HERITAGE IMPACT ASSESSMENT FOR TUNG WAH MUSEUM

In Respect of

THE REDEVELOPMENT OF KWONG WAH HOSPITAL

PREPARED FOR
HOSPITAL AUTHORITY | TUNG WAH GROUP OF HOSPITALS | KWONG WAH HOSPITAL

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1.0 INTRODUCTION

In accordance with the Development Bureau Technical Circular (Works) No. 6/2009, an Heritage Impact Assessment (HIA) is required for submission to Antiquities and Monuments Office (AMO) for their approval once the capital works projects involved with or affecting a heritage site and its associated heritage values within the project boundary (inclusive of works area) or in its vicinity (usually interpreted as not more than 50 metres measured from the nearest point of the project boundary (inclusive of works area)). Those heritage sites include declared monuments, proposed monuments, sites and buildings graded by the Antiquities Advisory Board (AAB), recorded sites of archaeological interest and Government historic sites identified by AMO within or in the vicinity of the project boundary.

The existing Tung Wah Museum (Museum), the former Main Hall of the Kwong Wah Hospital (KWH) located within the hospital compound was built in 1911. It was accorded a Grade 1 Historic Building status in 1992 and it was subsequently declared as a monument on 12 November 2010 for statutory protection under the Antiquities and Monuments Ordinance Cap.53. The rest of the hospital buildings are not graded historic buildings. The objectives of this HIA are to assess the effect of the latest proposed scheme of the KWH redevelopment on the heritage value of the Tung Wah Museum

1.1 Project Background

As part of the Hong Kong health care system, Tung Wah has been delivering its valuable services in coordination with the Government. With the support of the Government, Tung Wah contributes to the local health care system by upholding its mission “to heal the sick and to relieve the distressed”. It has been Tung Wah’s long standing tradition to provide medical services free or affordably to the needy in the community, and these services have been well received by the general public.

Being the oldest charitable organisation providing free medical services, Tung Wah’s Chinese and Western general outpatient clinics provide more than one million free consultations to the local community every year. The Chinese medicine general outpatient clinics at Kwong Wah Hospital provide free bone-setting and herbalist service for the public.

KWH is a major acute hospital providing comprehensive acute care services for the Kowloon West Cluster of the Hospital Authority (HA). Being located in a densely populated area in the Yau Tsim Mong (YTM) district, KWH is one of the busiest hospitals of HA. According to the latest projection of the Planning Department, the population of the YTM district is projected to decrease slightly from 315,000 in 2013 to 309,200 in 2023. However, the elderly population aged 65 or above in the district is projected to increase from 48,700 in 2013 to 69,400 in 2023, representing a significant increase of around 43%. The aging population in the district gives rise to increasing demand for both in-patient and ambulatory services.

The majority of the buildings within the KWH compound are over 50 years old. With the passage of time, provision of space has become inadequate and building services installation has become out-dated. The structural conditions of the buildings have also been deteriorating. The extremely heavy utilisation of KWH has also accelerated the wear and tear of its facilities. Inadequate operational floor space has been a perennial problem facing KWH against the ever-increasing service demands. Numerous improvement works have been carried out in an ad hoc manner over the years to cope with the essential operational needs of the clinical services units. At present, related facilities and services are scattered in many different buildings of the KWH, causing unnecessary travelling and inconvenience to patients, increasing the risk of cross infections and hampering the operational efficiency of the hospital.

To ensure that modern and safe services will be provided to meet the future healthcare needs of the community, HA are currently planning an extensive redevelopment project for the KWH. The redevelopment plan will enable the KWH to meet the standards of a modern acute hospital, with a patient-oriented setting and flexible use of

space that will improve patient comfort, achieve operational efficiency and provide quality modern healthcare.

The project is proposed to be carried out in two phases. The existing TWGHs Tsui Tsin Tong Out-patient Building (TTTOPB) built in 1999 and the Museum, a declared monument protected by the Antiquities and Monuments Ordinance, will be retained whereas the rest of the hospital buildings within the existing compound will be demolished.

Technical Feasibility Statement (TFS) and Master Development Plan (MDP) for the redevelopment were completed in June 2010 and July 2011 respectively. The HIA on the design scheme in the MDP stage was submitted to AMO for endorsement in June 2012. Funding for the preparatory works of the redevelopment was granted in February 2013 as per FCR(2012-13)71.

In March 2013, Simon Kwan & Associates Ltd. (SKAL) have been commissioned by HA as the Architectural Consultant of this redevelopment project. Urbanage International Ltd. (UIL) have been commissioned by SKAL as Heritage Conservation Consultant for the project to conduct an update for the HIA in the MDP Stage endorsed by AMO back in 2012.

1.2 Site Location

The project site (Site) is occupied by the KWH compound located at 25 Waterloo Road, Kowloon. The Site is bounded by Waterloo Road to the South East, Dundas Street to the north and Pitt Street to the south. The main hospital compound buildings were constructed in stages in the 1950s and 1960s. Subsequently there have been ongoing renovations, alterations, redevelopments and expansion carried out in the KWH compound.

The existing Site is owned by the TWGHs and occupied by KWH which forms part of the Kowloon West Cluster administered by the HA.

1.3 Objectives and Scope of Heritage Impact Assessment

The objectives of this HIA are to assess the effect of the latest proposed scheme of the KWH redevelopment on the heritage value of the Museum, a Declared Monument within the Site and to provide recommendations for necessary mitigation measures if adverse impact is unavoidable as well as proposing enhancement measures to the Museum.

1.4 Methodology

The Methodology of this HIA report is in accordance with the requirements of the DEVB Technical Circular (Works) No. 6/2009, following the Guidelines for Built Heritage Impact Assessment (BHIA) 2008, and with reference to the Burra Charter Australia ICOMOS.

The structure of this HIA report is generally described as follow:

- Desk top study of project data & document, obtained from HA, TWGHs, KWH, the Museum & AMO
- Conduct site visit and condition survey to existing building structures
- Conduct baseline study and Impact assessment in respect of the latest proposed scheme
- Assess potential heritage impacts and recommend mitigation measures in respect of the latest proposed scheme for the redevelopment of KWH.

1.5 Acknowledgements

The author of this report would like to acknowledge the following parties, organizations and departments for their assistance and contribution in preparing this report:

- Hospital Authority (HA)
- Tung Wah Group of Hospitals (TWGHs)
- Kwong Wah Hospital (KWH)
- Antiquities and Monuments Office (AMO), Leisure and Cultural Services Department (LCSD)
- Antiquities Advisory Board (AAB)
- Public Records Office (PRO)
- Hong Kong Museum of History
- Tung Wah Museum (Museum)
- LWK Conservation Ltd.

1.6 Definitions

This section is to clarify some commonly used terms in this report. The following definition shall refer to the meaning within the context of this report as below:

The Site or the Historic Place:	means the existing site of KWH

The following definitions are borrowed from the Burra Charter – *Australia ICOMOS Charter for the Conservation of Places of Cultural Significance* as below:

Place:	means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.
Cultural significance:	means aesthetic, historic, scientific or social value for past, present or future generations.
Fabric:	means all the physical material of the *place*, including components, fixtures, contents, and objects.
Conservation:	means all the processes of looking after a *place* so as to retain its *cultural significance*.
Maintenance:	means the continuous protective care of the *fabric* and *setting* of a *place*, and is to be distinguished from repair. Repair involves *restoration* or *reconstruction*.
Preservation:	means maintaining the *fabric* of a *place* in its existing state and retarding deterioration.
Restoration:	means returning the existing *fabric* of a *place* to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.
Reconstruction:	means returning a *place* to a known earlier state and is distinguished from *restoration* by the introduction of materials [new or old] into the *fabric*.
Adaptation:	means modifying a *place* to suit the existing *use* or a proposed use.
Use:	means the functions of a *place,* as well as the activities and practices that may occur at the *place*.
Compatible use:	means a *use* which respects the *cultural significance* of the *place*. Such a *use* involves no, or minimal, impact on cultural significance.
Setting:	means the area around a *place*, which may include the visual catchment.

Related place:	means a *place* that contributes to the *cultural significance* of another place.
Related object:	means an object that contributes to the *cultural significance* of a *place* but is not at the place.
Associations:	mean the special connections that exist between people and a *place*.
Meanings:	denote what a *place* signifies, indicates, evokes or expresses.
Interpretation	means all the ways of presenting the *cultural significance* of a *place*

2.0 HISTORICAL AND ARCHITECTURAL APPRAISAL

2.1 Historical Development

The KWH compound is located at 25 Waterloo Road, Kowloon and bounded by Waterloo Road to the South East, Dundas Street to the north and Pitt Street to the south. The hospital was established in 1911 and later extended in 1923. The existing hospital buildings were redeveloped and constructed in different phases between the 1950s and 1960s. There had been constant renovations, alterations, redevelopments and expansion of services carried out to the KWH buildings since then.

2.2 Founding of Kwong Wah Hospital

The Kowloon Peninsula became a part of the colony in 1860. By 1905, the Chinese population on the peninsula had grown to over 70,000. In 1870, the Tung Wah Hospital, the first Chinese hospital in Hong Kong, was established on the Hong Kong Island. In 1906, in accordance with the government's proposal, Tung Wah planned the construction of a new hospital in Yau Ma Tei, which would later become the KWH. Apart from allocating crown land, the government also provided Tung Wah $30,000 for building costs as well as $6,500 annual subsidy. Among the eighteen founding directors of the KWH, many were former directors of Tung Wah.

Tung Wah Hospital c.1870
(Source: "Hong Kong · Benevolent City: Tung Wah and the Growth of Chinese Communities" exhibition catalogue)

According to Zhengxin Lu (Annual Report) of the Founding of KWH, 1911, the vast areas of the Kowloon Peninsula and the New Territories consisted of a large population without any hospital facilities. Whenever, residents fell ill and needed the attention of a medical practitioner or sought medical treatment, they had to make the trip all the way to Hong Kong Island. This was, of course, hugely problematic for many members of the community. With these facts in mind, the government formed a preparatory committee with Ho Kai being Chairman to build a hospital in Kowloon for the Chinese. The hospital was consequently established on 9 October 1911, a day before the 1911 Revolution, with Governor Sir Frederick Lugard presiding at the opening ceremony.

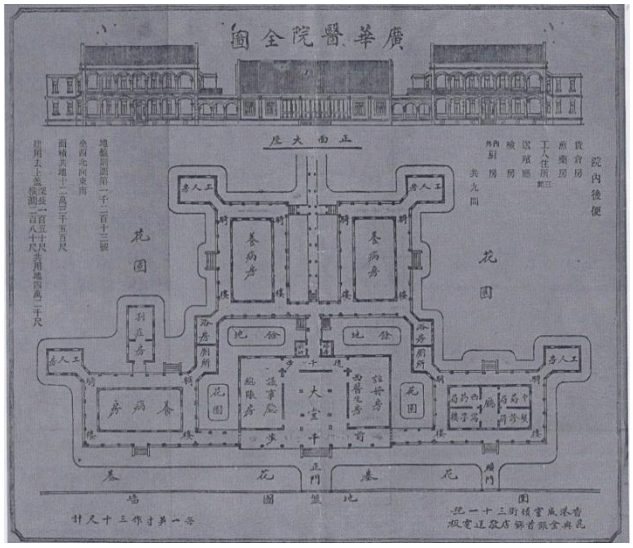
The Inauguration Ceremony 1911
(Source: Tung Wah Museum Archive)

On 24 August 1911, the government promulgated the 1911 Expansion of Tung Wah Hospital Ordinance which stipulated that the Kwong Wah board of directors must be made up of Kowloon residents. This held true even though the hospital would continue to be managed by Tung Wah, whose board of directors controlled Kwong Wah's finances. Later, when Kwong Wah experienced funding shortages, the government handed over to Kwong Wah the management of the Tin Hau Temple in Yau Ma Tei, the Kwun Yum Temple in Mong Kok and the Hung Shing Temple in Tai Kok Tsui so that revenues from the temples could help cover hospital expenses.

Kwong Wah Hospital in 1930
(Source: Tung Wah Museum Archives)

KWH was the first hospital established in Kowloon Peninsula. The Main Hall of KWH (present Tung Wah Museum) was originally a single storey building with one main hall and two side halls when first built in 1911. In 1919, additional attic floors were added to both side halls converting it into a two-storey building. The design of the KWH afforded the wards plenty of light and good ventilation. It was equipped with various western medical

facilities such as operation theatres, a pharmacy and consultation rooms. The government subsidized the hospital by offering free western medicine to patients in an attempt to promote western medical practices.



Original Plan of Kwong Wah Hospital 1911
(Source: Tung Wah Museum)

The Extension Site 1923
(Source: Tung Wah Museum)

In 1923, the KWH started an extension project on a piece of adjacent land of 84,000 square feet allocated by the government. In 1931, KWH was amalgamated together with Tung Wah Hospital (founded in 1870) and Tung Wah Eastern Hospital (founded in 1929) forming the Tung Wah Group of Hospitals. During the Japanese Occupation period from 1941 to 1945, the hospital services were largely disturbed and only limited services were being provided to the public. Soon after the World War II, the deteriorated Main Hall was completely restored in 1947.

2.3 Redevelopment of 1950s-1960s

Due to the continuing inflow of refugees from the Mainland since late 1940s, the population growth of Hong Kong during 1950s was immense. As a result, the demand of medical services in Kowloon area was also under great pressure. The whole KWH compound underwent an extensive redevelopment in late 1950s to the mid of 1960s. The entire Site and buildings were being redeveloped in phases. Construction of the Out-patient Clinic, the East Wing and Central Wing were first completed in 1959 following with the Nurses' Training School and Nurses' Quarters in 1960, the North Wing in 1961 and finally the South Wing in 1964. The redeveloped hospital compound was officially completed with its opening ceremony officiated by Governor Sir David Trench on 23 March 1965. The Chinese Medicine Out-patient Clinic was completed later after the official opening ceremony.

The new Kwong Wah Hospital with Nurses Training School (Source: Tung Wah Museum Archive)

Aerial Photo of Yaumatei 1964 (KWH centre)
(Source: Survey and Mapping Office)

The extension of the East, Central and South Wings was occupying the extension site of an original street block located between Kwong Wa Street and Waterloo Road between Dundas Street and Pitt Street. The section of Kwong Wa Street that the hospital and the Main Hall originally facing, became part of the enlarged site of KWH after the redevelopment. Since then, the Kwong Wa Street has been cut off and ended at Dundas Street.

2.4 Conversion to Tung Wah Museum

In 1970, the centenary year for Tung Wah, the then Board of Directors resolved to preserve and restore the old Main Hall. The restored Main Hall was converted into Museum to collect and preserve the archives and relics of the Tung Wah Group of Hospitals. The Museum was established with its opening ceremony officiated by Sir Kwan Cho Yiu on 15 January 1971. The Museum was extensively restored in 1984 and 1991 with the main roof and the ridge reconstructed. The Museum was later accorded as a Grade 1 Historic Building by the Antiquities Advisory Board (AAB) in 1992 and subsequently was open to the public in 1993. In recognition of its outstanding heritage value, the Museum was declared as a monument by the government in 2010 and is protected under the Antiquities and Monuments Ordinance. There were two redevelopment plans and expansion of hospital services since early 1980s with the TWGHs Yu Chun Keung Memorial Medical Centre (YCK) built in 1981 and the TTTOPB subsequently completed in 1999, both were facing Dundas Street. There has been no major redevelopment within the hospital compound since then.

Opening Ceremony of the Tung Wah Museum, 1971
(Source: Tung Wah Museum Archive)

2.5 Chronological Events

The development history of the Kwong Wah Hospital is summarized in the following table of chronological events:

Year/ Period	Events
1860	The Kowloon Peninsula became a part of the British colony.
1870	The government enacted the Chinese Hospital Incorporation Ordinance.
1872	Tung Wah Hospital, the first Chinese Hospital, was completed.
1904	Reclamation was carried out in Yau Ma Tei from Shanghai Street to Ferry Street.
1906	The first stretch of Waterloo Road from waterfront to the Victory Avenue was completed.
1908	The Hong Kong Government enacts the Man Mo Temple Ordinance allowing Tung Wah to officially take over the management of the temple and its properties.
1911	In order to serve the growing number of Chinese members of the community in Kowloon, the KWH entered operation on 9th October.
1916	The KWH built the Public Dispensary for the Floating Population in Mongkok to take over the work of the Yaumatei Public Dispensary that was founded by Tung Wah.
1919	The Main Hall of KWH *(the former use of Tung Wah Museum)* was converted to a 2-storey building to ease the high demand of for hospital beds.
1920s	Dundas Road was completed.
1921	The KWH set up a nurses' training school to train local nurses.
1922	An anonymous woman's generous donations gave the free Chinese medicine services in KWH a start.
1931	Tung Wah, Kwong Wah and Tung Wah Eastern hospitals were amalgamated to form the Tung Wah Group of Hospitals (TWGHs) to be managed by a board of directors.
1938	The TWGHs received full government subsidy for its medical services and was subject to government regulation. This marked the inclusion of Tung Wah into the government's institutional oversight.
1941 – 1944	The Tung Wah Eastern Hospital was requisitioned for use as a military hospital first by the British and then, by the occupying Japanese forces. During this time, the Tung Wah and KWH provided limited services. Towards the end of the Japanese occupation, Tung Wah experienced a severe lack of funding. The board of directors decided to terminate its provision of Chinese medicine hospitalization and dispensing services.
1945	Hospital services of Tung Wah gradually resumed after the war.
1947	Major repair works to the Main Hall of KWH were carried out.

Year/ Period	Events
1958 – 1964	The entire old KWH complex underwent a massive redevelopment construction with only the Main Hall being preserved. 1959 East Wing & Central Wing was completed 1960 Nurses' Training School & Nurses' Quarters were completed 1961 North Wing was completed 1964 South Wing was completed
1965	The new KWH was officially completed in March. Governor Sir David Trench officiated at the inauguration ceremony.
1967	All nurses' practical training of Tung Wah hospitals was conducted at KWH.
1970	TWGHs celebrated the centenary of its founding. The board of directors agrees to establish the Tung Wah Museum. The Main Hall of KWH was converted into the Tung Wah Museum
1971	Tung Wah Museum was established with its opening ceremony officiated by Sir Kwan Cho Yiu on 15th January.
1981	TWGHs Yu Chun Keung Memorial Medical Centre was built.
1984	A major restoration project on the Tung Wah Museum was conducted.
1990	The first Well Women Clinic, located in KWH, was founded.
1991	All Tung Wah hospitals joined the Hospital Authority. Reconstruction of the pitched roof of TWGHs Museum was carried out.
1992	The Tung Wah Museum was graded as Grade 1 historic building on 18th December.
1993	The Tung Wah Museum opened to the public.
1999	TWGHs Tsui Tsin Tong Out-Patient Building was built.
2000	TWGHs celebrates the 130th anniversary of its founding. Restoration work at TWGHs Tsui Tsin Tong Outpatient Building in KWH was completed.
2001	The first Chinese medicine clinical research and service centre (Kwong Wah Hospital – The Chinese University of Hong Kong Chinese Medicine Clinical Research and Services Centre) was established.
2003	Hong Kong was hit by the outbreak of Severe Acute Respiratory Syndrome (SARS). Even though the first SARS patient was diagnosed in the KWH, there was no large outbreak in the hospital. Tung Wah assisted in combating the epidemic in various aspects.
2004	The first Well Men Clinic was established in KWH (renamed TWGHs Integrated Diagnostic and Medical Centre in 2009)
2006	TWGHs offered Hong Kong's first integrated inpatient Chinese and Western medicine services at the Kwong Wah and TWGHs Wong Tai Sin hospitals.
2010	TWGHs celebrated the 140th anniversary of its founding. The Man Mo Temple and the Tung Wah Museum (12th November) were declared as monuments.

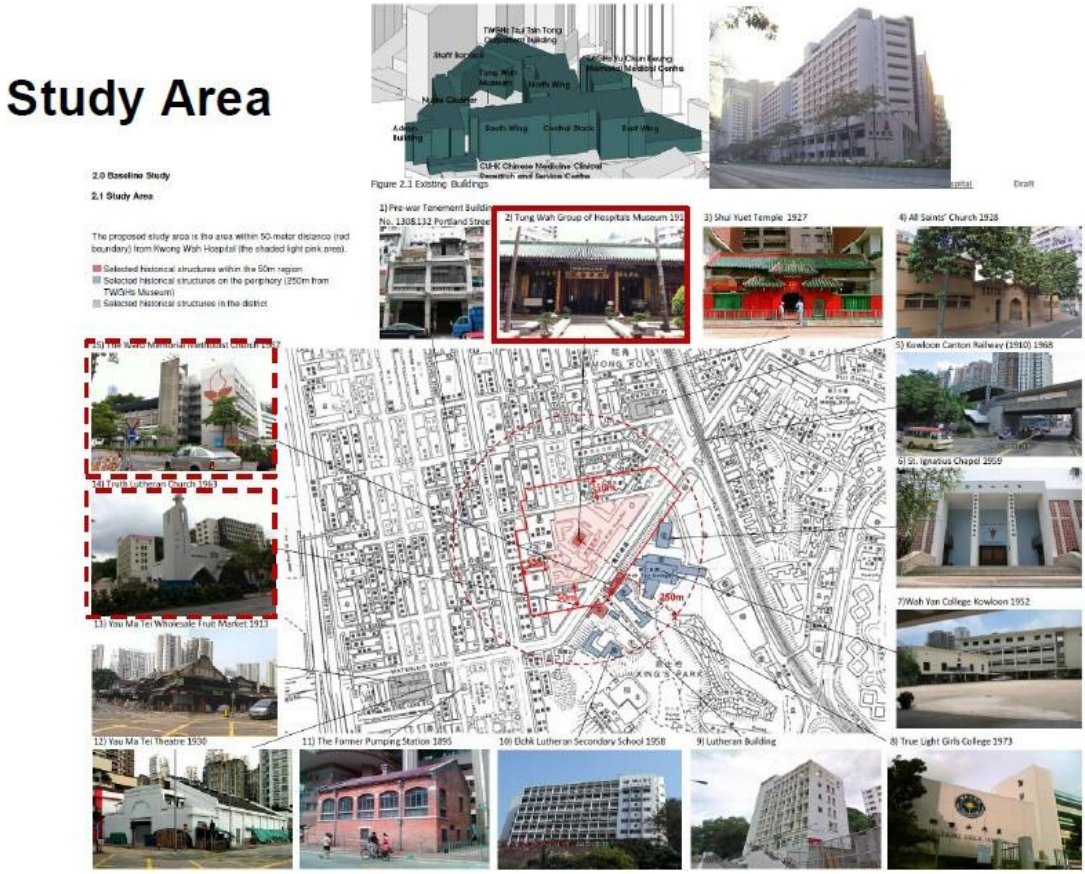
2.6 Architectural Appraisal

2.6.1 Study Area

A general study on the existing buildings in the adjacent area around the Site within the 50m radius study area has been carried out according to the Guidelines for BHIA. It is identified that the Tung Wah Museum, a declared monument, is the only pre-1950 historic building accorded by AMO and existed within 50m from the Site which is likely subject to potential impacts due to the redevelopment. Opposite to the Site, there are two churches, the Methodist Church built in 1967 and Truth Lutheran Church built in 1963, situated at the junction of Chun Yi Lane and Waterloo Road, both are marginally and partially touching the 50m perimeter. Both churches are post-war reinforced concrete structures, recently renovated and found in fairly good conditions, and unlikely subject to any potential impact to their structures due to the KWH redevelopment project.

There are a number of post-war school and church buildings or historic buildings existed outside the 50m zone from the Site including the Wah Yan College Kowloon (1952) and St. Ignatius Chapel (1957), True Light Girls' College (1973), Lutheran Building and ELCHK Lutheran Secondary School (1958), Shui Yuet Temple (1927), All Saints' Church (1928), Yaumatei Theatre (1930), Yaumatei Fruit Market (1913), and the Former WSD Pump House (1895). There are either fairly modern reinforced concrete structures in sound conditions or located far beyond the 50m zone of the Site which are unlikely subject to any impact due to the redevelopment project.

A list of inventory of those selected buildings being studied around the Site is attached to this report in Appendix B.



Study Area of the Project Site

2.6.2 General Description of the Existing Buildings

The existing buildings within the hospital compound were mainly constructed during the extensive redevelopment in the 1950s and 1960s. The latest two buildings added to the compound are the YCK (1981) and the TTTOPB (1999).

A View of the Main Building (South, Central & East Wing) from Waterloo Road

TWGHs Yu Chun Keung Medical Centre

TWGHs Tsui Tsin Tong Out-patient Building

Nurses Quarters & Chinese Medicine Centre

Main Entrance & Central Wing Main Building

Administration Building & Nurses Quarters

South Wing & Administration Building

Staff Barracks

North Wing Main Building

Chinese Medicine Centre

Vehicular Entrance from Waterloo Road

Site Plan and Photos of Existing Buildings around Tung Wah Museum

Based on the site inspection, historical and architectural study on the existing buildings and record drawings provided by KWH, most of the existing buildings within the hospital compound are built in different post-war periods since late 1950s and early 1960s with the latest building TTTOPB built in 1999. It has revealed that these relatively modern buildings are all typical concrete reinforced structures of simple functional design without any particular or consistent architectural style of design.

The proposed redevelopment of KWH will involve demolition of all existing buildings but retaining the Tung Wah Museum and the TTTOPB. In view of the fact that the Site had been extensively redeveloped in the past, the original setting of the Site had also been largely altered. The proposed demolition is therefore considered of having less significant impact to the place in terms of physical site setting. The main focus of this HIA study will be the analysis of any potential impact on the existing Museum imposed by the redevelopment.

2.6.3 Tung Wah Museum

The Tung Wah Museum (Museum), the original Main Hall of KWH, was built in 1911 and has been restored in 1947, 1984 and 1991 respectively. In 1971, the restored Main Hall was converted into Tung Wah Museum to collect and preserve the archives and relics of the TWGHs.

It is accorded in AMO's document of Historic Building Appraisal for the Tung Wah Museum that the Museum is a mixed architectural style combining Western and Chinese style features with the use of modern and Chinese traditional building materials. It is a two-storey seven-bay building resembling the layout of a Chinese ancestral hall of symmetrical layout. It was constructed of concrete (floor), stone and grey bricks with load bearing bricks walls supporting its pitched roofs of timber rafters, purlins and glazed ceramic roof tiles. The roof structure has been strengthened with reinforced concrete and waterproofing materials. The high ceiling ceremonial hall is in the middle on ground level flanked by two exhibition rooms on its left and right. An altar housing a spirit tablet of the God of Shennong (Deity of Chinese Medicine and Agriculture) is enshrined in the middle of the hall.

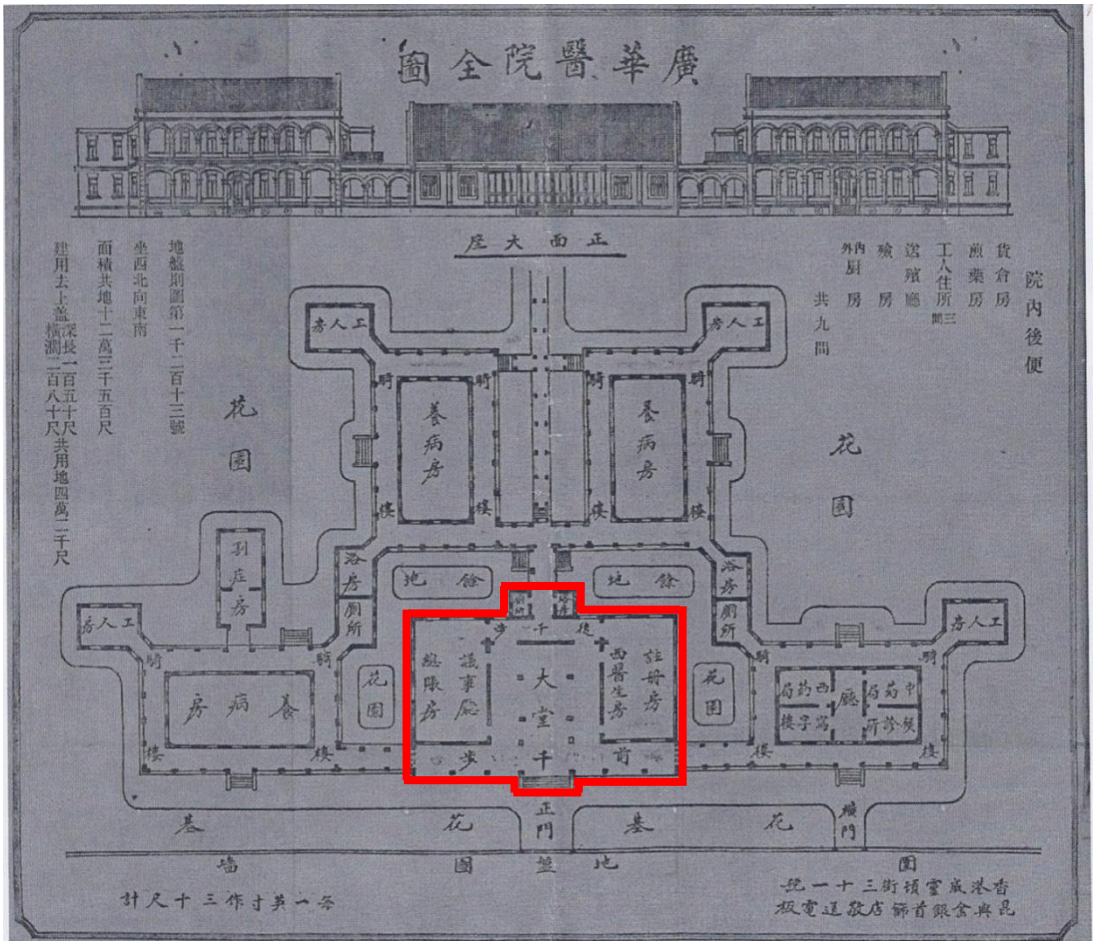
The upper level (the attic floor added in 1919) is accessible by a timber staircase located in the middle back of the building and a corridor connecting the conference room on one side and a library on the other side. The front verandah at the entrance and the central hall are of high ceiling supported by tall columns. The arched windows are with wooden frames painted red. The pitched roof reconstructed in 1984 is covered with traditional green-glazed tiles and its ridge reconstructed in 1991 decorated with traditional Shiwan ceramic motifs. At the very middle of the ridge is a pearl, flanked on either side by a gold coin decoration, while the ends of the ridge are embellished with a 'dragon fish'. The whole building is heavily decorated with traditional Chinese wood carvings, sculptures, porcelain portraits, historic memorial plaques and couplets on beams and columns and above the entrance.

Based on the visual inspection during site visits carried out in August 2011 by LWK and May 2013 by SKAL, the existing structure of the Museum is found in overall fair condition. There is no significant structural defect or crack observed during the time of site inspection. Some major defects were observed on site including the deteriorated brick works and rising damp that seriously affected the painted coated internal brick walls. Despite those alterations and previous changes made to the building to suit its different use, its authenticity of this building has been retained together with its mixed Chinese and western style construction and traditional decorative elements relics being kept in this building.

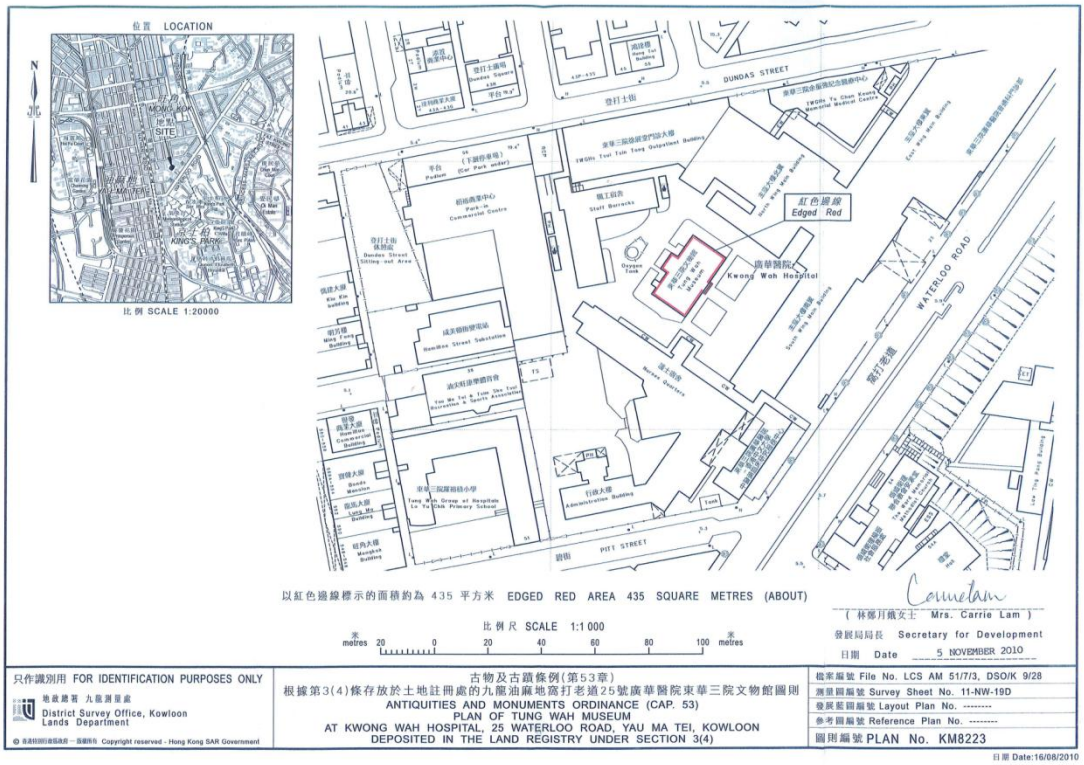
Today, the Museum houses a considerable amount of historic memorial plaques and couplets, as well as valuable archives of the TWGHs including accounting journals, letters and correspondence between TWGHs and the Government or the public, Board Meeting minutes, records of Tung Wah Coffin Home, reference books and photographs of various occasions and events.

Exterior of Tung Wah Museum

Interior of Tung Wah Museum



Original Plan of Kwong Wah Hospital (Inside red colour is the current Tung Wah Musuem)



Gazette Plan of Tung Wah Museum

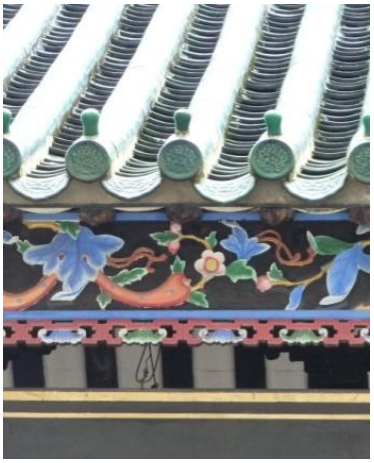
Main Façade – East Elevation

Main entrance


Ridge details – stucco motifs and green-glazed tiles


Granite column base with the cement tiles detail


The open verandah


Timber eave board details


The timber framed western design window

This elevation being the main façade of the building contains most of the decorative details which demonstrate its traditional Chinese ancestral hall design with western ornamental features.

North Elevation

The north elevation wall of the Museum in pitched form with fully plastered surface. Windows are later altered to fit in the upper hanging AC unit but remain its traditional timber design and the arched frames.

An arch porch access to the front verandah of the east elevation.

A close up to the timber glazing windows of the openings and the enclosed archway at the rear attic level.

Side – South Elevation

The south elevation wall of the Museum in pitched form with fully plastered surface. Windows are later altered to fit in the upper hanging AC unit but remain its traditional timber design and arched frames.

The later altered window openings with an AC surround added to top of each window.

The pitch top round opening fitted with a round louver.

West Elevation

Arched window details with the centre keystones

The ceramic ridge details with Chinese coin pattern

Ceramic ridge details with geometric ends and dragon-fish decors

Details of green-glazed roof tiles

Internal Area – Rear Attic Floor

Western-style timber truss system supporting the pitched roof.

Timber staircase connecting the attic floor

The central corridor running through the entire attic floor at the rear end of the building. The corridor is covered with timber strips with many historic timber couplets hanging on the wall.

The wide-spread arch in load bearing function supporting the upper pitched roof.

Internal Area – G/F Exhibition Area

Exhibition areas occupying the left and right side chambers. Except the floor tiles relieved as an earlier fabric being retained, these areas have converted into exhibition space with false ceiling covering decorated with traditional palace coffered pattern with dragon crafts

7 pairs of timber screen doors being fit as the main entrance doorway leading from the horizontal open verandah into the central altar area. Accesses to the side chambers are of arch doorways fitted with timber patterned panels.

The central main altar worshipping the Deity of Chinese Medicine and Agriculture

One of the arched doorways constructed with grey bricks leading to the rear attic level

3.0 ASSESSMENT OF CULTURAL HERITAGE VALUE

3.1 Cultural Significance

Cultural significance is a concept which helps in determining the value of a historic place for society at large and specific groups within the society. Places that are likely to be of significance are those which provide an understanding of the past, or enrich the present and which would be of value to future generations. Cultural heritage value encompasses all the values or meanings that a place may have to people beyond its functional values. These values refer to historical, architectural or aesthetic, social or other relevant values for past or present generations, and also include its likely values to future generations. The definitions and explanation of cultural heritage value applied in this report refer to the Burra Charter (1999). The overall heritage values of the Museum have been summarized in the *Statement of Cultural Heritage Value* or Cultural Significance below.

3.2 Statement of Cultural Significance

The KWH was built in 1911 to serve the growing Chinese community in Kowloon. The hospital underwent an extensive redevelopment construction from 1958 to1965 with only the Main Hall being preserved within the Site. The Museum is culturally significant for the following reasons:

Historical Value

As the original Main Hall of the KWH built in 1911, the Museum is now used as an important cultural heritage base with a rich collection of preserved relics and archives of the TWGHs.

Architectural Value

As a fine exemplar of public building built in early 20th century of mixed Western-and-Chinese architectural style, it is characterized by its green-glazed ceramic tiled roof, timber brackets and brick gable walls, Western-style timber truss, arched window and wall openings, with rich Chinese ornaments and decorative motifs.

Social Value

As the first hospital in Kowloon and the New Territories serving the community, particularly the lower sector of Hong Kong in early days, it is an important testimony to the development history of the TWGHs and the KWH for both Western and Chinese medical services.

Authenticity and Rarity

The existing building displays a distinct architectural look. A high degree of authenticity is also retained in the original structure despite certain later alterations have been made to the building.

3.3 Character Defining Elements

Character-Defining Elements (CDEs) are those architectural elements and features that contributing to the unique character of a historic building. The CDEs of the Museum have been identified as below. It is recommended that such CDEs should be conserved, properly repaired and restored in coming conservation works to be planned for the Museum in future.

3.3.1 External Elements

The overall built form and elevations are significant. The following external elements which form an integral part of the whole building should be conserved as they serve as character defining elements of the historic place:

- Overall form of the building and elevations
- Main façade with facing Chinese grey brick external wall
- The Chinese style front verandah with columns on granite bases, timber beams and brackets, curved ceilings and wooden panelled doors
- Elevated granite base and steps at the entrance
- Arched windows with timber framed windows
- Traditional Chinese timber roof with green-glazed tiles, main ridge decorated with Shiwan ceramic and motifs of two dragon fish and a pearl
- Chinese style memorial plaques and couplets display at entrance, on walls and columns

3.3.2 Internal Elements

The internal form and configuration are significant as they form an integral part of the cultural heritage value of the Museum. The following individual elements should be conserved as they are considered significant within the building interior:

- The seven-bay symmetrical layout
- The central Main Hall and historic furniture resembling a traditional Chinese ancestral hall layout and ambience
- Chinese-and-Western style timber-and-brick construction on elevated platform
- Load bearing brick walls with arched doorways
- Traditional Chinese timber columns on granite bases and interlocking bracket sets (*dougong*) system
- Chinese timber rafters, purlins and battens
- Chinese style wooden carved decorations
- Arched windows with timber frames
- Timber staircases & railings from ground to upper level
- The two attic floors with typical trusses (covered in wooden boards) on upper level
- Original floor tiles on ground level
- Chinese style memorial plaques and couplets display on walls and columns

4.0 CONSERVATION POLICIES

4.1 Conservation Objectives

The conservation policies aim to establish guidelines for the conservation and management of the Museum to safeguard its identified cultural significance and meanings to the surroundings. Based on the Statement of Cultural Heritage Value and Cultural Significance established in the previous Section 3.0, the followings are the Conservation Objectives adopted for the future conservation works for preserving the Museum:

- Preserve the existing building fabrics in particular the identified Character Defining Elements of the Museum as a whole.
- Conserve the existing building for continual use as a museum for the TWGHs and for public visit.
- Preserve and enhance the heritage value retained in the Museum.

4.2 Conservation Principles

This section sets the broad standard of conservation process of making possible a compatible use for the historic building through retention of the heritage values of the Museum and taking reference to:

- Burra Charter (2013) – The Australia ICOMOS Charter for Places of Cultural Significances

The following are the key guiding principles of determining appropriate management for future conservation works that would be generally followed when planning and designing for the conservation works of the Museum, with general reference to international charters and other relevant conservation standards as considered appropriate.

Policy 4.3.1: Conserve Heritage Value

Conserve the heritage value of a historic place, and respect its changes over time which represents a particular period of time. Do not remove, replace, or substantially alter its intact or repairable character-defining elements which contributing to its heritage value.

Policy 4.3.2: Retain Authenticity & Integrity

Respect the original character or architectural style of the building fabric and retain its traditional building materials or construction system as much as possible.

Recognize each historic place as a physical record of its time, place and use. Do not create a false sense of historical development by adding elements from other historic places or by combining features of the same property that never co-existed.

Policy 4.3.3: Minimum Intervention

Keep any treatment or intervention to building fabric to the minimum and respect the heritage value when undertaking an intervention. Use the gentlest means possible for any intervention.
Make any intervention physically and visually compatible and identifiable, and document any intervention for future reference.

Repair rather than replace character-defining elements. Only when such elements are too severely deteriorated to repair, and with sufficient physical evidence, replace them with new elements that match the forms, materials and detailing of the same elements. Where there is no sufficient evidence, make the form,

material and detailing of the new elements compatible with and distinguishable from the character of the historic buildings.

Policy 4.3.4: Reversible Changes

Make any intervention, including alteration and new addition, to the building fabric reversible without causing any damage to the existing structure when such intervention is to be removed in future.

Create any new additions or related new construction so that the essential form and integrity of a historic place or its building fabrics will not be impaired if the new work is removed in future.

Policy 4.3.5: Integrate Old and New

Conserve the heritage value and character of the building fabric when creating any new additions in proximity of a historic place or any new construction of compatible design.

Make the new work physically and visually compatible with and distinguishable from the original fabric of the historic place. Respect the significance of the Museum through consideration of the new work's siting, bulk, form, scale, character, colour, texture and materials and avoid imitation.

Policy 4.3.6: Retain the Content

Retain the content which contribute to the cultural significance of the Museum. Do not remove them from the Museum unless it is the sole means of ensuring their security and preservation on a temporary basis. Such contents should be returned where circumstances permit and it is culturally appropriate.

In order to avoid damages to the archives, plaques and artefacts during the construction stages of the KWH redevelopment, archives will be relocated to a site provided by TWGHs. These measures will be discussed in Section 5.5.

Policy 4.3.7: Protect the Museum during construction

Protect the Museum by both conventional and additional protective & monitoring measures during the demolition and construction stages of the KWH redevelopment to safeguard the integrity of the Museum. These measures will be discussed in Section 5.5.

Policy 4.3.8: Direction, supervision and implementation

Maintain competent direction and supervision at all stages and implement any changes by people with appropriate knowledge and skills.

Policy 4.3.9: Visitor Management

Maintain partial operation and phased opening of the Museum during repair and maintenance to the Museum and the critical period of the construction stage. Please refer to Section 5.7 for the proposed public access to the Museum during redevelopment of the hospital.

5.0 REDEVELOPMENT SCHEME

The Museum is located at the centre of the KWH compound and surrounded by hospital buildings on all sides. The public is not aware of its existence.

Aerial Photo of the existing KWH compound

It is intended to take this opportunity of redevelopment to open up the Museum to the public visually from the Waterloo Road in the redevelopment scheme, to bring the Museum in close contact with the community and to signify its importance in the history of KWH development.

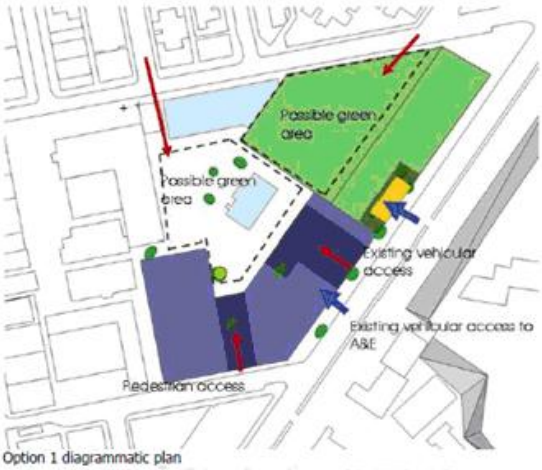
5.1 Design Options

A number of design options for the redevelopment were proposed and considered in MDP stage. The study of different options as follows:

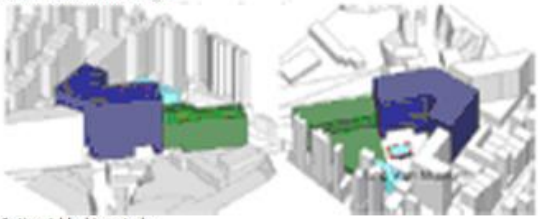
Option 1 : Maximizing Phase 1 Approach

The option maximizes the building height, which is permitted up to 18 storey high in the phase 1 redevelopment, giving the greatest area of accommodation to relocate hospital services and facilities. However, the development involves building a high-rise tower which stands in front of the Museum causing greater visual impact to and impediment of the vertical circulation in the vicinity. Although this option can retain a relatively larger foreground to the Museum, the high-rise approach in front of the Museum fails to fully incorporate the Museum into the hospital complex. The Museum remains detached from the main road by the building block and cannot reinstate its value of being the entrance hall of the original hospital.

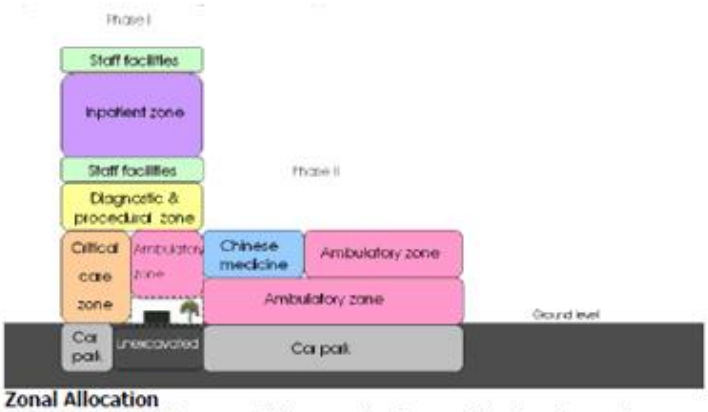
Option 1 – Maximizing Phrase 1 Approach



Option 1 diagrammatic plan



Option 1 blocking study



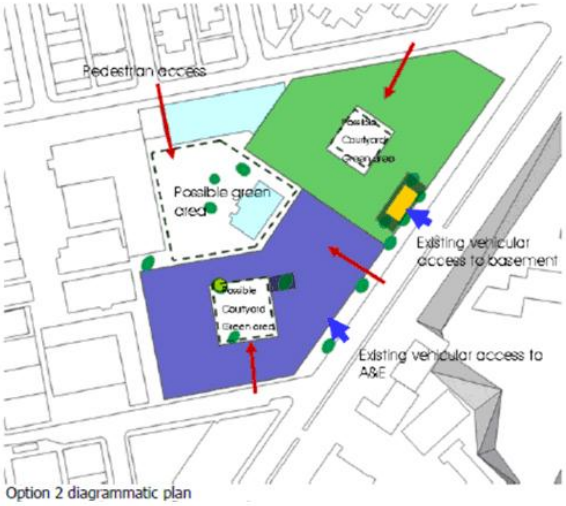
Zonal Allocation

- The Tung Wah Museum will become the focus of the development.
- Inpatient Zone is located at high levels.
- Day Surgery Services including Critical Care Zone and Ambulatory Zone are allocated at low levels.
- Staff Facilities are located in the mid levels for stuff accessing to all zones.

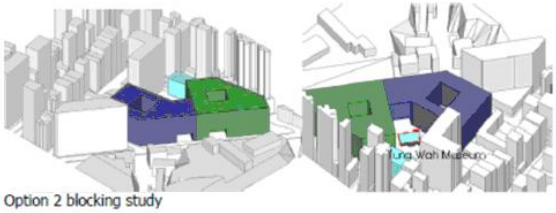
Option 2 : Mono Block Approach

The option proposes a single tower on each redevelopment phase to allow more flexible floor plate for hospital operations. A central courtyard is proposed inside each building to allow natural sunlight into the building. Both building blocks would be built in mid-rise and would maximize the floor area of the building in exchange for fewer storeys. A multi-storey basement is proposed to get more space and underground excavation would be needed under the museum. This proposal has considerable impact on the Museum as the new building block will occupy the forecourt area in front of the Museum and decrease the buffer zone separating it from the modern structure. Visually, the Museum fails to be incorporate into the hospital complex. The front area is extensively built on which reduces its historic value as the main entrance of the original hospital. Furthermore, the excavation of the basements may cause greater risks to the Museum physically.

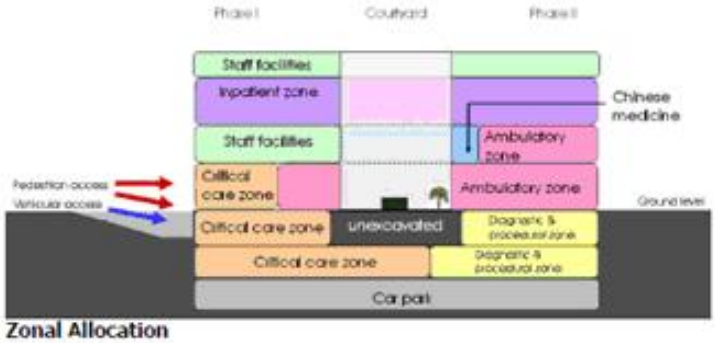
Option 2 – Mono Block Approach



Option 2 diagrammatic plan



Option 2 blocking study



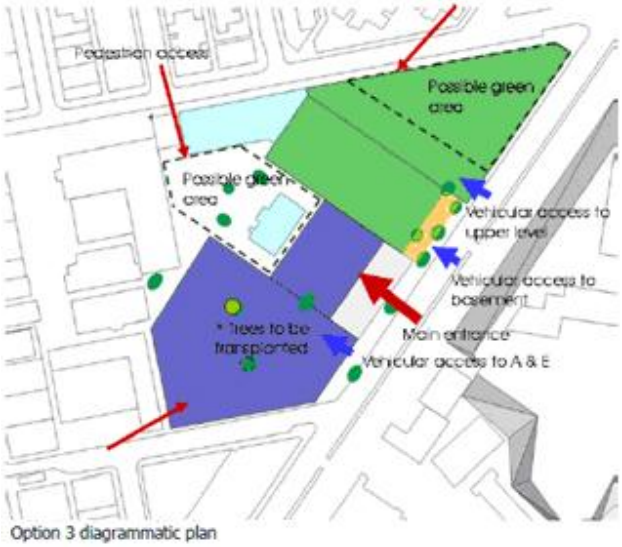
Zonal Allocation

- The Ambulatory Zone is located at lower level and forms the centre of the campus.
- The Inpatient Zone is separated by Chinese Medicine Zone and Staff Facilities.
- Underground space is optimally used for accommodating the hospital services.

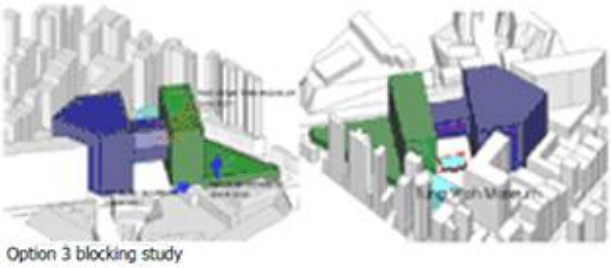
Option 3 : Atrium and Tower Approach

The option proposes the erection of new buildings on the left and right of the Museum and an overhanging bridge structure is built linking both buildings to form an atrium underneath facing the Museum. The design basically preserve the central line of the Museum allowing an unobstructed view looking into the Museum at street level to reinstate its value as the original main entrance facing the street. Although it has a relatively higher building height, by centralizing the buildings on the Site, this proposal minimizes the visual impact to the surrounding residential area and allows better vertical circulation. This approach is generally accepted by all concerned parties (HA, TWGHs & KWH) and various design options have been proposed.

Option 3 – Atrium and Tower Approach



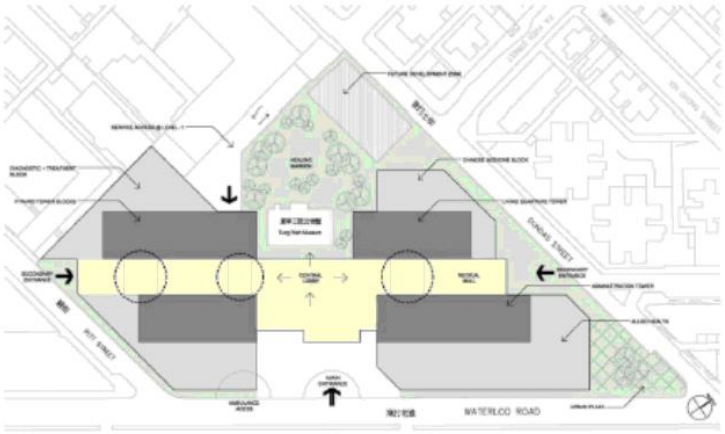
Option 3 diagrammatic plan


Option 3 blocking study

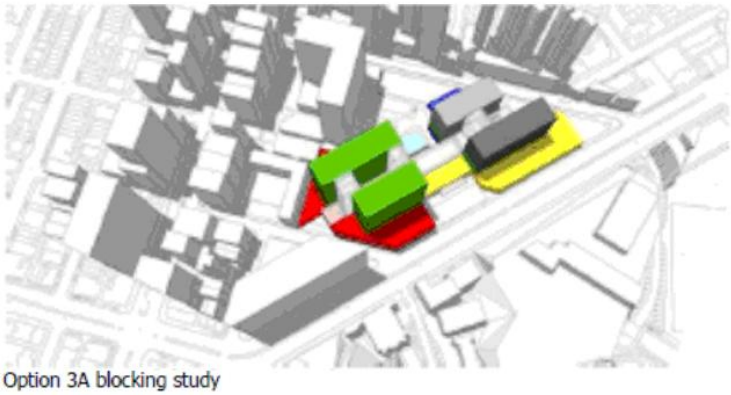
Option 3A & 3B : These options involve building the tower in two rectangular blocks in two phases with linkage towers in-between. The two phases will be linked together with a light bridge and an atrium is created underneath. The major differences between the two options lie in the orientation of the phase 1 building. Option 3A proposes to put the two rectangular blocks parallel to Waterloo Road with linking towers built on edge of each building. Two existing trees have to be transplanted. Option 3B proposes to put the building perpendicular to the road with the linkage tower reduced into one and preserving the two existing trees.

These two options successfully preserve the central line of the Site reinstating the Museum to its original setting looking through from the main road. Sufficient planting along this preserved "corridor" will increase the greenery of this area and improve ventilation. However, all parties considered the orientation of the building was irregular in allowing the operation efficiency, logistic circulation including staff, materials and patients and also for future expansion flexibility.

Option 3A – Atrium and Tower Approach

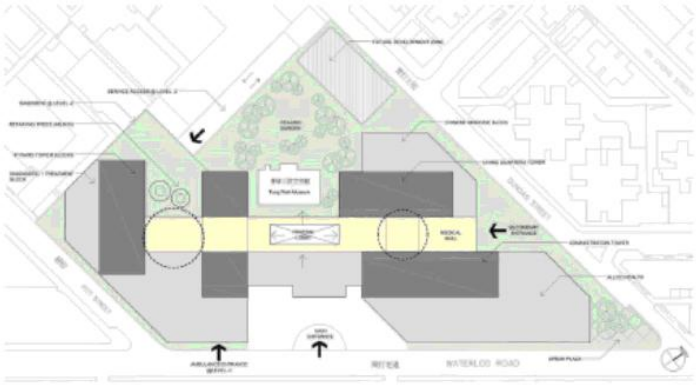


Option 3A diagrammatic plan

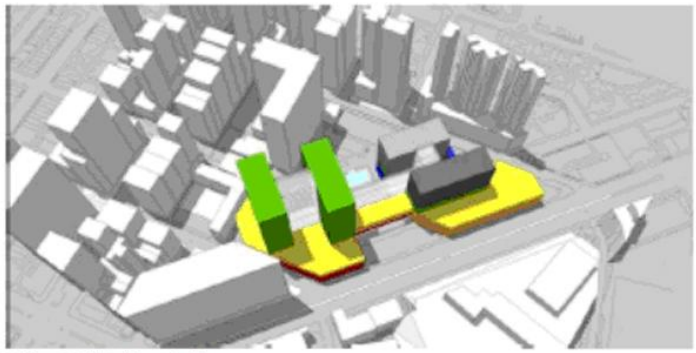


Option 3A blocking study

Option 3B – Atrium and Tower Approach

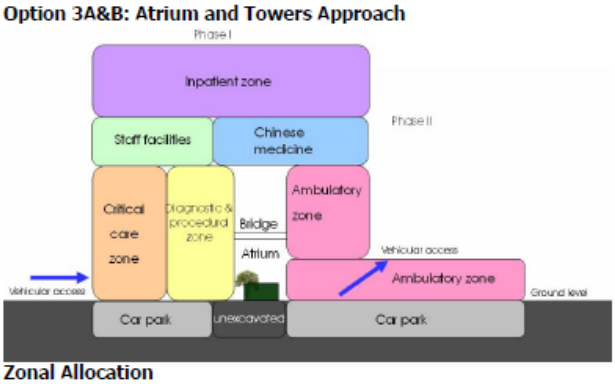


Option 3B diagrammatic plan



Option 3B blocking study

Option 3A&B: Atrium and Towers Approach



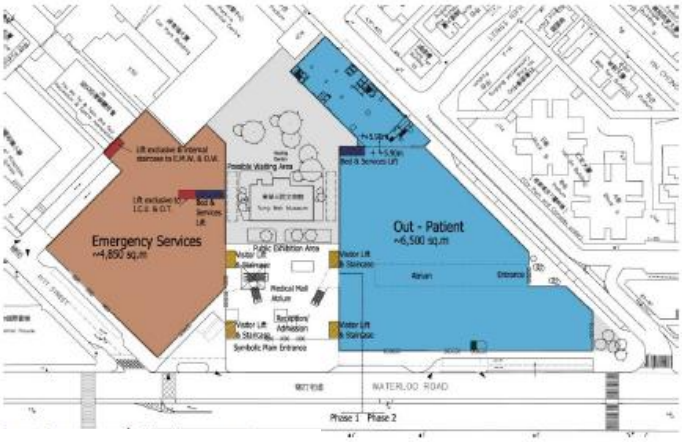
Zonal Allocation

- The large podium in North-East accommodating the Ambulatory Zone allows for the provision of a medical mall.
- Chinese Medicine Zone is located at the Linkage Block to allow better connection and integration of different zones.

Option 3C : This option proposes the erection of two towers in a single structure with the central linking block occupying larger floor plate. The towers are more regular in configuration which allows greater flexibility in the facility planning. A larger linkage block enhances the connectivity between two towers. The atrium underneath and the preserved central axis running east-west of the Site covering the Museum will reduce visual impact on the Museum and will reinstate the value as the entrance hall of the original hospital. The proposed building set back from the site boundary can provide an open plaza in front of the hospital as well as the Museum forming a focal point for people gathering and distribution. It also improves the congestion of the area around the hospital. The only mitigation required is the design of the transparent central atrium separating the Waterloo Road and the Museum. Since this option has its building line slightly set back from Waterloo Road, it becomes slightly closer to the Museum.

After comparing the different designs options, all concerned parties concurred that Option 3C would address the

aim to open up the Museum to the public and recommended that the option should be adopted for the new redevelopment scheme in the MDP stage.



Option 3C G/F plan

Option 3C is developed with the considerations of the followings:

- The linkage block with larger floor plate between towers would be built for enhancing the connectivity.
- The component blocks in Phase 1 are regular that facilitates the internal planning, hospital operation and circulation.
- Maximized floor plate especially on ground floor can be fully achieved with assumption of the transplantation of major trees
- Building set back from the site boundary provides open space and improves the congestion of the district on ground level.

Visual Impact Study

- The proposed measures are considered beneficial in reducing the possible adverse visual and air ventilation impacts from the development.

- Visual Connection and the congestion at ground floor are improved by Tung Wah Museum and the atrium.

Please refer to Appendix C for the comparative analysis of the pros and cons of each option.

5.2 Design Principles Adopted in Option 3C

a. Creation of Central Axis

The design will orient the two building masses both on left and right side of the boundary without touching the central axis of the Site on ground level where the Museum stands. The proposed linkage block will create a central Medical Mall Atrium serving as the central lobby of the hospital as well as the entrance hall for the Museum.

This will successfully preserve the central axis of the Site where the Museum stands. The Museum being visible to the public from Waterloo Road can enhance the heritage value of the historic building which served as the main entrance of the original hospital in 1911. The preserved central axis will act as the main greenery area of the Site on ground level will successfully respect the Museum as an important part of the Site.

b. Provision of a Medical Mall Atrium

The proposed Medical Mall Atrium in front of the Museum will act as a link between the redeveloped KWH and the Museum helping to enhance the history of the Site and the connection between the old and the new architecture.

c. Maintaining buffer distance between new hospital and Museum

The proposed building block will be built closer to the Museum façade and reduced the open forecourt area separating the Museum and the new development. Although the proposed separating glazing built as the rear wall of the central atrium will give a transparent view to the Museum, it is important to allow an adequate buffer area between the Museum and the glazed rear wall of the central atrium.

d. Removal of carpark and provision of landscaping area

The existing car-park and vehicular access surrounding the Museum will be removed and part of it will be replaced with landscaping area. This will improve the existing environment where car-park currently surrounds the Museum. Pollutants such as exhausted gas, noise and also vibration by running cars cause deterioration to the historic fabric of the building. Removal of traffic away from the Museum can give the building a beneficial protecting environment and prolong its life span. The provision of landscaping area around the Museum can provide a tranquil and sustainable environment to the Museum.

e. No change to Museum

There will be no works, alterations or changes proposed to the Museum. It is considered the project itself does not cause direct or physical impact to the Museum. However, mitigation measures should be planned to protect the building from potential indirect impacts such as damages during the demolition and construction stages of the redevelopment.

5.3 Latest Proposed Scheme for the Redevelopment

Since March 2013, further improvement and development to the design of the redevelopment have been made based on Option 3C adopted in the MDP stage. Although the design principles and parameters of the latest proposed scheme, a hospital block being divided into two phases comprises of 18 storeys of superstructure with two levels of basement floors (B1 and B2), a Medical Mall Atrium linked the two phases together in front of the Museum, a landscaping area surrounding the Museum to create a central courtyard and a healing garden behind the proposed hospital block, are similar to those adopted in Option 3C, those principles adopted to mitigate the heritage impacts from the redevelopment of KWH on the Museum have been enhanced and reinforced in the latest proposed scheme.

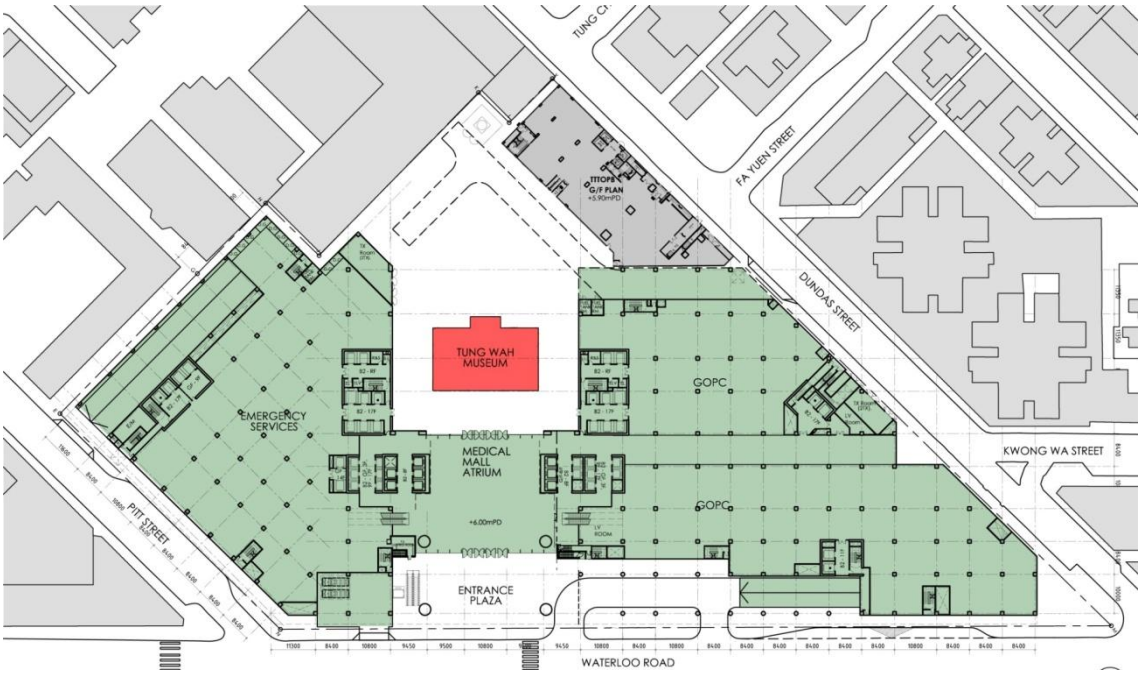


Fig. 1 – Proposed ground floor plan

6.0 ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

With reference to the assessment of physical conditions and degree of significance of the existing building fabric, this section is to evaluate the proposed treatments and any potential impact for the character defining elements (CDEs) *and any new works* being affected as well as to suggest any mitigation measures to reduce any adverse impact if necessary.

The definitions and explanations of terms within the context of this evaluation section are listed as follow:

Affected Elements	Affected elements are identified for each impact
Level of Significance	As defined in Character Defining Elements
Mitigation Measures	Practical advice on remedial actions is given to mitigate any adverse impact effects.
Impact Level	Overall level of impact on elements being assessed is classified into five levels as follows:

- *Beneficial Impact:* The impact is beneficial if the project will enhance the preservation of the heritage sites;
- *Acceptable Impact:* if the assessment indicates that there will be no significant effects on the heritage sites;
- *Acceptable Impact with Mitigation Measures:* if there will be some adverse effects, but these can be eliminated, reduced or offset to a large extent by specific measures;
- *Unacceptable Impact:* if the adverse effects are considered to be too excessive and are unable to mitigate practically;
- *Undetermined Impact*: if the significant adverse effects are likely, but the extent to which they may occur or may be mitigated cannot be determined from the study. Further detailed study will be required for the specific effects in question.

The potential impact arising from this project is assessed, based on the following levels of impacts:

- *High:* An impact that significantly alters or obliterates significant characteristics of the heritage resource
- *Medium:* An impact that alters the character or surroundings of the heritage resource, but is consistent with existing and emerging trends
- *Low:* An impact capable of measurement but with no alterations of significant characteristics
- *No:* No impact arising from the project

Detailed analysis of potential impacts and recommendation of mitigation measures are summarized in the following sections of Heritage Impact Assessment and Mitigation Measures in respect of the redevelopment proposal.

6.1 Potential Impacts

There will be no work, alterations or changes are proposed to the Museum in the redevelopment proposal; hence, no direct or physical impact to the Museum will be expected. However, as the Museum is located in the midst of the KWH redevelopment, potential impacts on the Museum during various stages of the redevelopment are inevitable.

The potential impacts to the Museum could be summarized as follows:-

a. Visual Impact

Due to the limited footprint of the KWH site and the large scale of the redevelopment project to meet the future healthcare needs, the new hospital will be inevitably taller than the existing buildings in the KWH compound and will be built closer to the Museum. The clear distance between the Museum and the adjacent new blocks on three sides (except the rear side) will be reduced.

b. Impact on Direct Daily Sunlight

Direct daily sunlight period on the Museum will be slightly shortened due to the reduction in distance between the new hospital and the Museum as well as the increase in the height of the new hospital.

c. Construction Impacts

Due to the close proximity of the construction works, potential vibration, dust deposition, falling debris and concrete slurry during demolition, excavation, foundation and superstructure construction stages of the redevelopment may pose potential impact on the Museum itself or indirectly on the curatorial contents within the Museum.

6.2 Mitigation Measures

a. Mitigation measures to the visual impact on the Museum

i. Maintaining buffer distance between new hospital and Museum

The new hospital will be inevitably taller and larger than the existing buildings in KWH compound and will be built closer to the Museum. The clear distance between the Museum and the adjacent new block on three sides (except the rear side) will be reduced and less than the existing. In order to reduce the visual impact to the Museum, a buffer distance of not less than 10m will be provided on 2 sides of the Museum. In order to highlight the importance of the Museum, a distance of 12m between the front of Museum and the glazing line of the rear entrance of the Medical Mall Atrium will be provided which is larger than the distance (not less than 10m) between the sides of the Museum and the rest of the hospital external façade so that a more significant and formal forecourt can be formed in front of the Museum.

Furthermore, most of the existing trees which affect the redevelopment and vegetation surrounding the Museum (especially along the forecourt of the Museum) will be felled in order to enhance the relationship between the Museum façade and the Medical Mall Atrium.

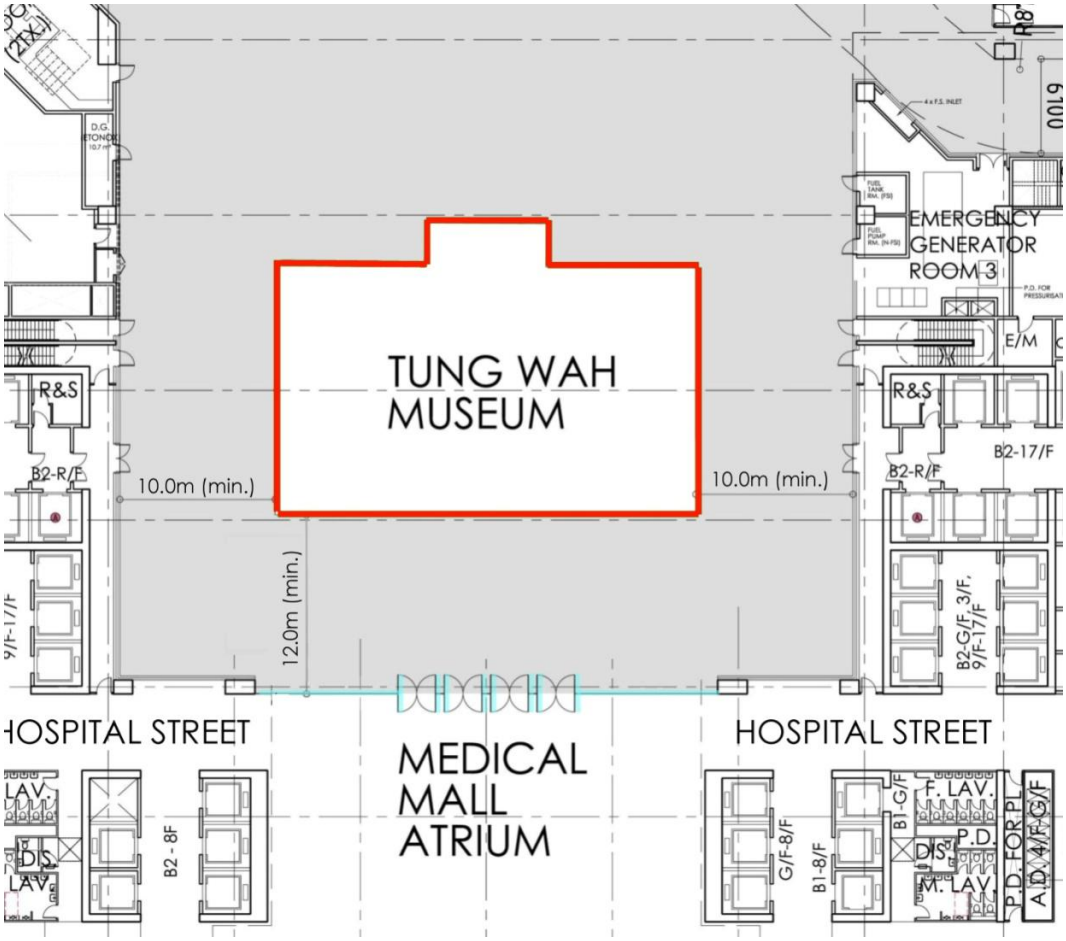


Fig. 2 – Proposed Ground Floor Plan showing the Extended Forecourt

ii. Provision of a Medical Mall Atrium

The Medical Mall Atrium is one of the key design features of the new KWH. The design reinforces the idea of "healing & patient oriented design". It also presents and reminds the public of the history of KWH and heritage of the place which is centered on the Museum.

In order to further minimize the visual impact to the Museum on ground level, a long span structure of approximately 28.3m and a clear headroom of around 12.5m will be provided to the Medical Mall Atrium to avoid the vista from Waterloo Road from being interrupted by columns. Spacing of structural columns within the atrium will be maximized so as not to obstruct the main façade of the Museum. Low-reflective and highly transparent glazing supported by light weight supporting system will be used for the façade of the Medical Mall Atrium to ensure maximum visibility of the Museum from Waterloo Road. The interior design inside the Medical Mall Atrium will be carefully considered so that it can integrate and in harmony with the Museum.

A podium garden above the Medical Mall Atrium will be provided forming a viewing gallery to overlook the Museum at high level.

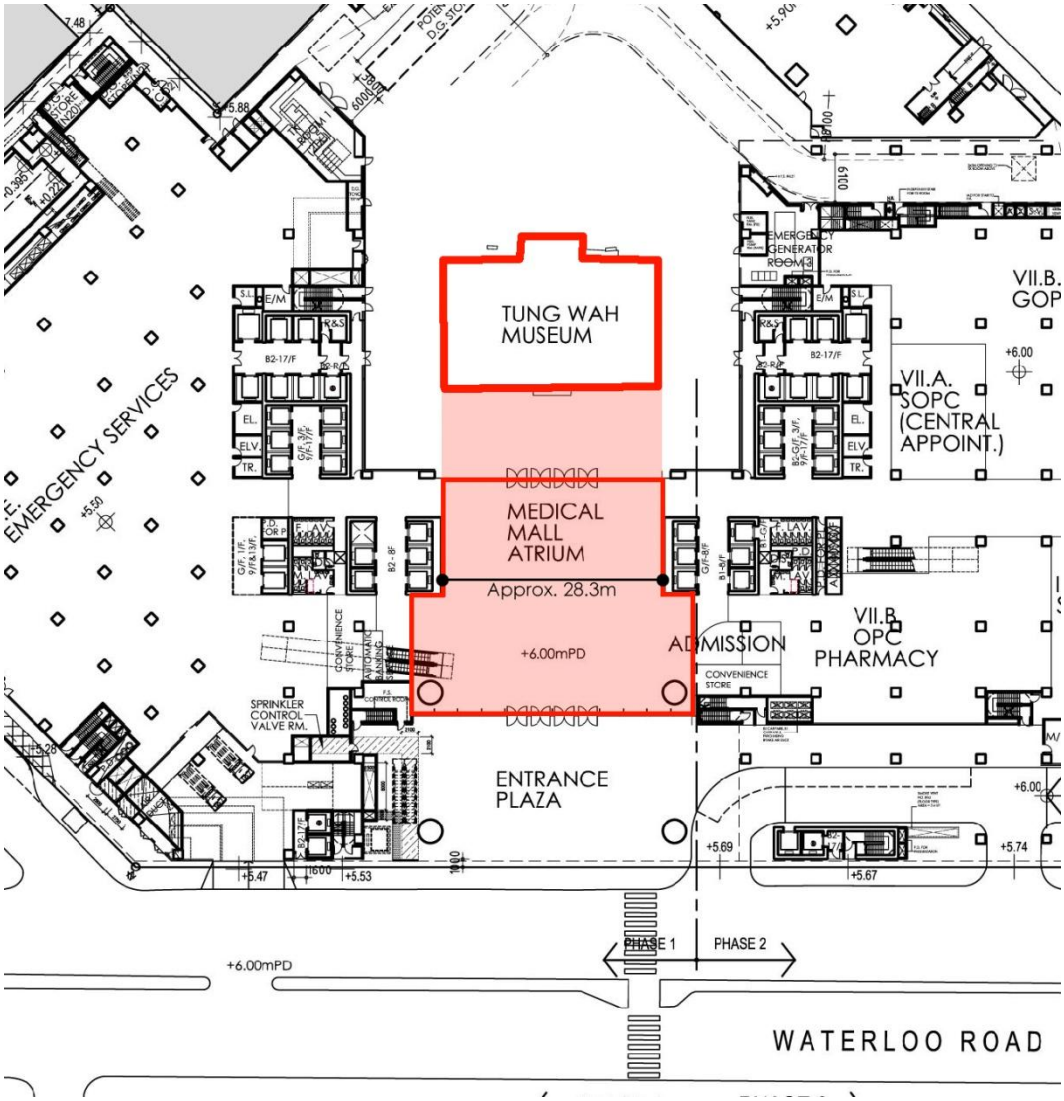


Fig. 3 – Medical Mall Atrium

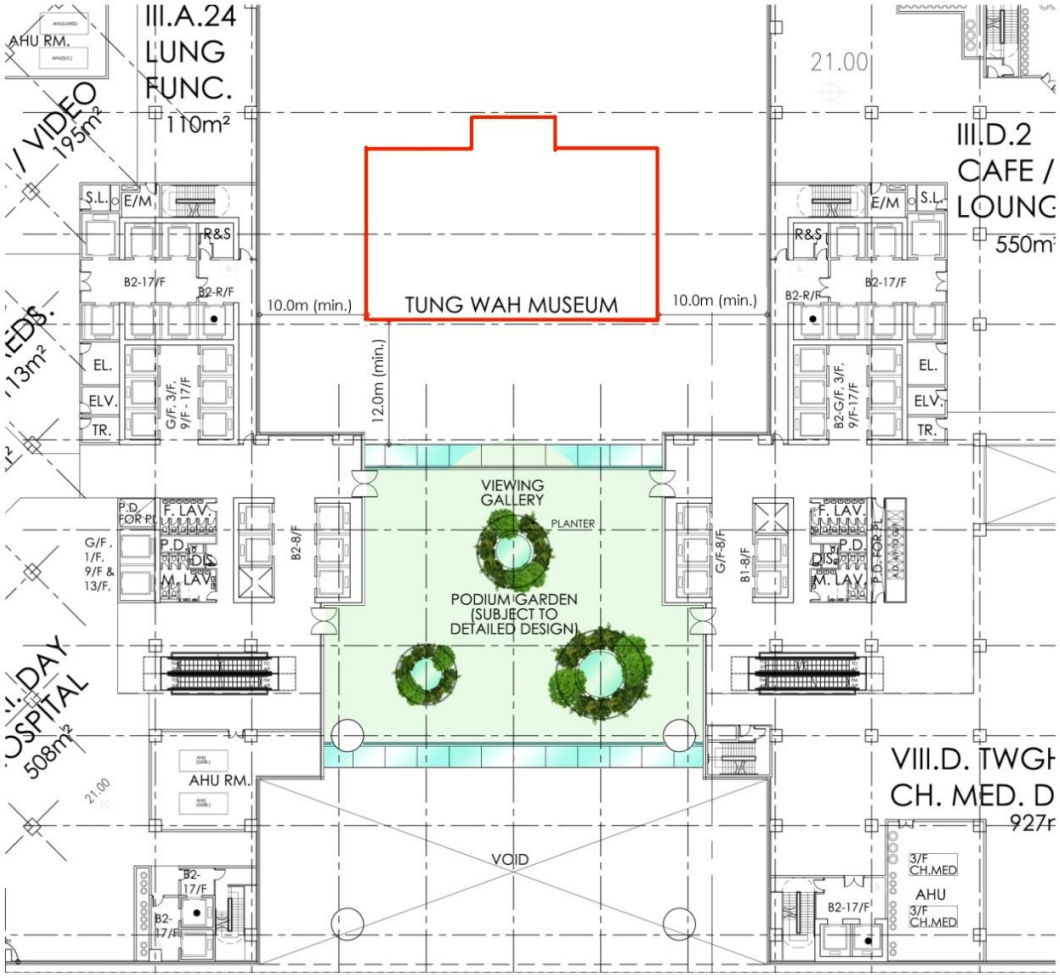


Fig. 4 – Third Floor Plan (Podium Roof Garden provides a viewing gallery overlooking the Museum)

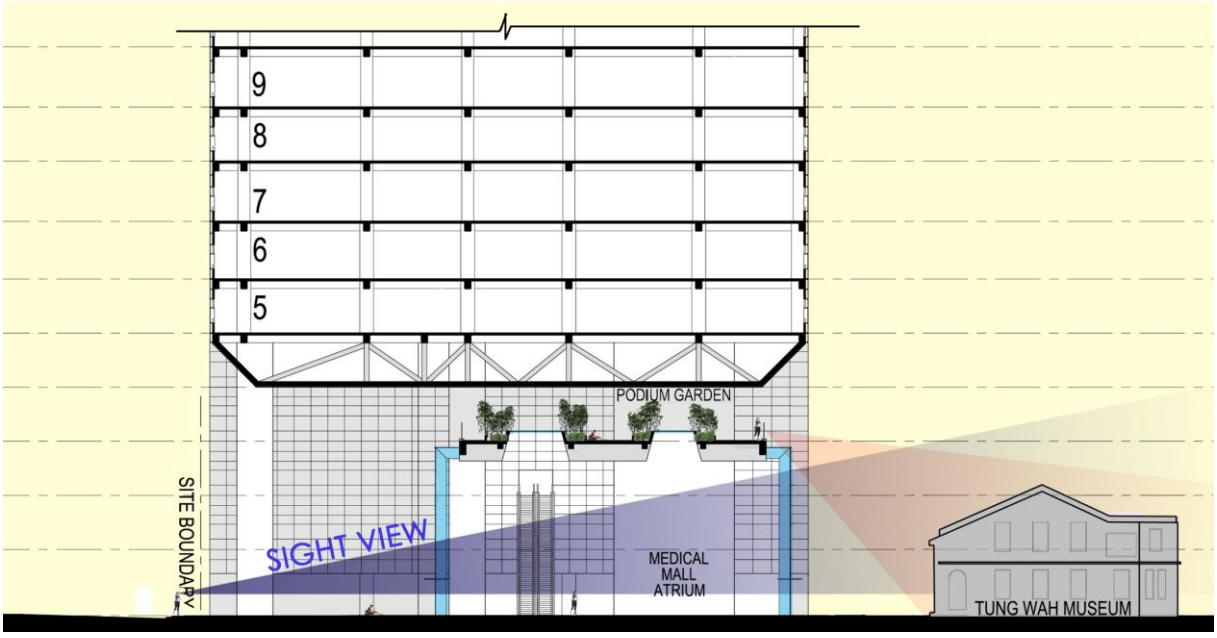


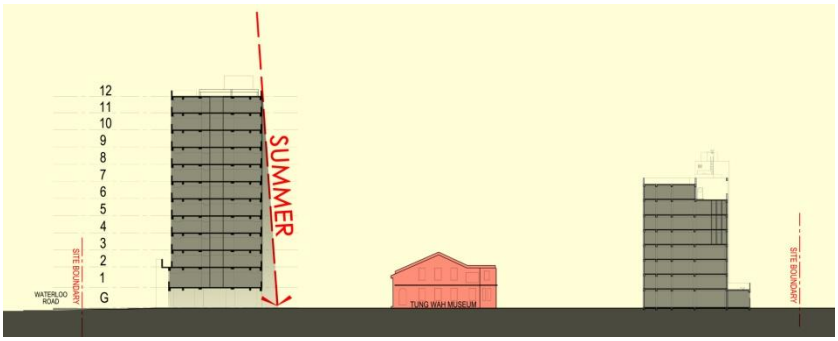
Fig. 5 – Schematic Section through Medical Mall Atrium

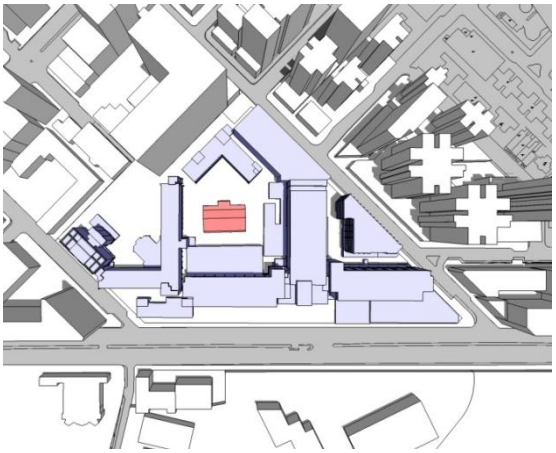
Fig. 6 – Existing Front Entrance of Kwong Wah Hospital from Waterloo Road
(Tung Wah Museum is hidden from the main entrance)

Fig. 7 – Computer image showing Tung Wah Museum through Medical Mall Atrium from Waterloo Road

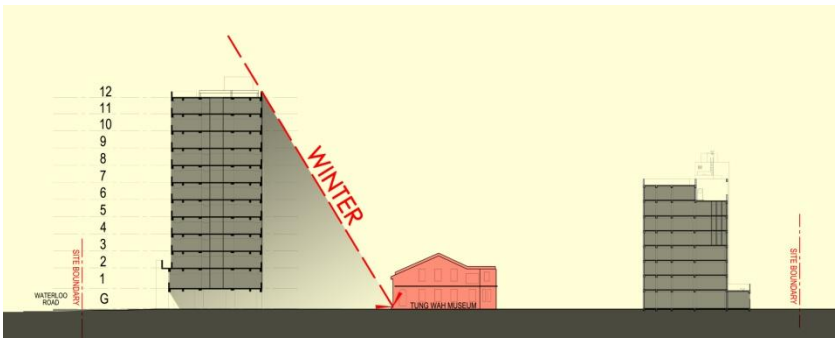
b. Mitigation Measures on impact on direct sunlight

As the distance between the façade of the new hospital block and the facade of the Museum will be less than the distance between the existing hospital buildings and the Museum as well as the increase in height of the new hospital block, a direct solar path study has been carried out for the existing KWH and the latest proposed scheme for the redevelopment to assess the effect of the new hospital on the Museum in terms of sunlight penetration. They are summarizes as follows:



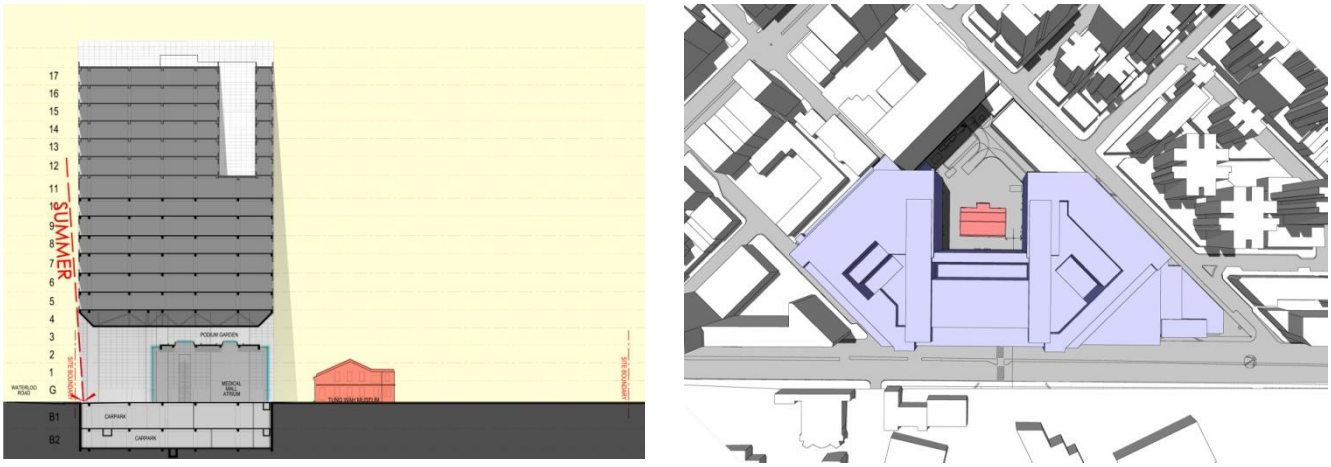


Summer



Winter

Fig. 8 – Direct Solar Path Study for Existing Kwong Wah Hospital



Summer

Winter

Fig. 9 – Direct Solar Path Study for Latest Proposed Scheme

	Daily Sunlight Period for the landscaped area surrounding Tung Wah Museum	
	Existing Condition	**Latest Proposed Scheme**
Spring Equinox and Autumnal Equinox (21/3 and 21/9)	0900 – 1600 (8 hours)	1130 – 1630 (5 hours)
Summer Solstice (21/6)	0800 – 1500 (8 hours)	0930 – 1500 (5.5 hours)
Winter Solstice (21/12)	0930 – 1500 (6.5 hours)	1300 – 1600 (3 hours)

Fig. 10 – Table showing different of Daily Sunlight Period between existing and Latest Proposed Scheme

As shown in the study, direct daily sunlight period for the landscaping area surrounding the Museum will be reduced during the winter months due to the reduction in distance between the new hospital and the Museum as well as the increase in height of the new hospital.

With the demolition of Staff Barrack at the rear side of the Museum and the selection of light colour external wall finishes for the new hospital block facing the Museum, the diffused sunlight around the Museum will be improved to compensate for the reduction of the direct sunlight.

c. Mitigation measures to the construction impacts

Each instance of new construction or demolition next to an existing historic building will involve varying risks of causing damages to the historic building. Hence, in view of the close proximity of the Museum from the proposed new hospital block and the historic importance of the Museum, it is considered that additional protective/ preventive measures on top of the standard safety precautionary measures and the normal statutory requirements on site safety should be provided to further safeguard the Museum and its contents from any potential risks which might cause harm to the physical integrity of the Museum. On top of the provision of not less than 10m buffer zone between the Museum and the proposed hospital block, the following additional measures will also be provided to protect the Museum during the demolition and construction stages of the redevelopment.

i. Adopt stringent vibration standard

Vibration may cause damage to the loosing historic fabric and the building structure, a more stringent vibration/ settlement/ tilting limit as recommended by the AMO will be adopted as follows:

	Alert Level	**Alarm Level**	**Action Level**
Building Settlement	6mm	8mm	10mm
Tilting Check Point	1/2000	1/1500	1/1000
Vibration Check Point	2.0mm/s	2.5mm/s	3.0mm/s

It is required to develop mitigation measures and alert the site supervisors and AMO when the vibration/ settlement/ tilting limit during the demolition and construction exceed the alert level for the Museum.

ii. Suitable construction methods

Suitable construction methods will be used to safeguard the existing Museum structure from possible damages caused by excessive vibration due to any demolition, site formation, foundation and piling, or excavation works. Percussive piling will not be allowed. Grout curtain or stronger excavation & lateral

support (ELS) system along the construction site facing the Museum will also be provided to prevent settlement due to loss of ground water and to minimize the vibration and ground movement affecting the Museum.

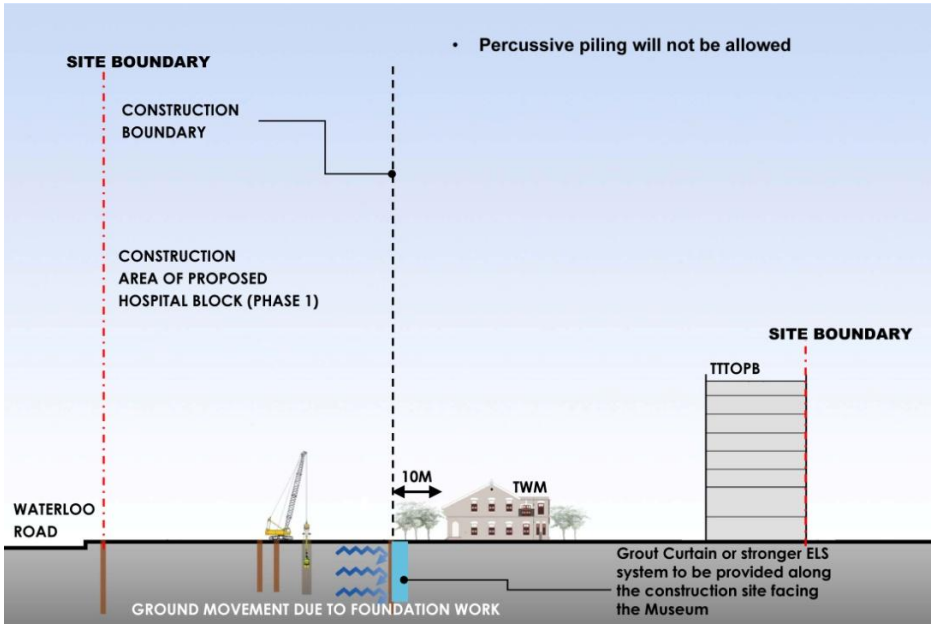
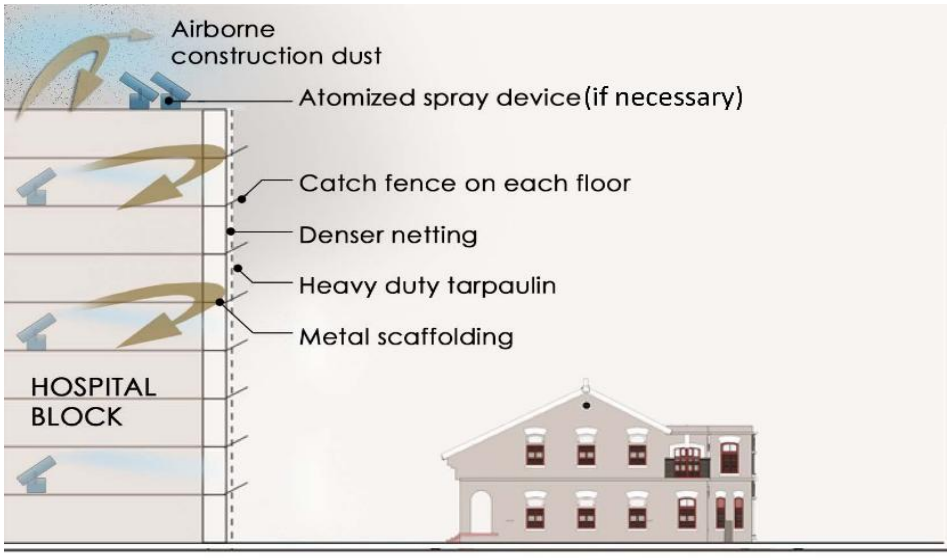


Fig. 11 – Additional protective measures against Vibration & Ground Movement

iii. Protection at Source

Hardskin at source, including metal scaffolding, catch fence on each floor, denser netting and heavy duty tarpaulin (impervious dust screen on the top of safety netting) will be provided to the construction site facing the Museum to minimize the adverse effects of falling debris, concrete slurry run off and spray; and, construction dust deposition, to the Museum during the redevelopment of KWH.

<u>Demolition Stage</u>



Superstructure Construction

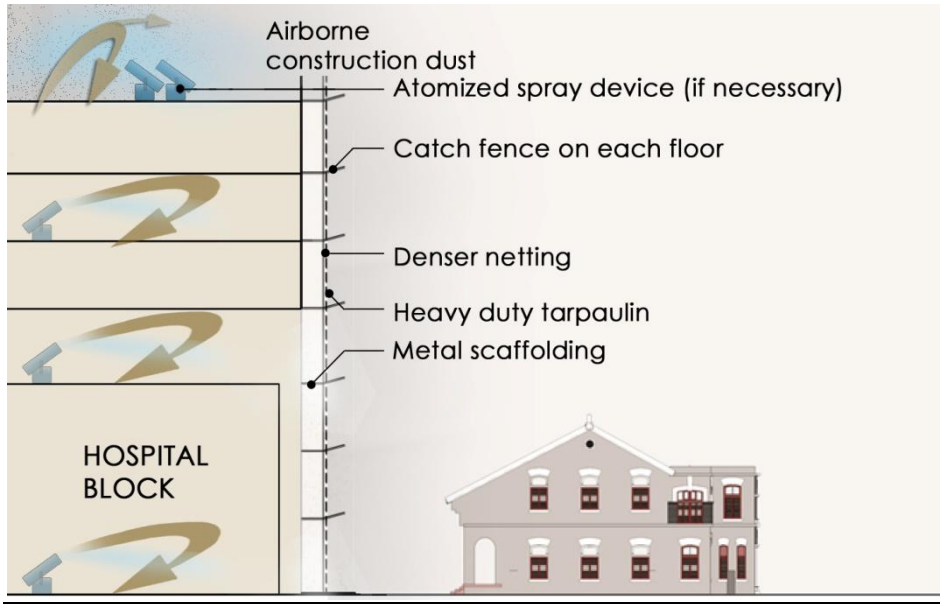


Fig. 12 – Additional protective measures against falling debris, concrete slurry run-off/ spray & construction dust deposition

iv. Additional dust suppression measures

Additional dust suppression measures will be provided to control permissible total suspended particulate (TSP) Level. More stringent dust suppression measures will be carried out. All exposed surfaces will be adequately sprayed with water frequently and regularly. Stockpiles of sand and aggregate greater than 20cu.m. will be enclosed on three sides with the wall extending above the pile and 2m beyond the front of pile. Surface where any pneumatic or power-driven drilling, cutting, etc. takes place will be sprayed with water. Atomized spray device can be adopted if necessary. Mobile type air purification system will also be installed at the interior of the Museum in order to rapidly reduce Respirable Suspended Particulates (RSP) and air pollutant generated from construction. Such protective measures should be well maintained throughout the whole construction period.

Fig. 13 – Additional protective measures against dust deposition – Atomized spray device

v. Monitoring mechanism

During the course of construction works, a committee with various stakeholders will be set up to conduct regular review on the condition of the Museum and record any significant changes. In addition, qualified site supervisory staffs will also be deployed to monitor ground movement and vibration and record any significant changes.

vi. Protection of curatorial contents during construction

With the support of TWGHs, the Museum will maintain partial operation and phased opening during the critical period of the construction stage such as demolition, foundation construction etc. TWGHs will engage a heritage consultant to provide guidance for implementation of the protection plan of the Museum and its curatorial contents. Archives will be relocated to a site provided by TWGHs. Some plaques and couplets will be removed for in-situ or offsite storage and display. Strengthening devices for those which are retained in their present position will be provided, if necessary.

6.3 Enhancement Measures

a. Creation of central axis and Medical Mall Atrium

The latest proposed scheme enhances public access through the Medical Mall Atrium from the Waterloo Road and a central axis corridor connecting the Dundas Street to the Medical Mall Atrium. There will be also a secondary axis corridor extending from Kwong Wa Street into the hospital forming an internal hospital street integration with the Medical Mall Atrium in front of the Museum.

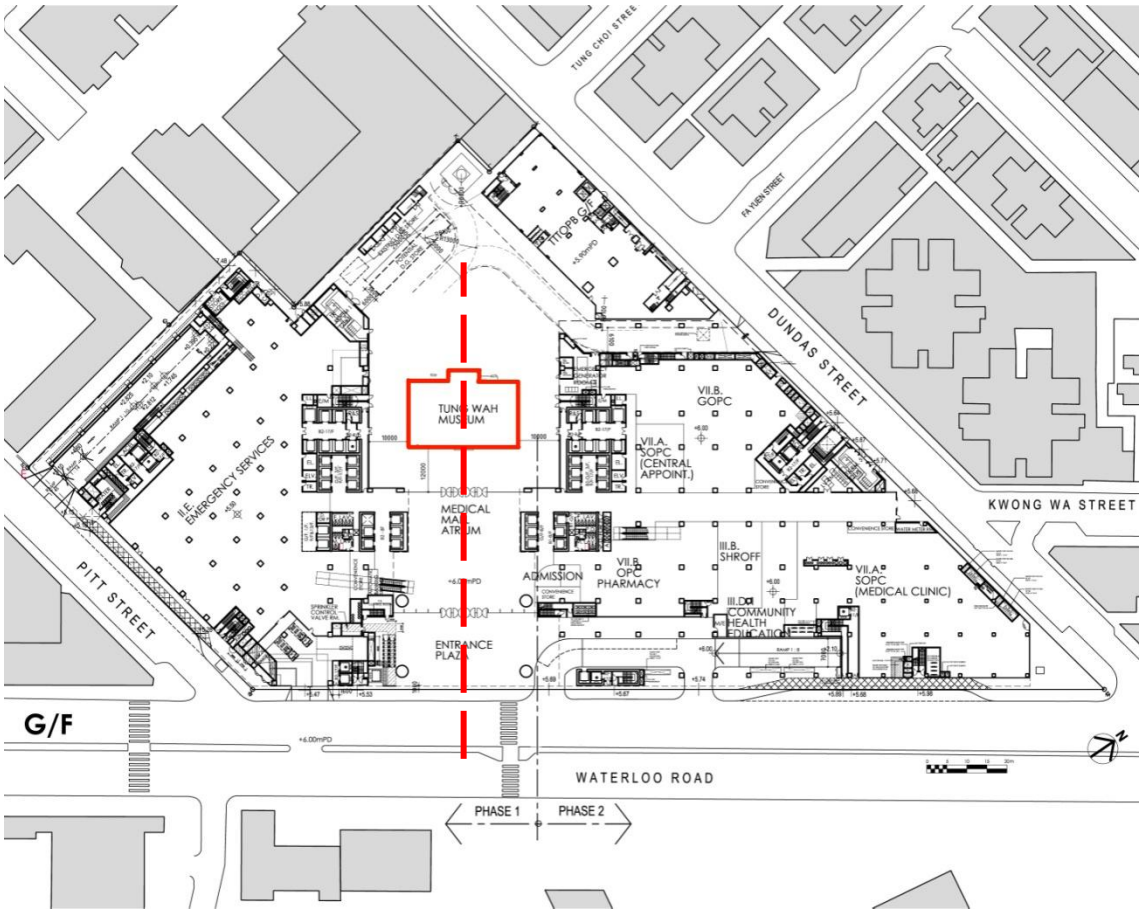


Fig. 14 – Ground Floor Plan of Latest Proposed Scheme

In order to enable a direct visual connection between the Museum and the community, a transparent entrance hall franked with glazed façade facing Waterloo Road in the front and facing the Museum in the rear is proposed. This visual and physical connection to the Museum from the Waterloo Road is an important aspect of the development. The emphasis of this central axis enhances the heritage value of the historic building and recaptures its historical importance as the main entrance of the original hospital in 1911.

The Medical Mall Atrium will be the major focal point and as a circulation node connecting the new hospital block and the Museum. An entrance plaza abutting the Waterloo Road provides a gathering point and allows a direct and convenient access for the public to come to the Museum from Waterloo Road. Furthermore, with the careful design of the Medical Mall Atrium, it can be integrated with the Museum forming part of the forecourt of the Museum. The open vista, the transparent Medical Mall Atrium and healing garden are achievable and would enhance the integration between the Museum and the hospital.

Fig. 15 – Creation of Hierarchy of Space at Central Axis

The vacant site area after demolition of the existing Staff Barracks would be combined with the surrounding landscaping area of the Museum to transform into a healing garden for the new hospital block. This healing garden will act as a transitional space between the hospital and the Museum, and will become the oasis in the hospital complex filling the area with tranquil ambience.

b. Removal of carpark and provision of landscaping area

In the latest proposed scheme, the existing vehicular access will be removed and part of it will be changed into a landscaping area so to integrate with the Museum. All vehicular parking will be directed to the basement carpark and improve from the current situation that the Museum surroundings are always parked with cars. This will expel the deteriorating traffic pollutants, such as exhausted gas, noise and vibration of running car away from the Monument. The landscaping area will provide a cleaner, tranquil and more sustainable environment for the Museum.

Fig. 16 – Landscaped Garden around the Museum

6.4 Table of Impact Assessment and Mitigation Measures

Item/ Location	Affected Elements	Latest Proposed Scheme	Potential Impact Level	Mitigation Measures
1.	Physical Setting	The new hospital blocks will be built near the conserved Tung Wah Museum which will be retained as a cultural focus of the place. New blocks built around overlooking the Museum have adverse impact to the historic building.	Medium / Acceptable Impact with Mitigation Measures	A buffer area with sufficient clear headroom and horizontal distance to be maintained on all sides of and above the Museum. A Medical Mall Atrium with adequate clear headroom to be provided to reduce the adverse impacts to the Museum. (Refer to Fig. 5) Based on the redevelopment proposal, the proposed buffer distance from 2 sides of the Museum would be maintained not less than 10m and the buffer distance from the forecourt would be increased to 12m. The clear headroom of the Medical Mall Atrium would be around 12.5m. (Refer to Fig. 2 to Fig. 4) Most of the existing trees surrounding the Museum which affect the redevelopment (especially along the forecourt of the Museum) will be felled in order to enhance the relationship between the Museum façade and the Medical Mall Atrium (Refer to Fig. 16)
2.	Visual Impact	The clear distance of the Museum to the adjacent blocks on three sides (except the rear side) will be reduced and less than the existing.	Medium / Acceptable Impact with Mitigation Measures	A buffer area with sufficient clear headroom and horizontal distance to be maintained on all sides of and above the Museum. A long span structure of approx. 28.3m and a clear headroom of around 12.5m will be deployed to the Medical Mall Atrium to avoid the vista from Waterloo Road from being obstructed by columns. The new Medical Mall Atrium enclosure walls has been set back away from the Museum, and made transparent as far as possible. (Refer to Fig. 2 to Fig. 5)
3.	Sight Line	The existing main buildings (South Wing) blocking the view and visual linkage of the Museum to outside will be demolished and replaced new glass atrium facing the Tung Wah Museum.	Low / Beneficial Impact	The new Medical Mall Atrium will be maintained unobstructed and transparent as much as possible. A clear sight line between Museum and the street level will be maintained. (Refer to Fig. 5 to Fig. 7) The design of the Medical Mall Atrium glass wall shall be of simple and compatible design.

Item/ Location	Affected Elements	Latest Proposed Scheme	Potential Impact Level	Mitigation Measures
4.	Physical Separation	The existing hospital blocks are physically separated from the Tung Wah Museum by driveways, car-parks and trees. In the new development scheme, the ground level and around the Museum will be free from vehicular traffic.	Low / Beneficial Impact	A Medical Mall Atrium with adequate clear headroom will be provided to reduce the adverse effect and impact. (Refer to Fig. 5) Landscaped garden of compatible design. (Refer to Fig. 16)
5.	Public Access	Existing public access to the Museum has to go through the hospital blocks and driveways which is not satisfactory.	Low / Beneficial Impact	The new atrium will serve as a central circulation node to improve internal pedestrian traffic. A permanent vehicular access at Dundas, next to the retained TTTOPB, will be constructed. This will provide a vehicular access for routine maintenance for both hospital and the Museum. (Refer to Fig. 19) The design of the atrium area will integrate with the outdoor landscape area around the Museum. (Refer to Fig. 15 & Fig. 16)
6.	Site Stability	Demolition, foundation and basement construction work associated with new development in close distance pose adverse impact to the existing building.	High / Acceptable Impact with Mitigation Measures	A more stringent vibration/ settlement/ tilting limit (i.e. 3A requirement) recommended by the AMO will be adopted. Construction methods involved with excessive vibration will be avoided. Suitable construction methods will be used to safeguard the existing museum structure from possible damages caused by excessive vibration due to any demolition, site formation, foundation and piling, or excavation works. Percussive piling is not allowed. (Refer to Fig. 11) Regular site recording and regular monitoring of cracks, settlement, tilting and vibration check points will be implemented to safeguard the Museum against any unexpected circumstance subject to structural engineer's recommendation. Archives will be relocated to a site provided by TWGHs. Some plaques and couplets will be removed for in-situ or offsite storage and display. Strengthening devices for those which are retained in their present position will be provided, if necessary.

Item / Location	Affected Elements	Latest Proposed Scheme	Potential Impact Level	Mitigation Measures
7.	Temporary Protection	Extensive demolition & construction work in close distance have adverse impacts to the existing building.	High / Acceptable Impact with Mitigation Measures	In addition to the conventional protective and monitoring measures including hoardings, catch fans and scaffolding, additional measures will also be provided to protect the Museum during the demolition and construction stages of the redevelopment. Hardskin at source, including metal scaffolding, catch fence on each floor, denser netting and heavy duty tarpaulin (impervious dust screen on the top of safety netting) will be provided to the construction site facing the Museum to minimize the adverse effects to the Museum during the redevelopment of KWH. (Refer to Fig. 12) Additional dust suppression measures will be provided to control permissible total suspended particulate (TSP) Level. More stringent dust suppression will be carried out. Mobile type air purification system will be installed at the interior of the Museum. (Refer to Fig. 13) With the support of TWGHs, the Museum will maintain partial operation and phased opening during the critical period of the construction stage such as demolition, foundation construction etc. TWGHs will engage a heritage consultant to provide guidance for implementation of the protection plan of the Museum and its curatorial contents. Upon on the completion of demolition work at Phase 1, a temporary vehicular access next to existing Central Stack would be formed as a Museum maintenance and service access.(Refer to Fig. 18)
8.	Site Integration	The Museum has confined the display of its curatorial contents in the Main Hall and exhibition area within the Museum. The proposed Medical Mall Atrium would not only open up the visual corridor from the Museum to Waterloo Road but provide a way of integrating the new building, the landscaped forecourt of the Museum and the Museum itself.	Low / Beneficial Impact	The Latest Proposed Scheme has taken careful consideration of the unique architecture of the Museum and its landscaped forecourt. The Museum represents the history and universal value of the Tung Wah Group of Hospitals.
9.	Direct Sunlight	Direct daily sunlight period on the Museum will be slightly shortened due to the reduction in distance between the new hospital and the Museum.	Low / Acceptable Impact with Mitigation Measures	Light colour external wall finishes will be adopted for the new hospital block facing the Tung Wah Museum, the diffused sunlight around the Museum will be improved to compensate for the reduction of direct sunlight.

7.0 CONCLUSION AND RECOMMENDATION

7.1 Overall Assessment

Based on the overall assessment of the heritage impacts for the proposed redevelopment project of KWH, it is recommended that the overall potential impacts on the existing Tung Wah Museum are considered acceptable and manageable with the proposed mitigation measures. The redevelopment proposal will minimize any potential impact on the Museum and provide enhancement measures to the Museum and benefit the community at large. It can be concluded that the KWH redevelopment project is considered technically feasible and acceptable from heritage conservation perspective.

The planning, design and implementation of the proposed redevelopment of KWH in the coming stages shall generally follow the recommendations made in this HIA report. In case if there is any significant change to the design proposal to the redevelopment plan in future, the assessment and recommendation made in this report should be reviewed.

7.2 Recording and Documentation

Before commencement of any site works of the proposed redevelopment project, photographic and cartographic surveys for the existing Museum should be conducted and documented for AMO's record.

All reports, plans, site inspection record during the construction work stage and record drawings of this project should be documented and filed at the site office and made available to future users or professional personnel who are responsible for up-keeping the existing buildings and reviewing the development history of this historical place.

Right before any redevelopment works start, a building structure and condition survey to the Museum should be done to record the existing building condition. All defects and cracks should be probably marked and monitored. Tell-tales and settlement points can be installed for the site monitoring at locations agreed with AMO. During the construction period, regular condition survey is also essential in monitoring the changes of the building. The format and details of the investigations and monitoring should be discussed and agreed with AMO prior to the commencement of the redevelopment works.

7.3 Protection Before and During Construction

In addition to the conventional protective and monitoring measures, the following additional measures will also be provided to protect the Museum during the demolition and construction stages of the redevelopment:

- Not less than 10.0m buffer zone between the Museum and the proposed hospital block will be provided.
- 3A levels on vibration/ settlement/ tilting limit as recommended by AMO will be adopted.
- Suitable construction methods will be used to safeguard the existing museum structure from possible damages caused by excessive vibration due to any demolition, etc.
- Grout curtain or stronger ELS system along the construction site facing the Museum will also be provided to minimize the vibration & ground movement to the Museum.
- Hardskin at source, including metal scaffolding, catch fence on each floor, denser netting and heavy duty tarpaulin (impervious dust screen on top of safety netting) will be provided to the construction site facing the Museum.
- Additional dust suppression measures will be provided.
- Archives will be relocated to a site provided by TWGHs. Some plaques and couplets will be taken down for in situ or offsite storage and display. Strengthening devices for those which are retained in their present position will be provided, if necessary.

7.4 Site Supervision and Monitoring

It is recommended that site supervision and monitoring by qualified site supervisors will be required for this redevelopment project during and throughout the construction work stages to monitor any adverse effect on the existing Tung Wah Museum due to the demolition and construction works on site. Regular site recording and close monitoring of cracks, settlement, tilting and vibration check points will also be implemented to safeguard the Museum against any unexpected circumstance subject to structural engineer's recommendation.

A committee with members of various stakeholders would be set up for the carrying out of regular inspection & monitoring.

7.5 Public Access to Museum

The Museum will maintain partial operation and phased opening during repair and maintenance period to the Museum and the critical period of the construction stage such as demolition, foundation construction etc. For public safety, special arrangement will be made for the provision of safe access (visitors, AMO maintenance access and Museum staff) to the Museum during the redevelopment of the hospital.

The existing pedestrian access to the Museum via the main entrance at G/F of Central Stack and the existing vehicular access via the underpass of South Wing of Main Building would be maintained during the demolition period of Phase 1. To ensure the public safety, covered walkways along the perimeter of the Phase 1 construction site and protective covers will be provided to South Wing and North Wing prior to the commencement of demolition work.

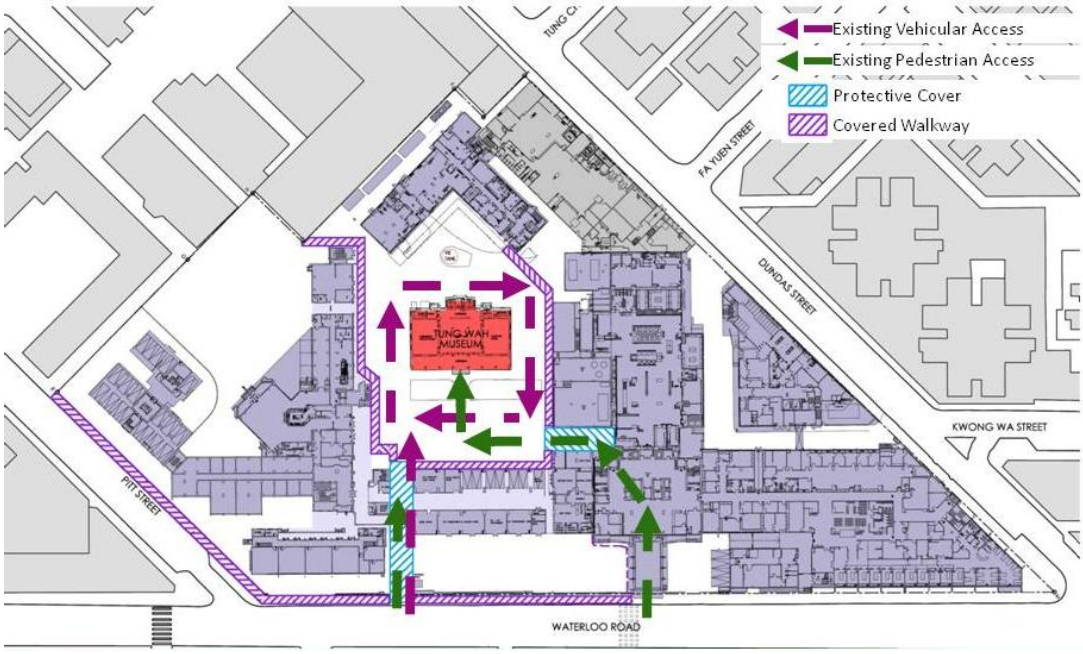


Fig. 17 – Proposed Access to Tung Wah Museum during Demolition of Phase 1 Area

Upon the completion of demolition work at Phase 1, a temporary vehicular access next to existing Central Stack would be formed as a Museum maintenance and service access. The pedestrian (i.e. visitors & Museum staff) could access the Museum via the new Entrance Plaza and Medical Mall Atrium upon the completion of Phase 1.

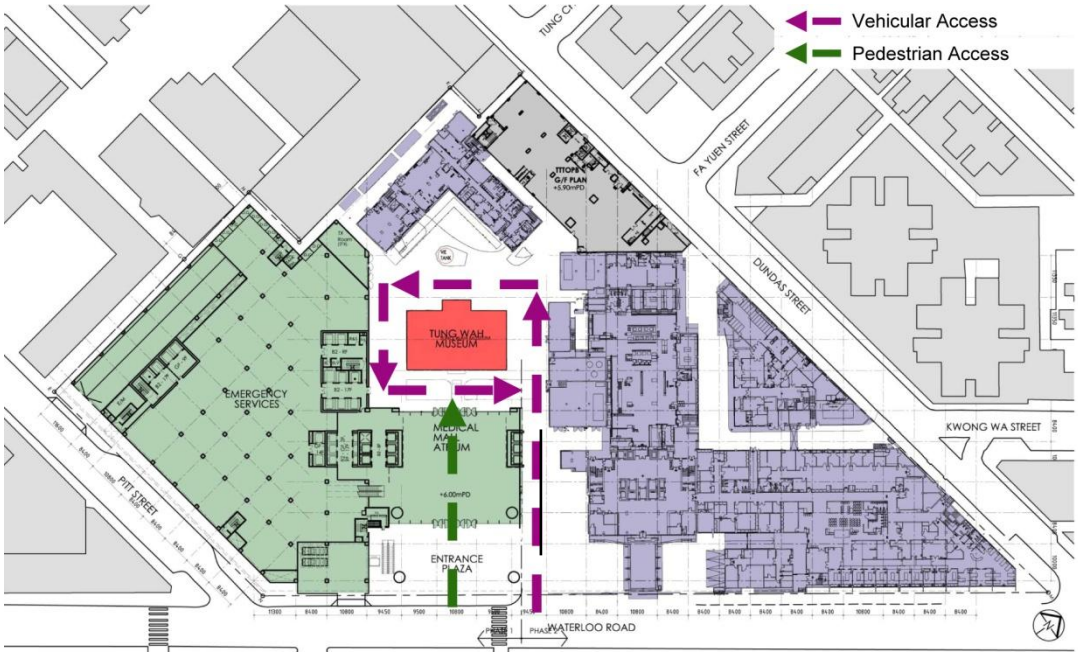


Fig. 18 – Proposed Access to Tung Wah Museum upon Phase 1 completion

Upon the completion of Phase 2, a permanent vehicular access at Dundas Street, next to the retained TTTOPB, will be constructed. This will provide a vehicular access for routine maintenance for both hospital and the Museum in long run.

Fig. 19 – Proposed Access to Tung Wah Museum upon Phase 2 completion

Appendix A – Source of Information and Bibliography

The Government of Hong Kong SAR

Development Bureau

- Technical Circular (Works) No. 6/2009 – Heritage Impact Assessment Mechanism for Capital Works Projects
- Guidelines for Built Heritage Impact Assessment (BHIA) 2008

Antiquities and Monuments Office, Leisure a& Cultural Services Department

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- Cheng, P.H. & Toong Po-ming. *A Century of Kowloon Roads and Streets*, Hong Kong: Joint Publishing (HK) Co. Ltd., 2003
- Empson, H. Mapping Hong Kong – *A Historical Altas*, Hong Kong: Government Printer, 1992
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- Lee C.M., *Historical Survey and Heritage Assessment of Pre-war Shop Houses in Kowloon and Hong Kong, 2008*

Appendix B – List of buildings within and beyond the study area

All pre-1950 buildings and structures within 50m

Name	Location	Construction Year	Uses	Type of Structure	Remarks
Tung Wah Museum	Kwong Wah Hospital, 25 Waterloo Road, Yau Ma Tei, Kowloon	Built in 1911, Roof reconstructed in 1991	Institutional	Brick and timber	Declared Monument

Selected post-1950 buildings and structures within 50m

Name	Location	Construction Year	Uses	Type of Structure	Remarks
Truth Lutheran Church	50 Waterloo Road, Yau Ma Tei, Kowloon	Built in 1963	Religious	Reinforced concrete	
The Ward Memorial Methodist Church	54 Waterloo Road, Yau Ma Tei, Kowloon	Built in 1967	Religious	Reinforced concrete	

Selected buildings and structures on the periphery of the study area (250m from TWGHs Museum)

Name	Location	Construction Year	Uses	Type of Structure	Remarks
Pre-war Tenement Building	130 & 132 Portland Street, Mong Kok, Kowloon	Pre-war	Private Domestic	Brick wall Structure	
Wah Yan College	56 Waterloo Road, Yau Ma Tei, Kowloon	Built in 1952	Educational	Reinforced concrete	
E;CHK Lutheran Secondary School	52 Waterloo Road, Yau Ma Tei, Kowloon	Built in 1958	Educational	Reinforced concrete	
St. Ignatius Chapel	Wah Yan College, 56 Waterloo Road, Yau Ma Tei, Kowloon	Built in 1959	Religious	Reinforced concrete	
True Light Girls College	54A Waterloo Road, Yau Ma Tei, Kowloon	Built in 1973	Educational	Reinforced concrete	
Lutheran Building	50A Waterloo Road, Yau Ma Tei, Kowloon			Reinforced concrete	

Selected buildings and structures in the district

Name	Location	Construction Year	Uses	Type of Structure	Remarks
Kowloon Canton Railway	Along Wylie Road and Yim Po Fong Street	Constructed in 1910, relocated in 1968	Transportation	Reinforced concrete	Structure is restored and stable with great history of railway development in Hong Kong
The Former Pumping Station of Water Supplies Department	No. 344 Shangha Street, Yau Ma Tei, Kowloon	Built in 1895	Past: institutional Present: G.I.C.	Brick and timber	Grade 1 confirmed on 18 Dec 2009
Yau Ma Tei Wholesale Fruit Market	Shek Lung Street, Yau Ma Tei, Kowloon	Built in 1913	G.I.C.	Brick and Stone	Grade 2 confirmed on 18 Dec 2009

Name	Location	Construction Year	Uses	Type of Structure	Remarks
Shui Yuet Temple	90 Shan Tung Street, Mongkok, Kowloon	Built in 1927	Religious	Brick and timber	Grade 3 Confirmed on 22 Jan 2010
All Saints Chruch	No. 2 Yim Po Fong Street, Mongkok, Kowloon	Built in 1928	Religious		
Yau Ma Tei Theatre	Waterloo Road, Yau Ma Tei, Kowloon	Built in 1930	G.I.C.	Timber structure with steel trusses	Grade 2 Confirmed on 18 Dec 2009

Appendix C – Comparative Analysis of Different Construction Options

1. The Adopted Option

Each option presents some advantages and disadvantages in aspects related to design, disposition, zoning arrangement or phrasing. Such options were developed in response to the heritage restraints, as well as relating to site constraints, zoning and phrasing requirements. On balance of all factors imposed on this Site, the Hospital Authority, Tung Wah Group of Hospitals and Kwong Wah Hospital have selected Option 3C as the adopted option for the future redevelopment of the Kwong Wah Hospital. A comparative analysis of the pros and cons of each option is tabled in the following Section.

2. Comparative Analysis of Different Construction Options

Option 1: Maximizing Phase 1 Approach

Development	Storey
Phase 1	
Possible Tower	18
Phase 2	
Possible Tower	10
Possible Podium	3

Pros

- The Tung Wah Museum is preserved and become as centre with larger forecourt be retained (larger buffer zone).
- No excavation under the Museum. No potential impact to the physical stability of the building aroused.

Cons

- High-rise approach in Phase 1 causes more visual impact to the Museum.
- Museum is detached from public street by the tower.
- The integration between the Museum and the hospital is not optimized.

Remarks:-

From heritage point of view, this option provides a larger buffer zone compared with other options. However, the high-rise approach causes a large visual impact to the Museum. The Museum is still detached from public street by bulky building which cannot reinstate its historic significance as the old entrance hall.

Option 2: Mono Block Approach

Development	Storey
Basement (excluding carpark)	2
Phase 1	
Possible Tower	10
Phase 2	
Possible Tower	10

Pros

- Towers with lower height causes less visual impact to the Museum.
- Mid-rise building put less impact for the surroundings.

Cons

- Reduction of horizontal distance in the buffer zone between the Museum and the new hospital structures.
- Museum is detached from public street by the tower.
- Site excavation below Museum may cause disturbing impact physically to the Museum.
- The integration between the Museum and the hospital is not optimized.

Remarks:-

From heritage point of view, this option has basements directly under the Museum which may affect the physical stability to the building. The bulky tower design causing reduction in horizontal distance of the buffer zone will have greater visual impact to the Museum. The Museum in this option is detached from public street which cannot reinstate its historic significance as the old entrance hall.

Option 3: Atrium and Towers Approach

Development	Storey
Basement	2
Phase 1	
Possible Linkage Block	10
Possible Tower	18
Phase 2	
Possible Tower	18
Possible Podium	1

Pros

- The transparent central atrium acts as the symbolic main entrance and better integration with the Museum can be achieved. The Museum thus can be viewed from public street.
- No excavation under the Museum. No potential impact to the physical stability of the building aroused.
- The vista towards Waterloo Road is maintained by the large void under the linkage block.

Cons

- Structures set back at the rear side and the forecourt area in front of the Museum for buffering is less than that provided in Option 1.

Remarks:-

From heritage point of view, the proposed unobstructed atrium design in front of the Museum can allow viewing of the Museum from public street and reinstate its historic significance as the old entrance hall. It is considered a positive heritage impact to the museum. Furthermore, the option does not require excavation under the Museum which may cause potential structural impact to its physical stability.

Options	Option 3A	Option 3B	Option 3C
Pros:	- The option allows the podium in Phase 1 site accommodating A&E services at one level with assumption that major trees can be transplanted. - The provision of central main atrium will facilitate the way-finding for patients and visitors. - Secondary atrium parallel to Waterloo Road would provide easier access for patients and visitors that bring people into the medical mall with large and welcoming entrances from Pitt Street and Dundas Street.	- Same as Option 3A.	- Comparing with 3A & 3B, linkage block with larger floor plate between towers would be built to enhancing the connectivity. - Regular block design can facilitate the internal planning, hospital operation and circulation. - Building set back from the site boundary provides open space and improves the congestion of the district on ground level.
Cons:	- The “Linear block” may not be suitable for the configuration of tri-radius basis easily.	- The floor plate area in phase 1 site is significantly limited because the major trees are retained.	