

12 IMPACT ON CULTURAL HERITAGE (BUILT HERITAGE)

12.1 Introduction

The EIA Study Brief for CKR requires a Cultural Heritage Impact Assessment (CHIA) comprising a Built Heritage Impact Assessment (BHIA) and an Archaeological Impact Assessment (AIA) to be conducted. This Chapter only presents the BHIA while the terrestrial and marine archaeological impact assessments are presented in **Chapter 11** of this EIA Report. BHIA requires to identify historic buildings and structures within the Study Area. Particular attention shall be paid to Yau Ma Tei Police Station, Tin Hau Temple, Yau Ma Tei Wholesale Fruit Market, Yau Ma Tei Theatre, Former Pumping Station of Water Supplies Department, Old South Kowloon District Court and Ex-Ma Tau Kok Animal Quarantine Depot. The assessment has considered the impacts during both the construction and operational phase of CKR. Any mitigation measures required are recommended for implementation.

12.2 Legislation and Standards

12.2.1 The Antiquities and Monuments Ordinance

The ordinance contains the processes and statutory requirements for declaration through which “the Authority” (The Secretary for Development) after consultation with the Antiquities Advisory Board and approval by the Chief Executive, by notice in the Gazette, declare any place, building, site or structure, which the Authority considers to be of public interest by reason of its historical, archaeological or palaeontological significance to be a monument, historical building or archaeological or palaeontological site or structure.

Section 6 subsection 4 of the ordinance states that subject to section 4, no person shall;

- excavate, carry on building or other works, plant or fell trees or deposit earth or refuse on or within a proposed monument or monument; or
- Demolish, remove, obstruct, deface or interfere with a proposed monument or monument, except in accordance with a permit granted by the authority.

12.2.2 Technical Memorandum on Environmental Impact Assessment Process

The general criteria and guidelines for evaluating and assessing impacts to Sites of Cultural Heritage are listed in Annexes 10 and 19 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). It is stated in Annex 10 that all adverse impacts to Sites of Cultural Heritage should be kept to an absolute minimum and that the general presumption of impact assessment should be in favour of the protection and conservation of all Sites of Cultural Heritage. Annex 19 provides the details of scope and methodology for undertaking Cultural

Heritage Impact Assessment, including baseline study, impact assessment and mitigation measures.

12.2.3 Guidelines for Cultural Heritage Impact Assessment

This document, as issued by the Antiquities and Monuments Office, outlines the specific technical requirement for conducting terrestrial archaeological and built heritage impact assessments and is based upon the requirements of the Technical Memorandum for Environmental Impact Assessment. It includes the parameters and scope for the Baseline Study, specifically desk-based research and field evaluation. There are also included guidelines encompassing reporting requirements and archive preparation and submission in the form of Guidelines for Archaeological Reports and Guidelines for the Handling of Archaeological Finds and Archives.

The prerequisite conditions for conducting impact assessment and mitigation measures are presented in detail, including the prediction and evaluation of impacts based upon five levels of significance (Beneficial, Acceptable, Acceptable with Mitigation Measures, Unacceptable and Undetermined). The guidelines also state that preservation in totality must be taken as the first priority and if this is not feasible due to site constraints or other factors, full justification must be provided.

Mitigation measures will be proposed in cases with identified impacts and shall have the aim of minimising the degree of adverse impact and also where applicable providing enhancement to a heritage site through means such as enhancement of the existing environment or improvement to accessibility of heritage sites. The responsibility for the implementation of any proposed mitigation measures must be clearly stated with details of when and where the measures will be implemented and by whom.

12.3 Methodology and Principles

12.3.1 Baseline Study

Desk-Based Study

A desktop study has been conducted to reveal all the information available in the public domain. The information sources include the following:

- List of Proposed and Declared Monuments, List of Proposed and Graded Historic Buildings and List of Government Historic Sites as issued by the AMO;
- Published and unpublished papers and studies;
- Publications on relevant historical, anthropological and other cultural studies;
- Unpublished archival, papers, records; collections and libraries of tertiary institutions;
- Historical documents which can be found in Public Records Office, Lands Registry, District Lands Office, District Office, Museum of History;
- Cartographic and pictorial documentation.

Site Visit for Built Heritage Resources

A site visit to the project Study Area (defined as all works areas and the land within 100 metres of these areas) has been conducted to note the current condition of the previously recorded resources and also to record resources not included in the previous study. As noted in the project Study Brief, the following Graded Historic Buildings located outside of the 100 metre boundary have been included:

- the Yau Ma Tei Theatre (Grade 2),
- the Yau Ma Tei Wholesale Fruit Market (Grade 2)
- the Former Pumping Station of Water Supplies Department (Grade 1).

The scope of built heritage resources included in this study will follow the requirements of the *Guidelines for Cultural Heritage Impact Assessment* as issued by the AMO. These will include Proposed and Declared Monuments, Proposed and Graded Historic Buildings and Government Historic Sites. As well as all pre-1950 buildings and structures and selected post-1950 buildings and structures of high architectural and historical significance and interest will be identified and recorded.

12.3.2 Impact Assessment and Mitigation Recommendations

Prediction and identification of both direct and indirect impacts that may affect the built heritage resources within the project Study Area will be undertaken with special attention paid to the built heritage resources identified in the project Study Brief. Preservation in-situ will always be the first priority for sites of Cultural Heritage. If preservation in totality is not possible, mitigation will be proposed to minimise the degree of adverse impact to the greatest possible extent. In addition, any disturbance to sites of Cultural Heritage that may cause physical damage should be avoided wherever possible through alteration of design, construction method or protective measures as appropriate.

12.4 Results of the Desk Based Study

12.4.1 Historical Background of the Study Area

Yau Ma Tei

Yau Ma Tei was originally an anchorage for boat dwelling families and it was not until the 1860's that it grew as a land based market town. The original inhabitants were collections of people dispossessed from cleared villages in Tsim Sha Tsui. The area quickly grew as a market town with evidence of a locally organised Kai Fong and Temple Committee as early as the 1870's. The Tin Hau Temple was originally established well before 1870, as can be seen on an inscribed tablet. It also notes that the area was relatively empty when it was constructed (HKRAS 1999). Inset 1 of **Figure 12.1** shows the locations of the built heritage resources in Yau Ma Tei as they were in 1947 (Empson 1992).

Ho Man Tin

Ho Man Tin was originally an agricultural area owned by the Ho and Man Clans. The area became a resettlement area for people from Mainland China in the 1950's and 60's. There are a number of schools in Ho Man Tin, including Tang

King Po School. Inset 2 of **Figure 12.1** shows the school and surroundings in 1965 (Empson 1992). The location of the Kowloon City Ferry Pier, Kowloon City Vehicular Ferry Pier and Kowloon Permanent Pier No. 70 can also be seen on Inset 2 of **Figure 12.1**.

To Kwa Wan

The old historical villages lying between Hung Hom and Kowloon City have long since disappeared through development of the area over the past 80 or so years. In addition, many of the villages in the area had their buildings demolished during the Second World War by the Japanese for reclamation fill for a runway at Kai Tak. The historical map from 1947 in Inset 3 of **Figure 12.1** shows the location of the Ma Tau Kok Animal Quarantine Depot (Empson 1992).

Kai Tak

The site was originally intended for residential purposes, but the project fell through and from 1925 the site was put to use as an airfield. An RAF base was established and the government took over the airfield in 1928. Airport expansion through reclamation of Kowloon Bay continued over the history of the airport. The currently existing runway was first constructed in 1957 and was extended in 1970 and 1975. The reclamation for the runway construction included construction of seawalls with large masonry block facing.

12.4.2 Declared Monuments

There are no Proposed or Declared Monuments in the boundary of the project Study Area

12.4.3 Graded Historic Buildings

CKR -01: Yau Ma Tei Police Station - Grade 2 (Figure 12.3)

A police station was first constructed on this site in 1922 to replace an older station that had been situated nearby. The 1922 station (the old block) consisted of two wings in a triangular shape. An extension block (the new wing) was added in the 1957. A 1-storey kitchen and laundry block and the car port were added in the 1970's. The interior open space of the compound was originally used as a parade ground.

CKR – 02: Tin Hau Temple, Yau Ma Tei - Grade 1 (Figure 12.3)

The temple was constructed between 1860 and 1869. It consists of a Shing Wong Temple, Fook Tak Temple, Shea Tan and Hsu Yuen. The temple also contains a study hall that offered free education from 1897 to 1955. The temple management has been delegated to the Tung Wah group of hospitals, by the Chinese Temples Committee (AMO website).

CKR-04: Old South Kowloon District Court - Grade 1 (Figure 12.3)

The court building was constructed in the Classical Revival style in 1936 and was originally known as the Kowloon Magistracy. Its original function was to handle minor criminal cases. It was renamed the Kowloon District Court in 1957 and functioned as such until 1986, at which point it became the Judiciary Central File

Repository. It was also used by the Japanese as a military headquarters during WWII. The building is currently in use by the Lands Tribunal.

CKR-05: Yau Ma Tei Theatre – Grade 2 (Figure 12.3)

The building dates to around 1930 (possibly as early as 1925) and is believed to be the only remaining Pre-War cinema building in Kowloon. The Theatre is a pitched roof single-storey building consisting of a long auditorium with a two-storey entrance hall or foyer and projection room at the front facing Waterloo Road. It is a mixture of Neo-Classical and Art Deco styles which was common at the time of its construction and follows the trends found in the Exposition des Arts Decoratifs et Industriels Modernes held in Paris in 1925 (ACO 2008).

CKR- 06: Yau Ma Tei Wholesale Fruit Market – Grade 2 (Figure 12.3)

Yau Ma Tei Wholesale Fruit Market was built in 1913. The name of this market was originally Government Vegetables Market which sold fruit and vegetables. Fish traders joined in the 1930s. Yau Ma Tei Wholesale Fruit Market consists of a rectangular site of one and two storey market stalls and shophouses. Originally the upper floors were living accommodation but now most upper floors are used for storage and rest rooms. They are largely built of brick or stone with covered pedestrian walkways or arcades formed by projecting balconies of upper floors.

CKR-07: Former Pumping Station of Water Supplies Department – Grade 1 (Figure 12.3)

The building has also been referred to as the “red brick house”. The Former Pumping Station of Water Supplies Department was built in 1895 and is the oldest pumping station in the territory. It is a two-storey red brick building and is built in colonial Neo-Classical style with Arts and Crafts influence. The roof is pitched and finished with Chinese tiles. A single chimney stack projects above the ridge. Windows are wooden casements set in window openings with granite cills and lintels.

CKR-11: Tang King Po School – Grade 3 (Figure 12.4)

The school was officially opened in 1953 and was named after a famous Hong Kong Industrialist and philanthropist. Further additions to the school were added in 1956, 1964 and 1965. It originally functioned as a vocational training school and is currently functioning as a Catholic Secondary Boys school run by the Salesian Society.

CKR-12: Ma Tau Kok Animal Quarantine Depot - Grade 2 (Figure 12.4)

The compound also known as the cattle depot was built in 1908 and is the only remaining pre-war cattle slaughterhouse in Hong Kong. It retained this function until a central slaughterhouse was constructed in 1999. It was renovated in 2001 and is currently serving as an “arts village” for local artists.

12.4.4 Proposed Graded Historic Buildings

CKR-10: Kowloon Methodist Church – Proposed Grade 3 (Figure 12.3)

Kowloon Methodist Church was built in 1950-1951. It is the largest church building of the Methodist Church in Hong Kong serving a congregation of over

3,000 (as at June 2004). The church and school which are interconnected are built in the Modern style (The New Wing of the Yau Ma Tei Police Station is also built in this style). The three storey school wing has a simple unadorned white façade, a flat roof and horizontal bands of repetitive windows emphasizing horizontal linearity. In plan, the school has an almost regular long rectangular shape, while the church adopts a rather irregular shaped plan. The design of the church is very complex.

12.4.5 Nil – Grade Heritage Buildings and Structures

CKR-03: No. 63 Temple Street (Figure 12.3)

The building dates back to 1950 (when the Mido café opened) or earlier. As the café has had very few alterations a number of scenes have been filmed here for the movies and TV programmes. Four storey concrete structure with 1st to 3rd floors occupying smaller area than the one below. The ground floor has been completely modernised as a cafe. The upper three floors each have a balcony (first floor has been enclosed and the upper two floors have open balconies. Parapet around the roof (flat roof). The balconies have round corners on the Temple street side.

CKR-08: K.I.L. Boundary Stone 6090 (Figure 12.3)

The boundary stones represent the original surveyed lot boundaries. K.I.L. stands for Kowloon Inland Lot (i.e. a plot of land at least 200 m from the waterfront at the time of survey). Part of retaining wall on the slope near the entrance to the Kowloon Methodist Church.

CKR-09: K.I.L. Boundary Stone 7068 (Figure 12.3)

The boundary stones represent the original surveyed lot boundaries. K.I.L. stands for Kowloon Inland Lot (i.e. a plot of land at least 200 m from the waterfront at the time of survey). Small cut granite block rectangular in shape with flat top slightly wider at the base). Identification engraved on the west facing side.

CKR-13: Kowloon City Ferry Pier – (Figure 12.4)

The pier is situated in Ma Tau Kok and began operation in 1956. It was the first permanent ferry pier to be constructed in Hong Kong Post WWII. The original services ran to Wan Chai, North Point and Tai Koo Shing (later Sai Wan Ho). A vehicular ferry service ceased operation in 1998. Concrete structure built on wooden piles. Rectangular plan with both angular and rounded features. It was built in the Modern style of architecture that was common at that time. It is currently undergoing evaluation as part of the Assessment of New Items in Addition to 1,444 Historic Buildings undertaken by the government. The structure is currently ungraded.

CKR -14: Tunnel Network K1 (Figure 12.3)

A series of tunnel networks were constructed in Hong Kong Urban areas in 1940 and 1941. This tunnel network consists of Air Raid Precaution tunnels that were built to protect the population of Hong Kong from aerial bombing during World War II and also for firearms storage. The tunnels were constructed of masonry side walls of uncoursed granite rubble with mortared joints and various types of lintels. The tunnels measured approximately 2 metres in width and 1.9 metres in

height. Drainage holes were provided in the tunnels at the time of their construction

CKR-15: Tunnel Network K1A (Figure 12.3)

A series of tunnel networks were constructed in Hong Kong Urban areas in 1940 and 1941. This tunnel network consists of Air Raid Precaution tunnels that were built to protect the population of Hong Kong from aerial bombing during World War II and also for firearms storage. The walls consist of uncoursed granite rubble with concrete lintels and chunam type fill over the crown. It was also noted that the tunnels originally also had timber supports, but it was believed that the wood was looted and no longer present in the 1970's during the survey (Mott, Hay, Anderson 1978).

CKR-16: Ma Tau Kok Public Pier (Figure 12.4)

The pier was constructed in 1974. It is a public pier and landing step. It is constructed of concrete platform and flat roof with supporting columns and metal railing. It is currently undergoing evaluation as part of the Assessment of New Items in Addition to 1,444 Historic Buildings undertaken by the government. The structure is currently ungraded.

CKR-17: Kowloon City Vehicular Ferry Pier (Figure 12.4)

The provision for this pier was initiated as early as 1959, but operation did not begin until 1965. It ceased operation in 1998. It was included as a variation of services under the Hong Kong And Yaumatei Ferry Company (Services) Ordinance 1951. It is situated to the southwest of the Kowloon City Ferry Pier. It is a concrete structure built in a similar style to the nearby Kowloon City Ferry Pier. It is currently undergoing evaluation as part of the Assessment of New Items in Addition to 1,444 Historic Buildings undertaken by the government. The structure is currently ungraded.

CKR-18: Kowloon Permanent Ferry Pier No. 70 (Towngas Pigging Station) Figure 12.4

The Kowloon Permanent Pier No. 70 (Towngas Ma Tau Kok Gas Pigging Station) is operated by Towngas and function as listed in the 2009 Government Harbour Database is (drainage and utilities – gas pigging station). The pigging station functions to supply Towngas from Kowloon through submarine pipelines to Hong Kong Island (at North point). The pier and station date back to the 1970's. It is currently undergoing evaluation as part of the Assessment of New Items in Addition to 1,444 Historic Buildings undertaken by the government. The structure is currently ungraded.

12.5 Impact Assessment

12.5.1 Prediction of Impacts (Construction Phase)

The following construction methods will be engaged in the vicinity of identified historical buildings;

Western Section: Cut-and-Cover Tunnels

The cut-and-cover tunnel in the western section of the CKR forms the interface between the bored tunnel section at Shanghai Street and the tunnel portal at Hoi Wang Road. The cut-and-cover tunnel is a box structure with the tunnel sides formed by diaphragm walls and the intermediate slabs formed by top down construction methods. The total length of the cut-and-cover tunnel is approximately 400 m.

Ground-borne vibration arising from the construction works may cause impacts to sensitive structures such as historical buildings.

Re-provisioning of Gascoigne Road Flyover

The Ferry Street / Kansu Street Junction is one of the busiest road junctions in the area. During the construction stage, the junction will be occupied in stages for the construction of the cut-and-cover tunnel. Ground-borne vibration arising from the construction works may cause impacts to sensitive structures such as historical buildings.

Central Section: Bored Tunnel (Drill-and-Blast Method)

The Central bored tunnel of CKR connects the East Kowloon and West Kowloon from Kai Tak Area to Yau Ma Tei Area. The main components of the Central Tunnel Section comprise of Eastbound and Westbound 3-lane carriageway tunnels, cross passages the Ho Man Tin Mid-Ventilation Shaft and the Ho Man Tin Ventilation Building.

The bored tunnel section will be mainly constructed by drill-and-blast methods in rock. In some of the sensitive areas, mechanical excavation methods (e.g., hydraulic splitting, chemical expanding agent) will be required in order to control blast vibration and potential impacts. The sensitive areas include MTRCL Tsuen Wan Lines and the proposed Kwun Tong Line extension, the MTRCL Shatin Central Link, part of the Ma Tau Wai area (near the Oil Tank) and other shallow rock cover areas.

Ground-borne vibration arising from the blasting has the potential to impact structures and appropriate limits to blasting levels must be set for sensitive structures such as historical buildings. Ground-borne vibration arising from the tunnelling process may cause impacts to sensitive structures, including historical buildings.

Cut-and-Cover Tunnel Section at Kowloon City Ferry Pier

The construction works in the vicinity of the Kowloon City Ferry Pier will consist of a cut-and-cover tunnel which will interface with the bored tunnel to the west and underwater tunnel to the east. Any excavation will inevitably cause movements of adjacent grounds and structures and the effect of movement can be minimized by careful design and control on construction. As the tunnel area to be excavated in close proximity to the Kowloon City Ferry Pier it is of paramount importance to establish the extent of movement which can be tolerated by the ferry pier.

12.5.2 Evaluation of Impacts (Construction Phase)

The following section presents the impact assessment for the built heritage resources in the project Study Area. The impact assessment for all resources apart from the Yau Ma Tei Police Station can be found in **Table 12.1**. The Yau Ma Tei Police Station Compound will be dealt with separately in the section below, as the impacts and mitigation required for this heritage resource are complex and cannot be clearly presented in the table.

Yau Ma Tei Police Station

Background to the Development of the Alignment at the West End

Previous CKR studies on the alignment options can be dated back to 1991, 1995 and 1999 under the “Central Kowloon Route Study”, “Central Kowloon Route - Study on Alternatives” and engineering review of “Design and Construction Assignment for Central Kowloon Route” respectively and there have been more than 40 alignment options considered. Amongst other factors, the effects on public facilities, such as the Yau Ma Tei Police Station have been included in the option assessments.

The process for selection of the preferred alignment at the investigation stage included 14 options, 5 of which were chosen for further detailed evaluation. A summary of the 5 options is presented below:

1. Alignment Option CKR01 consists of a side-by-side cut-and-cover tunnel on the north side of Kansu Street. This option requires underpinning of the old and new wings of the Yau Ma Tai Police Station and the risk of potential impacts to the Old and New Wings of the Yau Ma Tei Police Station is higher than CKR03;
2. Alignment Option CKR02 is a variation of CKR01. In CKR02 the alignment is shifted southwards and the side-by-side cut-and-cover tunnel avoids both the old and new wings of the Yau Ma Tei Police Station. However, it will affect other buildings, specifically, the CLP Substation, the Dickson Building and the Tak Cheong Building, none of which can be underpinned due to their heavy weight. This option would require the relocation of the CLP sub-station, which could take between 8 and 10 years to implement and not considered practical.
3. Alignment Option CKR03 is also based on CKR01, except that the alignment has been shifted less southwards than CKR02 such that the side-by-side cut-and-cover tunnel avoids the old wing of the Police Station and the residential buildings at the south side of Kansu Street. However, this option still affects the New Wing of the Yau Ma Tei Police Station, which would require underpinning.
4. Alignment Option CKR05 consists of a double-deck cut-and-cover tunnel along Kansu Street. This arrangement avoids the old and new wings of the Yau Ma Tei Police Station. However, this option requires relatively deep excavation and a relatively steep vertical alignment for the bottom deck;
5. Alignment Option CKR07 comprises a side-by-side elevated structure along Waterloo Road, across Nathan Road, with the road entering into twin-bored tunnel on the east side of Nathan Road. It would avoid the Yau Ma Tei Police Station. However, it would require demolition of some private residential buildings and a school and would pass in close proximity

to the Yau Ma Tei Wholesale Fruit Market (Grade 2) and Yau Ma Tei Theatre (Grade 2).

The 5 option alignments were discussed at a public forum, published in the project newsletters and posted on the dedicated web-site for the project, as well the views of the relevant government departments were sought. Through these public engagement activities, a general consensus of the public was reached that Alignment Option CKR03 is the preferred alignment option at the west end of the route. The Highways Department consulted the Kwun Tong DC's T&TC, Kowloon City DC's T&TC and Yau Tsim Mong DC on 8 April 2008, 10 April 2008 and 24 April 2008 respectively and the Panel on Transport of the Legislative Council on 16 May 2009. They were supportive of the preferred alignment.

The Yau Ma Tei Police Station Compound will be directly impacted by the proposed works. Details of the impacts are presented below for each of the impacted elements.

New Wing

The existing new wing building of Yau Ma Tei Police Station is a four storey building built in 1957. The building will be directly impacted by the proposed works and an underpinning scheme will be required to transfer the existing column loadings to a deeper rock stratum. The building is supported by concrete friction piles. Construction of CKR cut-and-cover tunnel underneath the building will require removal the affected piles and cutting of the existing ground floor slab to expose the existing pile caps.

There is also the potential for the building to be impacted indirectly as follows; as the construction works will be in close proximity to the new wing the building may also be impacted by contact with machinery, ground borne vibration, tilting and settlement. The impact level is assessed as acceptable with mitigation measures.

Boundary Wall and Vehicular Entrance of the New Wing

The existing boundary wall and vehicular entrance gate of the New Wing are of low heritage and architectural value, demolition is an acceptable impact and no mitigation is required.

Old Wing

The building, built in 1922 is found on spread footing foundation. The tunnel alignment has been shifted southward to avoid direct contact with the old wing and this will allow a clearance of about 2.3m between the old wing building and the proposed tunnel. As the construction works will be in close proximity to the old wing, there is the potential for indirect impacts, such as contact with machinery, ground borne vibration, tilting and settlement. The impact level is assessed as acceptable with mitigation measures.

1-Storey Kitchen and Laundry Block and the Car port

The 1-storey kitchen and laundry block and the car port, all added in the 1970's will be demolished. The location is shown in **Figure 12.5**. As stated in the report on the *Consultancy for Conservation Study of Yau Ma Tei Police Station at No.*

627 Canton Road, Kowloon (July 2009), “The 1-storey kitchen and laundry block and the car port, are of low significance and lack of architectural interest.” Demolition is assessed as an acceptable impact.

The 1-storey kitchen and laundry block and the car port would be vacated for the construction of CKR. After the commissioning of CKR, the vacated land will be passed back to the relevant authority.

Table 12.1: Impact Assessment for Heritage Features during the Construction Phase for CKR

Resource	Approximate Distance to Works	Nature of Works	Impact Assessment
Tin Hau Temple (CKR-02) (Figure 12.3)	Slant: 20 m	Drill-and-Break Tunnel Formation	The temple structures are sensitive to ground-borne vibration and may be impacted if vibration levels are not controlled. Acceptable impact with mitigation measures.
No. 63 Temple Street (CKR-03) (Figure 12.3)	Slant: 110 m	Drill-and-Break Tunnel Formation	The structure is not located in close proximity to the proposed works. Acceptable impact
Old South Kowloon District Court (CKR-04) (Figure 12.3)	Slant: 170 m	Drill-and-Break Formation	The structure is not located in close proximity to the proposed works. Acceptable impact
Yau Ma Tei Theatre (CKR-05) (Figure 12.3)	Slant: 350 m	Drill-and-Break Formation	The structure is not located in close proximity to the proposed works. Acceptable impact
Yau Ma Tei Wholesale Fruit Market (CKR-06) (Figure 12.3)	Slant: 235 m	Drill-and-Break Formation	The structure is not located in close proximity to the proposed works. Acceptable impact
Former Pumping Station of Water Supplies Department (CKR-07) (Figure 12.3)	Slant: 345 m	Drill-and-Break Formation	The structure is not located in close proximity to the proposed works. Acceptable impact
K.I.L. Boundary Stone 6090 (CKR-08) (Figure 12.3)	Slant: 10 m	Drill-and-Break Formation	The stone marker does not contain any features that may be impacted by vibration. Acceptable impact

Resource	Approximate	Nature of Works	Impact Assessment
K.I.L. Boundary Stone 7068 (CKR-09) (Figure 12.3)	Vertical: 30m	Drill-and-Break Formation	The stone marker does not contain any features that may be impacted by vibration. Acceptable impact
Kowloon Methodist Church (CKR-10) (Figure 12.3)	Slant: 25 m	Drill-and-Break Formation	The structure is sensitive to ground-borne vibration and may be impacted if vibration levels are not controlled. Acceptable impact with mitigation measures.
Tang King Po School (CKR-11) (Figure 12.4)	Slant: 120m	Drill-and-Blast Tunnel Formation	The structure is not located in close proximity to the proposed works. Acceptable impact
Ma Tau Kok Animal Quarantine Depot (CKR-12) (Figure 12.4)	Slant: 70 m	Drill-and-Blast Formation	The structure is sensitive to ground-borne vibration and may be impacted if vibration levels are not controlled. Acceptable impact with mitigation measures.
Tunnel Network K1 (CKR-14) (Figure 12.3)	Slant: 30 m	Drill-and-Break Formation	The tunnel network may be impacted by ground borne vibration. Acceptable impact with mitigation measures.
Tunnel Network K1A (CKR-15) (Figure 12.3)	Slant: 100 m	Drill-and-Break Formation	The structure is not located in close proximity to the proposed works. Acceptable impact

Resource	Approximate	Nature of Works	Impact Assessment
Kowloon City Ferry Pier (CKR-13) (Figure 12.4)	8 m	Cut-and-Cover Tunnel Formation (and interface with drill-and-break tunnel and underwater tunnel)	<p>The Kowloon City Ferry Pier is currently undergoing evaluation for grading status. If the ferry pier is granted Grade 1, Grade 2 or Grade 3 status, the impact assessment will be revised to adhere to the requirements for Graded Historic Buildings.</p> <p>Acceptable impact (with mitigation to be implemented by the contractor as part of the contract requirements)</p>
Ma Tau Kok Public Pier (CKR-16) (Figure 12.4)	0 m	Cut-and-Cover Tunnel Formation (and interface with drill-and-break tunnel and underwater tunnel)	<p>The Ma Tau Kok Public Pier is currently undergoing evaluation for grading status. If the ferry pier is granted Grade 1, Grade 2 or Grade 3 status, the impact assessment will be revised to adhere to the requirements for Graded Historic Buildings.</p> <p>Currently, the ferry pier will be demolished.</p> <p>Acceptable impact</p>
The Kowloon City Vehicular Ferry Pier (CKR-17) (Figure 12.4)	46 m	Cut-and-Cover Tunnel Formation (and interface with drill-and-break tunnel and underwater tunnel)	<p>The Kowloon City Vehicular Ferry Pier is currently undergoing evaluation for grading status. If the ferry pier is granted Grade 1, Grade 2 or Grade 3 status, the impact assessment will be revised to adhere to the requirements for Graded Historic Buildings.</p> <p>Acceptable impact (with mitigation to be implemented by the contractor as part of the contract requirements)</p>

Resource	Approximate	Nature of Works	Impact Assessment
Kowloon Permanent Pier No. 70 (CKR-18) (Figure 12.4)	14 m	Cut-and-Cover Tunnel Formation (and interface with drill-and-break tunnel and underwater tunnel)	Kowloon Permanent Pier No. 70 is currently undergoing evaluation for grading status. If the ferry pier is granted Grade 1, Grade 2 or Grade 3 status, the impact assessment will be revised to adhere to the requirements for Graded Historic Buildings. Acceptable impact

12.5.3 Prediction of Impacts (Operational Phase)

The presence of above ground structures, such as ventilation and administration buildings have the potential to cause adverse visual impact if situated in close proximity to historical buildings. The operation of the tunnel is not predicted to cause any adverse impacts.

12.5.4 Evaluation of Impacts (Operational Phase)

As can be seen in **Figure 12.2** the locations of the ventilation and administration buildings are not situated in the vicinity of the identified built heritage resources. No adverse impacts will arise from the operation of the project.

12.6 Mitigation Recommendations

12.6.1 Mitigation Recommendations for the Construction Phase

The following section presents the mitigation recommendations for the built heritage resources in the project Study Area during the construction phase. The mitigation for all resources apart from the Yau Ma Tei Police Station can be found in **Table 12.2**. The Yau Ma Tei Police Station Compound will be dealt with separately in section below, as the impacts and mitigation required for this heritage resource are complex and cannot be clearly presented in the table.

Yau Ma Tei Police Station

New Wing

To protect the building from impacts during the construction works, sufficient protection measures shall be considered in the design. An underpinning scheme is required to transfer the existing column loadings to a deeper rock stratum. The supporting system includes cutting the existing ground floor slab to expose the existing pile caps and then construct transfer beams at both sides of the pile caps. The transfer beams will tie up with the existing caps. Loadings of the transfer beams will be transferred to the rock socket piles installed at the two ends of the

beams. The proposal for the underpinning scheme will be submitted to the AMO for review and comment when detailed design is available.

As the construction works will be in close proximity to the new wing the following mitigation measures should also be undertaken; protective covering should be provided for the buildings in the form of plastic sheeting, buffer zones should be provided between the construction works and the external walls of the buildings. The buffer zones should be as large as site restrictions allow and be marked out by temporary fencing or hoarding.

As the building may be impacted from vibration, tilting and settlement, the following limits will be adhered to; the AAA settlement and tilting limit should be 6/8/10 mm and 1/2000, 1/1500 and 1/1000 (The predicted settlement and tilting will be provided in the detailed design report). Monitoring of vibration levels will be undertaken during the construction phase and the Alert, Alarm and Action (AAA) vibration limit will be set at 5/6/7.5 mm/s. A monitoring proposal (including the use of geotechnical instrumentation such as ground settlement markers, groundwater monitoring stations, tilting markers, vibration monitoring points and tell-tale for use as appropriate) will be prepared and submitted to AMO.

Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff of HyD to ensure compliance.

Old Wing

The mitigation measures will include adopting a diaphragm wall construction method to provide a water sealed wall with minimum water pumping and a high stiffness wall adopting lower bearing capacity to minimise chiselling works and settlement due to lateral deflection and significantly reduce.

A grout curtain wall will be provided in front of the affected building to absorb the vibration generated during the construction of the tunnel. A recharging system will also be installed as a contingency measure to mitigate the fluctuation of the water table.

As the building may be impacted from vibration, tilting and settlement, the following limits will be adhered to; the AAA settlement and tilting limit should be 6/8/10 mm and 1/2000, 1/1500 and 1/1000 (The predicted settlement and tilting will be provided in the detailed design report). Monitoring of vibration levels will be undertaken during the construction phase and the Alert, Alarm and Action (AAA) vibration limit will be set at 5/6/7.5 mm/s. A monitoring proposal will be prepared and submitted to AMO. With the above measures, it is anticipated that effect on the building will be controlled to an acceptable level. A monitoring proposal (including the use of geotechnical instrumentation such as ground settlement markers, groundwater monitoring stations, tilting markers, vibration monitoring points and tell-tale for use as appropriate) will be prepared and submitted to AMO.

Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff of HyD to ensure compliance.

1-Storey Kitchen and Laundry Block and the Car port

The 1-storey kitchen and laundry block and the car port are of low heritage and architectural value, demolition is an acceptable impact and no mitigation is required.

Other Built Heritage Resources

Table 12.2: Mitigation Recommendations for Other Impacted Heritage Features (Construction Phase) of CKR

Resource	Mitigation Recommendation
Tin Hau Temple (CKR-02) (Figure 12.3)	The Alert, Alarm and Action (AAA) vibration limit will be set at 3/4/5 mm/s. and a condition survey shall be carried out by the project proponent prior to the construction Vibration monitoring of the structure shall be employed during the construction phase to ensure that the level is not exceeded.
No. 63 Temple Street (CKR-03) (Figure 12.3)	No mitigation required.
Old South Kowloon District Court (CKR-04) (Figure 12.3)	No mitigation required
Yau Ma Tei Theatre (CKR-05) (Figure 12.3)	No mitigation required
Yau Ma Tei Wholesale Fruit Market (CKR-06) (Figure 12.3)	No mitigation required
Former Pumping Station of Water Supplies Department (CKR-07) (Figure 12.3)	No mitigation required
K.I.L. Boundary Stone 6090 (CKR-08) (Figure 12.3)	No mitigation required.

Resource	Mitigation Recommendation
K.I.L. Boundary Stone 7068 (CKR-09) (Figure 12.3)	No mitigation required.
Kowloon Methodist Church (CKR-10) (Figure 12.3)	The Alert, Alarm and Action (AAA) vibration limit will be set at 5/6/7.5 mm/s. Vibration monitoring of the structure shall be employed during the construction phase to ensure that the level is not exceeded.
Tang King Po School (CKR-11) (Figure 12.4)	No mitigation required.
Ma Tau Kok Animal Quarantine Depot (CKR-12) (Figure 12.4)	The Alert, Alarm and Action (AAA) vibration limit will be set at 5/6/7.5 mm/s. Vibration monitoring of the structure shall be employed during the construction phase to ensure that the level is not exceeded.
Kowloon City Ferry Pier (CKR-13) (Figure 12.4)	A monitoring system for settlement, vibration and tilting will be determined and implemented pending determination of the future grading. A monitoring proposal will be submitted to AMO before commencement of work if a historic building grade is accorded.
Air raid precaution tunnels of the K1 Network (CKR-14) (Figure 12.3)	A condition survey for the tunnel networks should be undertaken by the project proponent to determine the present condition of the air raid tunnels and to recommend protective measures to ensure that the tunnels are not impacted by the construction works. Vibration monitoring on the tunnels shall be employed during the construction phase.
Air raid precaution tunnels of the K1A Network (CKR-15) (Figure 12.3)	No mitigation required.
Ma Tau Kok Public Pier (CKR-16) (Figure 12.4)	No mitigation is required at present. If the public pier is granted Grade 1, Grade 2 or Grade 3 status, the mitigation will be revised to adhere to the requirements for protective measures for Graded Historic Buildings.
The Kowloon City Vehicular Ferry Pier (CKR-17) (Figure 12.4)	A monitoring system for settlement, vibration and tilting will be determined and implemented pending determination of the future grading. A monitoring proposal will be submitted to AMO before commencement of work if a historic building grade is accorded.

Resource	Mitigation Recommendation
Kowloon Permanent Pier No. 70 (CKR-18) (Figure 12.4)	The pier contains active gas pipelines and will be strictly monitored for safety precautions during the works based on guidelines from the HK China Gas Company. It is concluded that these guidelines will provide sufficient protection for the pier structure and no additional precautions from a heritage perspective would be required. However, if the pier is granted Grade 1, Grade 2 or Grade 3 status, the mitigation will be revised if necessary, to adhere to the requirements for protective measures for Graded Historic Buildings.

12.6.2 Mitigation Recommendations for the Operational Phase

As can be seen in **Figure 12.2**, the locations of the ventilation and administration buildings are not situated in the vicinity of the identified built heritage resources. No mitigation will be required regarding this issue.

The operation of the Central Kowloon Route will not impose any adverse impacts on the Yau Ma Tei Police Station and mitigation measures will not be required.

12.7 Conclusion

A built heritage survey has been conducted and a total of 18 built heritage resources have been identified within and in the vicinity of the Study Area. The construction and operation of the tunnel and road network will not cause any insurmountable impacts if the proposed mitigation measures are implemented properly.

12.8 References

AMO Files

- Yau Ma Tei Police Station (No. 627 Canton Road) (Grade 2) AM87-0381
- Tin Hau Temple (Yau Ma Tei) (Grade 1) AM86-0366
- Ex-Ma Tau Kok Animal Quarantine Depot (Grade 2) AM91-0487
- Old South Kowloon District Court (No. 38 Gascoigne Road) (Grade 1) AM92-0485 AM92-0485
- Yau Ma Tei Theatre (Grade 2) AM98-0942
- Yau Ma Tei Wholesale Fruit Market (Grade 2) AM90-0458
- The Former Pumping Station of Water Supplies Department (Grade 1) AM00-1596
- Tang King Po School (Grade 3) AM05-2148

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- Hase, P (Ed.) In the Heart of the Metropolis: Yau Ma Tei and Its People (The Royal Asiatic Society, Hong Kong Branch), Joint Publishing (H.K.) Company Limited, Hong Kong (1999)

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- Consultancy Agreement NEX/2207 – EIA Study for KTE: Cultural Heritage Impact Assessment* (MIEL 2010)
- Agreement No CE 58/2006 (HY) Central Kowloon Route and Widening of the Gascoigne Road Flyover – Investigation – Cultural Heritage Impact Assessment* (MMHJV2010)
- Agreement No CE 11/77 Investigation of Disused Tunnels Network : Final Report on Network No. K1 Gascoigne Road* (Mott, Hay and Anderson 1979)
- Consultancy for Conservation Study of Yau Ma Tei Police Station at No. 627 Canton Road* (Chinese Architectural Heritage Unit & Kenward Consulting 2009)
- Condition Survey, Construction and Adaptive Re-Use Assessment of Yau Ma Tei Police Station [“the Premise”]* (KCL, FiSEC Ltd 2008)
- Report on the Preservation of Yau Ma Tei Police Station Compound* (Final) (MMHJV 2008)