

10. Cultural Heritage

10.1 Introduction

10.1.1 This section assesses the potential heritage impact associated with the Route 16 Alternative Alignment construction. Potential impacts have been assessed and the scope of work to be undertaken during the EIA (if any) has been identified.

10.2 Environmental Legislation and Guidelines

Archaeological and Cultural Resources

10.2.1 The *Environmental Impact Assessment Ordinance* was implemented on 1 April 1998 and requires the formal assessment of specified projects. Under the accompanying EIAO-TM, issued under Section 16 of the Ordinance, the technical scope of assessments undertaken under the new provisions has been defined; *Annex 10* states that the criteria for evaluating impacts to sites of cultural heritage include:

- The general presumption in favour of the protection and conservation of all sites of cultural heritage because they provide an essential, finite and irreplaceable link between the past and the future and are points of reference and identity for culture and tradition.
- Adverse impacts on sites of cultural heritage shall be kept to an absolute minimum

10.2.2 In addition to the EIA Ordinance, the heritage resources of Hong Kong are governed by a range of legislative and planning mechanisms. The *Antiquities and Monuments Ordinance (Cap. 53)*, provides powers for the designation of Antiquities and Monuments Sites or Declared Monuments in Hong Kong. The Ordinance provides statutory protection against the threat of development for declared monuments, historic buildings and archaeological sites which have been recommended by the Antiquities Advisory Board (AAB), approved by the Chief Executive and gazetted in the government gazette to enable their preservation for posterity.

10.2.3 Deemed Monuments have been identified by the Antiquities and Monuments Office (AMO) and agreement reached with the owners of the Monument to provide for specific measures to ensure preservation. Deemed Monuments have the potential to be upgraded to statutory Declared Monuments.

10.2.4 A wide range of sites of cultural heritage are identified and recorded by the AMO. Recorded historic buildings and structures are classified into grades I, II and III by the AAB according to their historical and architectural merit, as well as their group value and rarity and are defined as follows:

- Grade I - Buildings of outstanding merit, which every effort should be made to preserve if possible.
- Grade II - Buildings of special merit; efforts should be made to selectively preserve.
- Grade III - Buildings of some merit, but not yet qualified for consideration as possible monuments. These are to be recorded and used as a pool for future selection.

10.2.4.1 Although the grading is for AMO's internal reference and carries no statutory status, the recorded and graded historic buildings and structure should be protected either under the EIAO or through administrative measures as far as possible.

10.2.5 The current record of archaeological sites is known to be incomplete as many areas are not yet surveyed. Although *Section 11* (and its relevant sub-sections) of the *Antiquities and*

Monuments Ordinance require any person who discovers an antiquity or supposed antiquity to report the discovery to the Antiquities Authority, there is a need to ensure that procedures and mechanisms, which ensure the preservation or formal notification of previously unknown archaeological resources that may be revealed or discovered during project assessment or construction, are identified at an early stage in Project planning.

10.3 Assessment Methodology

10.3.1 Scope

10.3.1.1 The potential impacts to the Archaeological, Historical and Cultural Resources within a corridor of 300m either side of the alignment have been assessed. This corridor is considerably wider than the actual area of landtake required for construction and operation of the new road and has been defined in order to provide information regarding the context of features directly affected, to allow indirect impacts to be assessed and to help develop predictions on the scale of currently unknown archaeological resources.

10.3.1.2 The examination of this defined corridor also allows a more general appraisal of the archaeology, architectural history and historic landscapes of the areas that the Route 16 (West Kowloon Section) traverses.

10.3.1.3 The following heritage resources have to be assessed:

- **Historic Buildings and Structures**, which include a variety of forms with a wide range of different functions including domestic, working and cultural uses. These include places of worship, houses, agricultural buildings, boundary and milestones and industrial buildings and workshops;
- **Landscape Features**, including sites of historical events, historic field patterns, tracks and fish ponds, and cultural elements such as fung shui woodlands and clan grave sites; and
- **Archaeological Remains**, including a variety of buried and upstanding forms dating from the prehistoric to historical times and comprising upstanding ruins, earthworks, finds scatters and evidence of landuse management, settlements and cultural attributes.

10.3.1.4 The Route 16 Alternative Alignment development phase with the greatest potential direct impact to heritage features will be during the construction of the new road. However, the study team has also assessed the indirect impacts associated with the operating road.

10.3.2 Prediction Methodology

Known Heritage Features

10.3.2.1 Data gathering on known heritage resources has focused on the records held by the Antiquities and Monuments Office (AMO), supplemented by discussions with representatives of AMO, Government records such as Lands Department and appropriate academic sources, and site visit.

10.3.2.2 An assessment of direct and indirect impacts upon identified buildings and structures has been undertaken.

Identifying Historic and Cultural Resources

10.3.2.3 Heritage significant features such as historical buildings and structures, clan grave sites, fung shui and temples have been identified through consultations with and information from the Lands Department, AMO, other academic resources and field survey. Both direct and indirect impacts from the construction and operation of the development have been assessed. Mitigation measures which may be recommended and shown in Section 10.7.

10.4 Baseline Conditions

10.4.1 Existing Conditions

10.4.1.1 Data gathering identified that the Lai Chi Kok Hospital and the historical buildings in Tin Sam Village are the only known historical buildings which will potentially be impacted by the Route 16 Alternative Alignment.

10.4.1.2 The Lai Chi Kok Hospital, which was built in 1924, is located some 150m to the west of Route 16 and listed as a Grade 3 building by the AMO.

10.4.1.3 There are five historical buildings in Tin Sam Village are shown in Table 10.4a:

Table 10.4a Known Historical Buildings in Tin Sam Village

Name of Site (Site Code)	Description
Liu's Ancestral Hall (ST-I-13)	A one-hall hakka style ancestral hall. Not graded yet.
Choi's Ancestral Hall (ST-I-14)	A one-hall hakka style ancestral hall which was built in 1890's. The building was renovated in 1995/6. Not graded yet.
Leung's Ancestral House (ST-I-15)	A one-hall ancestral house and it is now occupied by a tenant, Mr. Lai. Not graded yet.
Leung's Ancestral House (ST-I-16)	A one-hall hakka style ancestral house which may have existed for over 100years. This house has been now occupied by a tenant for over 10 years. Not graded yet.
Tin Sam Gate (ST-I-17)	A one-hall hakka style gate mainly for defense use during the 1700's and it was renovated in 1996. Not graded yet.

10.4.1.4 The five buildings are located some 90m to the project boundary of the Route 16. Furthermore, the nearest structural work for Route 16 will be over 170m from the nearest historical building.

10.4.1.5 No known archaeological sites are to be impacted by Route 16.

10.5 Source of Impact

10.5.1 Both temporary and permanent landtake may result in damage to, or loss of, archaeological remains and deposits, the removal of historic buildings, standing archaeological monuments or culturally significant features and changes to the setting of buildings and monuments and to the physical coherence of historic landscapes.

10.5.2 Subsoil archaeological sites may be affected by:

- Disturbance through excavations at or near site, topsoil stripping and the passage of heavy machinery on exposed deposits;

- Disturbance by machinery working on the present surface where there are extant earthworks;
- The burial of sites resulting in a limitation on accessibility for future archaeological investigations (including surface survey and remote sensing techniques) and obscuring visible surface evidence; and
- The introduction of archaeological material with spoil from other sites.

10.5.3 In addition, severance and "islanding" may result from permanent landtake required for development and associated permanent features and from temporary landtake required during construction to accommodate haul roads and construction sites. Areas of historic and cultural interest may be severed, thereby altering or destroying their integrity.

10.5.4 Ground compaction due to construction activities or the weight of permanent embankments may cause damage or distortion to buried archaeological remains, especially in soft alluvial deposits.

10.5.5 Visual and noise intrusion on the setting and amenity of the cultural resources may occur where the route passes close to historic buildings, grave sites, archaeological sites and monuments and culturally or historically significant landscape features.

10.6 Evaluation of Impacts

10.6.1.1 The Lai Chi Kok Hospital and the historical buildings in Tin Sam Village are located some 150m and 170m from the nearest structural work for the Route 16 alignment respectively and, therefore, the HKPSG criteria are satisfied and no direct air impacts are expected during the construction phase. Nevertheless, environmental control and mitigation measures stipulated in *Air Pollution Control (Construction Dust) Regulation* are required to limit the dust emission from the site. Mitigation measures are described in the Section 3.5.3.

10.6.1.2 During the operation phase, the major air pollutants are NO₂, CO and RSP; due to the large separation distance between the alignment and the historical buildings, the predicted pollutant levels are within the AQO criteria and, therefore, no air impact is expected.

10.6.1.3 Exceedances of the daytime construction noise levels are predicted at LCK hospital and at the historical buildings at Tin Sam Village during the construction of the Route 16. However, with the use of mitigation measures such as the use of quiet powered mechanical equipment (PME) and reducing the number of PME operating concurrently, the construction noise impact associated with Route 16 will comply with the daytime construction noise criteria. In addition, low vibrating piling method, such as bored piling, will be employed to ensure that the noise and vibration induced from the construction of Route 16 will be minimum. Considering the large separation distance (ie 150m and 170m), it is expected that these historical buildings will not be affected by the vibration induced from the piling activities.

As discussed in para 4.6.4.15, the LCK hospital will be affected by high levels of road traffic noise. However, the noise contribution is dominated by the traffic noise on the existing road network and the noise levels due to Route 16 are low. Nevertheless, mitigation measures have been recommended to minimise the noise impact from the Route 16 alignment.

As the historical buildings in Tin Sam Village will be adequately screened by the village houses at the boundary of Tin Sam Village, no road traffic noise impact is expected.

10.6.1.4 The LCK Hospital is not regarded as a visually sensitive receiver. No direct and indirect impact is expected. No further action is required.

10.7 Mitigation Measures

- 10.7.1.1 No direct air impacts to the LCK Hospital are expected. However, environmental control and mitigation measures stipulated in *Air Pollution Control (Construction Dust) Regulation*, are required to limit the dust emission from the site. Mitigation measures are summarised in Table 10.7a below.
- 10.7.2 With the use of appropriate mitigation measures, no construction noise impact on the LCK Hospital is expected. As discussed in section 4.6.5, the combination of 3m to 5 m noise barriers have been proposed which would ensure the new Route 16 alignment does not further deteriorate the future noise environment on the LCK Hospital. The proposed mitigation measures are summarised in Table 10.7a below.

Table 10.7a Summary of Mitigation Measures for LCK Hospital

Issues	Mitigation Measures
Construction dust	<ul style="list-style-type: none"> • any excavated dusty materials or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet; • a stockpile of dusty materials should not extend beyond the pedestrian barriers, fencing or traffic cones; • vehicle washing facilities should be provided at every exit point; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit; • every main haul road should be sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet; • the portion of any road leading only to a construction site that is within 30 m of a discernible or designated vehicle entrance or exit should be kept clear of dusty materials; • any stockpile of dusty materials should be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides or sprayed with water or a dust suppression chemical so as to maintain the entire surface wet; • all dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet; • every vehicle should be washed to remove any dusty materials from its body and wheels immediately before leaving a construction site; and • the working area of any excavation should be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet.
Construction Noise	<ul style="list-style-type: none"> • use of quiet PME; • reducing the number of each type of PME to one ; and • use of low vibration piling methods such as bored piling
Operational Noise	<ul style="list-style-type: none"> • 5m high roadside noise barrier located on the western side of the northbound carriageway of LCKV (opposite LCK Reception Centre Staff Quarters);

Issues	Mitigation Measures
	<ul style="list-style-type: none">• 3m high roadside noise barrier located on the western side of the southbound carriageway of the LCKV (opposite LCK Reception Centre Staff Quarters);• 3m high roadside noise barrier located on the southern side of Slip D; and• 3m to 3.5m high roadside noise barrier located on the southern side of Slip E.

10.7.3 To further ensure the structural integrity of the historic buildings within Lai Chi Kok Hospital and Tin Sam Village would not be affected by the construction of the Route 16, it is recommended that visual inspection of the 5 historic buildings in Tin Sam Village and the historic buildings within Lai Chi Kok Hospital should be conducted prior to the commencement of the construction. All structural defects that could be identified during the visual inspection should be recorded. In addition, structural inspection survey for the above buildings should be made in quarterly interval. Critical structural members, such as main beams and columns will also be included in the quarterly inspection. Future inspection record will be copied to AMO for record. Measurement of vibration would also be carried out on a need basis during the piling work.

10.7.4 A piezometer will also be installed in Butterfly Valley to monitor any change in ground water table during construction. The measurement will be made twice a month during construction. Records of monitoring will be copied to AMO for record.

10.8 Conclusions

10.8.1 Concerns have been raised regarding indirect impacts to the LCK Hospital and the historical buildings at Tin Sam Village. Appropriate mitigation measures mentioned in Section 10.7 should be implemented during the construction and operation phase of the road development so that the air and noise impact on these historical buildings are kept to within the acceptable levels. There are no adverse impacts to heritage resources due to the construction or operation of the Route 16 Alternative Alignment.

10.8.2 Structural survey for the historic buildings at Lai Chi Kok Hospital and Tin Sam Village should be conducted by the Contractor prior to the commencement of the works and subsequent monitoring survey on a quarterly basis to ensure the structural integrity of these buildings. Piezometer would also be installed in Butterfly Valley to monitor any change in ground water table during construction. Measurement of vibration would also be carried out on a need basis during the piling work.