggestion and supply the "eyes" to the Chinese given tank

⁸ Photographs of this tank showing the Welsh dragon and the commemorative plate are in the collection of Lincolnshire Archives, document reference MISC DON 1487, photos 36-38.

because I feel sure it would gratify not only the giver, but all the Chinese in the Malay States and likely lead to the gift of another tank. (Eu 2008:9)

And to preempt any attempt from the lower army hierarchy to resist his boss' idea, he added:

I can barely suppose that the War Office would consider the addition of the eyes would make the tank so conspicuous that they must be painted out, but one can never tell. (Eu 2008:9)

As letters were exchanged between the Official Press Office and the Colonial Office, the production of the important Mark IV tanks, which began in early March, proceeded in earnest. Because of a variety of political, technical and logistical reasons, new Mark IV tanks were initially produced at a rate of only 20 tanks a week. (Fletcher 2007:4) As soon as they rolled out from the production lines in England, there was a pressing need to dispatch them across the English Channel to France, where their numbers could be built up for the planned Cambrai offensive. The first batch of 19 Mark IV tanks (with War Department numbers 2001 to 2019), which came off the same production lines at the Foster plant in Lincoln as Tank 2341, reached France on the night and early morning of 17-18 April. (Campbell 2008: 266, 268) Like other new tanks, they would be tested and fitted out at the Central Workshops in Erin before being assigned to their designated tank units.

In June 1917, the War Office finally gave in to Swettenham, and was prepared to retrospectively add eyes to the tank donated by Eu Tong Sen. However, it would have been impossible to carry out the work in Britain, as Tank 2341 had by this time already been shipped to France and issued to F Battalion of the Tank Corps. The painting would have to be carried out on French soil. But who was responsible for painting the eyes on Tank 2341? The author would like to hypothesize that it was a member of the Chinese Labour Corps – Chinese contract labourers serving with the British Army in World War I – who worked at the Camouflage Section of the Erin Central Workshops. The Camouflage Section was at the time staffed by 70 members of the Chinese Labour Corps and was tasked with the painting of all tanks.

An overlooked piece of evidence that strongly suggests that eyes were the handiwork of a member of the Chinese Labour Corps is the fact that the eyes

proposed by Swettenham were those painted on Chinese fishing boats, which were supposedly *fish eyes*. Chinese Labour Corps members were typically northern Chinese from the inland areas of Shandong province, and such a person assigned to the painting job would have little idea about the maritime tradition of southern China. Having no reference to the painting order, which probably did not specify the particular kind of eyes, the painter from Shandong painted a pair of human eyes. The eyes were apparently European in that they featured folded eyelids and blue irises, and one can speculate that they were perhaps modelled on the eyes of the painter's supervising British officer!⁹ Notwithstanding their distinctive European features, from then on they would always be known as "Chinese Eyes" because of the Chinese connection to the conceptual origin and artistic execution.

WHAT HAPPENED TO TANK 2341 DURING THE WAR?¹⁰

The common story of what happened to Tank 2341 in France is a schizophrenic tale of confused identities.¹¹ After being tested and fitted out in Erin, Tank 2341 was assigned to 12 Section, 18 Company, F Battalion of the Tank Corps. The tank, according to the common story, was then named "Fly Paper" and assigned the tactical number of F56. F56 "Fly Paper" took part in the Third Battle of Ypres, which was launched on 31 July 1917, with a crew under the command of Second-Lieutenant J. M. Oke (who survived the war and rose to the rank of Captain).¹² By the time of the Battle of Cambrai, which began on 20 November 1917, F56 had somehow become transformed into "Fan Tan" and had a different crew and a new commander, Lieutenant H. A. Aldridge (who also survived the war and rose to the rank of Captain).¹³ This sketchy historical account of the generally accepted version represents the extent of what has hitherto been known about Tank 2341.

What could have actually happened to Tank 2341? Apparently, Tank 2341, christened "Fan Tan," had in fact been held in reserve as a spare tank in F Battalion. It was therefore not assigned a tactical number, as only combat vehicles were so treated.¹⁴ The tactical number F56, which is often confusingly associated with "Fan Tan," was indeed originally assigned to "Fly Paper." But that tank was a different vehicle with an unknown War Office serial number. As F56 "Fly Paper", this tank went into action on the first day of the Cambrai campaign on 20 November 1917, and sustained a level

⁹ This is a conjecture. For an image of an eye of Horus or the eye of a Maltese luzzu, see respectively the images at http://www.google.com.hk/search?q=eye+of+Horus&hl=en&rlz=1W1SUNC_en&biw=1366&bih=528&prmd=imvns&tbn=isch&tbo=u&source=univ&sa=X&ei=Ck91TuSkLK-ZiAeZsMyLDQ&ved=0CDwQsAQ and <http://en.wikipedia.org/wiki/Luzzu>

¹⁰ The main reference sources of this section are: the book War History of the Sixth Tank Battalion (1919) and the website Landships (hosted by Google Sites at (<http://sites.google.com/site/landships/>), which carries referenced historical information on British tanks built between 1916 and 1918.

¹¹ This version of the story is depicted in Fawcett 2001: 45 and Fletcher 2007: 45.

¹² Captain J. M. Oke's rank and name appear in the list of officers of the 6th (formerly F) Battalion of the Tank Corps; see: Somers 1919: 244.

¹³ Captain H. A. Aldridge's rank and name appear in the list of officers of the 6th (formerly F) Battalion of the Tank Corps; see: Somers 1919: 241.

¹⁴ See: the Landship website, page on spare tanks in F Battalion during the Cambrai campaign, at <http://sites.google.com/site/landships/f-battalion-spare-wire-pulling-and-supply-tanks-at-cambrai>.

of damage that would probably seem to have put it out of subsequent action:

F56 [Fly Paper] whilst passing South of La Vacquerie it was seen to still be in enemy hands, the tank thus turned and passed to the West, visiting the 4 or 5 "I" battalion tanks knocked out here. Engaged farm with 6pdr [the six-pounder gun on each side of the tank] but after three shots [the] tank was hit by field gun which knocked out the 6 pdr. Tank continued to Blue line where it silenced an enemy MG at request of infantry then joined another group of infantry and forced surrender of about 20 enemies. Reached and patrolled along Brown line. Rallied at 4pm.¹⁵

Battle records of 18 Company show that following these events a new tank, with the name "Fan Tan" and War Office number 2341, was allotted the tactical number F56, vice "Fly Paper" which was obviously no longer tactically usable. It had the same crew and commander (Aldridge) and saw action for the first time when it went into combat on 27 November,¹⁶ an

account of which is as follows:

F56 [Fan Tan] went to right of village, infantry following. Fired on targets in village with 6pdr and Lewis guns. Failed, three times, to enter east of village due to heavy enemy fire. Eventually entered village and helped clear enemy snipers. Tank now developed mechanical trouble and was withdrawn, with difficulty, to RP [rallying point].¹⁷

Photographic records exist of Tank 2341 going through its paces on a testing ground (possibly at the Erin Central Workshops), looking factory fresh and painted with eyes on the bow and its War Office number "2341" clearly displayed on the stern (Figure 3).¹⁸ However, the vehicle was conspicuously lacking its tactical number of F56, which would have been prominently painted on both sides of the vehicle body. This is supporting evidence that suggests that Tank 2341 "Fan Tan" had been kept in reserve as a spare tank until it replaced the damaged "Fly Paper" and assumed the same tactical number F56 as it went into battle on 27 November.



Figure 3: Drawing of the first tank that sported the "Chinese Eyes" – a Mark IV tank, serial number 2341, of F Battalion (later renamed the 6th Battalion) of the Tank Corps. (Original drawing by Lee Ho Yin, based on a photo in the collection of the Imperial War Museum)

As a propaganda tool to garner financial and material support among non-European British subjects throughout the Empire, it would be reasonable to hypothesize that the British authorities would not want to risk early damage or destruction to Tank 2341 "Fan Tan" by committing it to battle at the first instance. When "Fan Tan" was eventually called to battle to replace the damaged "Fly Paper" and thus assumed the latter's tactical number of F56 is what appears to be the source of the confusion.

WHAT HAPPENED TO TANK 2341 AFTER THE WAR?

Apparently, Tank 2341, F56, "Fan Tan," survived the war, and the authorities had originally planned to bring it back to Malaya as a victory monument. (Stem 1919: 129-130) But given more immediate priorities on hand after the war, the plan was not carried out, and the tank's whereabouts became a mystery. In all likelihood, it shared the same destiny as other veteran Mark IV tanks, which had then become outdated

¹⁵ Quoted from the Landships website at: <http://sites.google.com/site/landships/18-company-20-november-1917>.

¹⁶ According to the Landships website, "F56, 2341, . . . Fan Tan is not recorded prior to this date [27 November 1917]. See: <http://sites.google.com/site/landships/f-battalion-spare-wire-pulling-and-supply-tanks-at-cambrai>.

¹⁷ Quoted from the Landships website at: <http://sites.google.com/site/landships/18-company-27-november-1917>.

¹⁸ These photographs are in the archival collection of the Imperial War Museum.

and would serve no useful military purpose. This unceremonious fate of obsolete Mark IV tanks is described by tank historian David Fletcher in his book *British Mark IV Tank*:

The vast majority of war surplus [Mark IV] tanks were simply shipped back to Bovington and scrapped, although a significant number still remained on the Western Front, too damaged to move but too much of a nuisance to leave behind. Thus the Tank Corps raised a special salvage detachment which, for many months after the end of hostilities, worked steadily across the battlefields, blowing up wrecks where it was safe to do so or, in a few cases, burying them where it was not. (Fletcher 2007:43)

While the Mark IV tanks have all gone, except for a handful that still survive in museums, the “Chinese Eyes” have lived on to the present day. Over the years, legends and myths have been spun about the “Chinese Eyes,” including one that considers them a common symbol for tanks of the D (later 4th) Battalion. In fact, the eyes were unique to Tank 2341 “Fan Tan” of the F Battalion (renamed the 6th Battalion in January 1918) during World War I. It was after the war that the “Chinese Eyes” were inherited like a precious heirloom by a succession of tank units, and they remain today with the 1st Royal Tank Regiment.

CONCLUSION: THE CHANGING “CHINESE EYES”

The design of markings applied on military vehicles is subject to change, and, as such, tracking the changes is essential to achieving an understanding of the past and present of the tradition, and thereby an indication of its future.

In the case of the “Chinese Eyes” marking, the author has managed to discover at least four variations: the very first and only original design used during World War I (**Figure 4**); the second design possibly used during the inter-war years as depicted on the Mark V tank on display at the Imperial War Museum (**Figure 5**); the third design seen on tanks in World War II and the Korean War (**Figure 6**); the fourth and current design dates from the latter part of the Cold War to today (**Figure 7**). Through research of photographs of the “Chinese Eyes” painted on tanks of different eras, the four design variations are accurately reproduced and presented as the final illustrations for this paper.

It is hoped that this research will find useful application in the restoration of vintage tanks, which are significant military artefacts that hold much appeal to visitors in any war museums and, as such, deserve to be accurately restored for the correct interpretation of history.

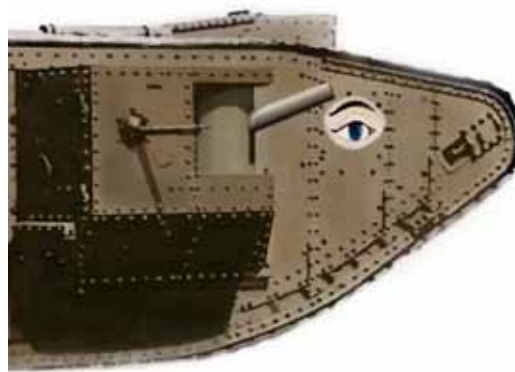
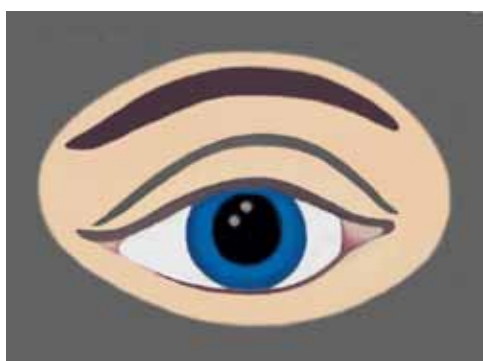


Figure 4a & 4b: The original design of the “Chinese Eyes” that first appeared in 1917, painted on the Mark IV tank donated by Chinese-Singaporean businessman Eu Tong Sen. (Original drawings by Lee Ho Yin)

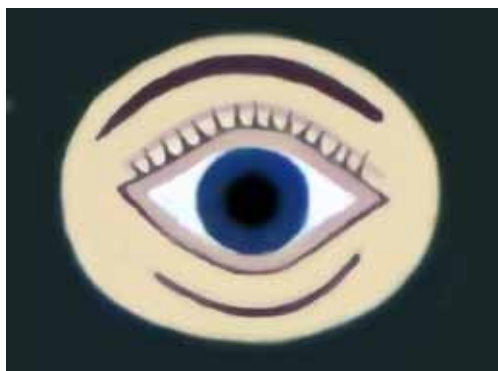


Figure 5a & 5b: The version of the “Chinese Eyes” painted on the Mark V tank exhibited at the Imperial War Museum, London. (Original drawing and photo by Lee Ho Yin)

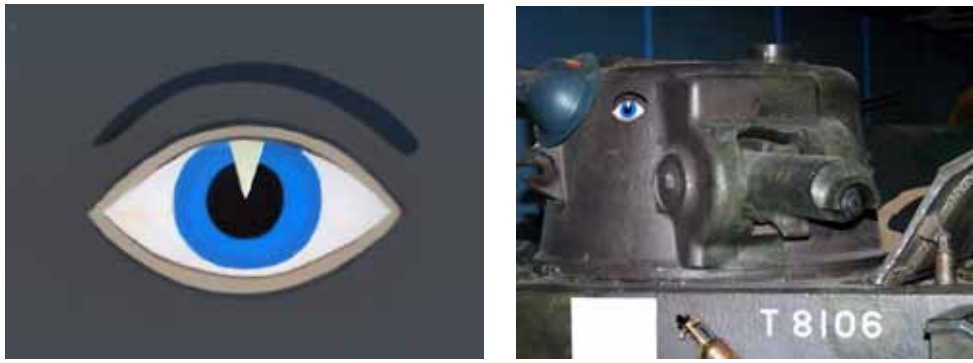


Figure 6a & 6b: The World War II version of the “Chinese Eyes” painted on a Matilda I tank exhibited at The Tank Museum, Bovington. (Original drawing by Lee Ho Yin; photo by Tom Cole, featured at http://www.peachmountain.com/5star/Bovington_Matilda_1.aspx)



Figure 7a & 7b: The current version of the "Chinese Eyes" painted on a Cold War-vintage Chieftain tank exhibited at the Imperial War Museum, London. (Original drawing by Lee Ho Yin; photo by Robert De Craecker, feature at the Prime Portal website http://www.primeportal.net/tanks/de_craecker/chieftain_mk6-4_walk.htm.)



Figure 8: The author in a modern armoured fighting vehicle (a M-113 armoured personnel carrier) in the early 1980s. (Photo owned by Lee Ho Yin)

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REFERENCES

Campbell C (2008), *Band of Brigands: The First Men in Tanks*, Harper Perennial, New York.

Childs DJ (1999), *A Peripheral Weapon? The Production and Employment of British Tanks in the First World War*, Connecticut: Greenwood Press, Westport.

Eu YMR (2008), Chapter Four, In *Eu Tong Sen Biography* (an unpublished draft document).

Fawcett B (2001), The Chinese Labour Corps in France 1917-1921, *Journal of the Hong Kong Branch of the Royal Asiatic Society*, 40, 33-111.

Fletcher D (ed.) (1994), *Tanks and Trenches: First Hand Accounts of Tank Warfare in the First World War*, The History Press, Stroud, Gloucestershire.

Fletcher D (2001), *The British Tanks 1915-19*. Crowood Press, Marlborough, Wiltshire.

Fletcher D, illustrated by Bryan T (2007), *British Mark IV Tank*, Osprey Publishing, Botley, Oxford.

Littledale, Harold Aylmer (1918), With the Tanks: I. Anatomy and Habit, *Atlantic Monthly*, December (1918), Sourced from the website *The Great War in a Different Light* (www.greatwardifferent.com).

Marquis-Kyle P and Walker M (1992), *The Illustrated Burra Charter*, Australia ICOMOS Inc., Sydney.

Mitchell F (1933), *Tank warfare: The Story of the Tanks in the Great War*, Thomas Nelson and Sons, London.

Somers L (Authur H. T. Somers-Cocks, 6th Baron Somers) (1919), *War History of the Sixth Tank Battalion*, N.p.: original edition privately printed, current edition printed and bound by Antony Rowe Ltd.

Stern Lieutenant-Colonel Sir Albert Gerald (1919), *Tanks 1914-1918: The Log-book of a Pioneer*, Hodder and Stoughton, London.

Western Front Association (2008), Organization and

Administration of The Tank Corps, Internet article at www.westernfrontassociation.com, dated 22 May 2008 and updated 24 Sep. 2008.

Decoding the Enigma of the Fall of the Shing Mun Redoubt Using Line of Sight Analysis[#]

Lawrence W.C. Lai*, Stephen N.G. Davies**, Ken S.T. Ching*** and Castor T.Z. Wong****

ABSTRACT

This paper explains the need for, the means to, and the findings of a re-examination of the fall of the Shing Mun Redoubt lost to Japanese forces during the early phase of the Battle of Hong Kong in December 1941. The methods of the re-examination were: (a) a comparative study of public documents and books in English, Chinese and Japanese and (b) the reconstruction of the battlefield, the defence structures and arcs of fire of the pillboxes and firing trenches at the Shing Mun Redoubt using information collected by an original on-site land use survey and generated by computer GIS techniques using a Triangular Irregular Networks (TINs) model.

As the first professional mapping exercise for the Shing Mun Redoubt, the findings clarify two mysteries that escaped scrutiny by both a court martial in a Japanese POW camp and a postwar Cabinet inquiry into the rapid collapse of this bastion, guarded by 2nd Battalion of the renowned Royal Scots Regiment, which triggered a premature evacuation of the Gin Drinker's Line.

The key survey findings are that the Redoubt was not of a faulty design for day time fighting, particularly as the Jubilee Dam across which the enemy advanced in complete darkness, was well-covered by the defender's positions; that the artillery observation post, which commanded the Redoubt, was physically isolated and un-connected by tunnels or trenches to any of the five pillboxes; and that despite certain exaggerations by the victors and missing links glossed over by the defenders, the general sequence of the actual fighting for the Redoubt recorded in the official war histories of parties to the battle was authentic.

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** Professor, Chartered Surveyor, Department of Real Estate & Construction (formerly surveying), University of Hong Kong*

Email: wclai@hku.hk

B.Soc.Sc. (HKU), M.T.C.P.(Sydney), M.Soc.Sc. (HKU), LL.B.(Lond), Ph.D.(HKU); M.C.I.L.T., M.P.I.A., M.H.K.I.P., F.R.I.C.S., F.H.K.I.S.

Government committee membership: Building Appeal Tribunal; Appeal Board (Town Planning Ordinance), Transport Tribunal

*** CSSC Maritime Heritage Research Fellow (formerly Museum Director), Hong Kong Maritime Museum; formerly Lecturer, Department of Political Science, Faculty of Social Science, University of Hong Kong; Fellow, Centre of Asian Studies, University of Hong Kong*

Email: stephendavies@hkmaritimemuseum.org

B.Soc.Sc. (Econ) (Wales), M.Sc. (Econ), Ph.D. (Lond)

**** Chartered Land Surveyor*

B.Eng.(Hons) (UNSW), M.G.I.S.(HKU), FHKIS, MRICS, RPS(LS), ALS, MCI Arb, MSSI(Aust.), MIS(Aust.)

Email: keland@biznetnavigator.com

***** Chartered General Practice Surveyor*

B.Sc.(Surveying), MHKIS, MRICS, RPS(GP)

Email: TszChoi.Wong@cbre.com.hk

INTRODUCTION

Despite the widespread recognition of the importance of terrain within military action, it has been rarely been used as an historical tool to help deconstruct events, actions, and outcomes of military engagements, yet clearly its potential to impact on our understanding of such actions is considerable. In recent years, however, the relevance of terrain as a tool in the historical analysis of historical engagements has gained some momentum...(Doyle and Bennett 2002: 1).

Chinese strategist Sun Tzu (Griffith 1971), well-known to Western and Japanese military thinkers, had a sharp focus on the importance of terrain to strategic and tactical operations (Doyle and Bennett 2002). The available technology of the profession of land surveying was used to help investigate the mystery of the fall of a stronghold at the Shing Mun Redoubt, guarded by the famous Royal Scots. This loss was a significant event during the Battle of Hong Kong, as it triggered the premature abandonment of the Gin Drinker's Line¹ and the evacuation of the mainland side of Hong Kong. The geography and hardware of this battlefield, like many others in this minor Pacific theater engagement of World War II, have never been seriously studied by war historians or heritage theorists in spite of a wartime inquiry by British military leaders in captivity and a postwar Cabinet inquiry in 1958 (Latham 1958). This was so, even though it was known that Hong Kong was probably one of the few places where British pillboxes were in action with the enemy during World War II (Osborne 2008: 301) and the defenders in the Battle of Hong Kong inflicted disproportionately high casualties on the enemy (Lai 2001). The report of the inquiry, authored by Brigadier H.B. Latham, Head of the Historical Section of the Cabinet Office, consolidated diverse sources of evidence, naturally all adduced in English, by the leaders of the defence and attack (captured at the Japanese surrender in 1945). It was obvious from the tenor and wordings of the Cabinet investigation that the British military authorities were not pleased with the rapid fall of the Gin Drinker's Line, the defensive line that was supposed to anchor the British defence on the mainland side.

As for the Japanese victors, they treated their capture of the Redoubt as a sumptuous, albeit unanticipated, success that exonerated Lt. Wakabayashi Touiti, who attacked on his own discretion and saved him from a court martial. The report of this postwar inquiry (the Cabinet Report), when read alongside reliable Japanese accounts of the fight, has left more mysteries as to what happened and how during the contest for the Redoubt. The most intriguing question found in both the British and Japanese official accounts is the amazingly low casualty figures: merely two soldiers on each side. Another intriguing question is that the physical

dimensions and design of the concrete tunnels, which are professionally surveyed, mapped, and reported here for the first time, could not permit large scale hand-to-hand fighting, not to mention the fact that no apparent war damage was found inside the tunnels.

Was there really fierce fighting at the Redoubt? Was the Redoubt poorly designed to withstand a day attack when fully manned? This paper seeks to provide informed answers to these two questions based, respectively, on a documentary analysis and a GIS reconstruction and evaluation of the design of the Redoubt.

The documentary study involved a comparison of the account of the battle consolidated in the Cabinet Report vis-à-vis Japanese information that was not available for the Cabinet Office's consideration when it made its inquiry.

Based on an accurate site survey of the ruins of the Redoubt combined with some assumptions about the weaponry employed, the GIS study reconstructed the Redoubt as it was during the battle by focusing on the arcs of fire of its five pillboxes and concrete trenches, which was essential information that had a bearing on the design of the Redoubt against an attack from Jubilee Dam (known as the "gorge dam" on some maps), the main dam of the Shing Mun (also known as the Jubilee) Reservoir built across the valley of the Shing Mun River.²

This paper is the result of interdisciplinary efforts by researchers, conversant in English, Chinese, and Japanese, who specialized in heritage conservation planning, land surveying, and military history. It publishes the key findings of the first on-ground land survey by a chartered surveyor of the Redoubt and has illuminated a number of interesting questions over its rapid loss by highlighting the influence of terrain on a battle (Badsey 2002). These questions were raised and consolidated by a careful documentary analysis of postwar materials in the aforementioned three languages and settled by digital analysis based on the data obtained by a ground survey. The GIS techniques adopted (ESRI 2002; Dakowicz and Gold 2003; Forkuo 2008) included those used in typical line of sight analysis, which has been growing in importance in landscape planning and conservation research in foreign (see, for instance, Lathrop and Bognar 1998; Germino et al 2001) and local (Mak et al 2005a, b) situations. In a post-colonial heritage conservation context, this work follows in the footsteps of works by Hill and Lian (1995); Phang (1998), Ko and Wordie (1996); Henderson (2007); Ip (2007); Lai and Ho (2002, 2003, 2007); and Lai et al (2003, 2007) by offering an example of how geographical information from archival materials on battles and the modeled data of battlefields (Pearson 2002) can be jointly used to better articulate issues relevant to war history and relics conservation (Smith 1996).

¹ For the locations of the pillboxes along the Line, see Lai et al. (2009).

² Another reservoir, called Lower Shing Mun Reservoir, was built below Jubilee Dam further down the Shing Mun Valley through the construction of an earth dam from 1963 to 1964 to increase water supply to Hong Kong's rapidly growing post-war population. The lower reservoir does not flood the battle area or the pillboxes guarding the valley.

BACKGROUND FACTS AND QUESTIONS

Shing Mun Redoubt was built in or around 1937³ in anticipation of a land invasion of Colonial Hong Kong from the north. It is situated on a ridge below Smugglers' Ridge. It is common knowledge that it consists of five pillboxes (PBs): 400, 401a, 401b, 402, and 403 and an artillery observation post (OP) built of reinforced concrete with steel doors and protectors for firing loopholes. The Redoubt also had a system of underground concrete tunnels, each named after well-known place names in London (e.g. Piccadilly, Haymarket, and Strand Palace Hotel), that were punctuated by open air firing trenches built of concrete, as surveyed and shown in **Figure 2**. The names of the tunnels were actually inscribed on their walls, and the numbers of the open trenches, T1 to T9, were assigned by the authors for ease of reference. Whether or not each defence structure was connected to the rest of the system by tunnels was a disputed key point before the Cabinet inquiry.

Indeed, the only facts that are unambiguous about the fall of this bastion of the GDL other than the fact that it was hopelessly undermanned are that it collapsed within a few hours and this was tactically and psychologically, if not also strategically, disastrous for the defenders. Otherwise, on the defender's side there would have been no wartime court martial in the POW camp ordered by General Christopher M. Maltby, not to mention the postwar Cabinet inquiry led by Brigadier H.B. Latham. Nor would there have been on the invaders' side the strong initial reaction of the Japanese command against the leader of the unauthorised attack on the redoubt and the subsequent conferment of a medal on Lt. Wakabayashi as a hero. The actual conduct of both sides during the battle is unclear.

The combined British narrative by Banham (2003), based on his reading of the findings of the Cabinet inquiry, a postwar analysis of the documents of the belligerents then available, interviews with key persons, and National Archive war diaries, could only trace the sequence of the fall of some of the pillboxes and certain details of the fighting by the defenders in the command centre of the Redoubt, which was located at the artillery OP. The most enigmatic of these details was that the defenders could not come out to fight or escape when attacked because the steel entrance to the OP was locked from the outside by a private, who took the key with him when he went out under orders to

guide an officer Lt-Col. Francis Woodley Kendall, from Canada, in charge of the Z Force, which carried out sabotage work behind enemy lines, to the OP. This led to the capture of a good number of defenders, the rest being able to retreat to the rear to fight the ferocious Battle of Golden Hill the morning after.

The Cabinet inquiry did not have the benefit of any accurate map or field analysis – and even Maltby, as he admitted in a questionnaire attached to the Cabinet Report, had never visited the Redoubt – but it confirmed that the battery OP was connected to the tunnel system linking all pillboxes. By implication, this contradicted the sketch map produced by the Royal Scots, which shows that the OP and the pillboxes were not connected – contrary to what our survey found. However, a quick field visit falling short of a professional land survey confirmed that the OP had more one than one exit, and egress could be gained from the kitchen (nicknamed the Strand Palace Hotel) at a lower level to an open air concrete firing trench or through another tunnel whose exit came very close to, but was physically separated from, the tunnel system that connected the PBs. In short, there were two distinct and separate tunnel systems and the OP defenders had more than one exit.

DOCUMENTARY ANALYSIS: THE HISTORICITY OF THE BATTLE

Our documentary analysis commenced with a compilation of an hour-by-hour chronology of events using the narratives found in the Cabinet Report as the framework and the insertion of information from subsequent published materials in the English language, notably Muir (1961), Stewart (2005), Kirby (2004), Lindsay (2005), and Banham (2003); Chinese (Li); and Japanese (Fujita (1941); Kitajima (1946); a work which we shall refer to as "Cheung Sha" (1971)⁴; and Matsuura (2007)). The results are shown in **Table 1**.

The compilation of the chronology of events is a standard practice in court proceedings and battle analyses. The Cabinet Report has undoubtedly been the best starting point, as it was meticulously written with reference to the best available documents available at the time. Its only limitation was its reliance on Colonel Teishichi Doi's testimony (Doi 1959). Although Doi was in command of the regiment that attacked the Redoubt, his testimony did not give any specific names of individuals of the assault force save for Lt. Wakabayashi, who later became a war hero. The gaps in the Japanese narratives of the battle were plugged

³ The year of construction was based on the archaeological evidence from a local English newspaper from that year found on the roof of a tunnel in the Redoubt (Lai et al 2008). The authors searched all sources, including the UK National Archives, and the question of the time of the construction was raised by Lai et al. (2009). The authors found in the annual report of the Public Works Department for 1937 with respect to the New Territories this statement, "Construction of Pill Boxes and Tunnels at Sites Nos. 53, 54 and 65: the work was completed on 20th September." This might have referred to the redoubt or other pillboxes along the Gin Drinker's Line (Director of Public Works 1937: p. Q55).

⁴ The Chinese Government translated this report, which used a lot of Chinese characters, into simplified Chinese. According to the preface of a Chinese translation (Tientsin Municipality), this work was compiled by the Japanese Ministry of Defence for training its self defence force officers. Thus, it is an "official" document and, hence, cannot be ignored. The Main Library of the University of Hong Kong has a copy of the Japanese version. Although the sketch layout of the redoubt in this book is worse in terms of accuracy than that in the UK Cabinet report, its description of the exact time of the surprise attack and the way of crossing the dam differs from that in the Cabinet account, and this is the enigma for inquiry here.

by the materials in the memoir of Lt. General Kitajima Kineo (1946), Commander of the First Artillery Brigade of the Japanese force that invaded Hong Kong, and those found in the most comprehensive work published in Japanese, titled *Honkon Chosa Sakusen* (1971), which stands for “Hong Kong-Cheung Sha Battle”.⁵ This work has detailed descriptions of battle actions and sketch maps of battlefields, including one for the Shing Mun Redoubt, which is represented by

a big X with pillboxes at the tips of each arm of the X and sketches of the pillboxes. Banham’s work (2003) consolidated information from nearly all English materials, but did not consult any Japanese or Chinese materials. The Chinese work by Li (2002), written roughly at the same time, used English, Chinese, and Japanese sources (including “Cheung Sha”) and is arguably the best Chinese work on the Battle of Hong Kong.

Table 1: Chronology of events leading to the fall of the Shing Mun Redoubt on 10 December 1941

Time (date)	Events [Source]	Remarks
(11 Nov)	HQ A Coy 2 Royal Scots moved into the Artillery Observation Post at Shing Mun Redoubt with Captain C. R. Jones its commander [Cabinet Office].	
00:00 (8 Dec)	Invasion began; defenders in positions without surprise.	
08:30 (9 Dec)	Lt. Captain H. Newton, commanding D Coy 5/7 Rajputs, took up positions on Smugglers Ridge to the east of the Shing Mun Redoubt [Cabinet Office].	
09:00 (9 Dec)	Captain Jones contacted Captain Newton and they agreed to: (a) interlock their arcs of fire and (b) have Captain Jones patrol the southern slopes of Needle Hill (across Jubilee Dam of the Shing Mun Reservoir, which lies right in front of the Redoubt) [Cabinet Office].	
13:00 (9 Dec)	Captain Jones went to Battalion HQ (at Skeet Ground) to discuss matters with Lt. Colonel S. M. White regarding the patrolling of the Redoubt. [Cabinet Office].	The Cabinet Office remarked that a “misunderstanding” occurred then. Skeet Ground was located near Castle Peak Road, Tsuen Wan to the SE of the Redoubt.
15:00 (9 Dec)	Colonel Doi Teishichi, commanding the 228 Infantry Rentai (Regiment), reached Needle Hill and decided to attack eight hours later at 23:00 [Banham, Lindsay].	The Cabinet Office found that Colonel Doi met the bulk of his troops two hours later at 18:00: the time difference was not considered material. Colonel Doi met the 3rd Taitai (Battalion) Commander, Major Nishiyama, and agreed to attack at night [Cheung Sha; Fujita Tachio].
17:30 (9 Dec)	Colonel Doi’s assault troops were within 500	

⁵ The Japanese lost the first three Battles of Cheung Sha during the Sino-Japanese War. All three defeats came at the hands of the Nationalist Chinese Army. The Japanese treated the Battle of Hong Kong as part of the bigger picture of their first attempt to capture Cheung Sha.

	metres of the Jubilee Dam. Major Nishiyama Haruka of the 3rd Taitai of Doi's troops decided to attack at night [Li].	
18:00 (9 Dec)	Major Nishiyama was displeased by dining noises of the original select attack group and tasked Lt. Kasugai to do the task instead.	
20:00 (9 Dec)	Lt. J. R. S. Thomson left the Redoubt with nine B.O.R.s of the Royal Scots to conduct a patrol [Cabinet Office].	We did not know from where Lt. Thomson took the nine soldiers out or the route of his reconnaissance. However, it was likely that he came out from the Platoon HQ, location uncertain.
21:00 (9 Dec)	Doi's assault troops reached the barbed wire of the Redoubt and took an hour to cut through it [Cabinet Office].	
21:30 (9 Dec)	The Japanese 9th Chutai (Company) commander, Lt. Kasugai, crossed Jubilee Dam without fighting and found only a 1m x 1m box on the dam [Cheung Sha: p.103].	
22:00 (9 Dec)	<p>Japanese troops assembled below Point 255. The Chutai (Company) commander, Kasugai, ordered the 1st Shui dui's (Platoon) commander, 2/Lt. Yamada Shoji, to climb up and cut through the two lines of barbed wire.</p> <p>Soon after cutting the wire, they were shot at by a southwestern pillbox.</p> <p>Major Nishiyama selected several assault groups from the 10th Chutai (Company) to join the fight.</p> <p>Lt. Kasugai tasked 2nd Shui dui (Platoon) to attack the SW pillbox while the bulk of his Chutai found the open air section of the underground tunnel system and threw grenades into them [Cheung Sha: pp. 106-107].</p>	<p>The pillbox was likely PB402 if the direction was accurately described. Corporal N. Campbell and a MG section was near this PB.</p> <p>The first shot likely occurred well after 23:00, or else the garrison of the Artillery Observation Post would have been alerted early.</p>
22:30 (9 Dec)	Lt. Thomson returned with "nothing to report" [Cabinet Office].	There was no dispute over this planned time of attack.
22:30 + (9 Dec)	Shortly after this, Lt. Thomson received the request from Mr. M. Kendall to report to the Redoubt. He sent a runner, Wylie, to guide Kendall in. Wylie took the only key from Indian L/Naik and locked the gate to the Artillery Observation Post, which was its "only exit" [Cabinet Office; Lindsay].	<p>This finding of an "only exit" was problematic, as the OP had at least three exits. The nearest one opened at its back, while another, situated below the OP, was connected by a tunnel through a kitchen. From the kitchen, one could go out into the open through a trench above PB 403 or through another short tunnel that was closest to the main system of tunnels connecting the Redoubt's four groups of pillboxes.</p> <p>We cannot find Wylie's full name.</p>

		<p>The Cabinet Office was wrongly counseled to accept that:</p> <p>(a) the Artillery Observation Post had only one exit and</p> <p>(b) the pillboxes were connected to the OP by tunnels.</p> <p>In fact, the Post had three exists and the Redoubt had <u>two</u> unconnected systems of tunnels.</p> <p>Waters and McEvan (2005: p.54) reproduced Z force member Colin McEvan’s statement, “the runner having the key in his pocket (Capt. Jone’s orders)”.</p> <p>Lance Naik is the Indian Army equivalent of Lance Corporal.</p>
<p>23:00+ (9 Dec)</p>	<p>Invaders’ narratives:</p> <p>The Japanese assault troops were shot at by a pillbox. Fighting commenced [Cheung Sha].</p>	<p>Probably PB 402, and the time had to be after Wylie went out and locked the gate.</p> <p>Obviously, the defenders shot first.</p> <p>23:00 was the Japanese planned time of assault on the Redoubt (Cabinet Office, Banham, Cheung Sha).</p>
<p>23:00+ (9 Dec)</p>	<p>Defenders’ narratives:</p> <p>(1)</p> <p>“Lance Corporal Laird, on sentry duty to the east of the Redoubt, which was nearest the Shing Mun river, challenged figures approaching the wire (95:49). They dispersed and he engaged them with his submachine gun. They replied with rifle fire and grenades.”</p> <p>The Japanese attack the Redoubt (initially around PBs 401b and 402) from above, throwing grenades down the airshafts. While they attacked the eastern parts, they were fired on from the western (and by Cpl. Campbell with a Vickers gun in a position 50 yards north of PB 402), with the 3rd Battalion’s HQ elements being caught in the open and suffering casualties.</p> <p>Sergeant Robb led a counterattack. Men were ordered to suppress the fire, and the battle degenerated into short blind chases through claustrophobic concrete tunnels. Sergeant Robb’s party of 13 men sustained five casualties (L/Cpl. Bankier, Ptes. Basnett, Coyle, Casey, and Jardine). They were left behind as Robb withdrew. Casey was killed when the Japanese entered. The others – apart from Jardine – were captured. Lieutenant W. Willcocks (the Artillery Observation Officer of the HKSRA) called fire down on the Redoubt itself to try and dislodge Japanese forces in the open (92:98) [Banham: p.38].</p>	<p>J. Laird</p> <p>R. Bankier, A. Basnett, H. Coyle, J. Casey, G. Jardine Casey was killed by the Japanese but Jardine escaped to the rear. [Muir]</p>

	<p>(2) At 23:00, Corporal Laird, on sentry nearest to the Shing Mun river, saw lights and a group of shadowy figures approaching the wire. He challenged them. Receiving no reply, he opened fire with a submachine gun. Grenades were flung at him and his fire was returned. Laird alerted his section commander and shouted to the signaller to inform Sergeant Robb and Captain Jones of the situation.</p> <p>“The Companies leading the attack,” wrote Colonel Doi, “assaulted the eastern position. First, a small number of troops threw hand grenades into the air ventilation chimneys of the connecting tunnels, and the infiltrating teams went into the tunnels and engaged in fierce close-quarter fighting.”</p> <p>Jones told Brigadier Wallis on the field telephone that he had heard muffled explosions and shouts. Wallis ordered that this serious situation must be quickly dealt with and told Jones “to get out with all his men evict the enemy quickly”. Never, to his dying day, did Wallis ever discover that Jones was trapped inside the post with the Platoon Commander and Forward Observation Officer. The Japanese started to drop grenades down through the grille [Lindsay: p.75].</p>	<p>Muir reported that the attack was from the high end of the Redoubt. “This party of the enemy was one hundred and fifty strong, according to the statement made later by General Kitajima, who said that they had climbed up the eastern side of Smugglers’ Ridge and had <u>come down upon the redoubt from above</u>. This party had not advanced until after the patrol of nine under Second-Lieutenant Thomson had gone back to the redoubt.” [Muir: p100]</p>
<p>23:45 (9 Dec)</p>	<p>The 5/7 Rajputs patrol engaged 200 Japanese troops in Shing Mun Valley to the southeast of Jubilee Dam [Cabinet Office].</p>	
<p>24:00 (9 Dec)</p>	<p>“It is clear that an officer needs to leave the observation post and take command of the fighting for the Redoubt. There is a telephone conversation between the Redoubt and Lt. Colonel White, and Thomson is told to take command. He tries to leave but finds the main door locked, and the top grille already under attack. Before this, a total of four Royal Scots [of] other ranks, and the Indian sentry, have been admitted into the observation post via the top grille (134).</p> <p>“Newton suspects that the Redoubt has already fallen. This loss leaves the Gin Drinkers Line untenable” [Banham: p. 39].</p>	
<p>00:00 (10 Dec)</p>	<p>Last order received from Artillery Observation Post: No. 2 Mountain Battery’s 4.5 inch howitzers ordered to fire at Japanese west of Redoubt [Banham].</p>	
<p>00:10 (10 Dec)</p>	<p>A platoon-sized contingent of Japanese troops of the 10th Chutai (Company) led by 2/Lt. Mochizuki captured the Artillery Observation Post by gaining access through an open air trench spotted. “Captain James” and others were taken</p>	<p>Should be Captain Jones.</p> <p>The Japanese most likely gained access from an open air trench above PB403 and worked their way up the tunnel that links the kitchen</p>

	prisoner [Cheung Sha].	and the Artillery Observation Post. Note that in the other report, by the defenders, stated that the surrender of the Post occurred at 02:45 (Banham).
00:30 (10 Dec)	Japanese troops took over the “control tower” and the southern part of the Redoubt [Li].	
01:00 (10 Dec)	<p>Mr. Kendall reached the Redoubt and contacted one of the wounded, L/Cpl R. Bankier of 2 Royal Scots [Cabinet Office].</p> <p>General eastward withdrawal of the Redoubt’s defenders towards the position of Captain Newton began [Cabinet Office].</p> <p>The pillbox attacked by the group led by Chutai (Company) Commander Wakabayashi continued to resist by closing the shutters of the firing loopholes. 2/Lt. Mochizuki led a party of six soldiers to force explosives into the pillbox and blew it up. (At dawn, they realized that the place was Point 341.)</p> <p>Japanese considered themselves to have captured the Redoubt [Cheung Sha].</p>	<p>The Cabinet Office deduced from Captain Thomson’s report of 03:30 that the general evacuation by the garrison of the Redoubt occurred at 01:00. This corresponded to the time the Japanese claimed the last pillbox.</p> <p>We consider that the “pillbox” Wakabayashi’s soldiers captured was not Point 341, which was really the location of the Artillery Observation Post. The latter was actually taken over by 2/Lt. Mochizuki.</p>
01:19 (10 Dec)	Lt. Colonel White at Battalion HQ at Skeet Ground moved D Coy from west of Castle Peak Road towards Golden Hill and moved C Coy from Texaco Peninsular (save for one platoon that was redeployed to guard a road junction of Castle Peak Road) in the vicinity of Battalion HQ.	
02:00 (10 Dec)	All communications with the Redoubt were cut off [Cabinet Office].	
02:30 (10 Dec)	The 2nd Chutai (Company) captured the SW pillbox with the help of sappers, but the PB at Point 255 continued to resist by closing the shutters of the firing loopholes. Sapper Corporal Fujimori Sakae, and three other soldiers forced explosives down the air vent, destroyed, and captured the pillbox [Cheung Sha].	The first pillbox to be captured was likely PB402, with PB401b (near “Point 255”) the next one.
02:40 (10 Dec)	<p>“Royal Scots situation report: A Coy.: Sergeant Robb and the survivors of 8 Platoon are heading towards the Rajput, 7 and 9 Platoons are in their original position” B Coy.: In its original position C Coy.: In PBs 406, 407, 408 D Coy.: In L.115, 116, 117, 118 HQ Coy.: Still in the OP (134)” [Banham].</p>	
02:45 (10 Dec)	“The Japanese blow in the main steel shutter of the Observation Post, instantly killing two Indian	Note that the Japanese claimed that they captured the Post as early as 00:10.

	signalers. Thomson is badly wounded by a grenade (92:98). Stunned, the artillery OP (garrisoned by three officers, fifteen British ORs, and IORs) surrenders with total of eleven casualties (134)” [Banham p.42].	
03:15 (10 Dec)	Redoubt area shelled by defenders’ batteries till 05:00 [Cabinet Office].	
03:30 (10 Dec)	Captain Newton reported that 19 BORs (1) 2 Royal Scots reported to him “during the past two hours” and 13 wounded men of this party had taken up a position on the left of D Coy 5/7 Rajput [Cabinet Office]. “In confused fighting, the Rajputs push the Japanese back up the valley and into the Redoubt (95:50)” [Banham: p.42].	
03:50 (10 Dec)	The Japanese captured the entire redoubt. Coy A of the Scots was almost annihilated. Wallis decided to gather the Scots, the grenadiers, the Punjabis, and the artillery to counterattack at dawn [Li: p.43].	
04:00 (10 Dec)	“The Redoubt is now considered fallen to the Japanese, though one pillbox is still occupied” [Banham].	PB 401b [Muir: p.100] This was more likely than PB 402 mentioned in Banham [p.43].

Notes: Banham = Banham (2003); Cabinet Office = Latham (1958); Muir = Muir (1961); Cheung Sha = *Honkon Chosa Sakusen* (1971); Li = Li (2002); Lindsay = Lindsay (2005)

Disposition of troops and geographical setting of the Redoubt

The general dispositions of the belligerents before the battle for the Redoubt (**Figure 1**) were as follows. The Japanese 228th Infantry Regiment, commanded by Colonel Doi, reached and occupied the grassy Needle Hill (532m high) that overlooks both the Shing Mun Reservoir and the Redoubt, which consisted of five machine gun pillboxes (PBs) and an artillery OP. The British selected the OP as their Redoubt HQ and built it with reinforced concrete and firing/observation loopholes protected by steel shutters. These they situated on the small knolls (key high positions

described by the Japanese as points 255⁶ (PB 401b) and 341 (OP)) on the southeastern side of the reservoir across Jubilee Dam. The Redoubt was, in fact, situated at the western lower reach of the Smugglers’ Ridge, which has two summits. The western summit, which is closer to the Redoubt, is 381m high (on a British military map), whereas the eastern one was 338m. [From the new source, “Cheung Sha” (1971), one of the immediate subordinates of Colonel Doi was Battalion Commander Nishiyama, who led two companies, the 9th and 10th under Kasugai and Wakabayashi, respectively.] Once in position, Colonel Doi decided to launch a night attack on the Redoubt at around 11PM.

⁶ It is Point 251 on a British military map.

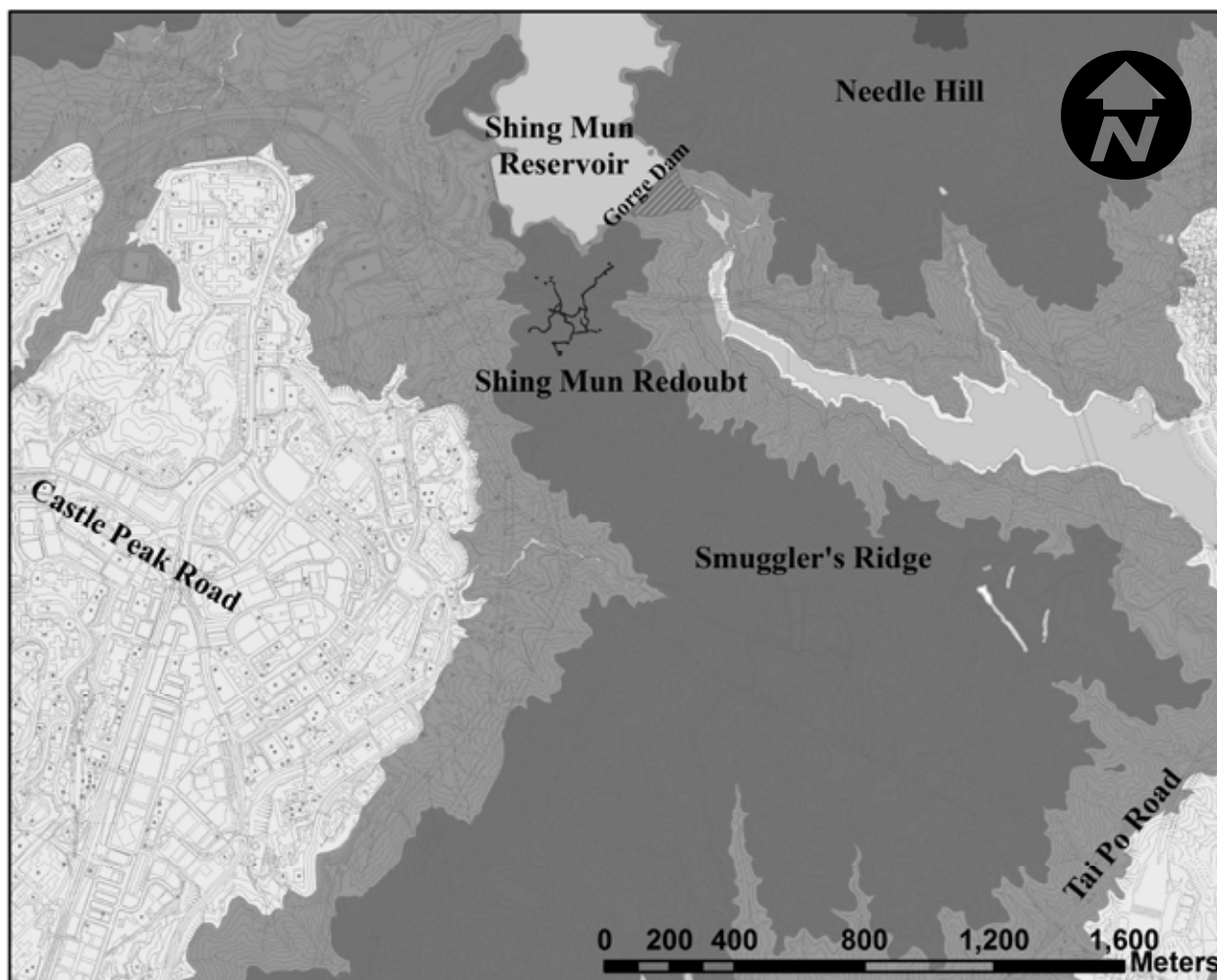


Figure 1: Battle field of Shing Mun Redoubt

The Gin Drinker's Line was designed to be guarded by two divisions and the Redoubt was to be defended by a full company (Osborn 2007). The actual size of the entire Hong Kong Garrison was only about two brigades. According to the Cabinet Office Report, the Redoubt at the time was defended by a total of just 42 men: ten at the HQ of A Company, 2 Royal Scots (Captain C.R. Jones and 9 British B.O.R.s); 27 with No. 8 Platoon of A Company, 2 Royal Scots (2/Lieutenant J.S.R. Thomson and 26 B.O.R.s); and five with the 1 Hong Kong Regiment of the Hong Kong Singapore Royal Artillery (HKSRA) (Lieutenant L.C. Wilcox, 2 B.O.R.s and 2 Indian I.O.R.s). It was also known that during the fight, there were 15 to 20 persons, three officers (Jones, Thomson, and Wilcox), 15 B.O.R.s, and 2 I.O.R.s inside the OP. They suffered 11 casualties, including two dead I.O.R.s. The 15 to 20 defenders inside the OP at the moment of surrender included the entire HQ unit, less one soldier who was tasked with manning the redoubt's telephone exchange elsewhere and all personnel of the HKSRA and 2/Lt. Thomson. The remaining half of the garrison was said to have been deployed at locations in or near PB 401b and PB 402.

The Redoubt was apparently situated to deter an enemy invasion from the north towards the area comprising

Smugglers Ridge through Jubilee Dam. The ridge overlooks the Kowloon Reservoir, which is served by a road off Tai Po Road in the east and Castle Peak Road in the west. These two roads were the only highways that extended all the way from urban Kowloon to the Hong Kong-China border. The top of Jubilee Dam, once the tallest dam in the British Empire, is about 4 metres wide and is the end section of a reservoir service road that goes down to Castle Peak Road via Shing Mun Road, which was guarded by a series of pillboxes manned by the Royal Scots. The Battalion HQ of the Royal Scots, commanded by Lt. Colonel White, was at "Skeet Ground" on the eastern side of the Castle Peak Road below Smugglers' Ridge.

According to Sun Tze's terminology, the Redoubt was located on "indecisive" terrain (Griffith 1971: 124) because it was equally disadvantageous for the attackers and defenders to enter. Sandwiched between two commanding heights, Needle Hill (which the Japanese controlled) and Smugglers' Ridge (which was guarded by the British Rajuts), the Japanese faced the risk of being trapped and bombarded by mortars from Smugglers' Ridge and long distance guns located further away, while the British could be threatened by the Japanese from Needle Hill. The following is a reconstructed account of what happened during the

battle based on our sources.

Activities of the defenders prior to the outbreak of the battle

Prior to the arrival of the main bulk of the 228th Regiment at Needle Hill, the commander of the Redoubt, Captain Jones, was in contact – first with Lt. Captain Newton Commander of the 5/7 Rajputs, who had taken up defensive positions at the eastern end of Smuggler’s Ridge, and then with his Battalion Commander Lt. Colonel White at Skeet Ground regarding interlocking firing arcs over Shing Mun Valley and the patrolling of Needle Hill and Jubilee Dam. Eventually, a night patrol was conducted by Lt Thomson with a small party of 9 at 8 PM on 9 December 1941, one day after the invasion.

Japanese troop movements

Daytime visibility of the Redoubt on 9 December was quite good. Colonel Doi stated that a fog came downhill during the day and added that he could see the laundry of the garrison hanging inside the Redoubt.

A small party of the Japanese 9th Company crossed the Jubilee Dam without being detected at around 9:30 PM and assembled below Point 255. 2/Lt. Yamada Shoji was tasked with climbing uphill with a small party to cut a way through the barbed wire entanglements that surrounded the Redoubt.

Meanwhile, Lt. Thomson completed his reconnaissance, returned to the OP, and was soon asked to send someone to guide Mr. Kendall of Z Force, which worked behind enemy lines, to the Redoubt. The guide locked the OP gate and took the key with him.

The first shot

Well before Mr. Kendall reached the Redoubt to witness the effects of the battle, one of its sentries, Corporal J. Laird, discovered the Japanese wire cutting party at around 11 PM and immediately opened fire. The Japanese reckoned that the shooting was from a pillbox at the western part of the Redoubt, probably PB402. Recognizing this, the Japanese commander rushed in the 10th Company under Lt. Wakabayashi to begin the assault.

The fall of the Redoubt

Confused fighting followed and resulted in the retreat of 19 defenders not stationed in the pillboxes or OP to Captain Newton’s position on Smuggler’s Ridge and the capture of those inside the OP. The latter were trapped inside the OP during the early morning hours of 10 December. During their defense of the Redoubt, the Rajputs also engaged Japanese forces in the

Smuggler’s Ridge area.

In terms of sequence, the first defensive structure of the Redoubt to fall to the Japanese was the OP, courtesy of 2/Lt. Mochizuki of the 10th Company, followed by an uncertain pillbox (probably PB 400 or 403) in the vicinity, to Lt. Wakabayashi. Hours later, the defence of PB 401b and 402 also collapsed. Corporal Fujimori Sakae, also of the 10th Company, was the leader of the attack on PB401b.

As soon as the loss of the Redoubt was certain, the defenders’ long range batteries (notably on the filter beds, Tai Po Road, Stonecutters Island and Mount Davis) bombarded the Redoubt with a view to neutralizing the Japanese there for a possible counterattack.

Some questions

How did the Japanese cross Jubilee Dam: below it or on top of it?

The first major discrepancy between the Cabinet Report of 1958 and the 1971 Cheung Sha Report (1971) is over the mode of the Japanese crossing of the Jubilee Dam. Relying on Colonel Doi’s testimony,⁷ the Cabinet Office believed the Japanese crossed Shing Mun Valley *below* the dam, whereas the new Japanese source (Cheung Sha 1971), which stated (and reproduced a map said to be published by the Japanese Army in 1943), clearly that the crossing was made along the top of the dam mentioned earlier.⁸ The latter source was likely authentic, as it was accompanied by such details as the Japanese seeing only a “1m³ box” on the dam; the place of their assembly after they crossed, viz. below Point 255; and the name of the leader of the barbed wire cutting party. Whether the crossing was made “below” or “on” the dam did not make much difference in the discussion of the authenticity, route, and timing of Thomson’s patrol,⁹ which the Cabinet Report deemed very critical because the area was vast and the patrol could have easily missed a small party of the Japanese assault force that was instructed to attack at 11 PM. Besides, had Thomson’s patrol party followed the tunnel system, which was not unreasonable or unwise in the darkness in such a vast area, their chances of not detecting any small party of the Japanese assault team would have magnified.

The location of the crossing, however, has an implication on the appreciation of the main line of attack by the Japanese after they cut through the barbed wire. Above all, it has a bearing on the design credibility of the Redoubt regarding the location of the pillboxes.

⁷ We inspected Doi’s account and found that he testified that the “the rear elements of the 3rd Battalion advanced along the dyke” (Doi 1952: 5), but did not actually say whether it was above or below the dam.

⁸ Whether they moved along the four-metre wide reservoir service road “on” the dam or a lower flat grassy platform (wider than four metres), which runs parallel to and “below” the service road does not make any significant difference.

⁹ Actually where the defenders’ patrol and the Japanese soldiers moved could make a huge difference depending on what soldiers call ‘intervisibility’, i.e. line of sight. Imagine that Thomson’s patrol kept to the water side of the 4m road and the Japanese to the dam side of their platform. Each could have passed without either seeing or hearing the other if the conformity of the dam ensured no intervisibility, which intuitively seems quite possible.

How did the Japanese troops attack the Redoubt after cutting the barbed wire?

Another major difference between the Cabinet findings and the Japanese source was that the former had been led to believe that the assault was carried out by the Japanese climbing up Shing Mun Valley right up to the positions on Smuggler's Ridge above Point 341 before descending to sweep the Redoubt. Most likely, this view was influenced by the skirmishes between the Rajputs and the Japanese to the west of the Redoubt and the sequence of the fall of the OP and the pillboxes. Apparently, the Cabinet Office paid attention to only one attack leader other than Colonel Doi, and that would be Lt. Wakabayashi.

The new Japanese source (Cheung Sha 1971) revealed that one of the immediate subordinates of Colonel Doi was Battalion Commander Major Nishiyama Haruka, who controlled two companies, the 9th and 10th under Lt. Kasugai and Lt. Wakabayashi, respectively. The wire cutting party and the captors of PBs 401b and 402 were part of the 9th Company, whereas the captors of the OP were with the 10th Company. Note that Wakabayashi did not personally lead the party that captured the OP. Indeed, the Japanese inscription referring to the capture of the Redoubt by Wakabayashi was not found inside the OP, but near the entrance of a tunnel (Shaftsbury Avenue) physically unconnected to the OP. Outside this entrance was a path junction that branched out (a) upwards to the OP and (b) eastwards horizontally towards the Strand Palace Hotel entrance.

We have reasons to believe that the following events are what actually happened. The Japanese actually ascended the Redoubt proper from near their assembly point near the Redoubt end of the Jubilee Dam, seeking to attack PBs 401b and 402. Subsequent reinforcements of the 10th Company also came up along the same route and then branched out southwards to invest the OP and Strand Palace Hotel through the Charing Cross or T3 (see **Figure 2**) tunnel entrance. After shooting at the Japanese for some time, the 19 Royal Scots who were not trapped inside the OP and PB 401b, *losing phone contact with their commander* in the OP or their comrades inside the pillbox, decided to move to a position on higher ground to conduct a better defence lest the Redoubt would be fully encircled by the enemy. Thus, they left five wounded behind and moved southwards through the underground tunnel system with which they were familiar, came out into the open, and ascended to higher ground on Smuggler's Ridge above the OP and the rest of the Redoubt. As they moved very quickly through the tunnels, they did not engage any enemy assault team, then largely above ground, before making contact with the Rajputs. It was very likely that when they reached the vicinity of the OP, it had already fallen and the Japanese there had turned north into the tunnel system in search of the remaining defenders and to capture the last pillbox.

The Japanese attackers numbered only about 40. Had they committed additional men to assault the higher

ground above the OP at the western end of Smugglers' Ridge, they would have been in position to intercept the withdrawing Royal Scots. Judging from the fine fighting record of the Royal Scots during the Battle of Hong Kong, we do not believe that they retreated from the enemy due to cowardice.

Facts about the layout of the Redoubt: How many OP exits were there?

In the Cabinet Report (Latham 1958), Banham (2003), and Lindsay (2005) were convinced that the defenders of the OP were "trapped" after the runner went out with the key to the gate. However, to reiterate, even a casual site visit would have revealed that the OP had more than one exit. There are 3 hatches and an exit that proceeds down Strand Palace Hotel via a tunnel. We could reconcile this apparent discrepancy with a careful reading of the Japanese source, which revealed how the party led by Mochizuki captured those inside the OP – they accidentally discovered an opening that led up it. Probably while other Japanese soldiers attempted to break into the OP from above, Mochizuki's party sought to break in from below, likely from trench T3, as our detailed site survey discovered and reported in the next section, into Charing Cross or the kitchen (Strand Palace Hotel) tunnel. This factual question about the physical layout of the OP brought us to a key factual error¹⁰ stated in the Cabinet Report.

Facts about the layout of the Redoubt: Was the OP connected to the Pillboxes by tunnels?

The Royal Scots' battle diary produced a sketch map showing that the OP was cut off from the main system of tunnels to the pillboxes. Maltby, the ranking British military commander in Hong Kong during the battle, admitted in a questionnaire to the Cabinet Office that he had never visited the Redoubt himself. In the absence of any independent field investigation, a large scale layout of the Redoubt, or oral evidence, the Cabinet inquiry found that key parts in the entire Redoubt were interconnected by tunnels. It was not certain how it arrived at this discovery, although whether the Redoubt consisted of one or more system of tunnels mattered little to us.

Modes of Fighting

How was the battle actually fought? The presence of the tunnels inside the Redoubt easily conjured up images of dramatic hot chases and fighting in subterranean corridors. (See, for instance, Banham's (2003: 38), Lindsay's (2005: 75, quoting Doi), Thrower's (1985: 90) accounts.) The following postwar (1946) description of the action at the Redoubt in the memoir of Lt. General Kitajima suggests that the actual fighting was much quieter, though no less exciting.

On the evening of 9th December, the vanguard led by Wakabayashi arrived at the hill overseeing Shing Mun Reservoir and saw the enemy's defences as inadequate.

The master plan was to attack after an initial

¹⁰ This is curious, as the sketch map ("Map 3") adopted by the Cabinet Office also shows a gap between the two tunnel systems. The map is conceptually and largely correct, but inaccurate as to scale and proportion.

bombardment by the artillery. Wakabayashi, of course, knew about the (bombarding) plan, but he judged that controlling the highland would be an advantage for future operations. He (Wakabayashi) insisted that his senior, Major Nishiyama, to agree to his night attack plan.

The small troop of Wakabayashi and his soldiers, using only grenades and edged weapons, attacked the enemy-held positions one after another from Highlands 255 to 341. Soon, they captured Highland 341.

During this night attack, the Japanese Army never fired a shot with its rifles, light machine guns, or light mortars.

British Captain James (Captain Jones, nicknamed “Potato Jones”), who was responsible for the defence of this area, could not expect this sudden attack. He could not find any way to fight back, and was captured (Kitajima 1946: underlines and brackets are the authors’).

Why were firearms hardly used? The answer to this question may be found in a detailed survey of the tunnel system of the Redoubt.

Overview

We do not consider the discrepancies regarding the mode of crossing the Shing Mun Valley, the mode of fighting, and troop movements to be significant, and believe that the general sequences of the actual fighting for the Redoubt recorded in the official war histories of the parties to the battle were authentic. What remained unclear was if the Redoubt could have warded off an invasion from across Jubilee Dam during the day had it been fully manned. This is question we shall examine.

RECONSTRUCTION OF THE REDOUBT: THE ARCS OF FIRE FROM ITS PILLBOXES AND FIRING TRENCHES

To evaluate the design of the Redoubt as a daytime static defence system, we conducted a land survey exercise in Winter 2008 and built a computer model in 2009 on the basis of our assumptions about the mounting, elevations, the range of the Vickers machine guns inside the pillbox, the OP, and the open firing trench of the Redoubt with a view to ascertaining their arcs of fire. We also expected the findings to inform us of the routes of the Japanese attacks.

The sources of background information for the land survey included an old British map prepared in 1957; a series of 1:1,000 basic topographical survey sheets (B1000) obtained from the Survey and Mapping Office of the Lands Department (Nos. 7-SW-12D, 7-SW-13C, 7-SW-17B, and 7-SW-18A); and a series of 1963 and 1964 aerial photos prepared by the British surveying company, R.C. Huntings. These low-level photos were the best postwar aerial photos of Hong Kong and

have been used by researchers to locate all surviving pillboxes of the Gin Drinker’s Line (Lai et al 2009).

We adopted the traditional ground survey method and used a calibrated Leica Total Station surveying instrument (TC405), together with associated accessories, to conduct it. The relevant precision and accuracy specifications for the captioned instrument are listed below:

Standard Deviation	5”
Measurement Accuracy	+/- (2mm +2ppm)

Prior to the actual field measurements, a desk study was performed through aerial photography and survey sheet interpretation followed by a one-day rapid route reconnaissance. Like most of the surviving pillbox ruins along the Gin Drinker’s Line, all the pillboxes in the Redoubt had their tops removed probably due to postwar anti-sabotage measures (Lai et al 2009). Thus, all pillboxes and open trenches were easily identified in the aerial photos. This preparation stage provided an early indication of the likely extent of the ground situation and/or features that had to be confirmed or re-established during the site survey process.

Only several control stations were established by GPS surveying, while the traditional traversing method was adopted as the principal approach for providing subsequent control stations. These subsequent controls were then used as survey stations to radiate the details of underground tunnels and other military features, notably the pillboxes and open trenches. The reason why the traditional ground survey method, rather than GPS, was used for measuring the details is twofold:

- Most of the military features (e.g. tunnels, trenches, etc.) were either located beneath the ground and/or covered by dense vegetation. GPS surveying, which requires open sky conditions to receive satellite data, is not feasible in this respect.
- The absolute positions of the surveyed details were crucial for this project. The traditional radiation survey method would provide a far more reliable and robust result, particularly for small and dilapidated features like pillboxes and trenches.

Upon establishing the control stations, sketches were drawn by the field surveyors and photographs were taken of the respective features. This is a standard professional survey record process, and it proved to be very valuable, as some uncertainties during the field measurements could be readily rectified during the later office reduction stage.

Points of detail were then obtained by 3D topographical survey (Northings, Eastings, and Height), and the single radiation method was applied to measure these physical features. All crucial military features, such as underground tunnels, pillboxes, existing concrete platforms or trenches, the crests and toes of slopes, etc., were then surveyed. The surveyed details were then uploaded to the computer and plotted onto the relevant 1:1,000 base maps using either AutoCAD2007

or MicroSurveyCAD 2009.

In generating the Lines of Sight/Fire covers, the commercial GIS software, “ESRI ArcGIS,” with its extension package, viz., 3D spatial analysis, was used to construct a three-dimensional view of the interpolated surface. There was, indeed, other GIS software (e.g. Global Mapper; MicroDEM; ERDAS Imagine, and IDRISI) on the market that was also capable of generating 3D views and contained a similar analyzing function, but we selected ArcGIS to conduct the analysis for the following reasons:

- It was probably the most common GIS software used in Hong Kong, if not the world. Many GIS and land-related professionals have used the software since their training/studying periods.
- In light of its popularity in the industry, the software’s problems of data conversion, data format, and data compatibility could be minimized.
- It contains many user-friendly, built-in functions that can be used to generalize results.
- Other GIS software contained different limitations in building up the surface model.

After all the surveyed details were generated and plotted in AutoCAD format, the data was then, layer by layer, incorporated and geo-referenced into the ArcMap with the B1000 as base maps.

By abstracting the digital contour information, as contained in the base maps, a Triangular Irregular Networks (TINs) model was then built to create the 3D terrain model of the Shing Mun Redoubt. TINs, which are digital geographic data in the form of a vector base, were established by triangulating a set of vertices. These vertices were connected with a series of edges to form a network of triangles.

Upon completing the TIN model, the elevation values for any location on the TIN surface could then be interpolated using the values of the triangles’ nodes.

In ArcMap, some built-in tools could be used to analyse the visibility of the parts of the resulting model surfaces. In this project, two major tools, viz, the *Line of Sight* and *Viewshed*, were used:

- The *Line of Sight* tool identifies whether or not one location is visible from another and whether or not the intervening locations along a line between the two locations are visible (ESRI, 2006).
- The *Viewshed* tool can be used to find the places that can be seen from one or more observation points or lines. It calculates for each cell of a raster surface and codes them to indicate if they are visible (ESRI, 2006).

For analysing firing arcs and lines of sights, we made some basic technical assumptions:

- The elevation and depression observation angles of the Vickers Machine Gun (MG) were 20 degrees and 30 degrees, respectively.

- The effective observation range of the MG was 600m at all angles.
- There was an average plant height of one metre at the Shing Mun Redoubt in December 1941.
- There was no material change in the natural topography between December 1941 and the present except that which was already reflected in the survey plan.
- The heights of the observers at the PBs and OP were 1.2m above the floor level.
- The heights of the observers at the concrete firing trenches were 0.7m above the floor level.
- The heights of the observers at the dam were 1.2m above the floor level.
- The targets at the PBs and OP were one metre above the floor level.
- The targets at the concrete firing trenches were 0.5m above the floor level.
- The targets at the dam were at the ground level.
- The average refraction factor was applicable.
- The Earth’s curvature was negligible.

The key findings are shown in **Figures 2 to 5** and **Table 2**.

Figure 2 shows the horizontal surveyed layout of the entire Shing Mun Redoubt as it existed in Winter 2008 with the names of the tunnels (which were actually inscribed on the walls of the tunnels and the open trenches, to which numbers T1 to T9 were assigned by the authors for ease of reference. The question as to whether there was one or are two systems of tunnels has been answered: there were two separate systems. This shows that the tunnels were deliberately not built in straight lines, but in a zig-zag manner with varying widths. This was certainly a design feature to prevent the enemy’s ‘enfilade fire’ from easily shooting inside the tunnel. During the survey, we identified from aerial photos and measured a concrete bunker or block house, now in ruins, very close to Jubilee Dam. Marked on our maps as “Position X”, this site had never been reported, but would have altered the course of the fight for the Redoubt had it been manned as a forward post with machine guns. This post covered the entire Jubilee Dam and the slopes of Needle Hill descending to the dam.

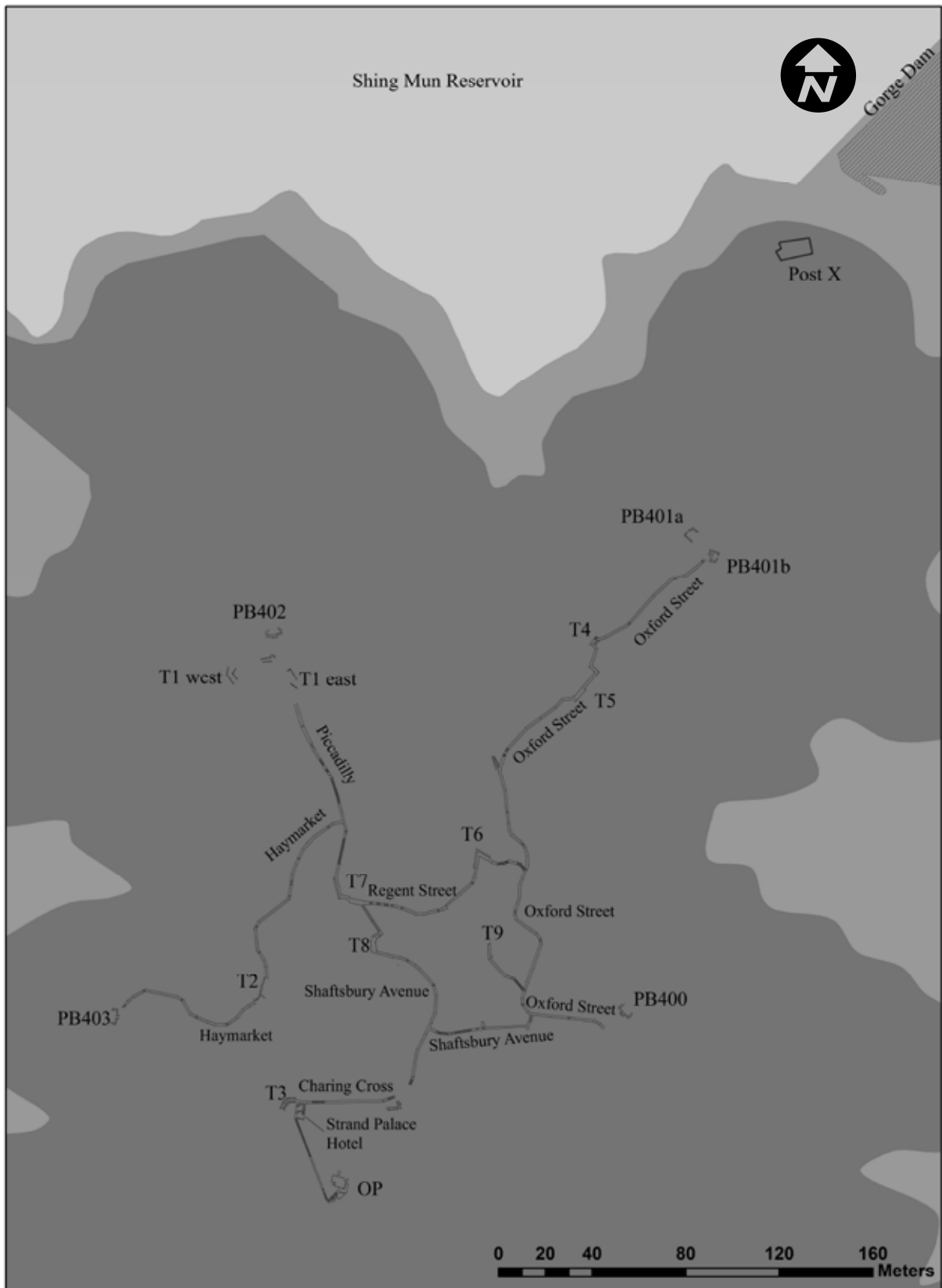


Figure 2: Full horizontal surveyed layout of Shing Mun Redoubt

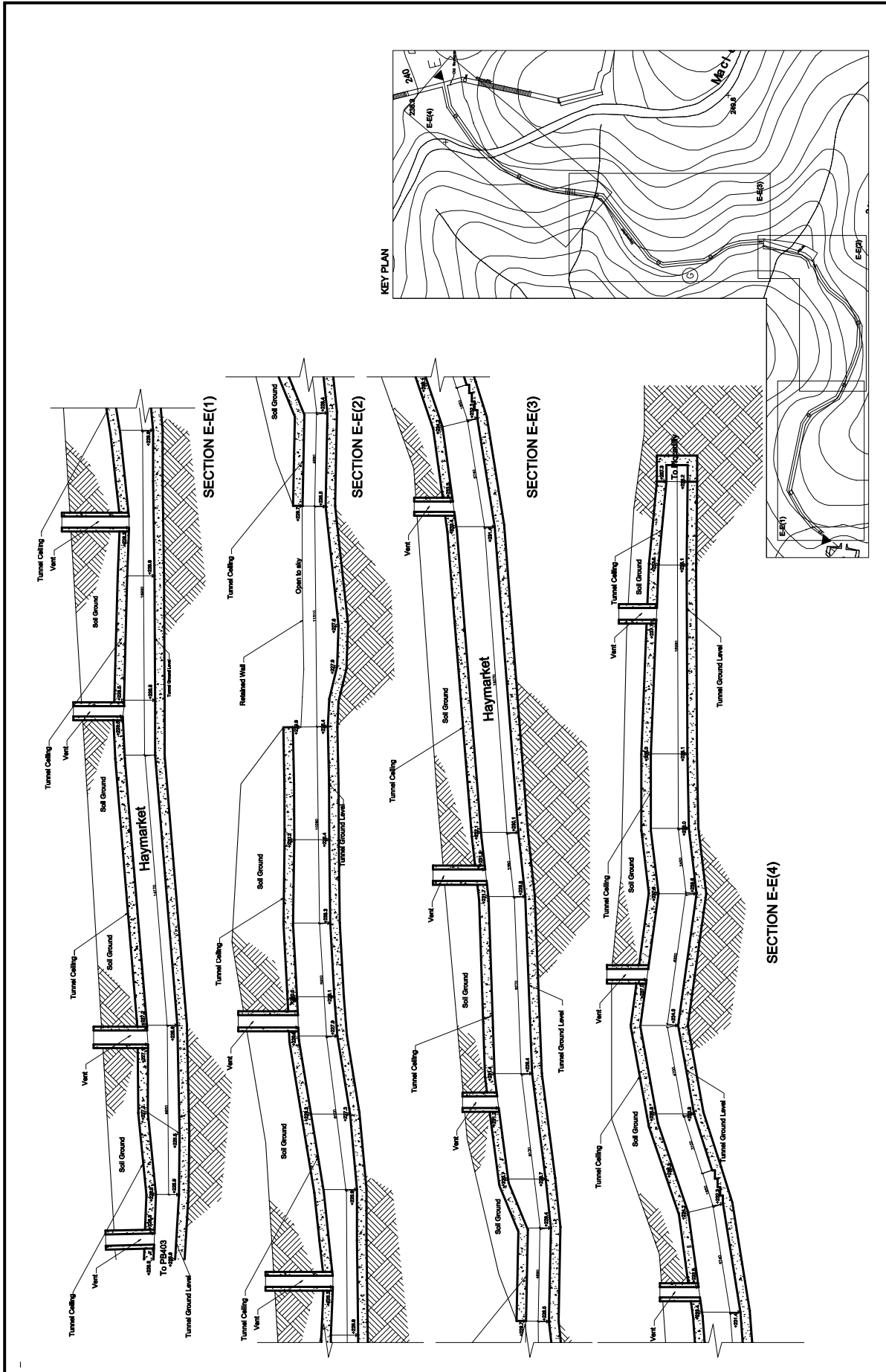


Figure 3: Selected vertical profiles of Shing Mun Redoubt from PB 401b to PB 403 (from Piccadilly to Haymarket)

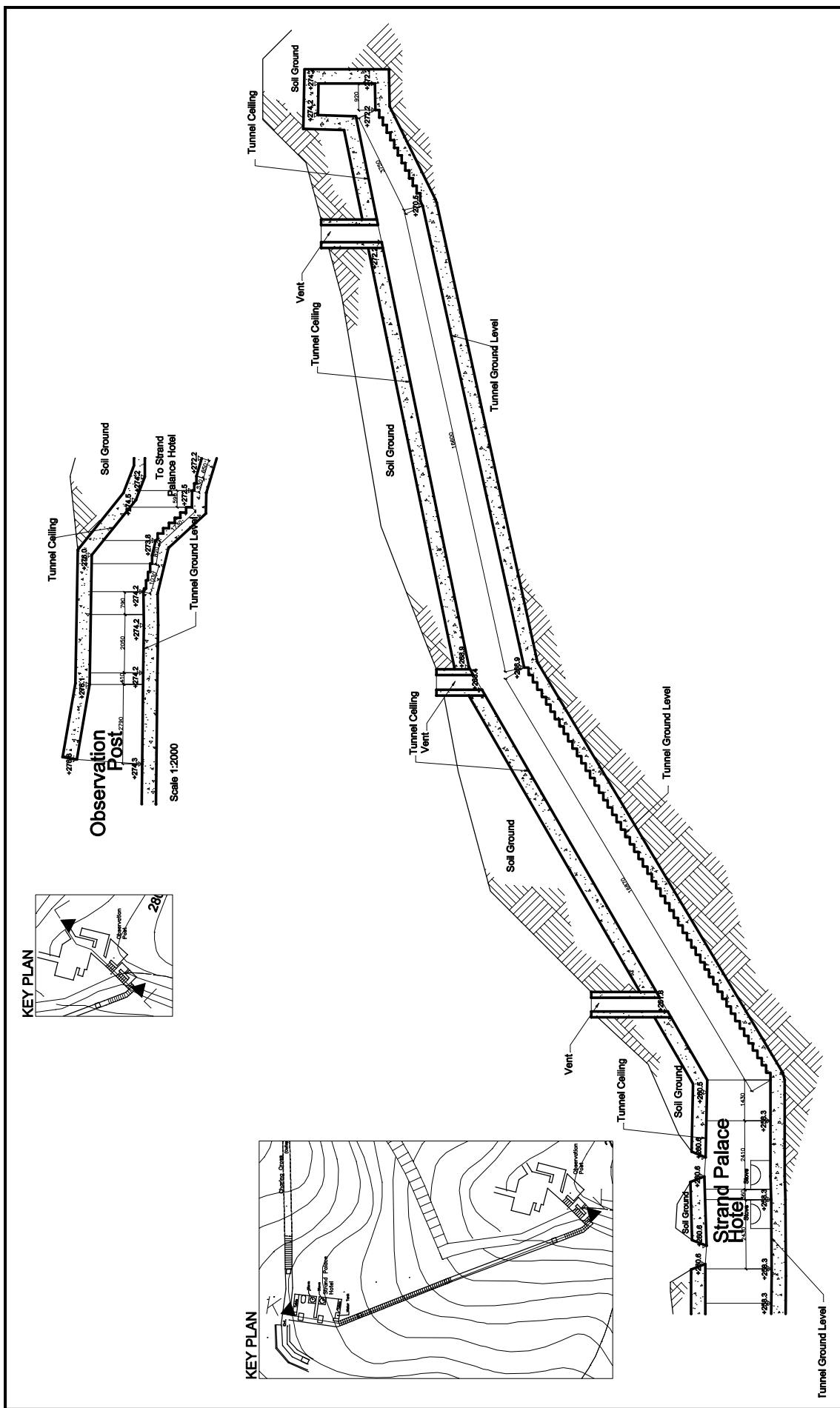


Figure 4: Selected vertical profiles of the Command Centre (Artillery Observation Post) of Shing Mun Redoubt

Figure 3 shows the selected vertical profiles of the Shing Mun Redoubt from PB 401b to PB 403 – a total ground distance of 494 metres. To move from one place to another, a person must go up and down steps here and there inside zig-zagging tunnels of varying heights and widths, and with roofs punctuated by vertical air ducts and floors punctuated by rainwater basins that could have also served as grenade traps. We may infer that chasing and shooting inside the tunnel system with “long arms” (such as rifles and MMGs) was difficult and even hazardous. This supports the Japanese account that they did not shoot much, if at all.¹¹ Shooting had to be confined to areas outside the tunnels. The dropping of grenades down air ducts along tunnels was possible, but this might kill both friends and enemies that were already fighting inside¹². **Figure 4** shows the vertical profiles of the Command Centre (Artillery Observation Post) of the Shing Mun Redoubt and the kitchen below. As explained above, we believe that Sergeant Mochizuki invaded the OP from the trench T3 outside the kitchen, which had two crucibles with stoves and water tanks.

Table 2 and **Figure 5** address the questions of mutual fire support by the defensive structures of the Redoubt. **Table 2** shows the lines of sight from any one PB or trench vis-à-vis all other PBs and trenches. Each defensive post was guarded by at least one other post as long as the other post was manned. **Figure 5** shows the beaten zones of the PBs, OP, and trenches derived from

the assumptions and methods mentioned. The key facts established are that the entire access road along Jubilee Dam and its landings along the slopes of Needle Hill were under the direct fire cover of PB 402, and that the slopes on the Needle Hill side of the Shing Mun River Valley were covered by PB401b. The key findings based on **Figures 2 and 3** are:

- (1) The Royal Scots’ depiction of the OP as being separated from the rest of the Redoubt in terms of tunnel connection was correct: there was a gap between Charing Cross and Shaftsbury Avenue (**Figure 2**).
- (2) The Artillery OP/Command Centre of the Redoubt has more than one exit: T3 was the nearest and Charing Cross the farther alternative exit to the 3 hatches. (**Figures 2 and 3**).
- (3) The concrete tunnels inside the Redoubt varied by height and width and included vertical air ducts and rainwater/grenade traps (**Figures 2 and 3**).

We may infer from (3) that the built form prevented the enemy from easily shooting or undertaking a fast pursuit during the battle, as lines of sight were near zero and a person could easily stumble or collide with something in the darkness.

Observer	PB400	PB401a	PB401b	PB402	PB403	OP	T1(West)	T1(East)	T2	T3	T4	T5	T6	T7	T8	T9
PB400		I	V	I	I	V	I	I	I	I	V	V	I	I	I	V
PB401a	V		I	V	I	I	I	I	I	I	V	V	V	V	I	V
PB401b	V	I		I	I	I	I	I	I	I	I	V	V	V	I	V
PB402	I	V	I		I	I	I	I	I	I	V	I	I	I	I	I
PB403	I	I	I	I		I	V	I	I	I	I	I	I	I	I	I
OP	V	I	I	I	V		V	V	I	V	I	I	I	I	V	I
T1(West)	I	I	I	I	I	V		I	I	V	I	I	I	I	V	I
T1(East)	I	V	I	I	I	V	I		I	V	V	I	V	I	V	I
T2	I	I	I	I	I	I	I	I		I	I	I	I	I	I	I
T3	I	I	I	I	I	I	V	V	I		I	I	I	I	V	I
T4	V	I	I	I	I	I	I	I	I	I		V	I	I	I	I
T5	V	I	I	I	I	I	I	I	I	I	V		I	I	I	I
T6	I	V	V	I	I	I	I	V	I	I	V	I		V	I	I
T7	I	V	I	I	I	I	I	I	I	I	I	I	I		I	I
T8	I	I	I	I	I	I	I	V	I	V	I	I	I	I		I
T9	V	V	V	I	I	I	I	I	I	I	V	V	I	I	I	

Table 2: A visibility analysis of all pillboxes and firing trenches of the Shing Mun Redoubt

Remarks and Basic Assumptions

1. V - Visible
2. I - Invisible
3. PB - Pill Box No.
4. T - Trench No.
5. OP - Observation Post
6. Height of Observers at PBs and OP are 1.2m above floor
7. Height of Observers at concrete firing trenches are 0.7m above floor
8. Targets at PBs and OP are 1.0m above floor
9. Targets at open trenches are 0.5m above floor
10. Earth curvature factor negligible
11. Average refraction factor applicable
12. This table should be read in conjunction with Plan No. HKU/SMRD-01

¹¹ A lot of night attacks used to be made with grenades and edged weapons because that way one reduces the likelihood of ‘friendly fire’ casualties, especially at close quarters. One also ensures that, without muzzle flashes, the enemy is not sure of the location of an attacker.

¹² Evidence of explosions of grenades, all dropped from the east through air vents along tunnels, can be found in a few places along Oxford Street (north of T4 and near T9) other than within the OP.

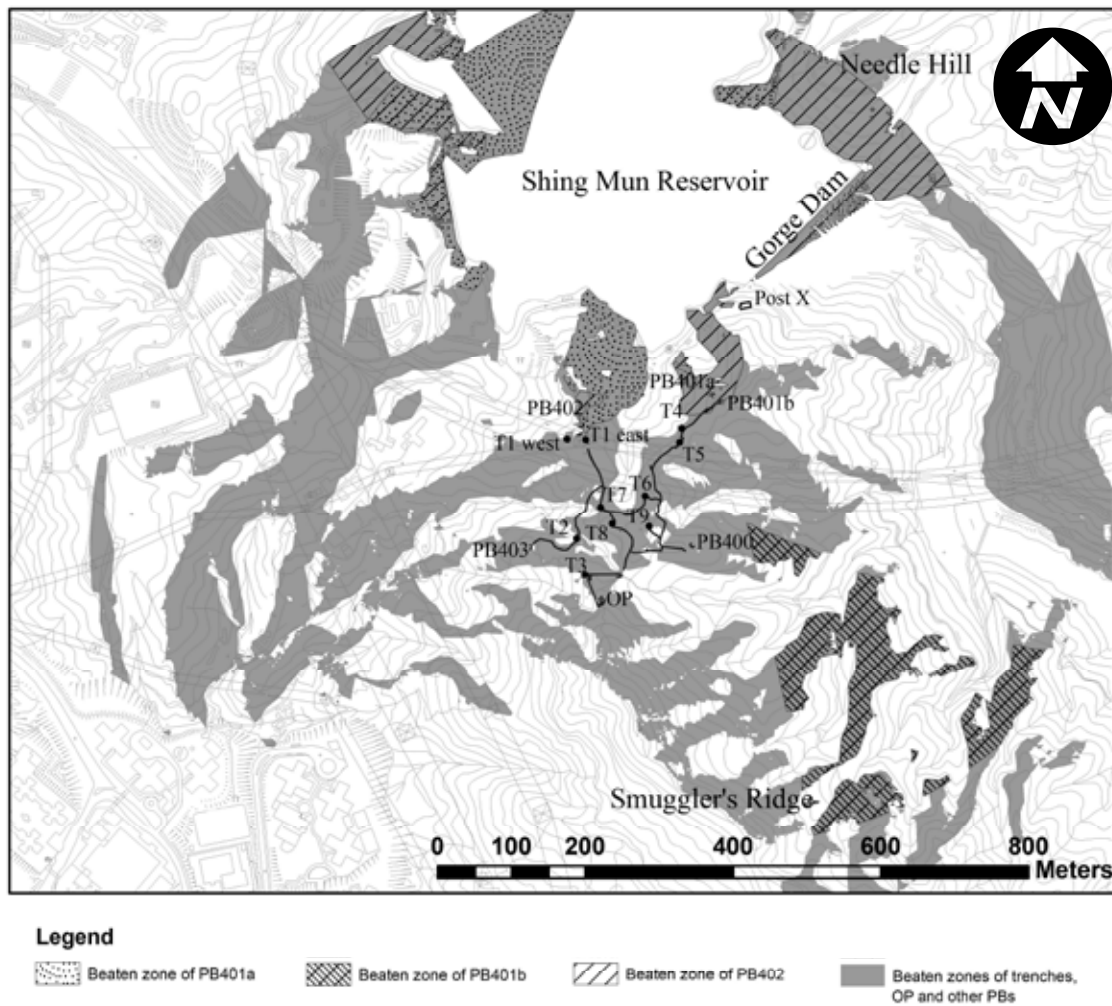


Figure 5: Beaten zones of all pillboxes, OP and trenches of Shing Mun Redoubt

The key findings based on **Figure 2**, **Figure 5**, and **Table 2** are:

- (1) The northern and middle sections of the Jubilee Dam and the slopes immediately above the western bank of the reservoir were well-covered by the machine gun fire of PB 402 (**Figure 2**). Fire cover from the dam could have been provided by Position X.
- (2) The eastern slopes of Needle Hill down to the Shing Mun River were well-covered by the machine gun fire of PB 401b (**Figure 2**).
- (3) The left flank of PB401b was partially protected by the machine gun fire of PB 401a (**Figure 2**).
- (4) The PBs, OP/Redoubt Command Centre, and were the firing trenches were mutually covered to different degrees (**Table 2** and **Figure 5**).
- (5) The OP did not cover or enjoy any line of sight in relation to the Jubilee Dam, but had a good line of sight towards PB400, T1 behind PB402, and

PB401 on the right, centre, and left (**Table 2**).

- (6) PB402 had good line of sight towards PB401a, the rear of PB401b, and the entire Jubilee Dam (**Table 2**).
- (7) Either T8 or T9 on a knoll was the likely Platoon Headquarters.

Based on the above findings, we may infer that the design of the Redoubt, assuming that the neglected Position X was part of the defensive system, was not defective in terms of fire cover, and possessed lines of sight in the face of a day attack from Needle Hill. Against an attack on this position, the machine gun fire cover of Position X, PB401b, and PB402 would have been of great value as long as they were supported by friendly forces positioned along the open trenches.

Figure 6, produced using aerial photos, shows the view of the Redoubt commanded by the Japanese troops on Needle Hill. The lower terrain of the defenders allowed the invaders to enjoy a superb advantage in reconnaissance.



Figure 6: View of the Shing Mun Redoubt from Needle Hill area

CONCLUSION

We carried out a land survey exercise for the Shing Mun Redoubt due to a number of bewildering questions that arose from our documentary analysis. Why were there so few casualties for a fight that both sides took so seriously (especially the defenders)? The defenders' post-war consensus was that the attack first hit the OP and then swept northwards towards PB401 and PB402, but the Japanese account showed that it was a direct north-south movement that branched off to catch the 15 to 20 mysteriously trapped soldiers in a position (factually separate from the rest of the redoubt in terms of tunnel connection) with at least three exits, which a site visit could easily establish. So the defenders' explanation that they were locked in from the outside by a private had to be incomplete.

Whether the construction of a redoubt with pillboxes connected by underground tunnels could enable a numerically inferior garrison of 42 soldiers, slightly larger than one platoon, stationed at lower ground to resist for a considerable period of time a full regiment of a determined enemy attacking from a commanding height (Needle Hill) and enjoying a good view of the defenders' exposed positions was an issue on which this paper attempted to shed some light.

This professional land survey of the Shing Mun Redoubt, based on questions of documentary analysis, is the first of its kind for any battlefield in Hong Kong or elsewhere in Asia that was defended by the British. It employed techniques used by the surveying industry and GIS researchers, and the findings are useful not only for historians and enthusiasts of a small battle in a small theatre of war in the Pacific during World War

II, but also for heritage conservationists. The line of sight analysis was pivotal in locating and disseminating information on the vantage points of a heritage site. The results of our analysis are of immediate practical use for the battlefield tourist development of Shing Mun Reservoir as part of a looming heritage conservation movement in Hong Kong, while the methods used should serve as a solid reference for developments elsewhere.

REFERENCES

- Badsey S (2002), Terrain as a Factor in the Battle of Normandy, 1944, *Fields of Battle: Terrain in Military History*, Doyle, Peter and Bennett, Mathew R (eds.), Kluwer Academic Publishers, Dordrecht, Netherlands, 345-363.
- Banham T (2003), *Not the Slightest Chance: the Defence of Hong Kong, 1941*, Hong Kong University Press, Hong Kong.
- Dakowicz M and Gold CM (2003), Extracting Meaningful Slopes from Terrain Contours, *International Journal of Computational Geometry and Applications*, 13:4, 339-357.
- Director of Public Works (1937), *Report of the Director of Public Works for the Year 1937*, Public Works Department, Hong Kong.
- Doi T (1952), Battle Progress Report of the 228th Infantry Regiment in the Hong Kong Invasion Operation in December 1941, PRO record.
- Doyle P and Bennett MR (2002), Terrain in Military

- History: An Introduction, *Fields of Battle: Terrain in Military History*, Peter Doyle and Mathew R. Bennett (eds.), Kluwer Academic Publishers, Dordrecht, Netherlands, 1-7.
- ESRI (2002), *Using ArcGIS 3D Analyst*, ESRI ArcGIS Desktop Help Manual.
- Forkuo EK (2008), Digital Terrain Modelling in a GIS Environment, *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XXXVII B2.
- Fujita T (u.d.), Hong Kong Bombardment, 26 December 1941, *Asahi Shimbun*. (Japanese publication)
- Germino MJ, Reiners WA, Blasko BJ, McLeod D and Bastian CT (2001), Estimating Visual Properties of Rocky Mountain Landscapes using GIS, *Landscape and Urban Planning*, 53, 71-83.
- Griffith SB (1971), *Sun Tzu: the Art of War*, Oxford University Press, London.
- Henderson J (2007), Remembering the Second World War in Singapore: Wartime Heritage as a Visitor Attraction, *Journal of Heritage Tourism*, 2, 115-136.
- Hill M and Lian HF (1995), *The Politics of Nation Building and Citizenship in Singapore*. Routledge, London.
- Honkon Chosa Sakusen* (Hong Kong-Cheung Sha Battle) (1971), Boeicho Boeikenshusho Senshishitsu, Asgumo Shimbunsha, Tokyo. (Japanese publication)
- Ip PW (2007), The Role of Heritage Conservation in Enhancing Tourism Development in Stanley, unpublished Master of Urban Design dissertation, The University of Hong Kong.
- Kirby SW (with C.T. Addis, J.F. Meiklejohn, G.T. Wards, N.L. Desoer) (1957), *The War Against Japan, Vol. 1, The Loss of Singapore, History of the Second World War*, United Kingdom Military Series, HMSO, London. (Reprint Naval & Military Press, Uckfield, 2004).
- Kitajima, K (1946), The discretion of Wakabayashi, *Memoirs of Lieutenant General Kitajima Kineo*, October 1946. (Japanese publication)
- Ko TK and Wordie J (1996), *Ruins of War: a Guide to Hong Kong's Battlefields and Wartime Site*, Joint Publishing, Hong Kong.
- Lai LWC (2001), The Battle of Hong Kong: a Note on the Literature and Effectiveness of the Defence, *Journal of the Hong Kong Branch of the Royal Asiatic Society*, 39, 115-136.
- Lai LWC and Ho DCW (2002), Devil's Peak Ruins, A Glimpse of a British Stronghold, English documentary, funded by the Lord Wilson Heritage Trust, 2002 (30 minutes).
- Lai LWC and Ho DCW (2003), Facilities Management and Planning for Heritage Sites: Lessons Learnt from a Pilot Study on Disused Military Sites, *Facilities*, 21:3/4, 80-88.
- Lai LWC and Ho DCW (2007), The Guns of Pottinger: a Snapshot of the Maritime Defence of Colonial Hong Kong and Ideas for Conserving a Heritage Site, English documentary, funded by the Lord Wilson Heritage Trust, 2005 (90 minutes).
- Lai LWC, Ho DCW and Leung HF (2003), Survey of the Devil's Peak Redoubt and Gough Battery, *Journal of the Hong Kong Branch of the Royal Asiatic Society*, 42, 101-137.
- Lai LWC, Ho DCW and Yung P (2007), Survey of the Pottinger Battery, *Journal of the Hong Kong Branch of the Royal Asiatic Society*, 47, 91-114.
- Lai LWC, Davies SNG and Tan YK (2008), To Action on the Gin Drinker's Line, *British Archaeology*, July/August, 32-35.
- Lai LWC, Tan YK, Davies SNG and Ping Y (2009), The Gin Drinker's Line: Reconstruction of a British Colonial Defence Line in Hong Kong Using Aerial Photo Information, *Property Management*, 27:1, 16-41.
- Latham HB (1958), Report on the Action of the 2nd Battalion The Royal Scots in the Fighting on the Mainland during the Hong Kong Campaign 8th -13th December 1941, Prepared at the request of the Chairman of the Battle Honours Committee, Historical Section, Cabinet Office, UK, January 1958. National Archive Ref. CAB 44/175 320817 [Cabinet Report].
- Lathrop Jr RG and Bogner JA (1998), Applying GIS and Landscape Ecological Principles to Evaluate Land Conservation Alternatives, *Landscape and Urban Planning*, 41, 27-41.
- Li CY (2002), *So, the Japs Attacked Hong Kong*, B and A Publications, Toronto.
- Lindsay O (2005), *The Battle for Hong Kong 1941-1945: Hostage to Fortune*, Hong Kong University Press, Hong Kong.
- Mak ASH, Ip EKM and Lai PC (2005), Developing a City Skyline for Hong Kong Using GIS and Urban Design Guidelines, *URISA Journal*, 17:1, 33-41.
- Mak ASH, Ip EKM and Lai PC (2005), Too much or Too Little: Visual Considerations of Public Engagements in Environmental Impact Assessments, *VISUAL 2005*, Bres, S. and Laurini, R. (eds.), LNCS 3726, Springer-Verlag, Berlin, 189-202.
- Matsuura M (2007), "Portrait of Showa Era: the Military Operation on Hong Kong, Rikugun Daigakko (The Army University), December 2007. (Japanese

publication)

Muir A (1961), *The First of Foot: the History of the Royal Scots*, William Blackwood and Sons, Edinburgh.

Osborn M (2008), *Pillboxes of Britain and Ireland*, Tempus Publishing, Chalford.

Pearson AW (2002), Allied Military Model Making during World War II, *Cartography and Geographic Information Science*, 29: 3, 227-241.

Phang LT (1998), Sites Reflect Diverse History, *The Straits Times*.

Rose EPF, Ginns WM and Renouf, JT (2002), Fortification of Island Terrain: Second World War German Military Engineering on the Channel Island of Jersey, a Classic Area of British Geology in *Fields of Battle: Terrain in Military History*, eds. by Doyle, Peter and Bennett, Mathew R., Kluwer Academic Publishers, Dordrecht, Netherlands, 265-309.

Smith V (1996), War and its Tourist Attractions, *Tourism, Crime and International Security Issues*, Pizam, A. and Mansfeld, Y. (Eds.), John Wiley and Sons, Chichester, 91-114.

Stewart E (2005), *Hong Kong Volunteers in Battle*, Blacksmiths Books, Hong Kong.

Thrower SL (1985), *Hong Kong Country Parks*, Government Printer, Hong Kong.

Waters D and McEvan A (2005), Colin McEvan's Diary: the Battle for Hong Kong and Escape into China, *Journal of the Royal Asiatic Society Hong Kong Branch*, 45, 41-115.

“Pillbox 3 did not open fire!” Mapping the Arcs of Fire of Pillboxes at Jardine’s Lookout and Wong Nai Chung Gap

Lawrence W.C. Lai*, Ken S.T. Ching**, Tim Ko*** and Y.K. Tan****

ABSTRACT

This technical note explains why Pillbox No 3 at Wong Nai Chung Gap was not operating during the contest for Wong Nai Chung Gap on 19 December 1941. The explanation is based on digital analysis of data obtained by post war aerial photos, survey maps and field surveys. This is the first professional mapping exercise for the battlefield of Wong Nai Chung Gap. Some interesting discoveries in field surveys confirm the authenticity of features depicted in a Japanese portrait of the Gap.

MOTIVATION

On 19 December 2011, it will be the 70th anniversary of the decisive battle of Jardines Lookout-Wong Nai Chung Gap in which the lives of many defenders – British, Canadian, Indian and the Hong Kong Volunteers Defence Corp (HKVDC), as well as the enemy – were lost. “The defenders lost 160 out of 230 men engaged. Of nine officers, six were killed and two wounded” (Stewart 2005: 30). Brigadier J.K. Lawson, from Canada, of the West Brigade and his HQ staff were all killed in action at the doorsteps of the Brigade HQ near the Gap. The loss of Wong Nai Chung Gap signified the severance of the East Brigade from the West Brigade and the beginning of the final collapse of British resistance on Hong Kong Island. In eliminating this position, the invaders nevertheless suffered at least five times as many casualties as the defenders, or “more than 800 men”, according to Colonel Shoji (Stewart 2005: 30). During the occupation, the Japanese military authority erected a monument in honour of Lawson outside the Brigade HQ. This testified to the recognition of the bravery of the defenders, as the

Japanese Army had a great distaste for cowardice.

The battleground, as shown in Figures 1 and 2, was on various parts of the hill called Jardines Lookout (JLO)¹ located to the east of Mount Nicholson with the northern embankment of Wong Nai Chung Reservoir, on which Stanley Gap Road (renamed Tai Tam Reservoir Road after the war) ran, as its southern boundary. Three pillboxes (PBs) are shown. PB1 and PB2 faced Mount Nicholson, on the lower slopes of which PB3 is located overlooking Wong Nai Chung Gap. (A police station once stood on the knoll, “Police Station Knoll”, in this area, now occupied by a private house No.1 Repulse Bay Road). PB1 is above a catchwater, which drains into Wong Nai Chung Reservoir, whereas PB2 is below it. Below PB2 is Sir Cecil’s Ride (which we shall call “the Ride”), which is annotated as “Clementi Ride” (Sir Cecil’s Ride) in the sketches. (Sir Cecil Clementi was Governor of Hong Kong from 1925 to 1930.) All three pillboxes were built of reinforced concrete with loopholes equipped with Vickers MG gun mounts. PB1 and PB2 have four loopholes whereas has PB3 three (see Lai et al 2008).

* Professor, Department of Real Estate and Construction, Faculty of Architecture, University of Hong Kong

Email: wclai@hku.hk

** Chartered Land Surveyor

B.Eng.(Hons) (UNSW), M.G.I.S.(HKU), FHKIS, MRICS, RPS(LS), ALS, MCI Arb, MSSI(Aust.), MIS(Aust.)

Email: keland@biznetvigator.com

*** Hong Kong Historian

Email: kotimkeung@netvigator.com

**** Research Assistant, Department of Real Estate and Construction, Faculty of Architecture, University of Hong Kong

Email: tanyk@netvigator.com

¹ The hill owed its name to its early use as a lookout for the British firm Jardines which, like all shipping companies, wanted the earliest warning of the impending arrival of its own or rival company ships. Jardines Lookout, immediately uphill from Jardine’s East Point company buildings, commands a view of the western approaches.



Photo 1 – The attack on Pillboxes 1 and 2

Many of the casualties suffered by the Japanese attackers were inflicted by two pillboxes (PB 1 and PB2) held by No. 3 (Machine Gun) Company of the HKDVC, which comprised mainly Eurasian Hong Kong citizens. A wartime painting by a Japanese artist (**Photo 1**) showing Japanese soldiers fighting uphill, with Mount Nicholson and Wong Nai Chung Gap Road in the distant background to provide geographical context, obviously refers to their costly assaults on these two pillboxes up from the Ride.

Unlike other fighting elsewhere during the Battle of Hong Kong, the dispositions of the defenders and invaders were recorded in two almost identical sketches (the smaller scale at 1:20000) in a war diary ("War Diary") written by Major G. Evan Stewart, the commander of No.3 Company of the HKVDC, while he was interned in a Japanese POW camp.

This present work is however the first to provide accurately surveyed locations and measurements of the defensive structures of this major battlefield, some of which have been concealed by heavy postwar overgrowth, for the benefit of historians and military experts who are interested in the Battle of Hong Kong, but have never been able to evaluate certain aspects of the battle scientifically due to the absence of accurate maps.

PURPOSE

This short paper represents the first professional mapping exercise for the defensive structures on the battlefield of Wong Nai Chung Gap during the Battle of Hong Kong, with particular attention paid to the firing arcs of PBs1 to 3. Some of these structures (save the PBs) have never been marked on government survey maps.

METHODS

This exercise involved examining archival materials and aerial photos (in order to locate the structures for surveying), field trips and actual site measurements using standard land surveying tools, and line of sight analysis. The starting point is the larger scale sketch by Major Stewart in his war diary. The only structures that we have not been able to ascertain are posts JLO 1, 2, and 3 and those along the Ride. Those on (and including) Blue Pool Road, now buried under the Hong Kong Cricket Club grounds and reclaimed by 1972 post war, were identified using aerial photos of 1949 and 1963.

The exercise shows how GIS techniques can be used for heritage mapping and explaining gaps in a battle's history.

The authors visited the structures marked in the larger

sketch in Major Stewart's war diary during the period from early 2008 to Winter 2010. All land surveying and GIS work was done by the second author.

THE BATTLE OF JARDINES LOOKOUT AND WONG NAI CHUNG GAP

The Japanese attack consisted of two pincer movements towards Wong Nai Chung Gap. One prong rushed the post of Lieutenant French at Mount Butler Gap from the Ride, and then went north-south along the Ride until it arrived below a spot near PB1 and PB2 on the western slope of Jardines Lookout. From here, one party branched out to cross the narrow upper Wong Nai Chung stream valley to rush the posts on the upper reach of Blue Pool Road near the West Brigade HQ. Another prong moved pushed up Stanley Gap Road from the east. (It is uncertain whether this prong branched off at Mount Butler Gap from the group travelling on the Ride, which entailed hard climbing down steep slopes in the darkness, or rather moved up from Sanatorium Gap, now called "Windy Gap," farther north.) The objective of both prongs was to capture Wong Nai Chung Gap, and then take Middle Gap and Wanchai Gap at the northern end of Mount Cameron, with Magazine Gap above the Battle Box at the Victoria Barracks (now Island Shangri-La Hotel, Queensway) being the ultimate target.

While the Japanese succeeded in capturing Wong Nai Chung Gap after 16 hours of fighting, the two pillboxes held by the HKDVC blunted their advance party and remained a thorn in their side until they surrendered at 18:00 on 19 December after all the walking wounded had evacuated and there was no more ammunition.

BATTLE OF THE TWO PILLBOXES

During the night of 18 December 1941, PB1 and PB2 were manned by 20 men of the No.9 Platoon and commanded, respectively, by Lt. Bevan Field and L/Sgt White. During the early morning of 19 December, PB1 was the assembly point for Lt. French and platoon, which was sent to guard the catchwater at Mount Butler Gap, and the Canadian platoon led by Lt. Birkett, which was on its way to the summit of Jardines Lookout. The former was wiped out completely at its post soon after the attack commenced.

JLO1 and 2 were overrun and JLO 3 was bypassed by no later than 3:00. A party of the attackers worked its way up Jardines Lookout from JLO2 and ran into Birkett's platoon, which held its position until the afternoon.

PB1 opened fire at an estimated 400 enemy soldiers² on the southern part of the Ride at 06:20. "Enemy was close[ly] massed and unable to extend of take cover rapidly." (War Diary) Until 06:30, PB1 poured deadly MG fire on enemy troops "moving up ridge between the Ride and Stanley Gap...In the quarter-light, their small flags and white gloves (of the commanders see **Photo 1**) gave them away." (War Diary) Then, from 06:30 to 06:40, the Japanese climbed up the slopes from the Ride in an attempt to overrun PB1, but were repulsed. At 06:45, PB1 fired at the enemy rushing Wong Nai Chung Gap and the Police Station knoll. "Enemy again caught 'en masse' and casualties heavy." (War Diary)



Photo 2 – Japanese soldiers at the heavy AA gun battery.

² Another source (Banham 2005: p. 124) reported 250.

By 07:40, the Japanese were "in possession of the whole JLO area except PBs". (War Diary) This meant that the heavy AA Gun position and the bunkers in the vicinity (**Photo 2**), including those guarding Stanley Gap Road, were lost. Stanley Gap was lost at 08:30.

"Enemy left us alone." (War Diary) The defenders blocked the PB ventilating outlets with blankets and greatcoats.

After the Japanese captured Stanley Gap, they concentrated their efforts to take PB1 and PB2 "by heavy mortar-fire alternating with infantry attacks." (Stewart 2005) Most of the defenders were wounded more than once.

Two Japanese attempts to advance along the catchwater were frustrated by the defenders, who came out and threw hand grenades into it.

At noon, a Japanese party attempted to throw hand grenades through the loopholes of PB1, but was wiped out by the defenders of PB2, who came out to help. As all MG guns of PB1 had been knocked out, Lt. Field led his surviving men into the open and fought on with rifles and light MG.

Five Canadian survivors from the summit of JLO joined the defenders of PB1 at about 13:30. At about 15:00, Lt. Field ordered L/Cpl Broadbridge and 12 men (including five walking wounded) to evacuate and held on with a few defenders.

At 18:00, all the remaining defenders except Sgt. White had been wounded, some mortally. A Japanese officer came in with a flag of truce. The PB defenders surrendered and were taken prisoners. Those who could not walk were left to die. This was undoubtedly an indication of the Japanese respect for the heroism of the defenders as elsewhere captives and wounded were simply bayoneted on the spot³.

The above was all documented in Stewart's war diary and his *Hong Kong Volunteers in Battle*, which was

first published in 1953 and the last reprint of which was made five years ago (Stewart 2005).

Three questions remain concerning this heroic epic of the Battle of Hong Kong:

- (1) Did PB1 really kill that many enemy soldiers?
- (2) Why didn't PB2 report having fired at enemy along the Ride or at Wong Nai Chung Gap?
- (3) Why didn't PB3 fire at all?

SURVEY FINDINGS

Figure 1 shows the larger scaled original sketch of the defences of Jardines Look Out and Wong Nai Chung Gap by Major Stewart⁴. Our survey findings are presented in **Figures 2 to 7**.

Figure 2 shows the accurate locations of the defensive positions indicated on Major Stewart's sketch.

Figure 3 shows the measured horizontal layouts and profiles of PBs 1, 2, and 3.

Figure 4 shows the measured layout of the OP on the summit of Jardines' Look Out.

Figure 5 shows the measured layouts of the Stanley Gap bunkers we discovered above Stanley Gap Road.

Figure 6 shows the layouts of the bunkers of the West Brigade HQ near the present petrol station.

Figure 7 shows the layouts of the bunkers (occupied by the staff of the artillery) to the north of the West Brigade HQ.

Figure 8 shows the beaten zones and firing arcs of PBs 1, 2, and 3.

Our survey results should help answer the three questions.

³ Banham's research (2005: p.126) found that in fact four seriously wounded men Jitz, Izatt, Fisher and a Canadian were killed by the Japanese after surrender.

⁴ Note that the marking "Present Quarry" refers to an area on the other side of the Mount Butler ridge line, as indicated by the hill cutting symbol.

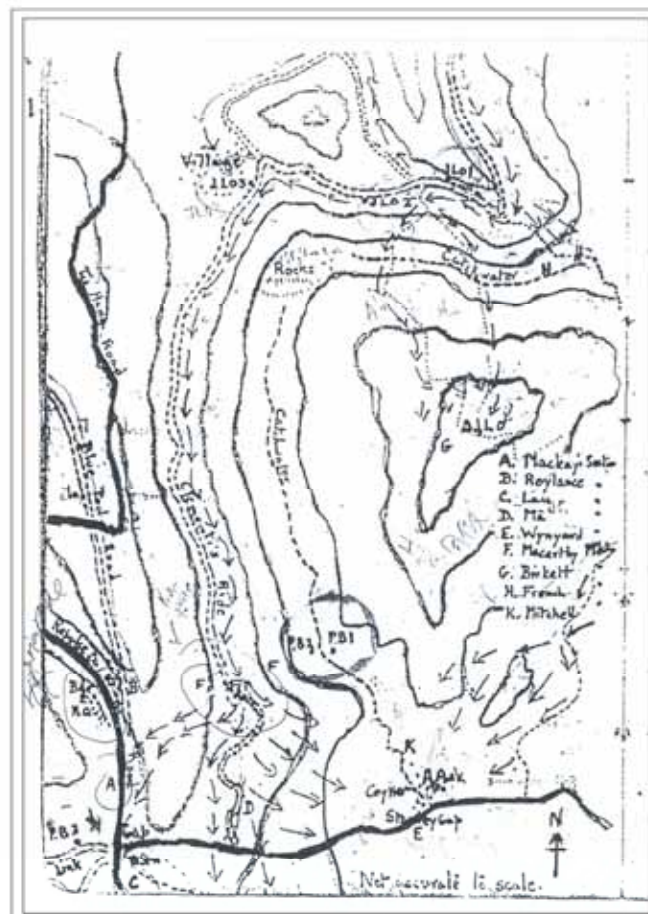
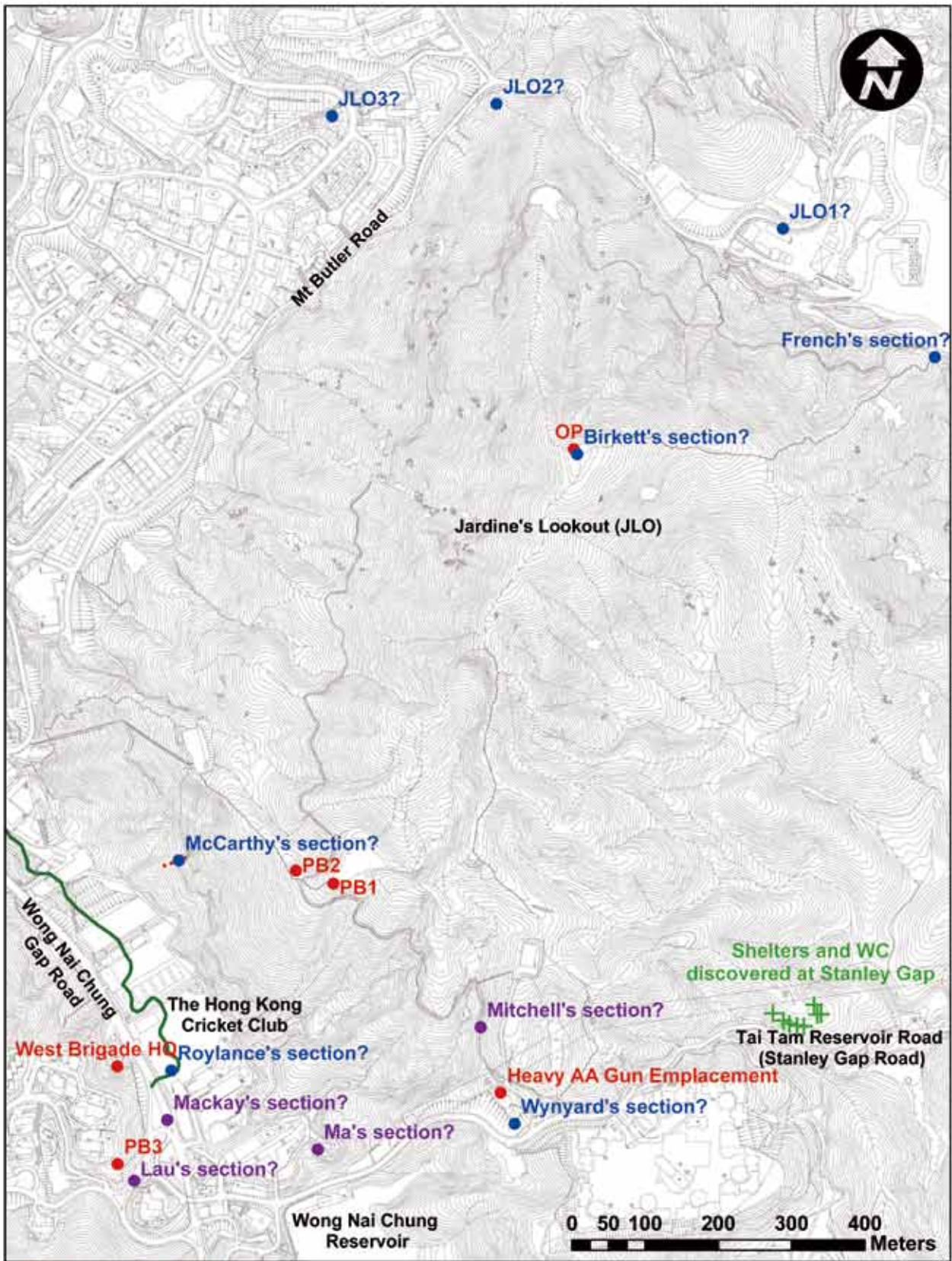


Figure 1: Sketch map of defence structures/posts by Major Evan Stewart



- Old Blue Pool Road
- Identified by field surveys
- Estimated according to aerial photo and map interpretation
- Estimated according to interpretation of sketches in Major Stewart's war diary
- + Shelters and WC discovered at Stanley Gap, hitherto unreported

Remark: "Repulse Bay Road in Major Stewart's sketches refers to the present Wong Nai Chung Gap Road"

Figure 2: Surveyed locations of defence structures/posts in Major Stewart's Sketch.

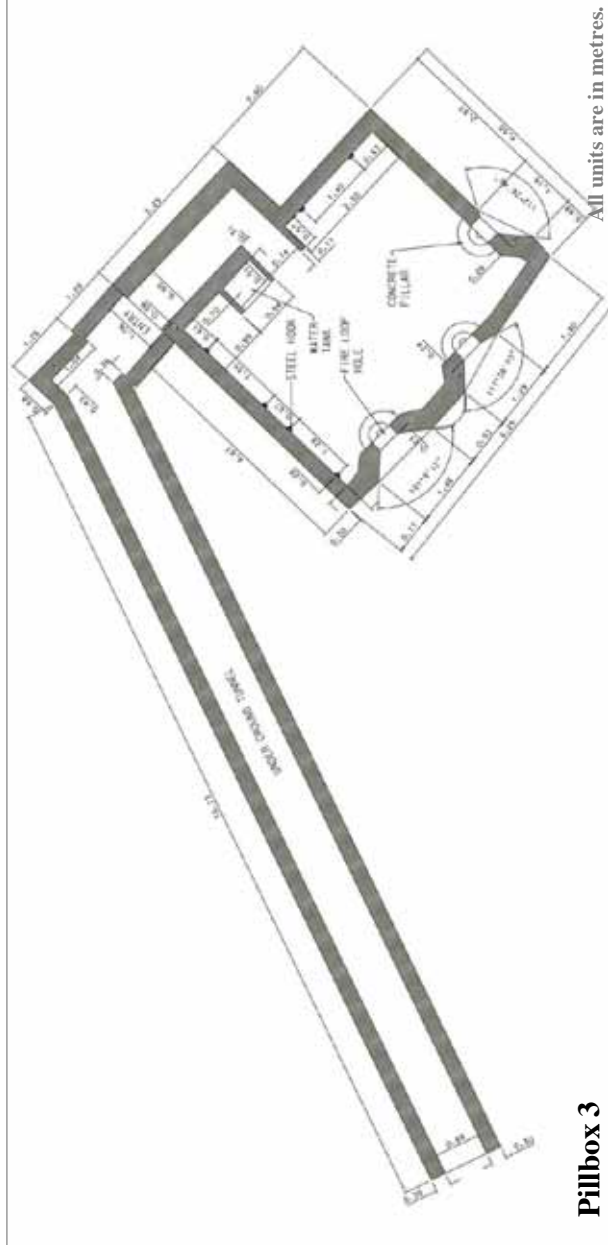
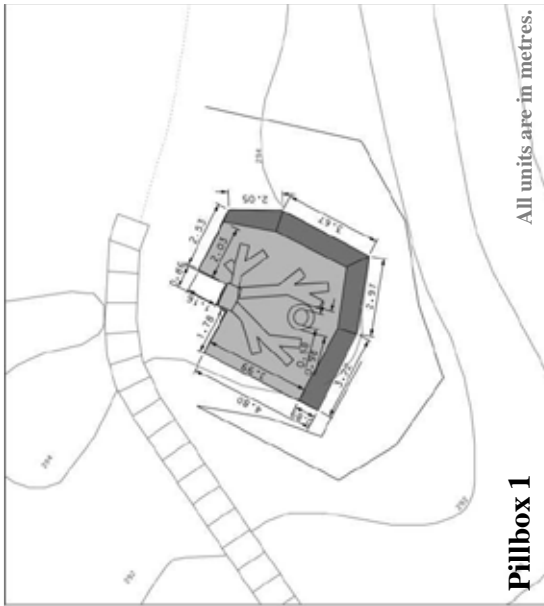
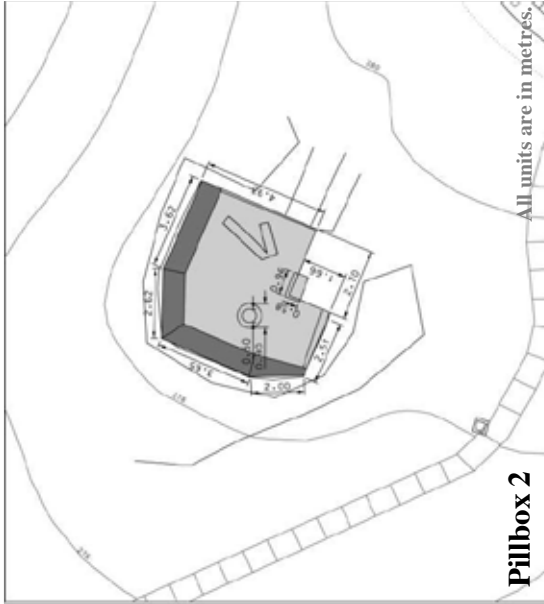


Figure 3a: Layouts of PB1, PB2 & PB3

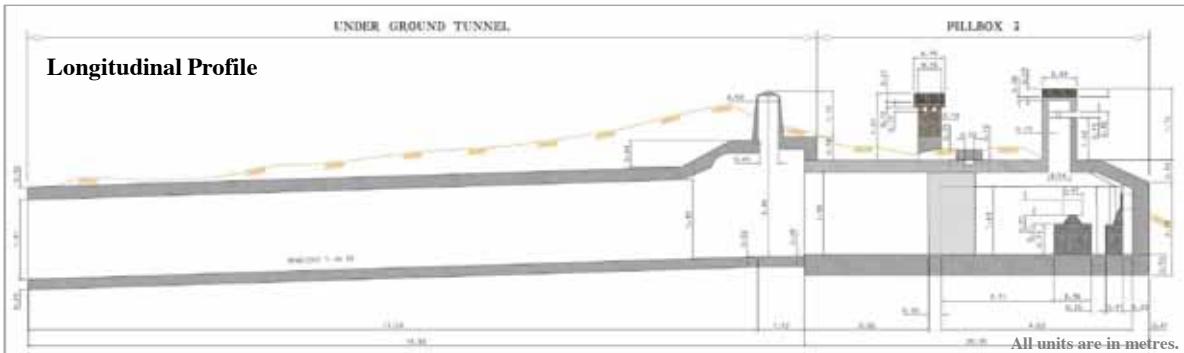


Figure 3b: Sectional view and longitudinal profile. of PB3

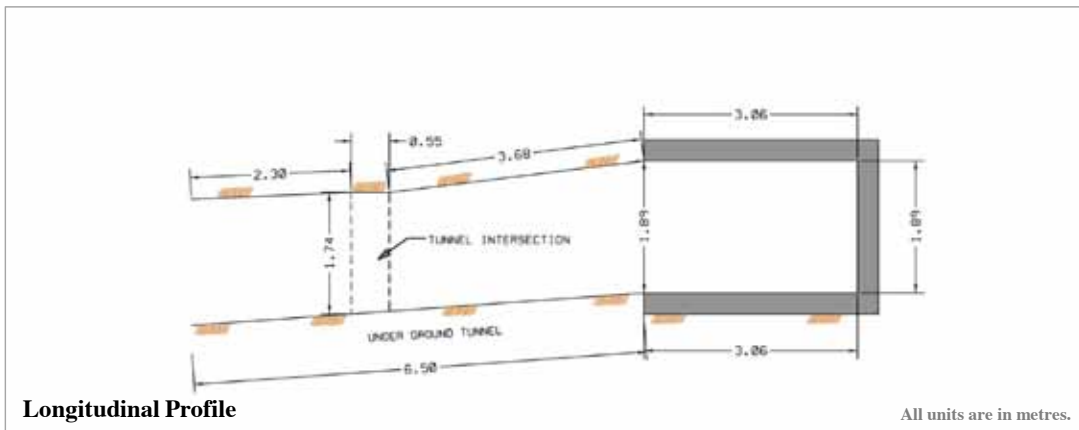
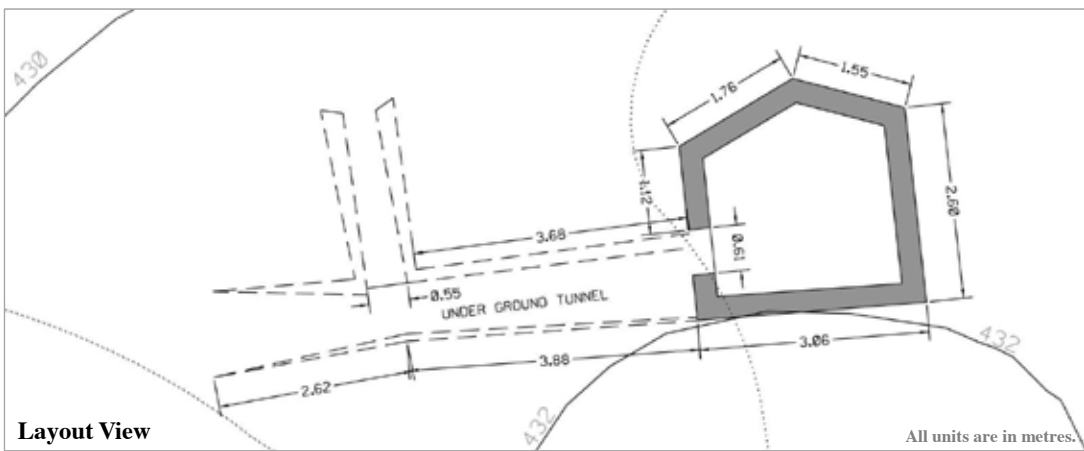


Figure 4: Layout and longitudinal profile of OP at Jardine's Lookout (JLO)

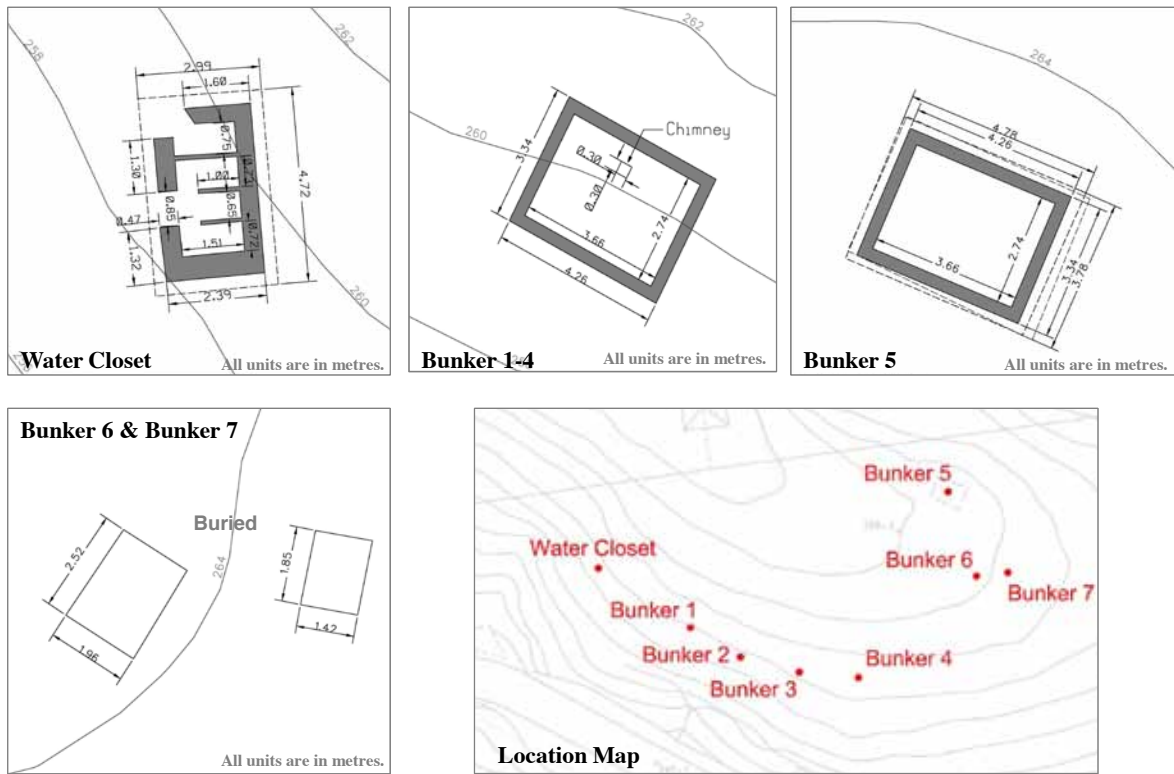


Figure 5a: Layouts of bunkers & water closet at Stanley Gap

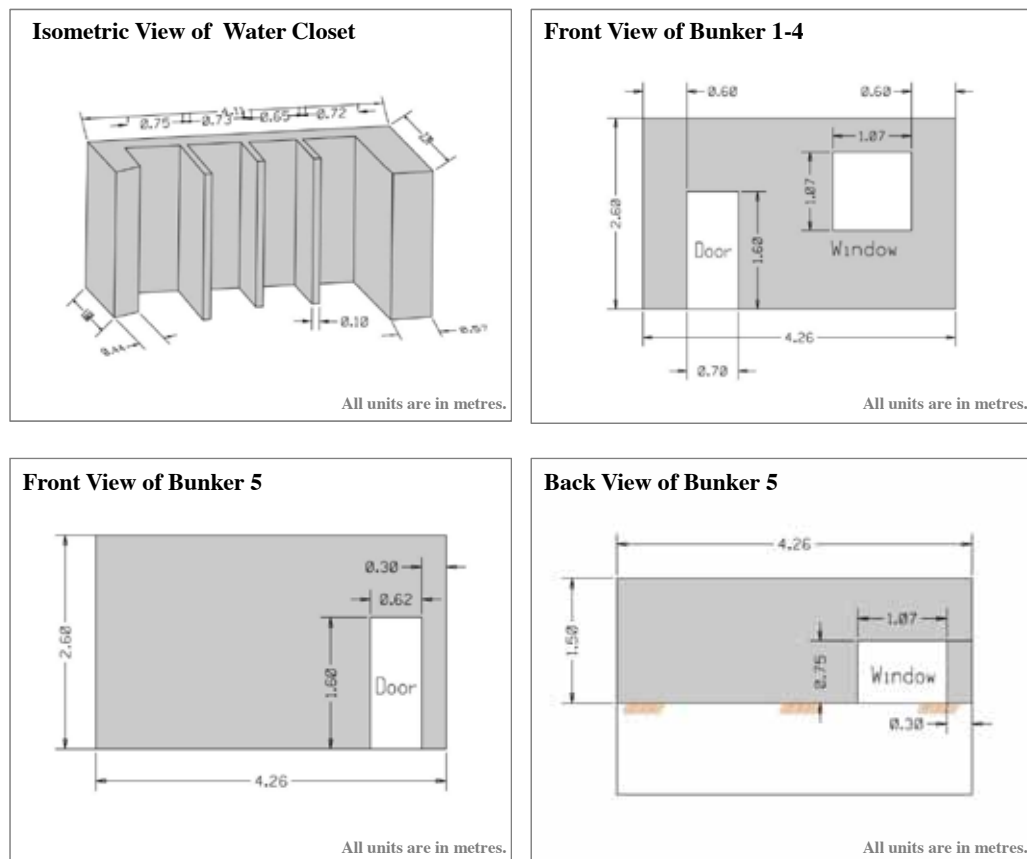


Figure 5b: Sectional views and isometric views of bunkers & water closet at Stanley Gap

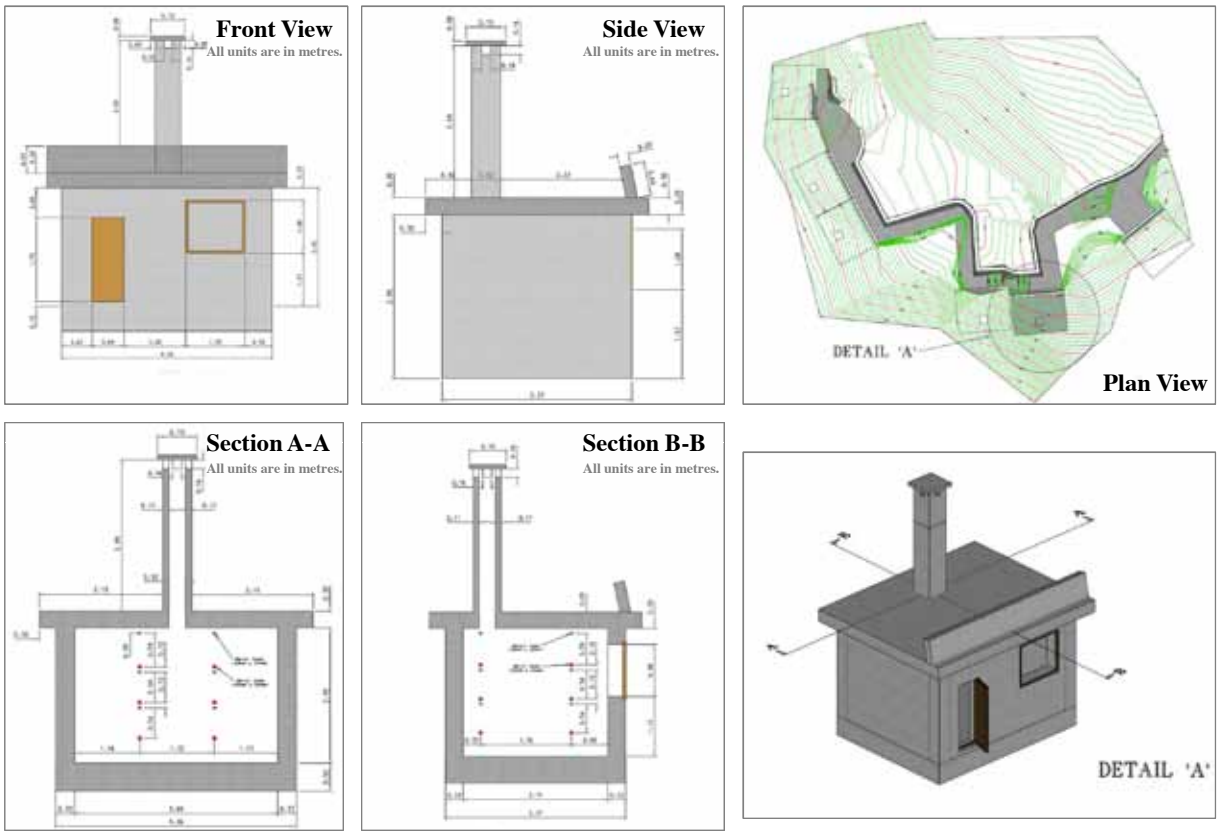


Figure 6a: Front view and sectional views of West Brigade Headquarters

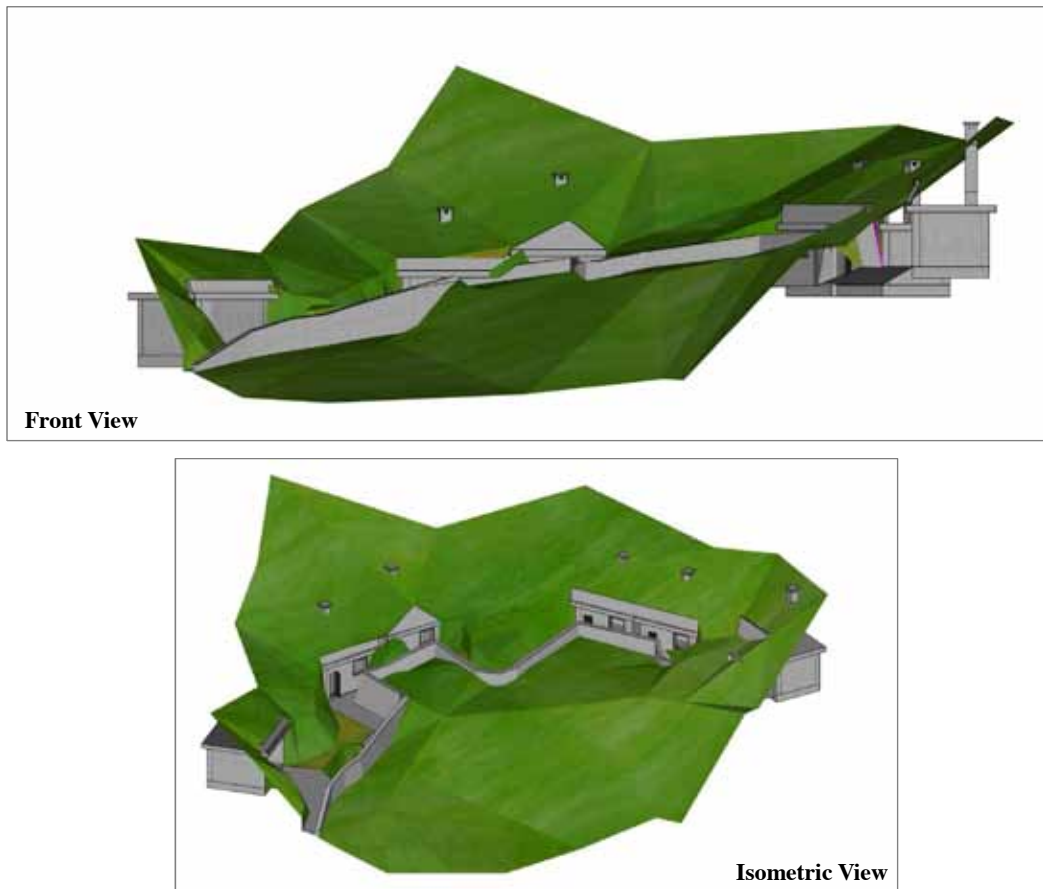


Figure 6b: Front view and isometric view of West Brigade Headquarters

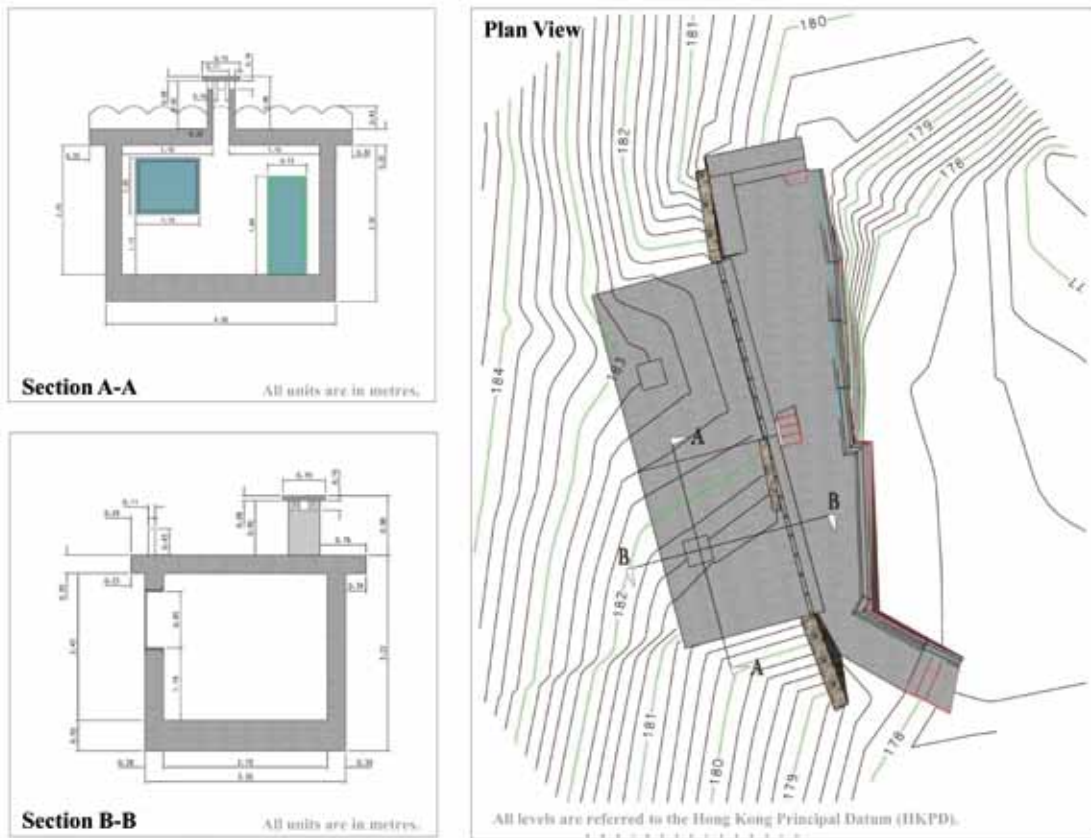


Figure 7a: Plan view and sectional views of artillery bunkers near West Brigade Headquarters

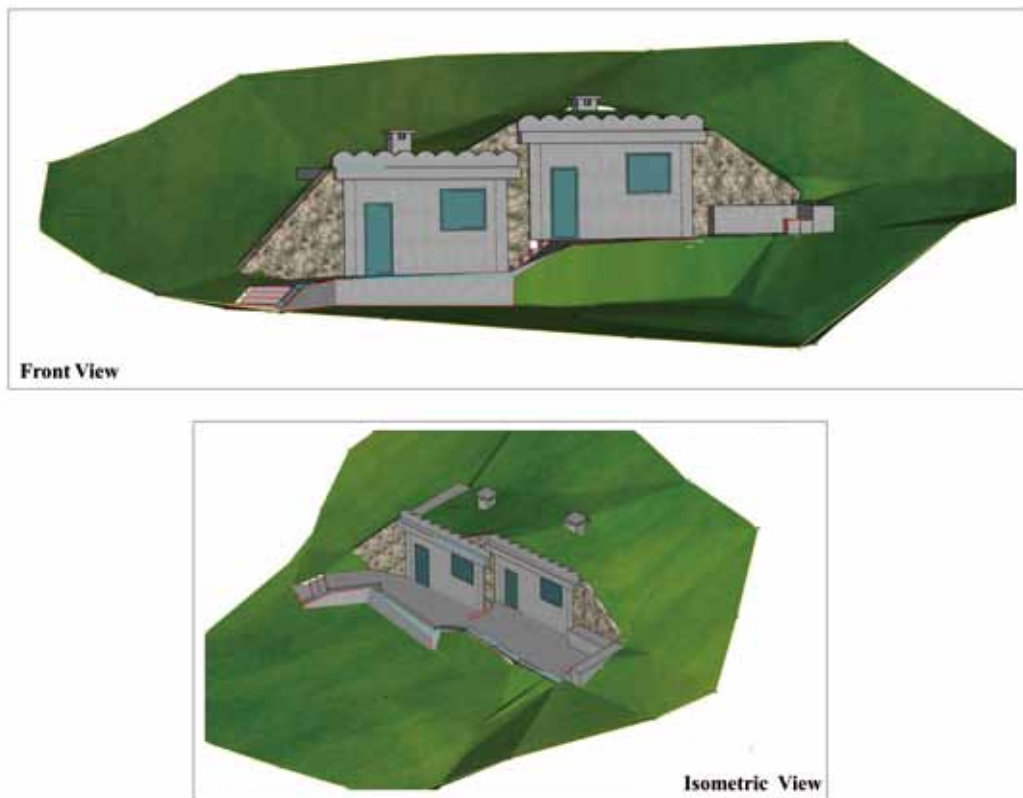


Figure 7b: Front view and isometric view of artillery bunkers near West Brigade Headquarters

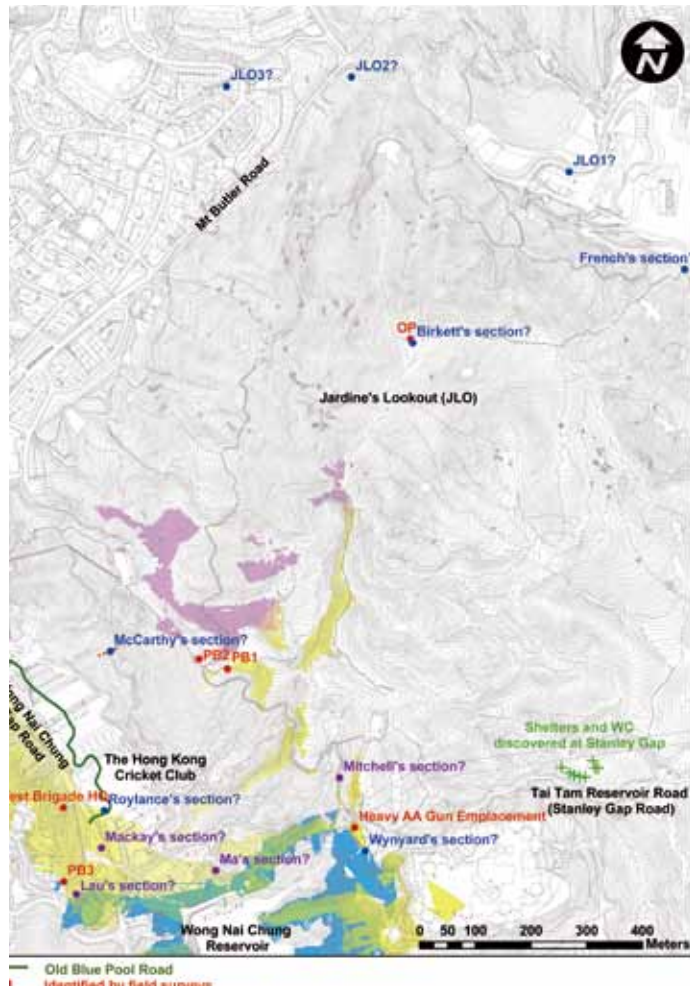


Figure 8: The beaten zones of PBs 1, 2 and 3

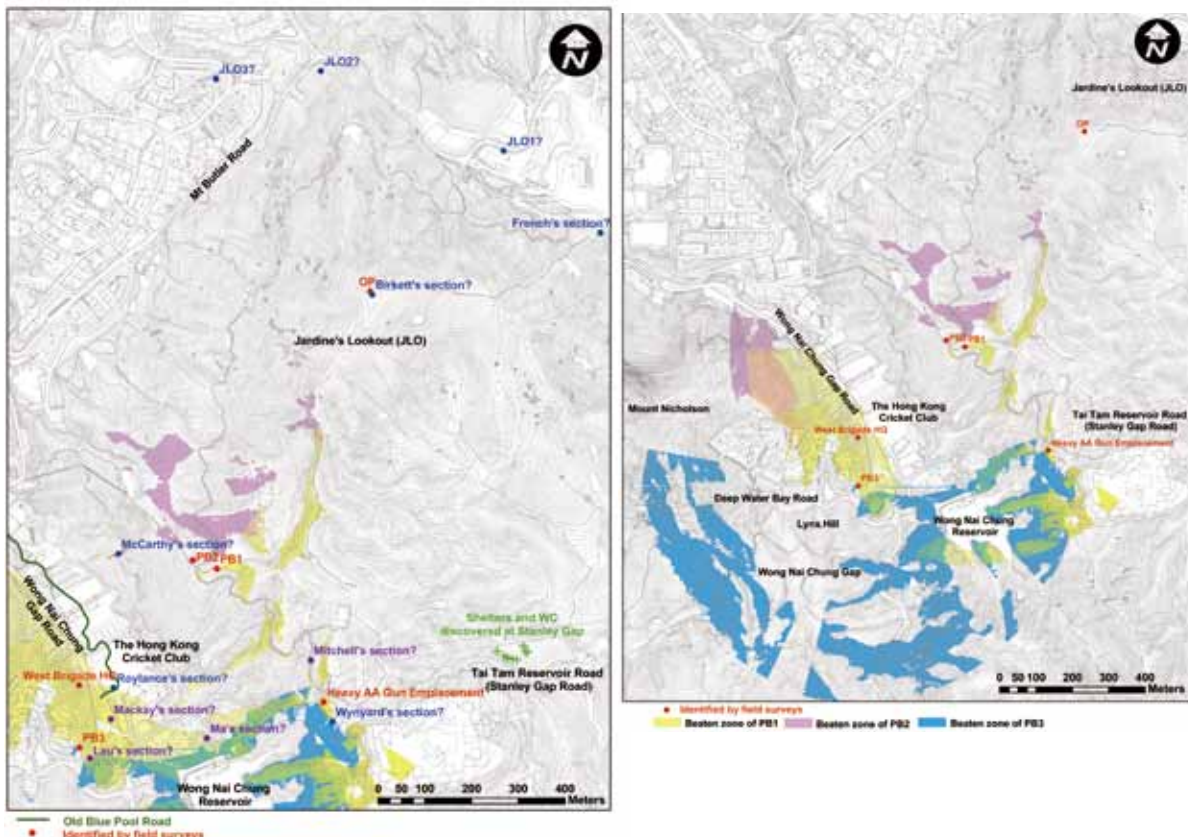
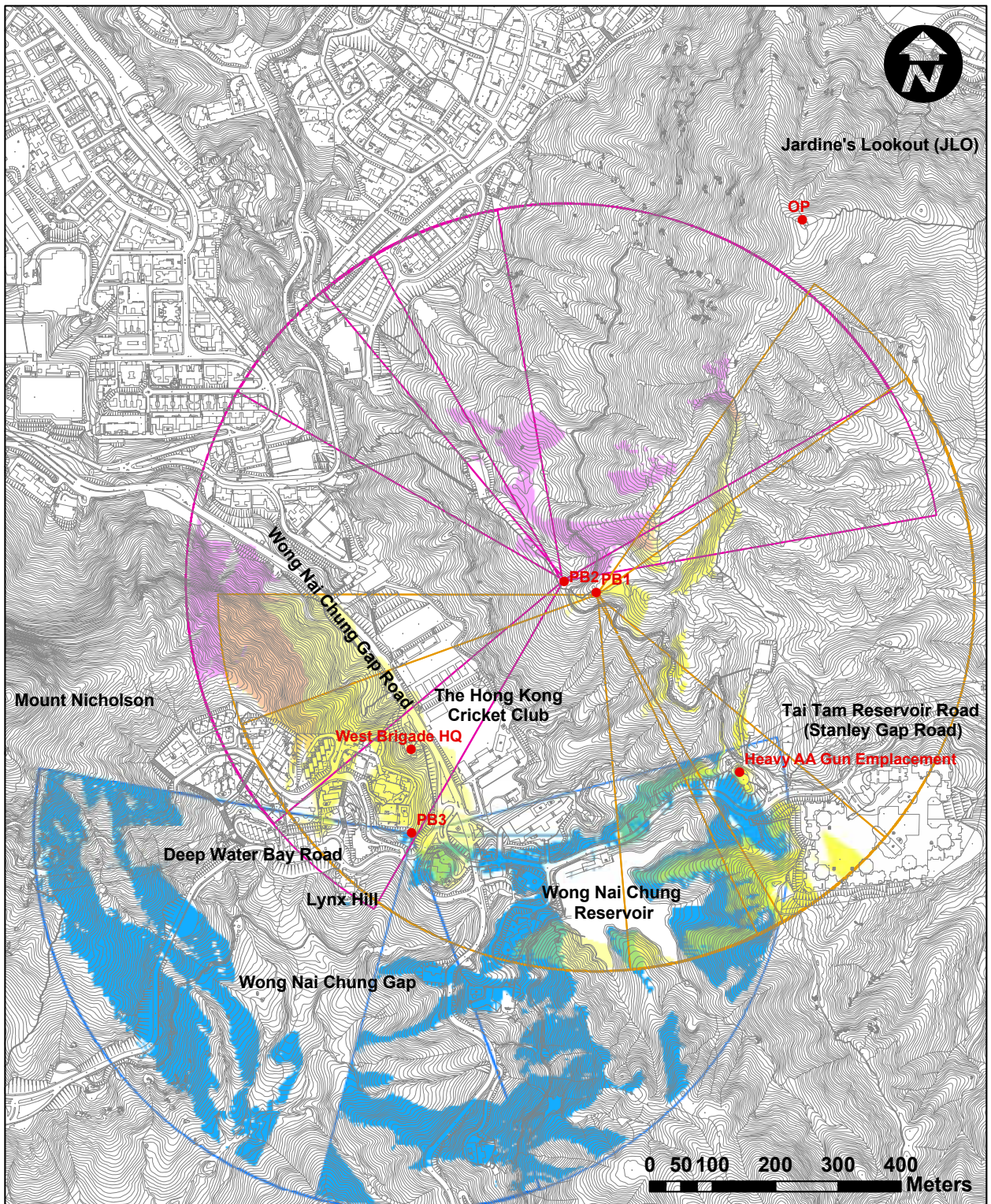


Figure 8a-b: The beaten zones of PBs 1, 2 and 3



- Identified by field surveys
- Beaten zone of PB1 ■ Beaten zone of PB2 ■ Beaten zone of PB3
- ⌒ Firing arc of PB1 ⌒ Firing arc of PB2 ⌒ Firing arc of PB3

Figure 8c: The beaten zones of PBs 1, 2 and 3

COULD PB1 REALLY KILL THAT MANY ENEMY SOLDIERS?

The answer is a qualified yes. **Figure 8** shows the beaten zones and arcs of fire of machine guns mounted inside the pillboxes shooting through its loopholes. The coverage was not satisfactory as far as the Ride or Blue Pool Road were concerned though it did cover both the AA gun position to the south and Wong Wai Chung Gap Road, the West Brigade Headquarters and PB3 across the Wong Nai Chung valley well. That the crew could take a heavy toll on the Japanese assembled down on the Ride at 6:30 was likely the result of firing with the machine guns positioned outside the pillbox and/or shooting through the loopholes using rifles instead of mounted machine guns.

WHY DIDN'T PB2 FIRE AT THE ENEMY ON THE RIDE AND WONG NAI CHUNG GAP ROAD?

There was no mention of PB2 firing at the Japanese advance party when PB1 shot at them from 6:20 to about 7:45.

Figure 8 provides the answer: its arc of fire, which anticipates attack on PB1 from the north along the catchwater and covers the northern and upper slopes of Mount Nicholson, did not cover the routes of attack.

WHY DIDN'T PB3 FIRE?

Major Stewart remarked in his war diary that during the heat of the battle, "P.B. on Black's Link, close to Gap, did not open fire, for some unexplained reason-possibly not occupied!!" This remark was not repeated in his

Hong Kong Volunteers in Action (2005).

Figure 8 provides the answer: this PB's arc of fire did not cover PB1, PB2 or the Ride across the valley, Blue Pool Road and the shelters there down the Valley, the West Brigade Headquarters or the stretch of Wong Nai Chung Gap Road right below it. However it did cover the Police Station Knoll and the northern dam of the Wong Nai Chung Reservoir.

Two of its loopholes, positioned in pairs, oriented towards the southwestern direction, now face a recently completed building called "Lynx Hill" at 3 Deep Water Bay Road of Wong Nai Chung Gap. They covered the areas near the southern side of Deep Water Bay Road as well as the slopes halfway between the summit of Mount Nicholson and Black's Link.

The single loophole near the southern corner of the pillbox, oriented towards a southeastern bearing, faced the Police Station knoll inside the Gap. Except the southern side of the Wong Nai Chung Reservoir, the shooting coverage of this isolated loophole covered almost the entire northern dam of Wong Nai Chung Reservoir as well as the eastern side of Repulse Bay Road.

In **Figures 8, 8a, 8b, and 8c**, the fire coverage of each pillbox is represented by a circle with the relevant pillbox as its center. In view of the disposition arrays of the three loopholes of PB3, the firing arc of PB3 is only a semi-circle, which obviously could not cover the major fighting areas the cold morning of 19 December 1941. However, had it been fully manned and equipped, it could have inflicted heavier casualties on the enemy and delayed their capture of the Wong Nai Chung Gap, the topography of which is manifested in **Figure 9** constructed using 1945 RAF aerial photos, because it covered both the Police Knoll and the reservoir dam on which Stanley Gap Road ran.

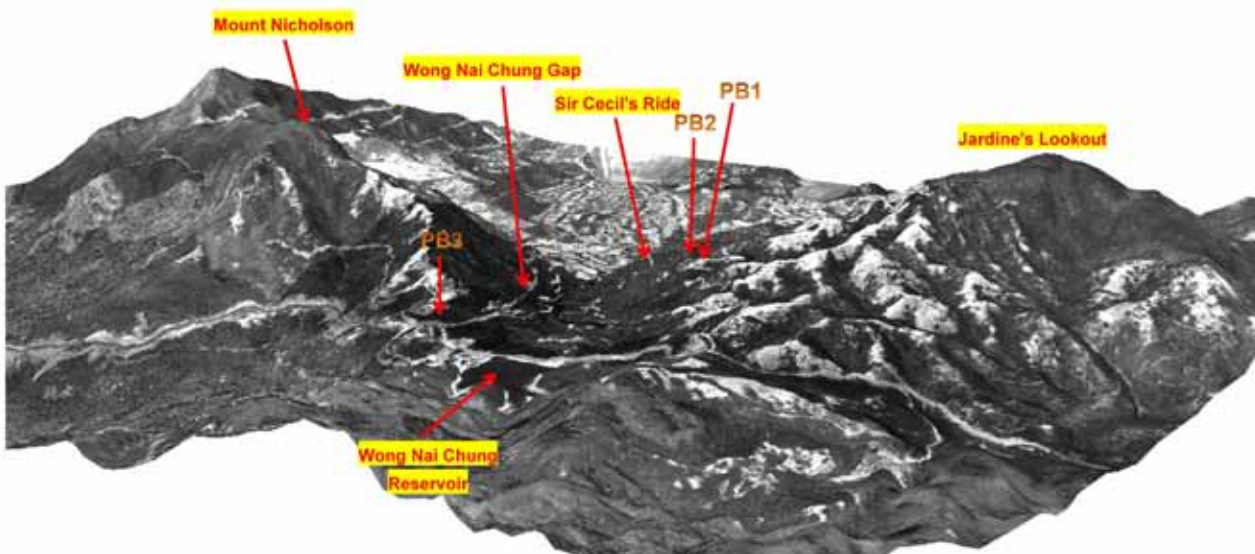


Figure 9: Wong Nai Chung Gap and its environs viewed from the south, 1945

Why were the arcs of fire of PB3 disposed in a way so eminently unsuitable for the battle that was actually fought? As pointed out by Lai, Davies and Tan (2008), the disposition of the WNC defences was aimed at stopping an incursion from the Repulse Bay/Deep Water Bay direction, a point that can be inferred from the south facing orientation of the two of the MG loopholes of PB3. It is also brought out by our analysis of an inferred position on the Ride below PB2 (guarded by McCarthy's Section), which was covering the approaches FROM Wong Nai Chung Gap as inferred from the disposition of the concrete barbed wire pickets (some of which were shown in the Japanese portrait in Photo 1) we discovered on either side of the Ride.

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REFERENCES

Banham T (2005), The Hong Kong Volunteers Defence Corps, Number 3, (Machine Gun) Company, *Journal of the Hong Kong Branch of the Royal Asiatic Society*, 45, 117-142.

Lai LWC (2008), Recollections of the Battle of Hong Kong and Life of a POW by Mr. Arthur Ernesto Gomes, 5th Company (Machine Gun), HKDVC, *Journal of the Hong Kong Branch of the Royal Asiatic Society*, 48, 25-50.

Lai LWC, Davies SNG and Tan YK (2008), Upland World War II Headquarters, Pillboxes and Observation Posts on Hong Kong Island in Photos, Manuscript, Department of Real Estate & Construction, University of Hong Kong. (Forthcoming (2011), *Journal of the Royal Asiatic Society Hong Kong Branch*.)

Stewart E (2005), *Hong Kong Volunteers in Action*, Blacksmiths Books, Hong Kong.

War Diary of Major G.E. Stewart (Hong Kong Public Records Office HKR S225-1-48-2).

The Gin Drinkers Line: Its Place in the History of Twentieth Century Fortifications

Bernard Lowry*

ABSTRACT

This paper outlines the development of the small, concrete defence posts commonly known as ‘pillboxes’ and their place not only in the defences erected in the 1930s in Hong Kong but also in the history of fortification generally during the first half of the twentieth century. The effectiveness (or otherwise) of such works is also alluded to, especially with respect to the Gin Drinkers Line. The paper then concludes with an outline of the current worldwide interest in the preservation of what remains of this diminishing heritage.

THE ORIGINS OF THE PILLBOX

Although small stone and corrugated iron prefabricated blockhouses had been used by the British in the Anglo-Boer War (**Figure 1**) to protect strategic installations such as railway lines these were the ‘swansong of a

castle and fort-building tradition which stretch[ed] back over one thousand years and embrace[d] a large part of the world’. Eighteen surviving examples of the blockhouses have now been declared national monuments in South Africa, Richard (1998).

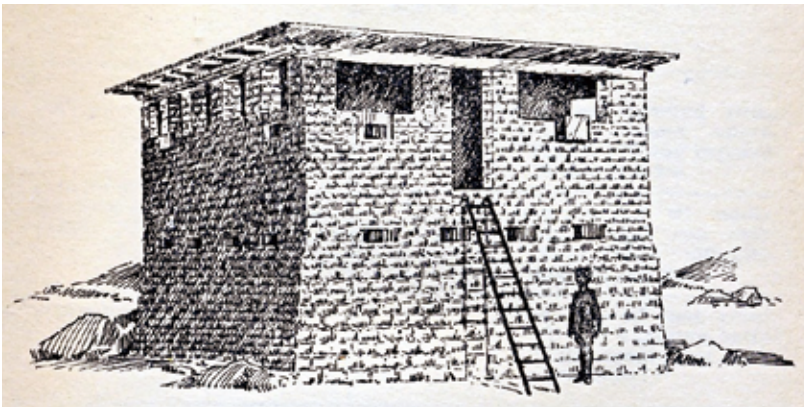


Figure 1: Different styles of blockhouse as employed in the Anglo-Boer War. (*Royal Engineers Pocket Book 1936*).

The British Army’s use of reinforced concrete for small defence works in the twentieth century can be traced back to the First World War. In the winter of 1916 Germany, to shorten its front line and so make maximum use of resources in men and materiel, began to erect reinforced concrete defences along a line intended to run from the Belgian coast to Switzerland, later to be known as the Hindenburg Line. With a main and subsidiary defence lines the line took advantage of any local geographical features endowing height.

The extensive use of barbed wire was intended to funnel attacks into killing zones where enemy infantry would be destroyed by fire from concrete machine gun emplacements. In addition to the Hindenburg Line, Germany also built a line of concrete defences, often using sea dyke walls, along the Belgian and Dutch border to protect its rear areas on the Western Front, Oldham (1995).

British attempts to breach the Hindenburg Line in 1917

*Retired insurance manager living in Shropshire in the UK, who has written six books on fortifications as well as many articles on the same subject for *Casemate*, the magazine of the *International Fortress Study Group*. In addition he was a Co-ordinator for the prize-winning *Defence of Britain* project which sought to record 20c British defences.
Email: bernardfeste@aol.com

were largely unsuccessful, leading to heavy losses and, impressed by the performance of the Line, the British Army's Engineer in Chief issued a memorandum: 'The Use of Ferro-Concrete in Dug-out Construction' in February 1918. A School of Concrete was also set up at this time. Work had begun in the winter of 1917 around the La Bassée Canal on the construction of concrete defences. To maintain secrecy materials were brought along the canal at night. In March the British began to fortify areas of their front line with reinforced concrete structures, for example seventy-two pillboxes (the name comes from the design's resemblance to the small cardboard containers used to dispense pills) were under construction in the Messines Ridge area as well as reinforced troop shelters. There was a gradual move from an offensive to a defensive philosophy, the latter having been previously neglected by the British High Command. Much of the construction work on the new concrete defences was carried out by Indian or Chinese labourers as well as British troops, Oldham (1995).

The movement of German troops to the Western Front after the Russian Revolution of 1917 coupled with the likelihood of an enemy spring offensive led to further work by the British. Each Army Command produced its own design of pillbox, these often now being prefabricated or built from block work supplied from depots in rear areas. However, it was to be 1918 before the Army officially adopted the pillbox. Standardisation began to take place with designs for swampy or dry ground conditions. The likelihood of an enemy offensive in 1918 led to the building of the GHQ (General Headquarters) Line as a fall-back position and as protection for the embarkation ports of Boulogne and Calais, although this remained incomplete at the end of the war. The line was in an area that had seen less devastation than the front line and so use could be made of existing houses with reinforced concrete pillboxes built inside them, the houses conferring a degree of camouflage on the pillboxes. Often the houses remained occupied by their owners. In addition to linear defences, vulnerable areas such as the strategic

town of Ypres, were protected by nests of pillboxes, Oldham (1995).

In September 1918 the British High Command decided that the construction of reinforced concrete shelters was incompatible with a 'war of movement' and work slowed or stopped on such defences, but within two months the war was over. The German designs for these emplacements had attracted the Allies' attention and one design, of a hexagonal shape and with walls one metre thick for three machineguns (*Maschinengewehrstand aus Eisenbeton*) is believed to have influenced the design of British pillboxes in 1918 and in 1940. In addition to such defences in France, in WW1 Britain also built a significant number of pillboxes around her coasts, in a variety of circular or hexagonal designs, as an anti-invasion measure whilst others were built to protect coastal gun batteries, Oldham (1995).

The pillboxes erected by both sides on the Western Front must have had something of a profound effect on the British national psyche. In 1933, fifteen years after the First World War had ended, a Colonel EGL Thurlow DSO wrote a book entitled 'The Pill-Boxes of Flanders', intended as a guide to the 180 pillboxes then preserved by the Belgian government following representations from the British Legion and the TocH charitable organisation. A detailed map indicated the locations of the pillboxes together with details of other memorials (**Figures 2a and 2b**). Today only a handful of these remain.

The staggering WW1 casualties became associated in the minds of British politicians, the public and the military with bloody offensives such as those on the Somme. In the post war period the doctrine of the permanent defensive posture took precedence (**Figure 3**). Britain put her trust in a powerful navy and an expanding air force but this was at the cost of a small and weak army ill-equipped for major overseas wars, Fraser (1983).

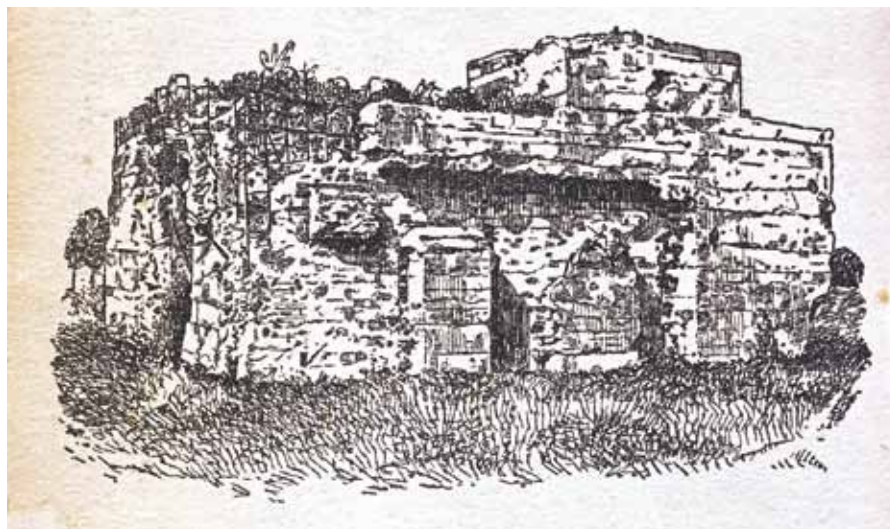


Figure 2a: The cover of *Pillboxes of Flanders* by Colonel Thurlow, published 1933. The drawing shows a German concrete blockhouse/pillbox near St Julien, northeast of Ypres.

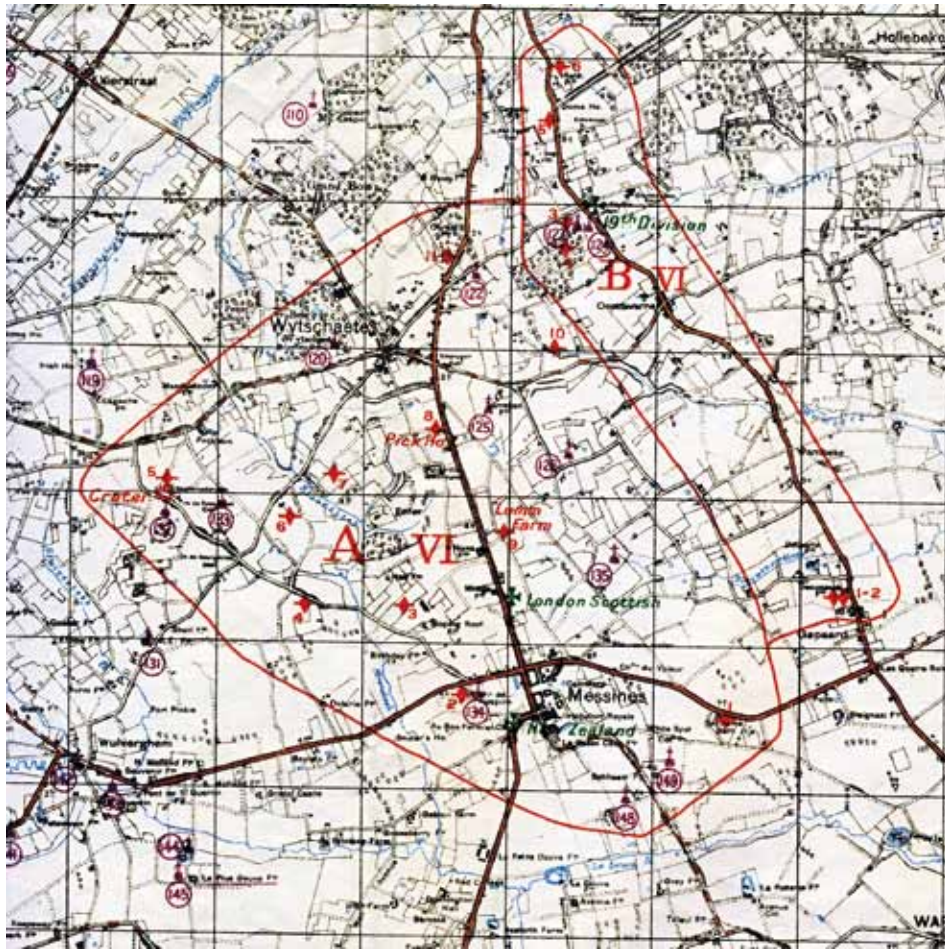


Figure 2b: A plan from *Pillboxes of Flanders* showing surviving German pillboxes in the Messines Ridge region. Each pillbox was marked on its side with a code letter corresponding with the map, for example 'A VI 5', which, as can be seen, was close to the crater of a British, tunnelled mine.

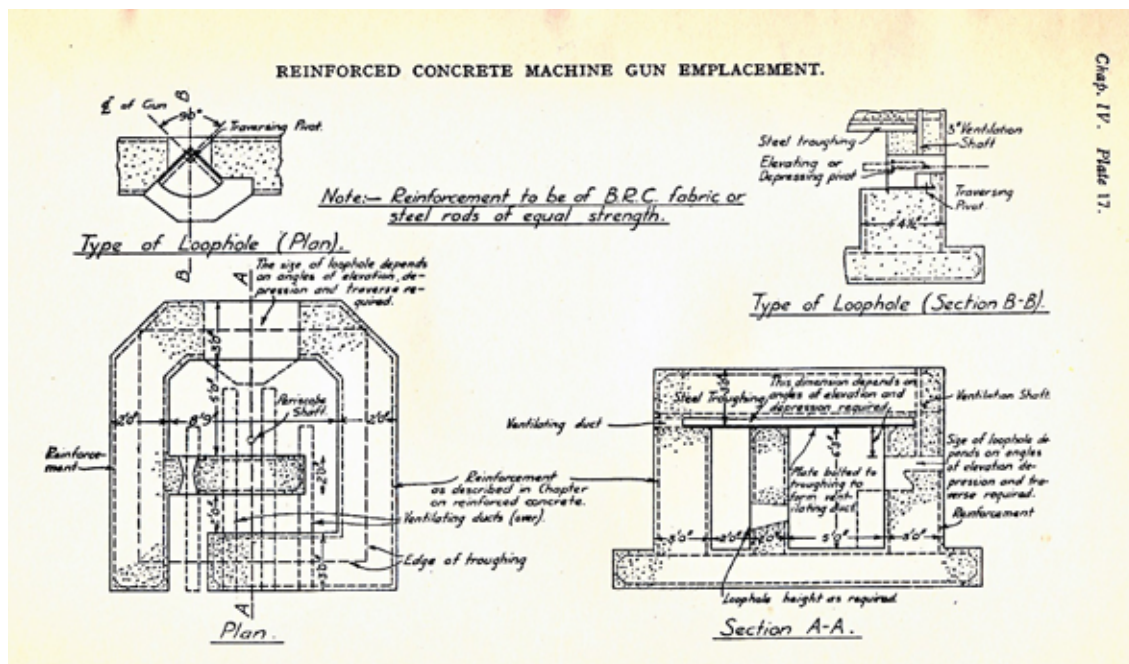


Figure 3: A drawing for a British Army reinforced concrete machine gun emplacement. (*Royal Engineers Pocket Book 1936*).

NEW, DEFENDED FRONTIERS

The end of the First World War left the nations of Europe taking steps to defend their new national boundaries following the Treaty of Versailles in Western Europe and the Treaty of Brest-Litovsk in Eastern Europe. The first country to act was France which, after losing Alsace Lorraine following the conclusion of the Franco-Prussian War of 1870-71, took steps to fortify her new frontier from 1922 onwards, building a system of fortifications along her eastern boundary as well as fortifications in the Alps, Corsica and in her North African colonies (see below) against the rise of Fascist Italy. The work in France was to be known as the Maginot Line after the government Deputy, André Maginot, who had pledged the funds for its construction (**Figure 4**). Other European nations followed suit including, naturally, Germany and Italy but also Belgium, the Netherlands, Switzerland, Finland, Czechoslovakia, Poland, Yugoslavia (these latter four newly created countries), Greece and the USSR. France's Maginot Line was the

most complex organisation of fortifications, influenced in part by the German fortifications erected in Alsace-Lorraine after the Franco-Prussian War of 1870-71. Other countries adopted simpler solutions, although influenced by French developments and by the success of the Hindenburg Line. Use was universally made of reinforced concrete, the works were often provided with artillery and an anti-tank capability. In addition, the colonial empires sought to protect their interests by building linear fortifications such as France's Mareth Line in North Africa (see also below). The fortifications erected along the Gin Drinker's Line are therefore part of this movement to protect national boundaries and interests in the 1930s especially following the rise of totalitarian regimes. In addition to providing barriers against an invader it was also hoped that the works would delay an attacker and provide time for armies to be mobilised. Compared with those fortifications erected elsewhere, however, the works built by the British in the 1930s and in 1940 were in the nature of infantry fortifications, generally lacking artillery positions and of a lighter construction.



Figure 4: A French pillbox dating from 1939, probably for a 25mm anti-tank gun, at La Vachette close to the Italian border in the south east of the country. Associated with this work were shelters, infantry pillboxes and mine chambers forming a valley barrier and part of a network of defences along the border.

BRITAIN SEEKS TO DEFEND ITS COLONIAL POSSESSIONS

The British Empire also felt the chill of the rise of Mussolini's Italy and in 1935, at the height of the Abyssinian crisis, a number of inland concrete pillboxes and beach defence posts were built on the island of Malta and provided with machine guns (**Figures 5 and 6**). Many more were also built at the

beginning of the Second World War (**Figure 7**). Those built in 1935 were camouflaged with walls made of local stone rubble, the later ones being given a painted camouflage finish on their concrete walls to blend with their surroundings. The designs usually included a small, square observation cupola and a searchlight position was often added. Each pillbox was manned by six men and a non-commissioned officer. A loophole was provided for the Vickers or Bren machine gun with other loopholes for the rifles of the squad, Spiteri (1991).



Figure 5: A British pillbox on Marfa Ridge, Malta, dating from 1935. It is carefully camouflaged with stone to resemble local buildings. The corner embrasures for machine guns are a characteristic of Maltese pillboxes. Note the observation position in the top of the ventilator.



Figure 6: Another pillbox on Marfa Ridge but dating from WW2. It is likely that its concrete sides were painted with a camouflage pattern to resemble that in photo GDL 5. The large opening at its base may be an emergency exit.

The defences of Hong Kong appear to date from 1935, with completion being in 1938. In Hong Kong's case the work followed Japanese aggression in Hong Kong's neighbour, China. The works, consisting of coastal pillboxes (which, like those on Malta, were often provided with searchlights), gun casemates and a stop line, the Gin Drinker's Line, were quickly abandoned, apparently because of a lack of defenders to man the works but it was rapidly re-manned in the emergency of 1941. What state of preparedness existed, the extent of ancillary works, or the precise armament of the smaller works is not entirely clear. A detailed account of the Line is contained in 'The Gin Drinker's Line: Reconstruction of a British colonial defence line in Hong Kong using aerial photo information' by Lai, et al (2009).

THE DEFENCES IN ACTION: HONG KONG

Hong Kong's defences may have been the only pillbox defences erected by the British to have seen action in WW2. As such their performance under fire might give an indication of how Britain's anti-invasion defences might have fared in 1940 if a German invasion had been mounted.

The task of the Hong Kong defenders was to hold the Gin Drinker's Line as long as possible. Royal Engineers had begun demolitions to delay the Japanese before fighting began in earnest. The Shing Mun Redoubt, the strongest part of the line, contained five pillboxes, but was otherwise sparsely defended. The twelve acre patch of hilly ground containing the Redoubt, with a perimeter $\frac{3}{4}$ mile long, was manned by only 41 personnel out of the garrison's approximately 14,000 personnel. On 8 December 1941 the Japanese attacked the Redoubt which fell 36 hours after the Japanese attack had been launched, after a 'less than epic' defence, Banham (2003), Lai et al (2008, 2009).

It would seem reasonable to hold that for the Redoubt to be fully manned, at least a company (more than 300 men) and possibly an entire battalion (less than 1000 men) was needed.

Japanese soldiers attacked the pillboxes, with the battle degenerating into short chases in the concrete tunnels connecting the pillboxes. The loss of the Shing Mun Redoubt, the key to the Gin Drinker's Line, led to the collapse of the Line: it had been calculated by the military before the action that it should have held out for one week - but it fell within 36 hours of the invasion commencing.

On the other hand, against the loss of the Shing Mun Redoubt, Jardine's Lookout appears to have put up a more spirited defence and held out from 00.15 hours to 1800 hours on the 19 December 1941. Here, two thin-walled pillboxes held by Volunteers 'caused hundreds of casualties'. Against this, the Shing Mun Redoubt fell at 1530 hours on 10 December following the launch of the Japanese attack on the Redoubt at 2300 hours on the previous day. Had other Gin Drinker's Line pillboxes been held longer in the Kowloon Range area before their evacuation it is conjectured that the Japanese might have suffered heavier casualties. However, this would only have slightly delayed the inevitable fall of Hong Kong, Banham (2003), Lai et al (2009).

The pillboxes built to protect the island appear to have been vulnerable to artillery fire (both from Japanese and British guns) and also to close-quarter attack, although they appear to have been provided with barbed wire defences and were designed to be armed with machine guns (although whether and how many of these were available is unclear). On paper, therefore, they were better provided with machine guns than the pillboxes built in Britain in 1940. However, even if adequately provided with machine guns, the line appears to have been inadequately armed, Banham (2003).

Meanwhile, the comparison to the Gin Drinker's Line being the 'Maginot of the East', Lai et al (2008, 2009), is not at all fanciful. France, like Britain, had also erected defence lines in the 1930s to protect her North African possessions from a potential aggressor, Italy. The line of the fortifications was fixed in 1931, including a ring of fortifications around Gabes, and the better-known Mareth Line, 150 km west of the Tunisian border with Italy's Tripolitania (now Libya). The Line took advantage of a mountainous area to the south as a barrier although this had the disadvantage of masking and overlooking the works. Use was also made of another natural feature, the Zigzaou river. Although by no means as strong as its metropolitan contemporary, the Maginot Line, the Mareth Line consisted of detached machine gun, artillery and anti-

tank concrete strong points, infantry shelters and command posts. Behind the main work was a further line of works, but less strong than the main work, so there was a degree of defence in depth (lacking in the Gin Drinker's Line). The works were further strengthened by belts of barbed wire, anti-tank rails, infantry trenches and by the use of inundations. When an attempt to force the line was made by the Allies in March 1943 this proved unsuccessful: strengthening had been carried out by the Axis forces during its occupation in the war including additional barbed wire together with anti-tank mines and it proved an effective barrier to the allies. Like its more powerful Metropolitan cousin it fell by being bypassed by the army of General Montgomery, Mary et al (2010).



Figure 7: A reinforced concrete pillbox built by the British Expeditionary Force at Cysoing, northern France in 1940. It has three machine gun embrasures. (Courtesy: Dr Mike Osborne).

UNITED KINGDOM STOP LINES

The despatch of the small British Expeditionary Force [BEF] to France in late 1939 during the 'Phoney War' led to the first construction of pillboxes by the British Army in the Second World War, approximately 350 being built east of Lille and behind the 1937 French extension of the Maginot Line following the declaration of neutrality by Belgium. Twelve different designs have been identified but no drawings for their design have been found so far. The designs ranged from infantry pillboxes with one to five loopholes, built to a regular hexagonal design (and similar to the FW3/22 model-see below), to square or rectangular designs with one or two loopholes with accommodation for machine guns (Vickers or Bren machine guns). In addition there were artillery pillboxes for field guns or anti-tank guns. Anti-tank ditches were also excavated. Construction work carried on before being abandoned in May 1940 at the time of the German invasion of France. None of the works saw any action before the withdrawal from France of the BEF but they did contribute to the dismissal of the then-Secretary of State for War, Leslie Hore-Belisha MP. He had criticised, wrongly, the BEF for delays in building the defences and was dismissed in January 1940, Depret (2009).

When invasion seemed likely following the disasters

in France and other countries in Western Europe, it is not surprising that a number of pillbox/defence post designs were quickly issued by the British War Office. The principle infantry designs were the FW3/22 and FW3/24 drawings (**Figures 8 and 9**). Emphasis was put on all round defence because the direction of the enemy's attack was often difficult to predict. The majority of these works accommodated riflemen plus a Bren gun, were of a simple design for speed of construction and were provided with an internal baffle wall. Much emphasis was put on camouflaging these obvious structures and the talents of artists and theatre set designers were employed (**Figure 10**). Because of the loss of much of the BEF's heavier weaponry, the number of artillery or machine gun pillboxes was limited to especially vulnerable positions, for example beach exits. Although 'shellproof' designs were built, the majority of pillboxes were relatively weak and, when concrete became scarce, designs using only household bricks were erected. The pillboxes are associated with coastal and vulnerable point defences, airfields and especially the many stop lines built in the UK in 1940. The principal one being the GHQ Line which protected London.

By 1941 it was realised that the majority of pillboxes were too vulnerable and, also, engendered a too-defensive mentality. Where they fitted in to local

defence plans they were retained but many were abandoned. However, defence posts continued to be built to protect airfields against lightly armed German airborne troops. Although the concept of the 1940 stop lines, combined with pillboxes, resembles the work at

Hong Kong, the use of large tank forces by Germany in 1940 required the British defences to be equipped with anti-tank barriers, for example ditches and rows of steel rails, as well as mines. However, unlike the Hong Kong defences, those in Britain saw no action.

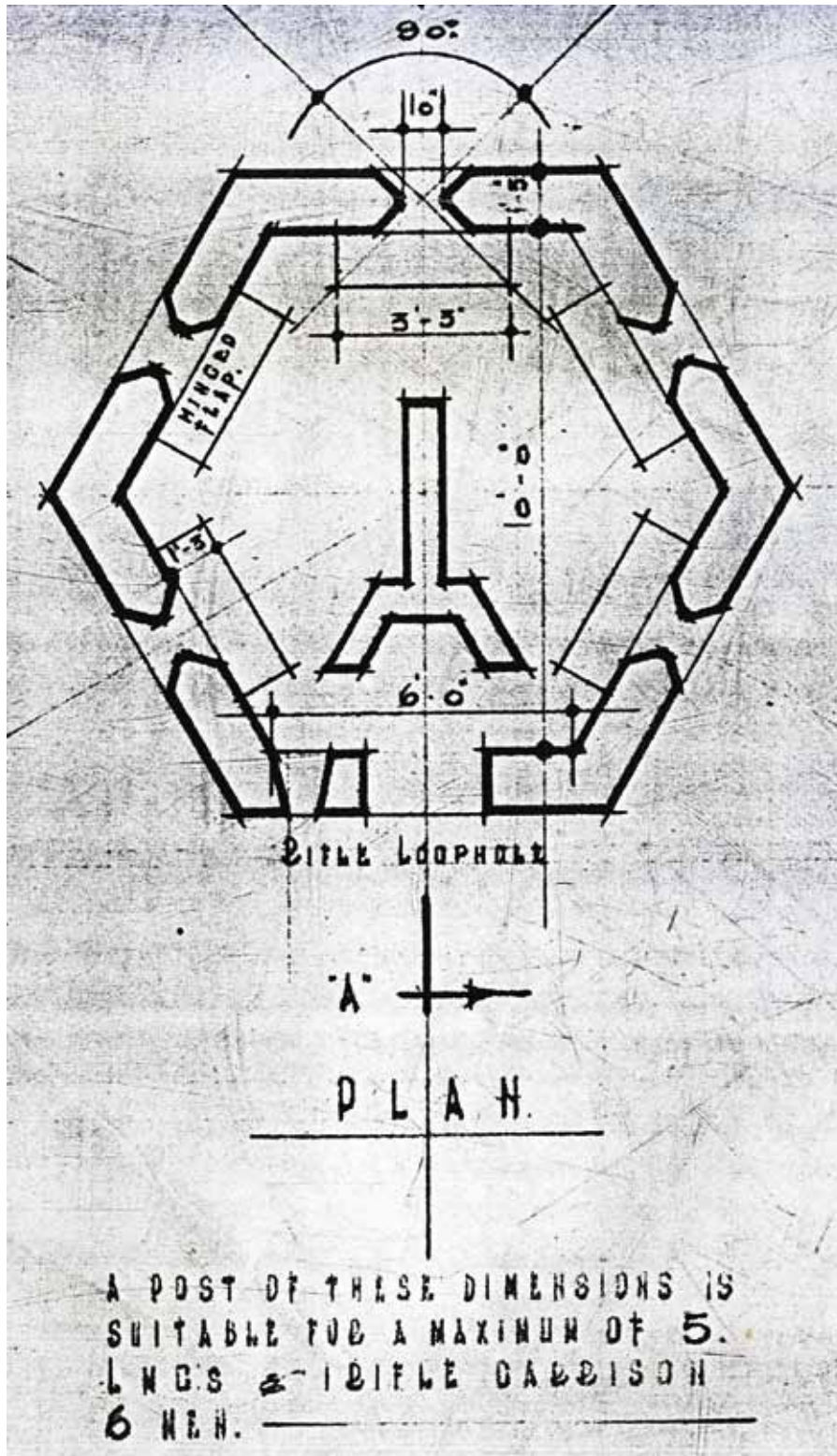


Figure 8: A drawing for the FW3/22 pattern pillbox, the second most numerous design encountered. (British National Archives)

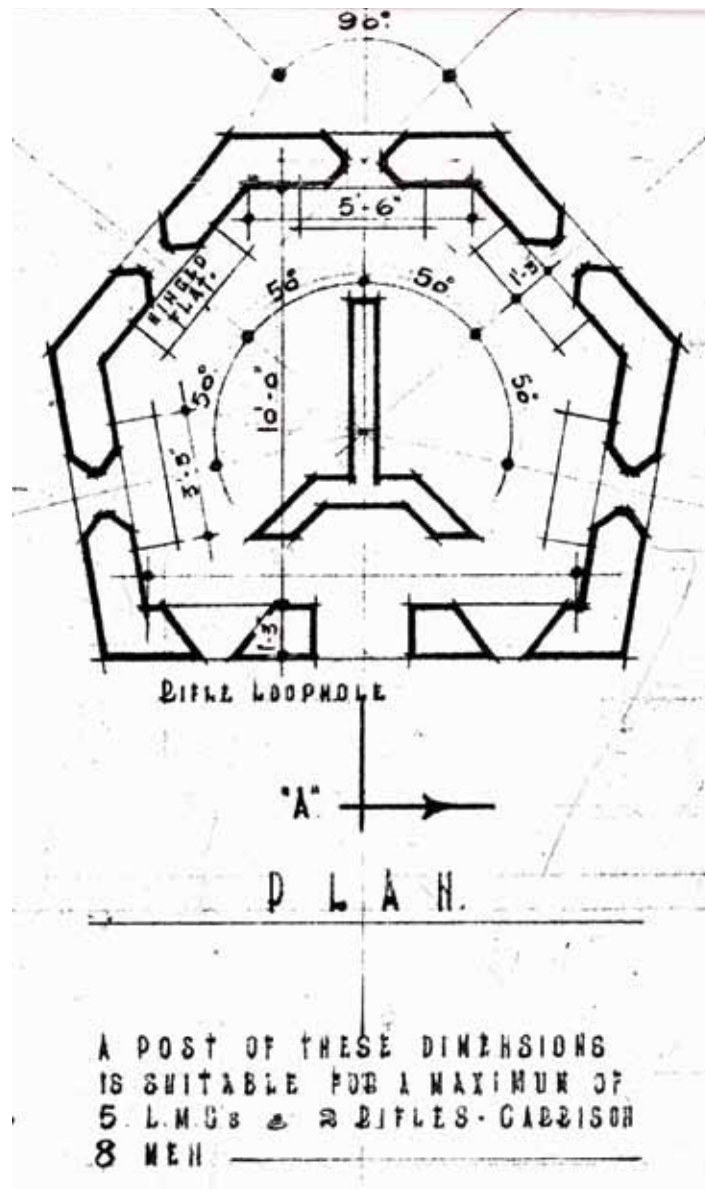


Figure 9: A drawing for the FW3/24 pillbox issued by the British Army Home Forces in the summer of 1940. Its simplicity is apparent, evidence of the state of emergency then applying. This was the most numerous design built in the UK. (British National Archives)



Figure 10: A preserved FW3/24 pattern pillbox at Market Drayton, Shropshire, a component of the Shropshire Union Canal Stop Line of 1940.

AN HISTORIC ASSET

The fortifications built in the 1930s and 1940s have in the past been subjected to neglect, abuse or actual destruction. The reason for this is understandable. Those built by Germany on French soil were especially detested, whilst those built in former colonies symbolise a colonial era often resented. Varying greatly in scope and size, these monuments now attract public interest and attention. For example many Maginot *ouvrages* are now open to the public, often run by local people, who appreciate their contribution to the history of their area. They are also a tourist attraction. At Fort Siloso in Singapore, Second World War features (including those from the Japanese occupation) have been preserved and have become a tourist attraction. In Britain the pillboxes constructed in 1940-1941 now have a 'presumption of preservation'. A small but growing number have now been given statutory protection.

In 1995 a national survey began in the UK, the Defence of Britain project, organised by governmental heritage bodies, the Council for British Archaeology and the Fortress Study Group, to record surviving defence structures of the Second World War. At the conclusion of the project over twenty thousand defence structures had been recorded. The project initiated a number of publications, including: Lowry (ed) (1995), English Heritage (2000), Ancient Monuments Board for Wales (2003), Schofield (2004), Foot (2006) and Cadw (2009).



Figure 11: A British 1940 pillbox preserved at Whittington Barracks, Staffordshire. This unique design, to resemble a railway platelayer's hut (it would have received wooden cladding), was removed from its original position on the River Tame stop line.

A new five mile cycling and walking route 'The Stop Line Way' (**Figure 12**), launched in June 2009, has now been opened in Somerset, following a part of the 1940 Taunton Stop Line. Heritage Lottery Fund money was granted with much volunteer labour coming from the local community. Local groups and parish councils helped to design the trail, which follows a redundant Great Western Railway track that formed part of the

In addition to the work of heritage bodies, *Loopholes*, the newsletter of the Pillbox Study Group has reported that:

- ten pillboxes have been converted into bat roosts in East Anglia. (*Loopholes*, 36, 2006)
- representations have been made for the preservation of a pillbox by the Keighley [Yorkshire] Local History Group ahead of a housing development. (*Loopholes*, 46, 2009)
- work has been done on the restoration of a pillbox at Midsomer Norton at a restored railway station. (*Loopholes*, 45, 2009)
- ditto at Moreton-in-Marsh as part of a heritage site. (*Loopholes*, 41, 2008)
- the same issue also records that in New Zealand an anti-tank block was being preserved.
- a pillbox at Taunton, Somerset (part of the Taunton Stop Line) preserved and plans in Surrey to use pillboxes as bat roosts. (*Loopholes*, 38, 2008)

In addition, for example, a pillbox camouflaged to resemble a railway platelayer's hut has been removed from a railway line to the museum at Whittington Barracks in Staffordshire (**Figure 11**). In the same county a pillbox has been retained as a feature in a nearby new housing estate. The National Arboretum War Memorial also contains a pillbox and at Kelmscott Manor, Oxfordshire, the home of the artist William Morris, an adjacent pillbox, part of a stop line along the River Thames, is included in the guide to the house, Catling (2010).

1940 defences. Support was given by South Somerset Development Council and by its Countryside teams. The initiative has won a prestigious government award under the 'Action for Small Towns' scheme. Interpretation boards along the route explain the significance of the pillboxes, gun emplacements and anti-tank blocks along the route (The Fortress Study Group (2010)).

USEFUL INFORMATION

TOWNS & VILLAGES
www.ilminsterforum.co.uk
www.chard.gov.uk
en.wikipedia.org/wiki/Donyatt
en.wikipedia.org/wiki/Knowle_St_Giles

MUSEUMS & other recording organisations
www.chardmuseum.co.uk
www.somerset.gov.uk/museum
Somerset Environmental Records Centre: www.somerc.com
Chard History Group: www.users.globalnet.co.uk/~carterw
www.somerset.gov.uk/archive (includes a photographic collection of Ilminster entitled: *Heritage of the Ile*)


PUBLICATIONS
Somerset. The complete Guide (1994)
Now you see it - then you didn't! - Stop Line (2000)
Working the Chard Branch - Railway (1991)
Roads, Canals and Railways of Chard (2001)
Somerset Steam (2009)
The History of Donyatt (2002)
Excavations in the Donyatt Potteries (1989)
Book of the Ile (1890) (Library reference only)

LIBRARIES
Chard: Holyrood Lace Mill
Ilminster: Ditton Street

TOURIST & LOCAL INFORMATION CENTRES
Chard: Guildhall, High Street (TIC)
Ilminster: Meeting House, East Street


The Old Railway Heritage/Community Project
For Ilminster, Donyatt, Knowle St Giles, & Chard

From 2005 to 2009, a group of volunteers from Ilminster, Donyatt, Knowle St Giles and Chard joined together to design a heritage project linking their communities along part of the National Cycle Network 33 (The Stop Line Way). In 2008, the Heritage Lottery Fund awarded them a grant. This leaflet gives additional information about the heritage of the area covered by the project and suggests further links to examine.




THE STOP LINE WAY

Ilminster to Chard
(5-mile long metalled section)



The Stop Line Way is a long distance coast-to-coast walking and cycling route which in parts is suitable for wheelchairs and pushchairs. The cycle route is 75 miles long and partly follows the 'Taunton Stop Line' built by the Army in 1940 to contain any Nazi German invasion of the South West. These defences ran for 50 miles, from Burnham on the Bristol Channel to Seaton on the South Coast. Canals, railways and rivers were made into a continuous anti-tank obstacle with road blocks and over 380 concrete pillboxes. Between Ilminster and Chard it largely follows the track of the old Great Western Railway.



Walk or cycle
THE STOP LINE WAY
& discover hidden Somerset,
past & present






Figure 12: The Stop Line Way. A leaflet issued by Somerset County Council to accompany users of this leisure trail.

Is there a possible way ahead for the Gin Drinker's Line? In another former British colony, Malta, the island's remaining pillboxes, together with the airfields and anti-aircraft batteries and especially the iconic, rock-cut air raid shelters are now seen as educational aids making a contribution to tourism and contributing to the reconciliation of Maltese national identity with its British past. A recent paper by Joseph Margo Conti (2009) further notes that there has been hostility in some circles to such memorials on political, aesthetic and economic grounds. In the last 20 years, however, there has been an increase in the interest shown by the Maltese public in the country's diverse heritage, mainly owing to the influence of the media and in the increased opportunities for the widening of interest and cultural capital, for example through better education and museum access. Lobbying by a local non-governmental office, the Maltese Heritage Trust (FWA), plus action by the Maltese Environmental and Planning Authority has led to statutory protection being given to samples of the country's recent heritage before it is too late. Through understanding there is increased awareness leading to a greater appreciation leading to conservation. 'Community archaeology' is now felt to be the cornerstone of modern heritage management with the involvement of the public in heritage matters. Better access to sites leads to greater participation and public involvement leading to the handing over to the public of part of the management of sites.

In Malta one possible 'audience' is the thousands of tourists who visit the island each year. In the view of the International Council on Monuments and Sites (ICOMOS) 'tourism and conservation activities benefit the host community' leading to a contribution to the socio-economic benefits of the host country in terms of employment and local involvement in site management'. (International Council on Monuments and Sites (ICOMOS) 1999: Principle 5) The key, according to Conti (2009), is a volunteer programme, for example the UK Defence of Britain project, beginning in 1995, where over 600 volunteers carried out a 'mass observation of history' in documenting WW2 sites. Public interest grows as access increases. Finally, public involvement in heritage management is about making the past relevant to society by understanding the needs and expectations of the public in all its diversity by communicating its significance, especially to local people (Conti 2009).

Finally, Foot, Council for British Archaeology, English Heritage (2006), state the importance of the British pillboxes: 'although no ground fighting took place on British soil [i.e. that of the British Isles], the relics of these defences seen in lines across the countryside can be viewed as reflecting the high water mark of Nazi expansion – battlefields that were prepared but to which, thankfully, contesting armies never came'. How more apposite, then, to consider the situation in Hong Kong where these British defensive structures did form

part of a contested battlefield and where a detailed study might indicate how their British equivalents might have stood up to attack. I submit that the Hong Kong defences deserve the protection that their British equivalents are now, at last, receiving.

REFERENCES

- Ancient Monument Board for Wales (2003), *Protecting Twentieth Century Military Structures in Wales*, Cadw, Cardiff.
- Banham T (2003), *Not the Slightest Chance: The Defence of Hong Kong, 1941*, Hong Kong University Press, Hong Kong.
- Cadw (2009), *Caring for Military Sites of the Twentieth Century*, Cadw/Welsh Archaeological Trusts, Cardiff.
- Catling C (2010), *Kelmscott Manor*, The Society of Antiquaries, London.
- Conti MJ (2009), Public access to Second World War British heritage in Malta, *Europe's Deadly Century: Perspectives on 20 Century Conflict Heritage*, Forbes, N. Page, R. and Pérez G. (eds.), Heritage, Swindon, 123-133.
- Davies SNG, Lai LWC, and Tan YK (2009), Small World War II Coastal Gun Casemates, Pillboxes, and Open Machine Gun Positions on Hong Kong Island in Photos, *Journal of the Royal Asiatic Society Hong Kong Branch*, 49, 57-91.
- Depret J (2009), *Les Fortifications Britanniques du Secteur Défensif de Lille en 1940*, *Magazine*, 39/45 271, 44-52.
- English Heritage (2000), *Twentieth Century Military Sites*, English Heritage, London.
- Foot W (2006), *Beaches, Fields, Streets and Hills: the Anti-Invasion Landscapes of England*, Council for British Archaeology and English Heritage, London.
- Foot WF, Council for British Archaeology, English Heritage (2006), *Beaches, fields, Streets, and Hills: The Anti-invasion Landscapes of England, 1940*, Council for British Archaeology, York.
- Fortress Study Group (2010), The Newsletter, *Casemate*, 89, 41.
- Fraser D (1983), *And We Shall Shock Them: The British Army in Second World War*, Hodder and Stoughton, London.
- Lai LWC, Davies SNG, Tan YK and Yung P (2009), The Gin Drinker's Line: Reconstruction of a British Colonial Defence, Line in Hong Kong Using Aerial Photo Information, *Property Management*, 27:1, 16-41.
- Lai LWC, Tan YK and Davies SNG (2008), To Action on The Gin Drinker's Line, *British Archaeology*, 101, 32-35.
- Lowry B (ed.) (1995), *Twentieth Century Defences: an Introductory Guide*, Council for British Archaeology, London.
- Mary JY, Hohnadel A and Sicard J (2010), *Hommes et Ouvrages de la Ligne Maginot Tome 5, Histoire & Collections*, Paris.
- Oldham P (1995), *Pillboxes on the Western Front*, Leo Cooper, London.
- Schofield J (2004), *Modern Military Matters*, English Heritage, London.
- Spiteri SC (1991), *The British Fortifications: An Illustrated Guide to The British Fortifications in Malta*, Valetta, Malta.
- Tomlinson R (1998), Masonry blockhouses of the Anglo-Boer War 1899-1902, *Journal of the Fortress Study Group*, 26, 169-198.

Location of Pillboxes and Other Structures of the Gin Drinker's Line Based on Aerial Photo Evidence

Lawrence W.C. Lai*, Y. K. Tan**, Ken S.T. Ching*** and Stephen N.G. Davies****

Figure 1 shows the identified locations of 93 pillboxes (PBs) with numbers and 20 other structures (kitchen (KIT), lookout (L), observation post (OP), company headquarters (Coy HQ), anti-aircraft searchlight shelter (AASL) and engine room (Eng Room)) of the Gin Drinker's Line on a modern survey map.

The database and methodology for pinpointing these are the same as those for Lai et al. (2009), but updated as PBs 211 (Yuen Chau Kok) and 409 (Lai King) have been doubled and confirmed by further aerial photo evidence, while the exact locations of PBs 307 (near Sha Tin Public School, Tai Wai) and 313 (inside Kowloon Reservoir catchment) have been identified clearly from aerial photos.

Certain place names in **Figure 1** have been abbreviated:

GH: Golden Hill
GP: Grasscutter's Pass
SP: Shatin Pass
TW: Tsuen Wan
TY: Tsing Yi

The map in **Figure 1** was basically produced using a combination of surveying techniques involving the interpretation of old 1949, 1963, 1964, and more recent aerial photos. These can be inspected at the Geography Library of the University of Hong Kong and at the Lands Department. The techniques used include studying old 1:600 survey sheets, site visits, and on-site measurements. Such an integrated approach was essential for this particular project as the military features, mostly in ruins and roofless, are widely scattered across the region to the north of the east-west ridgeline of the Kowloon Range and/or covered by dense overgrowth. Access to some locations was potentially hazardous due to the threat of landslides or to heavy undergrowth and, thus, direct on-site land surveying for each and every individual feature was not possible.

For data analysis in the office we applied the contemporary Geographic Information Systems (GIS) techniques to identify the locations of inaccessible features. The method was: once the approximate location of a particular feature had been pinpointed from pairs of old aerial photos, the aerial photos were then "geo-referenced" in a GIS platform with respect to contemporary 1:1,000 survey sheets obtained from the Lands Department. These "geo-referenced" features, which are in the local HK1980 Grid system, were then compared with all other available data such as old 1:600 imperial scale survey maps, results from handheld GPS instruments, or other archive records to determine their exact positions.

Before these features were plotted onto our map, a final quality control measure was also taken. We compared the geo-referenced results of all 61 military features, which were given accurate local grid coordinates in our previous study, with features indicated in 1:600 survey maps. These maps mostly do not indicate that a feature was actually a pillbox and sometimes they only give clues to the existence of one by an indentation in the contour which signifies its position, the parallel lines that mark the alignment of the two walls of its concrete rear entry tunnel or the surviving walls of the pillbox itself.

The finding was that out of the 61 features identified in the past study, 59 fell within 50m of their mapped locations, representing 97% of the sample. The other two features were found within 100m of the map location. **Figure 1** gives more features and should be accurate for identification purposes.

REFERENCES

Lai LWC, Tan YK, Davies SNG and Ping Y (2009), The Gin Drinker's Line: Reconstruction of a British Colonial Defence Line in Hong Kong Using Aerial Photo Information, *Property Management*, 27:1, 16-41.

* Professor, Department of Real Estate and Construction, Faculty of Architecture, University of Hong Kong

Email: wclai@hku.hk

** Research Assistant, Department of Real Estate and Construction, Faculty of Architecture, University of Hong Kong

Email: tanyk@netvigator.com

*** Chartered Land Surveyor

Email: keland@biznetvigator.com

**** CSSC Maritime Heritage Research Fellow (formerly Museum Director), Hong Kong Maritime Museum; formerly Lecturer, Department of Political Science, Faculty of Social Science, University of Hong Kong; Fellow, Centre of Asian Studies, University of Hong Kong

Email: stephendavies@hkmaritimemuseum.org

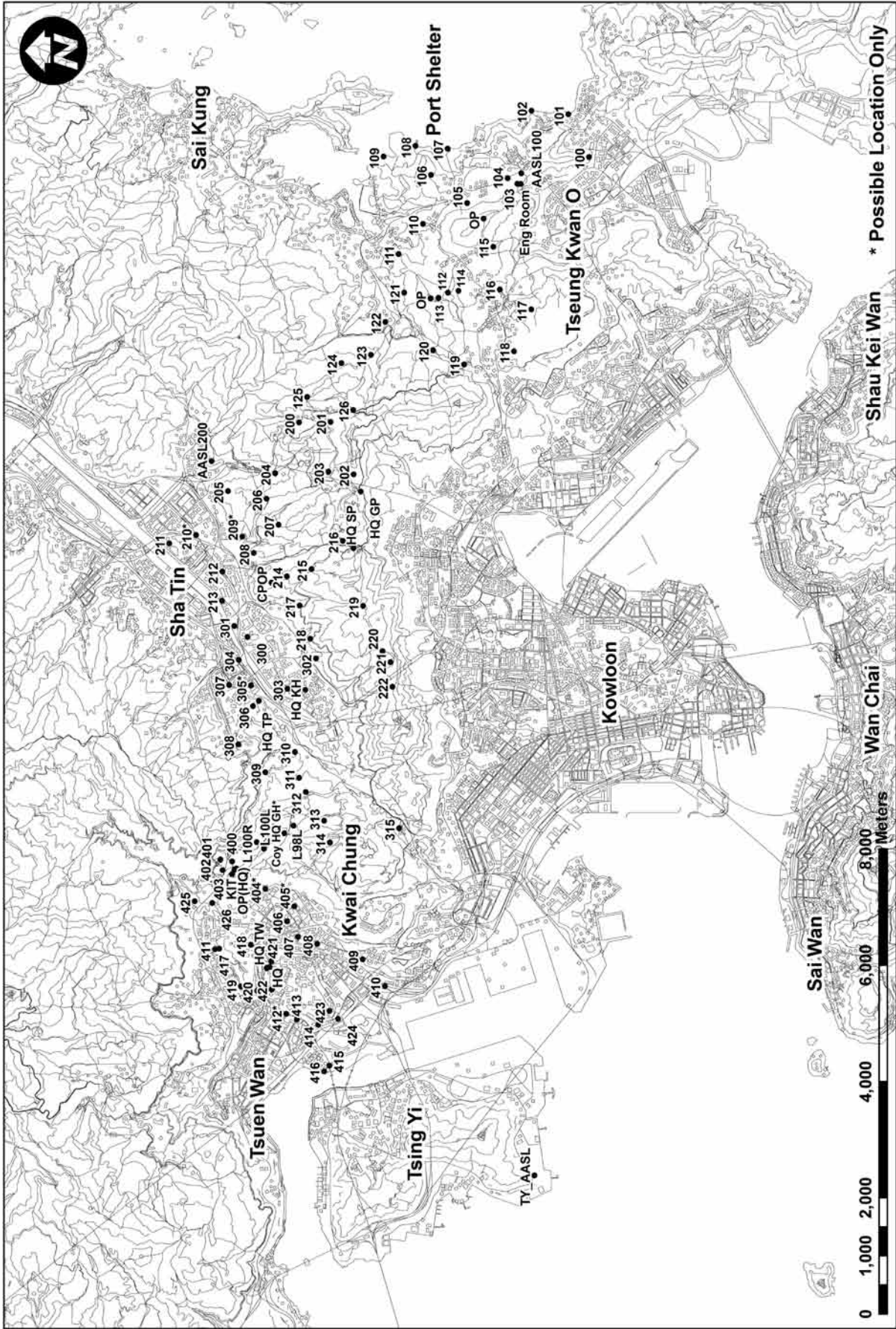


Figure 1: The Location of Pillboxes and Other Structures of the Gin Drinker's Line Based on Aerial Photo Evidence

Pillbox above Shing Mun Road

Y.K. Tan*

ABSTRACT

This paper describes the discovery and conditions of Pillbox No.419/420 on the Gin Drinker's Line.

THE GIN DRINKER'S LINE

The Gin Drinker's Line (Lai et al. 2009) used the natural barrier around the Kowloon Peninsula as a defence against an attack from the north. It was divided into four sectors: PB (pillbox) 100 to PB126*, starting from Silver Strand and passing Ho Chung to Tate's Cairn; PB200 to PB222*, starting from Tate's Cairn and passing above the Shatin area, ending between Lion Rock and Beacon Hill; PB300 to PB315*, starting near Che Kung temple and passing Shatin Heights, ending at Kowloon Reservoir; and lastly, PB400 to PB426*, which comprised a double line from the Shing Mun Redoubt to the present-day Riviera Garden, formerly a Texaco oil depot, in Kwai Chung. (*Represents the highest pillbox serial number I am aware of in these sectors.)

THE SITE

I was told by local historian Tim Ko that a Gin Drinker's Line pillbox still existed above the Shing Mun Road in early 2002 (**Figure 1**). The pillbox was on the slope a few meters above the road and completely covered by overgrowth. That site was a cleared squatter area, and the pillbox was located among some demolished huts. The surrounding landscape had been largely reshaped by the squatters. I then searched the entire surrounding area, but could not find any other military structure or marker stone. The site can overlook the Shing Mun valley and the catchwater below Tai Mo Shan (**Figures 2a, 2b and 3**).



Figure 1: The pillbox site in early 2002 completely covered by overgrowth so it can't be seen from the road side and Shek Wai Kok Estate.

*Research Assistant, Department of Real Estate and Construction, Faculty of Architecture, University of Hong Kong
Email: tanyk@netvigator.com

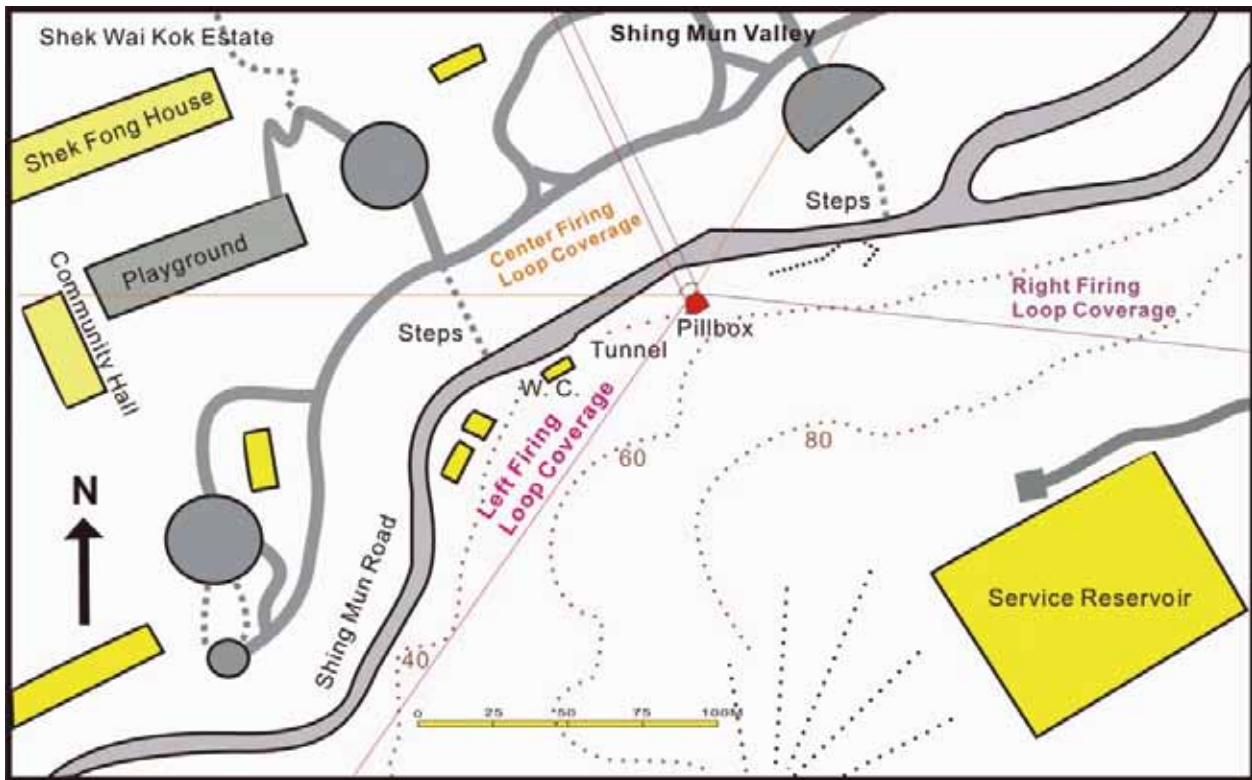


Figure 2a: Shing Mun Road site map in 2002

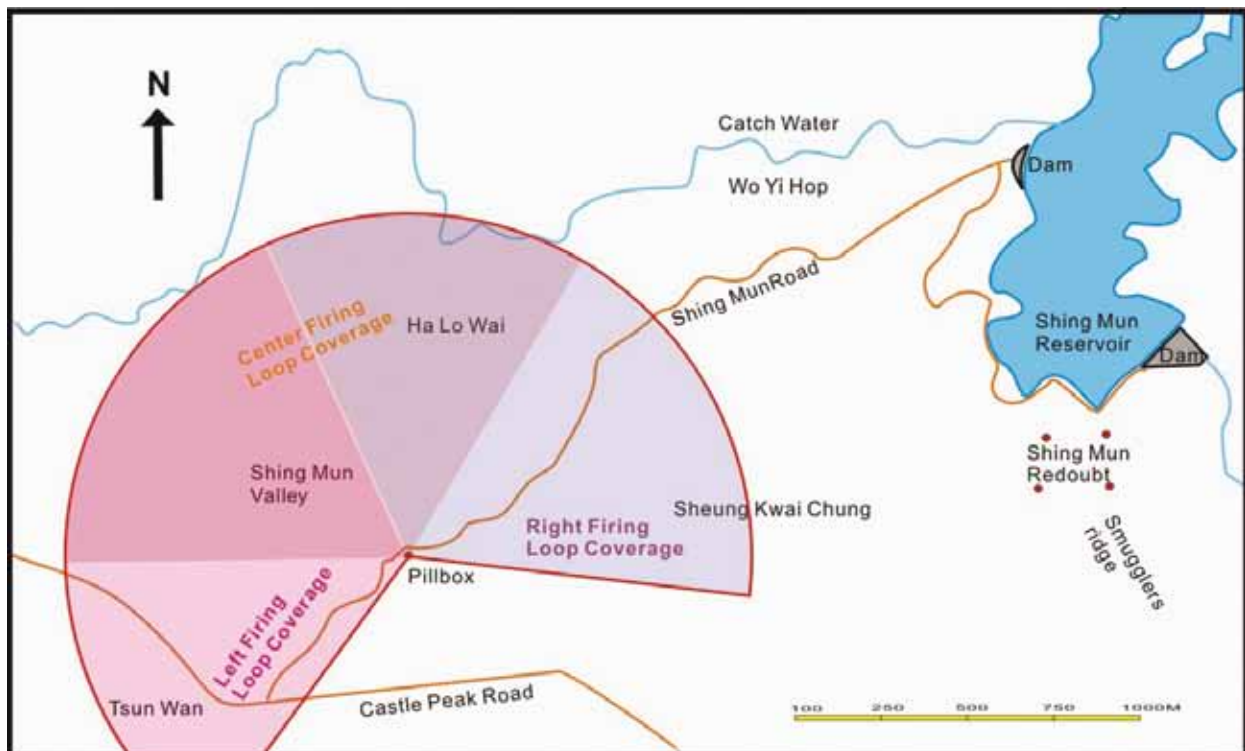


Figure 2b: The fields of fire of the Shing Mun Road pillbox in 1941. Note that local topography has placed considerable restrictions on the range of the beaten zone on the left and far right.



Figure 3: Looking out from the pillbox in 2003

THE PILLBOX

A pillbox is a strong defence shelter equipped with machine guns. The Shing Mun Road pillbox would have been built during late 1930s when the Gin Drinker's Line was constructed. Each pillbox was manned by around ten soldiers. It is not entirely clear what the serial number of the Shing Mun Road pillbox was, but it would have been either PB419 or PB420.

The condition of PB419/20 is very bad. Squatters converted it into a living room and workshop, which caused a lot of damage (**Figures 4 and 5**). All the walls and roof were covered by a black layer, which indicated that they had suffered through a fire. Like most of the Gin Drinker's Line pillboxes, the reinforced steel rods inside the wall had been removed after the war. Inches of wall were dug away, leaving clear marks in place of the removed steel rods (**Figure**

6). This made it very difficult for me to measure the pillbox accurately. A lot of effort would have been required to remove all the earth covering the pillbox and to dig out the steel deep inside the concrete. Such steel must have been worth a lot of money at the time. Half of the internal wall inside the pillbox had also been knocked down to create more internal space. One of the firing loops had been converted to an entry and two others were cleared for a window. The original entry was blocked by a house next to it and the roof was covered by a plastic sheet to help keep out the elements.

Despite the fact that the condition of this pillbox was poor, it was still a valuable structure, as almost all the pillboxes along the Gin Drinker's Line had been blown up by the military during the 1950s. The few remaining pillbox sites in Tsuen Wan and Kwai Chung were also completely demolished in favor of new town development.



Figure 4: The pillbox looked at from the outside. Note the plastic sheet on the roof.



Figure 5: The entry converted from a fire loop. The original entry still can be seen on the right side of the photo.



Figure 6: The marks of removed steel rods can be seen clearly on the wall. A firing loop is on the right bottom side.

THE STRUCTURE

This is a large pillbox with three firing loops arranged in a polygon pattern. The “combat area” was in front of the pillbox (**Figure 7**). A central corridor separated three firing posts into two isolated spaces. In the living area, just behind the firing post, four retractable beds were mounted on walls. A 90cm thick internal wall separated the “back room” and pillbox entry from the “combat area”. A pipe, 8cm in diameter, was found under the roof near the entry, which might have been used to house communication lines.

The reinforced concrete roof and walls were both 80-90cm in thickness. However, some areas around the firing loop are less than 20cm thick. Both sides of the walls under the roof were reinforced by thick steel rods. The remains showed that smooth surface

steel rods were used and covered by about 10 inches of concrete on both sides of walls. In the exterior of the walls, vertical steel rods ran all the way from top to bottom, while those inserted into the interior were significantly shorter, ending just below the roof. This could indicate that the roof was added after the walls had been constructed. The concrete was mixed with large pieces of granite aggregate, which was typical of the time. I found some crevices in the roof, which indicated that the granite aggregate and concrete were not completely mixed during the construction. This was not evident in the other surviving pillboxes, which may suggest that it was built hastily. Originally, this pillbox should have been covered by a thick layer of earth with only the firing loop exposed to the outside. However, this pillbox was completely dug out from the ground during the post-war steel removal.

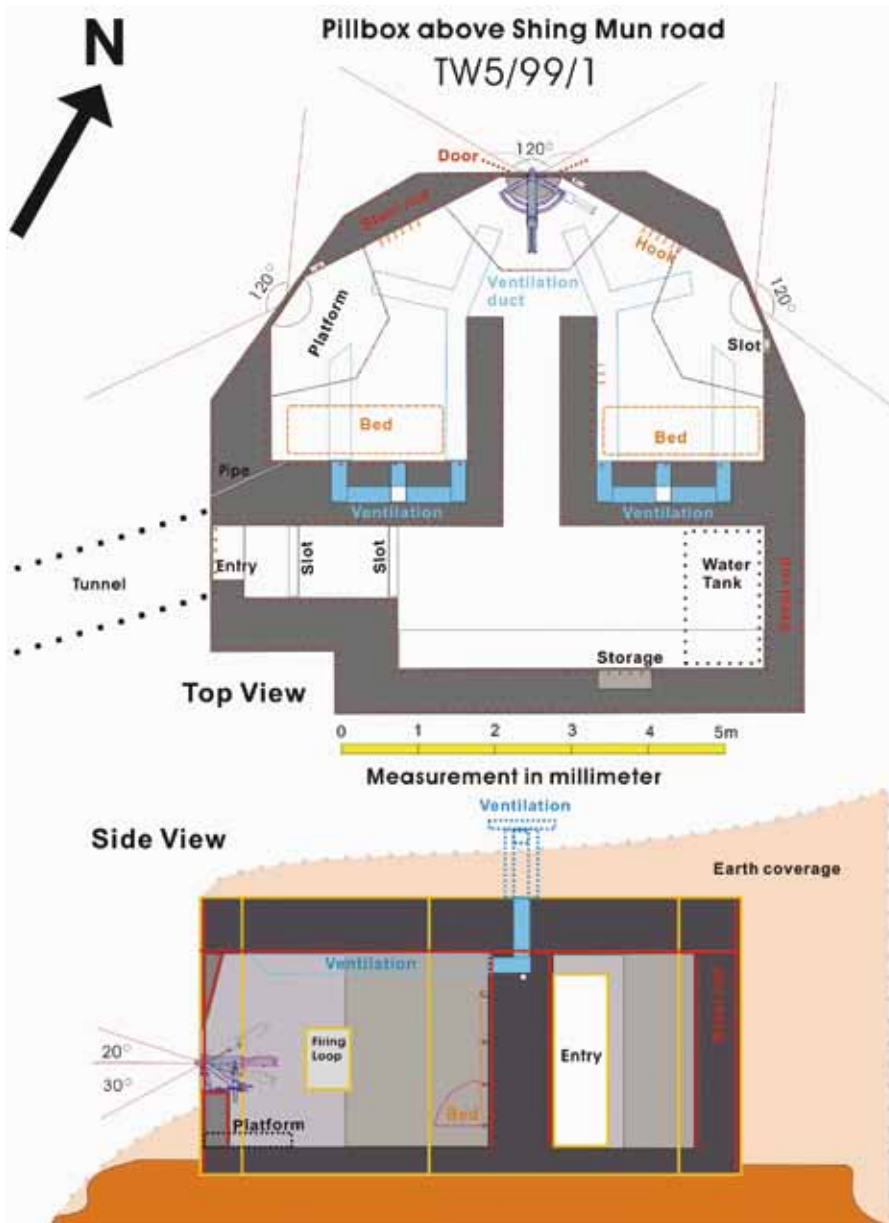


Figure 7: Layout of Pillbox 419/420

THE FIRING LOOP

The firing loop measured around 80cm x 80cm and was seriously damaged by the conversion (**Figures 8a and 8b**). Inside the pillbox, a 70cm high semicircular concrete stand was constructed below each firing loop for the installation of a machine gun mount, which provided the pillbox with additional protection. Above the firing loop there was also a triangular-shaped reinforced structure connected to the roof. The frontal walls around the firing loops were the thinnest and weakest points of all the pillboxes constructed along the Gin Drinker's Line. This problem was avoided by redesigning the pillboxes constructed later on Hong Kong Island.

All pillboxes were designed to accommodate the same gun: the Vickers .303" water-cooled medium machine gun together with its mounting. The range of the gun

was over 1,000 yards. The machine gun mount was specially designed for Hong Kong. It could pivot 120° left/right, 20° up, and 30° down. The shape of a pillbox was designed to maximize the field of fire of each firing loop. Altogether, the three firing loops of this pillbox had a 240° arc of fire with a 60° overlap. Originally, a pair of armored doors were installed in front of each firing loop. They could be closed and locked completely from inside when necessary.

A 12cm x 150cm slot was found on the firing loop's right wall, probably to prevent the ammunition belt from making contact with the wall when the machine gun was rotated all the way to the right. This slot was not seen on the Hong Kong Island pillboxes, as their newer design improved the space around the firing position. The other pillboxes along the Gin Drinker's Line usually had a half hexagon-shaped platform constructed around their firing post. However, in this pillbox, the floor was leveled by squatter and there was no trace of the platform.



Figures 8a & 8b: The area around the middle firing loop. The left firing loop was converted to an entry. Note the slot at the right side of firing loop and the damaged stand.



Figure 9: The living area behind the right side firing position. Note the mark on the ceiling for the ventilation duct mounting and the hook on wall.

THE BACK ROOM

All pillboxes along the Gin Drinker's Line had a "back room" behind the "combat area". It was surrounded by a thick concrete wall and connected to the entry, which was the most protected area in the whole pillbox (**Figures 9, 10a and 10b**). It provided a shelter for soldiers under heavy fire and allowed them to escape outside if needed. Storage space was found inside the wall for ammunition and supplies. A water tank

was usually installed at the back of the storage area to provide cooling water for the Vickers machine gun. However, no remains of such were found in this pillbox.

The entrance to the pillbox was located on the side of the "back room," which was the only way to enter and exit. The original entry was blocked by another hut in front of it. Two slots were found in the roof and wall in front of the entrance, however most of wall surface was

damaged and most traces of the slots had disappeared almost completely. Compared to other pillboxes, these slots might have been used to install a pair of roller doors to prevent attackers from penetrating into the structure.

The entrances to many pillboxes along the Gin Drinker's Line were connected by a brick tunnel or concrete trench. These tunnels and trenches were

always constructed at an angle from the entrance to prevent fire along the tunnel or trench from penetrating the entrance. However, no remains of either a tunnel or a trench were found near this pillbox, as other huts had been built in front of the original entrance. Nearby squatter dwellers might have destroyed the tunnel and used the bricks to build their own huts. I guess that the original tunnel entrance would have been near where a modern toilet is located on the Shing Mun Road side.



Figures 10a & 10b: The back room and entry. Note the demolished middle wall and the slot on the roof in front of the entry.

VENTILATION

The internal wall separating the “combat area” from the “back room” also doubled as the pillbox’s ventilation system. A 20x20cm duct was built inside the 90cm thick wall just under the roof. It was connected to a vertical duct that passed through the roof to the chimney above (**Figures 11a, 11b and 12**). The chimney on the roof was destroyed while the vertical duct was blocked, probably to prevent rainwater from entering the structure. Several ducts were mounted on the roof to channel outside air to the pillbox. The bolts mounting the ventilation ducts on the roof were still visible.

As there was no electric fan or other mechanism to increase the air flow, the efficiency of the ventilation system, especially under combat conditions, is questionable. The ventilation for this pillbox depended mainly on the air flow coming from the firing loops and the entrance tunnel. For ten soldiers in such a small space, ventilation inside the pillbox would have been very poor when the entrance and the firing loops were all closed. It was very humid inside the pillbox during my visit in the rainy season. Living conditions here must have been Spartan for its inhabitants. I wonder how the situation was during a hot summer’s day.



Figures 11a & 11b: The ventilation duct in the damaged wall. Note the vertical duct in the roof.



Figure 12: The right firing loop and part of the living space can be seen on the right side. Note the mark on the ceiling for the ventilation duct mounting and the hook on left side wall.

THE END

I visited the pillbox in March 2002 and spent a few days there surveying the site. I found a notice on the pillbox showing it was registered as TW 5/99/1, similar to those illegal structures in the vicinity. I believe the sole reason why the government left the pillbox there when demolishing the surrounding buildings was because it lacked the equipment to demolish a military-grade structure. Someone from the government's Housing Authority no doubt believed that this strange structure, with its massive one-meter thick concrete roof and walls, was just another illegal squatter structure! (Figure 13) This is an indication of ignorance or poor recordkeeping, or at least an

inadequate analysis and survey of the structures on the ground by a competent and informed professional. The pillbox was demolished by 2003. (Figure 14)

The Antiquities and Monuments Office (AMO) had not been informed about this structure, nor was any professional opinion sought before the pillbox was demolished shortly after my visit in favor of slope maintenance. Yet another wartime memorial in Hong Kong was destroyed unnecessarily, along with all the valuable information and wartime history that it represented. Who knows how many other historical sites in Hong Kong have disappeared and will disappear without fanfare in the same way as this pillbox?



Figure 13: The government notice posted on the Shing Mun Road pillbox.



Figure 14: The Shing Mun Road site in 2003 with the previous location of the pillbox highlighted.

REFERENCES

Lai LWC, Tan YK, Davies SNG, and Ping Y (2009), The Gin Drinker's Line: Reconstruction of a British Colonial Defence Line in Hong Kong Using Aerial Photo Information, *Property Management*, 27:1, 16-41.

Survey Findings on Japanese World War II Military Installations in Hong Kong

Lawrence W.C. Lai*, Ken S.T. Ching** and Y.K. Tan***

ABSTRACT

This technical note reports the surveying findings on known and likely Japanese military installations built of permanent materials in Hong Kong during the Japanese occupation period from 25 December 1941 to 15 August 1945.

INTRODUCTION

Research on precise building structures and locations of World War II military installations in Hong Kong is still in its infancy, although popular and academic appreciation of their values for heritage conservation and cultural tourism planning is growing. Most archive and secondary sources available to the public are about British defence structures, while information on those built by the Japanese is almost non-existent. As part of Hong Kong's "negative heritage," which evokes bad, unhappy, tragic or other emotionally stressful memories, they are reminders of the need for peace and reconciliation.

Inspired by the work of Tim Ko's (2001) *War Relics in the Green*, which refers to the clusters of Japanese pillboxes built in Luk Keng (on the southern shore of Sha Tau Kok Hoi (Starling Inlet)), the authors collected information from books, Royal Air Force (RAF) 1945 and 1949 aerial photos, military structure enthusiasts (notably Mr. Rob Weir), and websites that have information on the locations and types of known and likely Japanese military buildings in Hong Kong before carrying out formal site surveying and mapping exercises. The key findings are presented on modern 1:1,000 survey maps herewith with a view to promoting further and better research on the subject.

Aerial photos, either single or taken consecutively

in pairs, were geo-referenced with respect to a contemporary 1:1,000 survey sheet to build orthographic images in a GIS platform so that these military structures could be accurately measured and mapped.

Who built these structures? The Kai Tak Airport extension was built by Allied POWs. The rest were likely by local villages hired or impressed by the Japanese military.

In our survey, especially where a field examination was not feasible due to security restrictions or demolition of the structure, particular care has been taken in regard to aerial photo and map studies to examine if the buildings or trenches might have been built pre-war or post-war¹ by the British Army and the Hong Kong Regiments (RHKR 2004), which dug a number of trenches after the war in the countryside on exercise. A good example can be found on Kai Kung Leng, Shek Kong.

PILLBOXES AND TRENCH SYSTEMS NEAR WONG CHUK YEUNG

Never reported before, this site was discovered from the 1945 RAF photos (4031-681/5, dated 10 November 1945) and remained intact, as shown in R.C. Huntings'

* Professor, Department of Real Estate and Construction, Faculty of Architecture, University of Hong Kong

Email: wclai@hku.hk

** Chartered Land Surveyor

B.Eng.(Hons) (UNSW), M.G.I.S.(HKU), FHKIS, MRICS, RPS(LS), ALS, MCI Arb, MSS I(Aust.), MIS(Aust.)

Email: kenching@hku.hk, keland@biznetvigator.com

*** Research Assistant, Department of Real Estate and Construction, Faculty of Architecture, University of Hong Kong

Email: tanyk@netvigator.com

¹ For a description of post-war artillery deployment in Hong Kong, see Rollo (1991). For a glimpse of the defence strategy of the British military from the mid 1980s, see Lindsay (2005), who revealed the readiness for "a classic withdrawal battle to Kowloon (and through the Gin Drinkers' Line) and the Island" (p.52) and control of illegal immigrants as a Chinese tactic to put diplomatic pressure on the colonial administration (p.53).

aerial photos of 1963 (e.g. No.9662, dated 19 February) and 1964. As there was no record of British defence works built before the surrender in this area, which was well outside the perimeter of the Gin Drinker's Line (Lai et al 2009), we believe this system was built by the Japanese. It is likely that it was built to check the movements of Communist guerrillas, who were

active in the Sai Kung area. At least 13 pillboxes were identified, and they were connected by a system of trenches dug into the hillside. The site is now heavily overgrown and structures have been demolished or removed. Based on aerial photo information, the site was mapped and shown in **Figure 1**.

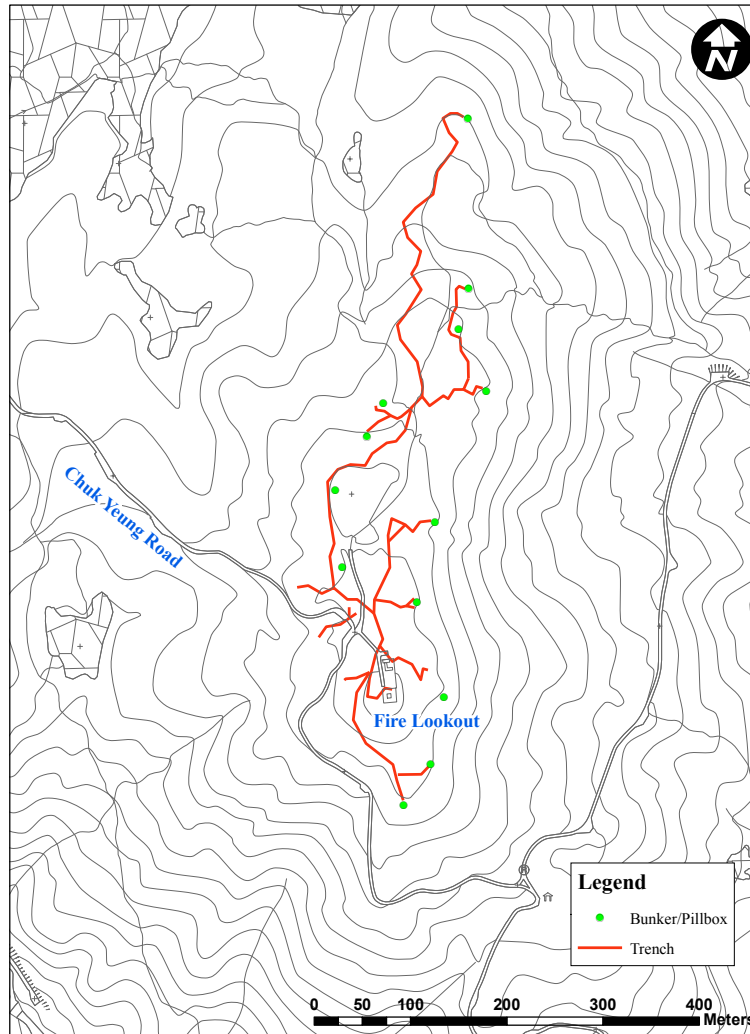


Figure 1: Military features at Wong Chuk Yeung

PILLBOXES AND TRENCH SYSTEM NEAR LUK KENG

First reported by Ko (2001: pp.47-50), followed by Yip (2008: 134, 138-139), the defence works at this site, on a hill (with a 121 trig station on the ridge) between Nam Chung in the west and Luk Keng in the east, were built during the occupation and are as important as most of the structures that are still intact. Therefore, they provide researchers with rare examples of Japanese WWII military architecture. The site was classified Grade 2 on the government's "List of the Historic Buildings in Building Assessment" (Number: 432) on 18 December 2009.² We inspected the seven

large pillboxes on top of the ridge, which was encircled by a communications trench system and a single loop hole satellite pillbox to the south, but we could not visit other satellite pillboxes that faced west and east due to heavy overgrown. Some of these could, however, be found in our site and aerial photos (see, for instance, A37393, dated 21 January 1994). The total number of pillboxes should be greater than ten. The eight pillboxes we visited were all measured from the details and photos taken. For easy reference, they are named Pillbox 1 to 8 in a clockwise manner. Pillbox 1 is a twin pillbox with one guarding the north and one the east. Pillboxes 2 to 4 have firing loopholes facing Luk Keng and Nos. 6 to 8 loopholes facing Nam Chung. Pillbox No. 5 guarded the approach from the south. The map

² <http://www.amo.gov.hk/form/AAB-SM-chi.pdf>. The official designation is "pillboxes and observation posts".

is shown in **Figure 2A**, surveyed layout of pillbox No. 2 in **Figure 2B**; and the photos for pillboxes Nos. 1 to 8 in **Figures 3 to 10**. The appearance and design of the Japanese pillboxes in Hong Kong were different from those in Betio, Tarawa in the Pacific (see US

War Department 1995: p. 161). A well can be found near Pillbox 7, which latter has a very thick (about one metre) front wall and was built on the hillside. We believe this pillbox was the command bunker.

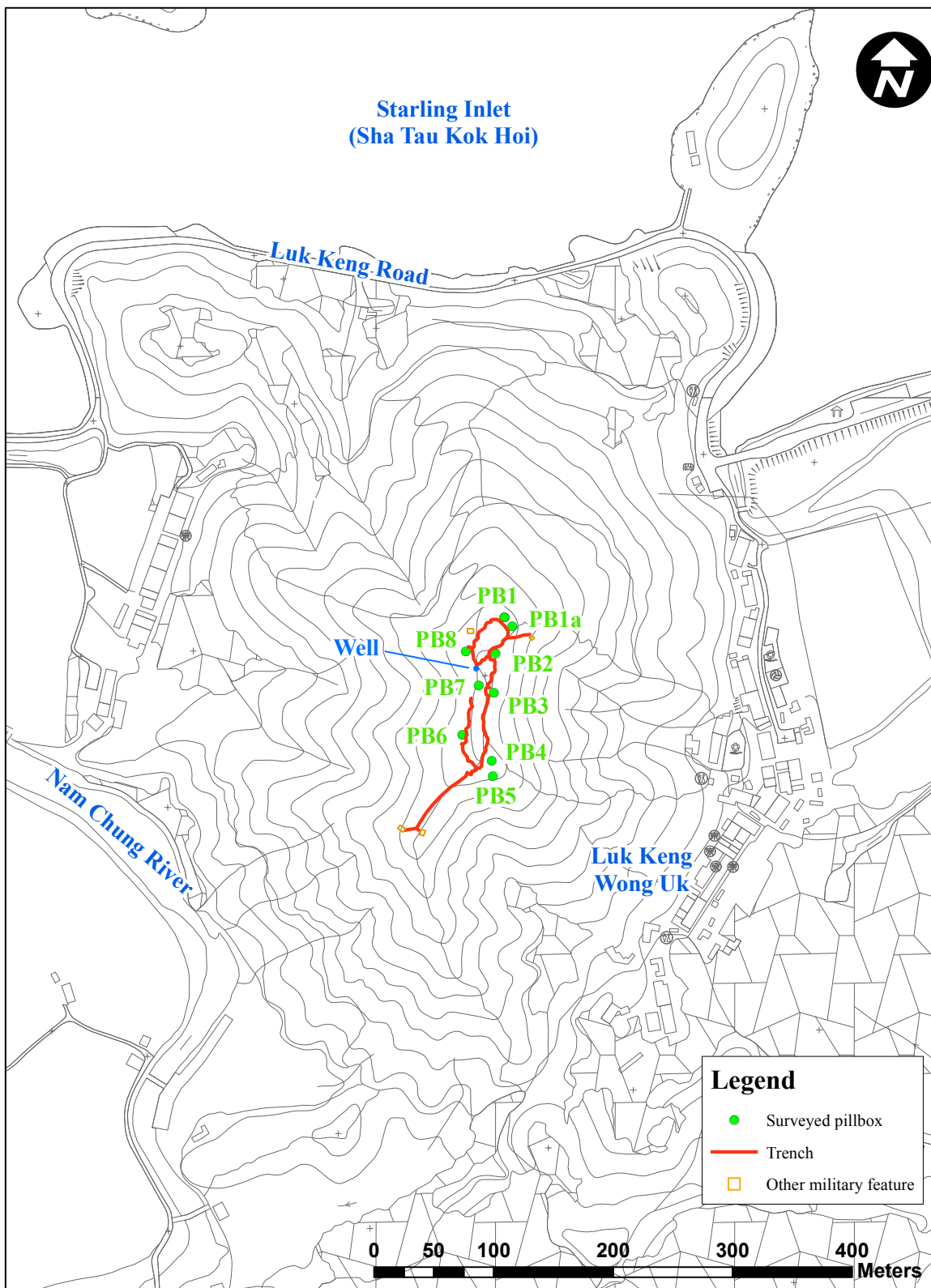


Figure 2A: Military features at Luk Keng

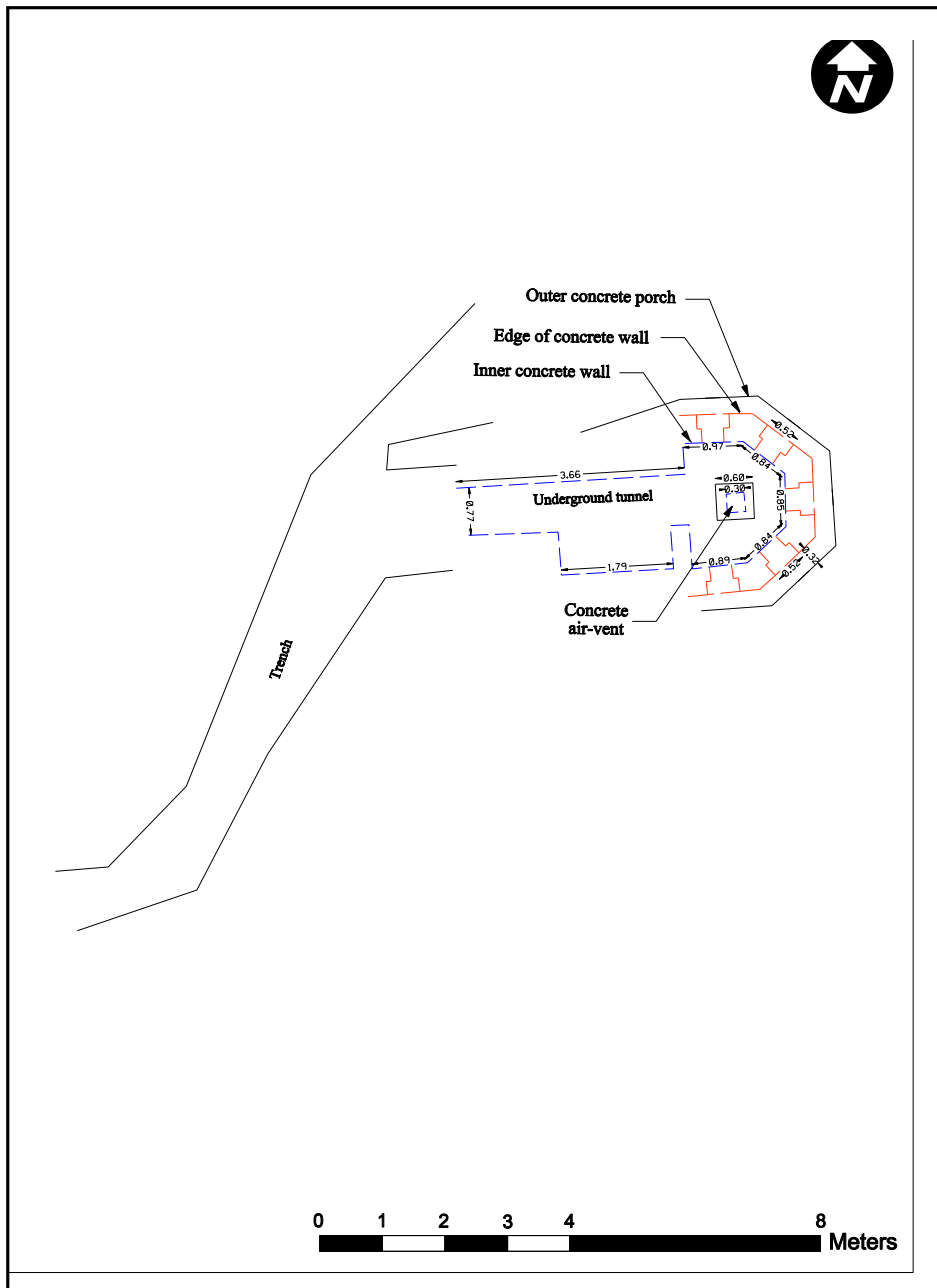


Figure 2B: Surveyed layout of Pillbox No.2, Luk Keng



Figure 3: Pillbox No.1, Luk Keng



Figure 4: Pillbox No.2, Luk Keng



Figure 5: Pillbox No.3, Luk Keng



Figure 6: Pillbox No.4, Luk Keng



Figure 7: Pillbox No.5, Luk Keng



Figure 8: Pillbox No.6, Luk Keng



Figure 9: Pillbox No.7, Luk Keng



Figure 10: Pillbox No.8, Luk Keng

From the oblique aerial photos, the big pillboxes look like Chinese farmhouses (see, for example, CW4082, dated 21 May 2002). Their facades were well-polished and finished and internal fittings were all gone. They were all built of reinforced concrete and Pillboxes 1 and 2 had air vents with squared concrete caps supported by 4 short iron rods as legs on their roofs. The military development at this site was probably carried out in anticipation of an Allied landing at Sha Tau Kok Hoi (Starling Inlet).

Based on the history of the Sai Kung detachment of the Communist East River Column, which actively operated in Hong Kong during the occupation killing Japanese and suspected collaborators, including priests (Criveller 2008: 118-120), we can infer that the site was built after the so-called Three-Three Incident of 3 March 1943, when more than 50 Japanese Kempeitai and two companies of Japanese soldiers captured the political commissars' HQ at Nam Chung after a fight (Chan 2009: p.77). Had the site uphill been constructed

and manned by Japanese soldiers earlier, the HQ would not have been stationed in that village. It was said that the Communist established an underground government in Nam Chung village in June 1943 (Chan 2009: p.83)

PILLBOXES AND TRENCH SYSTEM AT WU SHEK KOK, SHA TAU KOK

Never reported before, this site (mapped at **Figure 11**) was discovered from the 1945 and 1949 RAF photos (4030 681/4, dated 6 November 1945, and 6141 81A/130, dated 19 May 1949, respectively). The trenches remained intact, as shown in the Hong Kong Government's 1973 aerial photo (7676, dated 19 December). The 1949 aerial photo reveals a tower structure that could well have been a pillbox. The site is now a closed area.

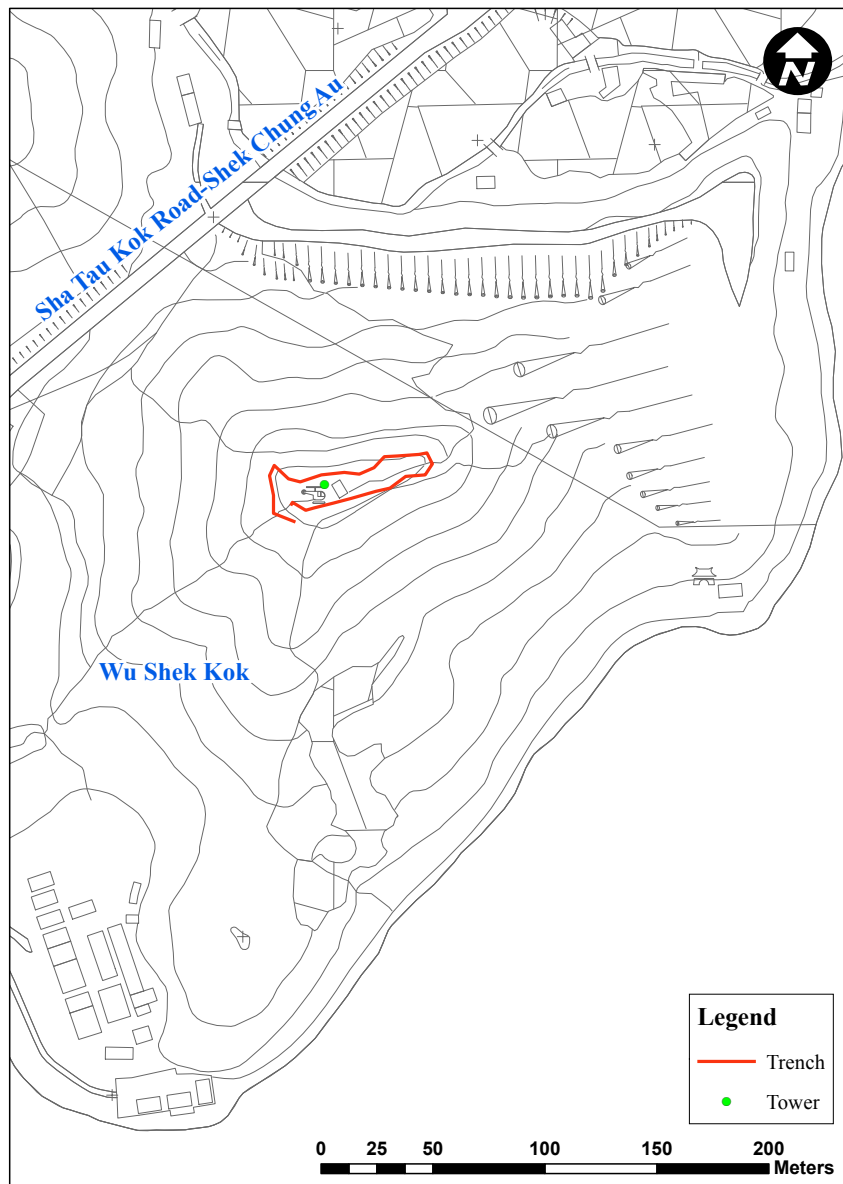


Figure 11: Military features at Wu Shek Kok

The layout of the trenches resembled that at Luk Keng (referred to above), and the purpose of this site was likely the same: anti-landing. Due to the impracticalities of site surveys in a restricted area, our mapping exercise relied on aerial photos. We used 1973 photo details as references and identified the trenches that encircled the ridge guarding both Sha Tau Kok Road and Sha Tau Kok Hoi.

GUN EMPLACEMENT ON TUNG LUNG ISLAND

A Japanese small gun emplacement was found near Nam Tong Mei (Tathong Point) on Tung Lung Island, probably to guard Tathong Channel. The caliber of

any gun mounted here would be less than six inches. The effectiveness of such a defence is an interesting question.³ The British had spiked nearly all fixed coastal guns before surrendering and the Japanese had no replacements for them. The Japanese were not using British guns. Nor is this site where any British site was. A 6" gun, depending on the charge, has a range of 8 to 9 miles, plenty enough to be a nuisance to any ship. The Japanese 12.7 cm/50 (5") Type 1 and 12.7 cm/50 (5") Type 5, the standard coastal gun (though not much used) had a range of 14 miles. That was probably why the Allies did bomb the island.

Figure 12 shows its location. For an aerial photo view, see, for instance, Huntings' aerial photo No.1132, dated 25 February 1963. The site is now a closed area.

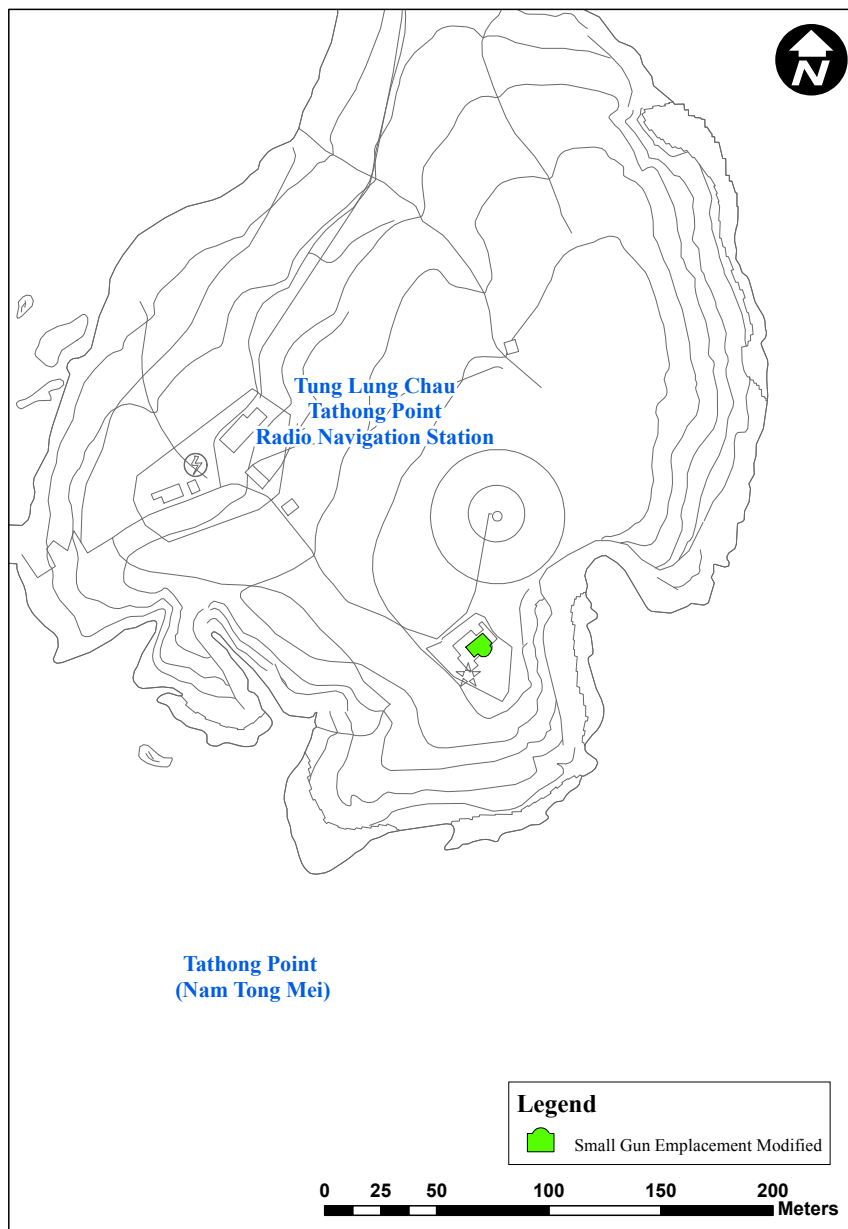


Figure 12: Military features at Tung Lung

³ We are grateful to Dr. Stephen Davies for his advice on this aspect of the defence.

PILLBOX AT TAI HOM VILLAGE

Reported in the news in 2000, a dome-shaped Japanese pillbox was found on the cleared site of Tai Hom Village (Figures 13 and 14). Near an old pre-war RAF hanger repaired by the Japanese after its demolition by the retreating RAF, its purpose was likely to defend the expanded Kai Tak Airport. This pillbox has been administratively graded by the government for conservation. The pillbox can be seen from a bus stop outside the A2 exit of the Diamond Hill Mass Transit Railway station. The site was classified Grade 2 on the government's "List of the Historic Buildings in Building Assessment" (Number: 1002) on 31 August 2009.⁴ Antiquities and Monument Office documents, which proposed to reclassify the structure as Grade 3, stated, "The Old Pillbox (機槍庫) was built by the Royal Air Force in the late 1930s. Although the location of the Old Pillbox was a bit far away from the Kai Tak Airport, it was situated at a strategic nodal point of the Ex-Royal Air Force Station (Kai Tak) and

the roads connected to the Kai Tak Airport. It was strategically important for defence, [for] if it fell into enemy hands, it would have enabled the enemy to attack the two other important locations (the Ex-Royal Air Force Station (Kai Tak) and Kai Tak Airport)."⁵ We have a different view, as all the walls of British pillboxes in Hong Kong were built of reinforced concrete, and this structure had entry walls clearly without steel reinforcement. Besides, had they been of British design,⁶ there would have been a number of similar examples along the perimeter of the old airfield. So far, we have no knowledge of the existence of any other example. Above all, the best type of defence for a hangar or an airport would have been anti-aircraft gun posts (say, for a 40mm Bofors light anti-aircraft gun tower⁷), not pillboxes with low elevation shooting apertures, though this is not true for the defence of an airport against a land mounted infantry attack. This dome-shaped pillbox is not any harder or easier to identify from the air.

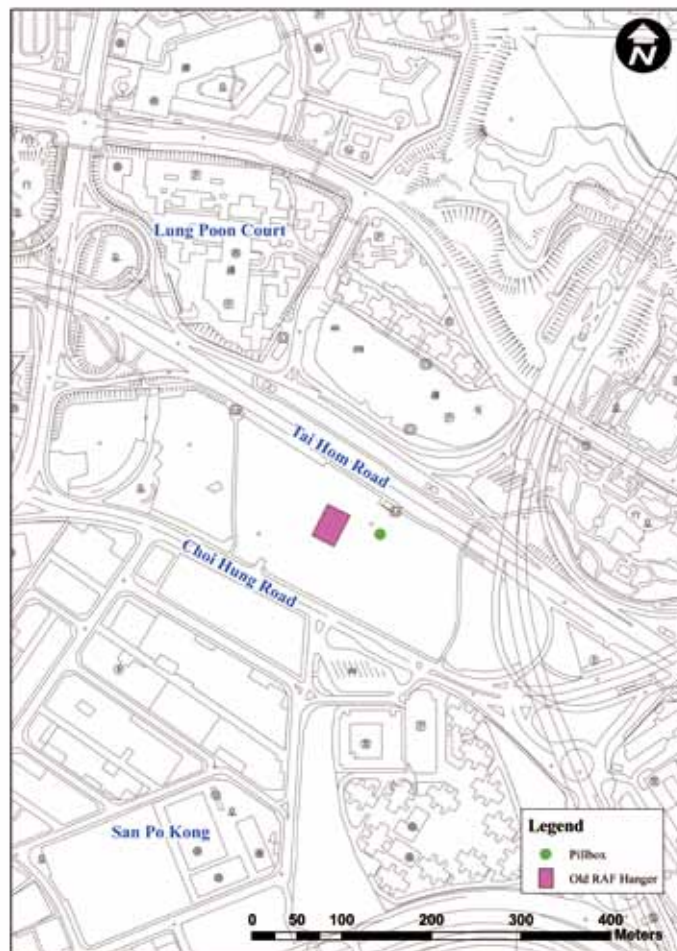


Figure 13: Military features at Tai Hom

⁴ <http://www.amo.gov.hk/form/AAB-SM-chi.pdf>. This site states that the pillbox was "built in the late 1930s". Last updated 15 June 2011.

⁵ http://www.amo.gov.hk/form/Brief_Information_on_proposed_Grade_III_Items.pdf.

⁶ See examples in Osborne (2009: pp.229-242). Mr. Bernard Lowry, an expert on British WWII home defence commented: "After 1940 and the use of standard FW3 designs on British airfields, the rapidly expanding RAF used its own works departments to come up with local designs for each airfield and to build them accordingly. There were many designs and variations. However, I know of none which used a domed roof like this one, which is more reminiscent of Italian 'bombproof' designs." The Tai Hom Village pillbox resembles the type, built of earth, found in Burma and the South Pacific (as shown in Figure 147, US War Department (1995: p.165)).

⁷ See an example in Osborne 2004 (p.175).



Figure 14: Japanese pillbox, Tai Hom Village

KAI TAK AIRPORT (PART)

The Japanese occupiers used POWs to expand Kai Tak Airport during the occupation. The outline of the airport in 1945 was shown in **Figure 15** based on RAF aerial photos 4115 and 4116 681/5, dated 10 November 1945. Included in our map is the yard in which the old

RAF hangar and the pillbox referred to above stand. Part of the 1945 airport was released to become the site for the San Po Kong industrial and school area, while the remainder of the airport was further expanded after the war until the 1980s (Eather 1996) and was decommissioned in 1998 when the current Chek Lap Kok International Airport commenced operations.

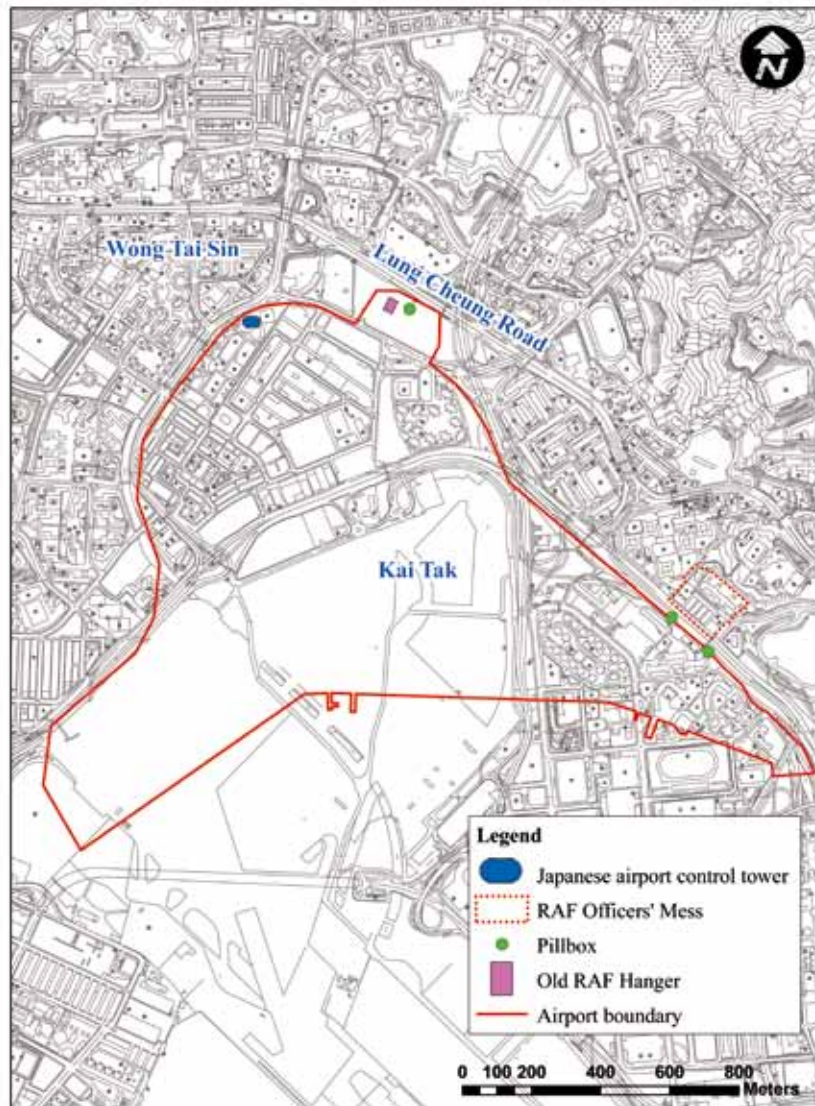


Figure 15: Kai Tak Airport 1945

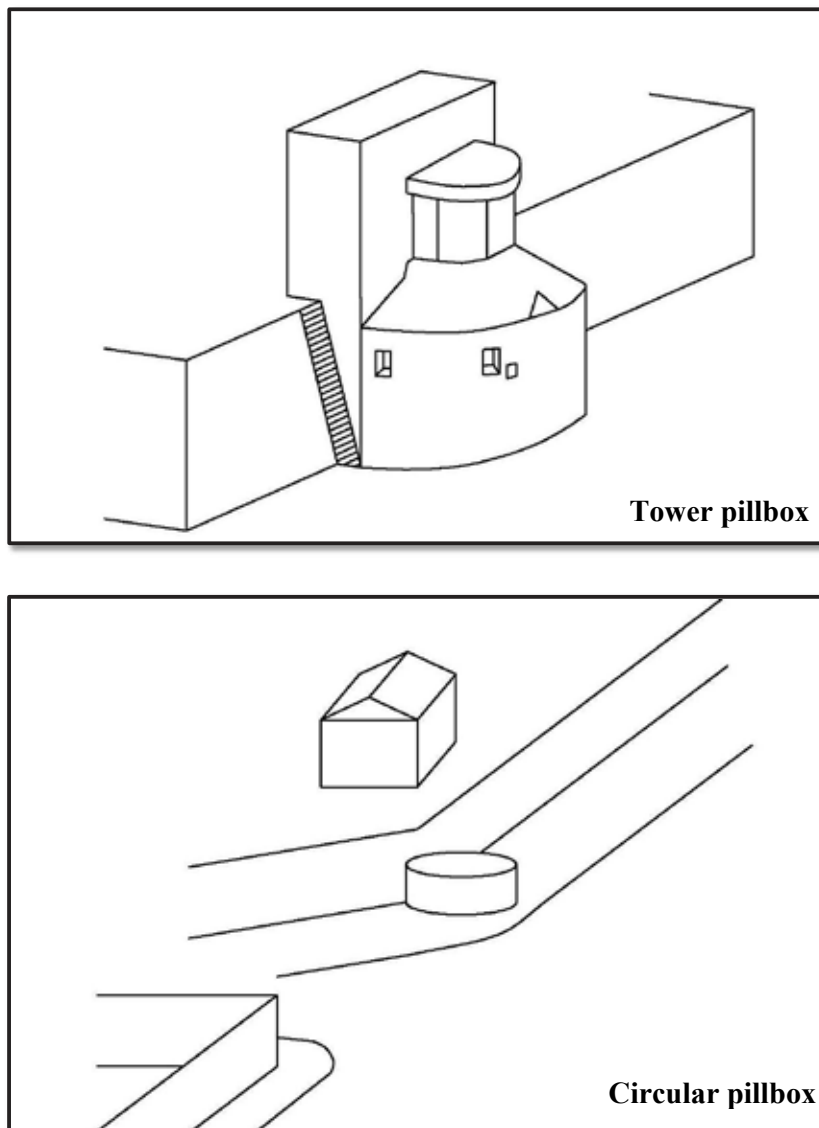


Figure 15a: Sketches of pillboxes near RAF Officers' Mess, Kai Tak

Figure 15 also locates two pillboxes (sketches shown in Figure 15a) along the present day Kwun Tong Road, opposite the R.A.F. Officers' Mess (the site is now occupied by Kai Tak Mansions, St Joseph Church and the Hong Kong Baptist College Academy of Visual Arts)⁸, from a 1946 photo found in Ng (2009: p.70). The eastern one, with a round base with firing holes, had an upper story with a wide aperture. It can be found on a 1949 aerial photo (6066 81A/117, dated 24 April). The western one is closer to the surviving RAF Quarters graded I by government⁹. It is likely that they were all built by Japanese engineers¹⁰.

RADAR AND AA GUN SITES ON TAI MO SHAN

The Japanese built Route Twisk¹¹ and a road up to the summit of Tai Mo Shan, on which a number of radar stations and AA gun sites were built by POWs from 1942 to 1943. A photo of part of the site is reproduced in Eather (1996: p.48). The exact locations were plotted on Figure 16 based on a 1945 RAF aerial photo (4021 681/5, dated 10 November). The installations were all demolished, although remnants can still be found. The government built a much bigger station in the area after the war. Figure 17 shows a photo of the ruins of an AA gun site.

⁸ <http://www.amo.gov.hk/form/AAB-Sm-Chi.pdf>. This mess is graded I but there is a proposal to downgrade it to II.

⁹ Ibid. Also proposed to be downgraded to II from I.

¹⁰ We thank Mr. Bernard Lowry for his comments on the origin of these two pillboxes.

¹¹ This was originally a military style acronym: TWSK, for Tsuen Wan (to) Sek Kong. They also built the road from Clear Water Bay junction to Sai Kung.

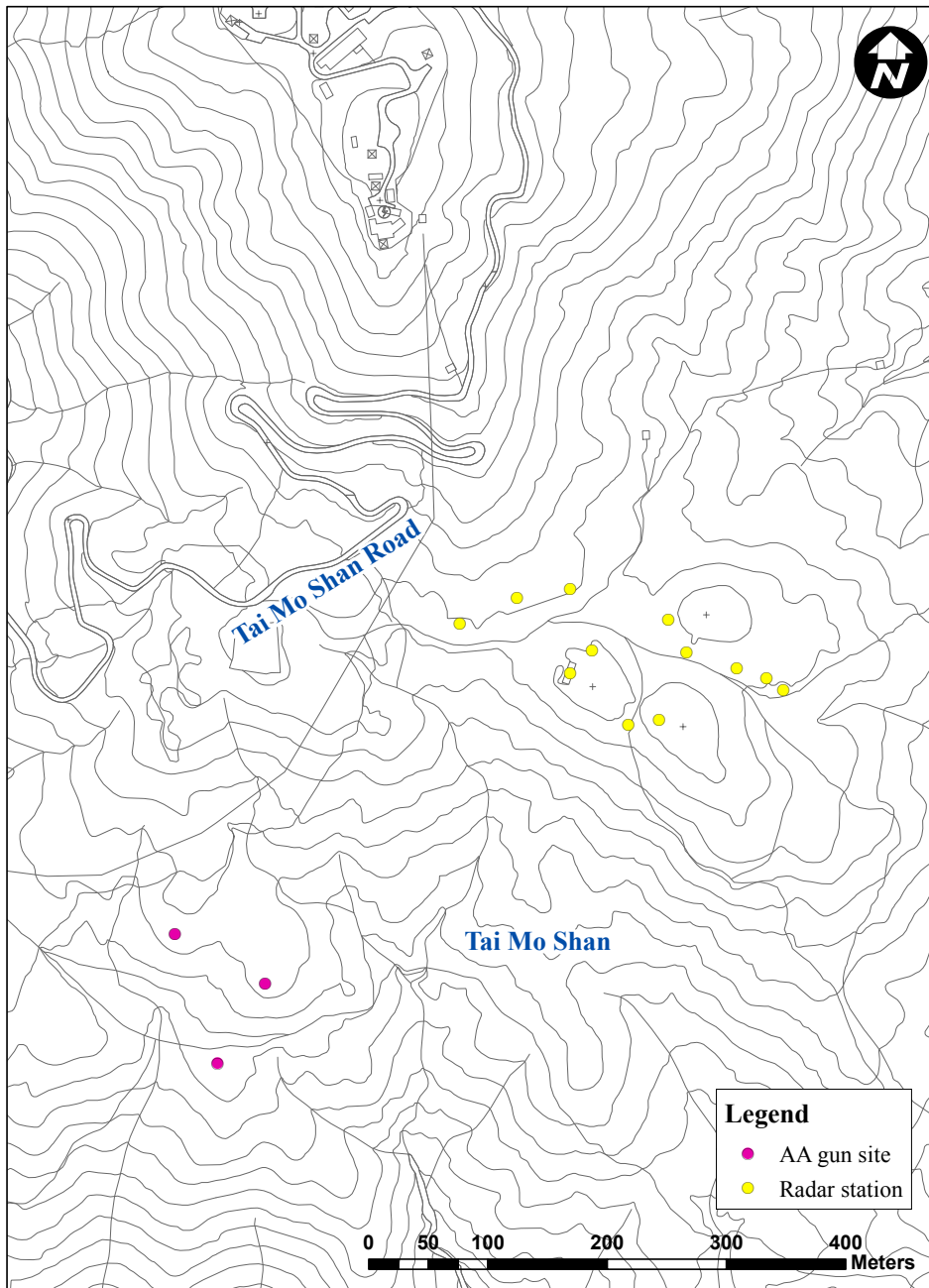


Figure 16: Military features at Tai Mo Shan



Figure 17: Ruins of an AA gun site, Tai Mo Shan

PILLBOX AND FOXHOLES BELOW GOUGH BATTERY, DEVIL'S PEAK

A pillbox built of stones, which was definitely not of British design or standard, and a number of foxholes can be found along the Lord Wilson Trail. See Lai, Ho, and Leung (2002) for its location (structure at the SE corner of Figure 4, p.122) and photo (Figure 7, p.125).

PILLBOXES AND TRENCH SYSTEM ON SPUR ABOVE POK WAI, CASTLE PEAK ROAD

A system of posts and trenches was found on the spur behind Pok Wai (near the access road to the present Fairview Park) to the east of Castle Peak Road from

Huntings' aerial photos (e.g. No.4097, dated 12 December 1964). They are mapped in **Figure 18**. As no available immediate post-war (i.e., late 1945) RAF photos covered this area, the precise nature of this site could not be determined using aerial photo information alone. As its style and pattern resemble the defence works at Wong Chuk Yuen, we once believed it could be of Japanese origin. However, there is a high possibility that it formed part of the British defence of Kai Kung Ling, in which case it would have been constructed to protect Shek Kong Airport, which was built during the Cold War (see Huntings' 1963 aerial photo No.8547, dated 6 February 1963). We paid site visits to this area and took photos. Judging from the building materials used, construction method, and style of architecture (**Figures 19 and 20**), we conclude that the structures were of post-war British origin. This is a good example of the importance of field surveys in aerial photo interpretation (Lai 1998).

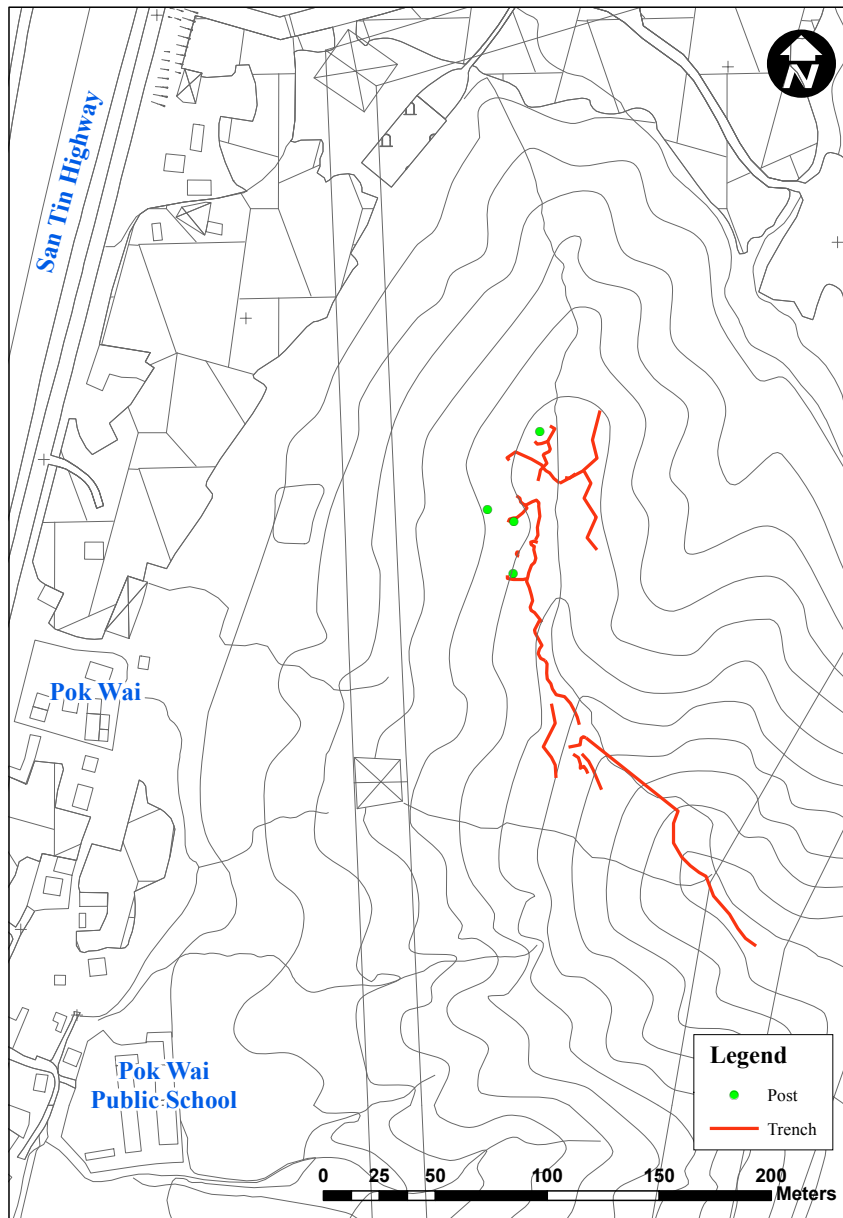


Figure 18: Military features at Pok Wai



Figure 19: Concrete post, Pok Wai



Figure 20: Shelter, Pok Wai

MILITARY WORKS NOT BUILT AS PERMANENT BUILDINGS

The Japanese dug a lot of foxholes and caves before they surrendered. Here, only two examples are given. The surviving ones are numerous and were often exposed only after hill fires.

Trenches near Wang Leng and Cat Hill

A trench system was found in some 1949 RAF photos (for instance No.6141 81A/130, dated 19 May) near Sha Tau Kok Road in the Wang Leng and Cat Hill area to the north of Ng Tung River. As there was no record of British defence works built here before the surrender, which was well outside the perimeter of the Gin Drinker's Line (Lai et al 2009), we believe this system was built by the Japanese. These trenches no longer exist. Their original locations are mapped in **Figure 21**.

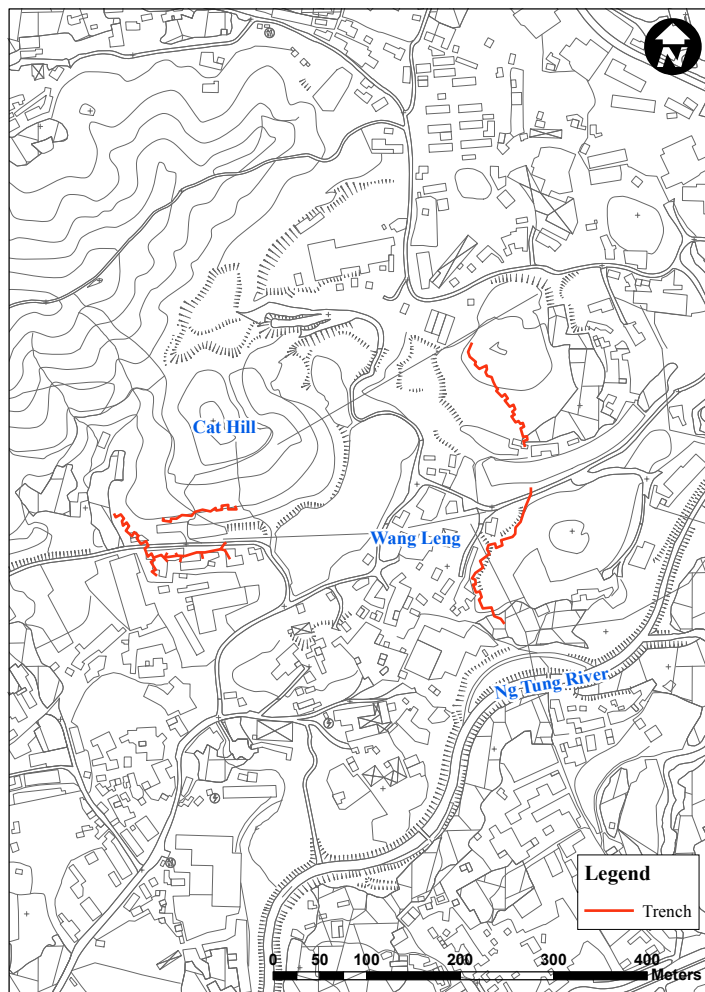


Figure 21: Military features at Wang Leng & Cat Hill

Possible gun sites along path to Ma On Shan Tsuen

We discovered two large dugouts on the hill slopes with caves dug into one side of the hill cuttings in the escarpment (**Figure 22** shows their locations based on Huntings' 1963 aerial photos (see, for instance, No.5311 dated 22 January and No.5622 dated 27 January) and **Figure 23** a photo of the lower dugout along the path leading up to the old mining village of Ma On Shan Tsuen to the west of Tai Shui Hang). We initially believed they were not post war mining cuts but constructed by the Japanese to guard the then-narrowest entry to Shatin Cove (now the channelized "Shing Mun River"). The dugouts were thought possibly to be used as field gun positions and the

caves were used to store ammunition or as personnel shelters. However, having examined the RAF's 1945 and 1949 photos (see, for instance, No.5021 [81A/118] dated 11 November 1945 and No.4028 (681/5) dated 24 April 1949), we established that these dugouts, like the catchwater that collected water from streams, were all post-war products that were probably associated with mining or soil-borrowing activities, although the mining track to Man On Shan Tsuen was built before Japan's surrender. Interestingly, the iron ore of Ma On Shan was exported to Japan, which was the major customer. The methods used to identify the age of the structures here are typically used to collect evidence in adverse possession actions.

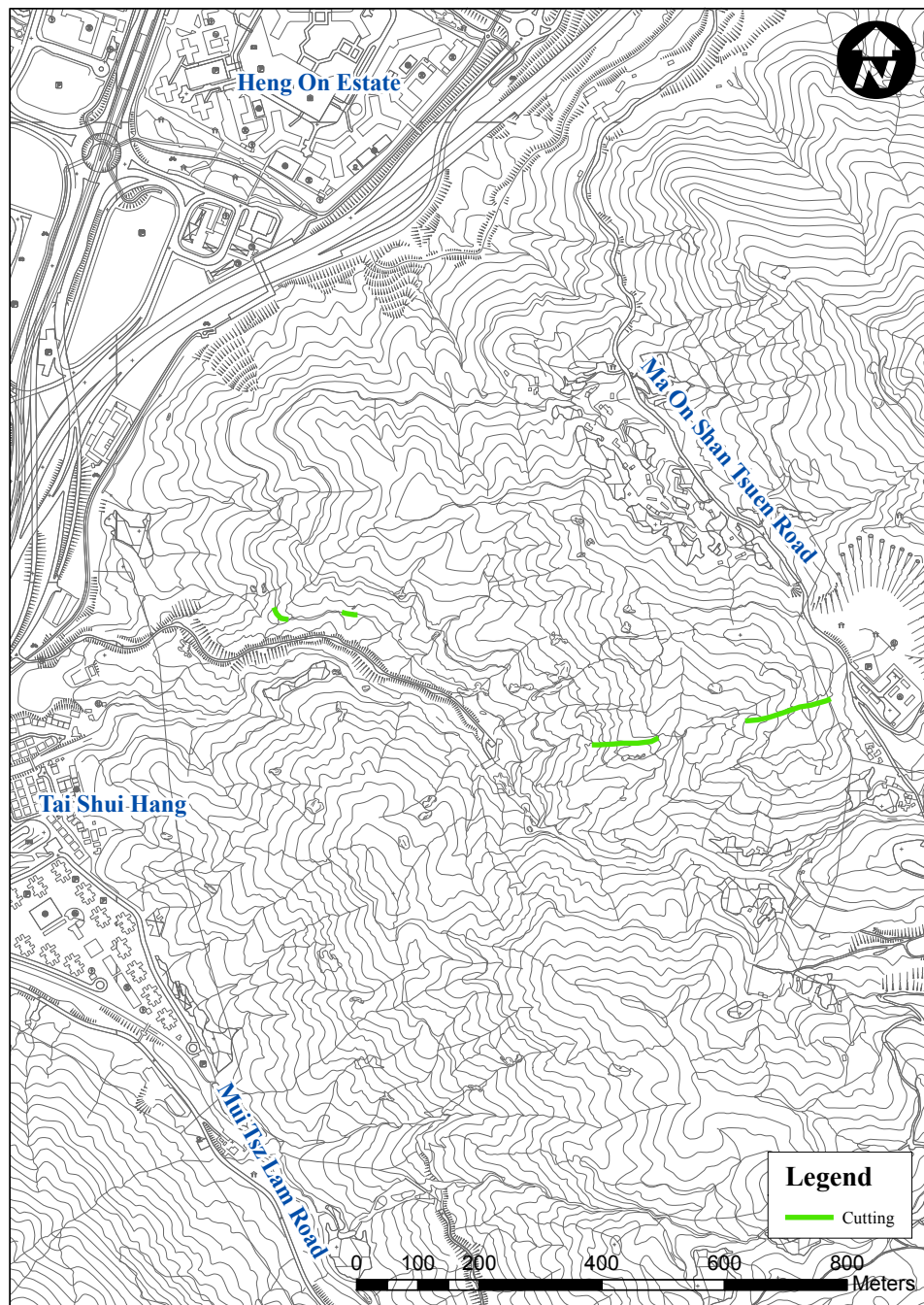


Figure 22: Cuttings at Ma On Shan



Figure 23: Suspected Japanese field gun position, Tai Shui Hang

IMPROVISATION WORKS IN BRITISH DEFENCE WORKS

The Japanese military also added additional defence installations to existing British military buildings. For instance, they added an “igloo” four foot thick to shield Gun Nos. 2 and 3 at Stanley Battery (Rollo 1991: p. 145; Ko and Wordie: 1996: p. 117). They also enlarged the four concrete machine gun mounts inside

the pillbox in Kennedy Town Gap within the private Chiu Yuen Cemetery so that they could mount their Model 11 or 96 light machine guns. **Figure 24** shows the location of this pillbox and two other pillboxes on the slopes above Pokfulam Road. (See, for instance, Huntings’ 1963 aerial photo No.7955, dated 6 February.) **Figure 25** shows the surveyed layout of this pillbox. **Figure 26** shows a photo of these Japanese improvised gun mounts inside the pillbox.

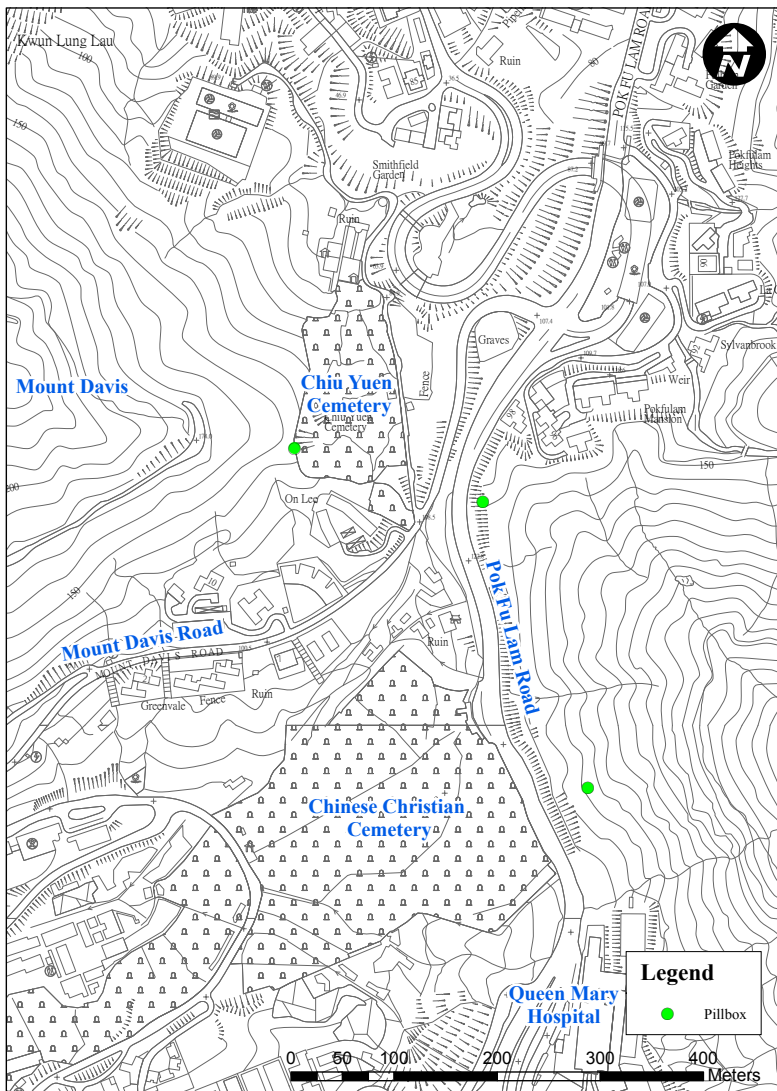


Figure 24: Military features at Chiu Yuen Cemetery & Pok Fu Lam Road

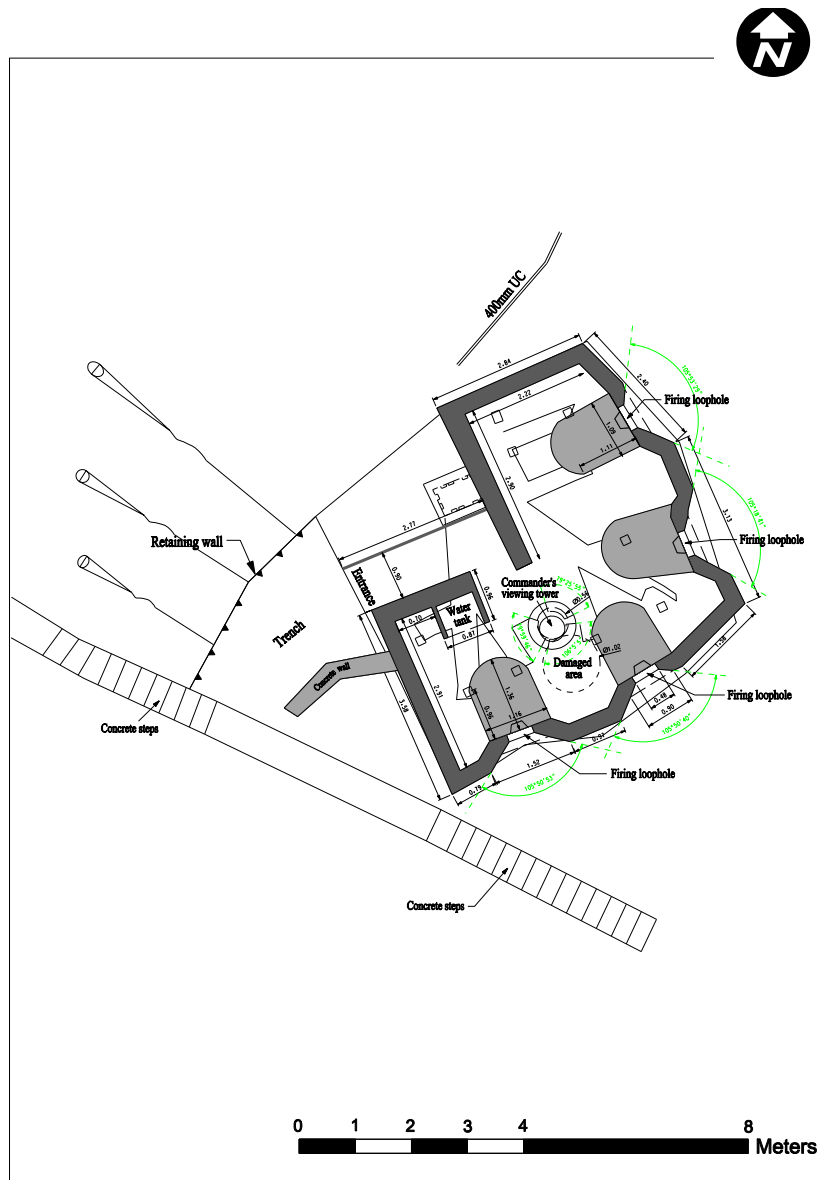


Figure 25: Surveyed layout of Pillbox, Chiu Yuen Cemetery



Figure 26: Japanese improvised gun mounts inside the pillbox within Chiu Yuen Cemetery

ACKNOWLEDGEMENTS

Funding for the project came from a Small Grant approved by the University of Hong Kong for the first author's Project Title: "Negative heritage: an aerial photo and field survey of the Japanese defence structures in the New Territories" (Project No 201007176022). The authors also thank the Committee of the Chiu Yuen Cemetery for allowing their survey team to measure the pillbox inside the cemetery on 19 May 2011. The useful comments by Dr. Stephen Davies and Mr. Bernard Lowry are deeply appreciated. All faults are the authors.

REFERENCES

Chan SJ (2009), *East River Column: Hong Kong Guerrillas in the Second World War and After*, Hong Kong University Press, Hong Kong.

Criveller G (2008), *From Milan to Hong Kong: 150 Years of Mission*, Vox Amica Press, Hong Kong.

Eather CC (1996), *Airport of the Nine Dragons: Kai Tak Kowloon*, ChingChic Publishers, Surfers Paradise, Australia.

Ko TK (2001), *War Relics in the Green*, Friends of the Country Park, Hong Kong.

Ko TK and Wordie J (1996), *Ruins of War; A Guide to Hong Kong's Battlefields and Wartime Sites*, Joint Publishing, Hong Kong.

Lai LWC (1998), The Use of Aerial Photographs in Enforcement in against Unauthorised Development, Appendix I in L.W.C. Lai (1998), *Zoning and Property Rights: a Hong Kong Case Study*, Hong Kong University Press, Hong Kong, 157-173.

Lai LWC, Ho DCW and Leung HF (2003), Survey of the Devil's Peak Redoubt and Gough Battery, *Journal of the Hong Kong Branch of the Royal Asiatic Society*, 42, 101-137.

Lai LWC, Tan YK, Davies SNG and Ping Y (2009), The Gin Drinker's Line: Reconstruction of a British Colonial Defence Line in Hong Kong Using Aerial Photo Information, *Property Management*, 27:1, 16-41.

Lindsay O (2005), *The Battle for Hong Kong 1941-1945: Hostage to Fortune*, Hong Kong University Press, Hong Kong.

Lowry B (2004), *British Home Defences 1940-45*, Osprey, Oxford.

Ng J (2009), *Another Glance at Kai Tak: From Japanese Occupation*. Zkoob Limited, Hong Kong. (Chinese publication)

Osborne M (2004), *Defending Britain: Twentieth Century Military Structures in the Landscape*, Tempus

Publishing, Chalford.

Osborne M (2008), *Pillboxes of Britain and Ireland*, Tempus Publishing, Chalford.

Rollo D (1991), *The Guns and Gunners of Hong Kong*, Gunners' Roll of Hong Kong, Hong Kong.

Royal Hong Kong Regiment (2004), *Serving Hong Kong: the Hong Kong Volunteers*, Hong Kong Museum of Coastal Defence, Hong Kong.

US War Department (1995), *Handbook on Japanese Military Forces*, Louisiana State University Press, Baton Rouge.

Yip J (2008), *A Travel of Hong Kong Mainland Defence Ruins (World War II)*, Rightman Publishing, Hong Kong. (Chinese publication).

Australian, Canadian and Hong Kong Connections: Memoir of a Hong Kong Person

David K. Manning*

ABSTRACT

This essay offers a case to survey, evaluate and keep at least some relics of the Battle of Hong Kong from the stance of an “outsider” who lived in and recently revisited Hong Kong. Sketch maps of the key battlefields, photos of the war ruins and rare images of post war Hong Kong and a member of the Sergeant Major John Osborn VC are presented. A good Australian example of war heritage conservation is provided.

INTRODUCTION

During the past 30 years of work and associated travel throughout Asia, the Pacific and Australia, I have visited many WW2 battle sites, military cemeteries and associated geographic areas of interest. The beginnings of this WW2 interest are connected to the mid 1960’s and Deep Water Bay-Wong Nai Chung Gap areas of Hong Kong. A sample of typical sites that have been partly or wholly preserved is:

- Kokoda Track, Papua New Guinea.
- Wom Peninsula, East Sepik, Papua New Guinea.
- Long Tan Battle Field, Vietnam.
- American War Museum, Ho Chi Minh City, Vietnam.
- Fort Siloso, Singapore.
- Battle Box, Fort Canning Hill, Singapore.
- Ford Factory Museum, Singapore.
- Kranji War Memorial, Singapore.
- Guam Island, Pacific.
- Leighton Battery Heritage Site, Buckland Hill, Western Australia.

- Oliver Hill Battery, Rottneest Island, Western Australia.
- Hiroshima Museum & Iwakuni Airbase, Japan.
- USAF Base, Wendover, Utah, USA.

My best hope is that this article might go some way to conserving more of the Hong Kong WW2 war relics for future generations.

BACKGROUND

On the night of the 29th September 1965 my family arrived at Kai Tak Airport on our BOAC 707 flight from Sydney to Hong Kong via Darwin.

My Dad, Flt. Lt. K.E.J. Manning had been posted to RAAF Detachment “A” Butterworth. The Detachment “A” bit was a small-ish RAAF detachment based at Little Sai Wan (called Siu Chai Wan before and during the War and now called Siu Sai Wan) on Hong Kong Island, a sort-of-secret cold war wireless listening base... back then this “cold war” business was very real. **(Figures 1, 2a, 2b and 3)**

* The author is Owner & Managing Director of Oilfield Production Technologies and has lived and worked in many Asia Pacific countries.
Email: dkm@oilfieldproduction.net; mobile: +61(0)411246992

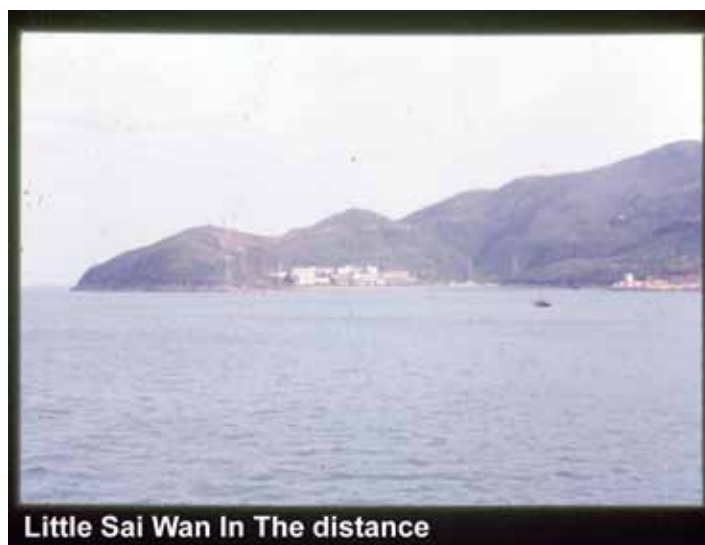


Figure 1: Little Sai Wan Complex

The 367 Signals Unit was an RAF Listening Station. Throughout the 1960's the 'Sigint' effort in Hong Kong was transferred to GCHQ as a 'composite signals organisation' (becoming more civilian...) and was conducted jointly with Australia who provided both Chinese and Vietnamese speakers. Prior to the Hong Kong handover this entire facility was demolished, dug up and all materials dumped at sea... nothing remains. The area became part of a larger reclamation for housing estates and schools.



Figures 2a and 2b: The Little Sai Wan RAAF Detachment 'A' offices in 1964. *A small part of the big bit above!*



Little Sai Wan In The distance

Figure 3: Little Sai Wan and the aerial farm seen in the distance.

Our first home was at The Repulse Bay Hotel and after many months we moved into a flat on Shouson Hill, just a short walk from Deep Water Bay and the Deep Water Bay Golf Course. During those early years in Hong Kong (Figures 4, 5, 6, 7a, 7b, 8a, 8b) when I was 12 or so years old, I spent many weekends and school holidays with my St. Georges High School mates who lived close by, searching out and discovering all sorts of pillboxes, shelters, trenches, gun emplacements and tunnels ‘just down the road, and out the back’ from our flat. I remember sandbag-lined trenches along Deep Water Bay (DWB) Road (from the corner of Shouson Hill Road East towards Wong Nai

Chung Gap) overgrown with ferns and shrubs. There was a number of pillboxes along Deep Water Bay and the Repulse Bay coast. We spent many hours exploring those places; buying batteries and cheap *Made in China* torches down at the Aberdeen markets, to check out the many tunnels. We broke into the bricked up windows and doors of the many shelters and pillboxes (see *the ‘Manning made hole’ in the splinter-proof shelter*; Figure 8a) we found. We were in search of bullets, brass shell casings, pistols and machine guns. We did find a number of bullets¹, one friend found a large brass shell casing, but never anything as exciting as a machine gun or Japanese rifle or bayonet!



Figure 4: Looking across the City towards Stonecutters Island.

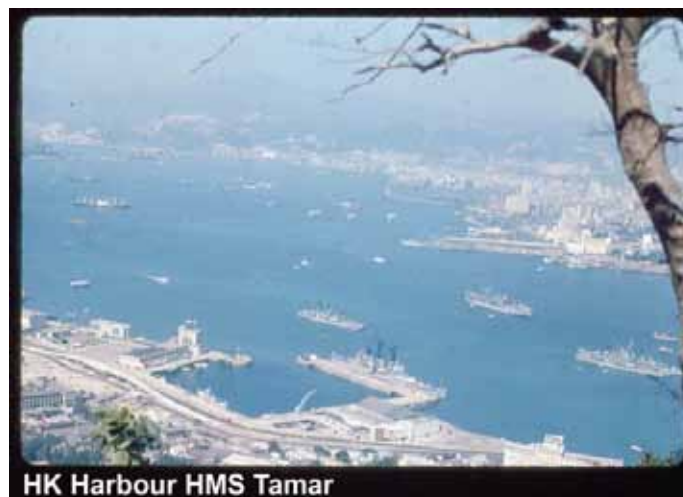


Figure 5: Warships at anchor in Victoria Harbour

Warships were always present within the Harbour, never a day without a few warships in the Harbour. The Cold War was very real during the mid-1960's. Note that the small white blob at the end of the Tamar harbour arm is a Japanese pillbox. This photograph from Stonecutters Island view down to HMS Tamar.

¹ My brother Robert: “From: Rob Manning Sent: Monday, 25 April 2011 :To: Dave Manning; ‘Mitch Manning’; ‘Brendan Manning’; Nick Manning; ‘Tony Banham’; ‘Lawrence W.C. Lai of HKU’; It is a nice story Dave and for the relatives...sometimes the consequence of our actions can never be guessed at i.e. the lunchbox in the cairn, or even his VC deed that it would be still talked about in 2011.” Mum still has the ring I found near that Shouson Hill splinter shelter and I often wondered the ‘what where and why’ about it, and Dad took all the live bullets off me that we found there.



Figure 6: David Manning (with Portable Radio) & Robert Manning up on Blacks Link looking down towards Little Hong Kong, foreground. Manning family's Shouson Hill flat marked 'X'.



Figure 7a: Our Shouson Hill Flat 1964
Susan Manning was waiting for the school bus.

Figure 7b: Our Shouson Hill Flat 2007



Figure 8a: Robert, Susan and David Manning standing at the front of the Shouson Hill British (NOT Japanese) Hong Kong splinter-proof shelter, about 1964.

Figure 8b: David Manning standing close to where the Shouson Hill shelter was located, Sunday 28 December 2008.

Note original but faded camouflage colours can be still seen. My father mistook this as a Japanese pillbox.

Back then I couldn't find anybody who could tell me any of the pre- or post-WW2 history and what these shelters, pillboxes and trenches were all about. I often wondered what had happened and who was there those few years before, back then WW2 was only about 20 years old, especially when we were way down in many of those long dark tunnels. Even my Dad, an RAAF Officer got it wrong – on one of his transparency colour slides, he wrote “*Japanese Pill Box*”. It was definitely NOT Japanese, but a British splinter-proof shelter! (**Figure 8a**) This splinter-proof shelter information is thanks to Tony Banham and his military connections².)

A ‘FEW’ YEARS LATER ...

It was on our 2008 Christmas family holiday that I eventually made it back to Hong Kong in a serious way to explore the history I'd long wondered about.

My Hong Kong Relics Story can be told in two important parts. These two parts go some way to highlighting the importance of war relic preservation. I believe relic preservation and the associated history is most important for future generations to know & understand - to walk within it; to sit, ponder and better feel what that history was all those years ago. Exploring is much better than just reading, and for some to ask the question “*how have those actions of both local and foreign men and women from both sides of the conflict impacted on current society*”. I'll leave that last question for others to answer.

So what are these two parts of the Battle of Hong Kong?

First is related to my St Georges High School days and our many sports afternoons of cross country running towards the back of the school in and around Lion Rock and surrounding areas:

- The Gin Drinkers Line, close to St Georges in Kowloon Tong.

The *second* is closer to home and within the area enclosed by Wong Nai Chung Gap, Deep Water Bay,

Shouson Hill, Repulse Bay and Stanley:

- The Wong Nai Chung Gap Battle Area was close to my Hong Kong home all those years ago.

We spent a number of our 2008 Christmas holiday days exploring in and around both these areas. Two important things happened during that time, one a little later:

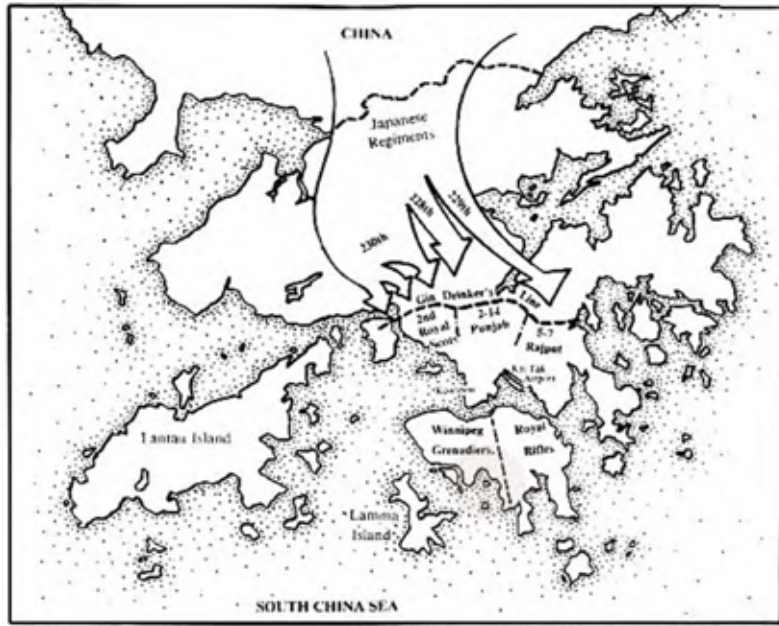
- a. We met Professor Lawrence Lai who was leading a group of students and friends at PB2 Wong Nai Chung Gap and since then have shared many notes and experiences. The most significant find was a copy of Major Stewart's War Diary and the works (Lai 2008, Lai et al 2009) on the Gin Drinkers Line, and other publications. That same day we discovered the granite blocks and sacks of hardened/set cement within the WNCG Battle area. We believe this to be the approximate location of the Company Sergeant Major John Osborn's death.
- b. The receipt of Tony Banham's “Osborn VC” email December 2009.

THE GIN DRINKERS LINE

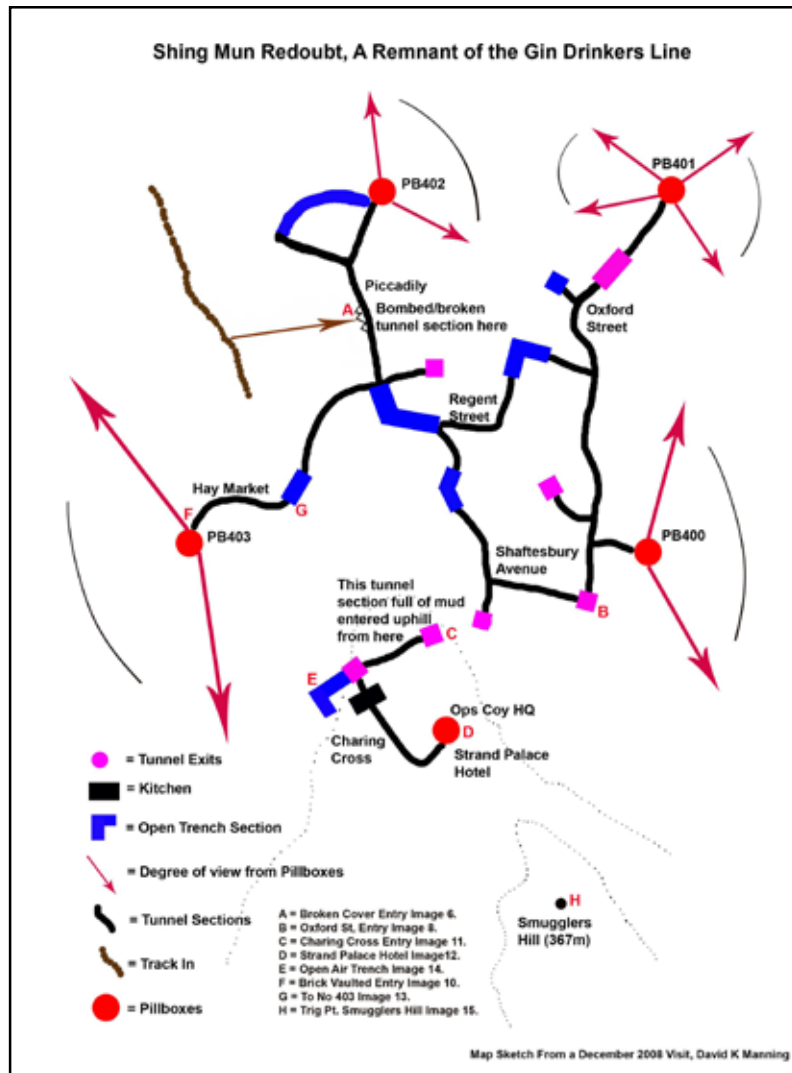
The Gin Drinkers Line saw action in the first three days after the Japanese crossed the Sino-Hong Kong border and invaded Hong Kong (**Map 1**) and disintegrated on the 11th December when the defenders began to withdraw to Hong Kong Island at 12:00 hours (midday).

The Line was a string of weapon pits, pillboxes, machine gun points and trenches spread along various hills separating Kowloon and the New Territories from Gin Drinkers Bay to Hang Hau in Junk Bay (Lai et al 2009). The defense line stretched about 18 kilometers. The part of the defensive line we visited in December 2008 was close by the Jubilee Reservoir and Beacon Hill and is referred to as the Shing Mun Redoubt. This Redoubt consisted of 5 pillboxes connected by underground/buried concrete tunnels (**Map 2; Figures 9 to 17**). The tunnels are named after London place names, like Oxford Street and Charing Cross (**Figures 9 and 14**, respectively).

² Email correspondence with Tony Banham stated that this was not a ‘Japanese pillbox’, as my father had written on his colour slide transparency, but was a British military splinter-proof shelter, most likely part of the Little Hong Kong Depot located just behind the Shouson Hill Villa flats.



Map 1: Sketch map of Hong Kong during the Japanese invasion and division of Hong Kong defense forces.



Map 2: Sketch map of the Shing Mun Redoubt.

[Editors' notes: for editorial reasons, Location A is shown in Figure 9, B Figure 11, C Figure 14, D - actually the OP proper Figure 16, E Figure 15, F Figure 13b, G Figure 13a and H Figure 17.]



Figure 9: Blasted tunnel cover, Shing Mun Redoubt

Location A in Map 2. This was a convenient entry point. The tunnel section headed to PB402, The critical section that was taken by the Japanese 228 Regiment, Refer location A Map 2.

[Editors' notes: the damaged tunnel is "Piccadilly" leading to T1, Figure 2, Lai, Ching, Davies and Wong (2011), this issue.]



Figure 10: Tell tile, Shing Mun Redoubt

A number of glass covered date stamps were found, all are embedded into the tunnel walls, with various dates... This one dated 20-1-40?



Figure 11: Oxford Street entry, Shing Mun Redoubt
Location B in Map 2.

[Editors' notes: Entry tunnel to PB401a and PB401b from T4, Figure 2, Lai, Ching, Davies and Wong (2011), this issue.]



Figure 12: One of a number of stairs linking several of the trenches and tunnel sections, Shing Mun Redoubt
[Editors' notes: from T7, Figure 2, Lai, Ching, Davies and Wong (2011), this issue.]



Figure 13a: Hay Market tunnel to PB403, Sing Mun Redoubt
Location G in Map 2.

[Editors' notes: from T7, Figure 2, Lai, Ching, Davies and Wong (2011), this issue.]



Figure 13b: Ruinous entry to the site of PB403, Shing Mun Redoubt
Location F in Map 2. A number of tunnel entrances showed a brick vaulted lined construction method. This one connects to a PB403. Refer location F Map 2.



Figure 15: Trench near Strand Palace Hotel the kitchen of Shing Mun Redoubt
Location E in Map 2. There are a number of similar open air trenches linking and in between the 'Underground' Tunnel System. These used for gun and mortar firing. This location is close to kitchen area and Charing Cross.
[Editors' notes: T3, Figure 2, Lai, Ching, Davies and Wong (2011), this issue.]



Figure 14: Charing Cross entry, Shing Mun Redoubt
Refer location C Map 2, this section is mud filled.
[Editors' notes: Figure 2, Lai, Ching, Davies and Wong (2011), this issue.]



Figure 16: The OP, Shing Mun Redoubt
Refer to location D Map 2.
[Editors' notes: Figure 2, Lai, Ching, Davies and Wong (2011), this issue.]

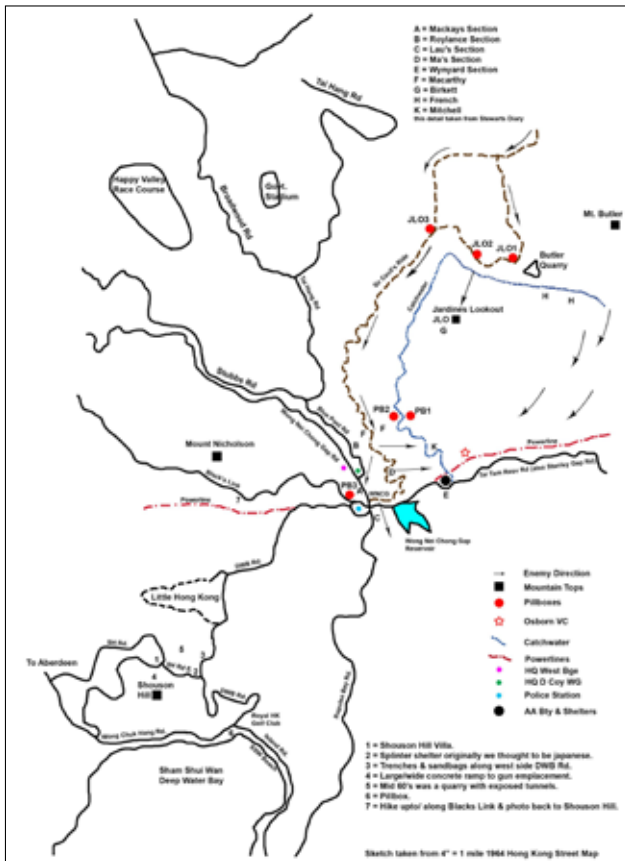


Figure 17: A position at the top of Smugglers' Ridge
[This is only a short walk above the HQ OP, Mitchell, Brendan and David Manning checking the elevation.]

WONG NAI CHUNG GAP (WNCG)

I think this is the most significant area for the battle of Hong Kong. (Figures 18 and 19) In particular this battle area involved the No 3 Machine Gun Company of the Hong Kong Volunteer Defense Corps (HKVDC), and the Winnipeg Grenadiers (WG) within the south western part of Hong Kong Island, holding the central pass from the north to the south of Hong Kong Island. The core of the area is WNCG, with connections to forces holding the south side of Hong Kong Island from Stanley to Aberdeen. This significant area takes in

Deep Water Bay, Shouson Hill, Black's Link, WNCG, Violet Hill and Repulse Bay and these are all places I explored back in the mid 1960's. Map 3 shows a sketch of the area, including the approximate locations of the JLO pillboxes, pillboxes 1, 2, 3 (PB1 (Figures 20 and 21), PB2 (Figure 22), PB3), West Brigade HQ, AA Gun emplacement³ with their associated shelters and bunkers (Figure 23). We were not able to physically locate the three forward posts JLO1, JLO2 and JLO3; the map locations indicated for these are approximate and taken from Major E.G. Stewart's War Diary WNCG map (Public Records Office).



Map 3: Sketch map of Wong Nai Chung Gap Area and Shouson Hill



Figure 18: Wong Nai Chung Gap and Mount Nicholson viewed after the War from Jardine's Lookout



Figure 19: Wong Nai Ching Gap viewed from the catchwater to PBs 1 and 2 at Jardine's Lookout

³ 7th AA Bty of the 5th Anti-Aircraft Regiment RA with two 3.7" AA guns; Counter Bombardment Group was also at WNCG from 14th December and wiped out on the 19th December.



Figure 20: Looking up PB1, Jardines Lookout

[Editors’ notes: it is no longer possible to look at PB1 from PB2 due to post war afforestation.]



Figure 22: Inside PB2, Jardines Lookout

Similar to PB1 although less evidence of grenade/ rifle fire wall damage with many internal fittings removed (post war), rubbish and recent wall graffiti.

[Editors' note: See Figures 3a and 3b in Lai, Ching, Ko and Tan (2011)]

EIGHT AWARDS, PROBABLY A RECORD...

The company of men most involved in the WNCG action and in particular in and around JLO forward posts, PB1 and PB2 was the Eurasian No 3 Machine Gun Company. These installations and the positions in and around the AA gun emplacement were linked to the defensive actions carried out by Major Stewart, his Platoon officers Fields, Holmes and Anderson, and their men during the early morning and into the late afternoon of the 19th December 1941. I was amazed to learn that this Company of men is possibly the most decorated company in the Battle of Hong Kong. Major E G Stewart says “probably a record⁴”. Banham (2005a) quotes Major General Maltby, “I should like to place

⁴ A note recorded in Major Stewart’s diary... ‘Seem this might be true’.

⁵ Banham (2005b) Company strength reported in Major Stewart’s Dairy is 4 officers and 108 OR; reports Company strength at 4 officers and 113 OR.



Figure 21: Inside PB1, Jardines Lookout

Inside PB1 with many internal fittings removed (post war) but suspect wall damage is grenade blasts & rifle fire with recent floor rubbish.

[Editors’ note: See Figures 3a and 3b in Lai, Ching, Ko and Tan (2011)]



Figure 23: Shelter above Stanley Gap Road

Nic and David Manning in a similar British Hong Kong shelter to the one he found at Shouson Hill in 1964. This particular Shelter located back along Stanley Gap Road to the East of the AA Gun Emplacement.

[Editors’ notes: See Figure 5 in Lai, Ching Ko and Tan (2011), this issue. An old route to Stanley from the urban area built before Tai Tam Road was constructed, Stanley Gap Road has been renamed Tai Tam Reservoir Road.]

on record the superb gallantry of No 3 (Eurasian) Company at Wong Nai Chung Gap⁵”.

A brief history of events leading up to and during the 19th December 1941, mostly taken from Major E.G. Stewart’s War Diary, enhanced with detail obtained from (Stewart 2005) and (Banham 2005b) highlights the significance of this battle area, and of the gallantry and sacrifice of the men involved.

On the two days of 18th and 19th December 1941 a heroic action was fought by the ‘Volunteers’ in holding up the rapid advance of the Japanese in a westerly direction across Hong Kong Island from their landing point in the Shaukeiwan/Lei Yue Mun area. On the evening of 18th December the Volunteers’ 7th, 8th and 9th Platoons were posted in defensive positions around

the flanks of Jardine’s Lookout and in the approaches to Wong Nai Chung Gap. By shortly after midnight on the 19th December, the units were engaged with the enemy in the first of series of intense firefights as they doggedly and reluctantly ceded ground, withdrawing back towards Wong Nai Chung Gap. The action was most intense between around 0600 and 1800 that day. By the end of it a large number of casualties had been inflicted on the enemy, but the defending forces of No. 3 Machine Gun Co. had been decimated. Later, on 25th December, Stewart reported 35 survivors⁶. On that day their gallantry had one a DSO, an MC, an MM, a BEM and four Mentions in Dispatches, two of the last being posthumously awarded.



Figure 24: John Robert Osborn VC

We purchased a sealable plastic box, a note pad and pencil and included a hand written note describing John Osborn’s heroic action on the afternoon of the 19th December 1941. We headed to Wong Nai Chung Gap and set off towards the second power line pylon and along a small single track up the hill to the granite blocks. We re-stacked them and left our plastic box and note inside explaining why we thought these blocks had been placed in this location (**Figure 26**). This was the same afternoon that we met up with Professor Lawrence Lai and friends close by pillbox PB2.

A MORE RECENT CANADIAN CONNECTION

Later in 2009 we received some e-mails from Tony Banham showing we got our cairn of rocks right! I’m very pleased we decided to revisit Wong Nai Chung Gap that Saturday and that my boys and I understand

THE FOREIGN VC

On Saturday 27th December 2008 the Manning family decided to return to the Wong Nai Chung Gap trails and the various pillboxes we knew to be there and to go back and locate a stack of granite blocks we had found the Thursday before. A little pre-Hong Kong reading of Tony Banham’s (2005b) *Not The Slightest Chance* and Mitchell’s Google search indicated we’d found the reason for those granite blocks and sacks of cement. It was the heroic action of Canadian Company Sergeant Major John Osborn (**Figure 24**) of the Winnipeg Grenadiers, who had been posthumously awarded the VC for his selfless sacrifice that saved the lives of his fellow soldiers. Their HQ in the WNCG was at Lynn Hall (**Figure 25**).



Figure 25: Lynn Hall, Company HQ Winnipeg Grenadiers, during the fighting around Wong Nai Chung Gap.

The red arrow points at Mount Nicholson where heavy fighting occurred after the fall of the Wong Nai Chung Gap.

a little more of Hong Kong’s more recent history, particularly that part of history I’ve wondered about since I was 12 years old - a few more answers to the “who and why”. I had explained to Tony in an e-mail that we had walked and explored using his book notes/maps and Evan Stewart’s hand sketched maps and fascinating diary notes. We had found many trenches and pillboxes, even the one under Jardine’s Lookout. I mentioned that in these explorations we had walked past a small pile of granite blocks and sack or two of set cement – still in the sack, several times. It was over breakfast we figured those granite blocks must be close to where CSM Osborn won his VC. So the course for our final day had required a visit to a supermarket for a weatherproof box note pad and pencil!

In his e-mail reply Tony had revealed how – and with who – he had discovered the plastic box the family and I had left.

“Last weekend we had CSM Osborn’s daughter

⁶ Christmas Eve “began the saddest procession trudging away from Repulse Bay Hotel for the last time at first it was uphill all the way up the sharp Middle Spur and over Violet Hill to WNCG. Bodies everywhere. Canadian bodies, English bodies, Indian bodies, Chinese bodies. Never a Jap body. They had special coolie squads to bury their men as soon as they fell. They never buried a foe”. (Marsman 1943)

and grandchildren in HK for a visit. The daughter unfortunately fell ill (though she's better now), but last Monday I took the two grandchildren up to the official memorial. Despite the fact that it was blowing a gale and raining, they insisted I took them to the cairn.

Imagine my horror when I saw that someone had dumped an old lunchbox in it! I couldn't stop them seeing it, though, and then of course we found that instead of a mouldy half-eaten sandwich there was your letter and visitors book.

It made their day - or probably their whole visit. They could not have been more pleased that someone had been so thoughtful." (Figure 27)

WHO WAS COMPANY SGT MAJOR JOHN OSBORN & WHY THE VC?

John Robert Osborn, VC (January 2, 1899 – December 19, 1941) was a 42 year old, Warrant Officer Second



Figure 26: Cairn of granite blocks we re-stacked for Coy Sgt Major John Osborn VC, Saturday 27th December 2008.

RELIC PRESERVATION & RESTORATION: A PERTH CONNECTION

Two excellent examples of WW2 relic preservation exists here in Perth. The first is the Oliver Hill Battery located offshore Perth on Rottnest Island and the other a coastal Battery unit just to the north of Fremantle Port, Western Australia.

OLIVER HILL BATTERY

This Battery consists of two 9.5" gun emplacements (H1 & H2) with above ground infrastructure a railhead, workshops and stores, crew shelters and gunners cottage. Underground magazines, gun loading, machinery room, personnel rooms and store rooms. Work began in 1931 and was completed in 1936. The H1 30 ton gun was installed in 1938 and was manufactured by Armstrong's in the UK. This gun was originally supplied to the Royal Navy and held in reserve for the fleet in Hong Kong! The H2 gun was

Class (Company Sergeant-Major), in the Winnipeg Grenadiers. He had been an inspiring example to all throughout the defense. The citation in the London Gazette of 1st April, 1946, reads: "At Hong Kong, on 19th December, 1941, a company of the Winnipeg Grenadiers became divided in an attack on Mount Butler. A part of the company led by C.S.M. Osborn captured the hill at bayonet point, but after three hours owing to the superior numbers of the enemy the position became untenable. C.S.M. Osborn and a small group covered the withdrawal and when their turn came to fall back he single-handedly engaged the enemy, exposing himself to heavy enemy fire to cover their retirement. Later the Company was cut off and completely surrounded. Several enemy grenades were thrown which C.S.M. Osborn picked up and threw back. When one landed in a position where it was impossible to pick it up, he threw himself upon it and was instantly killed. His self-sacrifice undoubtedly saved the lives of many of his comrades. C.S.M. Osborn was an inspiring example to all throughout the defense, and in his death he displayed the highest qualities of heroism and self-sacrifice."



Figure 27: John Osborn's granddaughter visiting John's Cairn, Wong Nai Chung Gap. 14th December 2009.

Photo is by Tony Banham.

installed in 1938 and previously used by the British Army at the East Weare Battery, Dorset, UK in 1919.

This Battery has been restored and is open to the public for daily guided tours and visits.

BUCKLAND HILL & LEIGHTON BATTERY

During WW1, Buckland Hill served as a WW1 Battery Observation Post and Signal Station for ships at sea. WW2 saw this facility expanded with mounted guns, tunnels, and barracks built with coastal search lights. It ceased being a military facility in 1963.

Leighton Battery (LB) comprises a complex of underground tunnels, rooms, and an observation post, a semi-buried command post, two 6" gun emplacements (all 1942), two 5.25" gun emplacements one of which remains buried (1944-45), a radar hut (c1947), an access road and limestone retaining walls (c1990). The place is a former coast defense battery site constructed by the Australia Army in 1942. The site covers 7.4 ha

of land on a western slope of Buckland Hill.

Part of this Battery's tunnels have been restored



Figure 28: The Leighton Battery and tunnel complex entry point with a 3.7" Heavy AA gun
Four of these guns defended Fremantle from a position on Buckland Hill.



Figure 30: View from Leighton Battery towards Port of Fremantle

The history of the development of this military relic is an interesting one and aspects of the Heritage Councils of Western Australia Register of Heritage Places assessment document dated 27/08/1999 may be helpful to those considering similar assessments for Hong Kong's WW2 war relics. The following information was taken largely from a web site. ([http://register.heritage.wa.gov.au/PDF_Files/K-L%20-%20A-D/Leighton%20Battery%20\(P-AD\).PDF](http://register.heritage.wa.gov.au/PDF_Files/K-L%20-%20A-D/Leighton%20Battery%20(P-AD).PDF))

Aesthetic Value

- LB is situated in an attractive, large public open space with native vegetation and few obvious above ground built features.
- The hillside on which LB is located is a local landmark with panoramic views of the Indian Ocean over Rottnest and Garden islands, Fremantle Port, over the surrounding suburbs and east to the Perth city skyline and further east to the Darling Ranges.

The Historic Value

- LB is a remnant of a much larger military complex that occupied most of Buckland Hill since 1941 and has played a significant part in a larger national system of coastal defense strategies during WW2, using both artillery and anti-aircraft weapons.
- Buckland Hill, the site of LB, played a significant role in the military defense operations of Western Australia during WW2.

including modification for an underground museum and is open to the public on the first Sunday of every month. (Figures 28, 29, 30 and 31)



Figure 29: The restored observation post at Leighton Battery



Figure 31: View from Leighton Battery towards Cottesloe suburbs and beach

- LB and in particular the underground tunnel complex is an example of technical achievement during WW2.
- And finally LB is part of the area believed to have been explored by Willem de Vlamingh's party in 1697.

Scientific Value

- LB has the potential to yield information about coastal defense strategies in Australia and Western Australia in particular during WW2.
- LB has importance as an example of technical achievement in the construction of a tunnel complex in a hillside for the purpose of military defense.

Social Value

- LB is valued by members of the Royal Australian Artillery Historical Society who have contributed their efforts to the conservation, interpretation of, and public access to the site. It is valued by the present and past military community and the general community for its historic and military associations and for passive recreation.

Degree of Significance

- LB was the only 5.25" gun battery to come into operation in Australia.
- LB is important in demonstrating a distinctive

method of defense that is no longer practiced.

HOW WAS THIS CONSERVATION ACHIEVED?

In 1984 the Army relinquished Buckland Hill land and the Commonwealth began to negotiate the sale of land with part declared an 'A class' reserve.

In 1987, the land was sold to the Western Australia Development Commission.

In 1988 the land was resold to a private development company. Development began in 1989. Some land including the LB was set aside as public open space. The developers involved members of the Royal Australian Artillery Historical Society to conserve the LB tunnels and gun emplacements. Funds have been received from Australia Remembers Council, Western Australia Tourism Commission and Lotteries Commission for its conservation and re-vegetation. The particular land lots are now vested in the local town council and LB was placed on the Register of the National Estate in 1993. The National Trust classified LB on 13 May 1996.

All rubble was removed from the tunnels and one gun emplacement, the reconstruction of the tunnel entrances, removal of graffiti, and the installation of electrical services. Of the 5.25" gun emplacements, the south was removed; the north was uncovered and conserved while the center emplacement remains buried. A full structural survey was carried out in 1989. Work on excavating the underground installations commenced in May 1989 and conservation work continued through 1990. It included the installation of steel doors to the entrances, removal of burnt timbers and the replacement of windows to command post. The site has been re-vegetated and an access road and limestone retaining walls constructed.

POSTSCRIPT

Is it possible that the WNCG/JLO Battle Field and the Shing Mun Redoubt could be preserved along the lines of Buckland Hill?

A combination of:

- Government Agencies,
- Local business and
- The RHKR (The Volunteers) Association?

Could together, with suitable government backing, achieve a similar result and gain similar benefits.

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REFERENCES

Banham T (2005a), HK Volunteer Defense Corps, Number 3 (Machine Gun) Company, *Journal of the Royal Asiatic Society Hong Kong Branch*, 45, 117-142.

Banham T (2005b), *Not The Slightest Chance: The Defense of Hong Kong*, Hong Kong University Press, Hong Kong.

Lai LWC (2008), Recollections of the Battle of Hong Kong and the life of a POW by Arthur Ernesto Gomes 5th Company (Machine Gun), *Journal of the Royal Asiatic Society Hong Kong Branch*, 48, 25-50.

Lai LWC, Tan Y K, Davies S N G and Yung P (2009), "The Gin Drinker's Line: Reconstruction of a British Colonial Defence Line in Hong Kong Using Aerial Photo Information," *Property Management*, Vol. 27, No.1, pp.16-41.

Lai LWC, Ching KST, Ko T and Tan YK (2011), "Pillbox 3 did not open fire!" Mapping the Arcs of Fire of Pillboxes at Jardine's Lookout and Wong Nai Chung Gap, *Surveying and Built Environment*, this issue.

Lai LWC, Davies SNG, Ching KST and Wong CTC (2011), "Decoding the Enigma of the Fall of the Shing Mun Redoubt Using Line of Sight Analysis," *Surveying and Built Environment*, this issue.

Lindsay O (1978), *Lasting Honour: the Fall of Hong Kong, 1941*, Hamish Hamilton, Michigan.

Manning K E J (1960s) Selection of Scanned Colour Slides photographed by my Father Wing Commander (Ret.) K.E.J. Manning, a keen photographer with his Hong Kong purchased Pentax SLR camera.

Marsman JH (1943), *I Escaped from Hong Kong*, Angus & Robertson Ltd, New York.

Stewart E (2005), *Hong Kong Volunteers in Battle*, Blacksmith Books, Hong Kong.

Public records:

Public Records Office, *War Diary of Major E.G. Stewart*, HKRS 225-1-485, Hong Kong Public Records Office, Hong Kong.

Websites:

[http://register.heritage.wa.gov.au/PDF_Files/K-L%20-%20A-D/Leighton%20Battery%20\(P-AD\).PDF](http://register.heritage.wa.gov.au/PDF_Files/K-L%20-%20A-D/Leighton%20Battery%20(P-AD).PDF)