# Interim report on the Archaeological Watching Brief Findings in Harcourt Garden for South Island Line (East)

CONTENT

# 1. Project background

The South Island Line (East) (SIL(E)) Project comprises a new medium-capacity partly underground and partly viaduct railway system with an approximate route length of 7km from Admiralty (ADM) to South Horizons (SOH), via three intermediate stations at Ocean Park (OCP), Wong Chuk Hang (WCH) and Lei Tung (LET). This alignment will connect the existing Island Line and future Shatin to Central Link alignments.

The SIL(E) is a Designated Project under the Environmental Impact Assessment Ordinance (EIAO). Environmental Impact Assessment (EIA) Report approval and an Environmental Permit (EP) are required for its construction and operation. The SIL(E) EIA report was submitted to Environmental Protection Department (EPD) in June 2010, and approved by EPD on 26 Oct 2010 subsequent to review by public and Advisory Council on the Environment (ACE).

The EIA Report for SIL(E) (248137/51/F) (http://www.epd.gov.hk/eia/register/report/eiareport/ eia_1852010/Index.html) identified that the proposed works area at Harcourt Garden would be located within former coastal area, early reclamation and a former military site known as Wellington Battery and thus have the potential to recover archaeological remains associated with the 19th- and early 20th-century development of Hong Kong Island.

Although the archaeological potential of the Harcourt Garden area was considered to be low in the SIL(E) EIA report as a result of disturbances from previous construction projects, there remained the potential for the presence of isolated or disturbed archaeological material, especially in areas of early reclamation along former coastline and sites associated with the Military Cantonment of Victoria City, which have the potential to contain building foundations relating to military aspects of the early colony. Archaeological Watching Brief (AWB) was therefore recommended for the Harcourt Garden works site. Details of the AWB would have to be agreed with the AMO prior to implementation.

# 2. Archaeological Watching Brief Methodology

Following the EIA process where an Archaeological Watching Brief (AWB) had been recommended as mitigation, a detailed proposal for AWB was submitted to AMO for review and approval prior to the construction phase. The archaeological potential of Harcourt Garden works site was revised to moderate and a sampling strategy of 20% in areas of archaeological interest was proposed and agreed with AMO. The revised level of archaeological potential was still based on the same archaeological expectations, but allowed for a more intense level of scrutiny of the excavations. The proposal was appended to the licence application (ANNEX A) and the licence was granted on 20 May 2011 (no.317). The licence was renewed on 13 June 2012 (no.335) (updated proposal at ANNEX B)..

The methodology was designed in anticipation of the expected findings. The existing developments at Harcourt Garden, mapped on FIGURE 1, suggested severe adverse destruction of potential archaeological deposits with the exception of discrete areas.

Attempts were made to overlay old maps with modern day topography to predict potential findings, but these overlays are indicative only as older maps have a lesser degree of accuracy (FIGURE 2).

A standard procedure of reporting findings (Event Action Plan) was set out in the methodology whereby the archaeologist would inform the Site Engineer and AMO of significant findings. Subsequently a site visit is conducted and afterwards follow-up procedure depending on the findings will be discussed and agreed with AMO.

After informing AMO of the seawall fragment find on 25th September 2012, a visit was conducted by AMO on the following day and a statement was compiled detailing the brief historical background, initial findings regarding the seawall fragment and the construction sequence (ANNEX C). Based on the initial findings and in particular on the poor state of the seawall fragment (see *4.1.4 Condition* below), preservation by record was agreed upon as the appropriate course of action.

# 3. Historical background of the area

## *3.1 The Establishment of the Colony of Hong Kong*

The formal possession of Hong Kong Island by the British took place at Possession Point on 26th January 1841. One of the reasons for the choice of Hong Kong Island was its excellent harbour and the use of Hong Kong as a trading port was established from the earliest days. The ceding of Hong Kong to the British was a result of disagreements between the Chinese and British regarding the opium trade. The British trade to China in opium dated back at least to the early 19th century when it was monopolised by the British East India Company. In 1834 reforms in England allowed private entrepreneurs to also become involved in the trade and the monopoly of the East India Company ended. The trade however, flourished and increasingly became a social and health disaster in China. In fact, the medicinal use of opium had existed in China for many centuries and the trade was at first tolerated by the Chinese Authorities, who also benefited through trade equalisation from increased tea exports. But soon the mass importation of opium by the British led to an unacceptably high level of addiction in the Chinese population and the Chinese authorities attempted to take measures to stem the trade and prevent further spread of the addiction and the devastating social implications.

In 1839 the Chinese Government officially attempted to stop or at least control the flow of opium and the Governor of Canton at that time, Lin Xezu demanded that all opium held in the British warehouses be handed over to the Chinese authorities and that the sale of opium be banned, with the penalty for breaking the ban being death. He also shut off the channel to Canton, preventing the British traders from fleeing the city. The British merchants were convinced to hand over their opium stores with the promise that they would be compensated by the British Government. However, the trade in opium was seen by many in England as unethical and there was a strong feeling that the trade should be stopped. In

this light the British Government could not justify paying the opium merchants for their losses out of the public coffers. What ensued was the first opium war (1839-1842) in which China ceded Hong Kong in perpetuity to the British and Hong Kong became a Crown Colony.

### *3.2 Coastal defence*

The relationship between China and the British remained tense after the signing of the Treaty of Nanking which ended the first opium war and hostilities broke out once again in 1856 in the ensuing Second Opium War. As such, a military presence in Hong Kong was essential for the colonies survival from the start and defensive features such as batteries were established early on. The early batteries (1840's and 1850's) associated with Hong Kong Island included the Wellington and Murray Batteries both of which were located in the Central/ Admiralty area of modern Hong Kong and were designed to protect the colony from attack by sea. These batteries were situated along the coast as it existed at that time, although today reclamation has rendered their locations inland.

As early as 1842 (FIGURE 3.a) a 'Battery of 5 Guns' appears on maps at the site which was Harcourt Garden, but it is not until 1854 (FIGURE 3.c) that the battery is marked as Wellington Battery (named for Arthur Wellesly, Duke of Wellington 1769-1852). In general, it has to be pointed out that there are few mentions of Wellington Battery in historical accounts. Murray Battery, West Point and Possession Point Batteries seem to form the main line of protection in the early decades, while others such as Ouchterlony, Royal, Kellet Island and Wellington Battery get fewer mentions.

Some of the records mentioning the Wellington Battery include:

- An account of 1856 reported by Lieutenant Colonel Griffin, commander of the troops states that the battery counts nine 32 pounders, part of which faced east and others which commanded the anchorage.
- On 17-18 September 1857 Captain Bate of the HMS Actaeon witnessed the eclipse of the sun at the Battery (Latitude 22° 16' N and longitude 7hrs 36min 36sec E).
- The last account of the Wellington Battery in 1866 was an entry in the journal of Bandsman Davies of the 2nd Battalion the 20th regiment of Foot which stated that in front of D'Aguilar Hospital was a battery of seven guns, although the Battery continues to appear on maps until 1901.

The described components of the Wellington Battery only include the guns. Old maps dated to 1854, 1863, 1866 and 1889 (FIGURE 3) show a building more or less in the centre of the battery area (but not exactly the same location on each map). Maps until 1866 also show a wall surrounding the Battery which is of a smaller dimension in the south where it does not 'overlap' with the seawall. Only on the 1889 map (FIGURE 3.f) the Battery boundary is more defined than the seawall. The building and the southern wall are the only exclusive battery 'attributes' marked on the maps.

The navy according to memorandums in 1854 and in 1856 acquired additional space from the military which allows them to expand mainly to the west. It is possible that the

proximity of the navy excluded Wellington Battery from playing a major role in the overall defense of the harbor as the dockyard would have been protected by ships off shore.

Hong Kong's defense was re-evaluated in the 1880's and Wellington Battery is not mentioned in the re-organisation. Two decades later the military area at Admiralty was extended northwards and the Wellington Battery disappears from the maps.

*3.3 Reclamations and Seawalls*

The first land sale in Hong Kong took place on June 14 1841 and first official plan for a praya was instigated in 1842 by Sir Henry Pottinger, the first Governor of the Colony. The regulations and rights of the landowners and crown were clearly spelled out from these early days and in was noted in Government Notification No. 53 of the Government Gazette that '*The reclaiming of land beyond the high water mark must be deemed an infringement on the royalties of her majesty (and it is therefore positively prohibited) by any private persons.*' The private lot holders, however, were believed to have sometimes taken matters of construction of seawalls and piers into their own hands, rather than wait for the government to begin construction. A number of cases of between the government and private individuals concerning the extent of their lots were undertaken over the latter decades of the 19th Century. A quote from the 1850's concerning the construction of the early seawalls stated that "from the recollections of a Mr. Edgar that seawalls were constructed prior to the issuance of leases, but these were in general within the limits of land measured off in the land sales" (Government Notice No. 50).

The government did eventually engage in a large scale praya reclamation project in 1855. The praya was proposed to run from Possession Point to the Parade Ground and the details proposed in the associated minutes as presented by the Colonial Secretary Mr. W.T. Mercer 17th November 1855) were as follows;

*'I would propose a praya either straight or curvilinear, as the surveyor general may decide, commencing from the small promontory or bend about halfway up the parade ground sweep, where the old middle store pier used to stand, to the place where the new battery is proposed near Mr. Murrow's at Possession Point, or even to West Point if necessary'.*

The proposal also included the construction of public and private piers, railings, houses or walls at the front of each marine lot (for provision of privacy) and then a 45 foot wide praya and seawall.

There was also a proposal for reclamation and the construction of a praya by the land officer for "A space of land to be reclaimed from the sea in front of Government Hill to form a public landing place, with an esplanade or public walk; a Praya to be carried out in front of all the buildings, both eastward to the Point, the property of Messrs. Jardine & Co. and westward as far as Navy Bay, or four miles between the two extremities. The land thus reclaimed to form a number of marine lots, a public roadway close to the sea, of fifty feet in width to be on the left of the Praya and the space between that and the houses to be the private property of the possessors of the Lots assisting in carrying out the plan paying a proportion of the expenses and for whatever land they gained of course charged at the same rate as the rent for the rest of the Lots".

It should be noted that these proposals were for works on land controlled by the Colonial Government and this did not include land controlled by the Military Authorities. The military land in Victoria was situated in the middle of the settlement along the north coast of Hong Kong island. As the Colony grew and prospered the military land created a gap between the eastern and western districts. The Colonial Government attempted to address the situation through proposals for reclamation and praya construction on the military lands and a notice in the Government gazette of 25 May 1875 stated;

*"In accordance with the request of the Governor Sir Arthur Kennedy we have enquired into certain proposals regarding the reconstruction of the Praya that were destroyed by the late typhoon, - the reclamation of additional ground along the sea frontage of specified districts – and the building of a seawall and roadway in front of property held by the Naval and Military Authorities, so as to connect Praya east with Praya Central by one continuous structure. We were also instructed to report on the style of work to be adopted in rebuilding or repairing the praya wall"*.

The Government's attempts to create the link through works on the military land was not fruitful for many years and ongoing negotiations which left the government authorities more and more frustrated continued on until the reclamation was finally realised in 1905 (FIGURE 4.a).

The next step in the construction of a new praya was commenced in 1887 with the proposal for the Praya Reclamation Scheme, which was to be officially recognised as the Praya Reclamation Ordinance of 1889 (FIGURE 3.f). It was stated early on that the War Office and Naval land separating the eastern and western parts of Victoria were a hindrance both to the economic development of the colony as well as a health concern. Evidence of the lack of progress was noted in the report of the Surveyor general 1887 which stated:

"*A project known as the Praya Junction (which would provide nine acres of new land) was proposed, but difficulties regarding who would be responsible for covering the costs of construction as well as who would benefit from the use of the new land hindered the commencement of the project*".

The 'who' referred to whether the Colony would be responsible for the costs or if the Military would pay from their coffers. The attitude of the War Department was further noted with some consternation by the colonial government in a report on the scheme by the surveyor general as follows:

"*what is not easy to understand is that the War Office should not have appreciated the advantage of cooperating in a scheme which enables it to become possessed of building land to the extent of nine acres fitted for barrack sites and bearing a market value of over one million and a half dollars, a sum to be easily obtained should the military department ever wish to realize. I say nothing of the advantage to the arsenal for the landing and embarking of military stores, or of the sanitary boon which the conversion of the present noxious mud foreshore along the cantonments into a healthy sea frontage would prove to the garrison*."

Completion of the scheme did not however bring an end to the negotiations on use as the Report of the Director of Public Works (1904) which stated that **"**The negotiations mentioned in last year's report were brought to a satisfactory issue apart from those relating to the boundary between the proposed scheme and the naval and military properties."

It was 1902 when the War Department laid the foundation (memorial) stone of the reclamation at the military/naval area at Admiralty. By this time half the work of dredging the floating basin, one third of the excavation for the graving dock and four fifths of the foundation works for the 39 ½ acres extension had been completed. Underneath the 'memorial' stone in a glass container a copy of the China Mail and Hongkong Daily Press of 1902, six coins and a plan showing the plans of the dockyard extension were recovered in 1959 when the dry dockyard was being filled in as part of the decommissioning of the site.

During WWII the naval dockyard had been bombed and shelled and Commander F.W. Crowther recalled how about 230 shells fell in the dockyard in little over an hour at the onset of the invasion (Harland 1986, p.35). The dockyard surrendered with the rest of Hong Kong on December 25 1941. After the war normality soon returned to the dockyard and there were no major changes to site until the announcement of the closure of the dockyard on November 28 1957 (PLATE 1). The 'Wellington Battery' area while in use by the Navy was owned by the military. The Hong Kong Government in 1959 paid 24 million Hong Kong dollars to the War Department for the release of the land.

The Harcourt Garden was constructed in the middle of the 1990's and was named after Admiral Harcourt who arrived with the British fleet in August 1945 to accept the Japanese surrender and was the de facto governor of Hong Kong from September 1945 to June 1946.

# 4. Preliminary Results of the Archaeological Watching Brief

## 4.1 Seawall Fragment

During a regular Archaeological Watching Brief visit a seawall fragment of cut and dressed granite blocks was noticed in the ongoing excavations on 25 September, 2012. Desk-based research had identified the likelihood of a seawall in these vicinities and the Site Engineer and AMO were informed of the discovery on the same day. The bend at the eastern end of the seawall fragment corresponded with seawalls marked on 1845 map "Plan of Victoria, Hong Kong" (WO 78/4/79 National Archives, UK), 1854 (FIGURE 3.c) and 1863 (FIGURE 3.d) maps and thus initial interpretation of the find as seawall ensued. Further uncovering of the seawall fragment exposed additional evidence for a seawall interpretation.

### *4.1.1 Identifying features.*

The seawall fragment was entirely constructed with cut granite ashlars (PLATE 2) of which only the exposed north façade was dressed finely (PLATE 3). The granite blocks besides being sourced locally have a durable quality which is suited for seawalls. The cracks between the ashlars had been sealed with a concrete mortar to form a watertight barrier (PLATE 4).

A landing stone was recorded at the lowest dressed granite row to the north of the seawall fragment (PLATE 5). The landing stone consisted of a polished granite block of an irregular shape with two 'lewis cuttings'. The seawall fragment in front of the landing stone had two ashlars slightly sticking out of the seawall fragment (PLATE 6). These two formed 'steps' up to the top of the seawall fragment. It is not envisioned that this was a main landing option, but was used rather for ongoing maintenance of the seawall.

The alignment shape of the seawall fragment provides an additional argument for a seawall interpretation: the seawall fragment has two bends (PLATE 7) which are shown as early as 1845 on "Plan of Victoria, Hong Kong" as a standalone seawall (WO 78/4/79 National Archives, UK; http://gwulo.com/1845_map_hong_kong) and at a time when the Wellington Battery had not fully formed and the Battery was called '6 Gun Battery'. It is not clear whether the seawall had already been built at this stage but it is clear from the drawing that the seawall is conceived as an individual continuous feature fronting the military area. FIGURE 5 shows the wall alignment and corresponding area marked on the 1863 map.

A sewage outlet was also recorded. The original circular outlet had been cut into the granite at level of 'row 2' and part of 'row 3' (PLATE 8). A later modification saw the top of the old sewage stone opening broken to add a ceramic pipe.

A single run-off channel cut out in the granite at 'row 7' was also recorded. The channel continued inside the seawall fragment but no inlet was noticed (PLATE 9).

### *4.1.2 Location.*

The seawall fragment forms part of a seawall which fronted the military area in central Victoria Harbour and was constructed as part of the early military development of this area. The condition of the coastal area is reported in numerous government reports and is portrait as unhealthy with large accumulation of effluent and rubbish accumulating on the foreshore. Building a seawall could also allow ships to sidle up, although there is no evidence that such an argument was appropriate for the military frontage as transport between receiving ships and the island were handled by public landing places, such as Pedder wharf. In addition the water depth in front of the military area is shallow.

The seawall fragment which was found fronts the northwest of the Wellington Battery and continues to the west (FIGURE 5). The relationship between the seawall (fragment) and the Battery is unclear. There is however, no reason to believe that they are intrinsically linked as the wall extends beyond the Battery and had been planned as a separate feature

as indicated on the 1845 map "Plan of Victoria, Hong Kong". There was no evidence to suggest gun emplacement(s) were part of the wall; the military aspect of the seawall consists of its location. The seawall would have provided a clean, tidy shore and not necessarily a landing place as the foreshore was relatively shallow as can be seen on the 1845 map (http://gwulo.com/1845_map_hong_kong).

### *4.1.3 Construction method.*

The seawall (fragment) was constructed with rectangular granite ashlars ranging from 1.05m (3ft 5inch) to 1.2m (4ft) (stretchers) in length and 0.36m in height and width (headers). The lowest part of the seawall, 'row 1' has stretchers measuring 1.8m (6ft) in length. Plain masonry with a Flemish bonding type was used to form the seawall. The Flemish bonding type was most likely used not only for its decorative pattern but also for its strong cohesion (FIGURE 6). It was a vertical wall with a very slight inward slant (FIGURE 7). The top of the seawall fragment had already been removed by previous development projects and so there is no information regarding the capstones. In comparison old photographs show rounded thin capstones covering the seawall of the West Praya ca. 1860's (City of Victoria 1994.p.22)

The seawall fragment façade consisted of dressed granite with concrete/mortar sealing for the joints. During the partial demolition of the seawall fragment mortar was noted between the façade blocks, in particular at the lower courses. Sealing of the joints would have prevented seawater from seeping through and weakening the seawalls. Regular maintenance would have been undertaken to prevent the seawall from collapsing overtime.

The interior seawall (fragment) is also made with rectangular granite blocks (of varying sizes) and the spaces are filled with shims (scraps from splitting stones). The blocks are not set along a specific pattern but are pieces of a puzzle to fill the interior of the seawall fragment (FIGURE 8).

The rear of the seawall (fragment) had been damaged in numerous places and it was harder to obtain a clear picture. At the higher courses ('row 5' and above[1]) the seawall fragment span was about 3 metres and the blocks formed an 'irregular' backing (PLATE 10a) which would have been set into an artificial fill. The seawall fragment was a lot smaller at lower courses spanning about 1.5 metre with regular abutments fortifying the lower seawall fragment at the rear (PLATE 10b). At the bend in the east however, there were no abutments and the seawall fragment measure around 3 metres in width at 'row 4' (FIGURE 8).

Comparison with seawall model of the time (FIGURE 9.a) shows some parallels whereby the main wall part stretchers measure 4ft. Similar but not entirely the same are the lowest row in the recovered seawall fragment and second lowest on drawing measure 6ft stretchers, and the fact that both seawalls use the Flemish bond style (but headers are smaller size in

[1] The seawall counted maximum 8 courses; the rows are counted from the lowest level at the bottom of the wall 'row 1' up to 'row 8'.

the excavated fragment). The seawall fragment however, has no evidence for a 3ft and 6ft row upper structure as it had already been previously demolished by previous development projects.

The foundation has not yet been excavated, but the top of the foundation was noticed in several places. It is expected that the foundation consisted of a *pierre perdue* foundation (FIGURE 9.b). This type of foundation was not only cheaper and easier to built it would also have been suited for the relatively sheltered Victoria Harbour.

### *4.1.4 Condition.*

The seawall fragment was ultimately recorded, in sections, up to a total length of 41.70 metres and a maximum height of eight granite rows which equals 3 metres. In some places the broken condition of the seawall fragment did not allow for full exposure of the seawall height as loose blocks posed a safety concern for staff recording the seawall fragment. Originally the seawall would have stood higher as currently it only reached 4.20mPD. The archaeological evidence showed that after cutting the upper courses of the seawall, the top recorded layer ('row 8') in the eastern section was partially covered with concrete (PLATE 11) and a section in the western section had been cut further and its top layer 'row 7' was covered with chunam (PLATE 12). There was no evidence for capstones or any features residing on the top of the seawall fragment. Comparison with seawalls dating to the middle to second half of the 19$^{th}$ century, the seawall fragment would have been capped by a capstone and low wall however, no evidence for any of this was found at the Harcourt Garden site.

It is thought that the site may have known several major refurbishing phases starting with the second reclamation which was completed by 1905 (FIGURE 4.a). The original seawall would have been levelled and incorporated into the main inside area. Further major impacts would have occurred during the decommissioning of the site in 1959, intermittent use and construction of Harcourt Garden (PLATE 1).

The recorded seawall is a fragment which would have continued to the east and fronted the Wellington Battery and to the west up to the Naval area (FIGURE 8). To the east the seawall fragment had been cut by the construction of the electric substation some 30 years ago (FIGURE 1); it is likely that the Wellington Battery would have been largely destroyed at this time. To the west, the seawall fragment was truncated by the existing Admiralty station, and in particular by MTR Exit/Entrance 'E'. In addition some smaller impacts cut, dissected and impacted various part of the surviving wall: a plunge column sunk as part of the current project dissected the wall fragment in two (PLATE 13a), another recently built plunge column damaged the rear of the wall (PLATE 13.b), and thick rebar foundations part of the MTR Entrance 'E' (PLATE 13.c) affected the rear of the wall at its western end.

#### *4.1.5 Comparison to Wellington Battery.*

The definition military 'battery' is a fortified emplacement for heavy guns. Very little primary information is available in Hong Kong as most documents connected to the military cantonment are kept at the National archives in UK.

Wellington Battery is part of a string of batteries developed as coastal defence line on the northern coast of Hong Kong Island (and later southern Kowloon) since 1841. In 1842 a Battery of 5 Guns was known at the works area and in 1845 a Battery of 6 Guns. It is not known what the battery looked like, but the site would have needed stable platforms to carry the guns and possible receded walls to hide behind (such as at Murray Battery, see FIGURE 10). In 1854 Lieutenant Colonel Griffin reported nine 32 pounders and Bandsman Davies in 1866 reports seven guns. No evidence for gun emplacements was found, which suggests the remnant is not likely to be the Battery.

#### *4.1.6 Current state of excavation and recording.*

The surviving façade of the seawall fragment has been recorded as have been the top layer as excavated and an inner section of the wall at 'row 4'. The wall has been removed down to 'row 2' with exception at the western end where the entire wall has already been removed. Exposing the seawall fragment occurred in sections; partly because of the construction sequence but also because of safety concerns which loose blocks at the edge of destroyed wall parts posed. The seawall fragment has been photographed and described in line with the AWB methodology. The recording of the seawall fragment's foundation is outstanding and is expected to be conducted at the end of the year when excavations resume.

### 4.2 Well remnant

During a regular Archaeological Watching Brief visit granite blocks were noticed during excavations in the SEE shaft. The granite blocks were found in an irregular pattern and in loose manner (PLATE 14), no associated archaeological material was found. The blocks appeared arranged around a concrete pile (PLATE 15) which confused the interpretations. After the central concrete pile stopped and was removed it became clear that the feature was part of a well.

#### *4.2.1 Identifying features*

The circular shape of the well remnant once the concrete plug was removed was immediately identifiable (PLATE 16). The mortar lining (PLATE 17) would have been applied to keep the inside of the well clean and to seal the water in.

The soil deposit inside the well remnant below the concrete filling was excavated by hand and consisted of three basic layers: a modern building debris layer of approximate 50cm

thickness overlay a very black organic cultural (10-20cm) deposit with archaeological materials which covered a sterile sandy clayey soil. The finds from the black organic cultural layer included four coins (2 Chinese coins (date could not be identified) and 2 British Hong Kong coins dated to 1863), a button with the insignia VR (Victoria Regina), a belt buckle with leather fragments, glass bottles and window pane fragment, pottery fragments, a large quantity of red tiles and imbricis and red and blue brick fragments (PLATE 18). The analysis of the finds is still ongoing.

### *4.2.2 Location*

The well (remnant) is also part of the military/naval area at what is now Admiralty. The well does not appear on any map but due to the findings within the well it is estimated that the well was constructed during the middle to second half of the 19th century.

Water supply initially in 1841 was obtained from hill side streams and in 1851 five wells were sunk to augment the water supply. The location of these wells is unknown. Piped water from reservoirs to the city commenced in 1863 but it was not until 1892 a more comprehensive and reliable water distribution system was in place (Guilford 1998).

The role of the well at Harcourt garden within the city's water system development is unknown but the cultural deposit within the well remnant was very shallow which suggests that the original well was used for a short period in time. Two coins dated to 1863 provide some suggestion of timing as do the button with a date between 1837 to 1855 and a number of glass bottles dating to the end of the 19th/early 20th centuries. On top of this cultural deposit was a layer of construction debris believed to date from the decommissioning of the military site in 1959 sealing the older cultural deposit below.

### *4.2.3 Construction method*

The well remnant itself was constructed with cut granite blocks which were placed in radial design and with the gaps filled in with rock and blue and red brick shims. The upper part of the well remnant was lined with a thick mortar layer. This mortar stopped around 0.8mPD after which the rock was left naked to the bottom of the well remnant around 0mPD. The base of the well remnant consisted of roughly cut timber tree trunks onto which the granite blocks were placed (FIGURE 11).

### *4.2.4 Condition*

The well remnant was recorded between 3.10mPD and -0.10mPD. The top of the well had been cut by the concrete casing of a large ceramic pipe (PLATE 19) and the top of the well would have been at a height of more than 4 or 5mPD. The well had not been in use for a very long time and was found filled with a 1959 rubble fill and concrete to below the concrete pipe casing which had cut the well.

*4.2.5 Preliminary conclusion of the findings.*

The well remnant is an isolated finds which is found unconnected to other structures because the original surface level had been removed during previous urban development over the years. The impacts had also cut the top of the well and only the shaft and bottom remained. Based on the recovered finds it can be stated that the well was in operation for a short time after which is was abandoned and most likely closed off.

The well remnant was exposed in sections as the excavations went down; partly because of the construction sequence but also because of safety concerns which the loose granite blocks posed. The well remnant has been recorded by photograph, drawing and written description which in line with the AWB methodology.

The AWB results of the well remnant provide a brief snapshot of second half 19th century and the most significant findings are two Hong Kong coins, a one cent and one mil, which are dated to the 1863. The well shaft remnant and bottom were completely removed.

# 5. Summary: preliminary conclusion and 'statement of significance'

A seawall fragment, totaling 41.7m in length, was found during the archaeological watching brief programme, a mitigation recommendation of the EIA. The condition of the seawall was poor: the top had been completely removed, and parts of the rear and seawall had been severely damaged by previous development projects. Due to site conditions, construction sequence and safety concerns it was not possible to expose the all of the remaining fragments together. As such, the exposing and recording of the remains were undertaken in sections and once a section had been recorded it was necessary to remove it before exposure of the next section could be commenced.

The 19th century maps show a continuous seawall fronting the military area, including at the location of the Wellington Battery. There is no evidence a separate (sea)wall was constructed for the Battery and there are no defining elements such as gun emplacements which would allow for an interpretation of battery. The condition of the seawall fragment i.e. with its top shorn off and damaged by various developments and construction provides evidence for a seawall without providing a complete picture of the development of the area. Its alignment however, corresponds to the old maps and in particular with reference to the 1845 map “Plan of Victoria, Hong Kong” which marks the location of a seawall with bends similar to the archaeological record and written description: *seawall- average depth of highwater at 2ft.* in front of the ‘6 gun battery’ at the site which later will become the Wellington Battery.

Seawalls were a necessary and ubiquitous form of structure in Hong Kong due to both the nature of the settlement (a sea focussed trading colony) and the long history of reclamation both during Colonial times and today. The architectural style of the seawall would be described as utilitarian and the building methods were relatively standardised to meet the local conditions, as they would periodically be exposed to severe weather events such as typhoons. The seawalls of Hong Kong, both historical and modern, reflect the longstanding

maritime focus of the place. They do not have any particular association with historical events, personages or engineering innovations. Throughout the years of reclamation history of Hong Kong, seawalls have served their purpose and then been covered by subsequent extensions of the coast. The seawall fragment at Harcourt Garden provides an excellent chance for increasing the knowledge base on early seawall construction in Hong Kong and the record provided by the Archaeological Watching Brief Report will be a valuable addition to the existing information for future study and reference. The fragment retains a degree of authenticity as it shows few modifications to its original structure although there is a total loss of function, use and surrounding. The integrity of the seawall fragment however, both in its length (truncated) and height (top sheared off) and wall thickness (damaged) has been severely affected by previous development projects and affects the significance of the findings.

The shaft and bottom of a well remnant, recorded for a maximum height of 3.2m, was also found during the archaeological watching brief programme. The top of the well had already been removed during a previous development and the remainder of the shaft had been filled with construction debris and concrete. Archaeological evidence shows that the well had been in use for short time and in general, wells in early colonial Hong Kong were replaced by piped water by 1890's. The construction of the well is functional and has no architectural embellishments. The artefacts excavated from inside the well remnant are interesting but of no exceptional value. Again the information gleaned from the excavation of the well remnant adds to the overall picture of early colonial development and provides a common testimonial.

## REFERENCES and BIBLIOGRAPHY

### Documents which may be viewed as part of the report

- 1845 (Collinson) map can be pre-viewed at this link:

http://gwulo.com/1845_map_hong_kong

1845 map which marks the location of a seawall with bends similar to the archaeological record and written description: seawall- average depth of highwater at 2ft. and the '6 gun battery' at the site which later will become the Wellington Battery.

Wiltshire Thea 2003. Old Hong Kong Volume one 1860-1900. FormAsia Books Ltd.
Collection of old photographs of Hong Kong including some photographs which show reclamations in 1860-1890's (p. 28-29; 128-129) and possibly the Wellington battery area (p.127)

Hacker Arthur 1997. Hong Kong A Rare Photographic Record of the 1860's. Wattis Fine Art.

Collection of old photographs; p.59 show the reclamation by Jardine and Matheson in the middle of the 19th c.

City of Victoria. A Selection of the Museum's Historical Photographs. 1994

On p. 22 is a good example of the government led reclamation in Central in the 1860's; note the finishing of the top of the seawall with capstone and small intermittent wall. On P. 42 is a photograph of the extension of the Praya between 1890 and 1904 in progress.

### Documents at National Archives, UK

- 1846; [1845] Reference: WO 78/5503

The Ordnance Map of Hong Kong surveyed by Lieut. Collinson R.E. 1845'. Engraved. 4 sheets

- 1846-1875 Reference: WO 78/115

'Ten Outline Sketches of the Island of Hong Kong. To accompany the Ordnance map of Hong Kong': 12 sheets, comprising a cover sheet, ten views, and an index map showing the extent of each view. Compass indicator to the index map. [By] Lieutenant [Thomas B] Collinson, Royal Engineers; lithographed by Dickinson and Co, Bond Street; [?issued by] the Royal Engineers' Office, Hong Kong, 27 August 1846. An MS note on the cover sheet, dated 12 March 1847 states that the drawings should be deposited at the Royal Engineers' Office in Mauritius. Cover sheet stamped at the Royal Engineers' Office, Mauritius, 14 June 1875. For a copy of the Ordnance Survey map of Hong Kong, see WO 78/118.

- 1844-1851 Reference: WO 78/435

Hong Kong. 'Contoured Survey of the Cantonment and Victoria Hong Kong 1844': map. Scale: 3 inches to 200 feet. Surveyed by Lieutenant T B Collinson, Royal Engineers, Royal Engineers' Office, Hong Kong; signed by Major Edward Aldrich, 31 August 1845. Various later additions, including proposed buildings and roads for which provision was made in estimates dated 1846-1847; reference notes to colouring. Further notes, in pencil, one dated 19 March 1851.

- 1851-1857 Reference: WO 78/456

Hong Kong. 'Plan of the Cantonment at Victoria Hong Kong 1851. Shewg. all Ordnance Buildings and property - per Circular No.381, dated 23rd Feby. 1849': map. Reference table to buildings, etc. Scale: 1 inch to 66 feet. Originally dated at the Royal Engineers' Office, Victoria, 26 September 1851. Signed by Captain W E Delves Broughton, Commanding Royal Engineer, 21 February 1852. Stamped by the Board of Ordnance. A later addition refers to land transferred to the Admiralty in 1855. A pencilled note refers to a report dated 25 April 1857. Neither circular number 381 nor any other report is filed with the map.

- 1845-1846 Reference: WO 78/479

'Plan of Victoria, Hong Kong, Copied from the Surveyor General's Dept. ...': street map, also showing the nature of the terrain. Reference table to buildings and to the cantonment boundary; various reference notes. Scale: 1 inch to 200 feet. Compass indicator. Pencilled additions initialled"J.N." showing the proposed Central Battery, 13 January 1846. Originally accompanying a report dated 12 May 1845; the report is not filed with the maps. To accompany a Report of 12th May 1845.

- 1889 Reference: WO 78/811

Hong Kong: Victoria. Map showing sites occupied by the War Department and land claimed from the War Department by the colonial government. Reference notes Scale: 1 inch to 160 feet. By W H Tregellas.

- 1886-1889 Reference: WO 78/2267

Hong Kong: Victoria. 'Hongkong Harbour': chart showing soundings in feet. Reference notes. Compass roses. Surveyed by Lieutenant H E Purey-Cust, Lieutenant C H Simpson, Lieutenant J F Parry and Lieutenant C H A Gleig, under the direction of Commander W U Moore, HMS Rambler, between December 1886 and March 1887; engraved by Davies and Co; published by the Admiralty, 10 July 1888. Coloured MS additions showing proposed extensions to the praia (i.e. the waterfront) and land reclamations made by the War Office, the Admiralty and private individuals; MS reference table; additions dated July 1889. Engraved 1 inch = c.550 feet.

- 1889 Reference: WO 78/3359

Proposed new embankment plans at Naval and Military buildings

## Bibliography and Text References


UK National Archives reference Co129

Government Notice No. 53 (The Government Gazette)

Government Notice No. 50 (Report of the Bowring Praya Commission by T. Chisholm Anstey, William Cowper and J.C. Power presented to Sir John Bowring (24th of March 1856)

Minutes as presented by the Colonial Secretary Mr. W.T. Mercer 17th November 1855

Cameron Nigel and Patrick Hase 1997.The Hong Kong collection: memorabilia of a colonial era.

Flowerdew John 1998. The final years of British Hong Kong: the discourse of colonial withdrawal. New York, N.Y.: St. Martin's Press.

Guilford Michael C. 1998. A look back: Civil Engineering in Hong Kong 1841-1941. Journal of the Royal Asiatic Society Hong Kong Branch, vol. 37.

Harland Kathleen 1986. The Royal Navy in Hong Kong since 1841. Liskeard: Maritime.

Jones Olive R. 1986. Cylindrical English Wine and Beer Bottles 1735-1850. Studies in Archaeology Architecture and History. National Historic Parks and Sites Branch Environment Canada – Parks.

Nayler Peter. Military Button Manufacturers from the London Directories 1800-1899. Archaeological Services National Historic Sites. Canadian Heritage Parks Canada.

Owen Norman, Elfred Robersts, David Lung and Scarlet Cheng 1999. The Heritage of Hong Kong. Its History, Architecture and Culture. FormAsia.

White ensign, red dragon: the history of the Royal Navy in Hong Kong 1841-1997. Edited by P.J. Melson. Hong Kong: published for the LEP Trust by Edinburgh Financial Publishing (Asia), c1997.

http://adsabs.harvard.edu/full/1858MNRAS..18..162S Shadwell, C. F. A. in Monthly Notices of the Royal Astronomical Society, Vol. 18, p.162

http://brianseed.com/1847.html A 360°view of the harbor in 1846; Some small buildings can be seen in the background but it is difficult to distinguish any details

http://www.colchestertreasurehunting.co.uk/militarynamedregiments.htm identification of 'VR' button Royal Engineer Department, Officer and O/R's, 1837-1855.

# South Island Line
# Proposal for Archaeological Watching Brief

## 1. Introduction

The Final EIA Report (248137/51/F), prepared for this project under Agreement No. NEX/2301, identified that the proposed South Island Line East extension of the MTR rail network would pass through some areas with the potential to produce archaeological remains associated with the 19th- and early 20th-century development of Hong Kong Island, earlier activity along the pre-reclamation coastline or early settlements and activities on the Hong Kong Island southern alluvial plains (Figure 1). Six works sites, namely Harcourt Garden in Admiralty (Figure 1a); Sites S7c, S7d, S7e and Site S7 in Wong Chuk Hang (Figure 1b); and Site S10 (Monitoring of pier excavation as required) in Wong Chuk Hang San Wai (Figure 1c), were thus identified and all will need to be covered by archaeological watching brief during the construction phase of the project (see Appendix B's general *Methodology for Archaeological Watching Brief* and Appendix C's *Specification for Archaeological Watching Brief*).

## 2. Background to the Study Area

### 2.1 History

The project Study Area stretches from Admiralty to Nam Fung Portal over former coastal areas and early 19th and 20th century reclamations. The alignment tunnel opens to the south at Wong Chuk Hang. Wong Chuk Hang area has the potential to provide information on early historical village settlement from around the turn of the 19th century with a thriving local (incense) economy. While villages have since disappeared and limited information exists, archaeology may provide some clues. The alignment then turns west to Ap Lei Chau. The island of Ap Lei Chau has known extensive development which has destroyed its archaeological site and historical kilns and any potential for further sites.

#### 2.1.1 Admiralty

The area was earmarked for use by the British Military in the mid-19th century and reclamation was undertaken along the coast as early as 1863, as can be seen in the geological map in Figure 2. Some of the works areas are located within former coastal area (beach deposits), early reclamations (1863 and 1904) and a former British military site known as Wellington Battery. Figures 3 and 4 show the historical maps of the area in 1856 and 1936-46 respectively (Empson 1992).

### 2.1.2 Wong Chuk Hang

There is one Declared Monument in the project study area, namely the Wong Chuk Hang Rock Carving. The rock carving is carved into a fine grained volcanic rock face and faces east. Although no archaeological deposits have been found to date in the vicinity of the rock carving, its presence indicates that this was an area where human activity took place in the past and that there is the potential for archaeological material associated with this activity to exist within the current project study area.

Part of the project study area at Wong Chuk Hang lies on alluvial deposits and has the potential to contain archaeological material associated with historical village settlement in the area. The current village of Wong Chuk Hang San Wai was settled approximately 150 years ago by members of the Chow and Cheung clans who were relocated from the original Wong Chuk Hang Village (also known as Little Hong Kong), which is believed to be at least 200 years old (Chow 1958). Figure 5 shows a map of the area in 1895 (Empson 1992) while Figure 6 shows an aerial photograph of the area in 1949 (GEO). The remains of the older village are situated on the hillside at the northern side of the Aberdeen Tunnel Road (Li 1955). It is also possible that an historical settlement associated with incense trade could be located in the project study area as the nearby Shek Pai Wan was a shipping centre for export of incense (Lu 1983).

### 2.1.3 Ap Lei Chau

An archaeological site was identified by Schofield in the 1920s and Heanley also identified lime kilns on the island in the 1930s (Rogers et al. 1997). It was noted in the report of the 1997 Territory Wide Archaeological Survey that any traces of former archaeological sites had been destroyed by reclamation or development (Rogers et al. 1997).

## 2.2 Archaeology

There are no known archaeological sites but there have been three previous archaeological investigations conducted around Wong Chuk Hang in the south of the Project Study Area:

**Planning and Development Study on Hong Kong Island South and Lamma Island Cultural Heritage Impact Assessment (AAL 2001)**

The project study area for the Archaeological Impact Assessment included Wong Chuk Hang. Field testing was undertaken and an area of archaeological potential located east of the Aberdeen Tunnel was identified in woodland directly to the west of Wong Chuk Hang San Wai. The area consisted of abandoned agricultural land with moderate vegetation growth. A map highlighting the area is shown in Figure 7. Archaeological Watching Brief (Archaeological Monitoring) during construction phase of any proposed project was recommended in the report.

**Repositioning and Long Term Operation Plan of Ocean Park – Environmental Impact Assessment Study (Maunsell Aecom 2006)**

An Archaeological Impact Assessment (AIA) was undertaken as part of the EIA study and areas of archaeological potential were identified at the north-western end of Ocean Park as indicated in Figure 8. Mitigation for the project included the undertaking of an Archaeological Survey (See below).

**Ocean Park Archaeological Survey for the Repositioning and Long Term Operation Plan of Ocean Park (Wang Fei /Horizon Asia Ltd. 2008)**

Accordingly to AMO, an archaeological investigation was undertaken by Mr. Wang Fei within the footprints of the above identified area of archaeological potential. No archaeological materials or cultural layers were identified.

## 3. Review of Archaeological Potential

The following table reviews and updates the information presented in the CHIA desk-top study to present in tabular form a more detailed assessment of the archaeological potential of the six watching brief sites. In the absence of detailed information concerning the depth of cultural deposits and the likely rate at which such material will be removed, it is presently impossible to reliably estimate either the overall duration of contractor's groundworks in the upper layers (with archaeological potential) or the corresponding numbers or overall duration of

monitoring visits likely to be required in each site/area. Instead, three relative monitoring frequencies appropriate to the archaeological potential of each site/area are suggested. Based on a five day working week the three frequencies can be expressed as follows:

- very low potential – a minimum of one half day monitoring visit per two weeks of groundworks in layers with archaeological potential (equivalent to a 5% sample);
- low potential – a minimum of one half day monitoring visit per week of groundworks in layers with archaeological potential (equivalent to a 10% sample); and
- moderate potential – a minimum of two half day monitoring visits per week of groundworks in layers with archaeological potential (equivalent to a 20% sample).

The archaeologist should ensure that monitoring in each works area provides at least the agreed minimum coverage in terms of time/area and a good spatial sample across the site footprint.

The table below should be read in conjunction with the geological map in Figure 2 and enlarged site location maps shown in Figures 1a-c.

| Works Site | Geology & Topography | Existing Impacts | Archaeological Potential | WB Monitoring Frequency |
|---|---|---|---|---|
| **Harcourt Garden (Figure 1a)** | The southern part of the site is situated on 1863 reclamation; the north-western part of the site is also situated on early reclamation of 1904; whilst the north-eastern edge of the site is situated on more modern reclamations dating from 1945 and 1964. The approximate locations of the original shoreline and past military structures are marked on Figures 3 (1856 map), 4 (1936-46 map), and 9 (1936-46 map overlying 1880 map). | The entire area has gone through profound changes in the past few decades: Queensway was straightened in the mid 1970s to meet traffic needs; before the construction of Harcourt Garden in the mid 1990s, the former Wellington Battery and the Admiralty Dock site was occupied by several structures (Figure 10 – 1986 map); Wellington Barracks and Victoria Barracks were later replaced by Pacific Place and other modern complexes. Four 19th-century cannons were recovered recently in a construction site located within the boundary of the former Victoria Barracks near the junction of Supreme Court Road and Justice Drive (Ming Pao 20.09.08). According to a plan | Part of the Wellington Battery and Military Hospital have their location within the proposed works site at Harcourt Garden.<br><br>Although the archaeological potential of this area is considered to be **moderate** due to disturbances from previous construction projects, there is still the **potential** for the presence of isolated or disturbed archaeological material, especially in areas of early reclamation along former coastline and sites associated with the Military Cantonment of Victoria City, which have the potential to contain building foundations relating to military aspects of the early colony. | An initial site visit (on completion of site clearance) followed by a minimum of **two half day site visits per week (20% monitoring sample)** |

| | | | | |
|---|---|---|---|---|
| | | showing the underground section of the proposed cut-and-cover station box in Harcourt Garden (Figure 11, Arup 2009), the existing modern disturbance is only situated in the upper part of the fill. The exception being the eastern edge of the works site, which is occupied by an existing underground car park. Any archaeological deposits/ remains would have been severely disturbed by the construction of the latter car park. | | |
| **Site 7c Site 7d Site 7e**<br><br>**South-west of Wong Chuk Hang Tsuen**<br><br>**(Figure 1b)** | | The woodland area is situated in alluvial deposits. As seen in 1949 aerial photograph (Figure 6), the area was originally used for cultivation. | Based on the probable degree of disturbance and the area's history: the site is considered to have **low archaeological potential.** | An initial site visit (on completion of site clearance) followed by a minimum of **one half day site visit per week (10% monitoring sample)** |
| **Site 7**<br><br>**West of Wong Chuk Hang Tsuen**<br><br>**(Figure 1b)** | | The woodland area is situated in alluvial deposits. As seen in 1949 aerial photograph (Figure 6), the area was originally used for cultivation. | Based on the probable degree of disturbance and the area's history: the site is considered to have **low archaeological potential.** | An initial site visit (on completion of site clearance) followed by a minimum of **one half day site visit per week (10% monitoring sample)** |
| **Pier columns within Site S10 Wong Chuk Hang San Wai**<br><br>**(Figure 1c)** | | The proposed Works Site S10 is situated on alluvial deposits. Field testing was undertaken in this area in 2000 as part of the AIA for the HKIS & LI Project. An area of archaeological potential was identified in the woodland area located immediately to the west of Wong Chuk Hang San Wai (AAL 2001), see Figure 7.<br><br>No existing underground utilities are known in this woodland area.<br>Figure 12 highlights the area of archaeological potential for Works Site S10.<br>Should the proposed piers fall within this highlighted | Based on the probable degree of disturbance caused by road construction and landscape modifications and the area's history: the site is considered to have **very low archaeological potential**. | An initial site visit (on completion of site clearance) followed by a minimum of **one half day site visit per two weeks (5% monitoring sample)** |

| | | | | |
|---|---|---|---|---|
| | | area, archaeological watching brief during construction phase would be required.<br><br>Remainder of the area is located on slopes, major roads and carriageways. | | |

## 4. References

### Books and Articles


Chow, W. (1958) "Little Hong-Wong Chuk Hang", Hong Kong University, Hong Kong

Empson, H. (1992) Mapping Hong Kong: A Historical Atlas, Government Information Services, Hong Kong.

Lu, K. C. (1983) The Cultivation of the "Incense Tree" (Aquilaria Sinensis) in the Journal of the Hong Kong Branch of the Royal Asiatic Society (Pages 247-249)

Li, W. F. (1955) "How the Natural Environment, Economic and Social Conditions Combine to affect the activities of the people in Wong Chuk Hang", Hong Kong University, Hong Kong

Rogers, Van Den Bergh et al (1997) Hong Kong and Po Toi Islands: The Archaeological Survey Antiquities and Monuments Office, Culture and Sports Department, Government of the Hong Kong SAR, Hong Kong

Survey Production Centre, Royal Engineers (1957) Hong Kong and the New Territories, 1:25,000 map.
Victoria Harbour. London: D. Survey, War Office and Air Ministry.

Territory Development Department (1986). Hong Kong Planning Area No.4 (part) Victoria Barracks – Layout Plan 1986. Hong Kong: Territory Development Department.

華僑日報 (1963): '香港年鑑 – 第十六回: 街道指南' (Files provided by the Hong Kong Public Libraries)

華僑日報 香港年鑑 第三十回 街道指南 (Files provided by the Hong Kong Public Libraries)

明報: '金鐘出土古炮屬 19 世紀' (2008 年 9 月 20 日)

**Previous EIA and other Relevant Reports**

Planning and Development Study on HKIS and LI Cultural Heritage Impact Assessment (AAL 2001)

EIA Study of the Repositioning and Long Term Operation Plan of Ocean Park (AAL 2006)

Ocean Park Archaeological Survey for the Repositioning and Long Term Operation Plan of Ocean Park. (Wang, F Horizon Asia Ltd. 2008).

Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel (Black & Veatch 2006)

SIL(E) Admiralty Station and SCL Enabling Works. Scheme Design Presentation Report. (Ove Arup Ltd 2009).
古物古蹟辦事處 2001 年：«香港仔黃竹坑加氣站選址考古調查報告» (參考編號 HKI3)

**Geological Maps**

Hong Kong Geological Survey: Hong Kong and Kowloon Sheet 11, Solid and Superficial Geology (Edition 1) 1986, Geotechnical Control Office, Hong Kong

**Websites**
AMO Website

**Appendix A: Figures**

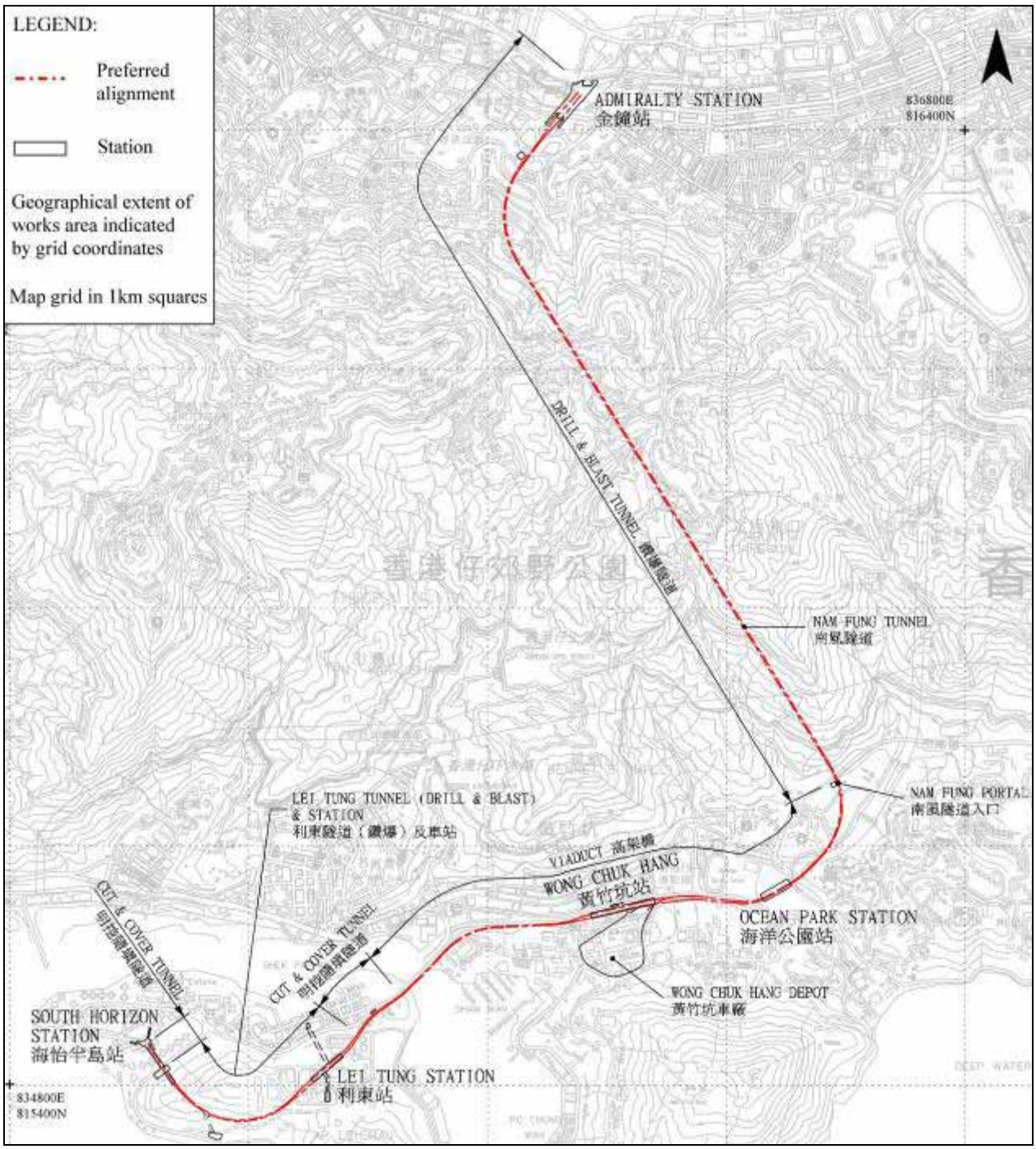



Figure 1: Overall project alignment showing works areas comprising five stations, depot, viaduct, tunnels and portals

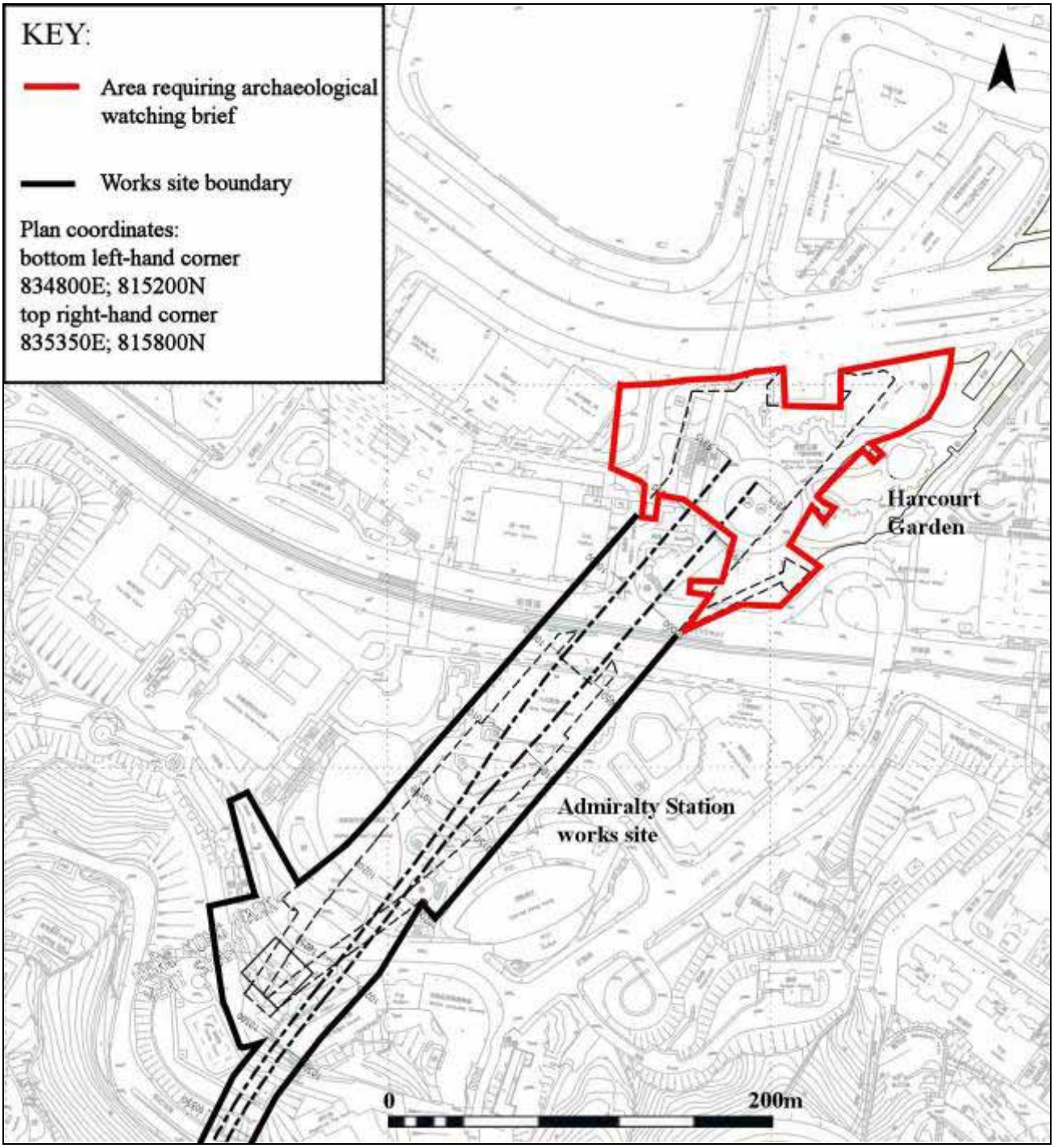



Figure 1a: Plan of Admiralty Station works site with area requiring archaeological watching brief at Harcourt Garden outlined in red.

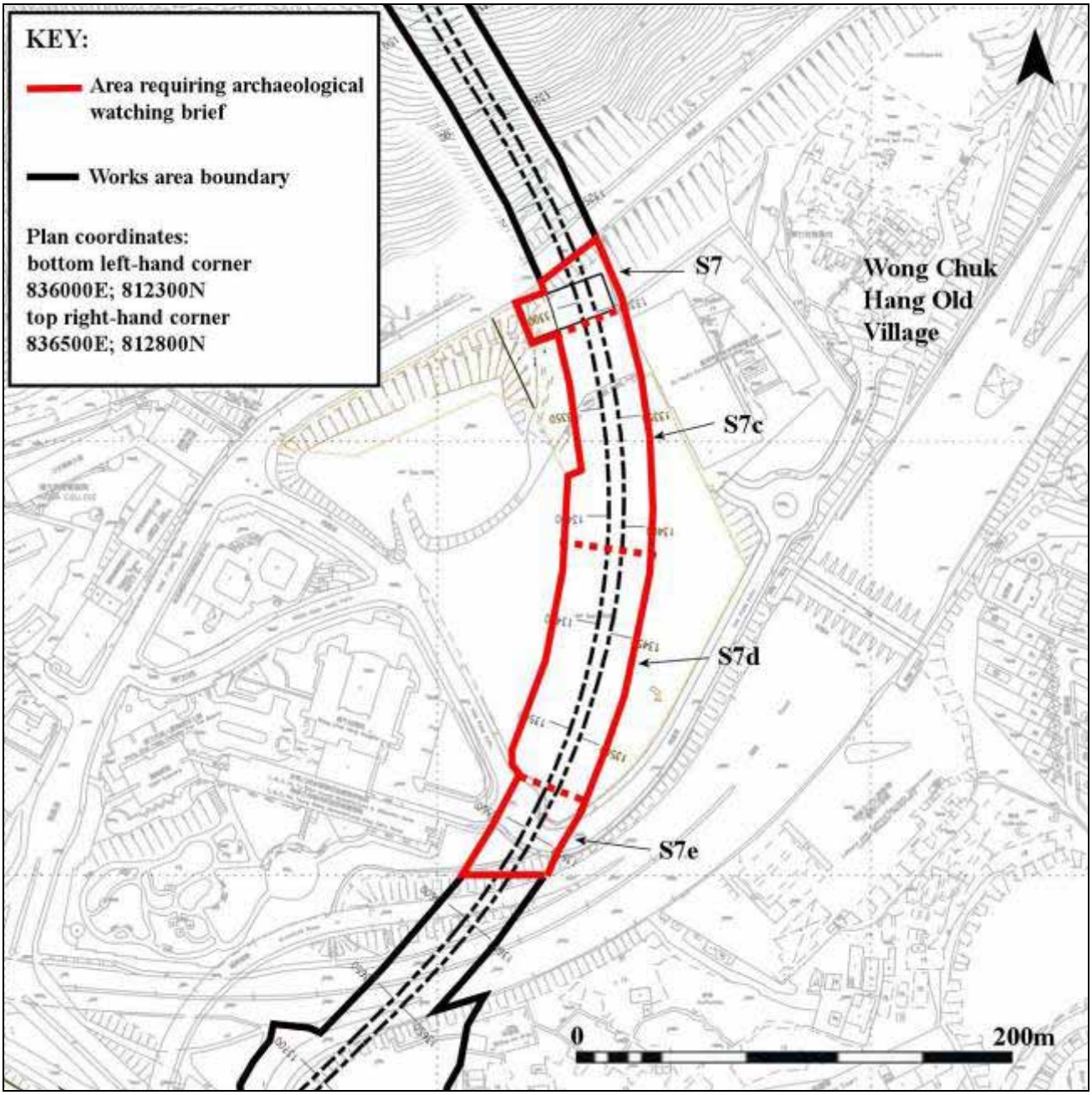



Figure 1b: Plan of works sites S7, S7c, S7d and S7e west of Wong Chuk Hang Old Village with area requiring archaeological watching brief outlined in red.

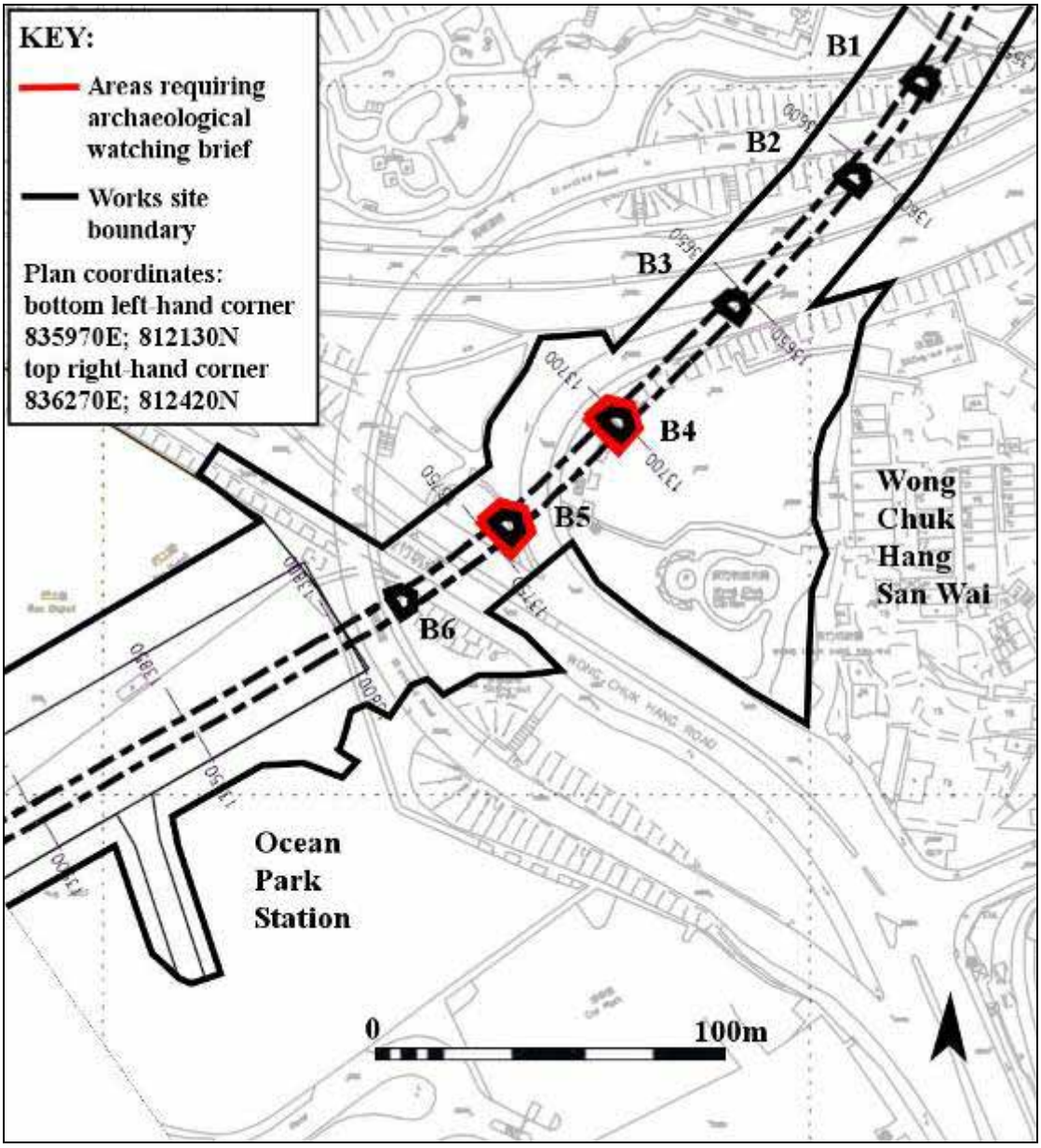



Figure 1c: Plan showing works site west of Wong Chuk Hang San Wai with viaduct supporting

columns B4 and B5 requiring archaeological watching brief outlined in red.

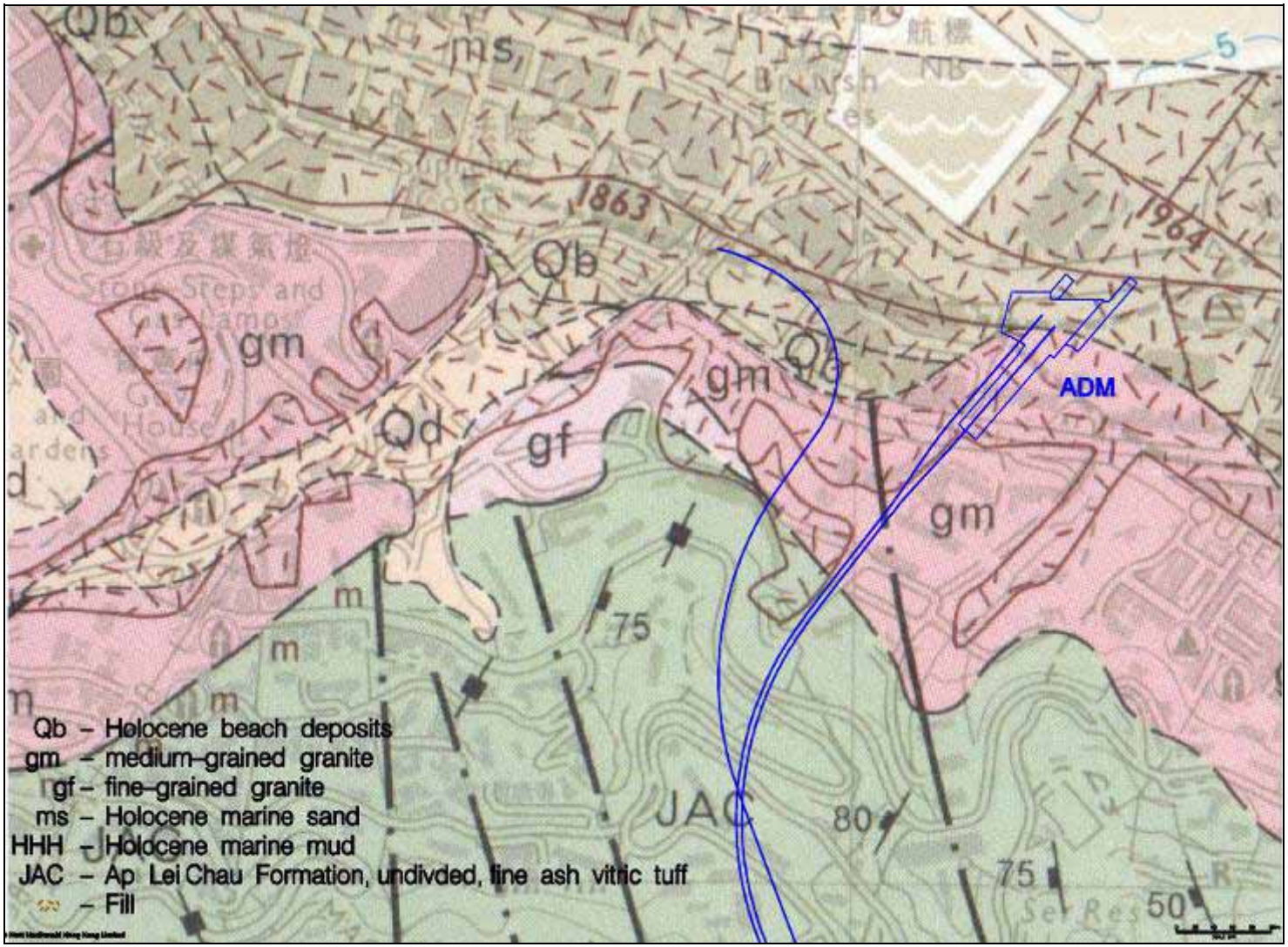



Figure 2: Detail of Geological Map showing the 1863 reclamation in Admiralty

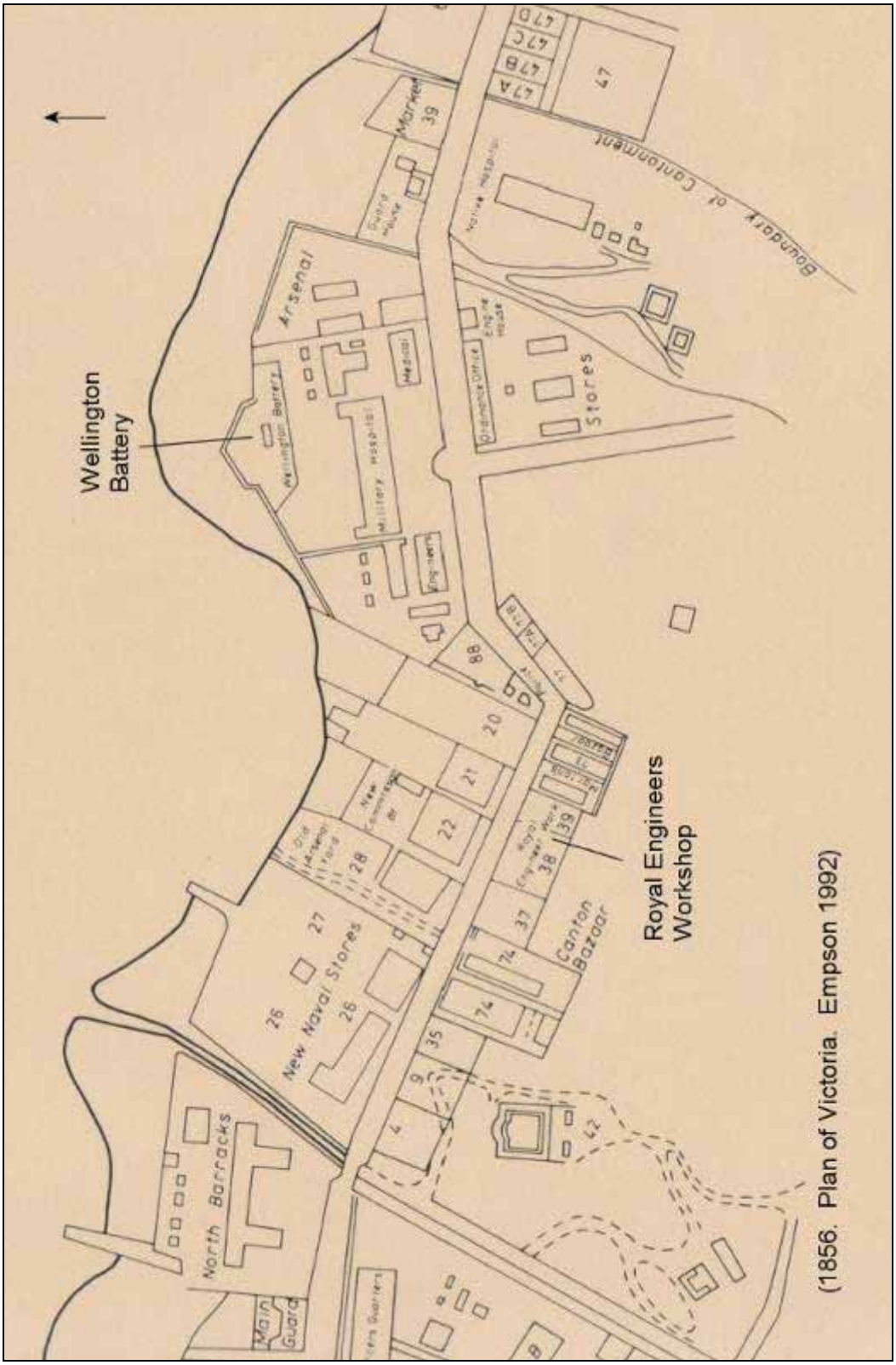



Figure 3: Historical map showing the Admiralty area in 1856

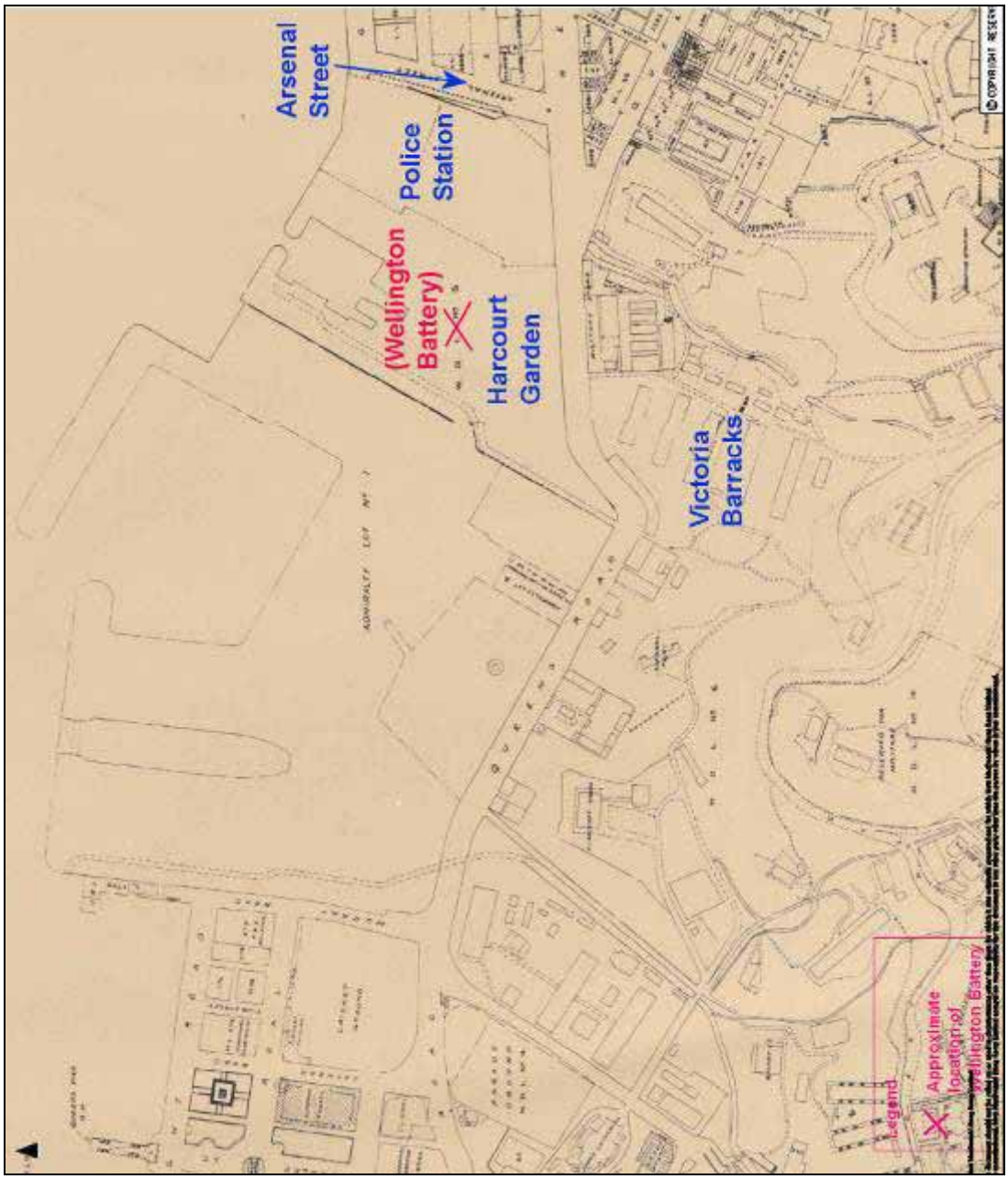



Figure 4: Historical map showing the Admiralty area in 1936-46

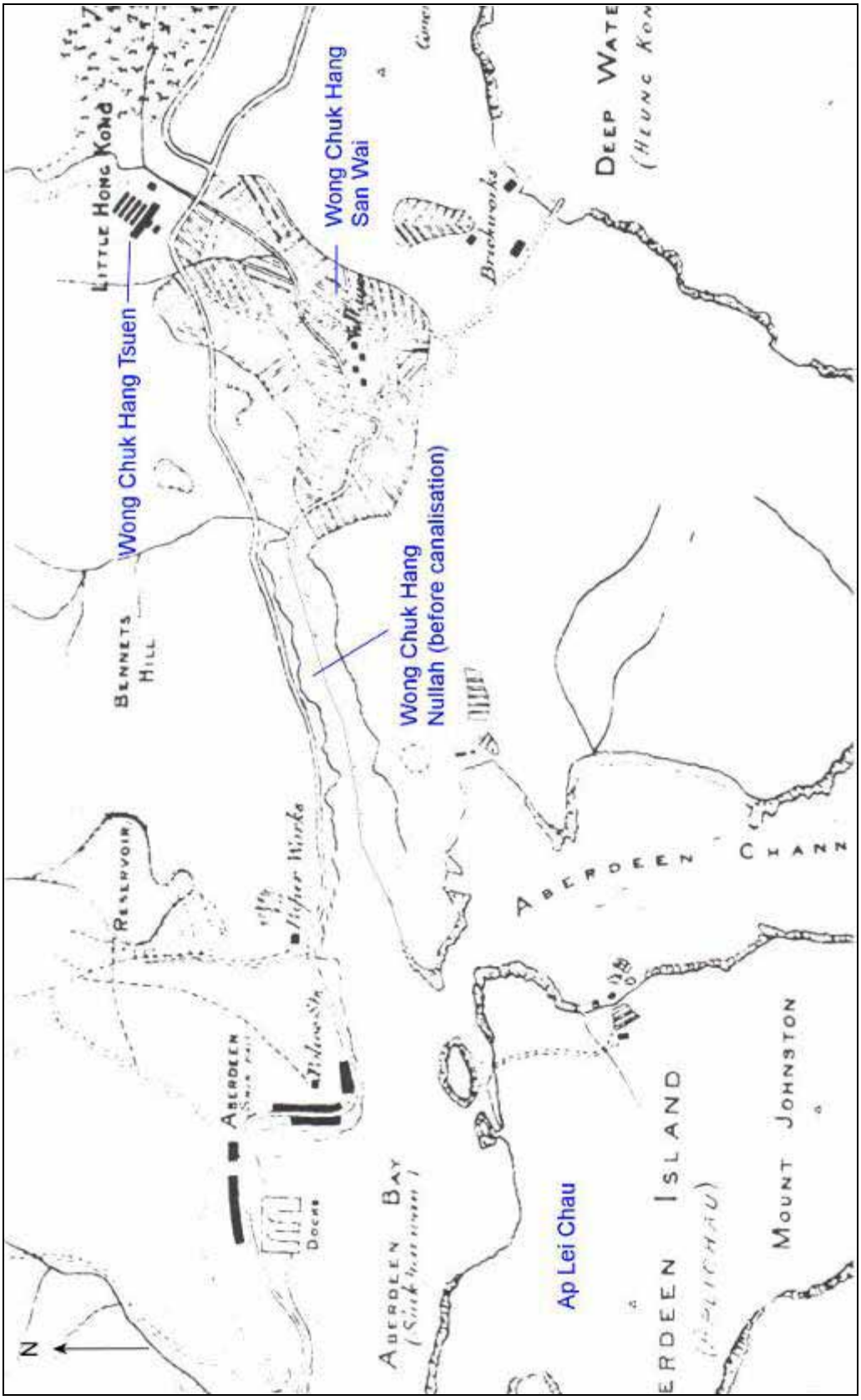



Figure 5: Map of the Wong Chuk Hang area in 1895 (Empson 1992)

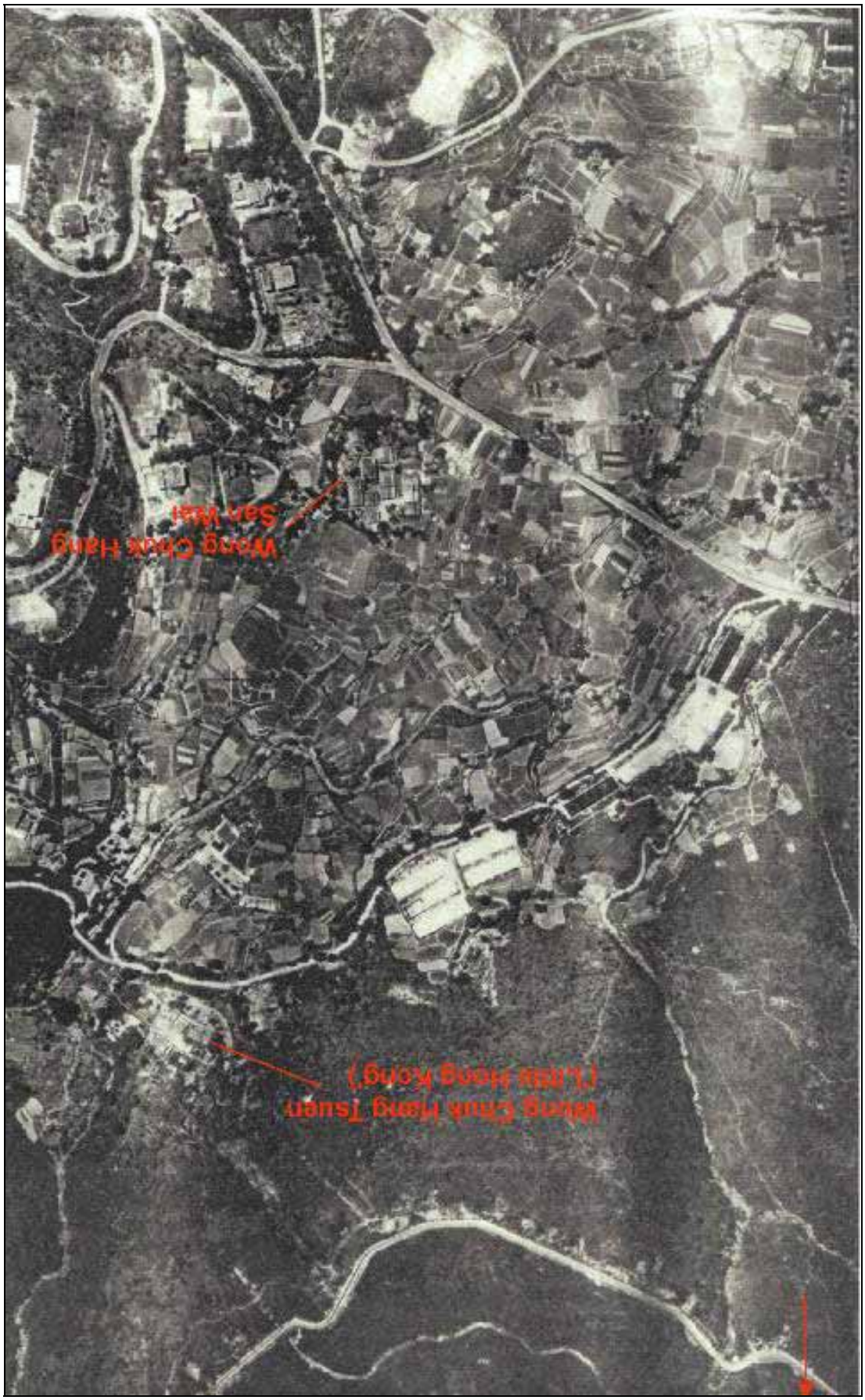



Figure 6: Aerial photograph of the Wong Chuk Hang area in 1949

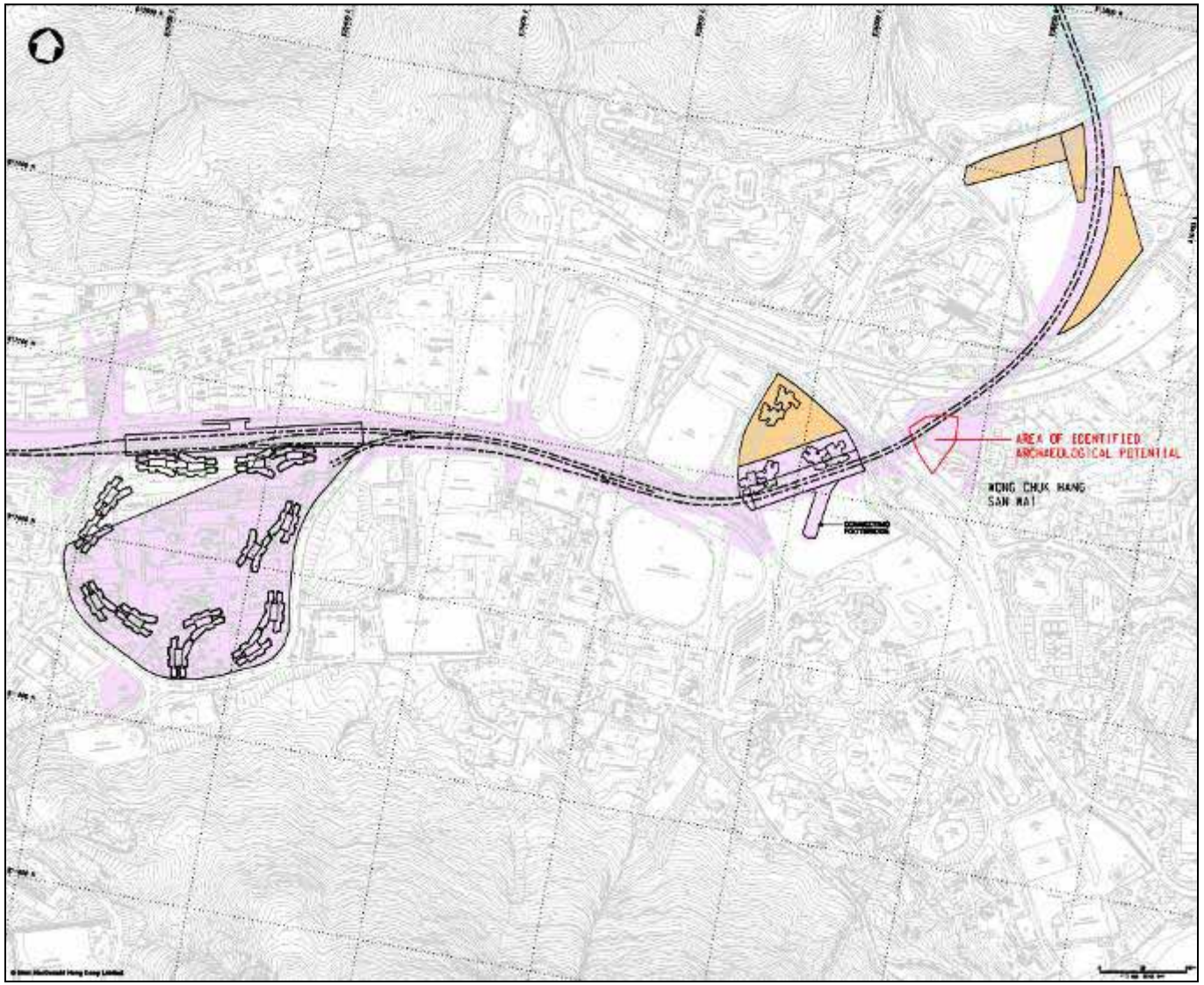



Figure 7: Map showing the area of archaeological potential identified during an Archaeological Impact Assessment in 2001

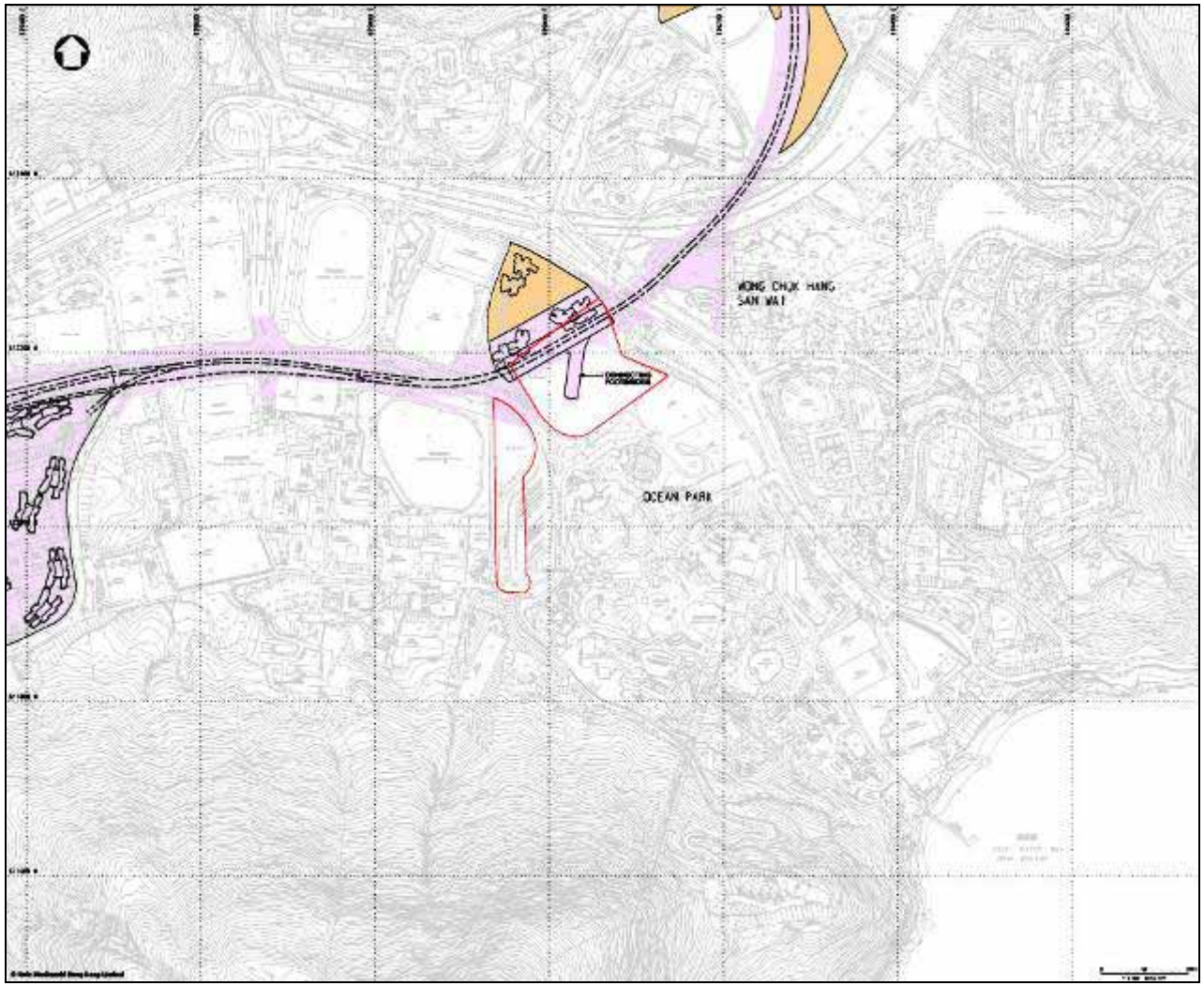



Figure 8: Map showing the area of archaeological potential identified during an Archaeological Impact Assessment in 2006, which was tested in 2008.

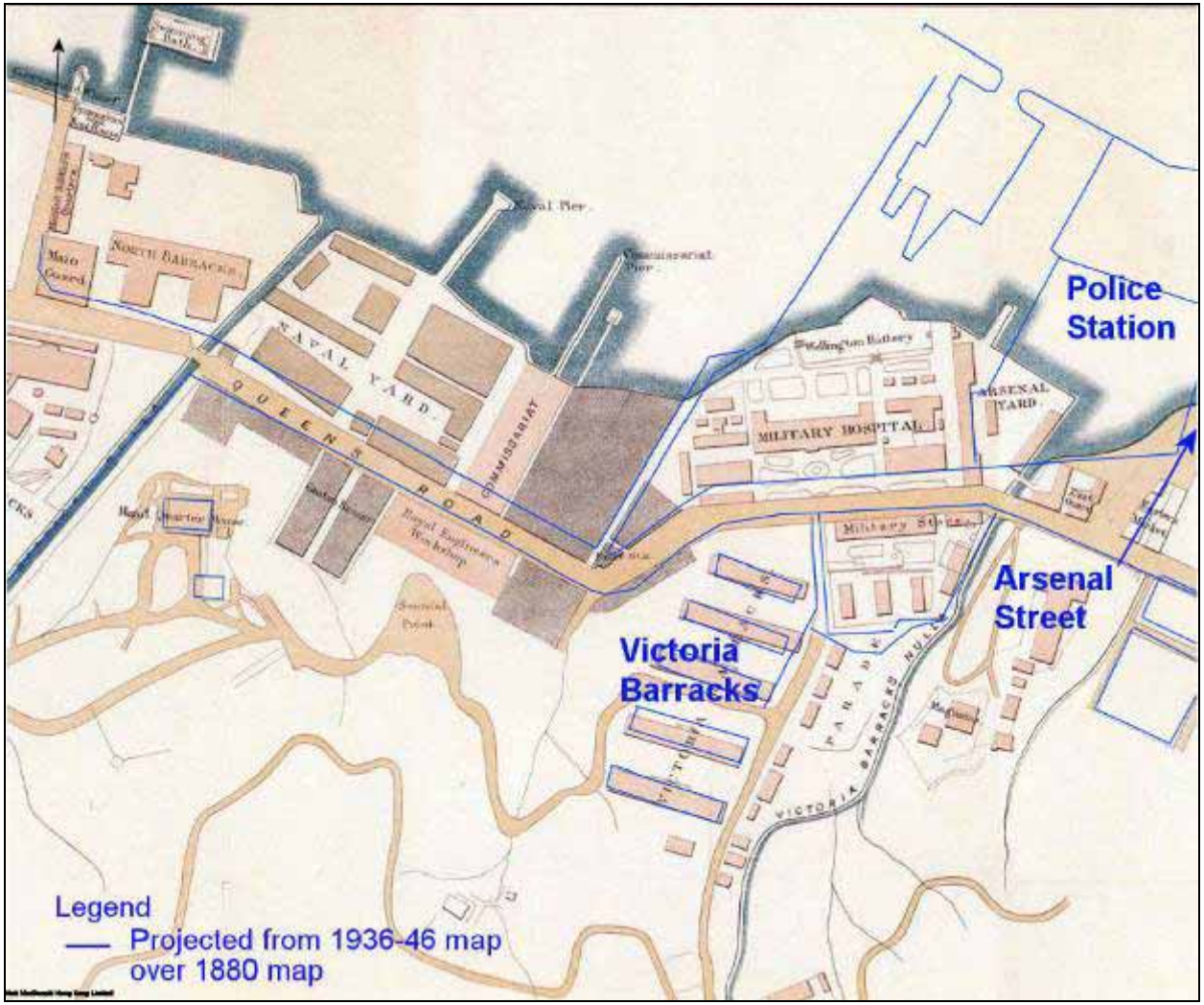



Figure 9: Figure showing the approximate locations of the original shoreline and past military structures; with 1936-46 map overlying 1880 map


Figure 10: Map of 1986 showing buildings occupying the former Wellington Battery and Admiralty Dock site prior to the construction of Harcourt Garden

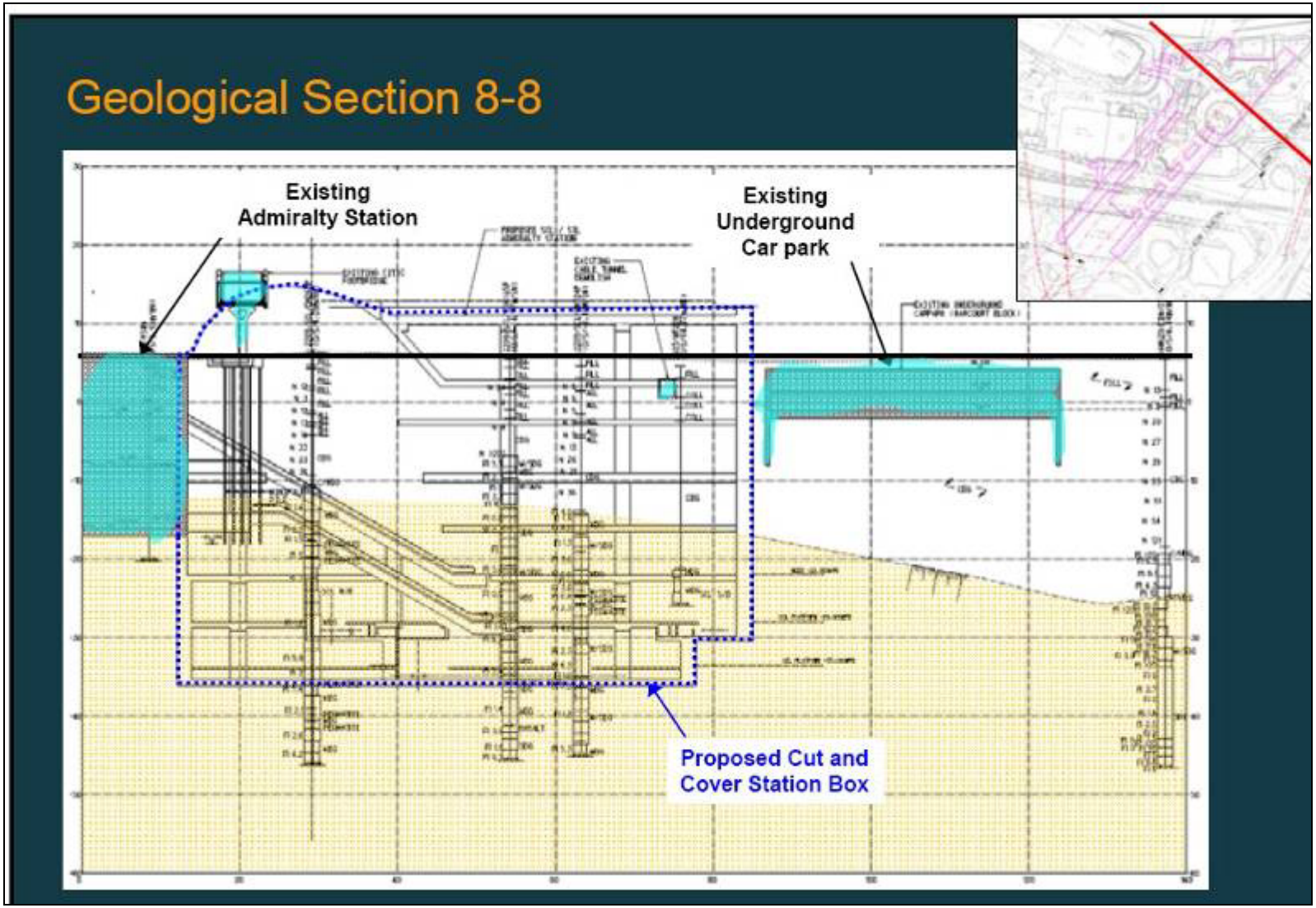



Figure 11: Plan showing the underground section of the proposed cut-and-cover station box in Harcourt Garden (Arup 2009)

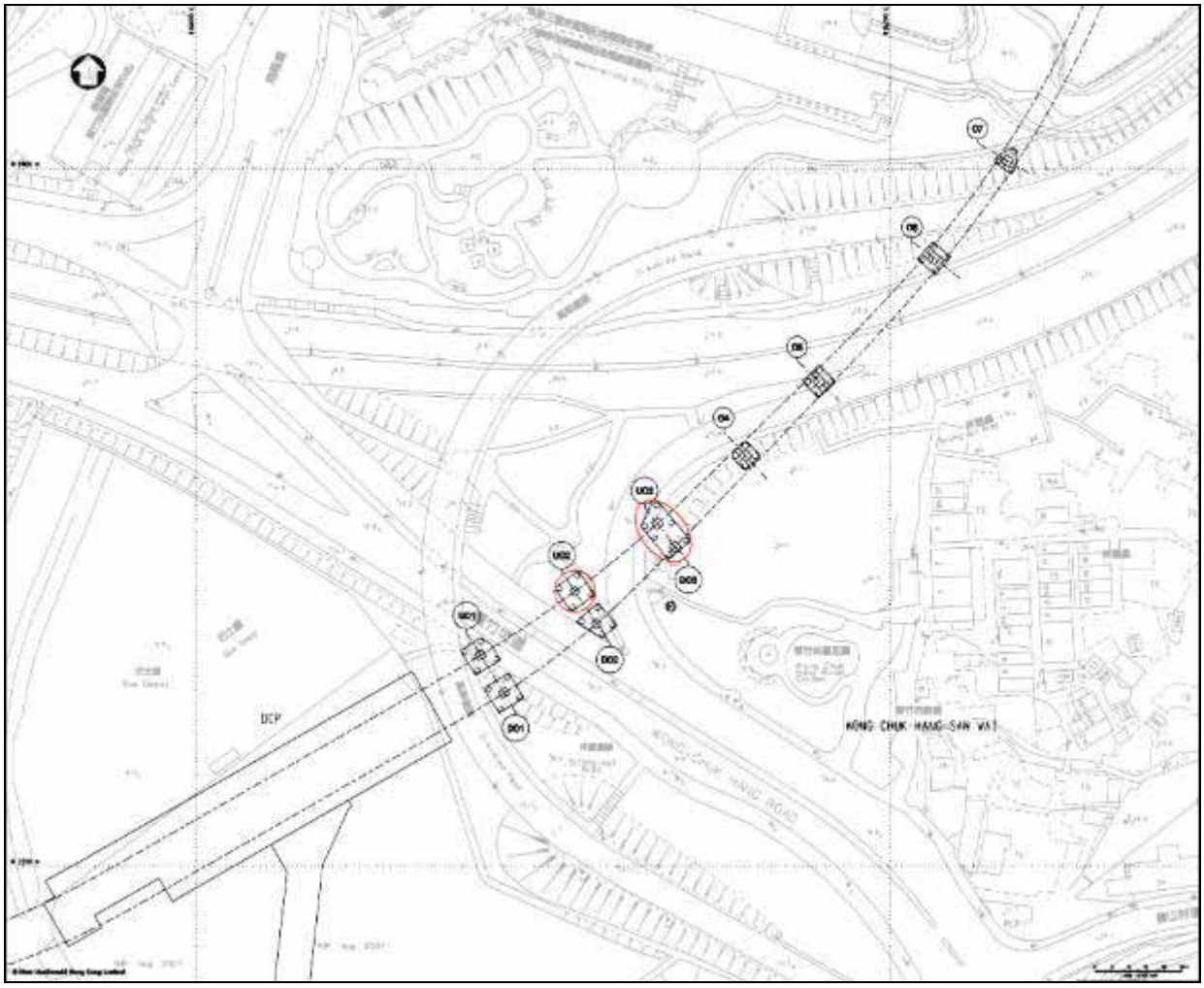



Figure 12: Red outlines indicate areas of archaeological interest at S10 (Wong Chuk Hang San Wai)

## Appendix B: Methodology for Archaeological Watching Brief

### 1. Introduction

Archaeological Watching Brief is a form of mitigation which is required when engineering works impact on areas that have been assessed as having some degree of archaeological potential and where conventional testing methods are deemed insufficient. The range of archaeological resources that require monitoring include both historical and prehistoric material and features.

A watching brief should be undertaken by a qualified and licensed archaeologist during excavation works at the construction stage. A qualified archaeologist should inspect the site at an interval that will depend upon the archaeological potential of the area in question and the nature and duration of the construction programme. Details of the frequency of inspection will be provided to AMO for review and comment once the detailed construction programme has been finalised. A construction programme should be provided to the archaeologist carrying out such watching brief prior to the commencement of site works in order to arrange the inspection schedule.

The archaeologist should be notified no less than 3 working days prior to any changes to the construction programme so that arrangements can be made to monitor the works. The engineer should facilitate arrangements and liaise between the archaeologist and construction contractor.

The Watching Brief process entails the observation of the engineering works by qualified archaeologists in order to identify any archaeological material or features revealed during the excavation phase of the works schedule. Upon identification of such material or features the archaeologists will require immediate access to the excavation area for recording of the material/features *in situ*, artefact/ecofacts retrieval and sample collection.

NB: If significant archaeological remains are discovered during engineering groundworks the site engineer and construction contractor must arrange a temporary suspension of works in the affected area to allow safe access for purposes of archaeological excavation and recording.

These guidelines serve two basic purposes: firstly, that the archaeological resources are adequately recorded and recovered and secondly, that appropriate measures are taken on site to create a minimum of delays to the engineering schedule.

## 2. Detailed Methodology of the Watching Brief

### 2.1 Watching Brief Personnel

Watching Brief should be undertaken by a qualified archaeologist, who must apply for a licence under the Antiquities and Monuments Ordinance (Cap. 53) from the Antiquity Authority before the commencement of archaeological fieldwork. All staff employed by the archaeologist must be suitably qualified and experienced for their roles.

Three Archaeological Assessments Staff members will be part of the SIL Archaeological Watching Brief: Julie Van Den Bergh, Ellen Cameron and Mick Atha. All three staff are fully qualified archaeologists and will be deployed as necessary. The frequency of monitoring allows for more than one site to be visited per week, if necessary; but at sites with more archaeological potential, such as Harcourt Garden, deployment of more than 1 archaeologist at the same time is likely.

### 2.2 Areas to be monitored

The areas which require Watching Brief must be defined and submitted by the qualified archaeologist under the project and agreed with AMO prior to commencement of works.

### 2.3 Site access

Archaeologists should be allowed reasonable access to relevant areas of groundworks, so that deposits can be examined and recorded. Trenches may require temporary shoring and groundworks might need to be temporarily rescheduled, to provide a safe environment for such works. Provision should be made, at the earliest stage of construction programming, for specific blocks of time to be available for unrestricted archaeological

access to areas of groundworks in the identified area of archaeological potential.

**2.4 Monitoring and retrieval methodology**

The table below shows the various categories of archaeological material and features that are most likely to occur in local contexts. Also listed are the recommended type and degree of recording and retrieval required for each category.

| Categories of Archaeological Materials | Retrieval Procedures |
|---|---|
| **Human Burial**<br><br>Skeletal remains<br><br>Items associated with human burial, i.e. grave goods | **Full Recording & Recovery of Human Remains & Associated Artefacts & Ecofacts**<br><br>▪ Complete recording by photography, drawing, written description<br>▪ Full measurement of burial and surrounding matrix<br>▪ Retrieval of human remains and associated artefacts & ecofacts<br>▪ Retrieval of surrounding soil for further analysis |
| **Intact Features**<br><br>Structural/architectural remains<br><br>Undisturbed contexts, e.g. hearth, midden, habitation area, assemblages of artefacts and/or environmental material | **Full Recording of Archaeological Features & Recovery of Artefacts/Ecofacts**<br><br>▪ Recording and measurement of salient features by photography, drawing and written description<br>▪ Retrieval of artefacts & ecofacts<br>▪ Retrieval of samples from the surrounding matrix |
| **Intact Artefacts**<br><br>Complete objects, e.g. pottery, metal objects, stone and bone tools. The objects are complete but isolated and are not part of assemblage of feature | **Recovery of Artefacts & Record of Matrix**<br><br>▪ Retrieval of objects<br>▪ Recording by written description and photography<br>▪ Sampling of surrounding matrix |
| **Isolated & Fragmentary Material**<br><br>Pottery sherds, non-human bone, other artefact fragments (e.g. metal, tile, glass). There are no complete objects, the material is isolated and fragmentary in nature | **Recovery of Archaeological Material & Recording as Appropriate**<br><br>▪ Retrieval of fragmentary artefacts & ecofacts<br>▪ Recording by written description and photography, as appropriate<br>▪ Sampling of surrounding matrix |
| **Deposits with Archaeological Potential**<br><br>-Soil deposits which exhibit characteristics associated with archaeological remains in Hong Kong | **Sampling of Deposit**<br><br>-Recording of soils by photography and written description<br><br>-Collection of soil samples from deposits displaying archaeological potential |

Any archaeological materials recovered during the programme should be properly recorded and submitted to the AMO. Upon the discovery of significant archaeological remains, the qualified archaeologist will contact

both the AMO informing them of the discovery and the Site Engineer to ensure a temporary suspension of works. Any follow-up works, if required, should be conducted following consultation and agreement with the AMO.

**2.5 Recording forms for Watching Brief**

Full and proper records (written, graphic, electronic and photographic as appropriate) should be made for all work undertaken. Standardised forms are used for the recording of any archaeological material identified during the Watching Brief and these would typically include the following:

- Registers to record the finds, special finds, contexts, photographs, drawings, levels and samples;
- Context description forms; and
- A daily record form designed specifically for Archaeological Watching Brief. This form must locate clearly the area of works monitored, the nature and extent of the works, and summaries of the day's findings all cross-referenced to register numbers used that day.

**2.6 Safety requirements**

Archaeologists and staff employed in monitoring must follow the safety procedures enforced by the contractors on site.

**2.7 Watching Brief Report**

The procedures and result of the Watching Brief should be presented in report form, following standards set by the AMO for reports on other types of archaeological field work. This includes details of the overall programme, methodology, sampling strategy, implementation, findings and interpretation. The report should be submitted to the AMO for approval in draft and, following resolution of any comments, in final form. All data, material and records forming the site archive must be submitted to the AMO upon completion of the project. The watching brief report should contain, as a minimum, the following elements:

- Non-technical summary (both in English and Chinese with approximate 150 - 300 words each)
- Introduction and aim of the work
- Archaeological, historical, geological and topographical background of the site
- Methodology
- Results
- Conclusion
- Recommendation
- Reference and bibliography
- Archaeological Team
- Copyright and dissemination
- Supporting illustrations
- Supporting data in appendices
- Comment and Response

In addition to the draft and final Watching Brief Report, bi-monthly progress reports will be compiled for the separate works areas and submitted to AMO.

## 2.8 Mitigation Measures

The Contractor should be sufficiently flexible to allow any necessary contingency arrangements to be implemented. Should significant archaeological materials be discovered, appropriate mitigation measures will be designed and implemented with the prior approval of the AMO.

## Appendix C: Specification for Archaeological Watching Brief

### 1. Introduction

In contrast the generalised overview of archaeological watching brief methods provided in Appendix B above, this section provides a more detailed specification tailored to suit the particular circumstances of this project.

### 2. Site Clearance Works

The process of archaeological watching brief in each site/area* will commence when demolition and clearance of all current surface obstructions has been completed. The engineer/contractor's representative must advise the archaeologist when the latter stage will be reached, giving at least 3 days' notice, to ensure that the archaeologist can make an initial inspection of the cleared site. It is important to note that every site/area, whatever its archaeological potential, should be the subject of such an initial assessment visit by the archaeologist.

*NB: Should any of the works sites be sub-divided and cleared at different times, it will be necessary to advise the archaeologist at the appropriate time to allow an initial visit for each area.

### 3. Estimation of depth of cultural deposits

In urban or semi-urban settings it is quite possible that cultural deposits such as historical building foundations or earlier historic/prehistoric remains might exist at some considerable depth below the modern surface. This is particularly likely in northern Hong Kong Island where a history of seasonal erosion (landslides) coincides with an area having a 150-year history of urban development and renewal. It is likely, therefore, that the depth to which archaeological monitoring will need be conducted will probably vary considerably between and within sites – this is especially likely for works sites located in lower hill slope areas and on the former narrow coastal plain. The deposits at southern Hong Kong in particular at the flat areas are expected to have less artificial fill cover. Engineering borehole or test pit data can provide very useful early warning of such variation and, if available, such data should be used as a predictive tool by the archaeologist.

### 4. Scope of Monitoring Works

The archaeological monitoring will be carried out in the course of the contractors' ground works in the six work sites identified as having archaeological potential. The depth of the archaeological monitoring will be various due to the local depositional history of each work site. The scope of the archaeological watching brief is therefore limited to the monitoring of cultural horizons overlying sterile natural strata.

## 5. Monitoring Programme

### 5.1 Overall Construction Programme

The table below shows the overall construction programme for the six works sites which may require archaeological watching brief depending on the depth of the works and geological formation:

| Works Site | Site Activities | Start | Finish |
|---|---|---|---|
| Harcourt Garden | Site formation | May 2011 | November 2011 |
| | Cut and cover: Piling | August 2011 | March 2012 |
| | Cut and cover: excavation | February 2012 | September 2013 |
| | Cavern & tunnels: SEE shaft pipe piling and excavation | July 2011 | February 2012 |
| | Cavern & tunnels: SEE adit excavation | February 2012 | June 2012 |
| | Cavern & tunnel excavation: | May 2012 | August 2013 |
| Site 7 | Portal area: Utility Works | June 2011 | September 2011 |
| | Portal area: Piling works | July 2011 | September 2011 |
| | Portal area: Excavation and installation of lateral support | August 2011 | February 2012 |
| Site 7c | Cut and Cover: Piling works | July 2011 | August 2011 |
| | Cut and Cover: Excavation and installation of lateral support | September 2011 | January 2012 |
| | Elevated Portion: Piling works | August 2011 | September 2011 |
| | Elevated Portion: Minor Excavation works | September 2011 | October 2011 |
| Site 7d | Elevated Portion: Piling works | August 2011 | September 2011 |
| | Elevated Portion: Minor Excavation works | September 2011 | October 2011 |
| Site 7e | Elevated Portion: Piling works | August 2011 | September 2011 |
| | Elevated Portion: Minor Excavation works | September 2011 | October 2011 |

| | | | |
|---|---|---|---|
| Site 10 (Piers B5&B4) | Utilities Diversion at Pier B5 & B6 | June 2011 | July 2011 |
| | Pile construction of Pier B3 to B6 | June 2011 | August 2011 |
| | Excavation and lateral support system for Pier B3 to B6 | July 2011 | October 2011 |

NB: Since the construction programme is subject to change, the schedule of the archaeological watching brief would also need to be adjusted should such change occur.

### 5.2 Calculation of Watching Brief Monitoring Rates

The frequency, duration and number of monitoring visits required in each of the works sites/areas will be dependent on a number of factors, namely: the character and rate of progress of development groundworks, the archaeological potential of each site/area, and the nature, extent and condition of any archaeological remains encountered. It is therefore extremely desirable that a detailed works programme showing both the process and timing of development groundworks for each site/area is available before the Final Proposal for Archaeological Watching Brief is submitted to the AMO.

### 5.3 Draft Watching Brief Monitoring Frequencies

As the table in Section 3 above shows, a draft monitoring frequency is proposed for the six works sites, which is based on an assessment of their archaeological potential in terms of topography and geology, known archaeological resources, site history, and likely degree of previous impacts. By assessing these criteria, three levels of archaeological potential were identified:

- Very Low: requiring only occasional monitoring after the initial site visit – a minimum of one half day monitoring visit per two weeks of groundworks in layers with archaeological potential – equivalent to a 5% monitoring sample
- Low: requiring regular monitoring after the initial site visit – a minimum of one half day monitoring visit per week of groundworks in layers with archaeological potential – equivalent to a 10% monitoring sample
- Moderate: requiring frequent monitoring after the initial site visit – a minimum of two half day monitoring visits per week of groundworks in layers with archaeological potential – equivalent to a 20% monitoring sample

The archaeological potential, monitoring frequency/samples and sites affected are summarised in the following table (calculations based on a notional 5-day week):

| Archaeological Potential | Monitoring Frequency | % Monitoring Sample | Works Sites Affected |
|---|---|---|---|
| Very Low | 1 x 0.5 day visit per 2 weeks | 5% | S10 (piers B5&B4) |
| Low | 1 x 0.5 day visit per week | 10% | S7c, S7d, S7e, S7 |
| Moderate | 2 x 0.5 day visits per week | 20% | Harcourt Garden |

**Appendix D: Event Action Plan**

| Event | Action Required | | |
|---|---|---|---|
| | **AAL Archaeologist** | **MTR Site Engineer** | **Works Contractor** |
| **Human Burial found:**<br>-Skeletal remains<br>-Grave and/or grave goods clearly associated with human burial | -Inform AMO & Site Engineer & request that work be stopped until archaeological work is completed & the AMO has had the opportunity to visit site<br>-Carry out full recording & recovery of human remains & associated features/finds | -Notify contractor | Temporarily suspend work in affected site area & facilitate safe access for purposes of archaeological excavation and recording |
| **Intact Features found:**<br>-Structural remains (e.g. foundations of military buildings associated with early colonial Hong Kong)<br>-Undisturbed contexts (e.g. hearth, midden, habitation area, assemblages of artefacts and/or environmental material | -Inform AMO & Site Engineer & request that work be stopped until archaeological work is completed & the AMO has had the opportunity to visit site<br>-Full recording of archaeological features & finds recovery | -Notify contractor | Temporarily suspend work in affected site area & facilitate safe access for purposes of archaeological excavation and recording |
| **Intact Artefacts found:**<br>-complete objects (e.g. pottery vessels, metal | -Inform AMO & Site Engineer & request that work be stopped until archaeological | -Notify contractor | Temporarily suspend work in affected site area & facilitate safe access for purposes |

| | | | |
|---|---|---|---|
| objects, stone & bone tools). The objects are complete but isolated & are not part of an assemblage or associated with a feature | work is completed & the AMO has had the opportunity to visit site<br>-Recording of finds location & finds recovery | | of archaeological excavation and recording |
| **Isolated Material found:**<br>-Sherds, non-human bone, artefact fragments (metal, pottery, glass). There are no complete objects, the material is isolated & fragmentary in nature | -Rapid recovery of sample of archaeological material & recording of location | No action required | Allow archaeologist brief opportunity to collect samples of material |
| **Deposits with Archaeological Potential found:**<br>-Soil deposits which exhibit characteristics associated with archaeological remains in Hong Kong | Rapid recovery of soil sample | No action required | Allow archaeologist brief opportunity to collect samples of material |

# South Island Line (E)

# Proposal for Archaeological Watching Brief

## 1. Introduction

The Final EIA Report (248137/51/F), prepared for this project under Agreement No. NEX/2301, identified that the proposed South Island Line East extension of the MTR rail network would pass through some areas with the potential to produce archaeological remains associated with the 19th- and early 20th-century development of Hong Kong Island, earlier activity along the pre-reclamation coastline or early settlements and activities on the Hong Kong Island southern alluvial plains (Figure 1). Six works sites, namely Harcourt Garden in Admiralty (Figure 1a); Sites S7c, S7d, S7e and Site S7 in Wong Chuk Hang (Figure 1b); and Site S10 (Monitoring of pier excavation as required) in Wong Chuk Hang San Wai, were thus identified and all needed to be covered by archaeological watching brief during the construction phase of the project. Site formation works commenced June 2011 and monitoring was conducted at all sites, since the commencement of the works AWB has been completed at Sites S7, S7d-e and S10 at Wong Chuk Hang. A progress report on AWB conducted under the previous licence has been submitted separately. The works were conducted following general *Methodology for Archaeological Watching Brief* (Appendix B) and *Specification for Archaeological Watching Brief* (Appendix C).

## 2. Background to the Study Area

### 2.1 History

The project Study Area stretches from Admiralty to Nam Fung Portal over former coastal areas and early 19th and 20th century reclamations. The alignment tunnel opens to the south at Wong Chuk Hang. Wong Chuk Hang area has the potential to provide information on early historical village settlement from around the turn of the 19th century with a thriving local (incense) economy. While villages have since disappeared and limited information exists, archaeology may provide some clues. The alignment then turns west to Ap Lei Chau. The island of Ap Lei Chau has known extensive development which has destroyed its archaeological site and historical kilns and any potential for further sites.

#### 2.1.1 Admiralty

The area was earmarked for use by the British Military in the mid-19th century and reclamation was undertaken along the coast as early as 1863, as can be seen in the geological map in Figure 2. Some of the works areas are located within former coastal area (beach deposits), early reclamations (1863 and 1904) and a former British military site known as Wellington Battery. Figures 3 and 4 show the historical maps of the area in 1856 and 1936-46 respectively (Empson 1992).

### 2.1.2 Wong Chuk Hang

There is one Declared Monument in the project study area, namely the Wong Chuk Hang Rock Carving. The rock carving is carved into a fine grained volcanic rock face and faces east. Although no archaeological deposits have been found to date in the vicinity of the rock carving, its presence indicates that this was an area where human activity took place in the past and that there is the potential for archaeological material associated with this activity to exist within the current project study area.

Part of the project study area at Wong Chuk Hang lies on alluvial deposits. The remains of an older historical village are situated on the hillside at the northern side of the Aberdeen Tunnel Road (Li 1955). It is also possible that an historical settlement associated with incense trade could be located in the project study area as the nearby Shek Pai Wan was a shipping centre for export of incense (Lu 1983).

## 2.2 Archaeology

There are no known areas of archaeological interest; AWB conducted as part the SIL (E) project in 2011-2012 highlighted however, that remains associated to the British military presence (Wellington Battery) at Harcourt Garden are present. In contrast the AWB programme at Sites S7, S7c-e indicates sterile alluvial deposits and an occupation of the area since late 1950's only.

## 3. Review of Archaeological Potential

The following table reviews and updates the information presented in the previous licence application submitted in 2011 and presents in tabular form a more detailed assessment of the archaeological potential of the two remaining watching brief sites Harcourt garden and Site S7c in Wong Chuk Hang. In the absence of detailed information concerning the depth of cultural deposits and the likely rate at which such material will be removed, it is presently impossible to reliably estimate either the overall duration of contractor's groundworks in the upper layers (with archaeological potential) or the corresponding numbers or overall duration of monitoring visits likely to be required in each site/area. Instead, three monitoring frequencies appropriate to the archaeological potential of each site/area are suggested. Based on a five day working week the three frequencies can be expressed as follows:

- very low potential – a minimum of one half day monitoring visit per two weeks of groundworks in layers with archaeological potential (equivalent to a 5% sample);
- low potential – a minimum of one half day monitoring visit per week of groundworks in layers with archaeological potential (equivalent to a 10% sample); and
- moderate potential – a minimum of two half day monitoring visits per week of groundworks in layers with archaeological potential (equivalent to a 20% sample).

The archaeologist should ensure that monitoring in each works area provides at least the agreed minimum coverage in terms of time/area and a good spatial sample across the site footprint.

The table below should be read in conjunction with the geological map in Figure 2 and enlarged site location maps shown in Figures 1a-b.

| Works Site | Geology & Topography | Existing Impacts | Archaeological Potential | WB Monitoring Frequency |
|---|---|---|---|---|
| **Harcourt Garden (Figure 1a)** | The southern part of the site is situated on 1863 reclamation; the north-western part of the site is also situated on early reclamation of 1904; whilst the north-eastern edge of the site is situated on more modern reclamations dating from 1945 and 1964. The approximate locations of the original shoreline and past military structures are marked on Figures 3 (1856 map), 4 (1936-46 map), and 9 (1936-46 map overlying 1880 map). | The entire area has gone through profound changes in the past few decades: Queensway was straightened in the mid 1970s to meet traffic needs; before the construction of Harcourt Garden in the mid 1990s, the former Wellington Battery and the Admiralty Dock site was occupied by several structures (Figure 10 – 1986 map); Wellington Barracks and Victoria Barracks were later replaced by Pacific Place and other modern complexes. Four 19th-century cannons were recovered recently in a construction site located within the boundary of the former Victoria Barracks near the junction of Supreme Court Road and Justice Drive (Ming Pao 20.09.08). According to a plan showing the underground section of the proposed cut-and-cover station box in Harcourt Garden (Figure 11, Arup 2009), the existing modern disturbance is only situated in the upper part of the fill. The exception being the eastern edge of the works site, which is occupied by an existing underground car park. Any archaeological deposits/ remains would have been severely disturbed by the construction of the latter car park. | Part of the Wellington Battery and Military Hospital have their location within the proposed works site at Harcourt Garden.<br><br>Although the archaeological potential of this area is considered to be **moderate** due to disturbances from previous construction projects, there is still the **potential** for the presence of isolated or disturbed archaeological material, especially in areas of early reclamation along former coastline and sites associated with the Military Cantonment of Victoria City, which have the potential to contain building foundations relating to military aspects of the early colony. | Outstanding excavation works at Harcourt garden includes the plunge column excavations and the construction of the station box. A minimum of **two half day site visits per week (20% monitoring sample)** is required. |
| **Site 7c**<br><br>**South-west of Wong Chuk Hang Tsuen**<br><br>**(Figure 1b)** | | The woodland area is situated in alluvial deposits. As seen in 1949 aerial photograph (Figure 6), the area was originally used for cultivation. | Based on the probable degree of disturbance and the area's history: the site was considered to have low archaeological potential however, based on the AWB findings in 2011-2012 the site is revised to have **very low archaeological potential** as monitored excavations show sterile well weathered alluvial deposits. | Outstanding excavation works consist of a last pile cap excavation. A minimum of **one half day site visit per every two week (5% monitoring sample)** is required. |

## 4. References

### Books and Articles

Chow, W. (1958) "Little Hong-Wong Chuk Hang", Hong Kong University, Hong Kong

Empson, H. (1992) Mapping Hong Kong: A Historical Atlas, Government Information Services, Hong Kong.

Lu, K. C. (1983) The Cultivation of the "Incense Tree" (Aquilaria Sinensis) in the Journal of the Hong Kong Branch of the Royal Asiatic Society (Pages 247-249)

Li, W. F. (1955) "How the Natural Environment, Economic and Social Conditions Combine to affect the activities of the people in Wong Chuk Hang", Hong Kong University, Hong Kong

Rogers, Van Den Bergh et al (1997) Hong Kong and Po Toi Islands: The Archaeological Survey Antiquities and Monuments Office, Culture and Sports Department, Government of the Hong Kong SAR, Hong Kong

Survey Production Centre, Royal Engineers (1957) Hong Kong and the New Territories, 1:25,000 map. Victoria Harbour. London: D. Survey, War Office and Air Ministry.

Territory Development Department (1986). Hong Kong Planning Area No.4 (part) Victoria Barracks – Layout Plan 1986. Hong Kong: Territory Development Department.

華僑日報 (1963): '香港年鑑 - 第十六回: 街道指南' (Files provided by the Hong Kong Public Libraries)

華僑日報 香港年鑑 第三十回 街道指南 (Files provided by the Hong Kong Public Libraries)

明報: '金鐘出土古炮屬 19 世紀' (2008 年 9 月 20 日)

**Previous EIA and other Relevant Reports**

Planning and Development Study on HKIS and LI Cultural Heritage Impact Assessment (AAL 2001)

EIA Study of the Repositioning and Long Term Operation Plan of Ocean Park (AAL 2006)

Ocean Park Archaeological Survey for the Repositioning and Long Term Operation Plan of Ocean Park. (Wang, F Horizon Asia Ltd. 2008).

Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel (Black & Veatch 2006)

SIL(E) Admiralty Station and SCL Enabling Works. Scheme Design Presentation Report. (Ove Arup Ltd 2009).
古物古蹟辦事處 2001 年：«香港仔黃竹坑加氣站選址考古調查報告» (參考編號 HKI3)

**Geological Maps**

Hong Kong Geological Survey: Hong Kong and Kowloon Sheet 11, Solid and Superficial Geology (Edition 1) 1986, Geotechnical Control Office, Hong Kong

**Websites**

AMO Website

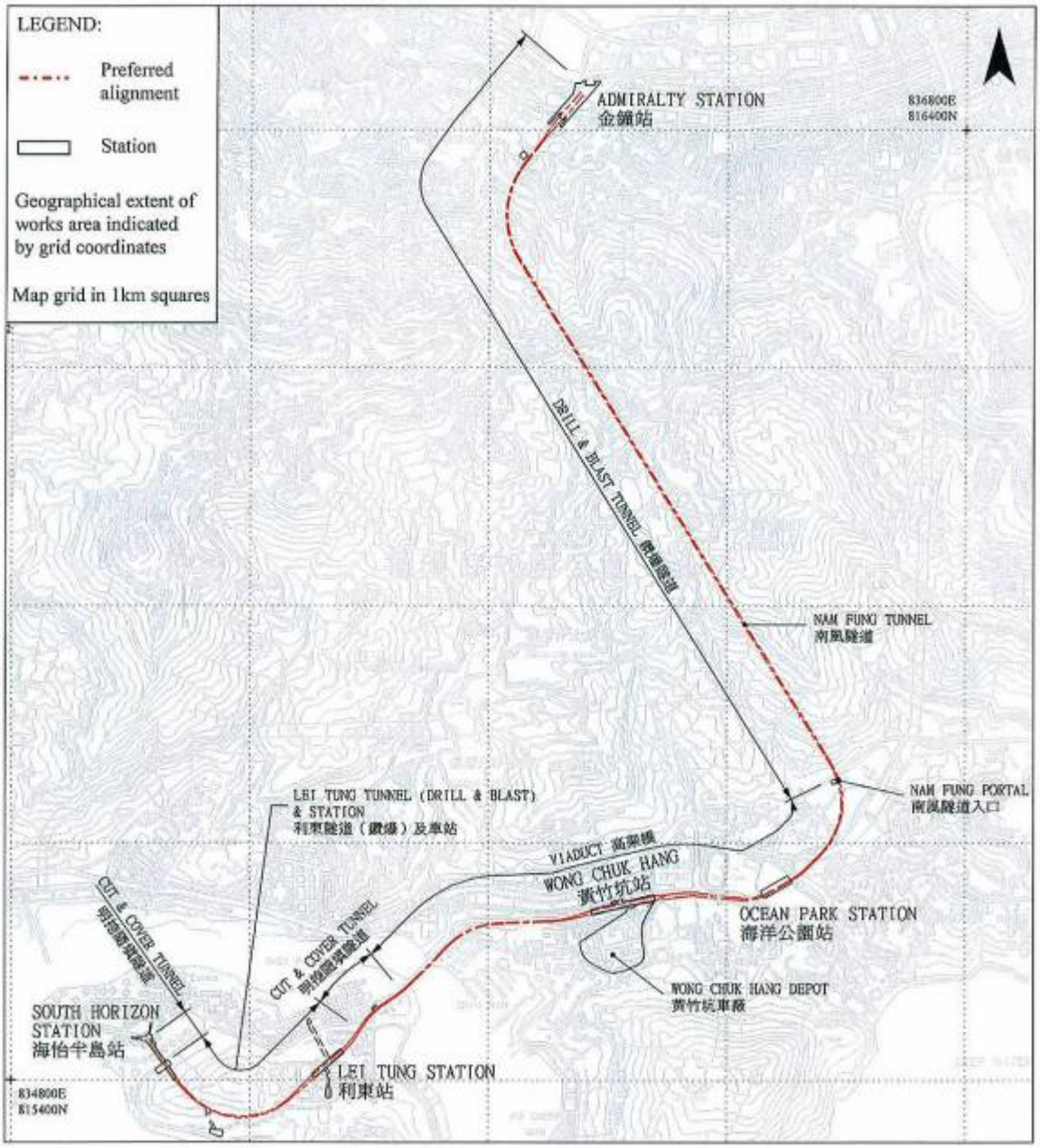



Figure 1: Overall project alignment showing works areas comprising five stations, depot, viaduct, tunnels and portals

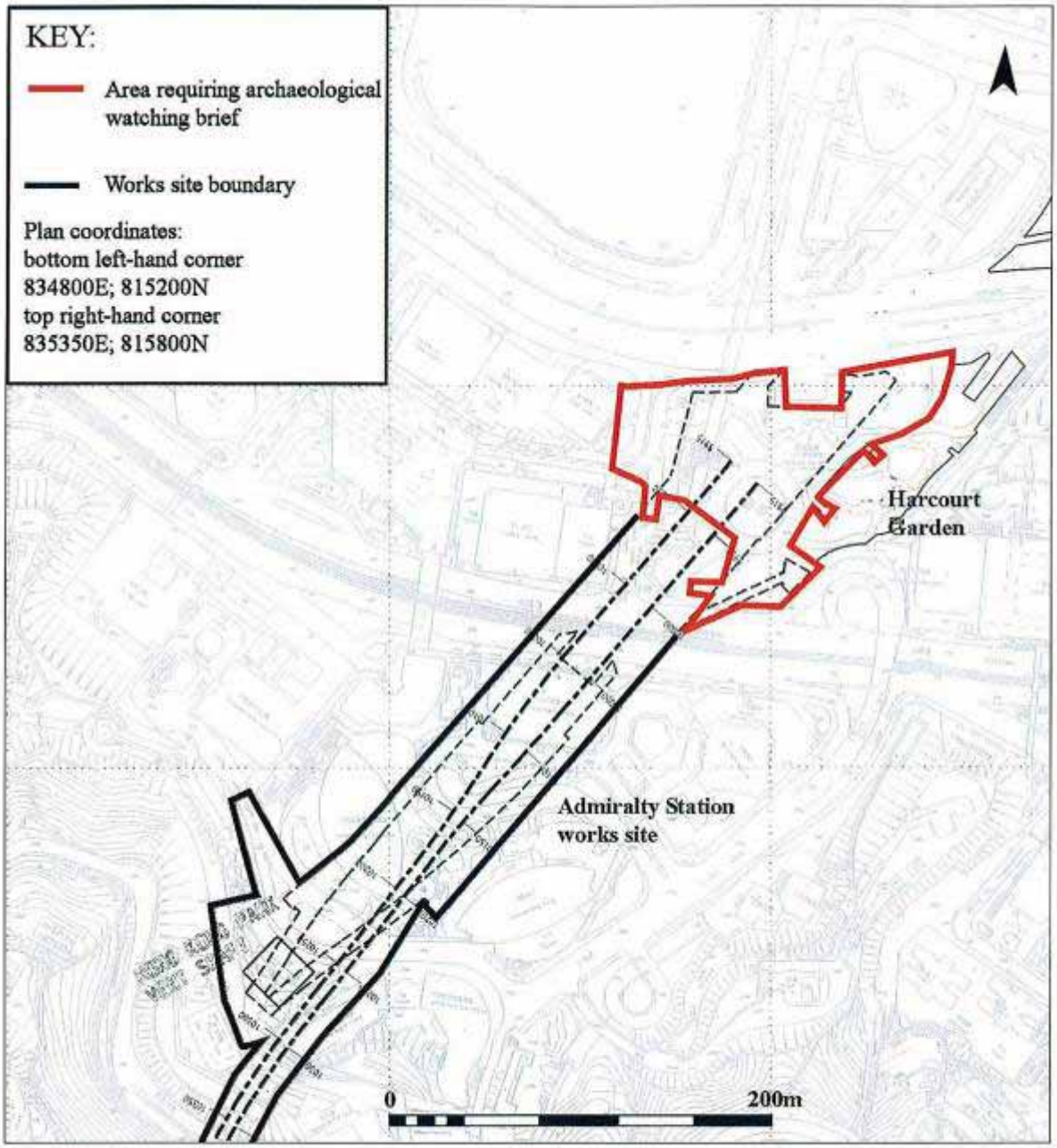



Figure 1a: Plan of Admiralty Station works site with area requiring archaeological watching brief at Harcourt Garden outlined in red.

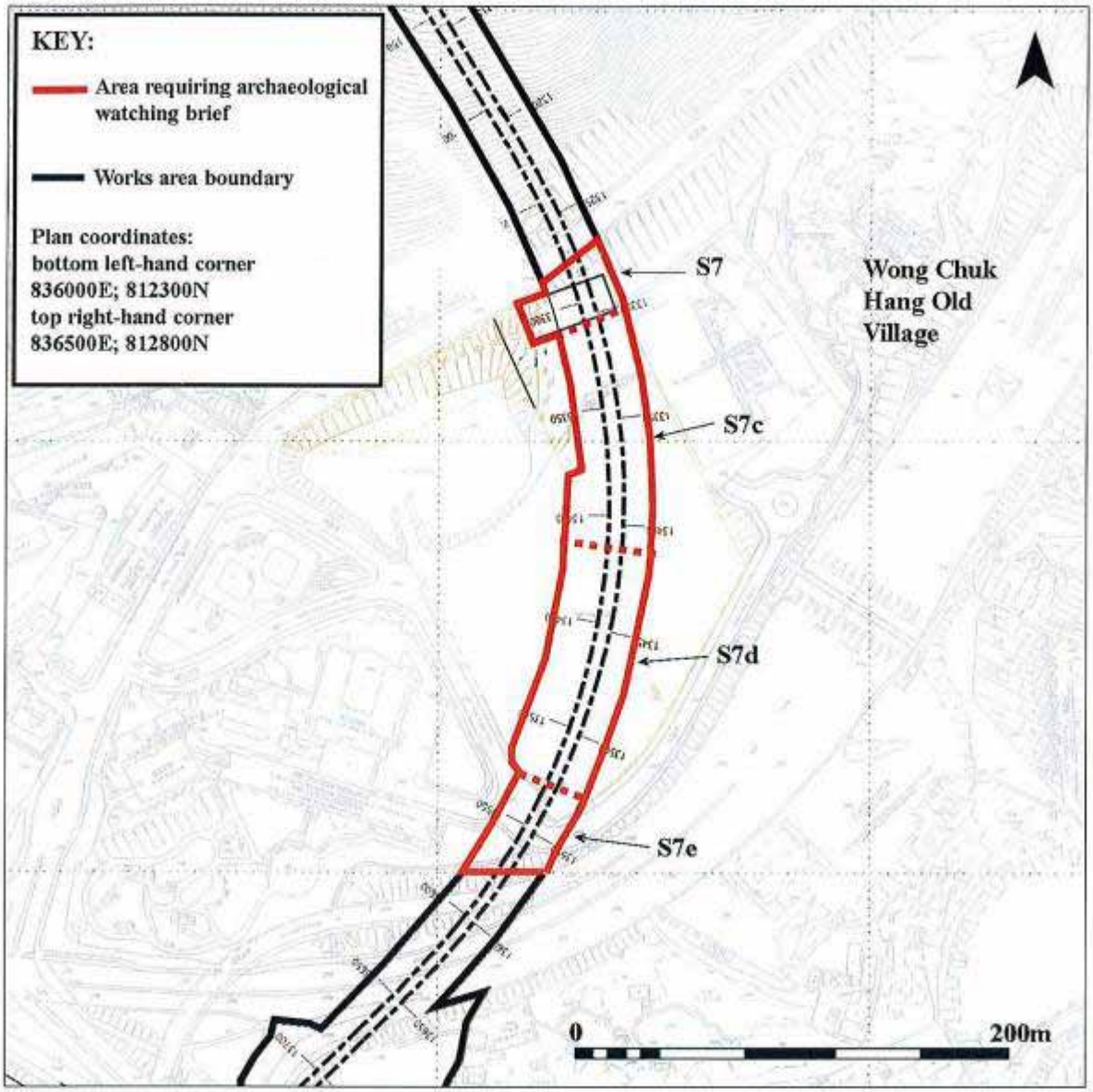



Figure 1b: Plan of works sites S7, S7c, S7d and S7e west of Wong Chuk Hang Old Village with area requiring archaeological watching brief outlined in red.

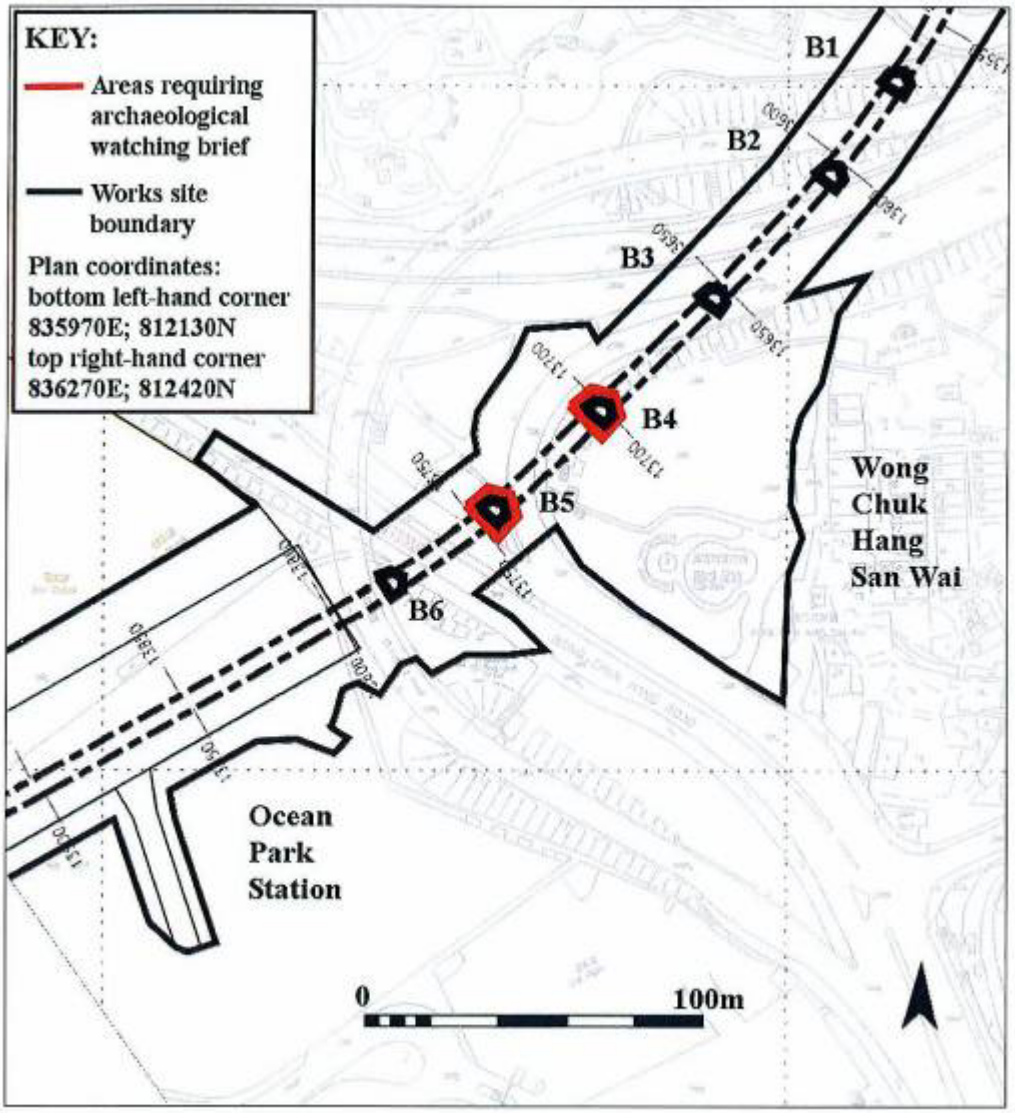



Figure 1c: Plan showing works site west of Wong Chuk Hang San Wai with viaduct supporting columns B4 and B5 requiring archaeological watching brief outlined in red.

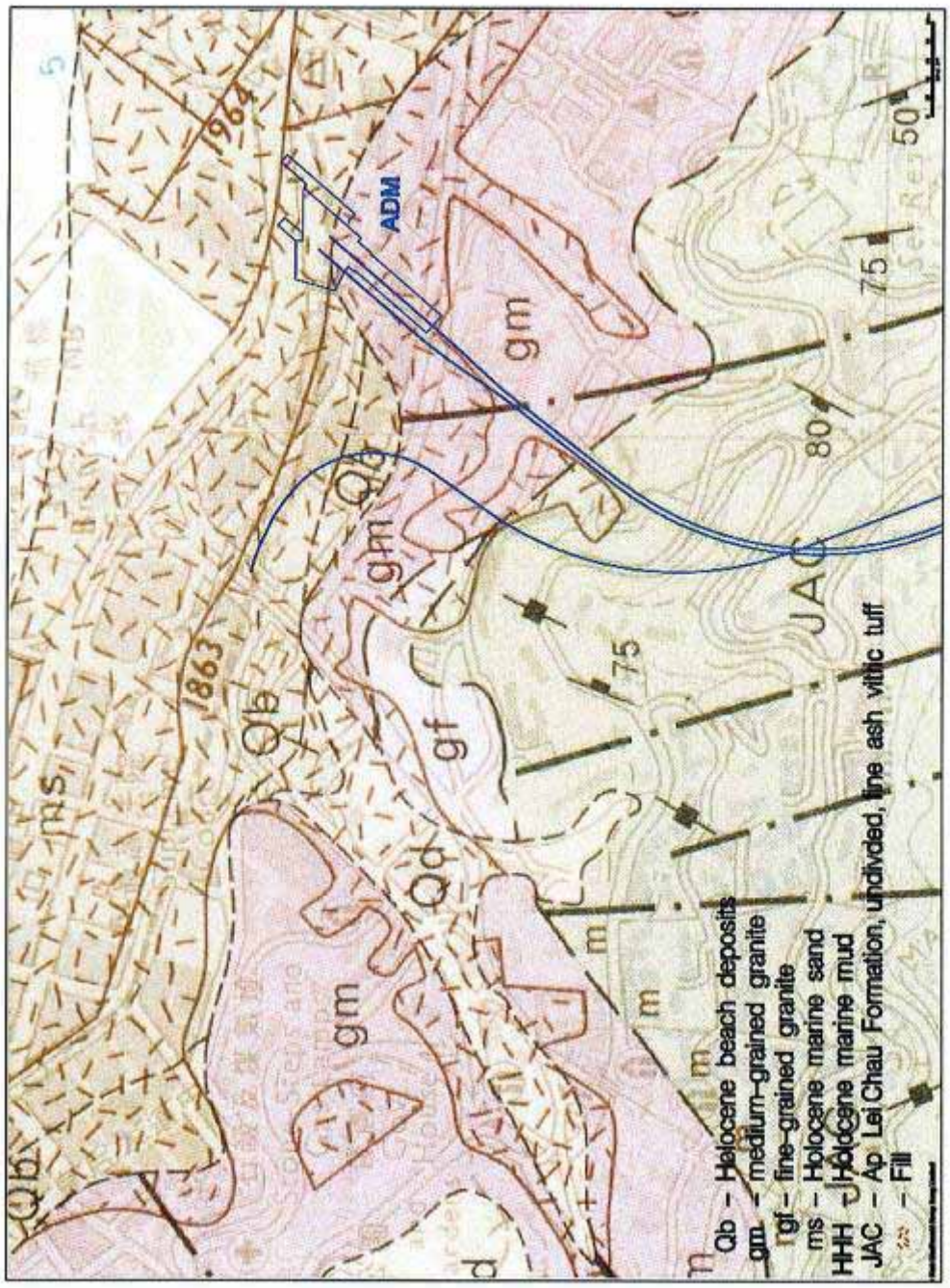



Figure 2: Detail of Geological Map showing the 1863 reclamation in Admiralty

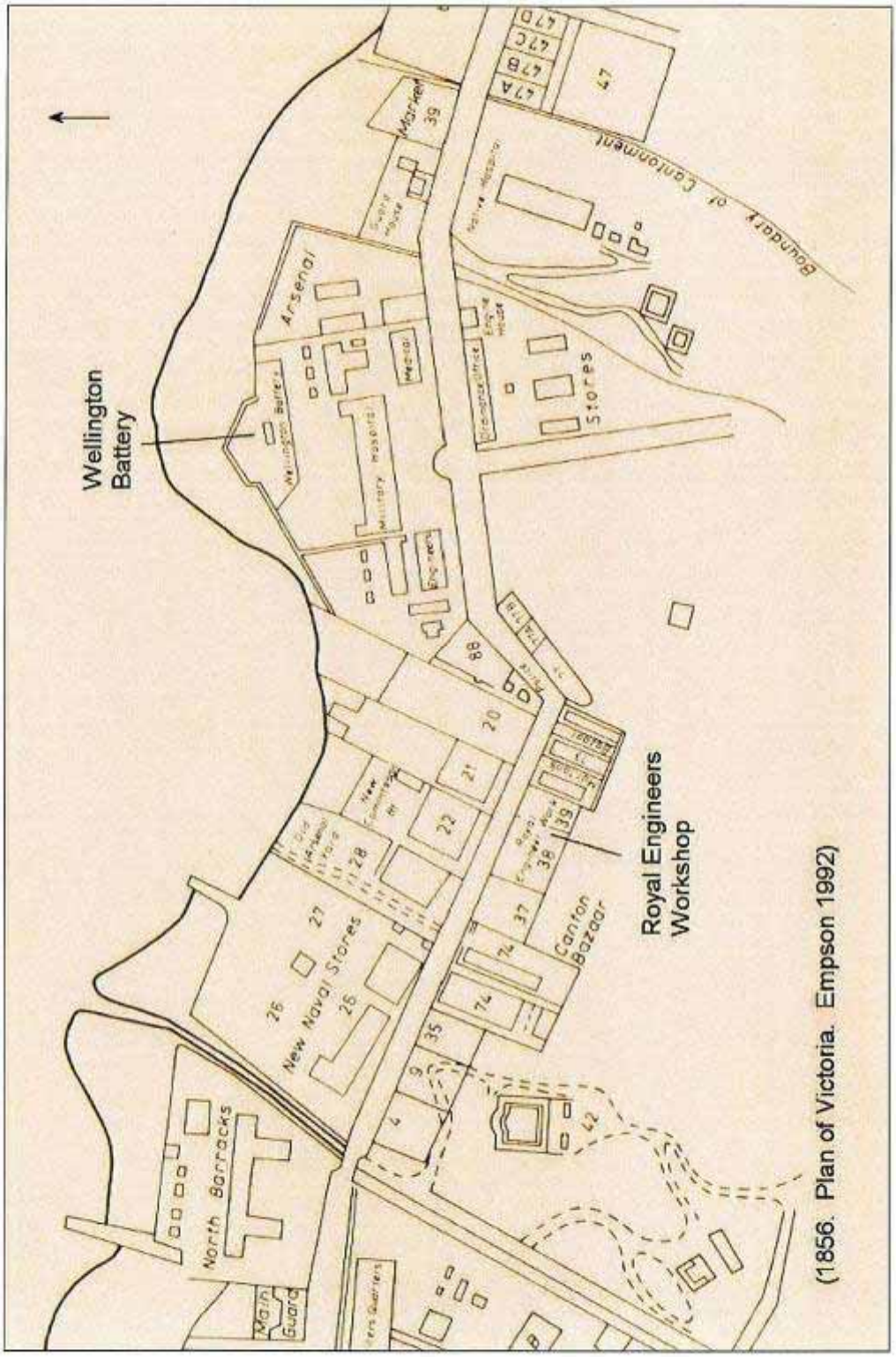



Figure 3: Historical map showing the Admiralty area in 1856

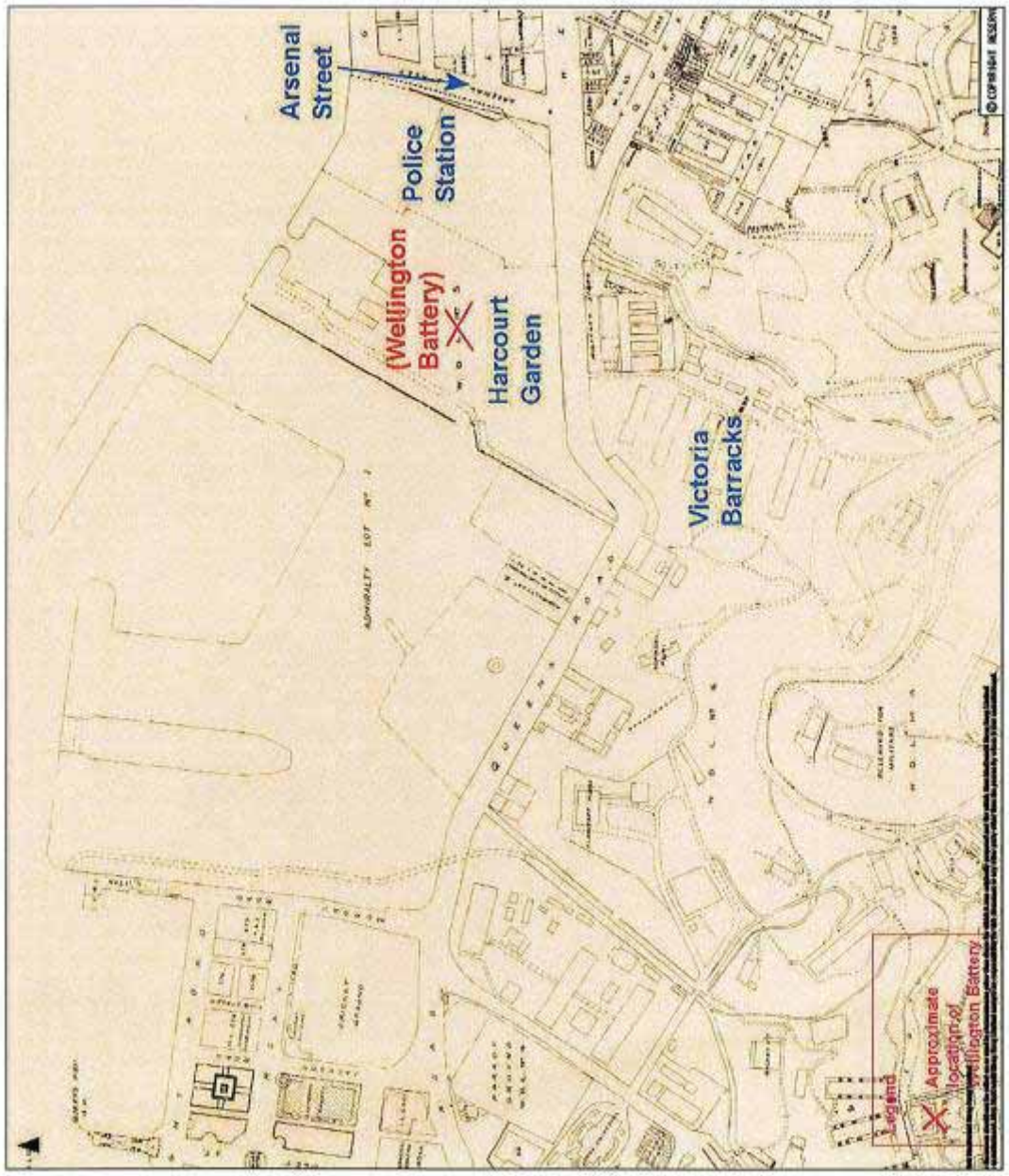



Figure 4: Historical map showing the Admiralty area in 1936-46

## Appendix B: Methodology for Archaeological Watching Brief

### 1. Introduction

Archaeological Watching Brief is a form of mitigation which is required when engineering works impact on areas that have been assessed as having some degree of archaeological potential and where conventional testing methods are deemed insufficient. The range of archaeological resources that require monitoring include both historical and prehistoric material and features.

A watching brief should be undertaken by a qualified and licensed archaeologist during excavation works at the construction stage. A qualified archaeologist should inspect the site at an interval that will depend upon the archaeological potential of the area in question and the nature and duration of the construction programme. Details of the frequency of inspection will be provided to AMO for review and comment once the detailed construction programme has been finalised. A construction programme should be provided to the archaeologist carrying out such watching brief prior to the commencement of site works in order to arrange the inspection schedule. The archaeologist should be notified no less than 3 working days prior to any changes to the construction programme so that arrangements can be made to monitor the works. The engineer should facilitate arrangements and liaise between the archaeologist and construction contractor.

The Watching Brief process entails the observation of the engineering works by qualified archaeologists in order to identify any archaeological material or features revealed during the excavation phase of the works schedule. Upon identification of such material or features the archaeologists will require immediate access to the excavation area for recording of the material/features *in situ*, artefact/ecofacts retrieval and sample collection.

NB: If significant archaeological remains are discovered during engineering groundworks the site engineer and construction contractor must arrange a temporary suspension of works in the affected area to allow safe access for purposes of archaeological excavation and recording.

These guidelines serve two basic purposes: firstly, that the archaeological resources are adequately recorded and recovered and secondly, that appropriate measures are taken on site to create a minimum of delays to the engineering schedule.

### 2. Detailed Methodology of the Watching Brief

#### 2.1 Watching Brief Personnel

Watching Brief should be undertaken by a qualified archaeologist, who must apply for a licence under the Antiquities and Monuments Ordinance (Cap. 53) from the Antiquity Authority before the commencement of archaeological fieldwork. All staff employed by the archaeologist must be suitably qualified and experienced for their roles.

Two Archaeological Assessments Staff members will be part of the SIL Archaeological Watching Brief: Julie Van Den Bergh and Ellen Cameron. Both staffs are fully qualified archaeologists and will be deployed as necessary. The frequency of monitoring allows for more than one site to be visited per week, if necessary; but at sites with more archaeological potential, such as Harcourt Garden, deployment of more than 1 archaeologist at the same time is possible.

**2.2 Areas to be monitored**

The areas which require Watching Brief must be defined and submitted by the qualified archaeologist under the project and agreed with AMO prior to commencement of works.

**2.3 Site access**

Archaeologists should be allowed reasonable access to relevant areas of groundworks, so that deposits can be examined and recorded. Trenches may require temporary shoring and groundworks might need to be temporarily rescheduled, to provide a safe environment for such works. Provision should be made, at the earliest stage of construction programming, for specific blocks of time to be available for unrestricted archaeological access to areas of groundworks in the identified area of archaeological potential.

**2.4 Monitoring and retrieval methodology**

The table below shows the various categories of archaeological material and features that are most likely to occur in local contexts. Also listed are the recommended type and degree of recording and retrieval required for each category.

| Categories of Archaeological Materials | Retrieval Procedures |
|---|---|
| **Human Burial**<br>Skeletal remains<br>Items associated with human burial, i.e. grave goods | **Full Recording & Recovery of Human Remains & Associated Artefacts & Ecofacts**<br>▪ Complete recording by photography, drawing, written description<br>▪ Full measurement of burial and surrounding matrix<br>▪ Retrieval of human remains and associated artefacts & ecofacts<br>▪ Retrieval of surrounding soil for further analysis |
| **Intact Features**<br>Structural/architectural remains<br>Undisturbed contexts, e.g. hearth, midden, habitation area, assemblages of artefacts and/or environmental material | **Full Recording of Archaeological Features & Recovery of Artefacts/Ecofacts**<br>▪ Recording and measurement of salient features by photography, drawing and written description<br>▪ Retrieval of artefacts & ecofacts<br>▪ Retrieval of samples from the surrounding matrix |
| **Intact Artefacts**<br>Complete objects, e.g. pottery, metal objects, stone and bone tools. The objects are complete but isolated and are not part of assemblage of feature | **Recovery of Artefacts & Record of Matrix**<br>▪ Retrieval of objects<br>▪ Recording by written description and photography<br>▪ Sampling of surrounding matrix |
| **Isolated & Fragmentary Material**<br>Pottery sherds, non-human bone, other artefact fragments (e.g. metal, tile, glass). There are no complete objects, the material is isolated and fragmentary in nature | **Recovery of Archaeological Material & Recording as Appropriate**<br>▪ Retrieval of fragmentary artefacts & ecofacts<br>▪ Recording by written description and photography, as appropriate<br>▪ Sampling of surrounding matrix |
| **Deposits with Archaeological Potential**<br>-Soil deposits which exhibit characteristics associated with archaeological remains in Hong Kong | **Sampling of Deposit**<br>-Recording of soils by photography and written description<br>-Collection of soil samples from deposits displaying archaeological potential |

Any archaeological materials recovered during the programme should be properly recorded and submitted to the AMO. Upon the discovery of significant archaeological remains, the qualified archaeologist will contact both the AMO informing them of the discovery and the Site Engineer to ensure a temporary suspension of works. Any follow-up works, if required, should be conducted following consultation and agreement with the AMO.

**2.5 Recording forms for Watching Brief**

Full and proper records (written, graphic, electronic and photographic as appropriate) should be made for all work undertaken. Standardised forms are used for the recording of any archaeological material identified during the Watching Brief and these would typically include the following:

- Registers to record the finds, special finds, contexts, photographs, drawings, levels and samples;
- Context description forms; and

- A daily record form designed specifically for Archaeological Watching Brief. This form must locate clearly the area of works monitored, the nature and extent of the works, and summaries of the day's findings all cross-referenced to register numbers used that day.

**2.6 Safety requirements**

Archaeologists and staff employed in monitoring must follow the safety procedures enforced by the contractors on site.

**2.7 Watching Brief Report**

The procedures and result of the Watching Brief should be presented in report form, following standards set by the AMO for reports on other types of archaeological field work. This includes details of the overall programme, methodology, sampling strategy, implementation, findings and interpretation. The report should be submitted to the AMO for approval in draft and, following resolution of any comments, in final form. All data, material and records forming the site archive must be submitted to the AMO upon completion of the project. The watching brief report should contain, as a minimum, the following elements:

- Non-technical summary (both in English and Chinese with approximate 150 - 300 words each)
- Introduction and aim of the work
- Archaeological, historical, geological and topographical background of the site
- Methodology
- Results
- Conclusion
- Recommendation
- Reference and bibliography
- Archaeological Team
- Copyright and dissemination
- Supporting illustrations
- Supporting data in appendices
- Comment and Response

In addition to the draft and final Watching Brief Report, bi-monthly progress reports will be compiled for the separate works areas and submitted to AMO.

**2.8 Mitigation Measures**

The Contractor should be sufficiently flexible to allow any necessary contingency arrangements to be implemented. Should significant archaeological materials be discovered, appropriate mitigation measures will be designed and implemented with the prior approval of the AMO.

**Appendix C: Specification for Archaeological Watching Brief**

**1. Introduction**

In contrast the generalised overview of archaeological watching brief methods provided in Appendix B above, this section provides a more detailed specification tailored to suit the particular circumstances of this project.

**2. Site Clearance Works**

The process of archaeological watching brief in each site/area* will commence when demolition and clearance of all current surface obstructions has been completed. The engineer/contractor's representative must advise the archaeologist when the latter stage will be reached, giving at least 3 days' notice, to ensure that the archaeologist can make an initial inspection of the cleared site. It is important to note that every site/area, whatever its archaeological potential, should be the subject of such an initial assessment visit by the archaeologist.

*NB: Should any of the works sites be sub-divided and cleared at different times, it will be necessary to advise the archaeologist at the appropriate time to allow an initial visit for each area.

**3. Estimation of depth of cultural deposits**

In urban or semi-urban settings it is quite possible that cultural deposits such as historical building foundations or earlier historic/prehistoric remains might exist at some considerable depth below the modern surface. This is particularly likely in northern Hong Kong Island where a history of seasonal erosion (landslides) coincides with an area having a 150-year history of urban development and renewal. It is likely, therefore, that the depth to which archaeological monitoring will need be conducted will probably vary considerably between and within sites – this is especially likely for works sites located in lower hill slope areas and on the former narrow coastal plain. The deposits at southern Hong Kong in particular at the flat areas are expected to have less artificial fill cover. Engineering borehole or test pit data can provide very useful early warning of such variation and, if available, such data should be used as a predictive tool by the archaeologist.

**4. Scope of Monitoring Works**

The archaeological monitoring will be carried out in the course of the contractors' ground works in the two work sites identified as having archaeological potential. The depth of the archaeological monitoring will be various due to the local depositional history of each work site. The scope of the archaeological watching brief is therefore limited to the monitoring of cultural horizons overlying sterile natural strata.

**5. Monitoring Programme**

**5.1 Overall Construction Programme**

The table below shows the overall construction programme for the two works sites which require archaeological watching brief depending on the depth of the works and geological formation:

| Works Site | Site Activities | Tentative Start | Finish |
|---|---|---|---|
| Harcourt Garden | Site formation | May 2011 | Completed |
| | Cut and cover: Piling | August 2011 | Completed |
| | Cut and cover: station | February 2012 | Not yet commenced |

| | | | |
|---|---|---|---|
| | excavation | | |
| | Cavern & tunnels: SEE shaft pipe piling and excavation | July 2011 | Completed |
| Site 7c | Cut and Cover: Piling works | July 2011 | Completed |
| | Cut and Cover: Excavation and installation of lateral support | September 2011 | In progress |
| | Elevated Portion: Piling works | August 2011 | Completed |
| | Elevated Portion: Minor Excavation works | September 2011 | Completed |

NB: Since the construction programme is subject to change, the schedule of the archaeological watching brief would also need to be adjusted should such change occur.

**5.2 Calculation of Watching Brief Monitoring Rates**

The frequency, duration and number of monitoring visits required in each of the works sites/areas will be dependent on a number of factors, namely: the character and rate of progress of development groundworks, the archaeological potential of each site/area, and the nature, extent and condition of any archaeological remains encountered. It is therefore extremely desirable that a detailed works programme showing both the process and timing of development groundworks for each site/area is available before the Final Proposal for Archaeological Watching Brief is submitted to the AMO.

**5.3 Draft Watching Brief Monitoring Frequencies**

As the table in Section 3 above shows, a draft monitoring frequency is proposed for the six works sites, which is based on an assessment of their archaeological potential in terms of topography and geology, known archaeological resources, site history, and likely degree of previous impacts. By assessing these criteria, three levels of archaeological potential were identified:

- Very Low: requiring only occasional monitoring after the initial site visit – a minimum of one half day monitoring visit per two weeks of groundworks in layers with archaeological potential – equivalent to a 5% monitoring sample
- Low: requiring regular monitoring after the initial site visit – a minimum of one half day monitoring visit per week of groundworks in layers with archaeological potential – equivalent to a 10% monitoring sample
- Moderate: requiring frequent monitoring after the initial site visit – a minimum of two half day monitoring visits per week of groundworks in layers with archaeological potential – equivalent to a 20% monitoring sample

The archaeological potential, monitoring frequency/samples and sites affected are summarised in the following table (calculations based on a notional 5-day week):

| Archaeological Potential | Monitoring Frequency | % Monitoring Sample | Works Sites Affected |
|---|---|---|---|
| Very Low | 1 x 0.5 day visit per 2 weeks | 5% | S7c |

| | | | |
|---|---|---|---|
| Low | 1 x 0.5 day visit per week | 10% | N/A |
| Moderate | 2 x 0.5 day visits per week | 20% | Harcourt Garden |

**Appendix D: Event Action Plan**

| Event | Action Required | | |
|---|---|---|---|
| | **AAL Archaeologist** | **MTR Site Engineer** | **Works Contractor** |
| **Human Burial found:**<br>-Skeletal remains<br>-Grave and/or grave goods clearly associated with human burial | -Inform AMO & Site Engineer & request that work be stopped until archaeological work is completed & the AMO has had the opportunity to visit site<br>-Carry out full recording & recovery of human remains & associated features/finds | -Notify contractor | Temporarily suspend work in affected site area & facilitate safe access for purposes of archaeological excavation and recording |
| **Intact Features found:**<br>-Structural remains (e.g. foundations of military buildings associated with early colonial Hong Kong)<br>-Undisturbed contexts (e.g. hearth, midden, habitation area, assemblages of artefacts and/or environmental material | -Inform AMO & Site Engineer & request that work be stopped until archaeological work is completed & the AMO has had the opportunity to visit site<br>-Full recording of archaeological features & finds recovery | -Notify contractor | Temporarily suspend work in affected site area & facilitate safe access for purposes of archaeological excavation and recording |
| **Intact Artefacts found:**<br>-complete objects (e.g. pottery vessels, metal objects, stone & bone tools). The objects are complete but isolated & are not part of an assemblage or associated with a feature | -Inform AMO & Site Engineer & request that work be stopped until archaeological work is completed & the AMO has had the opportunity to visit site<br>-Recording of finds location & finds recovery | -Notify contractor | Temporarily suspend work in affected site area & facilitate safe access for purposes of archaeological excavation and recording |
| **Isolated Material found:**<br>-Sherds, non-human bone, artefact fragments (metal, pottery, glass). There | -Rapid recovery of sample of archaeological material &<br>recording of location | No action required | Allow archaeologist brief opportunity to collect samples of material |

| | | | |
|---|---|---|---|
| are no complete objects, the material is isolated & fragmentary in nature | | | |
| **Deposits with Archaeological Potential found:** -Soil deposits which exhibit characteristics associated with archaeological remains in Hong Kong | Rapid recovery of soil sample | No action required | Allow archaeologist brief opportunity to collect samples of material |

ANNEX C

**Brief report on Archaeological Watching Brief Findings in Harcourt Garden for South Island Line (East)**

Prepared by: Julie Van Den Bergh
Date: 27 September 2012

## 1. Introduction

The brief report introduces a seawall found within the MTRCL's South Island Line (East) works area at Harcourt Garden, Admiralty.

The seawall was noted during a routine Archaeological Watching Brief programme visit to the site on 25th of September 2012. The feature had been partially excavated on its eastern end and was still partially buried at its western end. Towards the west the feature is expected to have survived only in fragments given the disturbance from various projects over the years. It is also noted that the feature is located within the middle portion of the top slab for future Admiralty Station extension, and this area is critical for the lateral support system necessary for achieving stability of existing Island and Tsuen Wan Lines.

According to the procedure set out in the Watching Brief methodology, the archaeologist set to cleaning the feature and informed the site engineer of the findings. AMO was duly informed in the evening.

## 2. Brief background of seawalls in Hong Kong

The settlement of Hong Kong by the British was based on a maritime economy and the importance of coastal plots for trade and industry were a necessity for the success of the Colony from its earliest days. It was recognised that the existing coastline was not sufficient for the desired purposes at an early stage and private lot owners began their own reclamations during the 1840's without any planning. This resulted in a situation of irregular lots and a disconnected coastline. The Colonial Government stepped in during the 1850's with the first planned reclamation in Hong Kong instigated by the then Governor Sir John Bowring, which was situated in the marshland north of Happy Valley. The government continued its attempts to control private reclamation through the construction of a praya and seawall along the north coast of Hong Kong island, which included the construction of a seawall in 1863 under the leadership of Governor Sir Hercules Robinson. The success of the governments control over reclamations was mixed and irregular and unplanned private reclamation continued on into the 1860's. The Colonial government encountered a lack of cooperation from not only private land owners but also from the Navy (where the seawall in question is located) who did not want the coastal

land in their possession to become a thoroughfare between Victoria and Causeway Bay.

The ongoing nature of reclamation in Hong Kong throughout the Colonial Period meant that the construction of the seawalls was a continuous process, as the newly reclaimed land required new seawalls. The older seawalls were buried by the fill deposited for the new reclamations. The seawall fragment identified at Harcourt Garden works site was most likely covered by reclamations undertaken in the early to mid twentieth century.

## 3. The seawall fragment at Harcourt Garden

The seawall fragment is located within the former Harcourt Garden and is truncated to the northeast by the Electric Substation and further along to the east by the underground carpark. The western end of the seawall shows that the top of the seawall, currently covered with concrete, was removed at some point in the past; most likely during the site formation for Harcourt Garden. The western end is cut by a plunge column, but the potential for seawall fragments to continue westwards exists within the worksite boundary. Previous monitored excavations along the west of the site show however, that disturbances by for instance Admiralty subway Entrance/Exit point, covered walkway supports and road construction would have adversely impacted the seawall. It is envisaged that the seawall extending further westwards may only exist in parts. The rear of the seawall is partially uncovered at this stage and has been disturbed by a plunge column. The eastern section which curves to the north has been recorded in plan but numerous blocks at the rear have either been removed or are displaced due to the surrounding excavations. At its western portion the wall has been partially destroyed by a plunge column.

The orientation and construction of the seawall suggests that it was constructed in the second half of the 19th century, possibly by 1863 (Figure 1). Old maps show a seawall bordered the Wellington Barracks to the north: Figure 2 shows planned buildings design made in 1856 and Figure 3 marks what should be the actual seawall in 1880's.

The British navy has occupied the (Harcourt Garden) area to some extent since 1841; it was not until 1854 however, that the area was official designated as naval base and permanent buildings were erected. It is possible that seawall was constructed as part of this phase. The base quickly expanded (April 1858) towards the west, which is known as the North Barracks.

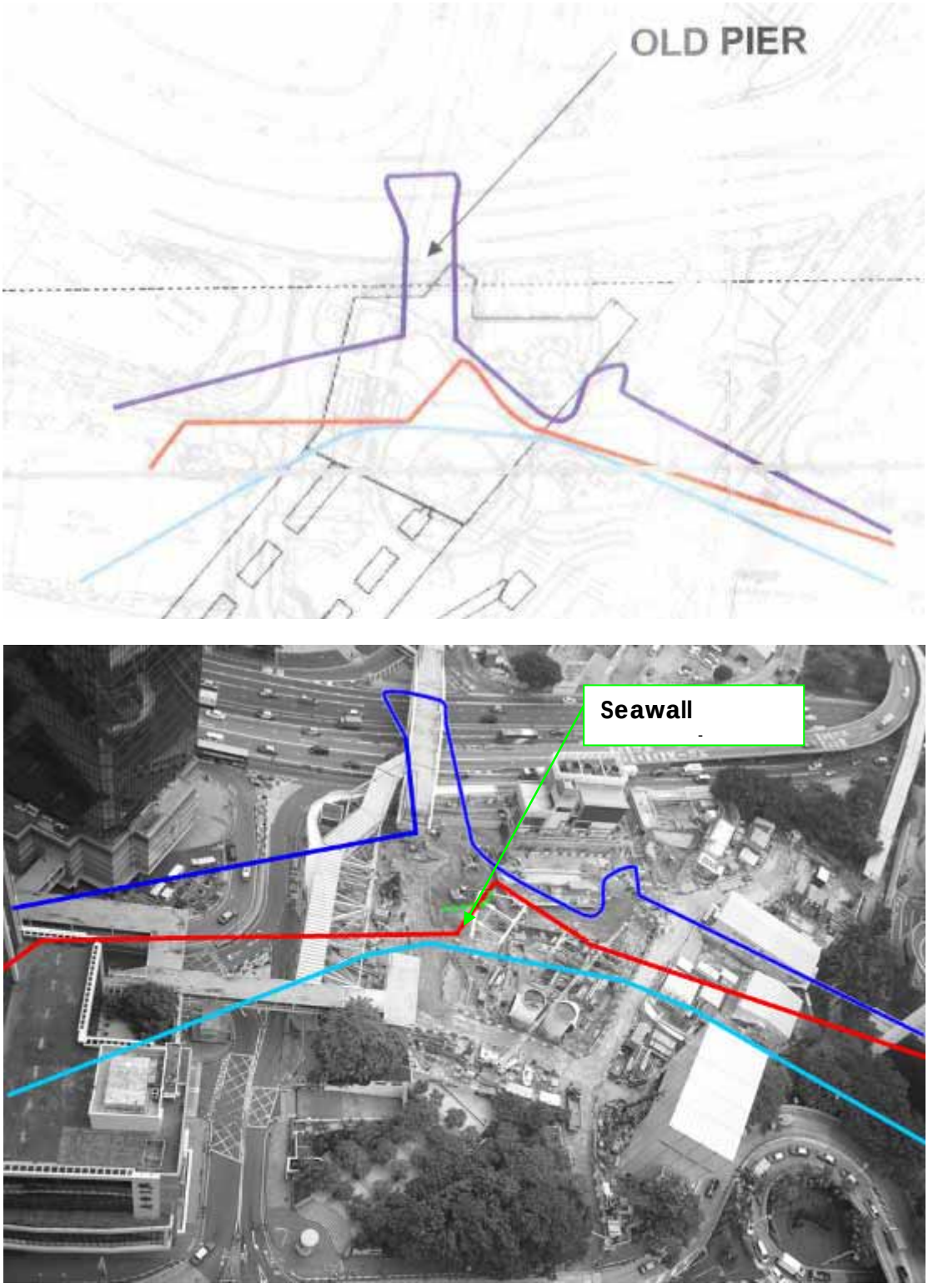



Figure 1 Seawall in red is taken from the 1863 map; the light blue line was taken from the 1842 map and represents the original coastline; the purple line was taken from 1895 map. (taken from Arup Geotechnical Report)


Figure 2 1856 map showing the location of Wellington Battery and possibly only proposed at this stage seawall

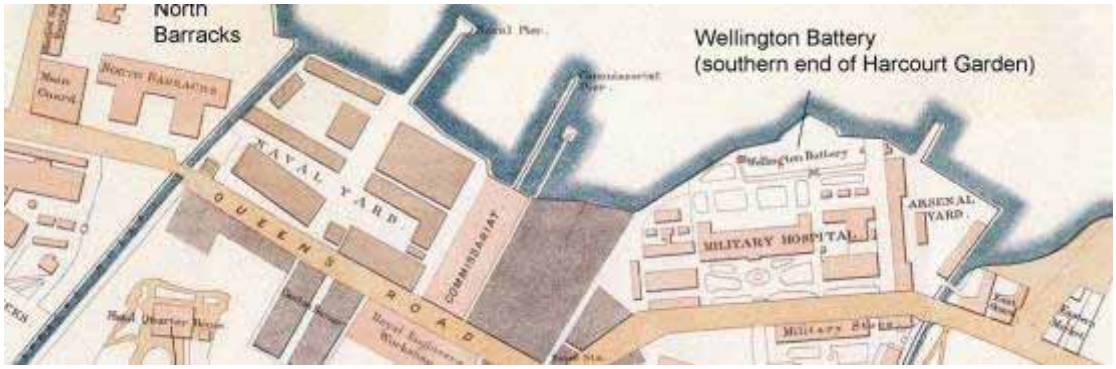



Figure 3 1880's map showing the outlay of the military area,with the location of the seawall and Wellington Battery

Little is known regarding the construction of 19th century seawalls and the AWB programme provides an opportunity to add to the knowledge of early seawall construction in Hong Kong. The function of the wall would have been to prevent the sea from eroding the naval grounds, but little is known of any other use, if any.

A maximum of eight dressed granite courses have been recorded, while it is anticipated that originally up to 10 courses were present (See Figure 4). At the bottom of the dressed granite blocks, rough stones started to appear. These may form the foundation of the dressed wall. The figure 4 below shows an early seawall design.

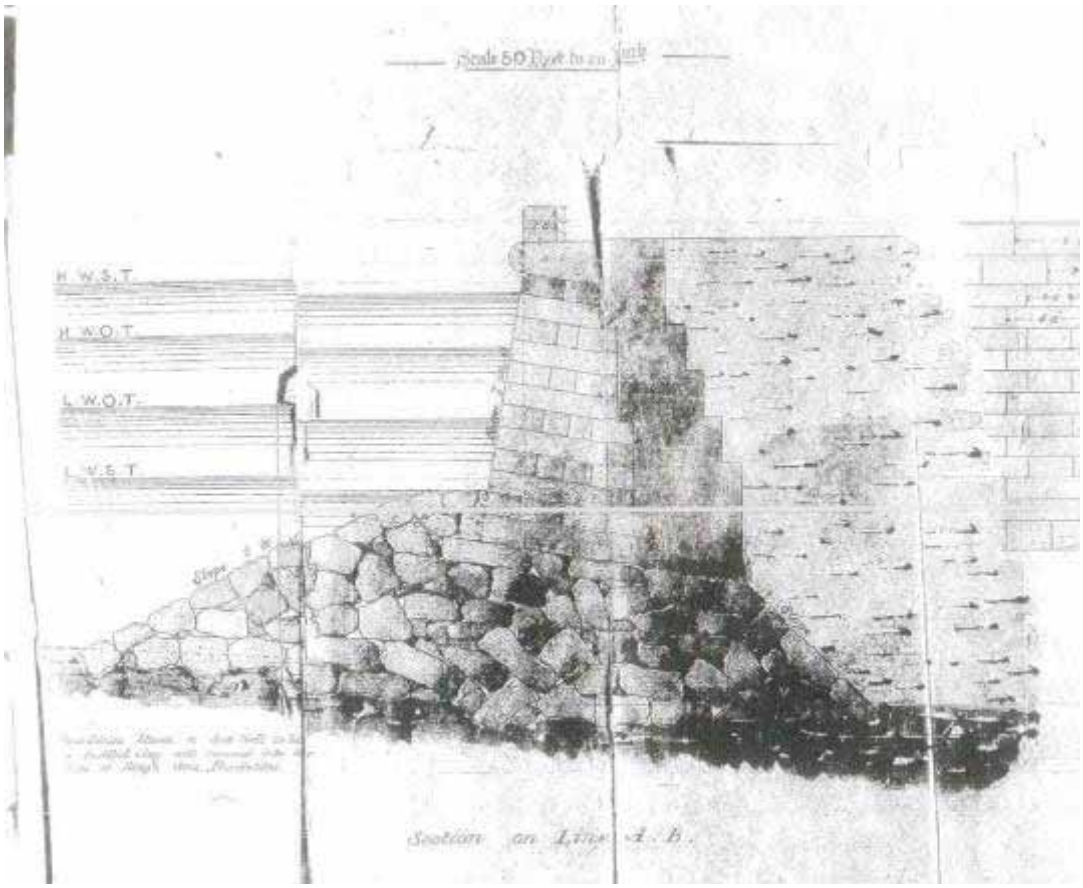
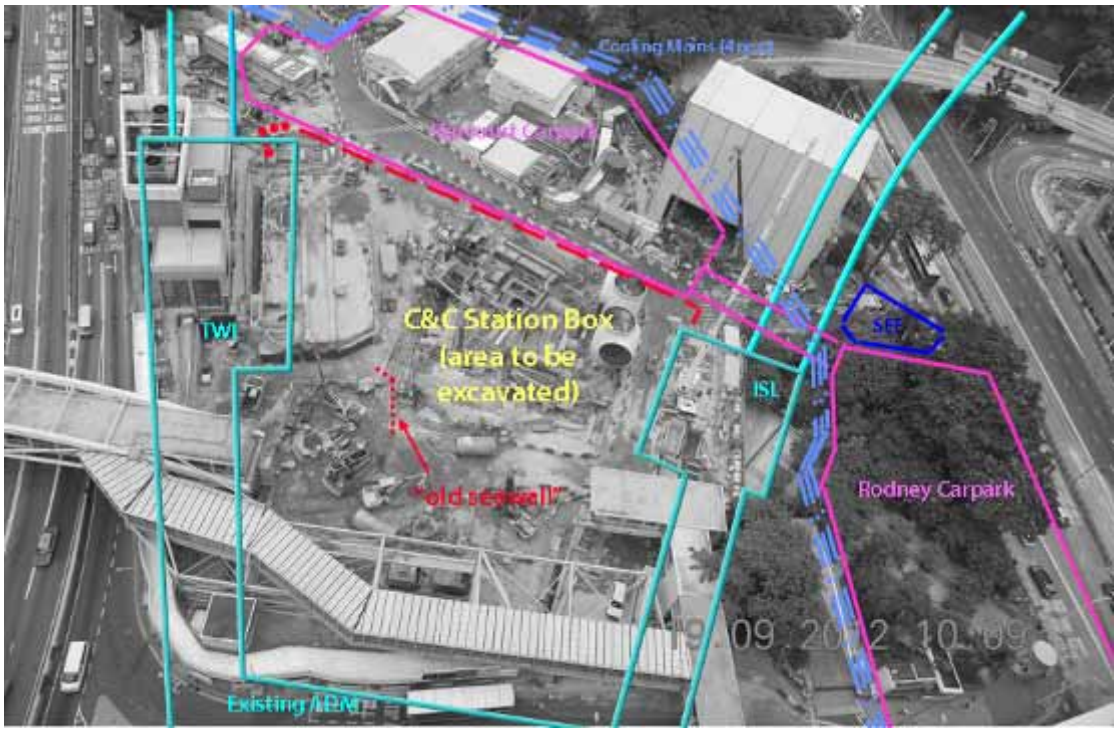



Figure 4 Early seawall design with dressed block on top of pile of rocks; care was taken with the front while the back was left rough. (Co129).

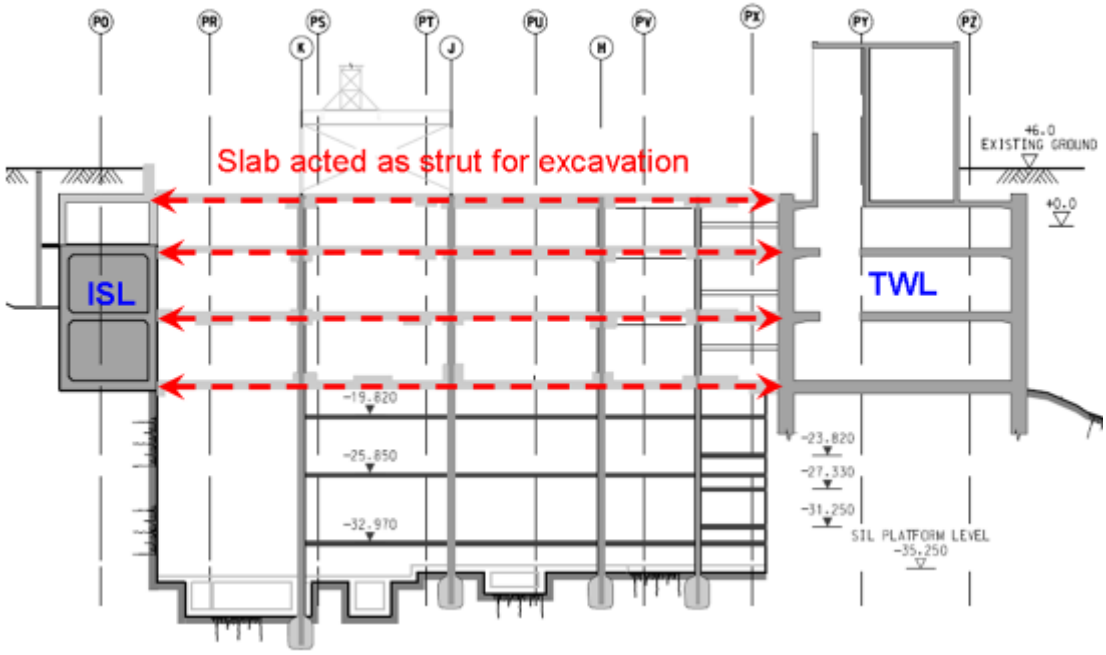
The seawall is thus presumed to date to second half of 19th century and survives in a small section within the works area only. While preservation by record can provide information regarding the construction method of constructing a seawall, the surviving seawall section is damaged in parts, has been partially excavated down to the last 4 courses and has been truncated on top.

## 4. Construction sequence

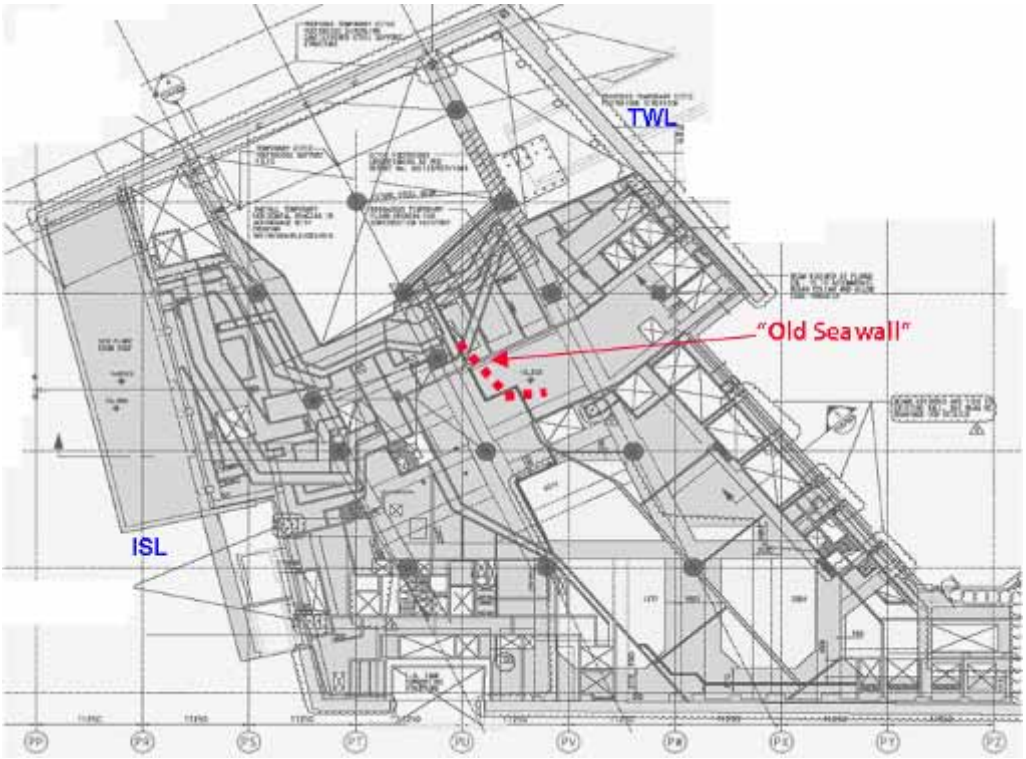
The new Admiralty integrated station to be constructed at Harcourt Garden works site include deep excavation works (more than 40m) for the future Admiralty cut & cover box (marked on the figure below in yellow as C&C Station Box) which adjoins the existing Admiralty Station, existing Island (ISL) and Tsuen Wan Lines (TWL) finger platforms, and Harcourt and Rodney Carparks (as shown below); all which are very sensitive structures.

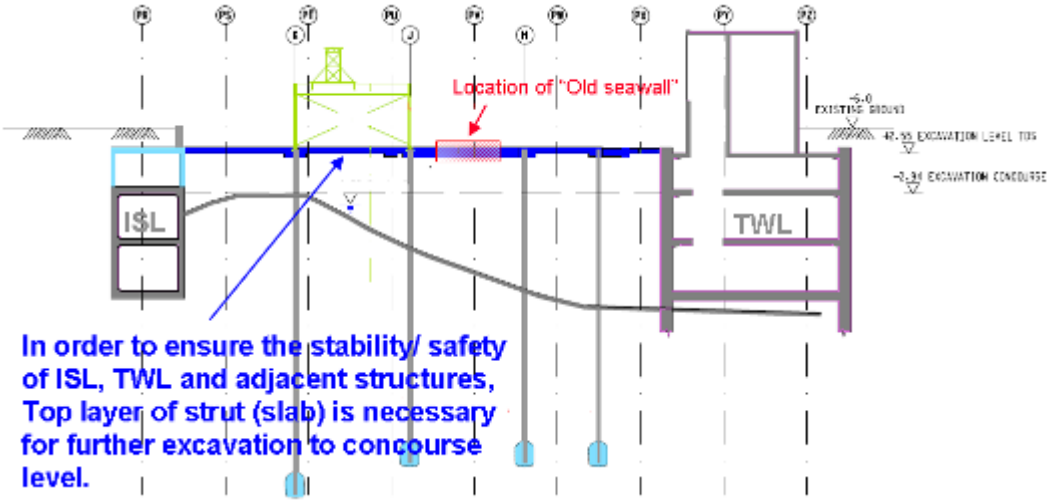



In order to minimize the risk to the adjacent structures, a top down construction method is adopted for the deep excavation. A permanent concrete slab is casted subsequently as the excavation level is lowered. The slab acts as the struts for lateral support system, as demonstrated below:



The excavation has commenced and the first layer of concrete slab (top level of strutting) is being constructed. Excavation works can only be lowered if the first layer permanent slab is constructed. As indicated as the layout plan and section below, the "old seawall" is located within the middle portion of the top slab. This is a critical area for the lateral support system and the support is necessary in order to achieve stability of Island and Tsuen Wan Lines.



In addition, due to the limited working area, the excavation and concreting works for the C&C station box has to be carried out progressively at each level.


## 5. Archaeological watching brief methodology

The methodology employed for the recording of the seawall follows the proposed methodology submitted with the Licence application, as shown below.

| Categories of Archaeological Materials | Retrieval Procedures |
|---|---|
| **Human Burial**<br>Skeletal remains<br>Items associated with human burial, i.e. grave goods | **Full Recording & Recovery of Human Remains & Associated Artefacts & Ecofacts**<br>▪ Complete recording by photography, drawing, written description<br>▪ Full measurement of burial and surrounding matrix<br>▪ Retrieval of human remains and associated artefacts & ecofacts<br>▪ Retrieval of surrounding soil for further analysis |
| **Intact Features**<br>Structural/architectural remains<br>Undisturbed contexts, e.g. hearth, midden, habitation area, assemblages of artefacts and/or environmental material | **Full Recording of Archaeological Features & Recovery of Artefacts/Ecofacts**<br>▪ Recording and measurement of salient features by photography, drawing and written description<br>▪ Retrieval of artefacts & ecofacts<br>▪ Retrieval of samples from the surrounding matrix |
| **Intact Artefacts**<br>Complete objects, e.g. pottery, metal objects, stone and bone tools. The objects are complete but isolated and are not part of assemblage of feature | **Recovery of Artefacts & Record of Matrix**<br>▪ Retrieval of objects<br>▪ Recording by written description and photography<br>▪ Sampling of surrounding matrix |
| **Isolated & Fragmentary Material**<br>Pottery sherds, non-human bone, other artefact fragments (e.g. metal, tile, glass). There are no complete objects, the material is isolated and fragmentary in nature | **Recovery of Archaeological Material & Recording as Appropriate**<br>▪ Retrieval of fragmentary artefacts & ecofacts<br>▪ Recording by written description and photography, as appropriate<br>▪ Sampling of surrounding matrix |
| **Deposits with Archaeological Potential**<br>-Soil deposits which exhibit characteristics associated with archaeological remains in Hong Kong | **Sampling of Deposit**<br>-Recording of soils by photography and written description<br>-Collection of soil samples from deposits displaying archaeological potential |

The structural remains of the seawall fall under the Category of archaeological materials: Structural Remains however, the feature is fragmented and non-intact. Notwithstanding this, it is considered that the retrieval procedure for this category, i.e. full recording of archaeological features by recording and measurement of salient features by photography, drawing and written description, would still be applicable.

The remaining section of the seawall will be cleaned, photographed and drawn by a qualified surveyor and in some cases the archaeologist will drawn certain aspects to provide additional illustration. The surveyors' team will produce a (single) plan and frontal elevation of the entire surviving section of the seawall and other drawings as is needed.

The recording of the surviving section will be completed as the area become available and is dependent of the construction sequence.

## 6. Conclusion

A fragment of a seawall dated to the second half of the 19th century is located within the future extension of the Admiralty station. The seawall is partially demolished and exposes the inside structure of the wall. Although the portion of the wall survived previous development including the electric substation and the existing Admiralty station, it is damaged from previous development projects such as formation of Harcourt Garden and loose blocks may pose a safety issue.

The location of the feature, within the middle portion of the top slab for future Admiralty Station extension, makes it impossible to preserve the wall fragment in situ. The construction of the top slab is critical for the lateral support system which in its turn is necessary to achieve stability for existing Island and Tsuen Wan Lines.

Apart from the feature exposed so far, only fragmented portions of seawall are expected given the disturbance of recent developments.

As per the procedure in the Watching Brief methodology, it is recommended full recording and measurement of salient features by photography, drawing and written description be conducted. No further action is needed.

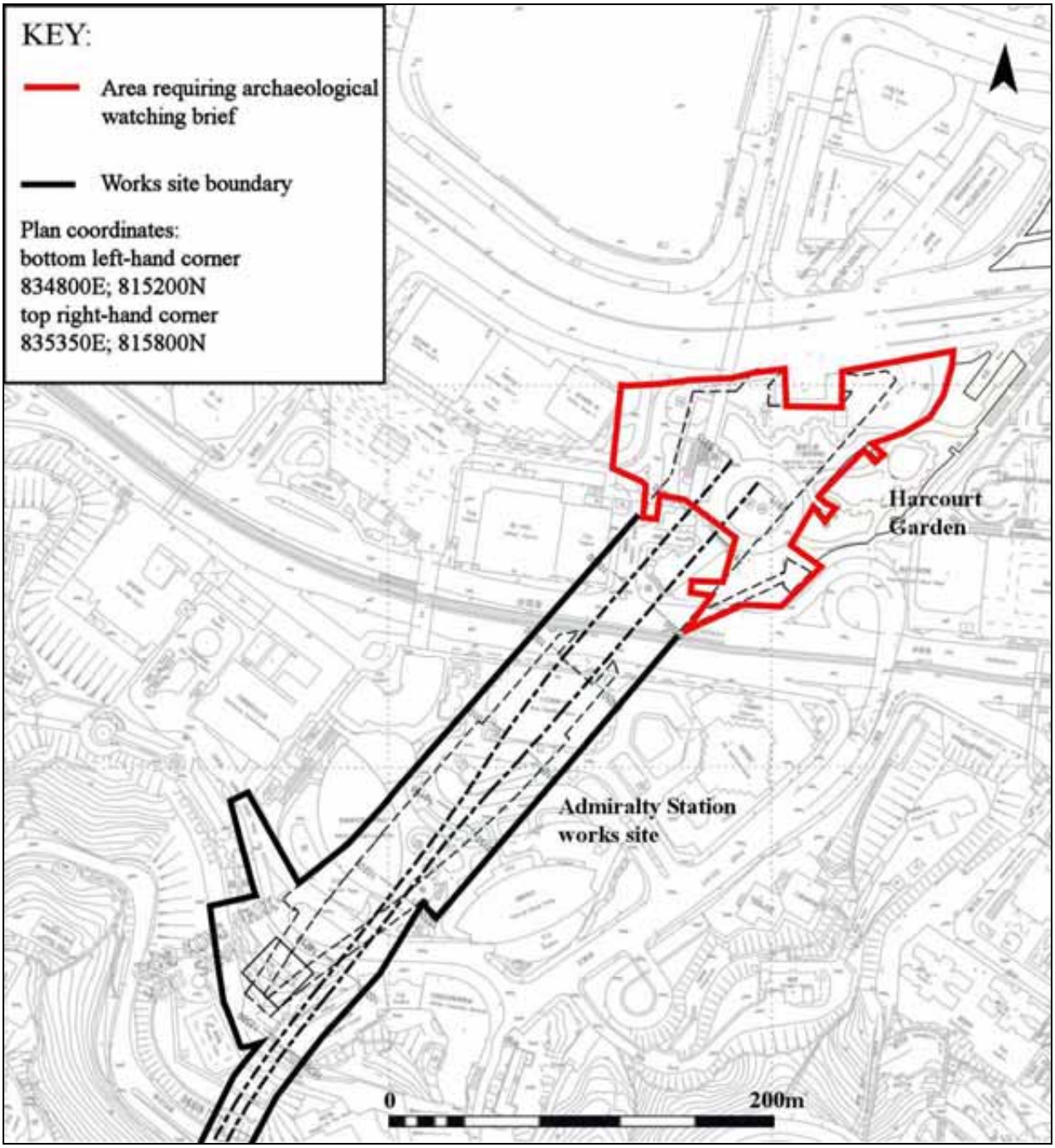



FIGURE 1a. Harcourt Garden. Area identified for Archaeological Watching Brief.


FIGURE 1b Harcourt Garden and areas of existing impacts marked with thick red line (MTRC Island and Tsuen Wan Lines and the Electric substation), thin red line (underground carparks) and aqua blue line marks the cooling mains for the shopping malls. The seawall fragment is marked in yellow. Please note that in addition to the marked impacts archaeological evidence shows that Harcourt Garden surface level was cut down to a maximum of 4mPD.

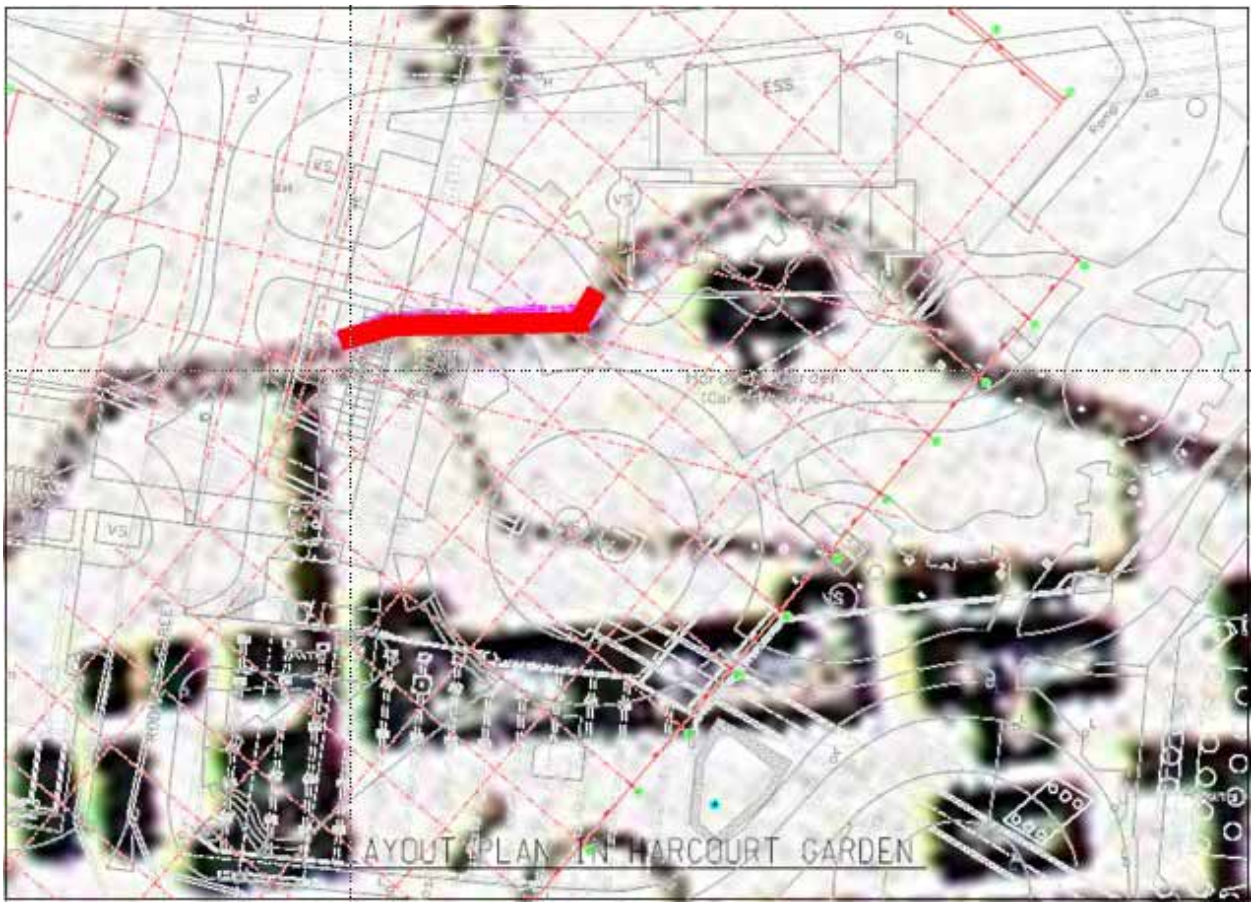



FIGURE 2 Excavated seawall fragment (in red) and layout plan of Harcourt Garden overlain on 1863 map. (The overlain for illustrative purpose only)

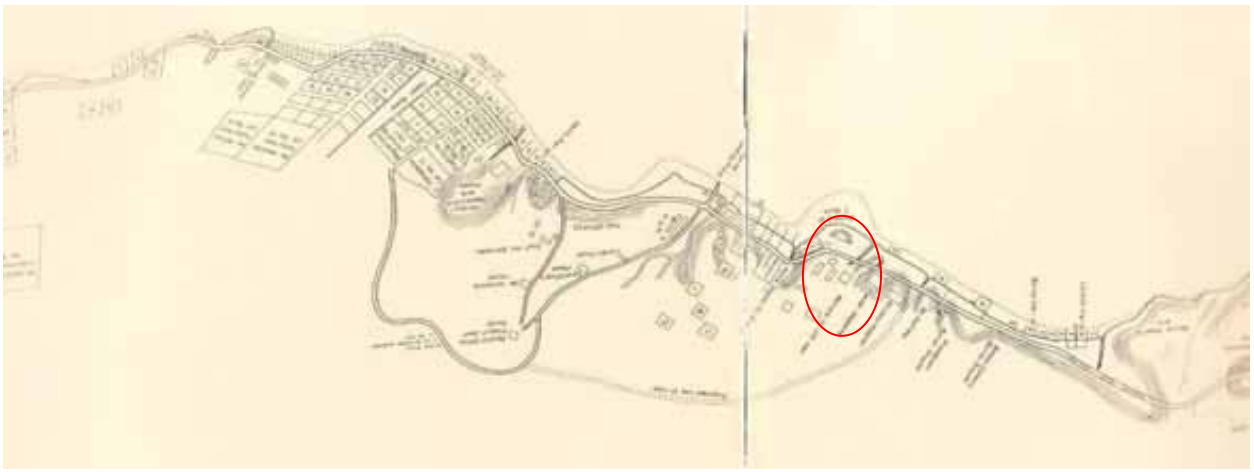


FIGURE 3.a 1842

FIGURE 3.b 1843

FIGURE 3.c 1854

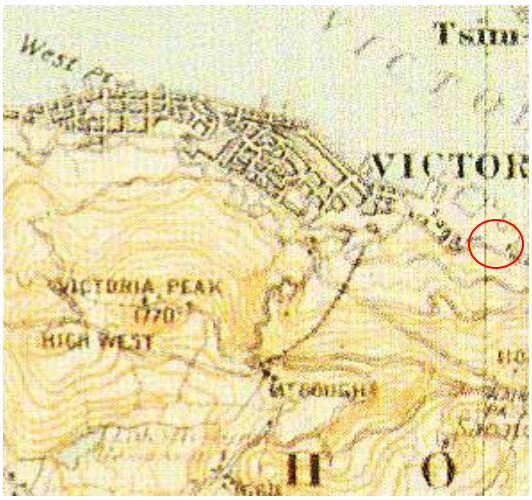
FIGURE 3.d 1863


FIGURE 3.e 1866


FIGURE 3.f 1889

FIGURE 3 Series of 19th century maps showing the project area:

4.a 1905




4.b 1946-1959

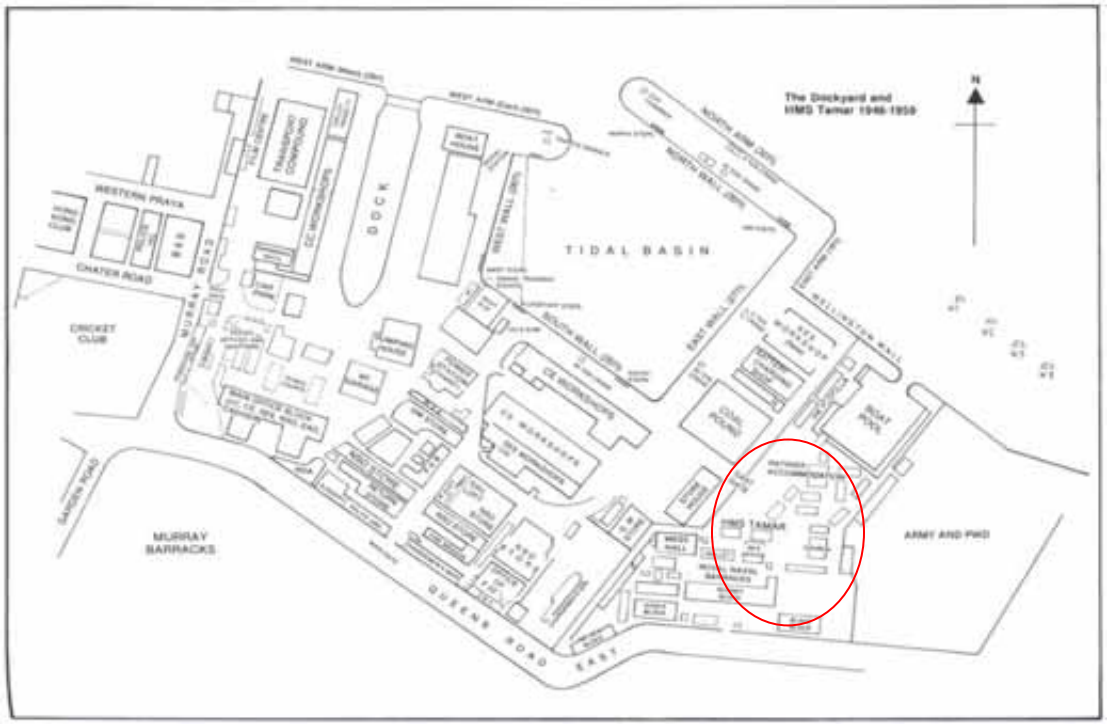



FIGURE 4 Project area in 20th century maps

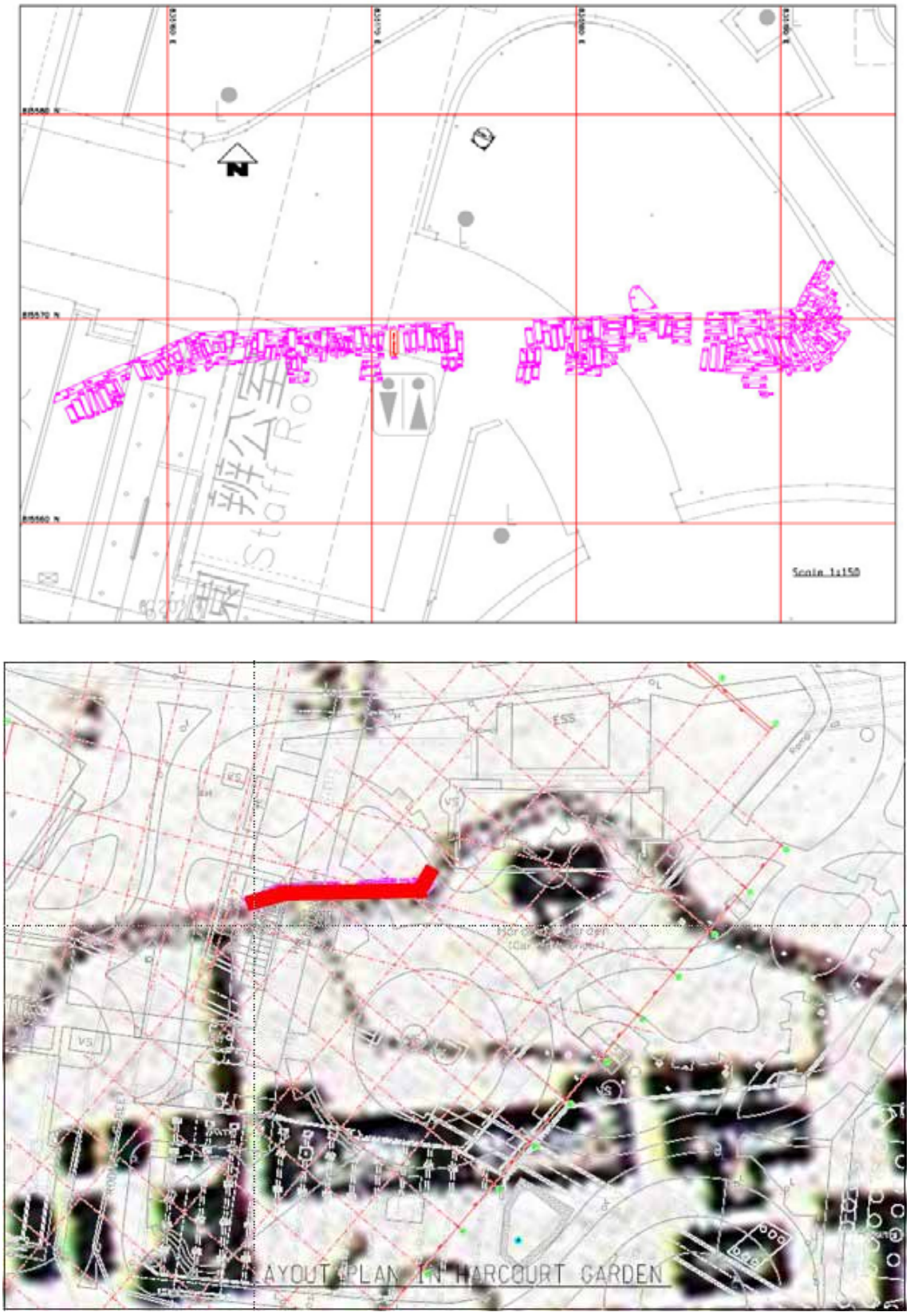



FIGURE 5 Comparison of the recorded seawall fragment and the 1863 map

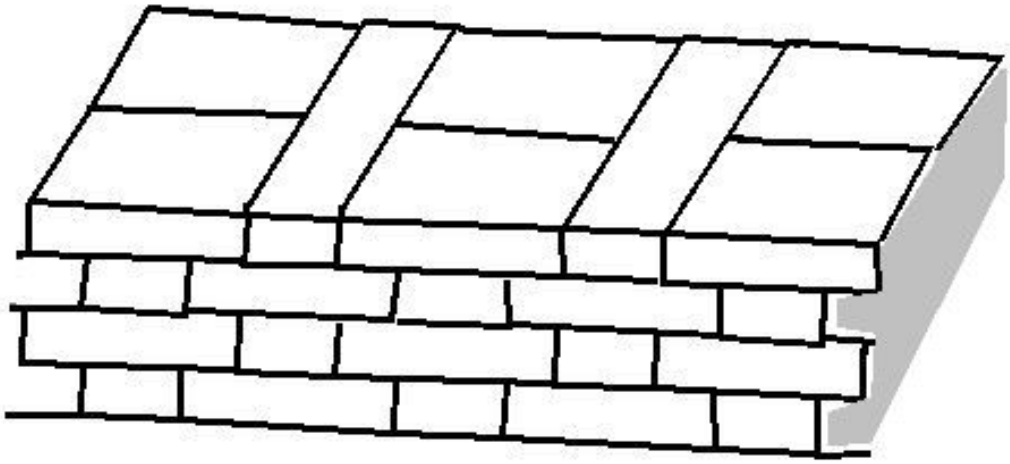


FIGURE 6 Flemish bond

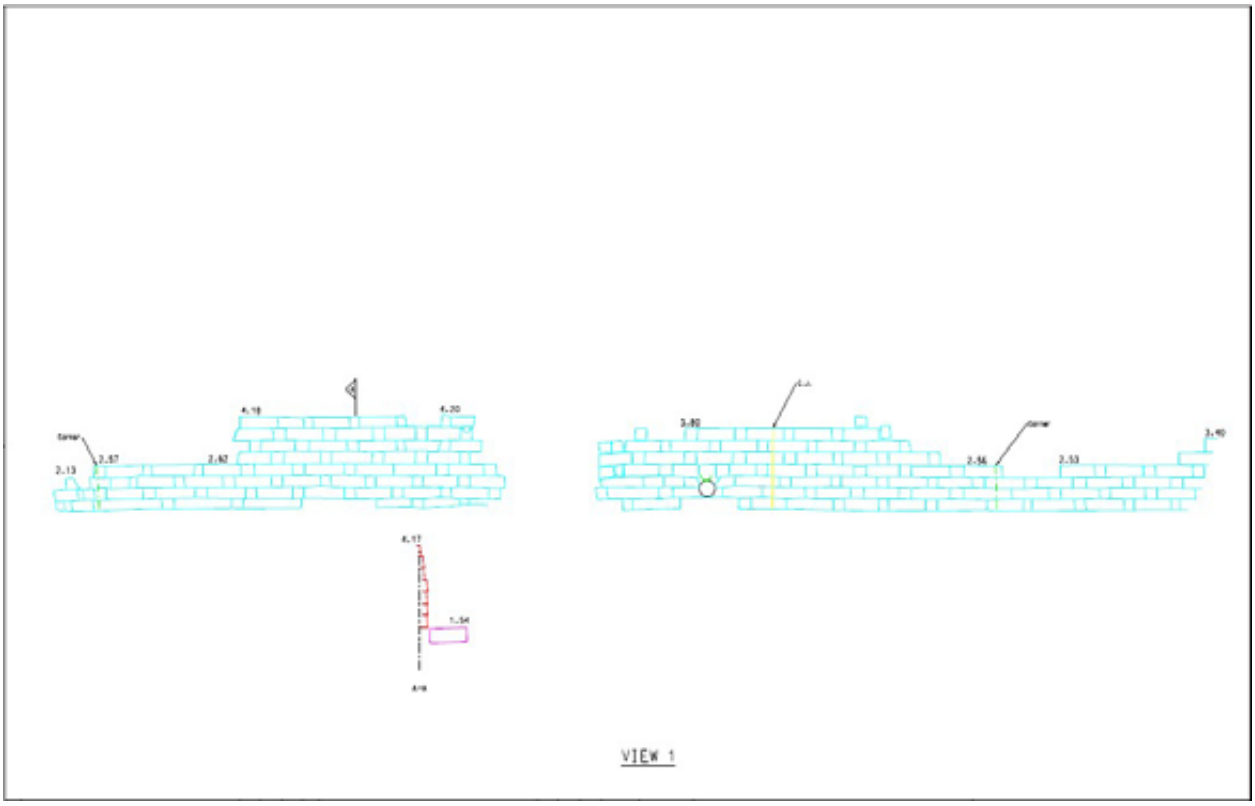



FIGURE 7 Frontal elevation plan and angle of wall

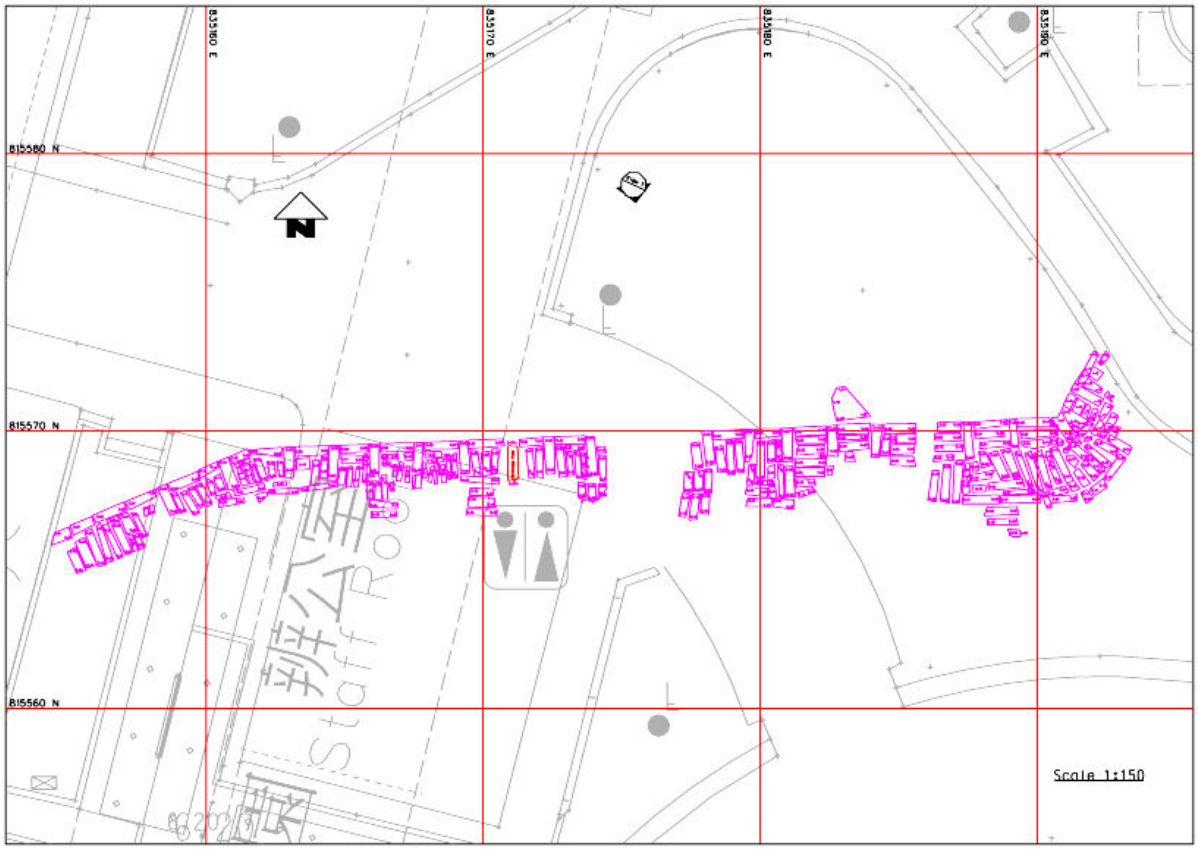



FIGURE 8 Groundplan of seawall at ‘row 4’

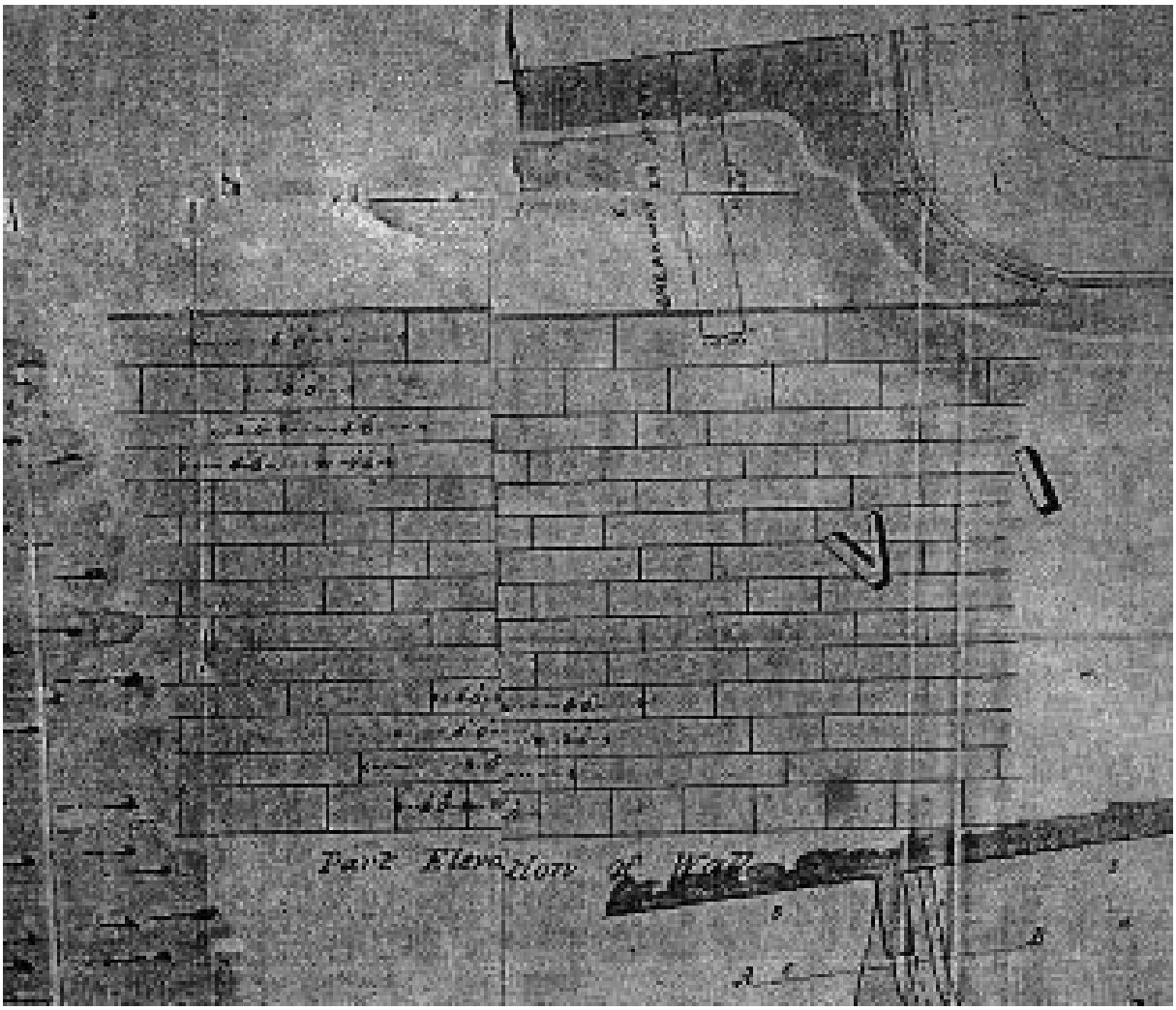


FIGURE 9.a Example of seawall façade with blocks measurements between 2, 3, 4 and 6ft.

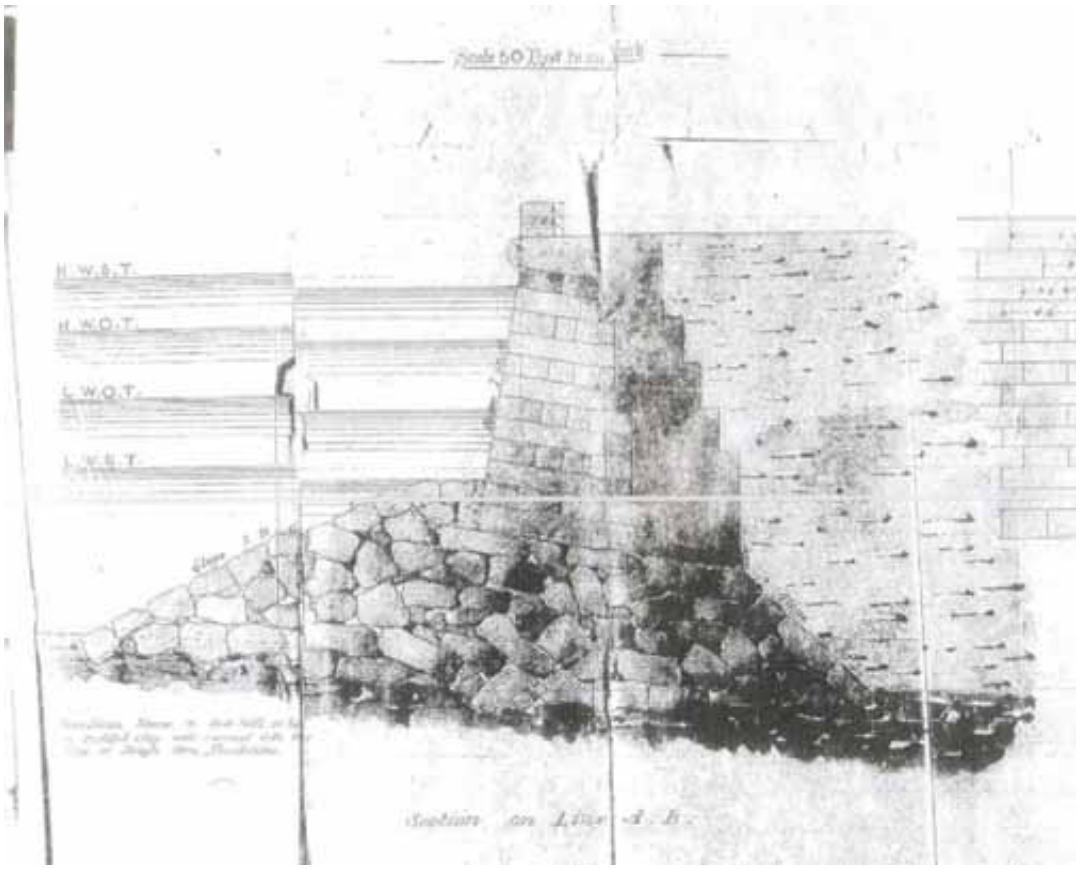



FIGURE 9.b Example of a pierre-perdue foundation; note the rounded capstone similar to the construction to the east and west praya in 1860's

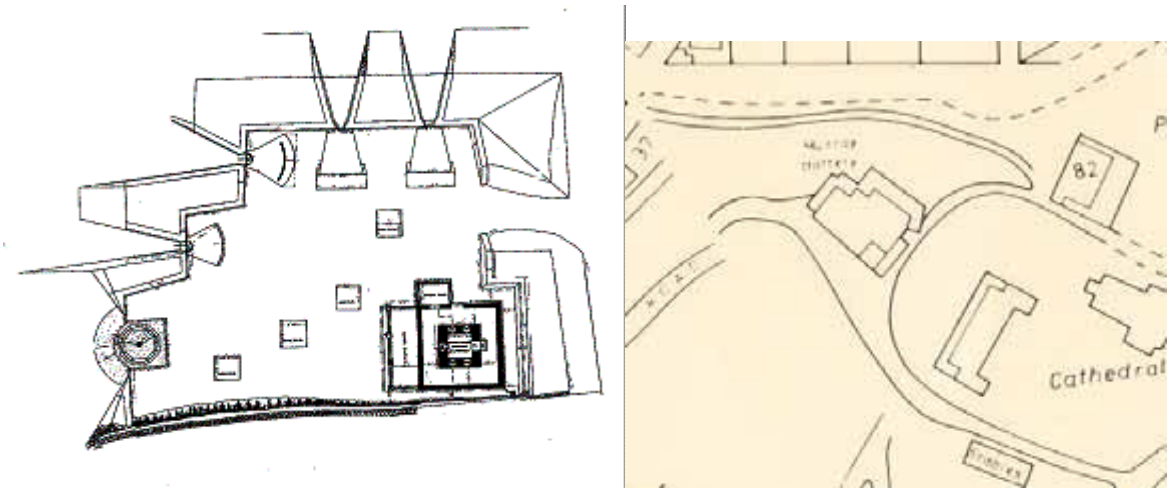



FIGURE 10 Groundplan (left) of Murray Battery built at a similar time as Wellington Battery and outline on the 1856 map (right)

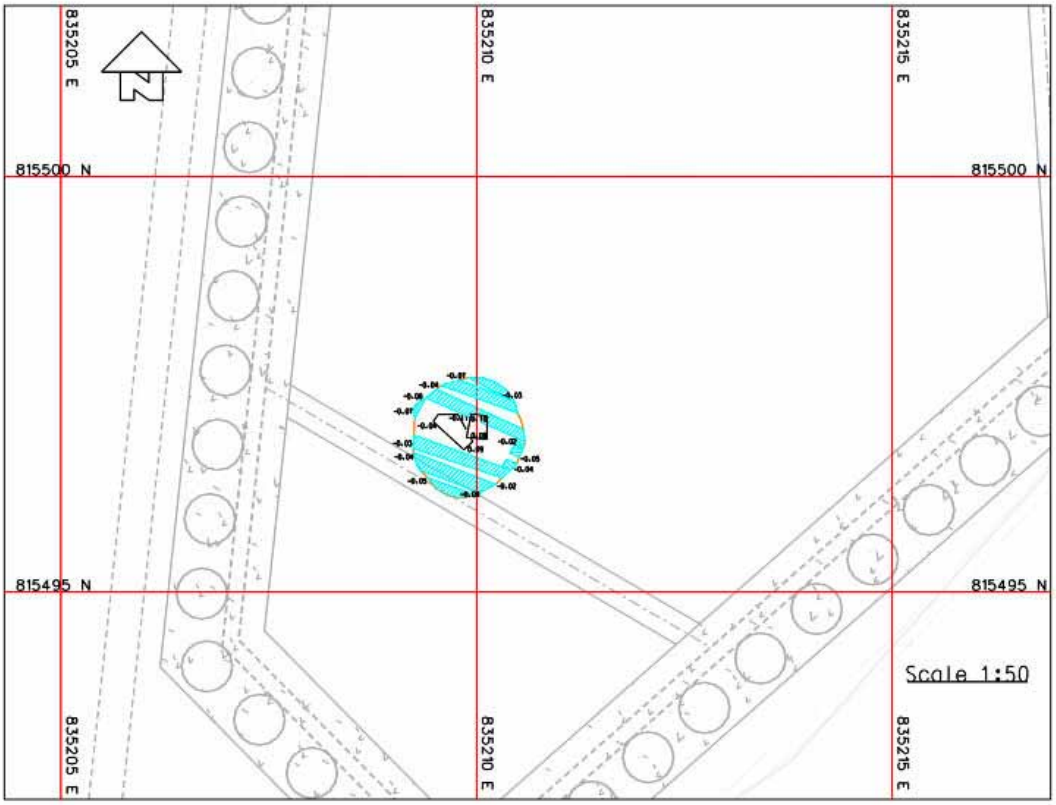



FIGURE 11 Groundplan of bottom of well showing the wooden beam supports in blue

PLATE 1.a Harcourt Garden area in the mid 1960's

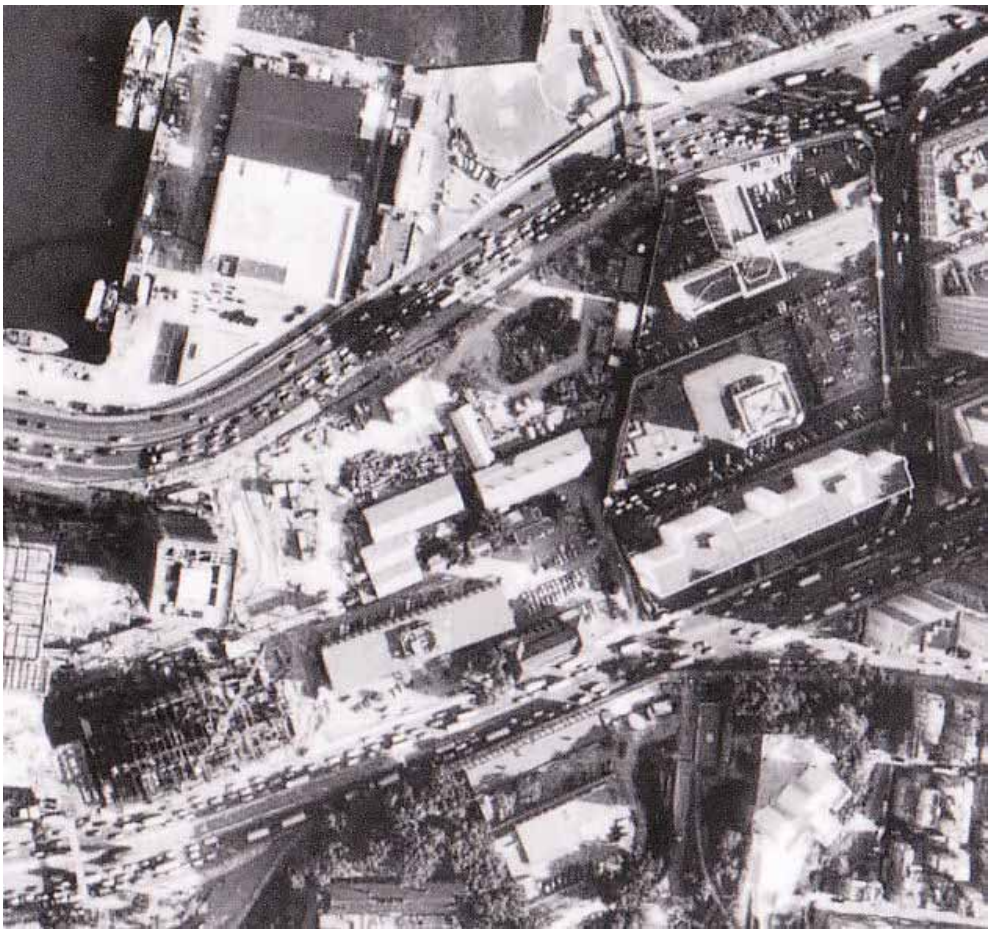


PLATE 1.b Harcourt Garden area in 1979, first major changes since decommissioning in 1959

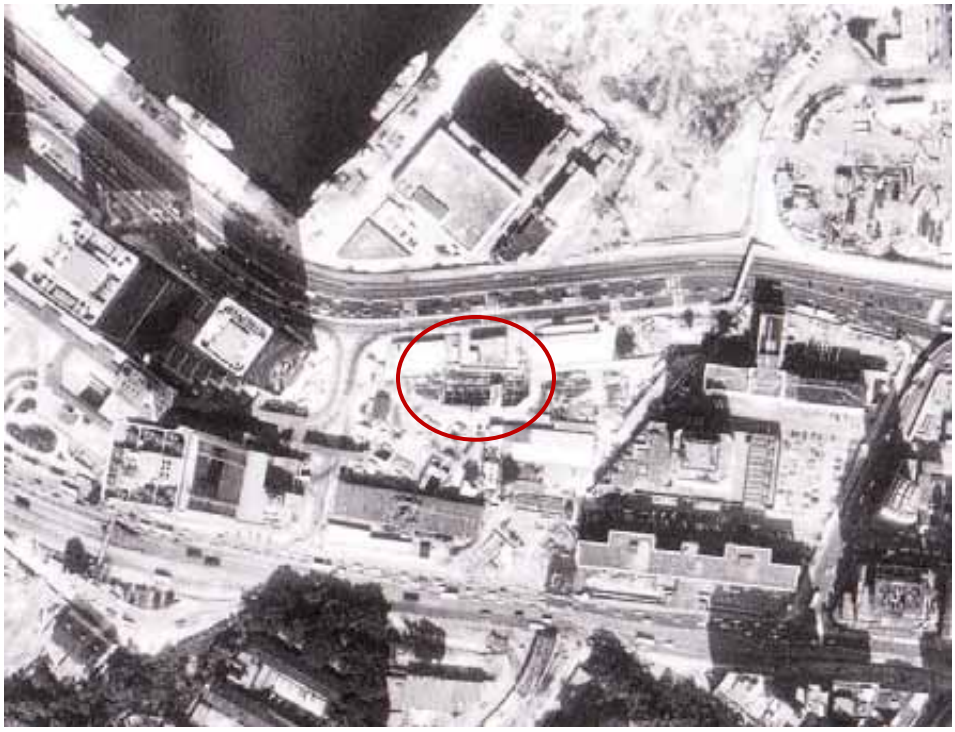


PLATE 1.c Harcourt Garden area in 1983; note construction of Electric substation (red circle)

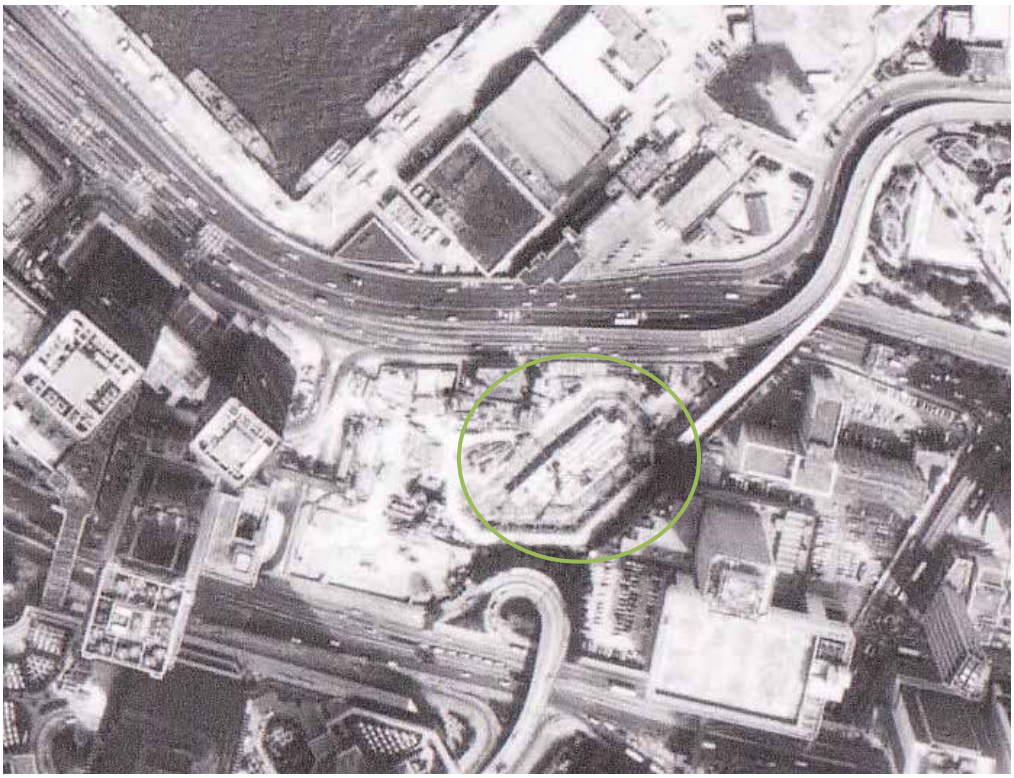


PLATE 1.d Harcourt Garden area in 1991, note the construction of Harcourt underground carpark (green circle)


PLATE 2.a Uncovering of section of seawall fragment

PLATE 2.b Bird eye view of east section of seawall

PLATE 2.c View of east section of seawall looking to southwest

PLATE 2.d View of west section of seawall looking to northeast

PLATE 2.e Rough shaped stones appear at bottom of seawall fragment

PLATE 2.f Uncovering 'row 4' with rear abutment

PLATE 2.g Part of the seawall fragment looking southwest

PLATE 2.h Seawall fragment at west end

PLATE 2 Uncovering of seawall fragment and construction of seawall

PLATE 3 Dressed granite blocks of the north façade of the seawall fragment

PLATE 4 Granite ashlar joints sealed with concrete mortar

PLATE 5 Landing stone at the bottom of the seawall fragment; ‘Lewis holes’ detail on right

PLATE 6 “Steps” in front of landing stone

a. Seawall fragment curving to the north in the east; notice the inner structure of the seawall fragment

b. Seawall fragment curving to the south in the west

PLATE 7 Two identifying ‘bends’ in the seawall fragment

a. Upper later addition b. Circular stone sewage out let with later addition on top

PLATE 8 Sewage outlets.

PLATE 9 Water run-off channel at ‘row 7’

PLATE 10 Rear of the seawall fragment at ‘row 8’ (a. left) and at ‘row 4’ (b. right)

PLATE 11 Concrete on top of the seawall fragment in the eastern section

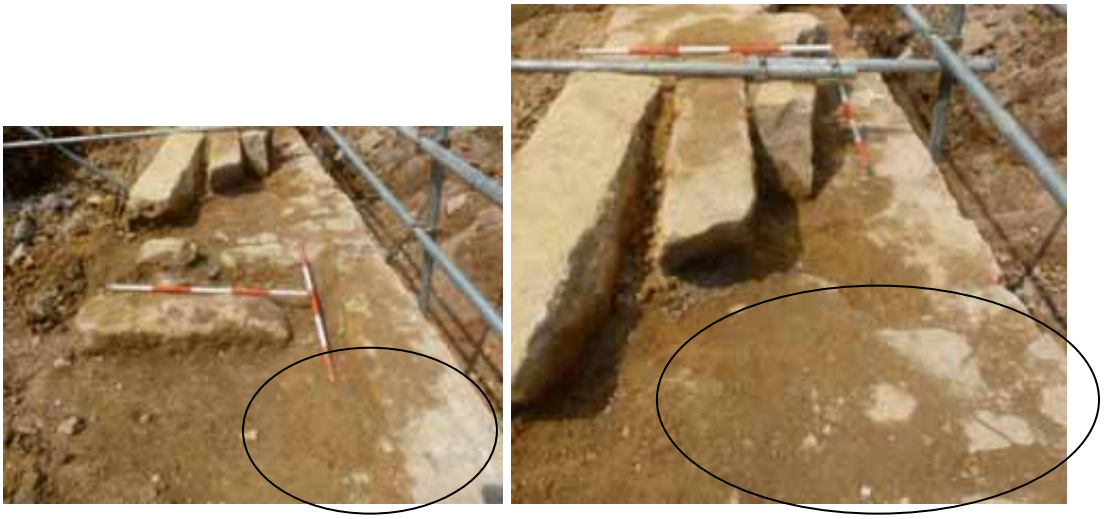


PLATE 12 Chunam on top of the seawall fragment at ‘row 7’ in the western section

PLATE 13 a Plunge column sunk from surface level prior to excavations has dissected the seawall fragment and affected the condition of seawall; left and right shows seawall fragment on either side of the plunge column (centre photo)

PLATE 13 b Plunge column sunk from surface level prior to excavations damaged the rear of the seawall fragment

PLATE 13 c Thick rebar foundations part of previous MTRC Entrance/Exit 'E' construction damaged the rear of the seawall fragment

PLATE 14 Early stage of uncovering the well remnant: granite blocks in an irregular pattern and loose manner which hampered early interpretation

PLATE 15 Concrete ‘pile’

PLATE 16 Circular shape of the well remnant after the concrete plug was removed; before and after it was cleaned

PLATE 17 Mortar lining on the inside of the well remnant and negative impressions of the blocks into the mortar

Button with ‘VR’ inscription (1cm scale)

One mil and one cent 1863 HK coins

Belt buckle with leather fragments

Knife handle with inscription ‘ALDERSHAW’

PLATE 18 Some finds recovered from the cultural deposit inside the well remnant

PLATE 19 Concrete casing and pipe from a previous development which cut the top of the well and leaves shaft and bottom on well

View of dressed side of block

View of side of dressed stretcher block

View of block with mortar

View of small side of blocks

View of interior block

View of dresser header block

PLATE 20 Examples of the salvaged seawall blocks

PLATE 21.a

PLATE 21.b

PLATE 21.c

PLATE 21.d

PLATE 21.e

PLATE 21.f

PLATE 21.a - f View of east portion of seawall fragment in section generally from left to right; the coloured dots identify the overlap. Use Figure 7, elevation of wall.

PLATE 22.a


PLATE 22.b

PLATE 22.c

PLATE 22.d

PLATE 22.e

PLATE 22.f

PLATE 22.g

PLATE 22.a - g View of west portion lower courses of seawall fragment in section generally from left to right; the coloured dots identify the overlap

PLATE 23.a Connects to lower courses in Plate 22.a

PLATE 23.b

PLATE 23.c

PLATE 23.a – c View of west portion upper courses of seawall fragment in section generally from left to right; the coloured dots identify the overlap