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Editorial Board

Contents

Editorial

Undo the "Deletion" of Administrative Town Plans: Layout Plans & Outline Development Plans

A government has the proper historical, social, legal, and policy grounds to keep and disclose its own documented information, especially when it relates to contracting parties and the public.

The keeping of administrative town plans that affect the drafting and interpretation conditions of sale, grant, exchange etc., for land transactions and ensuing Crown/Government Leases with valuation implications and Practice Notes for Authorised Persons (PNAPs) concerning building plan submissions and interpretations is a case in point.

Unlike the case of old or superseded PNAPs published by the Buildings Department (BD), all non-current administrative town plans or "departmental plans" adopted[1] or draft[2], mainly non-statutory Layout Plans (LPs) or Outline Development Plans (ODPs) approved by the Development Policy Committee (DPC), now the Committee of Planning and Land Development (CPLD), of the policy branch/bureau are not generally available for public inspection at the Planning Enquiry Counters of the Planning Department due to a practice[3] that does not seem to have policy endorsement or the benefit of legal advice.

On the other hand, all previous draft and approved statutory plans (say Outline Zoning Plans) are available for public inspection at Planning Enquiry Counters.

Whatever the rationale[4] for such "deletion of plans"[5] or "cancellation of departmental plans"[6] ("withdrawal"

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1 https://www.pland.gov.hk/pland_en/info_serv/tp_plan/adopted/index.html

2 https://www.pland.gov.hk/pland_en/info_serv/tp_plan/draft/index.html

3 This has occurred since about 2003.

4 One probable reason was that the rate of statutory plan production far exceeded that for administrative town plans (Kwong *et al*. 2020) and the ensuing generation of "non-conforming uses" embarrassingly multiplied. The uses are legitimate (permitted uses) under the land leases, but do not conform to the latest statutory town plans. One wonders about the extent to which this practice can really "sweep things under the carpet."

5 This is a term invented by the Planning Department. The introduction of this innovation was presented to the Town Planning Board, which has no jurisdiction to produce, amend, or remove such plans. To the best of the authors' knowledge, there has been no CPLD paper on the matter.

6 See Cancellation List of Adopted Departmental Plans: https://www.pland.gov.hk/pland_en/info_serv/tp_plan/cancel.htm

of plans binding all government departments from the public), this surely poses a great though surmountable hurdle for due diligence[7] in IPOs, rating and valuation, development rights, and obligation interpretations that pertain to real (leasehold) interests and encumbrances, as they are relevant to and are material parameters for the interpretation of the real interests or obligations of parties to land leases at the time of granting.

Although they are not statutory town plans that affect new constructions or redevelopments, they never cease to affect premium assessments and contractual rights and obligations, as the *Dairy Farm* case[8] demonstrated. This case involves the interpretation of the development rights of a Crown Lease for a Rural Building Lot (No.758) in the context of a "layout plan of the area" at the time, which is Layout Plan No. L.H. 10/5 dated 6 June 1956. The said layout plan, which can be inspected at Government's Public Records Office, shows the alignment of a future (planned) road connection of this lot, which did not abut any public roads, like Pokfulam Road, currently.

The current practice should be "undo" and all "draft" and approved administrative town plans that can affect the leasehold interests, as public documents, should be made available for public inspection.

Lawrence W.C. Lai & Jason W.Y. Kwong
30 April 2023

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[7] Just in case, a lessee should be able to seek court assistance to locate the relevant administrative town plans that subsisted at the time of the execution of the relevant conditions of sale, exchange, or grant, etc., of the relevant District Planning and District Lands Offices, as well as the Building Authority insofar as the interpretation of the lease terms and boundaries of and access to his/her lot is concerned.

[8] *The Dairy Farm Company Limited vs. Secretary for Justice* for and on behalf of the Director of Lands, Miscellaneous Proceedings. HCMP2423/2017 [2020] HKCFI 306.

Surveying & Built Environment

Hong Kong Art Deco: Theatre Buildings and a Hybridised Design Approach during the Interwar Years

Prudence L.K. Lau*

ABSTRACT

From the 1920s to 1941, numerous new theatres opened throughout Hong Kong. The demand for these new facilities, as a derived demand, due to the growth in demand for entertainment, indicated growing affluence in the city. During these two decades, these facilities experienced a transition in architectural expression from previous period revival or neoclassical to modernist style. Most of these theatres are now demolished, but a socio-cultural history of entertainment and theatre buildings in Hong Kong is still missing. This paper argues that certain theatres in interwar Hong Kong were characterised by a decorative and hybridised architectural style that shifted away from revival or neoclassical forms to signify a modern era in theatre design. This has been observed and researched in other global cities such as Shanghai, Mumbai, Vancouver, Los Angeles, etc., but seldom studied in Hong Kong. It also traces the intercultural exchanges among architects of the time, which contributed to the evolution of modern Hong Kong theatre, by delineating the socio-historical context of Art Deco, investigating the development of the local cinema industry during the early 20th Century, and analysing the reasons behind the transformation of theatre design during the interwar years.

KEYWORDS

Theatre buildings, art deco, Hong Kong, hybridized design, interwar years

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INTRODUCTION: A NEW RESEARCH ARENA

> The opening of a new cinema in any community is always an event of some importance. To the Building Industry this is particularly the case, since the construction of a cinema or theatre building offers the architect a far greater scope in the matter of design and the utilisation of new materials than is ordinarily the case […] (*The Hong Kong and Far East Builder* 1939, 17).

Those were the opening remarks in a local architectural journal to describe the newly-built Cathay Theatre [國泰戲院] in Wanchai on Hong Kong Island.

> Air conditioning is a branch of engineering that has come to prominence only during recent years […] The King's Cinema Theatre is the first public building in Hong Kong to be equipped with an air conditioning plant. (*South China Morning Post*, 27 May 1931, 11).

The above newspaper extracts indicated that the 1930s were the heyday of cinema or theatre buildings in Hong Kong. Research on theatres, to an extent, and its relationship with modern architecture and Art Deco has been conducted in cities worldwide including Shanghai (Erh 2006, 2008), Mumbai (Iyer 2000), Manila (Cabalfin 2003), Los Angeles, London, Vancouver (Windover 2003), in which the studies also delineate the development in both private and public buildings including residences and hotels etc., but there has been a dearth of academic research on the theatre building as a unique building type in Hong Kong.

Related research has focused on the socio-political developments of the city's film industry in relation to certain prominent Chinese families and businesses (Wong 2011, Fu 2003).

However, such studies mainly focus on the development of Chinese theatre from a socio-political perspective and not on the architectural or urban landscapes of the period. More recent publications briefly document theatre buildings (Wong 2015a, 2015b), but their focus was more on the films shown and not on an analysis of theatre architecture.

Scholars have also categorised theatre buildings into three typologies: (a) the 'standard' movie palace (eclectic, luxurious, and 'period revival' in design); (b) the atmospheric theatre (with 'fantasy' environments); and (c) the Art Deco theatres of the 1930s with the last being less ornamented and more streamlined than the first two (Slowinska 2005, 577).

It is worth studying how theatre buildings have evolved in Hong Kong – particularly during the interwar years, when local theatre designs began to flourish and deviate from their previous revival or neoclassical forms and give rise to new theatre layouts to reflect international cultural exchanges.

There is no previous study of Hong Kong theatre architecture and its relationship to Art Deco, so this paper will expand the knowledge base on Art Deco in the field of modern Hong Kong architecture, as well as analyse this type of architecture under socio-cultural and historical contexts.

ART DECO ARCHITECTURE: THEORETICAL CONTEXT

The late philosopher, Marshall Bermann (1982), characterised modernity as a historical experience that endlessly seeks to transform the conditions that produce it, as well as an attitude towards life that is a continuous process of evolution and transformation. During the 1960s, Art Deco was coined and defined as:

> …an assertively modern style developing in the 1920's and reaching its high point in the thirties […] and its ultimate aim was to end the old conflict between art and industry […] by adapting design to the requirements of mass-production (Hillier 1997, 16).

Moreover, the Art Deco style should be understood as "a decorative response to modernity" (Hillier & Escritt 1997, 24).

Theatre buildings were often termed, "universal Art Deco structures," as they provided an "escapist" atmosphere that no other structure could provide (Bayer 1990, 144). During the rise of film and theatre, Art Deco was intertwined with the 'machine' or technology standing "as the common ideological stylistic denominator of Hollywood and Soviet socialist realism alike," and, when the two were read together, they represented moments of some vaster global Art Deco transition (Jameson 2007, 184).

Entering the spaces of everyday life, Art Deco has had socio-political ramifications, as it was able to "fashion" public cultural spaces throughout the globe during the interwar years and the idea of "mobility" lies at the heart of the style (Windover 2003). In studying Art Deco theatres and department stores in Los Angeles, Bombay (Mumbai), and Canada, as well as American influence in the Philippines, scholars determined how Art Deco was both a product and object of public culture between the two world wars because it framed cultural practices and formed new lifestyles (Windover 2003, Cabalfin 2003).

In the Philippines, its film industry and movie houses were closely associated with Art Deco, as they were important American imports into the country. In fact, scholars suggest that Art Deco architecture influenced the formation of new lifestyles by serving as instruments of modern living conditions during the American colonial period in the Philippines (Cabalfin 2003, 213).

Other studies discussed the challenge of colonial or imperial architectural

expressions that evolved into Art Deco. This was the case in Bombay, where most public projects assumed the form of Gothic Revival architecture during the early British colonial days, a style preferred by many including the Governor Sir Henry B. E. Frere (1815-1884), a colonial administrator of Welsh British descent (Lau 2011). A challenge to such imperial architectural styles was at one point instigated by a British architect, Claude Batley (1879-1956), during his visiting professorship at Bombay's Sir Jamsetjee Jeejebhoy School of Art from 1914 to 1934. This was an architectural school whose curriculum was modelled after that of the Ecolé de Beaux-Arts.

In turn, this style contestation emanated an 'Art Deco modernism', which one of Batley's students, G.B. Mhatre, himself an avid protagonist of designing in the Art Deco style, followed. Mhatre's works reflect the evolution of modern architecture in Bombay during its final days of British rule and Art Deco was not only a decisive reaction against imperialism, but also a negotiation between tradition and modernity in architecture (Lau 2011).

After all, architecture in a colonial context is not simply a question of form, but also a process that reflects wider societal issues between patrons, architects, and audiences. Historians have adopted socio-political and cultural methods to examine the relationship between culture and power, as expressed in the architecture of British India (Metcalf 1989), as well as studied the politics of colonial urban developments in relation to culture, social power, and the environment (King 1976). Notable studies on architectural modernism in other colonial contexts include analyses of the politics of French colonial urbanism and the intersections of colonial and urban spaces (Wright 1991; AlSayyad 1992).

There is also a growing number of publications on colonial urbanism and the role of colonial architecture in shaping social power relations. Some cover Hong Kong (Scriver & Prakash 2007, Chu 2022), where Art Deco architecture scholars have examined colonial ideologies and local interests that impacted new architecture in the city during the 1930s. They have argued that certain forms of architecture reflect 'invisible' forms of resistance to colonial power and the empowerment of local architectural forms and architects in appropriating and claiming subjectivity in the making of Hong Kong's history (Lau 2016) by utilising post-colonial theory and a heightened awareness of the inherent politics within architecture to inform an understanding of history (Bozdogan 2001).

The above literature helps frame the context of Art Deco as a product and object of public culture in everyday life and, to a certain extent, as an instrument that helps propel a city towards modern living conditions. This paper will continue to identify early forms of theatre buildings in

Hong Kong by adopting the above contextual framework and analysing the changes that unravelled during the interwar years.

HONG KONG THEATRES: EARLY BEGINNINGS

Starting in the 1860s, several Chinese theatres and other performance venues including Tung Hing Theatre [東城戲院] and Ko Shing Theatre [高陞戲院] in Hong Kong showed Cantonese Opera performances, which were provided as mainstream entertainment for local Chinese. Although they occasionally showed films, with the earliest film screening occurring in City Hall in 1897 (Law and Bren 2004), Cantonese Opera or stage performances remained their focus. The first permanent theatre dedicated to film screenings was the Victoria Cinematograph [域多利影畫戲院], which opened in Central in 1907 (Cheung & Tsoi 2018, 77). Other local theatres – among them the Chungking [重慶戲院] and Ko Shing Theatres [高陞戲院] – followed suit.

At a time when only a few theatres existed, these local venues were great attractions to local Chinese and multi-purposed. They were used for seminars, meetings, and banquet halls for local and visiting VIP guests. For instance, a Chinese banquet was held for Prince Arthur of Connaught in 1906 at the Ko Shing Theatre, while a grand celebration was held at the Tai Ping Theatre to commemorate the birthday of Confucius in 1909. Ko Shing opened during the late 1860s, while Tai Ping opened in 1904 and both were architecturally grand in scale.

Ko Shing was a two-storey building with a trussed roof and embedded with neoclassical architectural elements on its façade including columns and stone arches. Tai Ping, a three-storey building, also embodied a neoclassical façade, but with a central porch. Although Ko Shing and Tai Ping were dedicated to Chinese Opera performances, they embraced a neoclassical appearance, thereby indicating a preference for Western or period revival forms.

Around a decade later, more permanent theatres opened in Hong Kong including Victoria (built on the former site of Victoria Cinematograph) and Kau Yue Fong Theatres [九如坊戲院]. Both were located in Central and opened in 1911. However, pictorial records of these theatres are rare, although the Victoria has been featured on a postcard (Figure 1).

The building appears to be a three-storey structure with neoclassical ornamentation and topped by a pitched roof, constructed with redbrick and white mortar. Similar to the previously-discussed theatres, the Victoria also encompasses a Western neoclassical architectural style and was constructed by the architectural firm, Palmer and Turner. A 1909 newspaper article stated that the building would be built in the “free Renaissance order” (South China Morning Post, 7 December 1909).

Figure 1: Victoria Theatre, opened in 1911. (The theatre succeeded Victoria Cinematograph, the first indoor theatre to show films, at the same site.Image reproduced with permission from the Hong Kong Museum of History).

1920s-1930s: INCREASED DEMAND FOR LOCAL THEATRES

The 1920s marked a watershed for Hong Kong in terms of its socio-cultural and demographic capital. During this period, large numbers of intellectuals from China sought refuge in the city (Fu 2000).

In addition, this was also when Shanghai and Hong Kong film studios began to establish close ties (especially studios including Minxin [民新影片公司], Lianhua [聯華影業公司], Mingxing [明星電影公司], and Tianyi [天一影片公司]), which helped filmmakers in both cities "bring their feature productions to the first golden age in Chinese film history" (Zhang 1998, 63).

The two cities exchanged capital and talents. When the World Theatre opened in 1921 in Sheung Wan, it was the first theatre building to be established by a Chinese, namely Lai Man-wai (1893-1953), who is regarded as the 'Father of Hong Kong Cinema' (*South China Morning Post*, 26 Mar 2023). According to an article published in the Hong Kong Daily Press on 15 July 1921, the World was described to be "modelled on the lines of the London Palladium".

Evidently, at the beginning of the 1920s, Western standards for theatre design were still popular in Hong Kong, as could be seen in the similarly neoclassical design of the Queen's Theatre, which opened in Central in 1924 and exhibited modillions or ornamental brackets, arched windows, and rustications along its façade.

Figure 2: Queen's Theatre in Central, opened in 1924. (Image reproduced with permission from the Hong Kong Museum of History.)

During the 1930s, the "Big Four" Hong Kong film companies – Grandview [大觀聲片有限公司], Tianyi [天一影片公司] (later Nanyang [南洋影片公司]), Chuen Kou (Global) Film Company [全球影片公司], and Nam Yuet [南粵影片公司] (Southern Kwangtung (Guangdong)) – began operations (Funnell 2010).

This period marked a breakthrough for local Cantonese film and saw Kowloon as the new gathering place in the city for

recent immigrants from China, as opposed to the 'modern' and 'Westernised' Central and Wanchai Districts on Hong Kong Island (Lai 2006: 3).

As a result, there was fast-growing demand for movies and entertainment north of Victoria Harbour and new theatres opened in Kowloon during this decade. Most of them were located in Yau Ma Tei, Sham Shui Po, and Mong Kok, where most working class Hong Kongers resided. They included the Tai Yat [第一戲院] (1926), Yau Ma Tei [油麻地戲院] (1930, Figure 3), Koon Chung [官涌戲院] (1931), and Nathan Theatres [彌敦戲院] (1938). Often only one or two storeys high, they displayed simplified appearances with less ornamentation and rectangular block designs – perhaps to reflect their neighbourhoods and the clientele they served, as well as to reduce construction times and costs.

Particularly, the 'simplified' theatres of the 1930s contrasted greatly with their older heavily-ornamental and neoclassical counterparts. Commonly observed 'new' forms of decoration included simple geometric lines along their façades, ziggurats or stepped-down patterns on or near their roofs, and even additional decorative elements in the form of eclectic patterns.

Alhambra Theatre [平安戲院][1], opened

Figure 3: Yau Ma Tei Theatre, opened in 1930, is the only surviving interwar theatre in Hong Kong. (Photograph by P.Y. Chow, 2023.)

[1] The taxi park near it became a billeting station during the Battle of Hong Kong of December 1942 (Ryan 1944).

in 1934 and demolished in 1958, was a standalone building that occupied an entire block at the junction of Kansu Street and Nathan Road. Its typical Art Deco elements included stylised spiral motifs that decorated its entire cornice and pilasters that appeared fluted or with linear mouldings spaced out along its entire façade. Some mouldings symmetrically marked its main entrance, which was situated on the side and highlighted by a hipped-roof portico (Figure 4). An emphasis on linearity was evident throughout the building, as emphasised by a tower element in a stepped-down ziggurat form positioned at its corners.

Designed by Chinese architect Wong Tai-cho (黃泰初, dates of birth unknown),[2] the Alhambra was the largest theatre in Kowloon when it opened with a fan-shaped hall that housed 1,795 seats. In 1935, another Wong-designed theatre opened in the neighbouring Portuguese

Figure 4: An image of Alhambra Theatre when it was built in 1934. (Photograph by Prudence L.K. Lau, retrieved from the late Gabriel Van Wylick's sketchbooks, during a visit to the Van Wylick family in 2011.)

[2] Wong, a HKU-trained engineer (B.Sc.Eng 1916), was, in fact, the brother-in-law of Lai Man-wai, the aforementioned 'Father of Hong Kong Cinema'. His wife was the sister of Lai Man-wai.

Figure 5: Apollo Theatre in Macau (1935), designed by Wong Tai-Cho. (Photograph by P.Y. Chow, 2023)

colony of Macau. This was the Apollo Theatre [平安戲院], or Teatro Apollo, which also featured an Art Deco style. Interestingly, its Chinese name is also called 平安戲院 (平安 means 'Peace').

The Apollo was Macau's first modern theatre and showed first-run Chinese and English films until it closed in 1993. But the building still stands today along the Avenida de Almeida Ribeiro, which is frequented by tourists. Its ground floor and lobby have been converted into retail establishments, while its balcony has been enclosed. The building owes much of its preservation to that of neighbouring buildings, so as to maintain the area's architectural harmony. It still exhibits stepped ziggurat patterns near the top of its two side entrances, as well as simple geometric decorative linear details along its façade (Figure 5).

ART DECO AS A HYBRIDISED DESIGN APPROACH

A newspaper article that covered the Alhambra's grand opening mentioned that it was "hailed as the most up-to-date and modern building of its kind in South China" and that "additional decorative suggestions were made by Mr G. Van Wylick of Credit Foncier" (*Hong Kong Daily Press*, 1 February, 1934).

This provides valuable evidence of an important link between local Chinese and international architects who practised in Hong Kong at the time. "Mr G. Van Wylick" is Gabriel Van Wylick (1897-1964), a Belgian architect and critical figure in China's architectural

history because he introduced Art Deco or another kind of "semi-foreign" architecture to China's treaty ports, specifically Hankou and Hong Kong, where he worked for the Crédit Foncier d'Extrême-Orient architectural firm (Lau 2018).

The author had previously interviewed Van Wylick's son, Edouard, and his family in 2011 in Brussels, Belgium as part of her doctoral research (Lau 2013), as well as studied his sketchbooks, personal collections, and a journal article he wrote during the 1920s, which revealed that he had condemned what he deemed the "decadence of Chinese architecture".

At the time, Van Wylick criticised the new Chinese bourgeoisie for preferring "foreign fashion" over more homegrown designs (Van Wylick 1927). In his 1927 article, entitled "L'Architecture contemporaine en Chine" (translated as 'Contemporary Architecture in China'), he expressed that he tried to convince his Chinese clients to accept projects that combined the "comfort of the West […] with the character of the country" and specifically encouraged the combination of "Western and Oriental styles," but often in vain.[3]

Van Wylick's article was published in the Belgian architectural journal, *L'Emulation*, a publication affiliated with the Central Society of Belgian Architecture and arguably the most important and influential architectural journal in Belgium.

In his article, Van Wylick defined the term, "semi-foreign," as an architectural type for wealthy Chinese that blended Western comforts with Chinese lifestyle requirements as a strategy for adapting to modern needs in residential living.[4] At the time the article was published, Van Wylick was based in Hankou, where he served as the Crédit Foncier d'Extrême-Orient branch's chief architect, before relocating to the firm's Hong Kong branch in 1927, where he assumed the position as chief architect from 1927-1946.

In 1928, Van Wylick designed a house for himself in Brussels. It blended European and Chinese elements and still stands today along Avenue Depage. This house was, to a certain extent, what he wanted to achieve for his Chinese clients in China. Standing out among a row of European townhouses, Van Wylick's design features a prominent Chinese roof structure above the central bay window, abstract brackets, and green-glazed Chinese tiles for ventilation (Figure 6).

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[3] Original text in French: "J'ai souvent essayé, lorsque j'avais à construire des résidences pour des riches Chinois, de leur faire accepter des projets qui, tout en offrant le confort de l'occident, auraient pu s'allier avec le caractère du pays; rarement j'ai pu arriver à en convaincre" (Van Wylick 1927, 99).

[4] Original text in French: "Chez les Chinois riches qui se font construire des résidences où le confort modern s'allie avec les nécessités de la vie chinoise et a créé là-bas un genre d'architecture que l'on appelle 'semi- foreign'" (Van Wylick 1927, 100).

When Van Wylick worked in Hong Kong, he directed many of his company's projects (the CFEO) in Kowloon. Worth mentioning here are the structures along Nos.190-220 Prince Edward Road West, which were built circa 1930 and still stand today (Figure 7).

The buildings comprise a group of 16 modernised tong lau-type residential buildings of four storeys each. Van Wylick remarked that these residences were "marvellously suitable for the modern European and Chinese middle class" and referred to them as "semi-European" constructions:

> The development of Building No.8 (Lot O/KIL 2372) [on 190-220 Prince Edward Road] was our first operation in Hong Kong of the semi-European type. […] The experience provided us the reason to adopt this genre of construction and this type of small apartments, of which addresses a permanent clientele.[5]

This type of tong lau structure was initially a "hybrid house form that emerged out of [the] Chinese building tradition and colonial building policies" (Chu 2012: 278). Blended into "semi-European" apartment buildings by Van Wylick and his company, the structures along Prince Edward Road represent a modernised and hybridised form of the tong lau with spacious individual flats adorned with Art Deco motifs, geometric patterns, and stepped gables on the façades to enhance their overall verticality and linearity.

There is an added touch of local or Chinese characteristics, as seen in the individual balusters on the balustrades by the balconies (most of them currently enclosed by windows) adorning the green-glazed bamboo shoots as decorations. Therefore, architects of the 1930s, including Van Wylick, played a major part in disseminating Art Deco as a form of "semi-European" or hybridised design approach in Hong Kong.

Other examples of a hybridized design approach are the buildings by a local architectural firm, Chau & Lee. Established in 1933, it contributed greatly to the local modern architectural movement through its introduction of an Art Deco vocabulary and hybridised Chinese and Western designs including the Sham Shui Po Public Dispensary (1936), St. Mary's Church (1937), and several theatre buildings (Lau 2014). Chau & Lee's later designs of the Broadway [百老滙大戲院] (1949, Figure 8) and Capitol Theatres [京華戲院] (1952) are worthy examples of modern theatre buildings in Kowloon and Causeway Bay, respectively. The Broadway was built "with the sole object of offering the best in comfort, sound and project equipment," as well as the "latest air conditioning installed" (*South China Morning Post*, 24 July 1949).

[5] Report written by Gabriel Van Wylick on 22 February 1940 and translated from its original French text: "Cet immeuble est maintenant bien connu, il convient à merveille à la classe moyenne européenne et chinoise moderne" (File 401, CFEO, Brussels State Archives).

Figure 6: The 'semi-foreign' residence (center) designed by Gabriel Van Wylick in 1928 remains standing on Avenue Depage in Brussels today. (Photograph by L.K.P. Lau, 2011.)

Figure 7: The "Semi-European" Houses by the CFEO on Lot O/KIL 2372, constructed c.1930. (Photograph by L.K.P. Lau, 2013.)

Each theatre is characterised by a central tower above a curved entrance, which prominently marks the corner sites where they are located. The towers embody vertical decorative members that give their buildings upward-thrusting appearances, while the decorative lines of linearity and simple geometry adorn their facades and essentially convey Art Deco's

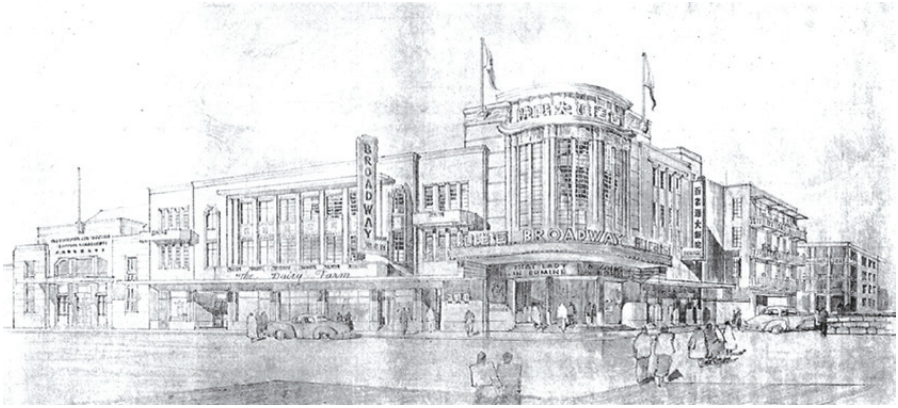

Figure 8: Broadway Theatre at the junction of Argyle Street and Nathan Road, Kowloon. (Source: *Hong Kong and Far East Builder* 7(3) 1949: 23.)

kept it abreast of international trends at the time. This paper invites more research to discover other unexplored areas in these fields including building typologies, popular entertainment, and urban cultural exchanges at large.

Architectural historians have noted that the Art Deco movement should generally be seen as an effort to synthesise local forms with modern materials and consumer preferences (Wright 1991, 38). This scenario was evident in the popularisation of Cantonese films in Hong Kong – particularly after the introduction of sound films (or 'talkies') during the early 1930s, which allowed the local theatre industry to target audiences that preferred to watch movies in their mother tongues – a win-win decision for both.

This led to a 'modernist' movement in theatre design, as seen in various Art Deco theatres discussed in this paper, as well as among the architects who designed them. The theatres discussed in this paper were among the first in Hong Kong to introduce Art Deco to theatre architecture via the use of modern materials while meeting consumer preferences.

On a global context, with the shift from movie palaces to Art Deco theatres during the 1930s, the main concern of theatre owners turned to decorative strategies that did not prevent audiences from being entertained – unlike previous 'illusionistic' typologies. The function of an Art Deco theatre was fundamentally different from that of its older counterparts, making the former more streamlined and functional, yet also visually appealing and decorative. In Hong Kong, the Art Deco idiom prevailed until after World War II, when streamlined modern and more functionalist structures began to take shape. Moreover, the theatres discussed in this paper illustrate the everyday lives of Hong Kongers before the arrival of broadcast television during the late 1950s.

Having consulted old newspapers, journal articles, photographs, and personal writings, while tracing the family lineages of Hong Kong's interwar architects, the author revealed that certain architects produced unique regional responses to adaptive modern architecture in Chinese cities, including Hong Kong and Macau, during the interwar period. Modern architecture in this region, particularly that of theatres, may, therefore, be understood in the context of these designs, which reflected their locales' architectural milieux and adapted to local conditions. It also showed the autonomy of the architects, who enjoyed much latitude to implement their own preferences into their architectural designs, so as to blend the unique adaptations of decorative (at times, Chinese) elements with modern Western expressions.

CONCLUSION

The paper discusses Hong Kong theatre buildings and Art Deco in the context

of modern architecture, a hitherto neglected subject. It covers Hong Kong's theatres from their early beginnings to just before the 1920s by discussing the prevalence of neoclassical or period revival expressions during the colonial era. It also describes the rising demand for Cantonese films during the 1920s and 1930s, the emergence of local Chinese involvement in Hong Kong's film industry, and the first Art Deco theatres constructed during this period. Finally, it examines how Art Deco is a 'semi-foreign' design approach in Hong Kong and, to an extent, Southern China featuring intercultural exchanges between architects.

This study hopefully acts as a bridge to allow one to understand the framework of architectural practices during the early 20th Century in Hong Kong and China while placing them in an international context. It also offers a foundation for further studies of modern architecture, urbanism, and a socio-cultural history of entertainment in the region.

ACKNOWLEDGEMENTS

The author is thankful to two anonymous referees for their useful comments on the manuscript of this paper, the research project for which was supported by the Research Grants Council General Research Fund (2020-2022), Grant Number 18608319, project title "Hong Kong Art Deco: Theatre buildings and the rise of modern cinemas in transforming the city's socio-cultural landscape." Mr. P.Y. Chow was the research assistant for this project.

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Surveying & Built Environment

Red Hill Fixed Observation Post (OP): An Update

Stephen N.G. Davies+*, Lawrence W.C. Lai* and Y.K. Tan*

ABSTRACT

Based on a map and aerial photo study of Red Hill (Pak Pat Shan[1] (白筆山)) informed by Major Monro's (1942) unpublished war diary, and the Defence Map of 1936, this research note updates the paper by Davies *et al.*(2022) on the fixed, observation posts (OPs) on Hong Kong Island. The study identifies the location of the Red Hill OP in 1963 Hunting Surveys Limited aerial photos. The nature of this OP in the defence of Hong Kong is discussed.

KEYWORDS

Fixed observation posts, Red Hill OP, maps, aerial photos

BACKGROUND TO THIS AERIAL PHOTO STUDY

In an article in *Surveying and Built Environment* (Davies, Lai, & Tan (2022)), it was noted that amongst the fixed observation posts (OPs) mentioned in contemporary British sources in the run up to the Battle of Hong Kong, one of the ones the location and nature of which research and fieldwork had not identified was at or near the

[1] Literally "white pen hill", likely named after the obelisk built along the Tai Tam Harbour shore below the hill. A better Chinese name, which would avoid confusion with the knoll (called "Obelisk Hill" (石碑山)) off Shek O Road, on which another obelisk stands, would have been "turtle back hill" (龜背山), as the hill morphologically looks like the dermal bone of a turtle to tally with the Chinese place name for Turtle Cove "turtle back bay." For a history of the two obelisks, see Waters (2000) & Davies (2014).

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Red Hill peninsula (紅山半島[2]), close to where Turtle Cove Beach (龜背灣泳灘), location of the surviving Pillbox 30 and its searchlight shelter (Lai *et al*. 2021: 66-67) are situated.

The peninsula, a rough oval around 1km on its long axis and 0.6km on its short axis juts out southwards from Hong Kong Island between Tai Tam Tuk Reservoir dam (大潭篤水塘水壩) and the approaches to Stanley (赤柱) in Tai Tam Bay (大潭灣), its eastern and northern shores creating the sheltered haven of Tai Tam Harbour (大潭港). The long axis is orientated c. 340°/160° and the short axis c.250°/070°. The highest point (120m) is the southernmost of three summits in a rough triangle on a small, rolling plateau that forms Red Hill (Figures 1 & 2)

A Red Hill OP is mentioned both in the 1939 *Outline Defence Scheme* and in Major John Munro's diary (Monro 1942). It formed part of the East Group of the artillery command and control system on Hong Kong Island. Its comparative absence from mention in accounts of the battle had suggested that it may possibly have been, as most New Territories OPs were, a temporary earthwork structure. This absence in the battle record also suggests that it

Figure 1: Detail from map *Hong Kong and the New Territory*, 1:25,000, Geographical Section, General Staff, No. 3868, 1930, revised 1938, 2nd edition 1945.

[2] A private development *Red Hill Peninsula* (紅山半島) was named after this old English place name rather than its official Chinese place name "Pak Pat Hill Peninsular."

may not have been manned since, as we shall see, it was wrongly orientated to have been of much use given the direction of the Japanese attack.

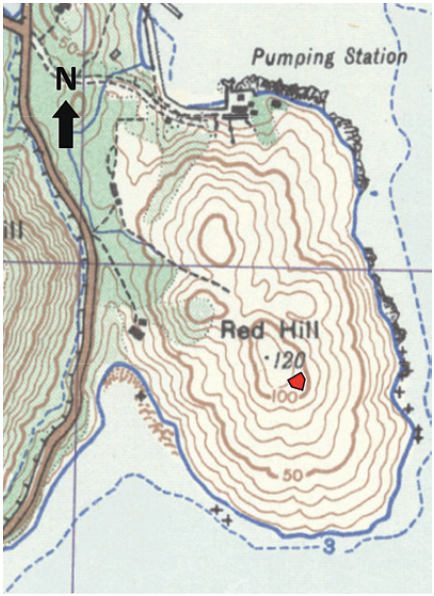


Figure 2: Detail of Red Hill peninsula from the map in Figure 1 above. (The red symbol shows the position and approximate orientation of a possible OP at about 115m.)

Up to the publication of our previous article (Davies *et al*. 2022), no trace of any Red Hill OP had been identified on any map or aerial photos by Battle of Hong Kong enthusiasts and researchers. The assumption had been that extensive building work across the top of Red Hill peninsular between the 1950s (when a service reservoir was built on Red Hill (the northernmost summit[3]) and the late 1960s (when the southern, highest summit was entirely built over by a luxury housing development called Villa Rosa, on Rural Building Lot 777 auctioned on 23 January 1962) would have expunged all physical traces. It followed that no fieldwork had alerted our team to anything like the OPs found elsewhere, so with nothing to report, in the previous article it was only mentioned in passing.

However, we were alerted that even if no physical remains could be identified, perhaps a more thorough mapping and, especially, aerial photographic analysis[4] might turn up something.

A solid hint here was given in an observation in Major Monro's diary in which he commented,

> "All the Hong Kong (and Singapore Royal Artillery) Regiments O.P.'s were officially sited for their view over the beaches; for fighting on the island itself they are in many cases quite useless."

FINDING RED HILL OP

We knew that two 4.5" howitzers of the Hong Kong and Singapore Royal Artillery's 1 Mountain Battery had been positioned at "Red Hill" on 7th

[3] The topographic maps for 1957 show that the road (now Pak Pat Shan Road (白筆山道)) accessing the service reservoir site and some buildings already existed.

[4] Our previous aerial photo studies had focused the service reservoir along the crest of Red Hill.

December 1941, and that two 18pdr guns of 965 Defence Battery of 12 Coast Regt had been destroyed somewhere close by Red Hill on 24th December.[5] However, all the intelligence about these units confirmed Major Munro's implicit view that their fire tasks would all have been orientated northwards. That left open two possibilities: a fixed OP that had been part of the "useless" OPs mentioned by Major Munro, or a temporary OP developed rapidly to serve the fast moving battle situation in December 1941.

The first possibility seemed to us the most fruitful to investigate. Any such OP would have been a visible, fixed structure of the sort that had enabled aerial photo analysis to identify other fixed OPs. It would also have looked "over the beaches" and thus have been most likely on the south end of the 100m-120m high plateau forming the Red Hill peninsula's summit. Though an outside possibility, if its precise location could be pinned down, then anything fixed may have left some sort of trace depending on how exactly it had been placed in relation to post-war building development.

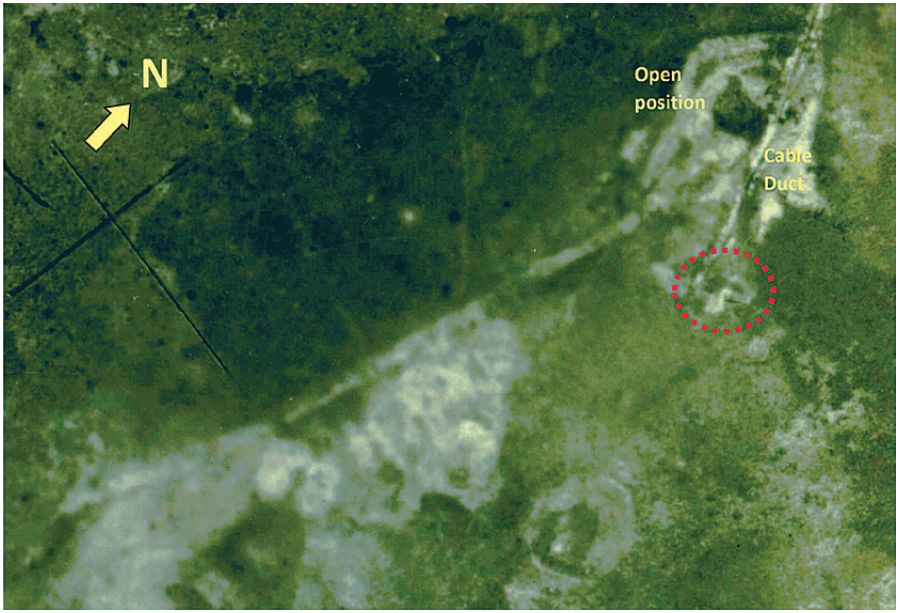


Figure 3: Enlarged detail from RAF aerial photo 81A_127-6206, 1949-05-08, 8600', 1:5160 - The circle encloses the OP site.

[5] https://ra39-45.co.uk/formations-and-markings/hong-kongdecember-1941., also https://digital.lib.hkbu.edu.hk/1941hkbattle/en/map.php, although this site does not mention 965 Defence Battery in the area on or before 24th December or, indeed, at all.

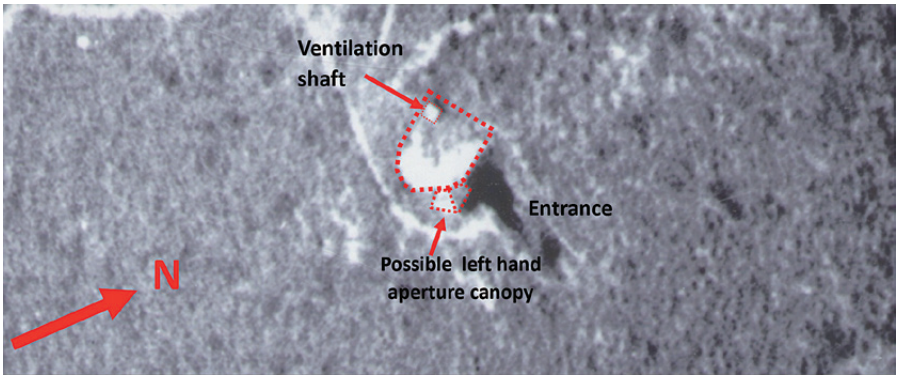


Figure 4: Enlarged detail from Hunting Surveys Ltd. aerial photo 1963-6779, 1963-02-01, 2700', 1:5400 – Looking southeast, the left hand aperture canopy is here very obvious.

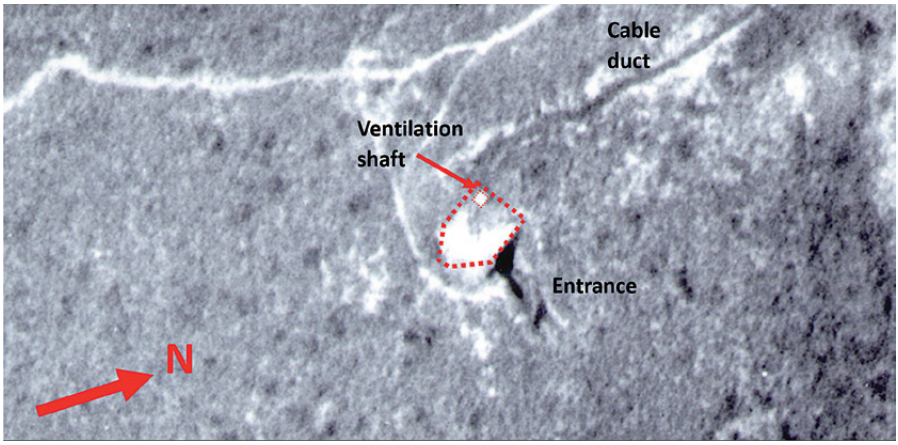


Figure 5: Enlarged detail from Hunting Surveys Ltd. aerial photo 1963-6636, 1963-02-01, 2700', 1:5400, with approximate outline of potential OP structure – the left hand aperture canopy is here less obvious.

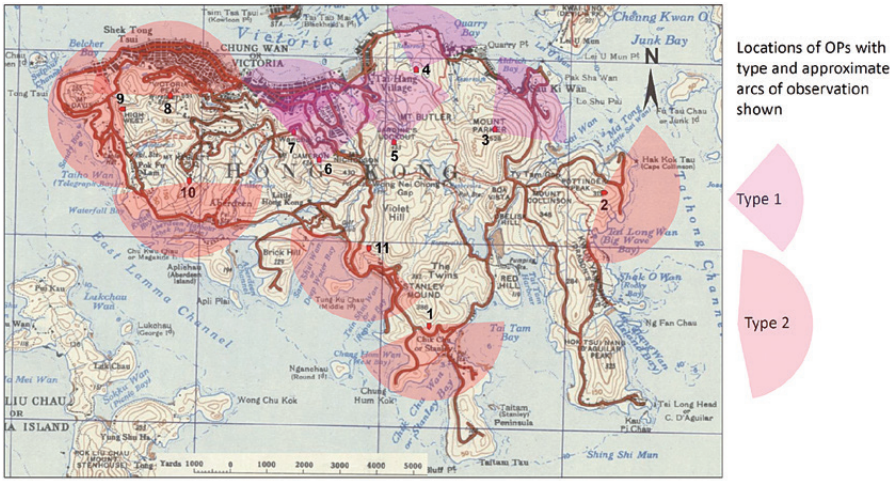
It was soon confirmed that nothing seemed to have been built by 1934, the aerial photographs of that year showing only a scattering of typical large traditional Chinese graves, which were oval in shape within circular burnt areas[6]. The aerial photography from shortly after hostilities ceased in November 1945 was from too great

[6] Effects of annual tomb sweeping.

an altitude for any clear conclusion. In 1949, however, a low altitude (5,160' (1,572m)) pass produced clear evidence of a structure on the southern, forward slope of the highest, 120m southern summit of Red Hill (Figure 3). The next series of photographs that enable a closer look came in 1963, and it is analysis of these (Figures 4 and 5) that seems to point to an OP orientated on an axis of c.147°, or in older notation, roughly SE by S. This was initially puzzling, since a single, Type 1 OP, with its observation slit orientated thus made little sense in the light of Major Munro's dismissive description.

The structure shown in Figure 4 and 5 is certainly an observation post, inferred from its shape and the cap of a small ventilation shaft on its roof to its rear, away from an entry trench; and the marks of a communication cable dug out (by scavengers after the battle) from the crest of the hill behind the structure. Only one pointed and sloping overhanging roof or reinforced canopy above an observation aperture or slit near the trench, typical of an OP, is clearly visible. This is on the left front as indicated in Figure 4. It might well have an additional aperture on the right hand side, concealed by vegetation, the shadows and poor image resolution. If so, that would make it a Type 2 OP.

This interpretation then drew our attention to Figure 4 in that paper (Davies *et al*. 2022: 58) reproduced here Figure 6: What stood out to us, looking at the figure again in the light of Major Monro's comment, was an obvious gap. If the object of the OPs on the south of the island was to cover all the potential landing places, it was clear that High West OP and Matilda



1:80000 Hong Kong and the New Territories map published by War Office 2nd edition 1945

Figure 6: Figure 4 reproduced from Davies, Lai & Tan (2022:58).

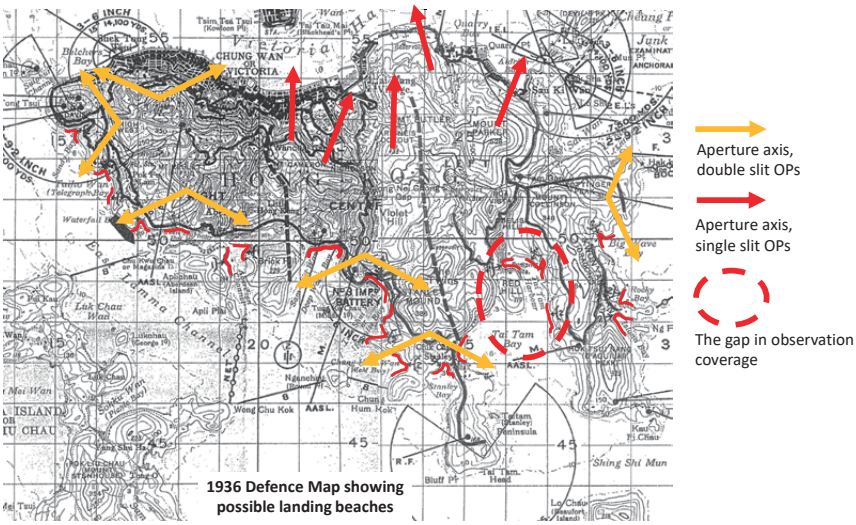


Figure 7: 1936 Defence Map showing possible landing beaches.

OP covered the west of the island and Middle Spur OP, with its remarkable split arcs covered Deep Water and Repulse Bays. It had earlier seemed that Stanley Mound OP had probably been placed to cover all of the beaches around Stanley including Tai Tam Bay. However, once the issue of a Red Hill OP emerged, whilst it was probably still the case that Stanley Mound could observe the beaches of Stanley Bay in the west and Stanley Main Beach in the east, as well as the outer beaches on the west side of the D'Aguilar Peninsula, it did not cover inner Tai Tam Bay or Tai Tam Harbour. There was, in short, a gap between Stanley Mound OP and the Pottinger Peak OP that covered the approaches to beaches on the east of Hong Kong Island.

This gap was made much clearer when we adapted the earlier diagram (Figure 7) and applied its data to the 1936 Defence Plan map, showing just the centre axis of the OP loopholes. Because the 1936 map showed all the beaches that planners expected to offer a possible enemy landing place, it was immediately obvious that the Type 2 OPs, almost all of which were on the south side of Hong Kong Island, covered all of the beaches except those in inner Tai Tam Bay. The newly identified Red Hill OP neatly closed the gap.

As we have noted, close inspection of the 1963 aerial photographs had led us to conclude there was sufficient discernible evidence to identify either a Type 1 or a Type 2 OP, orientated as noted above. In the light of Major Monro's comment, and the absence,

otherwise, of any Type 1 OPs on the Hong Kong Island south coast, we inclined to the view that, despite the uncertainty over the right hand aperture, this would have been a Type 2 structure and that its arcs of observation were as shown in Figure 8 below.

Does anything remain today? As yet we do not know. Figure 9 shows the 1963 aerial photograph used for Figure 4 with a modern 1:1000 scale map superimposed. It can be seen lot boundary that the two lots at the southern tip of the Villa Rosa development, today cover the site of what we surmise to have been a Type 2 OP called Red Hill OP.

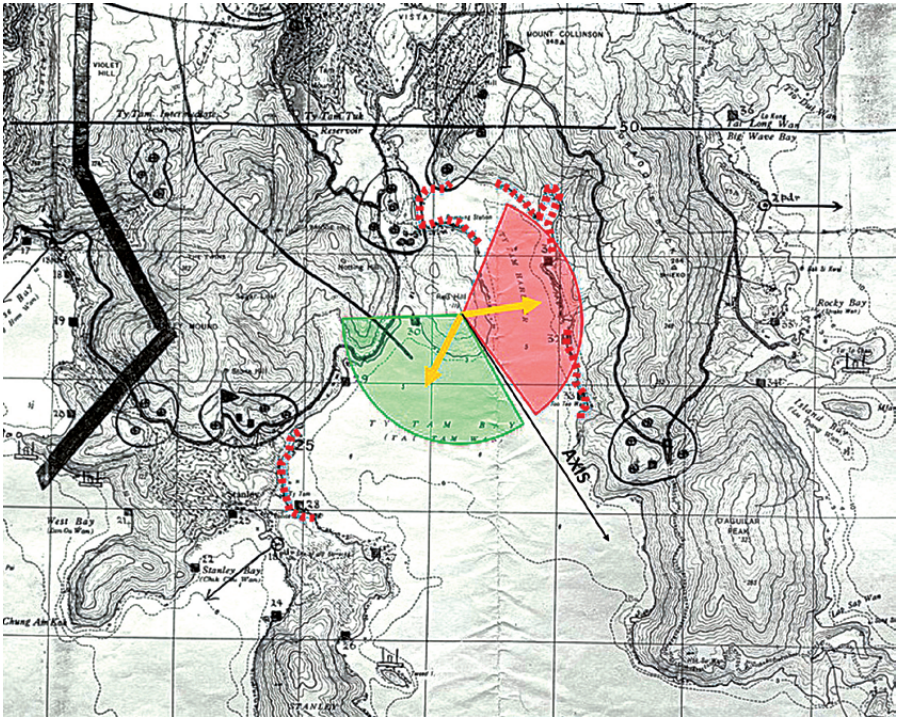


Figure 8: The structure interpreted as a Type 2 OP with left and right arcs of observation covering inner Tai Tam Bay, Tai Tam Harbour, Turtle Cove to Stanley Main Beach and, at least for the approaches, Stanley Prison Beach.

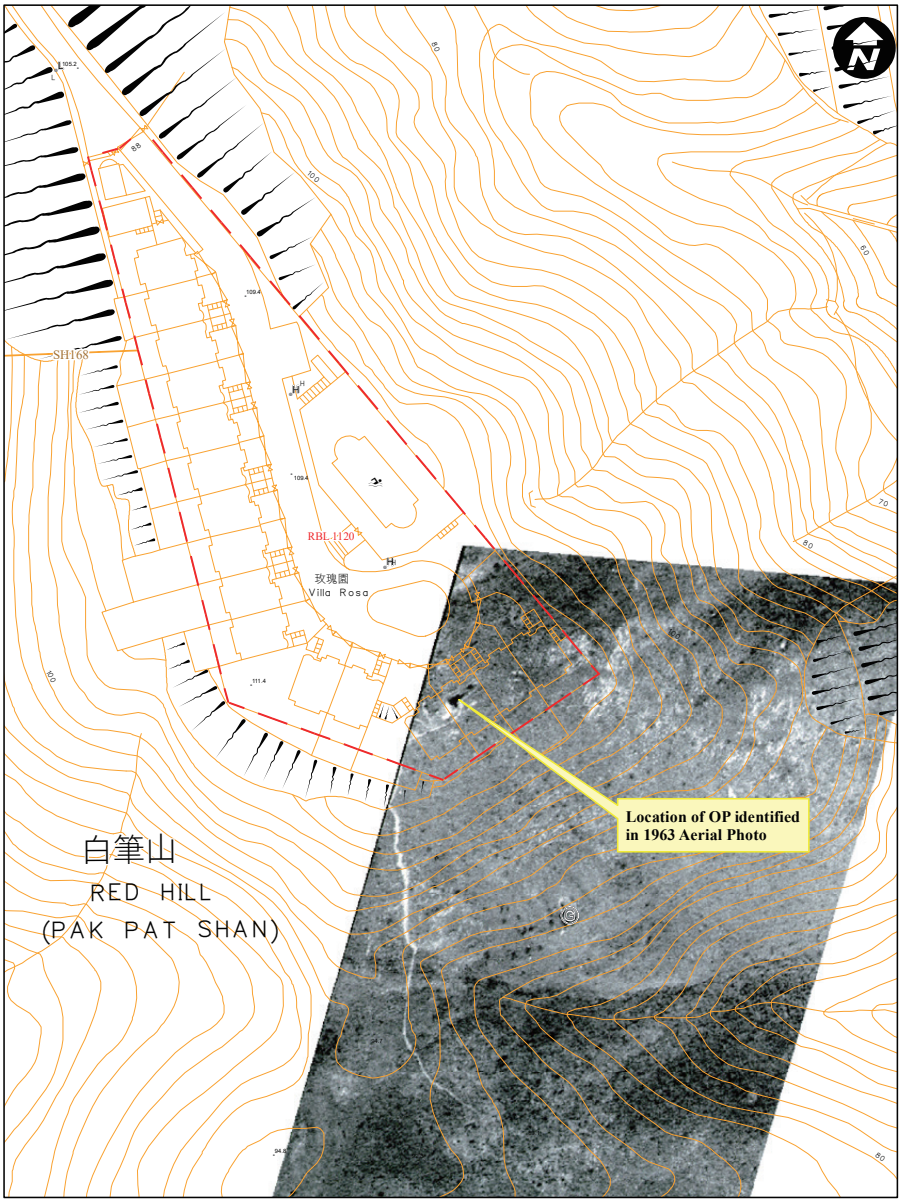


Figure 9: Hunting Surveys Limited aerial photo No. 6779, dated 1 February 1963, superimposed on the relevant lot boundary map. (Courtesy: Sr Dr Ken S.T. Ching) **1:1,000**

CONCLUSION

It is as yet unknown whether, during site formation for the development, the stout World War II (WW2) vintage reinforced concrete structure was demolished. It is possible that any demolition was only sufficient to ensure that the subsequent development could be built over the remains of the OP. Ground penetrating radar could resolve this issue, perhaps the only remaining technique for such an exercise, bar destructive excavation. It is, however, almost certain that nothing remains that would resolve whether the structure was an OP or what type it was.

Red Hill OP was unmapped, as in the case of Mount Parker OP, already identified from aerial photos, and Mount Austin OP, yet to be found by a similar aerial photo assisted study. This study shows the usefulness and limitations of basic surveying techniques in finding WW2 built heritage scattered on government land in the countryside. We hope that further and better research as well as policy support for their complete mapping and meaningful conservation will be forthcoming.

ACKNOWLEDGEMENTS

The authors are thankful to Rob Weir for his sharing information regarding the fire control aspect of mobile batteries, Mr. Nixon T.H. Leung for helping to obtain aerial photos, Mr. Vincent N.H. Chan for obtaining the lot map for Rural Building Lot No.777 and Sr Dr Ken S.T. Ching for his advice on geo-referencing and producing Figure 9.

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Surveying & Built Environment

Field Notes

World War II Japanese Pillboxes along Castle Peak Road at Kar Wo Lei & Brothers Point (Tai Lam Kok)

Y. K. Tan*

ABSTRACT

This short essay presents the findings from analysis of post war aerial photos with respect to World War II Japanese pillboxes along Castle Peak Road at Kar Wo Lei and Tai Lam.

KEYWORDS

Japanese pillboxes, Kar Wo Lei (嘉和里, Ka Wo Li), Tai Lam Kok (大欖角, Brothers Point), Castle Peak Road (青山公路)

INTRODUCTION

A member of the British Army told my friend Robin Weir (Rob) many years ago that some Japanese pillboxes were located around Kar Wo Lei and Brothers Point (Tai Lam Kok) close to Tai Lam Camp (See Figures 1 and 2).

To the best of the author's knowledge, these pillboxes have not been formally reported on before, and there are no known Japanese or British records about them.

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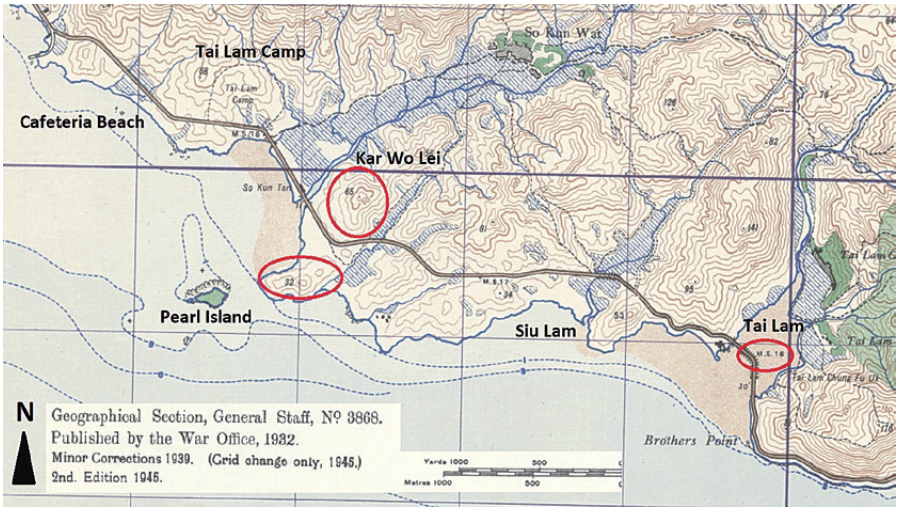

Figure 1: The sites on 1945 War Department Map. (https://www.hkmaps.hk/viewer.html)

Figure 2: The sites on the current Lands Department map. (web site: https://www.map.gov.hk/gm/map/)

Based on Rob's information, the author conducted a study to clarify matters. As the site has been urbanised, it is hard to find any pillbox remains on the sites today, so fieldwork was not likely to yield any data. The following information is therefore based entirely on analyses of available post-war RAF and Hong Kong Government aerial photos.

Comments by Professor Stephen N.G. Davies on the implications of the presence of these Japanese pillboxes in this part of Hong Kong, in the light of those Japanese defence systems covered by this journal (Davies, Lai & Tan 2022), are produced at the end of this essay.

JAPANESE PILLBOXES AT

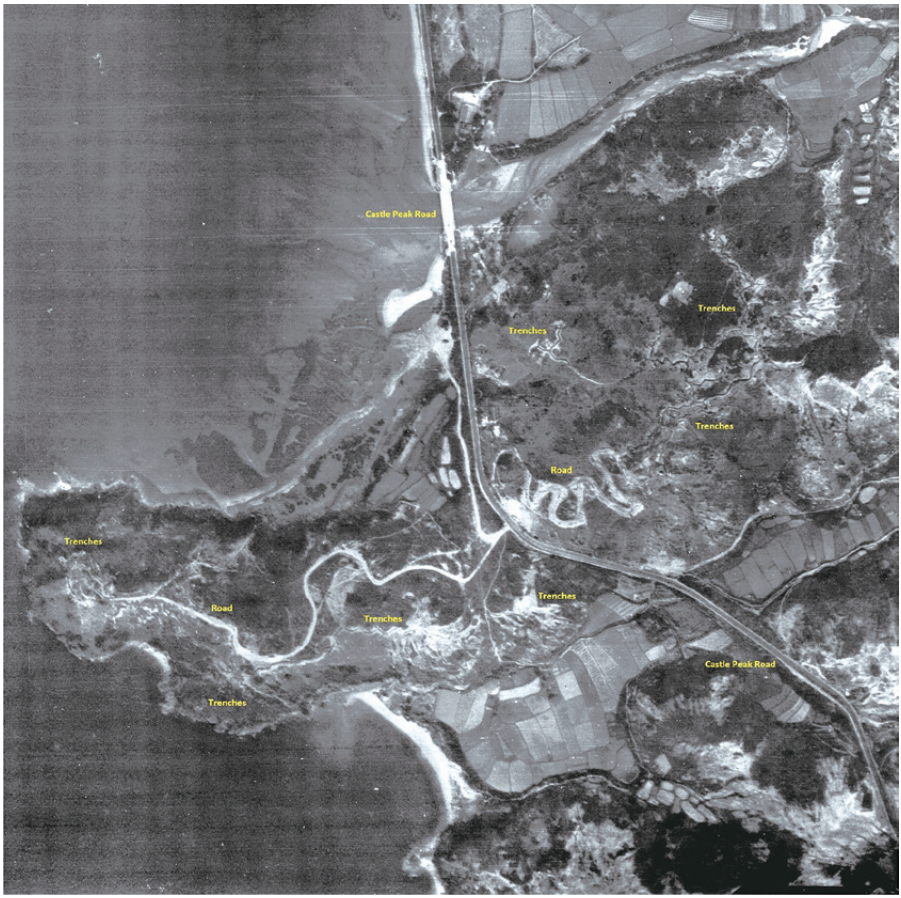

Figure 3: RAF aerial photo No. 81A-125 5179 of 8 May 1949 (5800 feet).

Figure 4: RAF aerial photo No. F21-81A-RAF-558 0127 of 28 December 1956 (16700 feet).

KAR WO LEI

A RAF aerial photo of 1949 (Figure 3) shows that two major defence sites were located on the eastern and western sides of Castle Peak Road at Kar Wo Lei (also Ka Wo Li). At that point in time large networks of trenches could be identified, that connected defence positions around the crest of the ridge. The ridge line of a spur running to seaward dividing the So Kun Wat (掃管笏) valley from the Tai Lam valley runs in a roughly NE to SW orientation, with its seaward end pushing out into the North Lantau Channel (北大嶼海峽). The main Castle Peak Road crosses this ridge between two spot

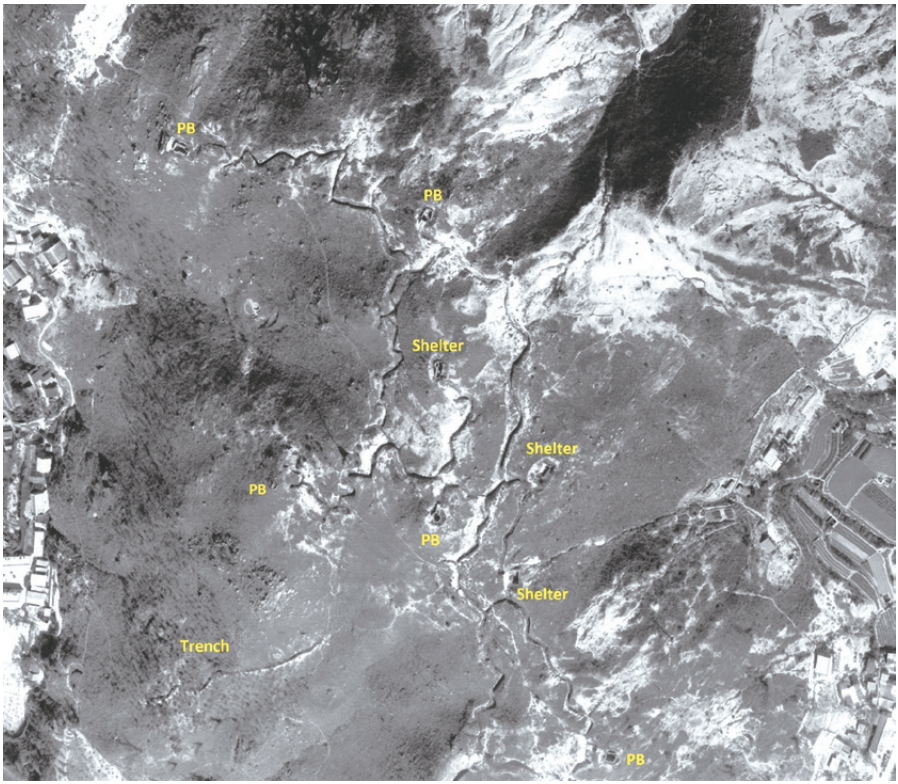

Figure 5: Hunting Survey Limited aerial photo No. 3600 of 20 December 1964 (1800 feet).

heights of 65m to the NE and 32m to the SW. Either side of the Castle Peak Road access roads lead towards the trench complexes.

Another RAF aerial photo (Figure 4), taken a few years later in 1956, shows the trench system and defence positions on the hill line more clearly.

By that date, however, the Japanese pillboxes that could be identified in 1949 seem to have been partially destroyed as in the later image they are without roofs.

The image shows that by 1956 the British military had erected some Nissen huts along the Japanese built road on the western, seaward side. They had also constructed two large platforms at the end of the road, possibly to serve a postwar British battery site developed there.

A 1964, low altitude Hunting Survey

Limited aerial photo for the Hong Kong Government (Figure 5) shows good close-up details of the Kar Wo Lei site. The trenches and pillboxes on the eastern site are clearly visible.

Like most of the Gin Drinker's Line pillboxes, and as observed in 1956, all the pillboxes and shelters had their roofs removed.

The four or possibly five identifiable pillboxes on the north eastern, inland part of the complex dominate the two main descents from the main, very sharp ridged spur, one to the west and the other to the south.

The trench system is complex. The main part links the PBs and three shelters that can be identified. The shelters are of

Figure 6: Hunting Survey Limited aerial photo No. 3625 of 20 December 1964 (1800 feet).

uncertain purpose. The two to the east of the main system on the Tai Lam side of the ridge were possibly a command post and an accommodation or stores building. The shelter inside the trench and path system towards the top of the ridge line, with visibility in all downhill directions, was likely an OP.

Another 1964 aerial photo (Figure 6) covering the central area of the complex closer to where the Castle Peak Road crosses the ridge shows a winding, probably unmade road leading uphill to the inland trench, shelter and PB complex from the main road.

By 1964 considerable development had taken place along the Castle Peak Road, so there may have been more

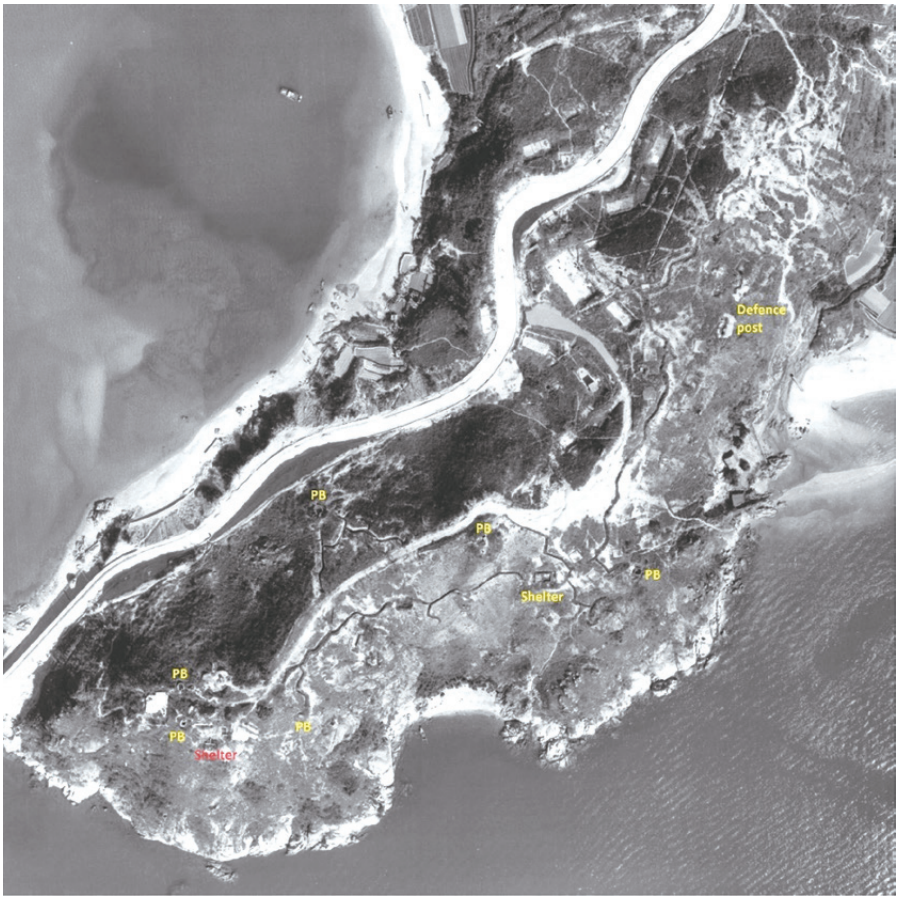

Figure 7: Hunting Survey Limited aerial photo No. 3625 of 20 December 1964 (1800 feet).

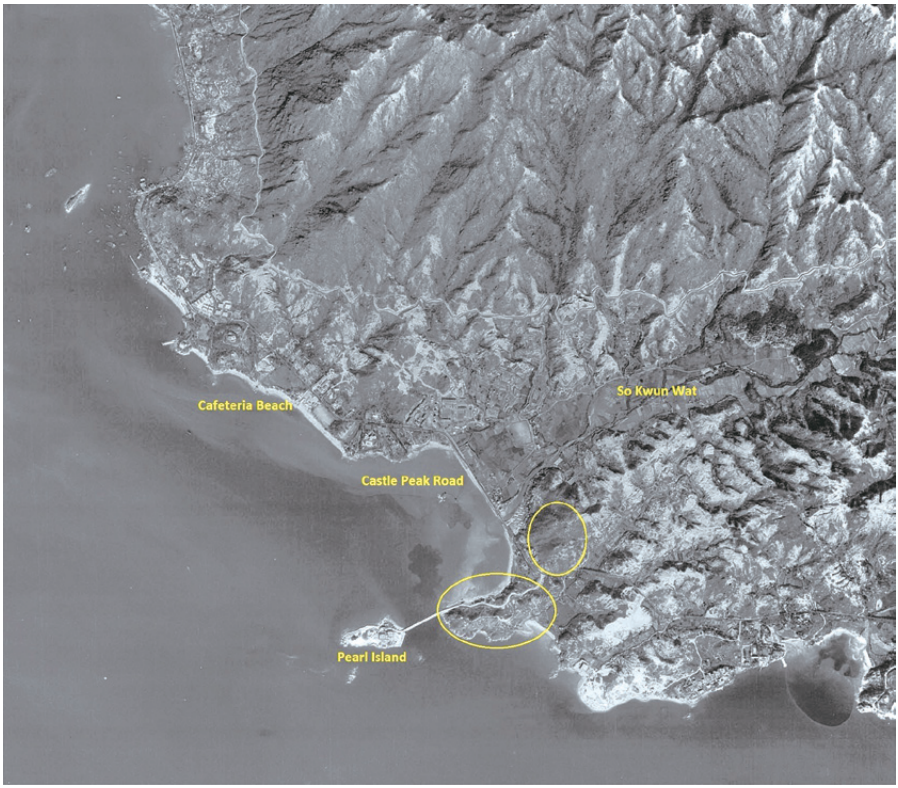

Figure 8: Hunting Survey Limited aerial photo No. 2569 of 13 December 1964 (12500 feet).

defensive structures where the unmade road branches off than can now be seen. However, over to the east a trench runs downhill from the main trench complex to a defensive position, as can be seen.

The western or seaward site on the 1964 aerial photo (Figure 7) shows that by that date all the British Nissen huts built after the war, and visible in the 1956 image, had been demolished. This is consistent with the site being abandoned by British in the early 1960s.

However, the remains of some six Japanese pillboxes can still be clearly seen, as can the sinuous line of the trench complex that appears mainly to have run along the south eastern side of the ridge just below the ridge line.

As noted earlier, the roofs of most pillboxes had been removed but a

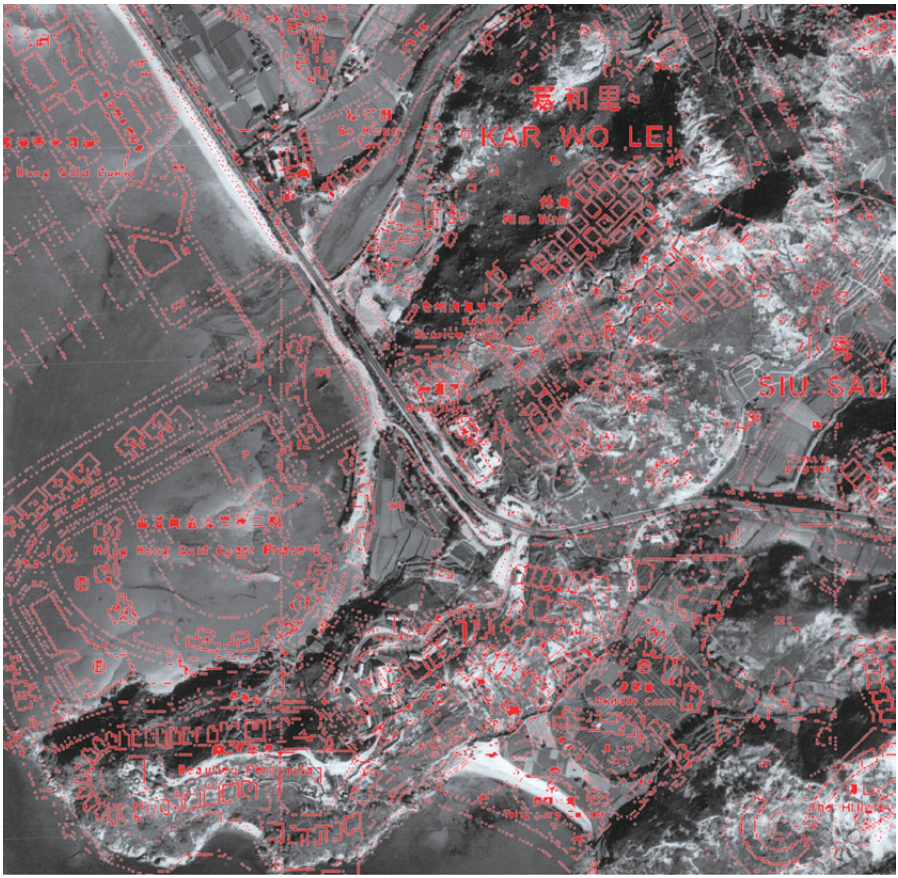

Figure 9: 1956 RAF photo F21-81A-RAF-558 0127 of 28 December 1956 (16700 feet) with current map data.

few small single-man pillboxes seem to have retained their roofs. A large shelter located at the centre of the site was possibly a command post.

Another shelter like structure located at the end of road could have been built by either the Japanese or the British Army.

Another 1964 Hunting Survey Limited aerial photo (Figure 8) shows the area controlled by the pillboxes at Kar Wo Lei. This site controlled the entrance to the So Kwun Wat valley, and the Castle Peak Road as far as Cafeteria Beach (咖啡灣泳灘).

Figure 9 shows the current (1:5000 6-SW-C (Current)) map data

superimposed on the 1956 RAF aerial photo (F21-81A-RAF-558 0127 of 28 December 1956). It shows that the entire Japanese base is now a housing area. This means that urban development has already removed all traces of any 1960s remains of the Japanese site.

The current view of the western site as completely covered by housing is shown in Figure 10.

The current view of the eastern site with housing is shown in Figure 11.

Figure 10: The western site in 2023. (Photo taken by Y. K. Tan, February 2023)

Figure 11: The eastern site in 2023. (Photo taken by Y. K. Tan, February 2023)

JAPANESE PILLBOXES AT BROTHERS POINT (TAI LAM KOK)

A 1963 aerial photo (Figure 12) does not seem to show any similar trench or other defence structure in either the Siu Lam (小欖) or Brothers Point (Tai Lam Kok) areas, though the height of the overflight makes discerning close detail more difficult. Anything like the Kar Wo Lei trench complex would stand out and there is nothing similar to be seen.

However, enlargement of a 1964 photo (Figure 13) shows that although no

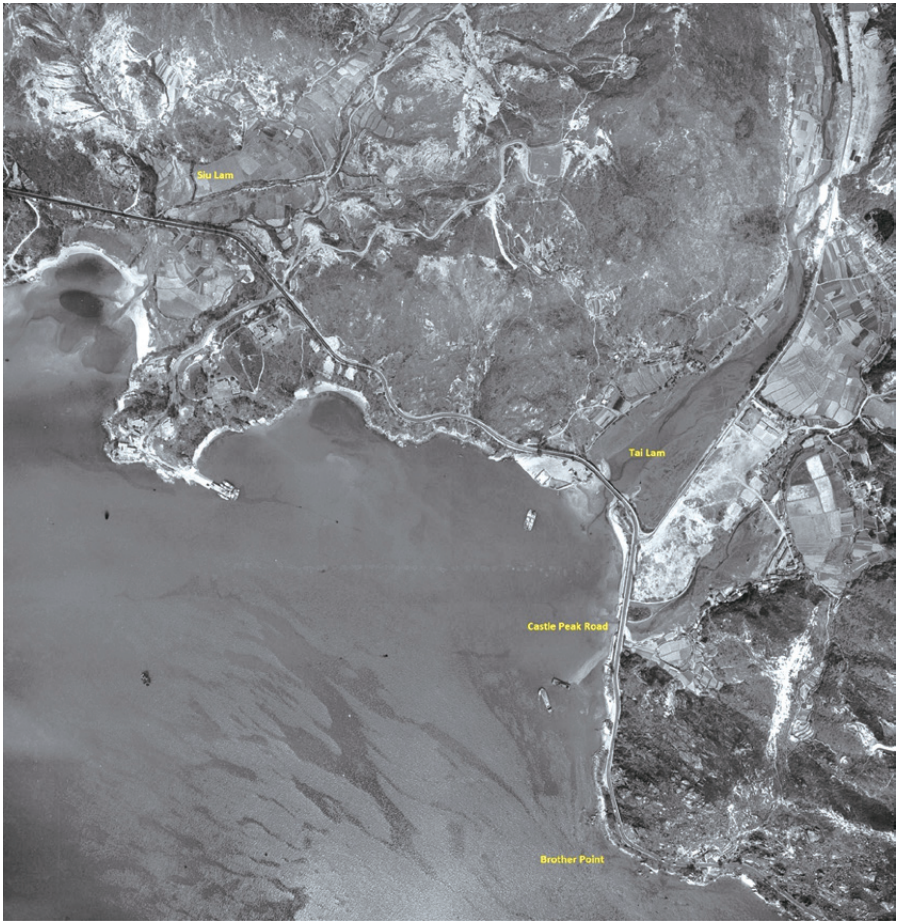

Figure 12: Hunting Survey Limited aerial photo No. 6369 of 13 December 1963 (12500 feet).

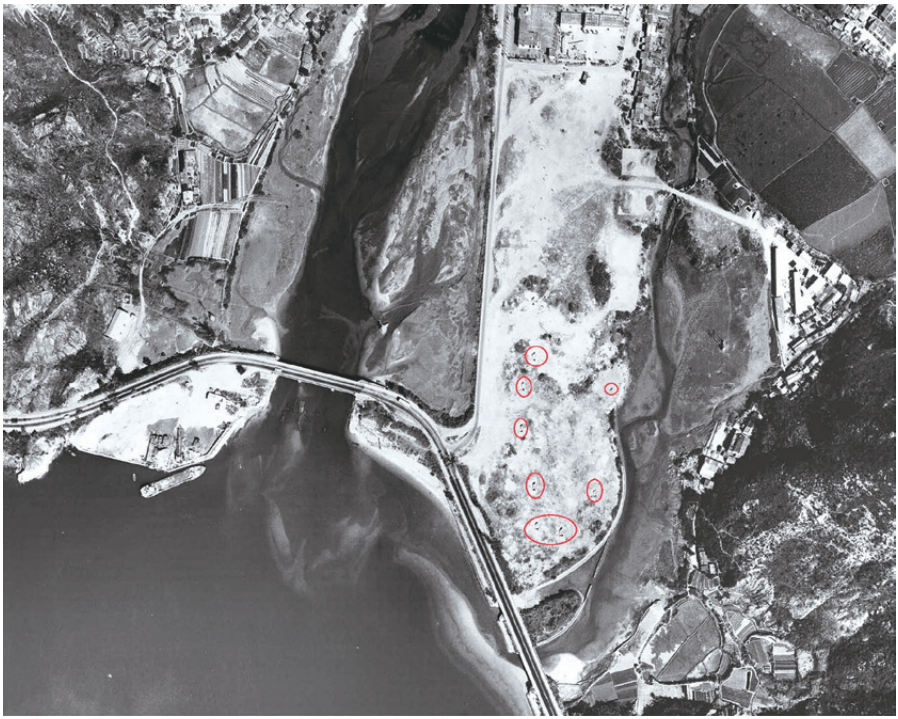

Figure 13: Hunting Survey Limited aerial photo No. 3635 of 20 December 1964 (1800 feet).

pillbox remains can be seen, there would appear to be many fox-holes. This site could therefore be a secondary site or battery to support the Kar Wo Lei base.

As this area has been fully developed, it is unlikely that any remains could now be found there.

COMMENTS BT PROFESSOR Dr STEPHEN N.G. DAVIES ON THE IMPLICATIONS OF THE PRESENCE OF JAPANESE PILLBOXES ALONG CASTLE PEAK ROAD

The Japanese pillboxes along Castle Peak Road can in theory be connected with roughly similar complexes identified by the author in the Northeastern New Territories, and

which have also been identified at Wong Chuk Yeung in the Sai Kung area.

If that connection holds, it seems feasible to conjecture that the Kar Wo Lei complexes may have been intended, not solely to interdict movement along the Castle Peak Road, but also prevent any communication or link up between the Lantau based guerrillas and those in the Northeastern New Territories via the Siu Lam and So Kwun Wat valleys and across via the Sek Kong area (Davies, Lai & Tan 2022).

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Surveying & Built Environment

Field Notes

Field Notes and Photos of Gin Drinker's Line Pillboxes Nos. 313, 314, 315 & 419: The Last Four Standing Pillboxes of the Kowloon Peninsular Inner Line (a.k.a. the Gin Drinker's Line)

Robin Weir*

ABSTRACT

As a contribution to conservation of World War II historical heritage in Hong Kong, this set of field notes provides the context of the Kowloon Peninsular Inner Line, more popularly known as the Gin Drinker's Line, and documents the findings and site measurements of Pillboxes Nos. 313, 314, 315, and 419, surveyed between March 1997 to March 2003, with some photographical and graphical illustrations.

KEYWORDS

Kowloon Peninsular Inner Line, Gin Drinker's Line, pillbox, Royal Engineers

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EDITORS' NOTES

This invited set of notes mainly provides, as a complement to Robin Weir's article (Weir 2023) on the British pillboxes in the last issue of *Surveying & Built Environment* (SBE), the findings of the 4 last standing Gin Drinker's Line (GDL) pillboxes (PBs).

Weir previously contributed to SBE papers on the blockhouses along the so-called Anderson Line (Weir 2012), the forerunners of PBs, and his research on the GDL PBs (Weir 2020).

Weir's report here is a precursor to the Hong Kong Institute of Surveyor's publication on the GDL by Tan *et al*. (2022).

THE CONTEXT

In 1935 the British Army commenced construction of a defence line across the Kowloon Peninsular from Gin Drinkers Bay (now reclaimed as Kwai Chung) in the west to the shores of Tide Cove (now Shatin new town) and on to Junk Bay (Tseung Kwan O) on the east coast, a distance of approximately 10 ½ miles (17 km), encompassing a variety of landscapes from coastal beaches to rolling hills. This was an updated version of a previous plan considered in 1920 to defend against a land attack by the Chinese Army, but neither was carried out.[1]

The construction was a major undertaking, with trenches, communication lines and both underground and above ground structures built. Among these were approximately 90 concrete Pillboxes (PBs).[2]

By 1937 the Japanese threat was significant and, with the British giving priority to building its defences in the UK against Germany, it was obvious that the whole of the Colony could not be defended by forces available, or likely to become available. A new policy was produced in 1938 which, should an invasion occur, envisaged a slow withdrawal from the Kowloon Peninsula and only HK Island itself being defended. The incomplete defence line was abandoned.[3]

In mid 1941, the Canadians were prevailed on to provide 2 Battalions of troops to bolster the defence of HK. In HK, this prompted a review of the defence plans and the original unfinished line was re-instated, with works still being done in the last weeks before the Japanese crossed the border.[4]

There is no known contemporary record of the exact number[5], or position, of the PBs built. Nor is there any record of construction plans for them. Details based on pre-war photographs

1 The National Archives London (TNA): TNA WO 32/5303.
2 TNA WO 106/2370.
3 TNA WO 106/2379.
4 TNA Maltby Despatch Supplement to the London Gazette. Jan 1948.
5 Tan *et al*. (2022) identified 93 along the Gin Drinker's Line.

are limited to a few personal photos and some well censored Army Public Relations short film clips. A number of the PBs were destroyed during the brief fighting in which they were involved, but most of the remainder were demolished using explosives in the late 1940's, or by land development for infrastructure since then as the population increased.

This paper sheds light on details of the PBs based on what has been found from the few remaining that are mostly intact, specifically PBs 313, 314, 315, and PB419, which has since been demolished. Numbering is in groups depending on their positions in the four denominated sections of the GDL – left PB400 – 426, left centre PB300 – 315, right centre PB200 – 222 and right PB100 – 126.[6] (Figures 1 to 3)

Figure 1: PB 214, an example of the condition of most PBs as found. (Photo taken in December 1992 by the author after a hill fire.)

[6] TNA 106/2364.

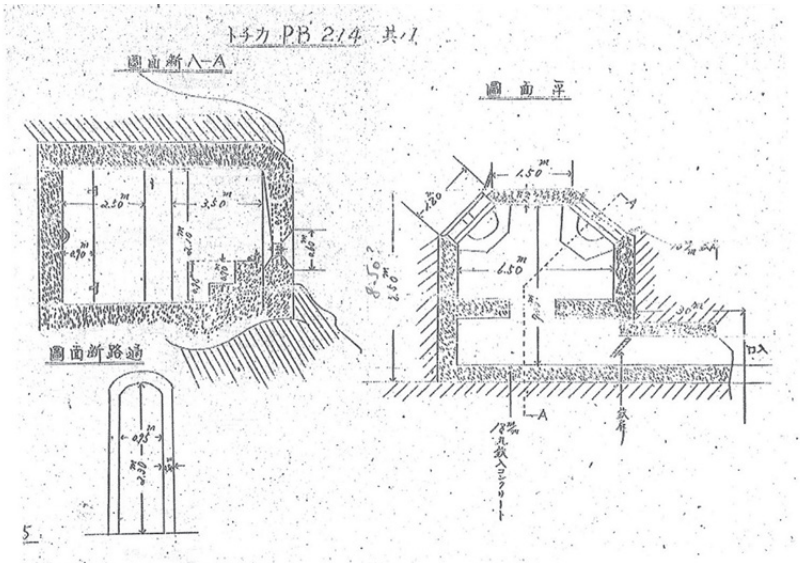

Figure 2: Japanese Army sketch 1942 PB 214 showing original shapes for comparison. (Source: Japanese Centre for Asian Historical Records.)

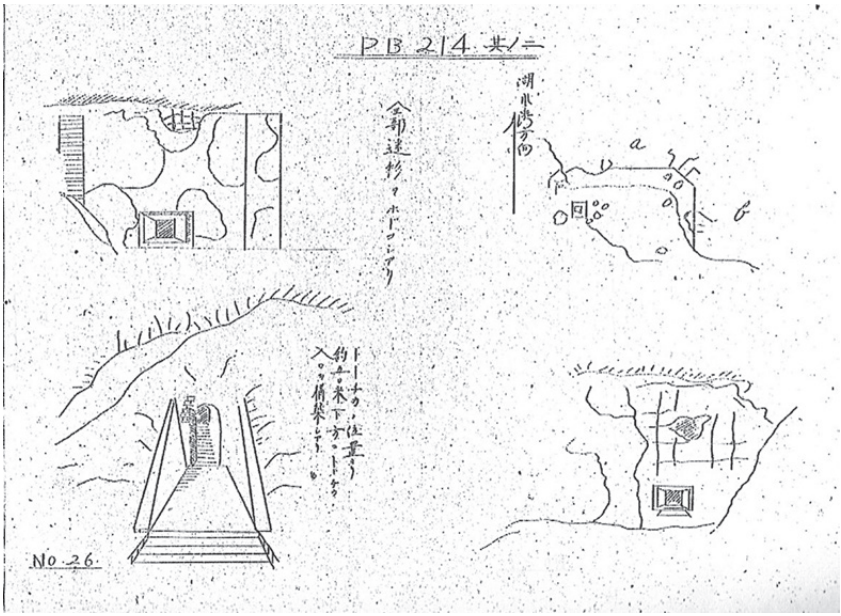

Figure 3: Japanese Army sketch 1942 of PB 214 showing damage from Artillery fire, and camouflage paint markings. (Source: Japanese Centre for Asian Historical Records.)

PLAN OF GDL PBs

As noted, there are no known plans still in existence for any of the PBs. The closest plan seems to be one published in the Royal Engineers Military Engineering and Defences Manual, though there will have been modifications to suit Hong Kong conditions. (Figure 4)

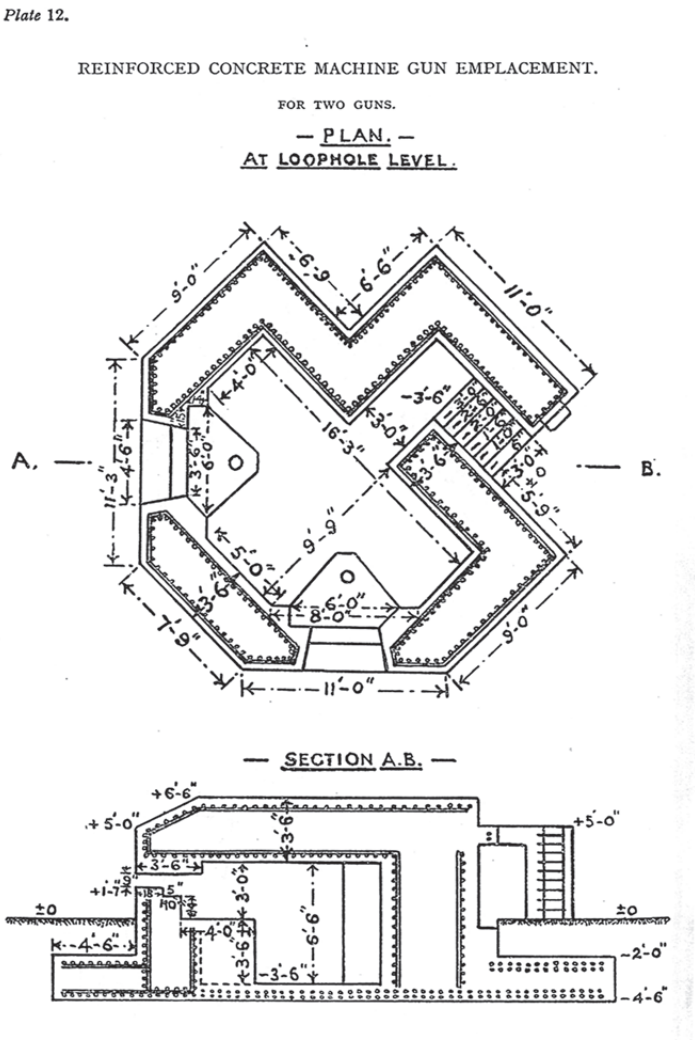

Figure 4: Plan of a Vickers Machine Gun PB. (Source: R.E. Manual of Military Engineering and Defences Vol. II.)

DESIGN & CONSTRUCTION OF THE GDL PBs

They were all built to use the Vickers .303 Medium Machine Gun firing from inside through loopholes from a fixed mounting specifically designed for Hong Kong PBs. The loopholes appear to be a standard size, with a metal frame to which were attached two outward-opening metal doors. The gun mounting allowed the gun to be positioned, ready to fire, with the doors still closed. (Figure 5)

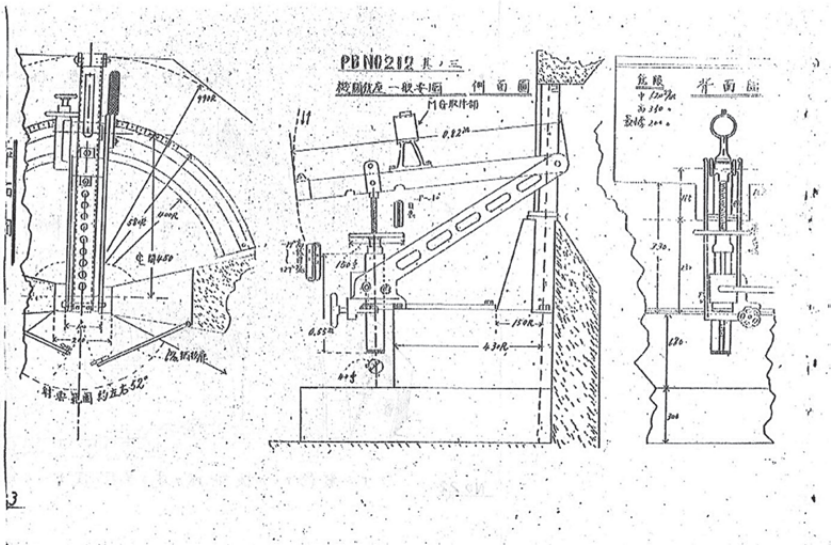

Figure 5: Japanese Army sketch 1942 of pillbox mounting for Vickers MG. (British Official title: MOUNTING PILL-BOX, HONG KONG. VICKERS .303 in M.G.) (Source: Japanese Centre for Asian Historical Records.)

The number of loopholes varied from five (Japanese source) to one, two being the most common, although sometimes, to increase the field of fire, two PBs were linked by a tunnel and listed with a common number and a letter suffix, e.g., PB 200a/b.

The PBs were all of reinforced concrete with construction and living materials brought to the site by horses, mules and people, except in a few areas around roads and on the coast. The nature of the hillsides often precluded the use of vehicles. As a large percentage of the construction was on hillsides in then uninhabited areas, workers, civilian and military, and animals needed accommodation and food as well, even at a rudimentary level. No nipping down to the corner store.

In a common description a large hole was dug, the PB constructed, and the hole filled in. (Cut and cover). The hillside PBs were sometimes covered with only the area around the firing loopholes left exposed. For an as yet unknown reason a small number of hillside PBs sat exposed above ground even though those on either side were dug in. Some PBs on the flat area around Tide Cove similarly sat above ground level.

The PB constructors apparently had authority to interpret the plan to fit local conditions, resulting in simple variations to shape and size, with such differences as flat or wedge-shaped fronts.

The PBs generally appear well constructed for an object likely to be under attack, so resistant to damage or destruction. The exterior surface was covered by a fine cement render, as was the interior, which was either limed or painted. Limited storage was provided by spaces formed in the back wall, and water for the cooling jacket of the machine guns was kept in separate space. Drinking water and emergency rations for the crews came with them on deployment. Canvas pipe cots clamped to the wall could be folded out of the way when not in use.

A rudimentary ventilation system was built into the roof and interior walls. Air flowed via external capped ducts on the roof[7], the number varying to correspond with the number of loopholes, through the internal channel in the wall and into the interior of the PB. Paint marks on the ceiling outline horizontal ducting attached to the ceiling to assist the distribution. It was entirely atmospheric with no mechanical assistance. Where the PB was buried, the external ducting protruded through the soil, and each was capped to prevent rain entering.

A single metal lockable door was used, either on the side or back, depending on the PB shape and placement. Besides its military use, it enabled equipment to be securely stored whilst the PB was not in use.

External access to the door could be direct, protected only by a short concrete walled trench, or through a buried tunnel (cut and fill) of varying lengths which allowed PB occupants distant entry or exit.

Some tunnels were simple concrete structures whilst others were hand built of layered bricks with arched ceilings. They had a similar steel door at the entrance as the PBs, and depending on length, the same sort of protruding air duct on the roof. The PBs were protected from direct ground attack by being surrounded by barbed wire and open positions that guarded tunnel entrances and dead grounds.

[7] It would not be possible to drop a hand grenade into a GDL (or Hong Kong Island British) pillbox through its ventilation shaft.

A large concrete block would be hard to miss sitting on an open hillside. Camouflage was used, from partial burying to covering the PB with concrete to create the shape of a large boulder, with exposed parts painted in appropriate colours. These attempts were perhaps defeated by the roof top ducts protruding through the covering of both PBs and tunnels, producing a distinct indication of the PB. In inhabited areas, particularly around the Tide Cove area, the PB was sometimes painted to resemble a village house or a false second storey was added. (Figure 6)

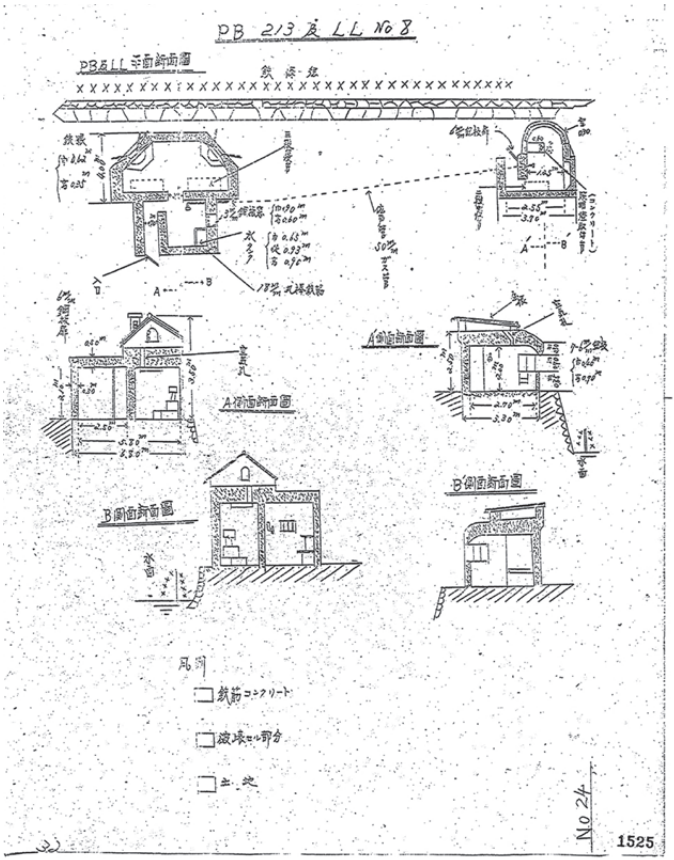

Figure 6: Japanese Army sketch 194 of PB 213 and LL 8 showing the PB with a false second storey. (The dotted line between PB and LL represents the metal speaking tube that connected the two for voice communication. XXX along the front represents barbed wire defences in the water.) (Source: Japanese Centre for Asian Historical Records.)

EFFECTIVENESS OF PBs AS DEFENCE STRUCTURES

The disadvantages of PBs had become more apparent once the war started in Europe. Although large numbers were built in the UK by 1940, in preparation for the possible invasion by the Germans, the newly appointed Commander of Home Forces, with recent experience in Europe, promptly stopped the building of more as mobile forces were considered more suitable for modern warfare (Alexander 1999). PBs could be bypassed, the troops tended to take refuge in them, and they could be easily overcome at night.[8] This was considered valid in Hong Kong also, where the Defence Plan specified that PB crews must, in poor daylight conditions or at night, fight from alternative positions outside the PBs.

The PBs had a mixed war. Those on the left of the GDL were involved in local fighting, in the centre some successes were had at longer ranges on troops gathering for attacks, but a significant number were destroyed by long range artillery, and on the right most were ordered to evacuate during the withdrawal, without participating in the fighting.

Post war, a deliberate policy to destroy PBs was carried out, with only the first three listed now remaining in examinable condition. The fourth, PB419, was demolished subsequent to the notes being made. A further possibly intact PB (PB426) remains, but as it is incorporated into other occupied buildings, it has not been examined.

The Japanese Army carried out a survey of at least some of the PBs shortly after the British surrender. Sketches or technical drawings produced have recently become available on the Internet and have been invaluable, when confronted with today's ruins, in giving an idea of what the PBs looked like in 1942. The sketches have some inaccuracies but are far ahead of any other detail. A second benefit is that some show Lyon Light (LL) shelters adjacent the PBs. The LL was a small self-contained searchlight housed in a purpose-built shelter usually to the side or behind PBs located near the water, to illuminate attackers attempting an amphibious landing at night. (Figure 7)

[8] TNA CAB 106/11.

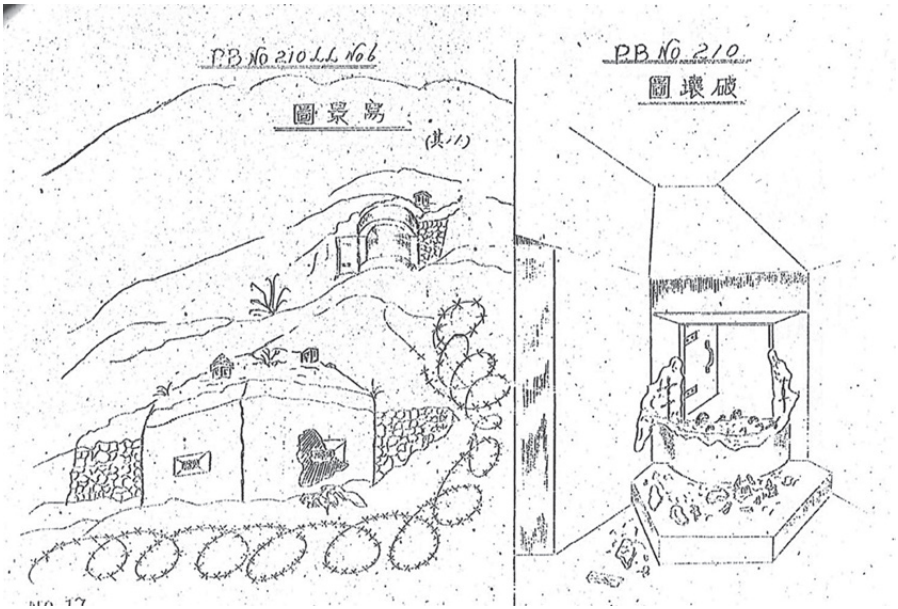

Figure 7: Japanese Army sketch 1942 of PB 210 and LL 6 showing damage externally and internally to the PB, barbed wire defences, and position of LL Shelter on rise behind PB. (Source: Japanese Centre for Asian Historical Records.)

A number of PBs with LLs were known to exist at the eastern end of the GDL from directions on track markers, but no remains have ever been found. Previously, there was no knowledge of LLs elsewhere on the GDL. It is unknown if the shelters actually contained any lights as there is no reference to them in any of the War Diaries of units involved with PBs.

Perhaps to be expected, one has to be different to all the others. The remains of PB 119 show its walls and roof were only 12 inches (30.5 cm) thick against the others being 36 inches (91 cm).

BRIEF DESCRIPTION OF PB313, 314, 315 & 419

A brief description of PBs 313, 314, 315 and 419 (details at Appendix 1):

PB313 (Surveyed March 1997 and March 2003)
On the opposite side of Golden Hill Road (金山路) to PB314. The entrance to the tunnel was found, but it was closed and locked by a gate. Walking above the short tunnel led to the roof of the PB, which was fully exposed. The two loopholes had been destroyed, and the area was covered by a grille, which

was obviously not original. The interior was being used for domestic purposes and was filled with furniture and large urns. On a later visit the gate was open and the occupants apparently departed, so access to the interior was gained. Like PB314, its interior was in good condition.

PB314 (Surveyed April 1996)
On a vegetation covered hillside on the south side of Golden Hill Road. After several attempts the entrance to the tunnel was found. Unfortunately, it had collapsed in several places and was unusable for access to the PB, but it could be followed on the ground and lead to an almost completely covered PB. Access to the interior was gained by digging through the earth which covered the right hand loophole. Great joy when the interior was found to be almost fully intact.

PB315 (Surveyed April 1996)
Found in another overgrown area after a couple of previous attempts were unsuccessful, even though in one attempt the author must have been standing on the roof. This was the most intact of all the PBs remaining, with only metal objects missing. Probably it owed its survival to being within a previously restricted area.

PB419 (Surveyed April 1997)
In view of most other PBs in this area already being demolished, it was a surprise to find one relatively intact, just off a main road in a cleared area. It had previously been used as a residence, with some renovations being carried out, but was mostly intact. It didn't last much longer.

CONSERVATION OF THE SURVIVING PBs

Little interest was shown in these leftovers from history for many years. It has increased in the past few years and hopefully these last three and PB426 can be preserved for posterity.

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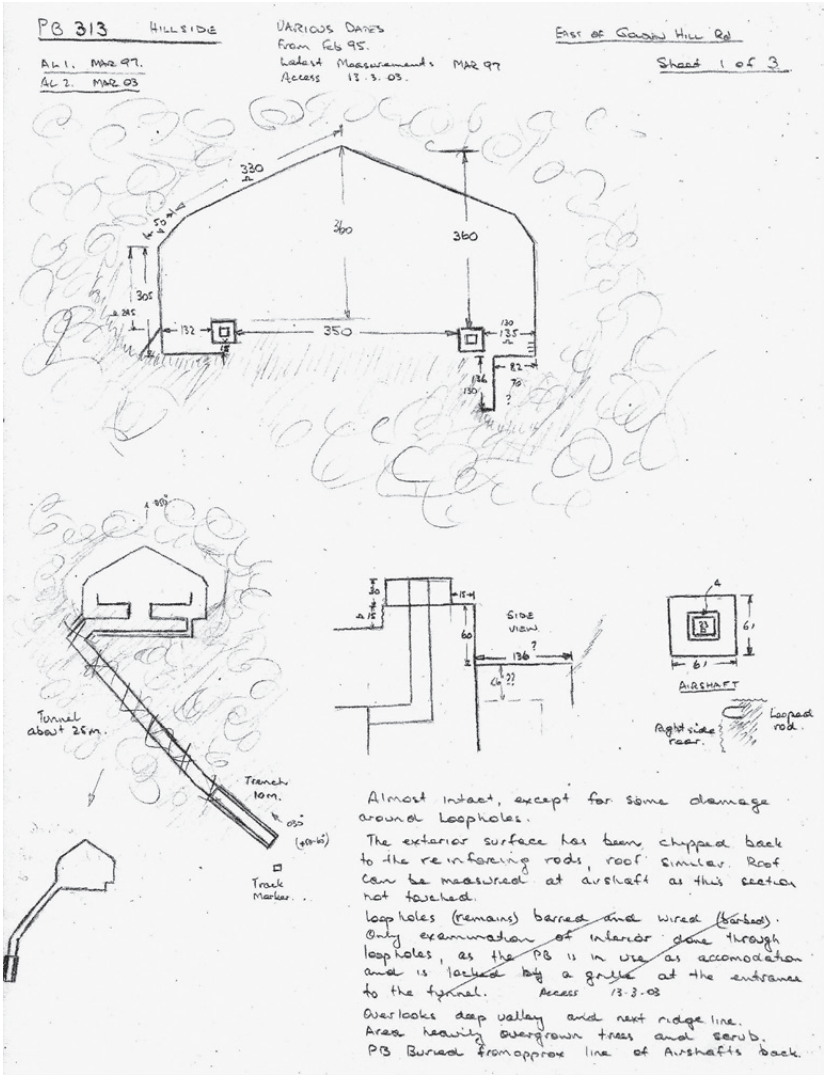
APPENDIX 1: Field Notes and Photos of Gin Drinker's Line Pillbox Nos 313, 314, 315 & 419

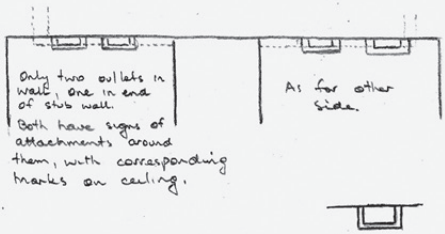
LOCATION: Golden Hill

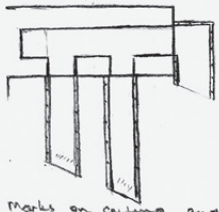
PB NO.: 313

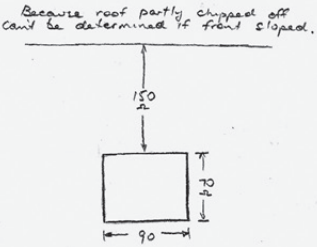
Sketch

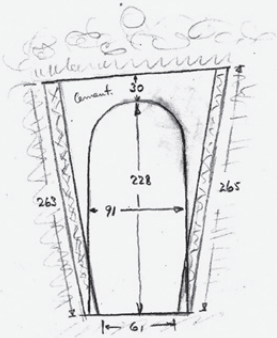


PB 313 HILLSIDE. AL 1 MAR 97 AL 2 MAR 03 Sheet 2 of 3

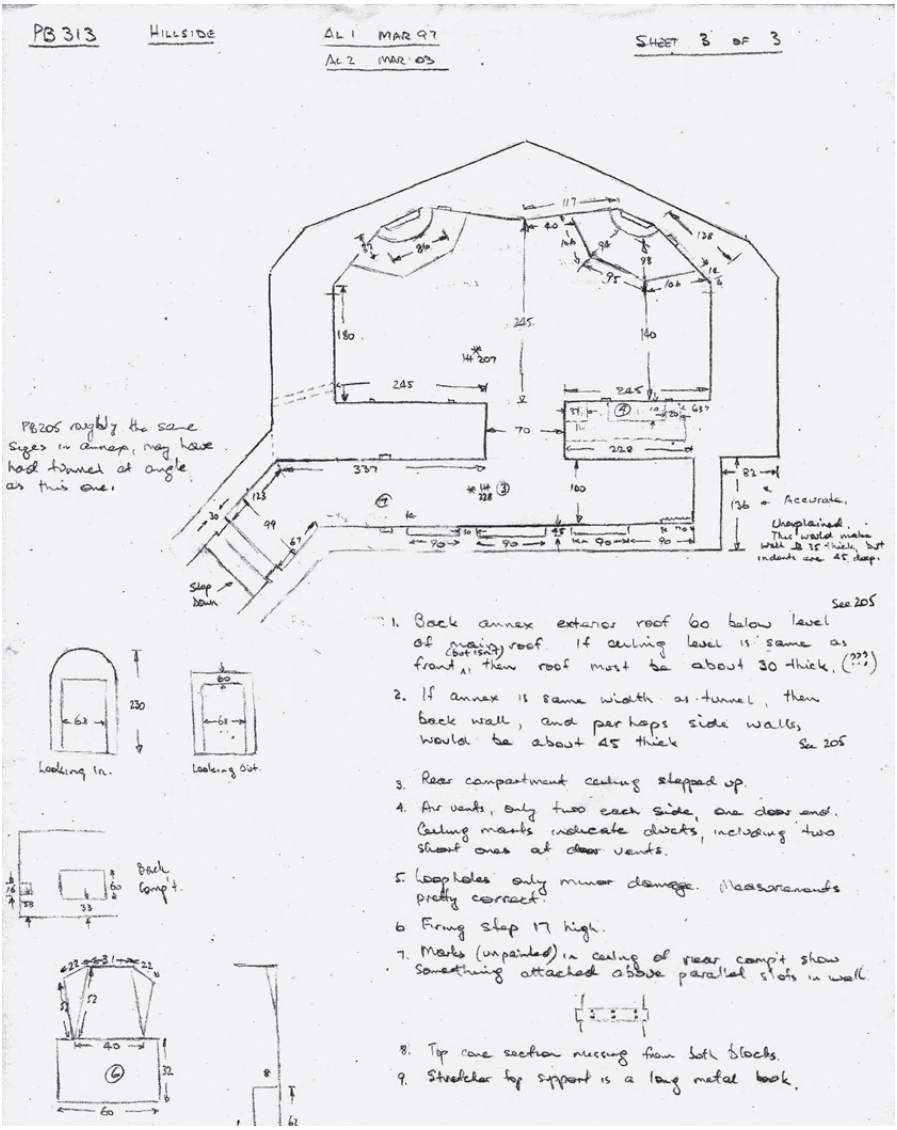




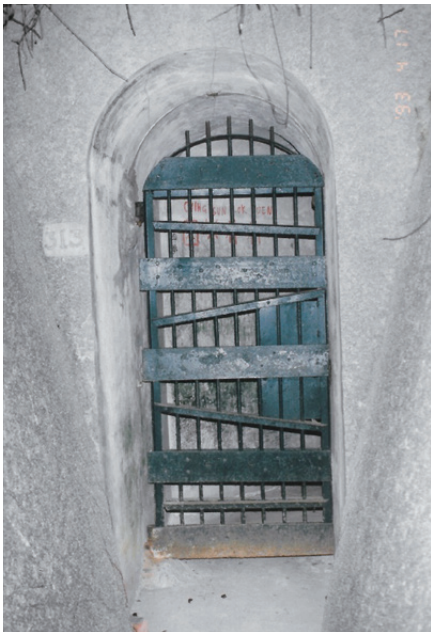




Track Marker.



YEAR SURVEYED: March 1997 and March 2003



Left: Trench to tunnel entrance. (April 1993)
Right: Non original grille gate at tunnel entrance. (April 1993)

Top of PB with airshaft. (April 1993)

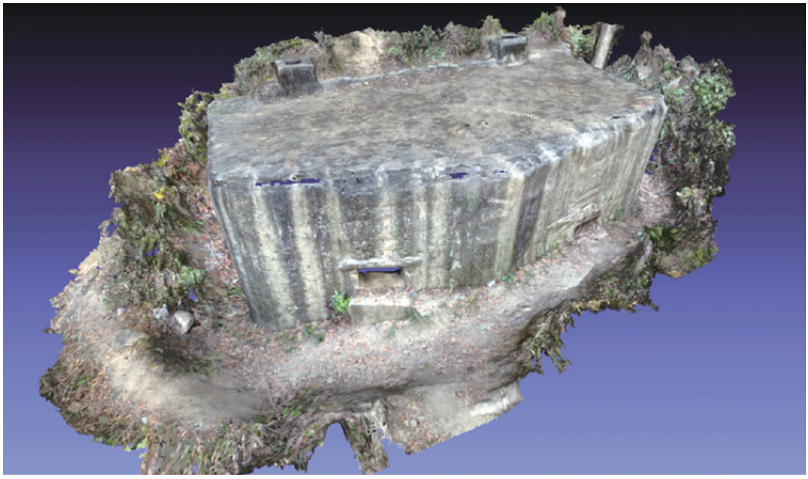
Left: Non original grille over exterior of damaged loophole. Note also rebars dug out of front wall. (April 1993)
Right: Entrance tunnel from PB end. That door was not original. (March 2003)

Interior showing damaged left loophole. (March 2003)

Notes

Exterior and loophole area of PB damaged. Interior structure is mostly intact.

3D scan by YK Tan (February 2021)

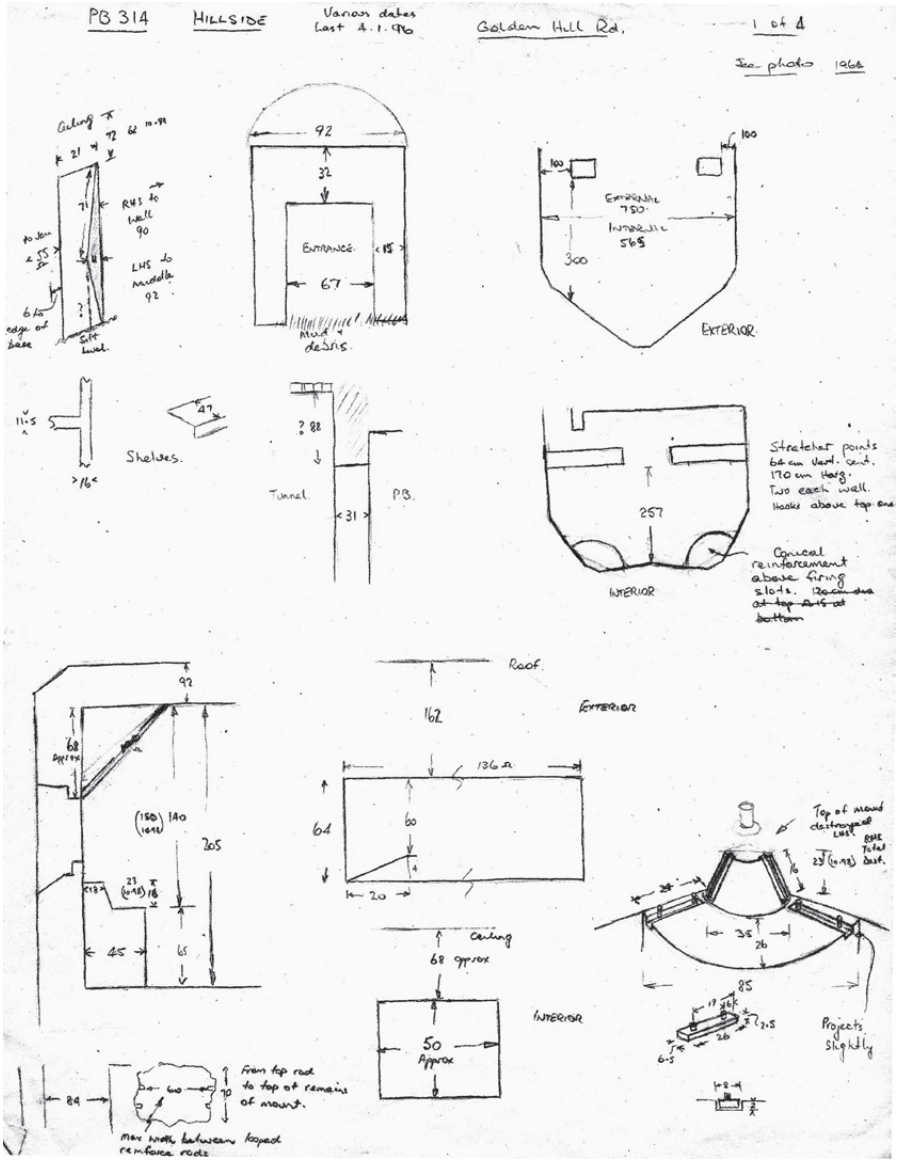


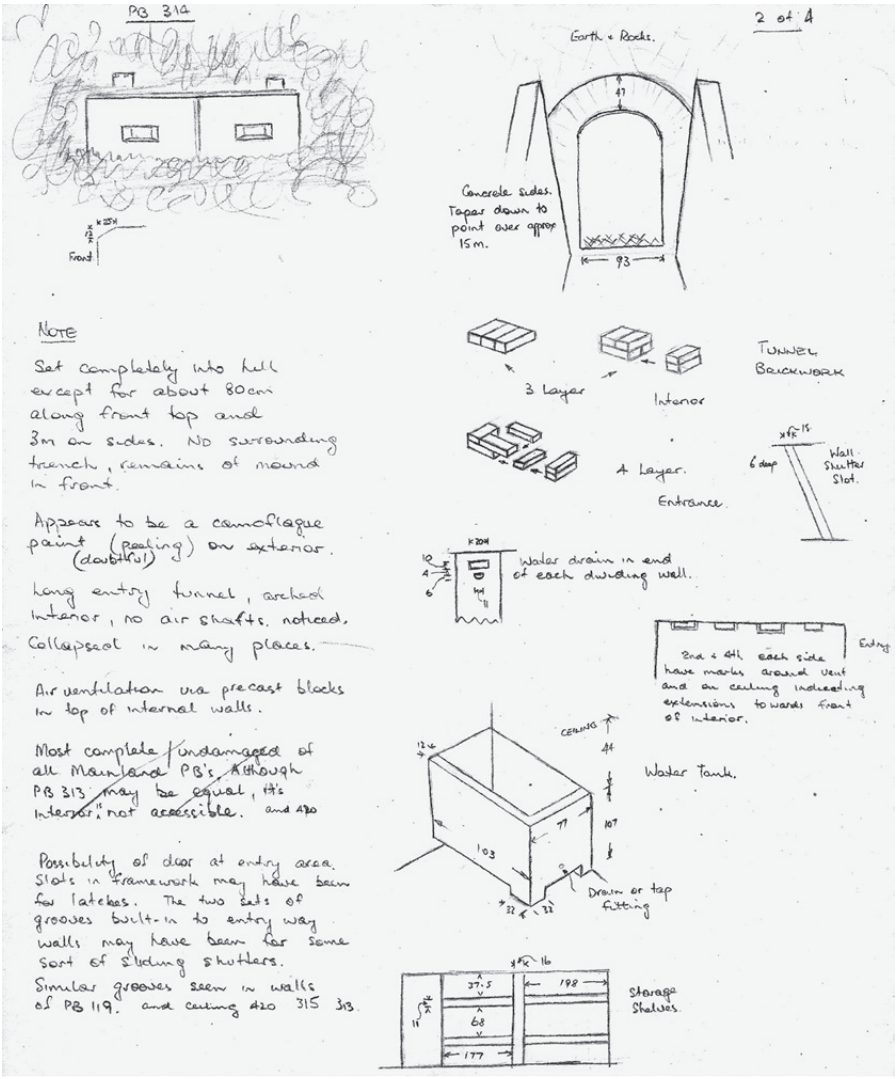
Exterior front and roof, with damaged loopholes

View of PB Interior and entrance tunnel.

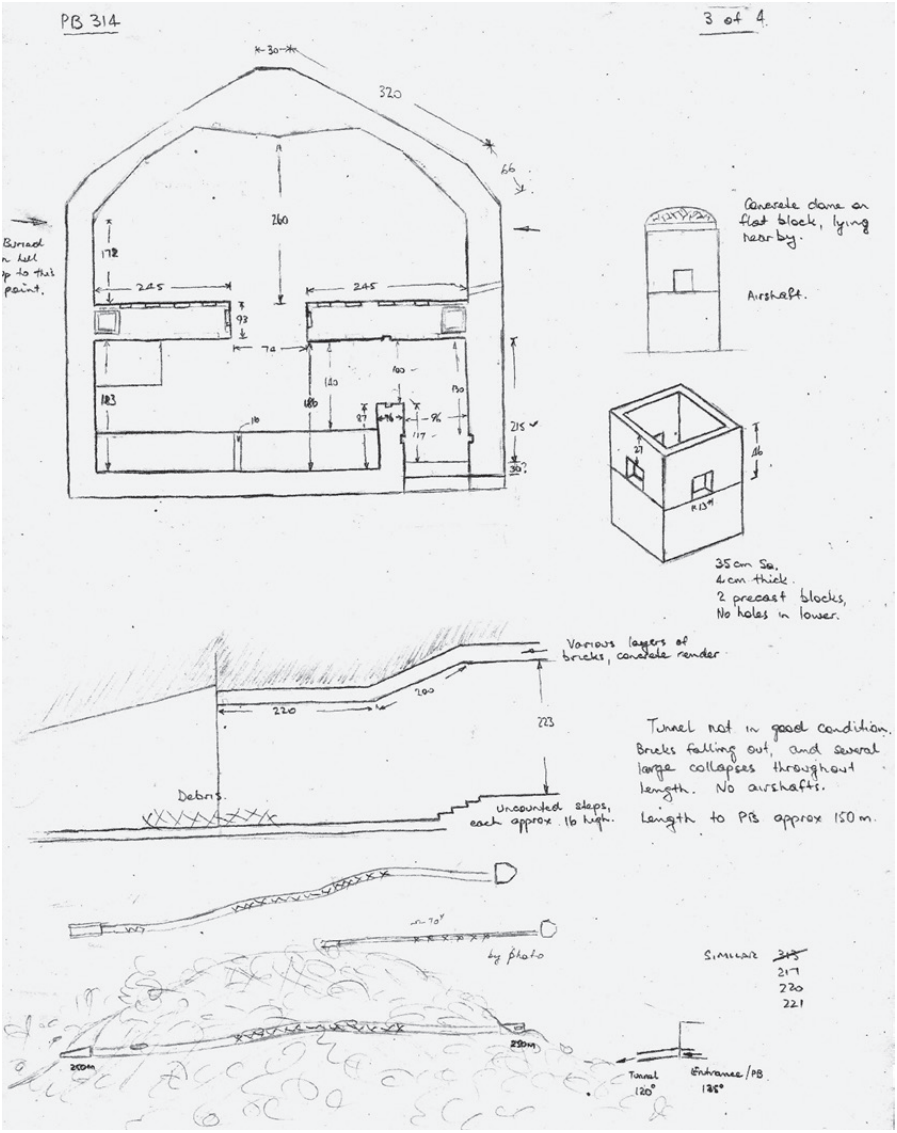
LOCATION: Golden Hill PB NO.: 314

Sketch



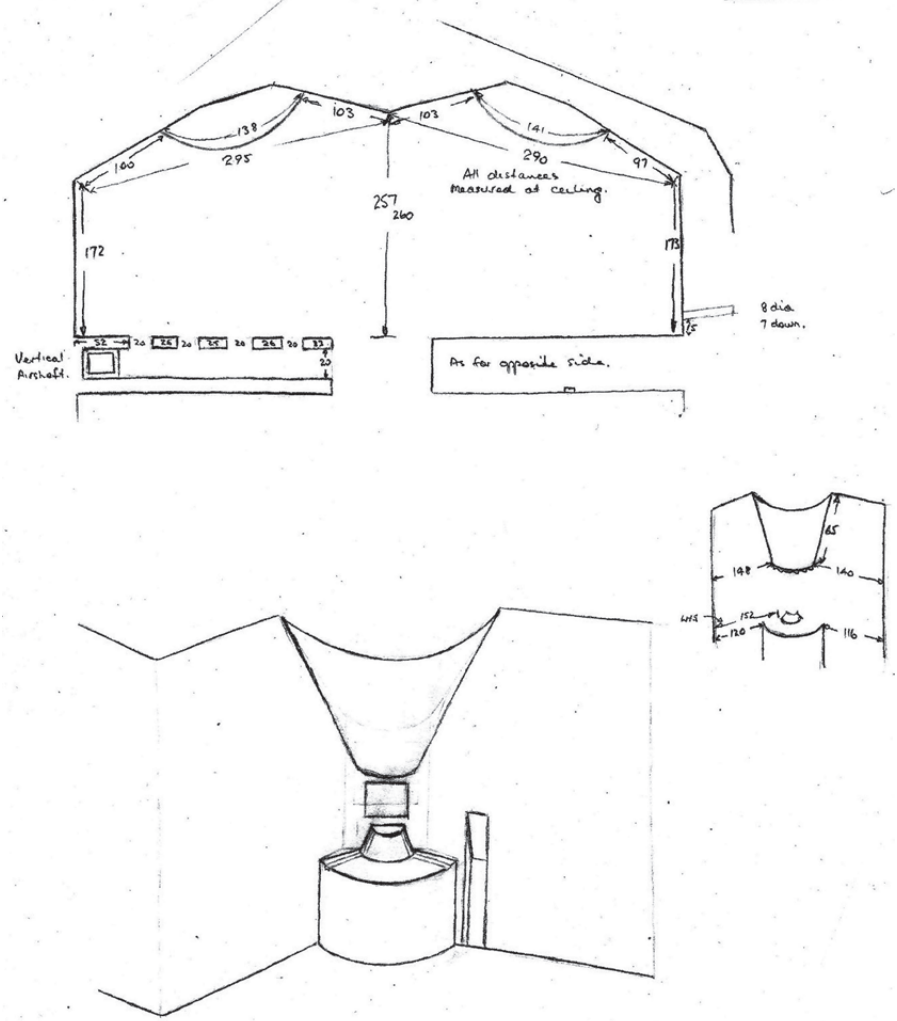


Note: The field notes above were written at the time. Subsequent research has cast doubt on the reference to PB420 being similar.


PB 314
3 of 4
30
320
66
260
172
245
245
93
74
100
140
180
183
16
97
96
117
215
30?
Broad in hell up to this point.
Concrete dome on flat block, lying nearby.
Airshaft.
27
16
35cm Sq.
4cm thick.
2 precast blocks,
No holes in lower.
Various layers of bricks, concrete render
200
220
223
Debris.
Uncounted steps, each approx 16 high.
Tunnel not in good condition.
Bricks falling out, and several large collapses throughout length. No airshafts.
Length to PB approx 150m.
70°
by photo
Similar
217
220
221
200m
250m
Tunnel
120°
Entrance/PB
136°

PB 314

Sheet 4 of 4



17.10.98. Even more heavily overgrown. Digging around loophole produced indications of exterior dimensions of loophole, and showed bottom surface sloped downward slightly. Loophole, when compared with figures from other related PB's comes out reasonably close to them, considering how little remains.

YEAR SURVEYED: March 1996

Remains of right hand loophole after digging my way in. (November 1993)

Remains of left hand loophole. (November 1993)

Interior walls showing ventilation ducts, hooks and pipe cot hooks and clamps. (November 1993)

Looking from front into rear compartment. (October 1998)

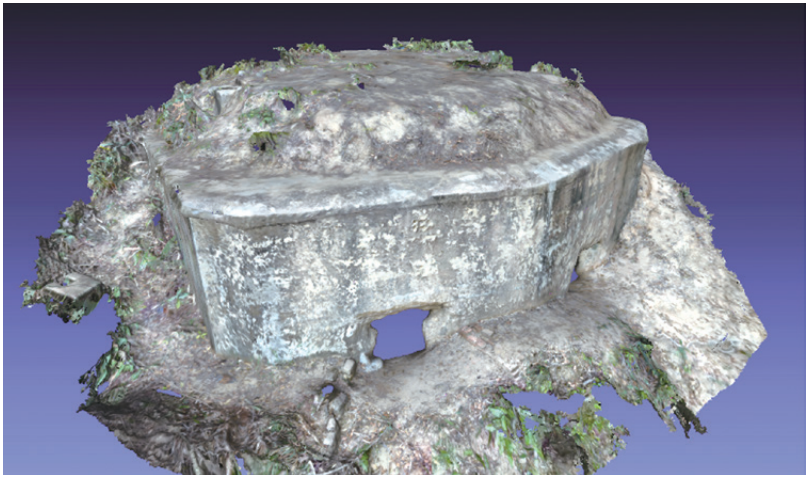
Rear compartment with shelving on rear wall and water tank compartment. (October 1998)

Roof area above right loophole. The only part exposed. (October 1998)

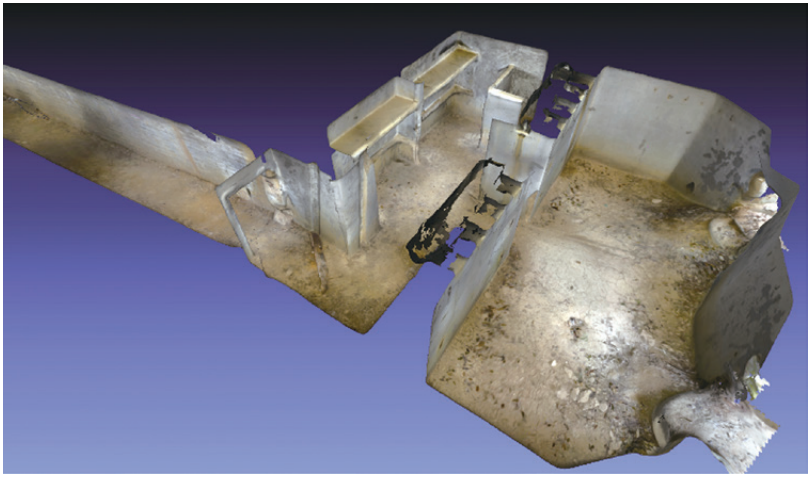
Notes

Tunnel entrance and loophole area of PB damaged. Interior is mostly intact.

3D scan by YK Tan (February 2021)



Outside view of PB314.



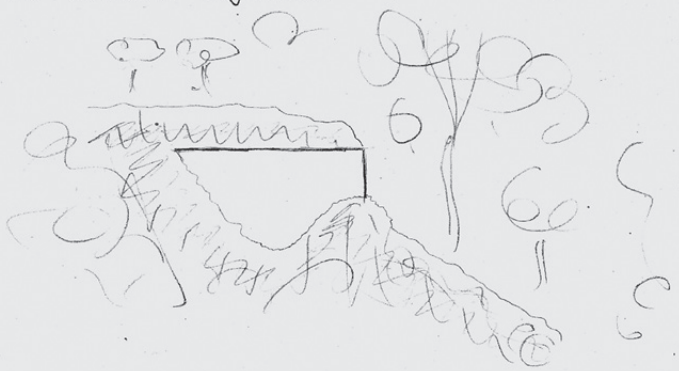
Inside view of PB314 and entrance tunnel.

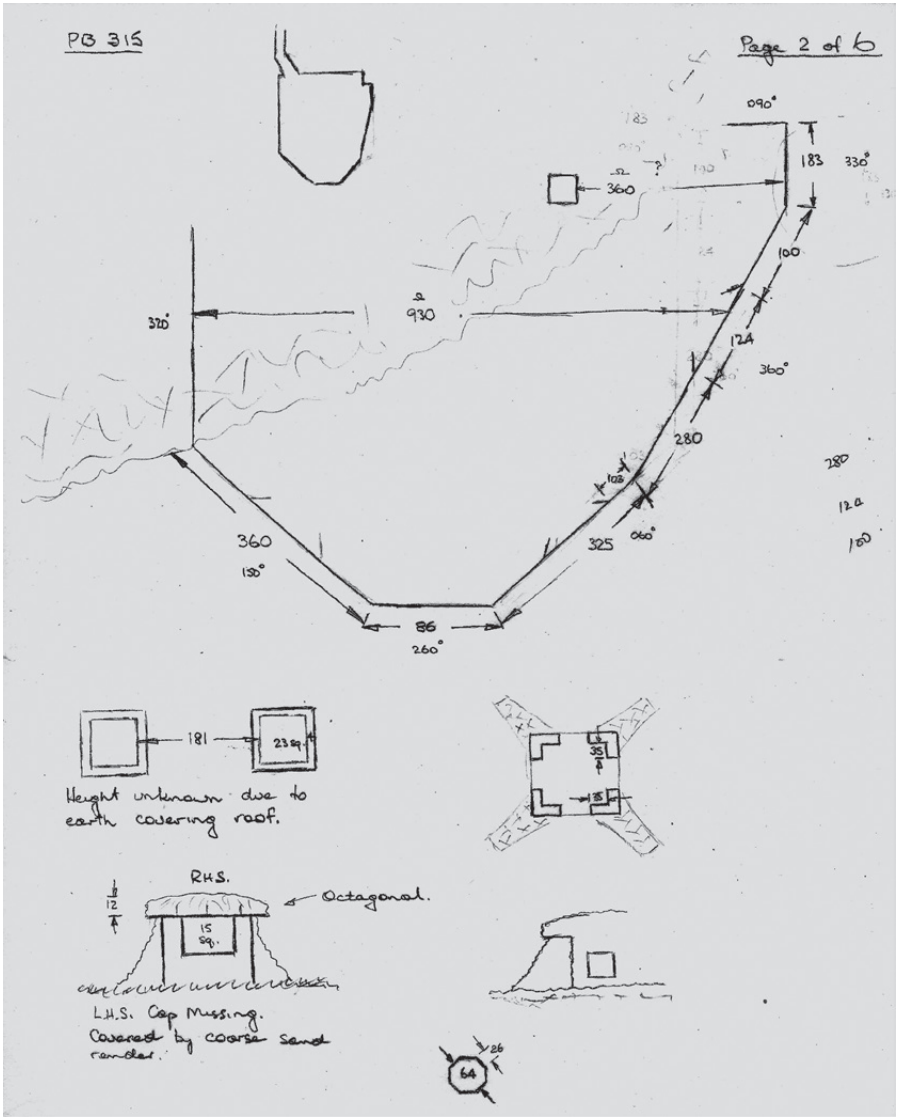
LOCATION: Kowloon Byewash Reservoir PB NO.: 315

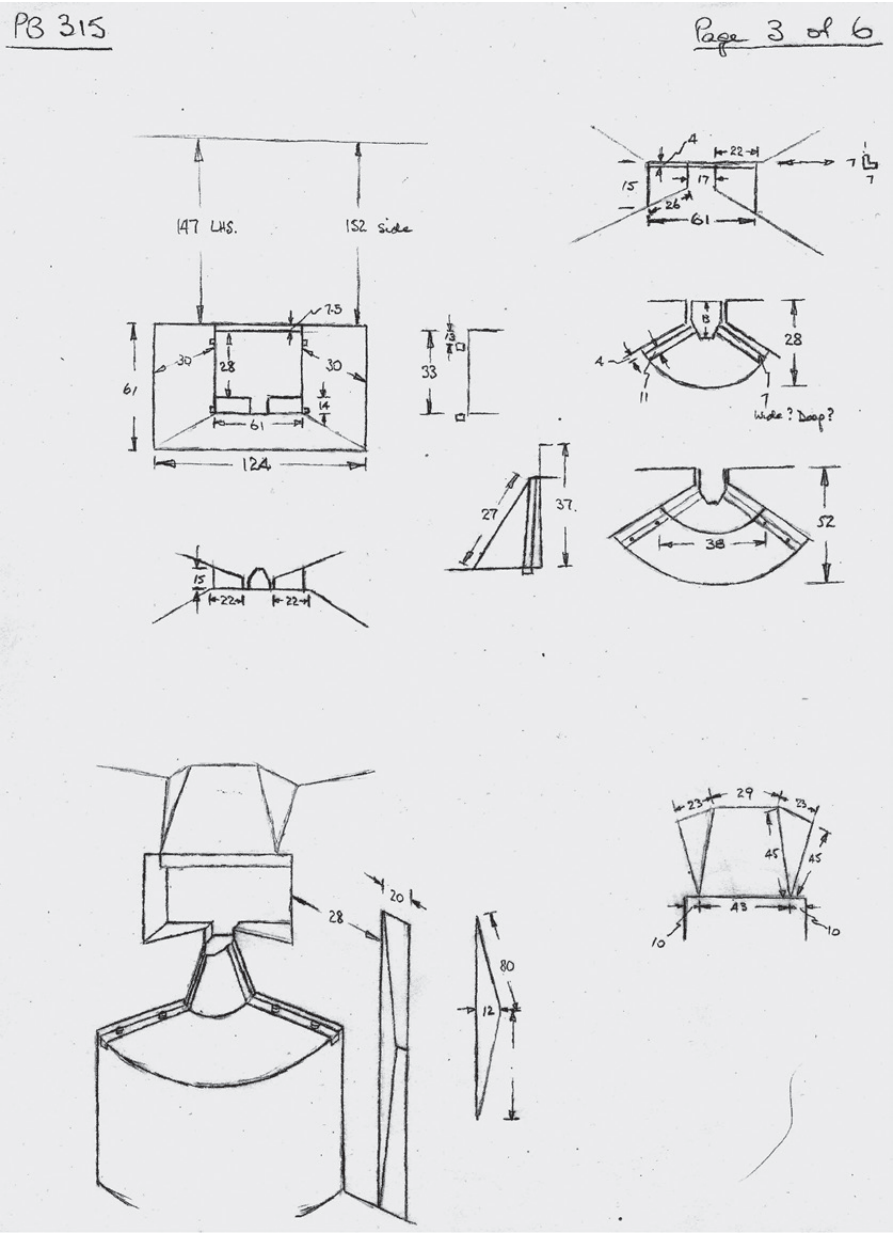
Sketch

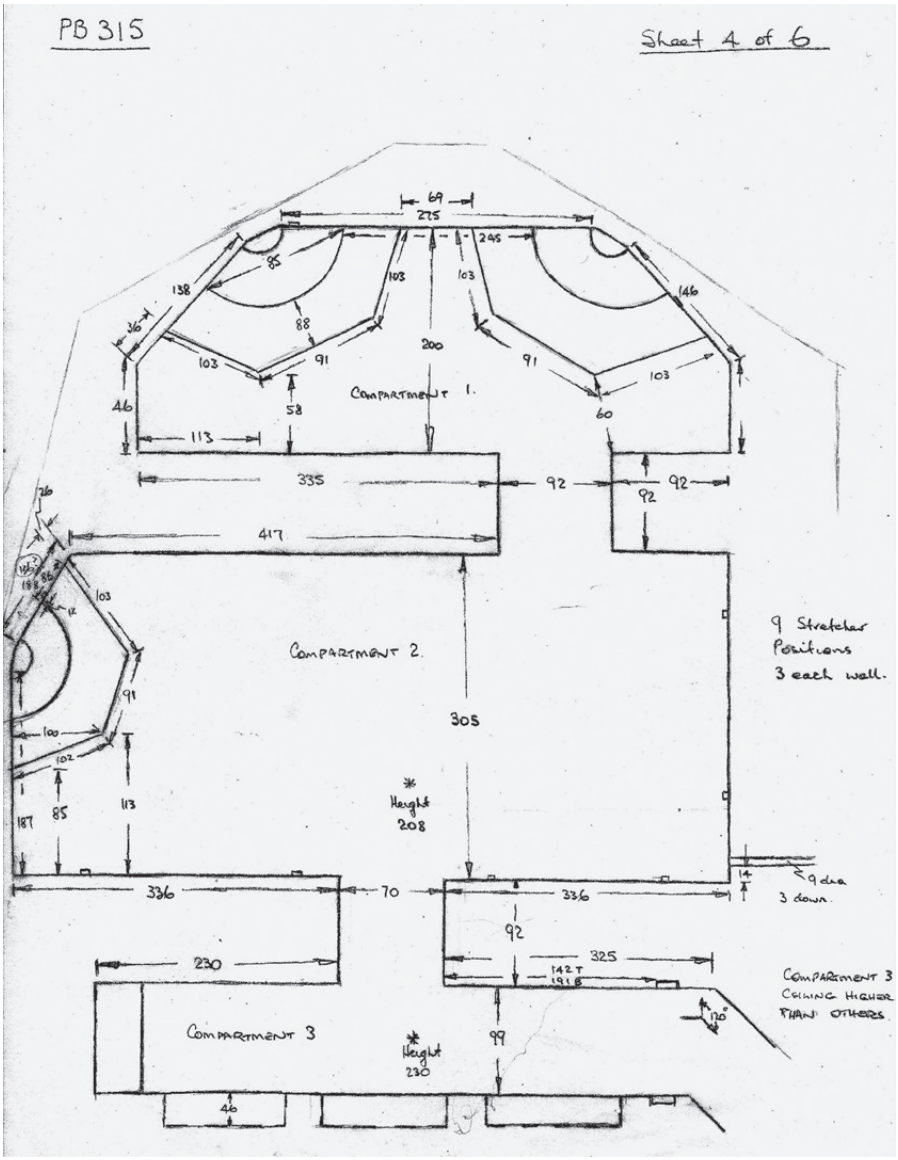
PB 315 Hillside PB. Kowloon Reservoir / Taipo Rd. 11.2.01 Page 1 of 6

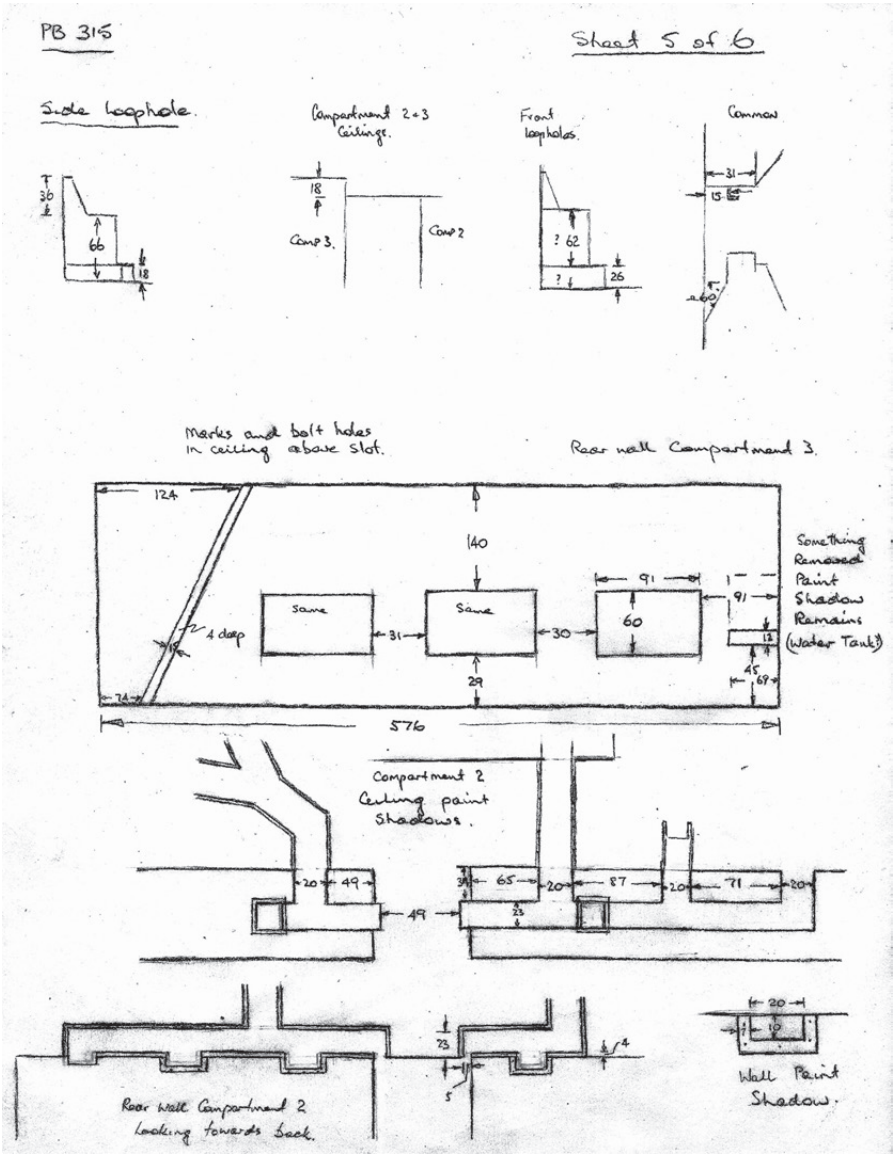
Large, 3 loophole, on crest of ridge. Undamaged, even down to loophole shutter hinge fittings still in place, although rusted.
Interior has raised floor platforms behind loopholes, and the third loophole is in a separate compartment, not unlike PB 12b.
Pillbox sits on a flat rise, the earth covering (about 60cm) forming the same line as the ridge. The loophole areas are the only part exposed (except for the protruding airshafts) and an earth slip has covered the right side one. The earth level is up to the lower level of the other two, although the hill drops steeply at the left side. Exposed exterior is covered by rendering of coarse gravel. Surrounding area is now brush covered, sloping fairly steeply down to the reservoir.
The entry trench and tunnel are in good condition although the trench is obstructed in places by vegetation.
Loopholes do not have metal frames (unlike Island PB's) however there is a metal girder across the top edge. Hinges are set into the concrete adjacent.

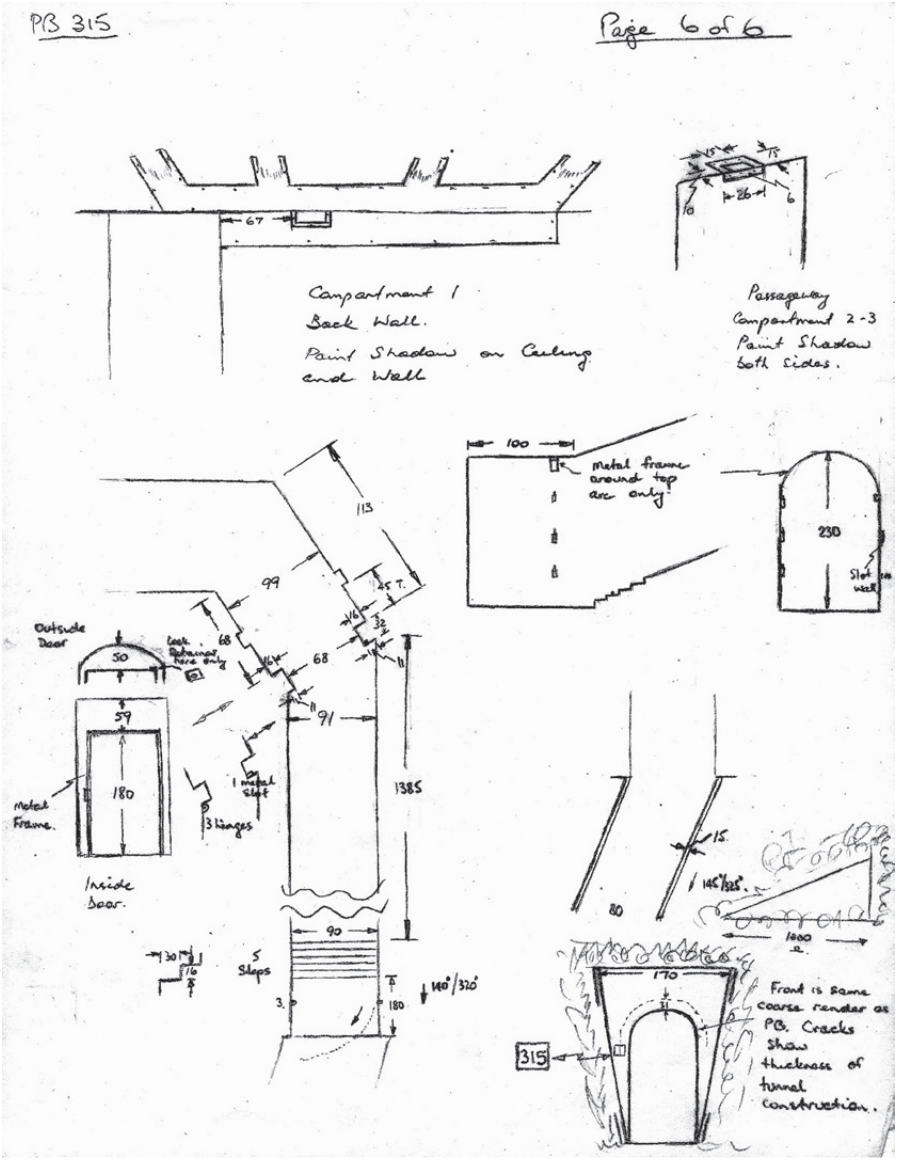



PB 315
Page 2 of 6
090°
183
330°
360
100
930
320°
124
360°
280
280
124
100
360
130°
325
060°
86
260°
181
23 sq.
Height unknown due to earth covering roof.
35
15
RHS.
12
Octagonal.
15 sq.
LHS. Cap Missing.
Covered by coarse sand rendered.
26
64


PB 315
Page 3 of 6
147 LHS.
152 side
7.5
30
28
30
61
14
61
124
33
4
22
15
17
26
61
7
28
4
11
7
wide? Deep?
27
37.
52
38
15
22
22
20
28
80
12
23
29
23
45
45
43
10
10


PB 315
Sheet 4 of 6
69
275
245
85
138
103
103
146
36
88
200
103
91
91
103
58
Compartment 1.
46
60
113
335
92
92
92
417
36
103
12
Compartment 2.
91
9 Stretcher Positions 3 each wall.
305
100
102
Height 208
85
113
187
336
70
336
14
9 dia 3 down.
92
230
325
142 T
191 B
Compartment 3 Ceiling Higher than others.
120°
Compartment 3
Height 230
99
46


PB 315
Sheet 5 of 6
Side loophole.
Compartment 2+3 Ceilings.
Front loopholes.
Common
Comp 3.
Comp 2
Marks and bolt holes in ceiling above slot.
Rear wall Compartment 3.
Same
Same
4 deep
Something Removed Paint Shadow Remains (Water Tank)
Compartment 2 Ceiling paint shadows.
Rear wall Compartment 2 Looking towards back.
Wall Paint Shadow.



YEAR SURVEYED: February 2001

Left: Tunnel entrance. (February 2001)
Right: Access trench from tunnel entrance. (February 2001)

Left: Tunnel and entrance from PB. (February 2001)
Right: Ventilation shaft on PB roof. (February 2001)

Left: Entrance to Compartment 3 from tunnel. (February 2001)
Right: PB entrance from inside tunnel. (February 2001)

Storage space in Compartment 3. (February 2001)

Left: Compartment 3. (February 2001)
Right: Looking into Compartment 3 from Compartment 2. (February 2001)

Interior of Compartment 2. (February 2001)

Compartment 2 loophole. (February 2001)

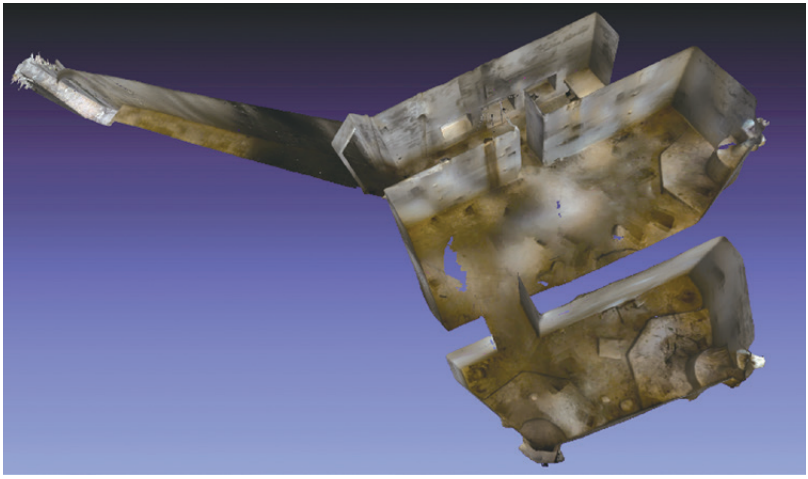
Exterior of Left front loophole. (February 2001)

Left: Compartment 1 Left loophole. (February 2001)
Right: Compartment 1 Right loophole. (February 2001)

Notes

PB315 is the only existing Gin Drinker's Line pillbox remaining intact today. A landslide below the pillbox has exposed and undermined its base. A further slide may cause structural damage.

3D scan by YK Tan (February 2021)



Inside view of PB315.

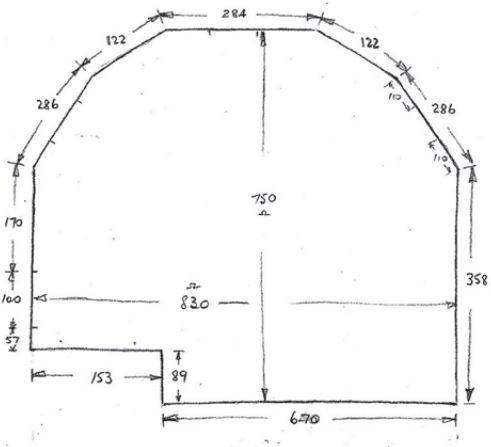
LOCATION: Shing Mun Road PB NO.: 419

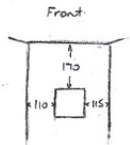
Sketch

SHING MUN PB 419. Hillside. 20.4.97 Sheet 1 of 3

On hillside just above old Shing Mun Road, not far from Castle Peak Road. Has been used as a village house, with some modifications. In better than usual condition, almost complete. Was a 3 loophole PB, LHS one has been enlarged to create new doorway. Original entrance at rear LHS has been bricked in. Did not have entrance tunnel, or apparently, a trench. Access originally would have been from a path to the left following around the contour line. Hillside has been cut away behind to give a vertical face. The soil is a reddish colour, and has obviously been used for interior repairs at some stage.

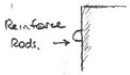
The back still has smooth rendered surface, although sides and front cut back to first rods. The back is also surprisingly uneven in finish, as though there wasn't quite enough cement to finish the job, and it was being stretched out. On the RHS, where a small section of rendering is still intact, the roof reinforcing rods actually protrude from the wall. Obviously constructed that way, intentionally or not.





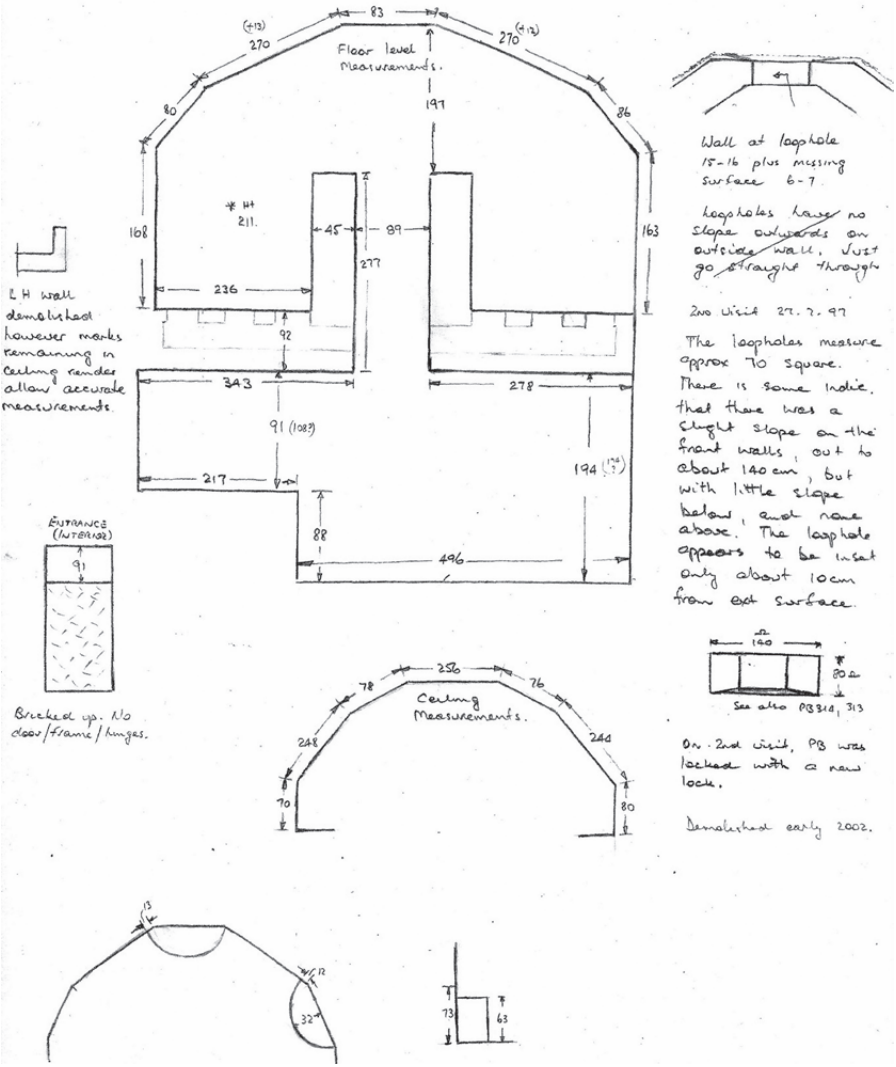
Front wall loophole, sides similar, about 110 from corners.

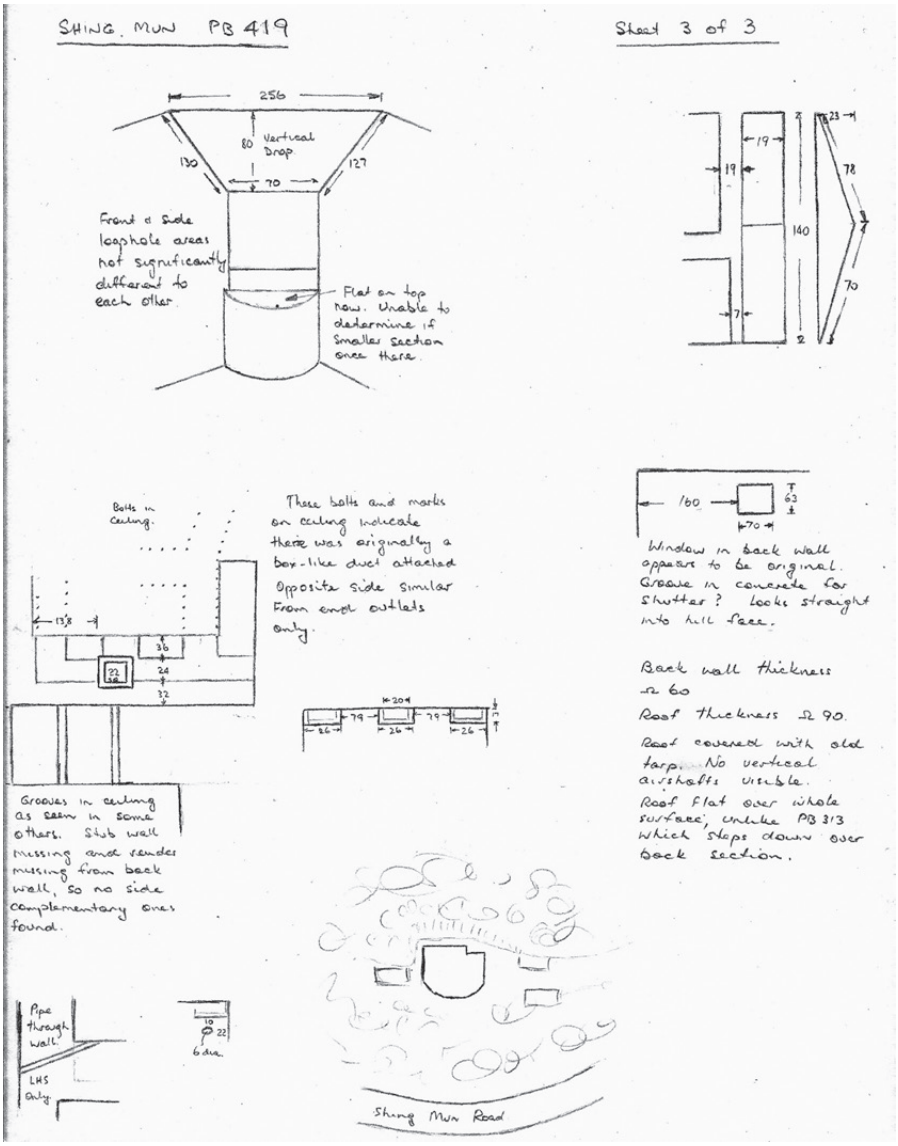
Loopholes 70 x 70 ⌀
Damaged and repaired.
Little if any cut back in front surface of walls. No signs of frame / shutters.



SHING MUN PB 419

Page 2 of 3





YEAR SURVEYED: April 1997

Exterior center front loophole. (April 1997)

Exterior right front loophole. (April 1997)

Interior center front loophole. (April 1997)

Interior right front loophole. (April 1997)

Original entrance blocked closed. (April 1997)

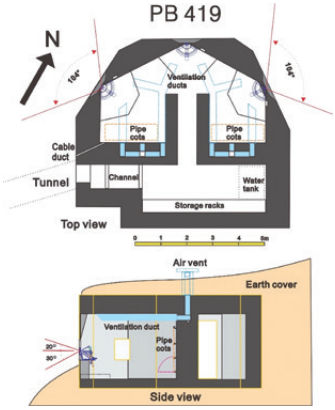
Interior left side loophole converted to entrance. (April 1997)

Exterior left side loophole converted to entrance. (April 1997)

Notes

PB419 destroyed by Structure Clearance No. TW 5/99/1 in year 2002.

MEASURED DRAWING BY YK TAN



Surveying & Built Environment

Field Notes

A Personal Reminiscence of Rob Weir's Research on Hong Kong World War II Military Structures

Tim Keung Ko*

Mr. Robin (Rob) Weir, a flight engineer by profession, is the most assiduous and knowledgeable researcher on Hong Kong's colonial defence structures, with a concentration on pillboxes and observation posts. Since the 1980s (Weir 2020), he has pored over a vast amount of diverse source materials for these structures. This was during a time when neither many researchers nor the government showed even the slightest interest in the subject.

Through Rob's almost exhaustive archival research in both Hong Kong and the UK, we now know that there were far more defence structures constructed in Hong Kong than we had thought. This has attracted further and better university researches backed by professional surveying and archival researches. Two recent key research outputs on PBs inspired by Rob are Lai, Tan & Davies (2021) and Tan, Davies & Lai (2022), respectively on Hong Kong Island and along the GDL. Rob's meticulous hand-drawn, measured drawings of PBs (as shown the examples in this work on 4 PBs along GDL; and his work on PBs on Hong Kong Island in the previous issue of *Surveying & Built Environment* (Weir 2023a)), and other military structures are

* Editors' note: The author is a historian and author of three very popular books (in English and Chinese) on war relics in Hong Kong (Ko 1995, Ko & Wordie 1996; Ko 2001). He was formerly a council member of the Royal Asiatic Society (Hong Kong Branch), member of the Antiquities Advisory Board (2011-2014) and museum expert adviser for the Leisure and Culture Services Department (2014-2020). Presently, he is historian-in-residence, University of Chicago Francis and Rose Yuen Campus in Hong Kong. He was invited by this journal to write this note for Weir's (2023b) "Field Notes and Photos of Gin Drinker's Line Pillbox Nos 313, 314, 315 & 419", especially because he is, like Y. K. Tan, a good friend of Rob.

indispensable materials for such further inquiry.

After the First World War, under the influence of militarism and ultra-patriotism,[2] Japan continued her relentless territorial expansion in Asia, and the international situation gradually worsened. Facing the looming Japanese military threat, the British garrison in Hong Kong began to strengthen the city's defences. It constructed a large number of bunkers, trenches, command and observation posts, etc., among which was the 18-kilometre long Gin Drinker's Line (GDL), originally called the "Inner Line", with nearly 100 pillboxes (PBs).

The British also built several large and medium-scale batteries, about another 100 PBs on Hong Kong Island, two dozen searchlight posts, and other associated defence works from the 1930s until the eve of the Japanese invasion in December 1941. Rob knows them and has visited nearly all.

It was a great honour for the author to have met Rob during his ventures into these structures in the early 1990s, at a time when such structures were little known to the general public. The author still remembers vividly the time when he and Rob explored PB 314 and PB315, and a gun position along a cliff below the golf course in Shek O, among many other pillboxes and military sites well-hidden in the thick bush in sub-tropical Hong Kong. These adventures have become part of the author's dearest experiences in his study of Hong Kong History.

Rob does not advertise himself, and photos of him are rare in the public domain. Figure 1 shows a photo, taken by Y.K. Tan around 2000, of Rob standing above the ruins of PB310 of the GDL, with Lion Rock in the background. Figure 2, of Rob and the author, was taken in 2004 in the Clear Water Bay area during a trip to an observation post.

Figure 1: Rob inspecting PB310. (Photo by Y. K. Tan, 2000)

Figure 2: The author (right) and Rob (left) during a trip to an World War II observation post near Silver Strand Beach, Port Shelter, in 2004. (Photo by author)

Through the endeavors of Rob, more researchers, enthusiasts, and members of the public are now aware of the whereabouts and great historical value of such structures. Hong Kong owes Rob a debt of gratitude for his great contribution to its history. He is without doubt our greatest single authority on the subject.

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Surveying & Built Environment

Research Notes

Hong Kong 2100: Factors of "Worst-Case Scenario" Flooding and a Flood Map

Ho Yin Aggie Chan,[1] Hon Chim Chiu[2]*

ABSTRACT

This study aims to analyse the potential flood risk factors that may affect Hong Kong in the year 2100. The ones considered for this study include storm surges, rainstorms, tidal changes, sea level rises, crustal subsidence, and land subsidence. The authors calculated the increased water levels associated with each factor additively to obtain a theoretical worst-case scenario. The authors predict that flood levels in 2100 would be around six metres and affect an estimated 1,637,302 people and produce a 2100 flood map. Their findings should provide useful information for policymakers and stakeholders when they discuss developing flood prevention measures and development projects located in high-risk areas.

KEYWORDS

Flood risk, coastal hazard, Hong Kong, GIS analysis, meteorological hazards.

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[2] School of Geography and Sustainable Development, University of St Andrews (*Corresponding author e-mail: hcc6@st-andrews.ac.uk)

INTRODUCTION

Hong Kong is a coastal city that is prone to meteorological hazards. Flooding usually accompanies meteorological events such as tropical cyclones, rainstorms, and storm surges (Environment and Ecology Bureau 2021).

The northern part of Hong Kong and its urban areas, which have a long development history, usually flood during heavy rainstorms (Leung 2005).

In Hong Kong, flooding most likely occurs in the summer (July-September) when tropical cyclones hit the city and heavy rain may persist for several days (Leung 2005).

There are other flood risks that affect Hong Kong and the authors divided them into short and long-term factors. Short-term factors include storm surges, tsunamis, rainstorms, and tidal changes. Long-term factors are sea level rises induced by climate change, crustal subsidence, and land subsidence.

Climate change in recent decades has led to sea level rises and greatly increased flood risk. Hong Kong's rate of sea level rise has accelerated in recent years. Victoria Harbour has risen by around three cm per decade between 1954 and 2022, according to data obtained from tide gauges placed in North Point/ Quarry Bay (Hong Kong Observatory 2023). In other parts of the city, such as Tai Po Kau in Tolo Harbour, the pace of sea level rise has been steady (Lui 2018).

With the number of extreme weather events increasing in recent years, the damage to Hong Kong brought by floods will also increase. Thus, it is necessary to prepare those areas of Hong Kong that are at a greater risk of flooding in the future, especially places that are currently not affected by floods, for the worst-case scenarios.

There is no government-produced flood risk map in Hong Kong. There are a few places often mentioned in the news after a strong typhoon or heavy rain, including Sai Kung in Eastern New Territories, Heng Fa Chuen in Hong Kong Island East, Lei Yu Mun in New Kowloon, Tai O in Southwestern Lantau Island, because these places are prone to flooding. However, no territory-scale flood map had been produced for flood risk assessment and mitigation.

Evaluation of flood risk in Hong Kong must take into consideration future sea level rises, since town planning processes and flood mitigation measures must be able to withstand the test of time – say, for at least 50 years. Therefore, this study aims to produce a territory-wide flood map that could facilitate the management of and planning for Hong Kong's coastal areas by employing the latest sea level rise projections until the end of the 21st Century.

However, there are technical difficulties in making predictions for flood scenario in a longer-term scale. Even with all the parameters well established, the uncertainties and errors could be so high

that the numbers may not reflect the true situation by that time.

In the following sections, the authors provide a list of factors and parameters that affect flood levels. All factors were given equal weighting – similar to a storm surge scenario in which the astronomical tide is simply added to the storm surge level to produce the final water level.

The authors have the opinion that even with all parameters well established and accounted for, coastal configurations and structures have a detrimental effect on the final water levels locally. As it would be excruciatingly difficult to predict what Hong Kong's coastline would look like in 2100, when making predictions, the authors understand that all such treatments could only yield estimates of wave heights at best.

The authors did not intend to deal with the highly technical aspects of flood and port engineering. This simple summation should sufficiently serve the intention of this paper, which is to provide a theoretical potential worst-case scenario of flood risk in Hong Kong. Similar approaches, such as Kulp & Strauss (2019), have been used around the world or locally (Owolabi & Zhang 2020) by basing flood risk on extrapolated water levels.

FLOOD RISK FACTORS & DATA COLLECTION

To predict future flood risk in Hong Kong, all flood risk factors that happen there have to be defined. In the following flood risk factors, the reference point is the Quarry Bay/North Point tidal station.

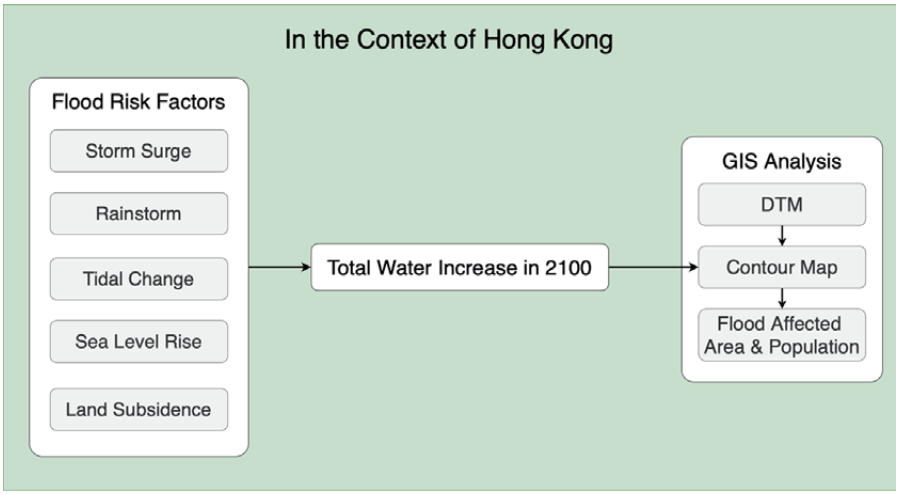

Figure 1: An analytical framework to determine worst case scenario flood level in the territory of Hong Kong in the Year 2100.

STORM SURGES

A storm surge is an abnormal increase in the sea level above the astronomical tide and is caused by the combined impacts of a tropical cyclone's low pressure and high winds (Ng 2014). Sea levels that accompany a typhoon can be exceptionally high (Qiang *et al*. 2021) and cause flooding in low-lying areas.

Typhoon Mangkhut brought the highest maximum storm surge to Hong Kong since 1954 and resulted in sea levels as much as 2.35 metres above the astronomical tide (Choy and Wu 2018). In the future, while storm surge frequency is expected to increase, the literature suggests that the primary culprit behind greater surge heights will be sea level rise (IPCC 2016). The highest maximum storm surge, therefore, remains the same: 2.35 metres above the astronomical high tide.

RAINSTORMS

Under the effects of climate change, the amount of rainfall is expected to rise in Hong Kong (DSD 2018). A prediction of increased precipitation and sea level rise was based on a variety of factors and research technology at the time of assessment and it will be periodically reassessed based on the most recent Intergovernmental Panel on Climate Change (IPCC) Assessment Report or other pertinent studies (DSD 2018). Higher intensity rainfall is foreseeable in the future, so the Drainage Services Department proposed a new design curve showing rainstorm durations and intensities in Hong Kong for different return periods (Figure 2). It adopted a 200-year return period (red solid line) and a 60-minute rainfall, during which its rainfall intensity would be about 160mm/hr.

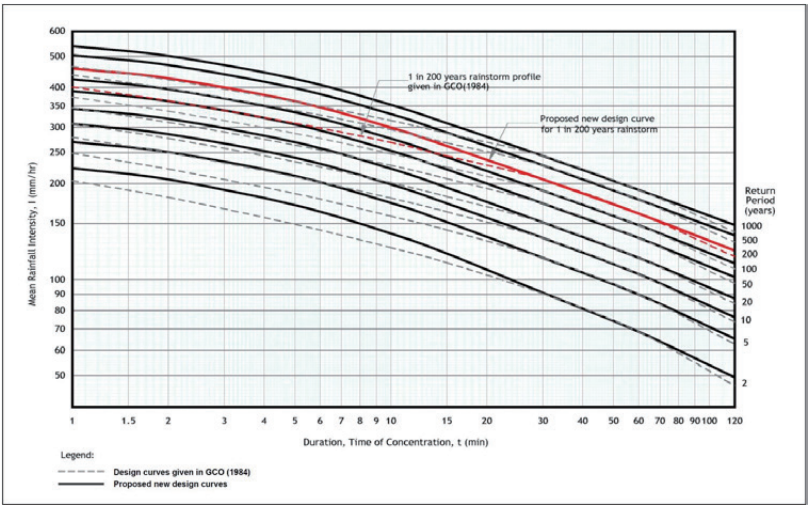

Figure 2: Proposed new design curves showing rainstorm durations and intensities in Hong Kong for different return periods. (DSD 2018)

TIDAL CHANGES

Flooding at high tide happens when local factors and sea level rises combine to increase water levels above normal high tide. High tide flooding can be caused by changes in the prevailing winds, ocean current fluctuations, and strong tidal forces that happen during full or new moons (NOAA 2022).

Other than the tides associated with storm surges causing flooding, there are other scenarios in which tidal changes can cause flooding. Hong Kong's winter monsoon drives strong winds to the South China Coast at about the same time in which its astronomical high tides occur during the fall or winter. This causes a noticeable sea level rise (Lui 2018).

The Mean Higher High Water (MHHW, the water level of the higher of the two high tides during one day) stimulates the higher astronomical tide. According to the Drainage Services Department, the MHHW Levels (1962-2017) is 2.01 metres above the Principal Datum (mPD) (Choy & Wu 2018). Given that there is no confident prediction of change in astronomical high tide conditions, this study adopts the current figure of 2.01 mPD for analysis.

SEA LEVEL RISES INDUCED BY CLIMATE CHANGE

Climate change in recent decades has led to sea level rises. Global warming causes temperature increases, the melting of ice and snow in the polar regions, an increase in the mean sea level, and other effects. The thermal expansion of the oceans and the melting of land-based ice and snow into the seas have led to a rise in the mean sea level.

Locally, the (formerly Royal and from 1997) Hong Kong Observatory (HKO) recorded an increase in the rate of sea level rise since the middle of the 19th Century, in line with global trends. In particular, Victoria Harbour has risen by around 3 cm per decade between 1954 and 2022 (Lui 2018).

The HKO has classified Hong Kong's mean sea level projection data into five shared socioeconomic pathways (SSPs), depending on various greenhouse gas emission scenarios. Between 1995 and 2014, Quarry Bay's average annual mean sea level was 1.45 metres above the Hong Kong Chart Datum (HKO 2021b).

For this study, the authors adopted SSP5-8.5 because they held a pessimistic outlook towards Hong Kong's greenhouse gas emissions in the future and it was the worst-case scenario analysis. They expect the range of mean sea level projection in 2100 to be 0.57-1.08 metres and the median to be 0.78

metres. The range's upper limit, 1.08 metres, was adopted to calculate the predicted rise in sea levels by the year 2100.

LAND SUBSIDENCE

Land subsidence contributes to the vertical land motions that directly relate to sea levels especially major cities built on low-lying delta region (Tay *et al*. 2022). However, the consolidation of reclaimed lands may endanger the stability and security of Hong Kong's infrastructure. Furthermore, the burden of buildings during major construction activity can easily cause land subsidence (Wang, Li & Jiang 2016). Hong Kong has practiced land reclamation since 1886 to expand its land area for development and even its Central Business District was largely built on reclaimed land (Ng 2006, Lai & Chua 2018).

The authors collected Hong Kong's relative local land subsidence data from 2014-2020, during which the city's peak relative local land subsidence velocity was about -6 mm per year (Tay *et al*. 2022). This meant that its water level will increase by 6 mm per year due to land subsidence. Therefore, the water level by year 2100 may increase by 0.48 metres (6 mm X 80 years = 480 mm = 0.48 m).

FLOOD RISK FACTORS NOT INCLUDED IN THIS STUDY

Two factors were not considered in this study. They are as follows.

TSUNAMI

Since the Philippines and Taiwan serve as near-complete buffers for Hong Kong against tsunamis, the city has never been significantly impacted by a tsunami in recorded history (HKO 2022a). The maximum sea level change recorded in Hong Kong has not exceeded 0.3 metres above the normal tide level (HKO 2022a). Moreover, the possibility of a tsunami accompanying a rainstorm or typhoon is low. If the tsunami data were to be included in our model, the results may be too extreme. Therefore, the water level change induced by a tsunami was omitted.

CRUSTAL SUBSIDENCE

Subsidence, or sinking land, causes higher sea levels and promotes the landward migration of coastlines, which increases the danger of flooding along coastal areas (NASA, n.d.). Based on Yim's (1992) study of seismological evidence for crustal movements in Hong Kong, the authors believe that the influence of uplift and subsidence by tectonic movements on sea levels is relatively minor compared to other factors accounted for in this study. Besides, it is difficult to predict crustal subsidence changes before the year 2100 (Yim n.d.). Therefore, crustal subsidence was not included in the calculation of water level changes.

TOTAL INCREASED WATER LEVEL

To understand the predicted flood levels in the year 2100, the authors collected data on the relevant flood risk factors and their increased water levels, which they show in Table 1.

Each flood risk factor contributes to a certain degree of water level rise and all factors carry equal weighting. By combining all flood risk factors, the authors attained the "worst-case scenario" (i.e., the highest possible sea level).

However, this approach disregarded factor interactions that could be antagonistic, synergistic or neutral with each other. In earlier analyses of past storm events, such as the calculation of the causes of storm surges in Hong Kong during typhoons, such interactions were not apparent and would, therefore, be deemed to pose a negligible influence on similar future events.

The authors plotted the data on the same chart datum used to project water level changes, and will produce a flood risk map for the year 2100, as explained in the following section.

Table 1: **Flood Risk Factors Expected to Influence Water Levels in the Year 2100**.

Flood Risk Factor	Increase in Water Level
Storm Surge	2.35 metres
Rainstorm	0.16 metres
Tidal Change	2.01 mPD
Sea Level Rise	1.08 metres
Land Subsidence	0.48 metres
Worst-Case Scenario	**6.08 metres**

Under the worst-case scenario, Hong Kong's increased water level will be 6.08 metres. As the ArcGIS Pro software has technical limitations, if the vertical interval is set as 0.1 or 0.5 metres, then the outcome would be more accurate. But the software would be unable to proceed. Therefore, the minimum vertical interval of the contour line delineating highest flood level is set as 1 metre, while the increased water level would be rounded down to 6 metres.

PRODUCTION OF A FLOOD RISK MAP USING GIS

The water levels obtained above were input on a contour map of Hong Kong. GIS analysis was used to calculate the flood-affected areas and the number of people who would be affected by flooding in the year 2100. In order to do this, the authors collected some spatial data from various government departments.

The Lands Department's Digital Terrain Model (DTM) of Hong Kong displays the topography of the area in a five-metre raster grid with an accuracy of ±5m including elevated features such as elevated roads and bridges. If a land plot is covered in vegetation, the height of its vegetation will represent the terrain, averaged for each grid (Lands Department 2022). The base map is Topographic Map API produced by the Lands Department and accessed via the GeoData Store. Also, the authors used population data from the government's Census and Statistics Department's 2021 Population Census conducted by the Small Subunit Group (Census and Statistics Department 2023) because it contains the most updated population data within the smallest territorial unit.

The authors converted the DTM of Hong Kong into a contour map with one-metre vertical intervals. Then they overlaid the flood level on the base map by choosing the nearest contour and "flooding" the area below the contour line with a different colour to produce a flood map.

The flood map can be used to estimate the number of affected people, while population statistics can be integrated with any flood-affected area and be clipped with it through GIS analysis. The map can highlight the locations where a higher number of people, relative to the territory as a whole, could be affected, which could be calculated and extrapolated to the year 2100 to indicate the flood's severity.

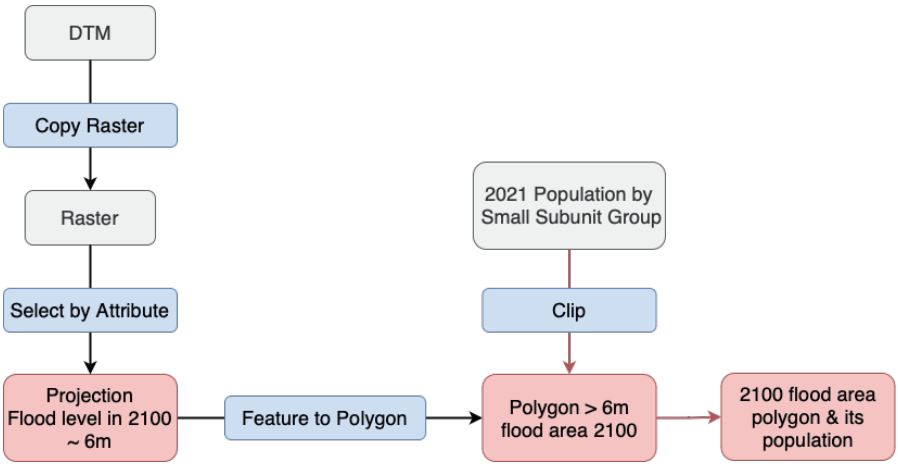

Figure 3: An analytical framework for producing predicted flood map in 2100.

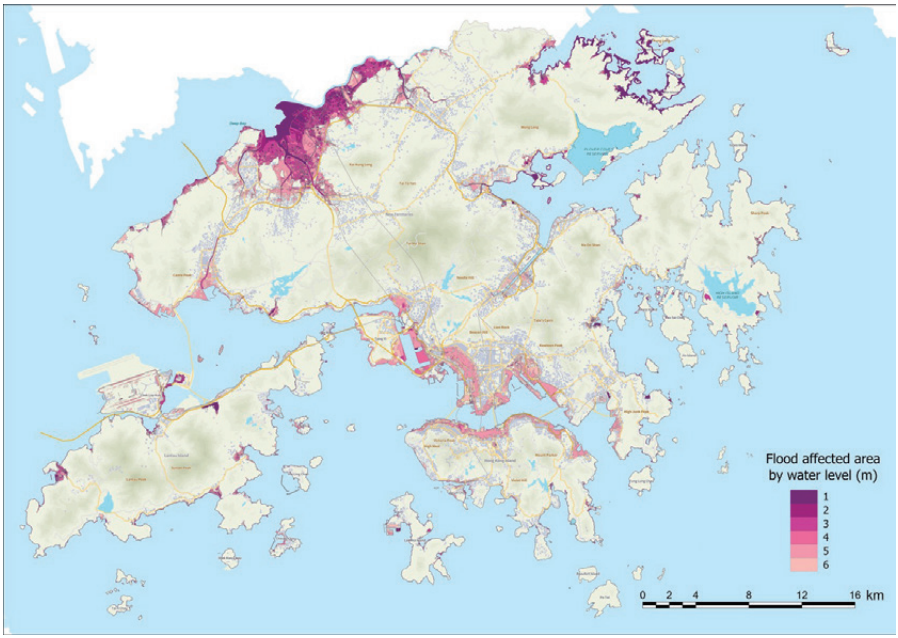

Figure 4: Predicted flood-affected areas in 2100.

HONG KONG'S FLOOD MAP IN 2100

Based on calculations, the flood level under the worst-case scenario will be 6.08 metres in 2100, which was corrected to six metres, as shown in Figure 4. The area below the flood level equals the size of the flood-affected region. In the legend below, the darker colours represent lower areas with higher flood risks, while the lighter colours represent higher areas with lower flood risk.

In the worst-case scenario, there is a severe storm surge and rainstorm occurring during an astronomical high tide at a location that will experience the worst land subsidence and sea level rise in 2100. Using the 2021 projected population census, the authors estimated that 1,637,302 people would be affected by such a flood. They mainly live in the Northwestern New Territories and on both sides of Victoria Harbour.

Figure 5 is the predicted flood map which indicates the potential population that would be affected by flooding in 2100 based on current population data recorded in the 2021 population census. The darker-coloured areas contain more people vulnerable to flooding.

Admittedly, it is impossible to make accurate future population estimates. According to the Census and Statistics

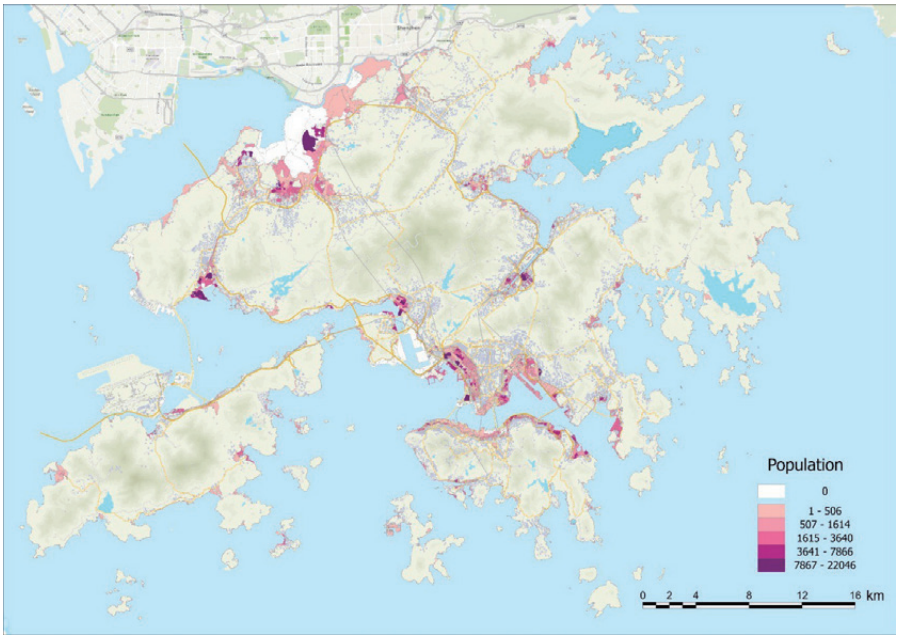

Figure 5: The *2100 Flood Map of Hong Kong* , showing the spatial distribution of the impact of flooding upon population in 2100. (Based on 2021 population data.)

Department, Hong Kong's population in 2011 was 7,071,576. This increased to 7,336,585 by 2016 and to 7,413,070 by 2021 (Census and Statistics Department 2022). Therefore, based on the population trend published by the Government, by 2100, Hong Kong should be more populated, unless arrested by net emigration so the affected population should be greater than the numbers presented in the map. However, the population density of each district by then is difficult to predict, as it would be dependent on policies, planning, and the economic situation.

The 2100 flood map as shown in Figure 5 represents the flood risk posed by future meteoric events in Hong Kong. History has shown that good drainage infrastructure and management strategies are effective in mitigating the impact of flooding. Hong Kong has a history of successfully discharging and storing rainwater to avoid or mitigate flooding using state-of-the-art engineering techniques.

Examples include the Tai Hang Tung, Happy Valley, Mid-Levels, and Sheung Wan projects completed by the Drainage Services Department. The above flood map could pinpoint the areas that should command the attention of future flood risk managers.

CONCLUSION

By combining all flood risk factors in Hong Kong, GIS analysis can produce flood risk maps for 2100. This paper offers one such map.

This analysis predicts an impending increase in flood risk for the city with over 1,600,000 people being exposed to high flood risk.

The flood-affected area may extend beyond the Northern New Territories to both sides of Victoria Harbour, which are high-value commercial areas.

At the same time, its Northern region will experience rapid development, as the government continues to forecast population growth in the future. Based on the development plan, *Towards a Planning Vision and Strategy Transcending 2030* (Hong Kong 2030+), the Hong Kong Government is eager to develop this region by proposing the Northern Metropolis idea (Hong Kong Special Administrative Region Government 2021). With more Intensive urban and suburban development, more people will reside there and generate more economic activity. This will increase the number of people exposed to flooding.

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Surveying & Built Environment

Research Notes

An Introduction to the Battle of Hong Kong 1941 Spatial History Project[1]

Chi Man Kwong*

ABSTRACT

This research note covers the background of a spatial history project "Battle of Hong Kong 1941" ('the 1941 Project'), completed in 2021, which built an interactive web map of the battle and an online database of the relevant British military installations and other related information.

KEYWORDS

Battle of Hong Kong, GIS, Project '44, Gin Drinker's Line

BACKGROUND

The Battle of Hong Kong (8-25 December 1941) was pivotal in Hong Kong's modern history. The Battle has been well covered by various studies, including many articles in this and other journals (see Appendix 1) covering the military structures related to the battle.

Using (GIS), the spatial history project "Battle of Hong Kong 1941" (hereafter 'the 1941 Project'), completed in 2021, built an interactive web map of the battle and an

[1] This research note is based on the Guest Blog the author posted on the Hong Kong History Centre's website: https://www.hkhistory.net/2021/09/17/guest-blog-kwong-chi-man-on-the-battle-of-hong-kong-spatial-history-platform/

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online database of the relevant British military installations and other related information.

This project was a collective effort by a team of historians, digital humanities specialists, and user interface/user experience (UX/UI) designers. It offers a way to visualize the Battle of Hong Kong as a historical event and an easy-to-use online database for researchers, educators, tourists, and conservation professionals.[1]

PAST EFFORTS

Military historians and others have been using web-based approaches to present the history of wars. Various means have been employed in the past, such as websites with multiple static maps (essentially e-books with color maps), interactive timelines, animations with Computer-Generated Imagery (CGI) terrain and effects, and animated maps presented as videos.[2] All these approaches serve the same purpose of visualizing events to provide more accessible ways to understand wars and battles.

The 1941 Project differs from these approaches as it is a GIS-based platform that visualizes a military operation (in this case, a battle that involved around 50,000 combatants) *and* a battlefield in an animated and interactive way.

Of course, the use of GIS in studying history, including military history, has a long history that this short piece cannot discuss in detail. Some larger projects, such as the China Biographical Database Project (CBDB), cover hundreds of thousands of data entries and centuries of history.[3]

The application of GIS in the study of military history is not rare either, and has been employed in Hong Kong since the 2000s.[4]

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[2] More about the research team: https://digital.lib.hkbu.edu.hk/1941hkbattle/en/research-team.php

[3] The author would like to thank the anonymous reviewer for providing the following examples: For interactive timelines: "The Great War: A Visual History," website: https://www.abmc.gov/sites/default/files/interactive/interactive_files/WW1/index.html; "The Second World War: A Visual History," website: https://www.abmc.gov/sites/default/files/interactive/interactive_files/WW2/index.html; For websites with series of static maps and texts: "Cold Harbour, https://www.battlefields.org/learn/civil-war/battles/cold-harbor; For CGI generated interactive animation: "Gallipoli Campaign," website (operates on tablets as an app): https://www.abc.net.au/ww1-anzac/gallipoli/.

[4] Harvard University, Academia Sinica, and Peking University, China Biographical Database (August 2021), https://projects.iq.harvard.edu/cbdb

[5] An example is Lai *et al*. (2011).

The 1941 PROJECT

The 1941 Project is partly inspired by the ambitious Project ’44 that attempts to map the European Theatre of War from D-Day to the fall of Berlin. While Project ’44 approached the war from strategic and operational perspectives and focused mainly on land operations, the 1941 Project attempts to focus on the operational-tactical perspectives and highlight the battlefield’s physical features, particularly man-made military structures.[5]

The 1941 Project research team has been studying the Battle of Hong Kong since 2011 by collecting first-hand data from the United Kingdom, the United States, Japan, Australia, and other places. Its primary sources range from unit war diaries to personal recollections, historical maps, and photographs. It also collected data from field studies and related works, such as those by Lawrence W.C. Lai’s University of Hong Kong team[6] on British military structures in Hong Kong.[7]

As of April 2023, the web map contains the following layers of data:

(1) Three historical map layers: they include a 1939 1:15,000-scale map drawn by the Land Survey Office (*rikuchi sokuryō*) of the Imperial Japanese Army General Staff (*sanbō honbu*), a 1941 1:25,000-scale map prepared by the Land Survey Office with notes added by the Headquarters of the Japanese 23rd Army, and a 1945 1:20,000-scale British GSGS (Geographical Section, General Staff) map (Figure 1).

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7 When Project ’44 created a side-project about Hong Kong, the 1941 Project provided the dataset about the position of the units on both sides. See https://www.project44.ca/hong-kong

8 Key members of this team are Sr Prof. Lawrence W.C. Lai, Prof. Stephen N.G. Davies, Y.K. Tan, and Sr Dr Ken S.T. Ching.

9 More about the references of the project: https://digital.lib.hkbu.edu.hk/1941hkbattle/en/bibliography.php

Figure 1: One of the Map Layers Used in the Interactive Map, with the Graphical Unit Symbols switched on.

(2) Unit dispositions: the map divides the Battle of Hong Kong into 51 "time-steps," each showing the positions and statuses of the units on both sides. The time-steps are not divided into regular intervals as the team intends to offer more detailed treatment of the key phases of the battle, such as the fighting on Hong Kong Island. The data granularity of the units goes down to the platoon/squad/individual artillery pieces level (Figure 2). The treatment of naval units is currently grossly abstracted, only showing the changing position of major naval units during the battle, and their movements are also abstracted into straight lines. Thus, one may sometimes spot the unusual movement of ships across land and islands instead of around them.[8] This issue will be tackled in the subsequent 3D version.

The interactive map provides two sets of symbols for different users. A default graphical symbol and a NATO symbol set can be switched through the map menu on the left-hand side of the interactive map.[9]

[9] Editorial note: A reasonable additional point is that ship's logbooks were almost all lost/destroyed with the loss of the ships, so knowing the times of departure from A and arrival at B, or the actual courses steered between points A and B can often not be known with certainty, save where alternative sources of evidence exist.

[10] For the explanation of the symbols, see: https://digital.lib.hkbu.edu.hk/1941hkbattle/en/unit-symbols.php

Figure 2: Interactive Map Showing Unit Positions at the Beginning of the Pacific War on 8 December 1941 (NATO Unit Symbols used in this screenshot).

(3) The locations of various military structures: the data granularity covers coastal batteries, anti-aircraft batteries, pillboxes, headquarters, shelters, medical posts, communication lines, demolition points, pre-arranged artillery targets, etc. Some structures are organized as a single POI if they are operationally seen as a single unit. Thus, individual guns of a gun battery would be shown as a single POI (Figure 3).

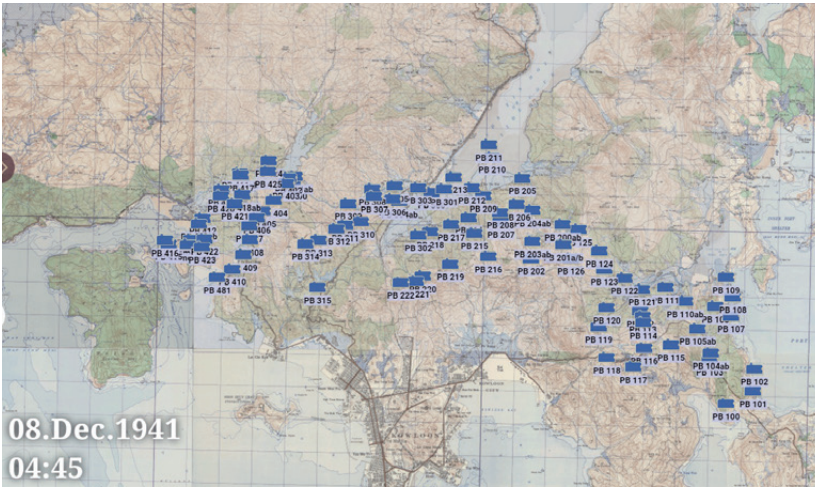

Figure 3: Interactive Map Showing the pillboxes on Gin Drinker's Line.

(4) Faces of War: tells the stories of those who experienced the battle (Figure 4).

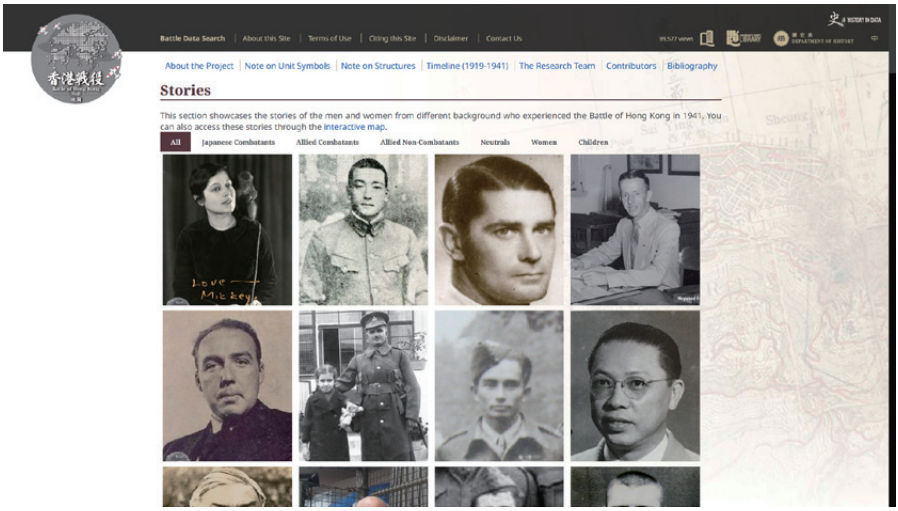

Figure 4: Interactive Map Showing the Personal Stories of Individuals Who Experienced the Battle of Hong Kong.

(5) Objects of War: consists of objects and artefacts related to the battle. They include weapons, vehicles, military aircraft, vessels, personal equipment, etc.

(6) Images of War: includes photos taken during the period.

(7) Units: contains information on the Allied and Japanese military units during the battle.

(8) A list of Hong Kong combatants: there is personal information on over 2,000 Hong Kong residents from different ethnic groups and backgrounds, who participated in the battle.(Figure 5)

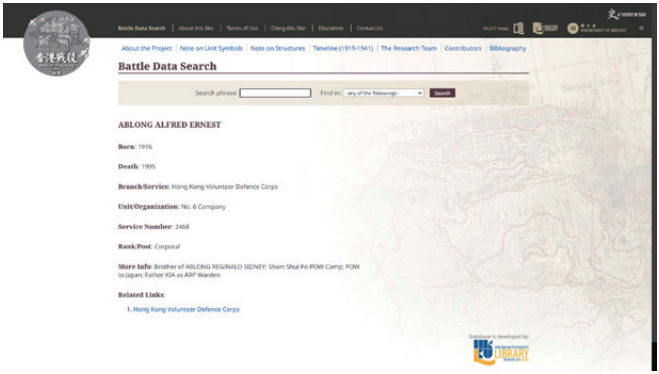

Figure 5: Database of the locally enlisted personnel who participated in the Battle of Hong Kong.

(9) A tutorial video on using the interactive map: https://www.youtube.com/watch?v=lgMCDD4Xgf8&t=3s (the link can also be accessed through the top page of the interactive map website).

In recent years, more primary sources about the Battle of Hong Kong have become available, such as memoirs of those who experienced it or more official documents that were seen as lost. However, it has been challenging for researchers to show the spatial and temporal dimensions of this battle as well as their relationship to the events, the experiences of the participants, and the war ruins that still exist.

The 1941 Project tries to tackle such a challenge by bridging different primary sources through a GIS platform so that the progress of the battle can be visualized and accounts from different perspectives compared. New insights about the operational and tactical dimensions of the battle, such as the role of the Canadian contingent, can be obtained by placing different accounts on the GIS (Kwong 2021).

The viewers can also have an easier way to understand the battlefield, as the interactive map combines georeferenced historical map layers and data layers about various kinds of military structures. This helps contextualize individual structures by giving a visualization of their spatial distribution and patterns.

To discuss the human experiences discussed in spatial contexts, the 1941 Project included in the database 86 stories from people of different nationalities, ages, genders, and backgrounds, and georeferenced them on the interactive map. This approach shows that the battle involved frontline combatants and civilians, whose accounts are usually not included in narrative histories. Such viewpoints expand the scope of the study of military history, which usually focuses on soldiers' actions. Viewers can read about these stories in the context of the progress of the battle as they relate to the surrounding area, including the military structures.

Hong Kong 1941 is an ongoing project, and its research team will issue irregular updates and hotfixes.[10] More primary and secondary sources will also be added to the project. Its mobile version, which is modified for mobile device screens, has been available since late 2021. Several related projects are underway, including an interactive map of the Japanese occupation of Hong Kong from December 1941 to August 1945 and a 3D version of the interactive map of the Battle of Hong Kong. The team welcomes any feedback and invites viewers to share with it original historical materials and stories on this period of Hong Kong History. Readers may contact it via its Facebook or Instagram pages, or by e-mail. The links are:

[11] As the project was finished in August 2021, some of the works published after that have yet to be included. They will, however, be included in subsequent updates of the website.

Facebook: https://www.facebook.com/bohk1941spatialhistory/
Instagram: https://www.instagram.com/hk1941spatialhistory/
E-mail: cmkwong@hkbu.edu.hk

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APPENDIX 1: SOME RESEARCH PAPERS AND NOTES ON WORLD WAR II DEFENCE STRUCTURES IN HONG KONG

1. Davies, Stephen N.G., Lawrence Wai-chung Lai & Yuk-kor Tan. "Small World War II Coastal Gun Casemates, Pillboxes, and Open Machine Gun Positions on Hong Kong Island in Photos." Journal of the Hong Kong Branch of the Royal Asiatic Society 49, (2009), pp.57-91.

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3. Davies, Stephen N.G., Ken Siu-tong Ching & Lawrence Wai-chung Lai. "Saiwan Redoubt Part I: A Unique, Intriguing but Neglected and Abused Example of Hong Kong's Military Heritage." Surveying and Built Environment 25, no. 1 (2016), pp. 9-46.

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5. Davies, Stephen N.G., Lawrence Wai-chung Lai, Ken Siu-tong Ching, Daniel Chi-wing Ho & Yuk-kor Tan. "Bokhara Battery and D'Aguilar Battery: Survey Findings." Surveying and Built Environment 30, no. 1 (2021), pp. 86-106.

6. Davies, Stephen N.G., Lawrence Wai-chung Lai & Yuk-kor Tan. "Fixed Observation Posts on Hong Kong Island." Surveying and Built Environment 31, no. 1 (2022), pp.45-104.

7. Davies, Stephen N.G. & Lawrence Wai-chung Lai. "Small Witnesses to Big Events: A Padlock Found in the Sing Mun Redoubt." Surveying and Built Environment 31, no. 1 (2022), pp.105-119.

8. Davies, Stephen N.G., Lawrence Wai-chung & Yuk-kor Tan. "A New and Anomalous Observation Post above Shaukeiwan (Shau Ki Wan)." Surveying and Built Environment 31, no. 1(2022), pp.120-127.

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10. Davies, Stephen N.G., Ken Siu-tong Ching & Lawrence Wai-chung Lai. "Finding Pillbox 45: Destroyed during the Battle of Hong Kong, or never there? Some Answers." Surveying and Built Environment 30, no. 2 (2022), pp. 22-37.

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13. Ko, Tim-keung. War Relics in the Green (野外戰地遺跡), Cosmos Books, Hong Kong 2001. (Chinese publication)

14. Ko, Tim-keung & Jason Wordie. Ruins of war: A Guide to Hong Kong's Battlefields and Wartime Sites, Joint Publishing (HK), Hong Kong, 1996.

15. Kwong, Chi Man. "Reappraising the Battle of Hong Kong: Preliminary Observations from a Spatial History Project." Canadian Military History 30, no. 2 (2021), pp. 1-38.

16. Kwong, Chi-man. "Reconstructing the Early History of the Gin Drinker's Line from Archival Sources." Surveying & Built Environment 22, no. 1 (2012), 19–36.

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Obituary

In Memory of Dr Jimmy Cheuk-fai LEUNG 1952-2023

We express our sorrow at the passing of a respected professional, scholar, civil servant, and friend Dr Jimmy Cheuk-fai LEUNG , SBS.

After Dr Leung's retirement from the HKSAR Government as Director of Planning, he became an adjunct professor in the Department of Urban Planning and Design (DUPAD), University of Hong Kong (HKU). Then he pursued a doctoral study at the Department of Real Estate and Construction (DREC), HKU. This occurred just as he had taken up a new appointment in the Department of Geography and Resource Management (DGRM), Chinese University of Hong Kong (CUHK).

During his adjunct tenure at CUHK while being a HKU doctoral student, Dr Leung also contributed tremendously to teaching B.Sc. (Surveying) students at HKU as a part-time lecturer, as well as participated actively in academic seminars and forums organized by the DREC as a guest speaker or a presenter. Many students in the HKU program benefited from his immense knowledge of the problems and various solutions in urban planning and land use in Hong Kong. One of them was Miss Emily Yan Lam Ho, whose undergraduate dissertation was inspired by Dr Leung and awarded the 2021 Hong Kong Institute of Surveyors (HKIS) undergraduate dissertation prize (top award in the Planning and Development Category) in 2022.

Dr Leung had a deep understanding of the institutional constraints facing the government and would not euphemize the limits to what the government can do in terms of addressing the issues related to urban development.

Although he served in the Town Planning Office/ Planning Department from 1978 to 2012, his did not see urban development problems solely only from the point of view of a government town planner. Dr Leung always had a bigger picture in mind

and wanted to know more about the phenomena he observed. Such a passion surely motivated him to study for a doctoral degree after retirement.

We believe that he would have become a world-renowned academic with planning practice in mind had he chosen and been given the opportunity to become an academic back in the late 1970s or 1980s.

His Ph.D dissertation on Coasian economic analysis of the revitalisation of industrial buildings was honoured as a 2021 HKIS outstanding PhD dissertation. His academic contribution extended beyond the classroom.

Dr Leung reviewed submissions to and published papers in the HKIS's refereed journal *Surveying & Built Environment* and continued to write his last paper for it even after he had been diagnosed with brain cancer and needed medical treatment. The paper was published last year in Vol.31 No.2.

We will always remember Dr Leung as a gift to us as a friend and to Hong Kong as a low-profile but well respected public figure.

The Hong Kong Institute of Surveyors
9 August 2023