

## 12 Cultural Heritage

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### 12.1 Legislation, Standards and Guidelines

**12.1.1.1** Legislation, standards, guidelines and criteria relevant to the consideration of Cultural Heritage Impacts under this study include the following;

- Antiquities and Monuments Ordinance;
- Environmental Impact Assessment Ordinance (EIAO), including the Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO) and Guidelines on Cultural Heritage Impact Assessment prepared by Antiquities and Monuments Office (AMO); and
- Hong Kong Planning Standards and Guidelines (HKPSG); and Development Bureau technical Circular (Works) No. 6/2009: Heritage Impact Assessment Mechanism for Capital Works Projects.

### 12.1.2 Antiquities and Monuments Ordinance

**12.1.2.1** The Antiquities and Monuments Ordinance (the Ordinance) provides the statutory framework to provide for the preservation of objects of historical, archaeological and paleontological interest. The Ordinance contains the statutory procedures for the Declaration of Monuments. The proposed monument can be any place, building, site or structure, which is considered to be of public interest by reason of its historical, archaeological or paleontological significance.

**12.1.2.2** Under Section 6 and subject to sub-section (4) of the Ordinance, the following acts are prohibited in relation to certain monuments, except under permit:

- To excavate, carry on building works, plant or fell trees or deposit earth or refuse on or in a proposed monument or monument; and
- To demolish, remove, obstruct, deface or interfere with a proposed monument or monument.

**12.1.2.3** The discovery of an Antiquity, as defined in the Ordinance must be reported to the Antiquities Authority (the Authority), or a designated person. The Ordinance also provides that, the ownership of every relic discovered in Hong Kong after the commencement of this Ordinance shall vest in the Government from the moment of discovery. The Authority on behalf of the Government may disclaim ownership of the relic.

**12.1.2.4** No archaeological excavation may be carried out by any person, other than the Authority and the designated person, without a licence issued by the Authority. A licence will only be issued if the Authority is satisfied that the applicant has sufficient scientific training or experience to enable him to carry out the excavation and search satisfactorily, is able to conduct, or arrange for, a proper scientific study of any antiquities discovered as a result of the excavation and search and has sufficient staff and financial support.

**12.1.2.5** It should also be noted that the discovery of an antiquity under any circumstances must be reported to the Authority, i.e. the Secretary for Development or designated person. The Authority may require that the antiquity or suspected antiquity is identified to the Authority and that any person who has discovered an antiquity or suspected antiquity should take all reasonable measures to protect it.

### **12.1.3 Environmental Impact Assessment Ordinance**

**12.1.3.1** The EIAO was implemented on 1 April 1998. Its purpose is to avoid, minimise and control the adverse impact on the environment of designated projects, through the application of the EIA process and the Environmental Permit (EP) system.

#### **Technical Memorandum on Environmental Impact Assessment Process**

**12.1.3.2** 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 TM-EIAO. 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.

#### **Guidelines for Cultural Heritage Impact Assessment**

**12.1.3.3** This document, as issued by the AMO, outlines the specific technical requirement for conducting terrestrial archaeological and built heritage impact assessments and is based upon the requirements of the TM-EIAO. It includes the parameters and scope for the Baseline Study, specifically desk-based research and field evaluation. Besides, it also includes 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.

**12.1.3.4** 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.

**12.1.3.5** 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.

## **12.1.4 Hong Kong Planning Standards and Guidelines**

**12.1.4.1** Chapter 10 of the HKPSG details the planning principles for the conservation of natural landscape and habitats, historical buildings and archaeological sites. The document states that the retention of significant heritage features should be adopted through the creation of conservation zones within which uses should be restricted to ensure the sustainability of the heritage features. The guidelines state that the concept of conservation of heritage features, should not be restricted to individual structures, but should endeavour to embrace the setting of the feature or features in both urban and rural settings.

**12.1.4.2** The guidelines also address the issue of the preparation of plans for the conservation of historical buildings, archaeological sites and other antiquities. It is noted that the existing Declared Monuments and proposed Monuments be listed in the explanatory notes of Statutory Town Plans and that it be stated that prior consultation with AMO is necessary for any redevelopment or rezoning proposals affecting the Monuments and their surrounding environments.

**12.1.4.3** It is also noted that planning intention for non-statutory town plans at the sub-regional level should include the protection of monuments, historical buildings, archaeological sites and other antiquities through the identification of such features on sub-regional layout plans. The appendices list the legislation and administrative controls for conservation, other conservation related measures in Hong Kong, and Government departments involved in conservation.

## 12.2 Description of the Environment

12.2.1.1 The proposed site for development of columbarium, crematorium and related facilities is located at the hillsides at Sandy Ridge to the northwest of Man Kam To Road and is partially occupied by Sandy Ridge Cemetery. MTR Lo Wu Station is located to the west of site boundary. The adjacent area of Lin Ma Hang Road is characterized by rural land uses with scattered village houses, agricultural land and natural terrain.

## 12.3 Construction Phase – Built Heritage

### 12.3.1 Assessment Methodology

#### Baseline Study

12.3.1.1 A desk-based study has been undertaken to determine the presence of built heritage resources in the project assessment area. Research will include gathering information from the following sources:

- List of Declared Monuments and Graded Buildings as issued by 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; and
- Previous Built Heritage Impact Assessment's (BHIA) in the project assessment area.

#### Built Heritage Survey

12.3.1.2 The purpose of the built heritage survey is to identify all built heritage resources within or near the project boundary. The BHIA survey must adhere to the above cited guidelines and provide adequate information to fulfil the relevant requirements as set out in Annexes 10 and 19 of the Technical Memorandum on the EIA process (TM-EIAO).

**12.3.1.3** The scope of the survey for this project will include all areas within the site boundary and an additional area covering 50m from the site boundary. The 50m study area outside of the site boundaries has been included to identify any built heritage resources that may be located in proximity to the proposed access roads leading from Man Kam To Road into the proposed C&C facilities at Sandy Ridge (**Figure 12.3.1**) and widening of Lin Ma Hang Road (**Figure 12.3.2**). The 50m study area is considered sufficient for the determination of indirect impacts such as damage from ground borne vibration, ground settlement and contact with machinery and equipment.

**12.3.1.4** The scope of the items to be included in the built heritage survey has in particular followed the *Guidelines for Cultural Heritage Impact Assessment* as issued by AMO to compile a comprehensive inventory of heritage sites within the proposed assessment area (as shown in **Figures 12.3.1** and **12.3.2**). The surveyed resources shall include:

- (i) all declared monuments;
- (ii) all proposed monuments;
- (iii) all buildings/ structures/ sites graded or proposed to be graded by the Antiquities Advisory Board (AAB);
- (iv) Government historic sites identified by AMO;
- (v) buildings/ structures/ sites of high architectural / historical significance and interest which are not included in items (i) to (iv) above; and
- (vi) cultural landscapes include places associated with historic event, activity, or person or exhibiting other cultural or aesthetic values, such as sacred religious sites, battlefields, a setting for buildings or structures of architectural or archaeological importance, historic field patterns, clan graves, old tracks, fung shui woodlands and ponds, and etc.

**12.3.1.5** The information gathered from the built heritage survey has been used to identify impacts and prepared mitigation recommendations (where necessary) for all of the resources identified in the survey.

**12.3.1.6** The coding method for the recording of built heritage resources will be as follows:

- Graded Historic Building (GB);
- Nil Grade Built Heritage Item (HB); and
- Historic Clan Grave (G).

### **Impact Assessment and Mitigation Measures**

**12.3.1.7** Identification of both direct and indirect impacts that may affect the built heritage resources within the project assessment area will be undertaken. Preservation in-situ will always be the first priority for sites of Cultural Heritage. If preservation in totality is not practicable, mitigation will be proposed to minimise the degree of adverse impact to the greatest possible extent. Besides, any disturbance to sites of Cultural Heritage that may cause physical damage should be avoided wherever practicable through alteration of design, construction method or protective measures as appropriate.

**12.3.1.8** The following classification of impact will be used:

- **Beneficial Impact:** The impact is beneficial if the project will enhance the preservation of the heritage site(s);
- **Acceptable Impact:** If the assessment indicates that there will be no significant effects on the heritage site(s);
- **Acceptable Impact with Mitigation:** If there will be some adverse effects, but if these can be eliminated, reduced or offset to a large extent by specific measures, such as conduct a follow-up Conservation Proposal or Conservation Management Plan for the affected heritage site(s) before commencement of work in order to avoid any inappropriate or unnecessary interventions to the building;
- **Unacceptable Impact:** If the adverse effects are considered to be too excessive and are unable to mitigate practically; and
- **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.

## **12.3.2 Historical Background**

### **Off-site Pick-up / Drop-off Points / Barging Point**

**12.3.2.1** As discussed in **Section 1.3**, it is proposed to have off-site pick-up / drop-off points for shuttle buses at MTR Kwu Tung Station, MTR Fanling Station, existing Sheung Shui Landmark North Public Transport Interchange (PTI) and layby at Pak Wo Road near Flora Plaza. Given the conditions of these existing highway infrastructures, no excavation works would be required and only road furnishing would be conducted. All these off-site pick-up / drop-off areas except MTR Kwu Tung Station are actually within existing highway corridors and these areas would not be affected and hence impacts are not anticipated. For MTR Kwu Tung Station (including the PTI and shuttle bus services area), it will be constructed under the Planning and Development Study on North East New Territories (NENT) Contract and will be available by 2026.

**12.3.2.2** In addition, a barging point at Siu Lam currently used by the Express Rail Link project (see **Figure 1.3**) would be required. All these areas are located within existing land use for barging point and hence impacts are not anticipated.

#### **The Closed Border Area**

**12.3.2.3** As part of the negotiations for the Convention of Peking in 1898, the New Territories became to be administrated under British government in 1899. The original boundary line agreed as part of the Convention was the shortest line from sea to sea which ran through the middle of a valley with the main town of Sham Chun (Shenzhen) remaining on the Chinese controlled side and the smaller towns and villages to the south of the river falling under British jurisdiction (Lockhart 1899). The boundary was objected to by both sides, as the villages on the British side would be cut off from family and trading ties with the Chinese controlled main market town of Sham Chun. As neither side could agree on the boundary, the Shenzhen River was eventually chosen as the boundary (Lockhart 1899).

**12.3.2.4** Between 1898 and 1949, there was no border patrol and movement between Hong Kong and China was possible. Subsequently, the Frontier Closed Area was established in 1951 to combat against illegal immigrants entering Hong Kong from Mainland China.

**12.3.2.5** The Lo Wu border crossing point as part of the Kowloon Canton Railway began operation in 1911. This included a railway bridge across the Shenzhen River. This bridge was destroyed during WWII by the British to hinder the Japanese forces invasion into Hong Kong Territory. The bridge was rebuilt in 1945 and the bridge was relocated downstream in 2003 (HK Government Press Release).

#### **Sandy Ridge Cemetery**

**12.3.2.6** There are two public cemeteries situated in Sandy Ridge (Sha Ling), Lo Wu, namely Sandy Ridge Cemetery and Sandy Ridge Urn Cemetery. They were both constructed in 1949 and opened to the public in 1950 (Tang 2011:66-67). The first burials recorded in these two cemeteries were dated 1.12.1950 (Ching 1986:208). The Sandy Ridge Cemetery comprised of 4 coffin sections: Sha Ling (general), Roman Catholic Church, Little Sister of the Poor and Tung Wah; while the Sandy Ridge Urn Cemetery consisted of nine: Sha Ling (general), Tung Wah, Chaozhou, Enping, Zhongshan, Heshan, Xinhui, Zengcheng and Fujin. All of the above were managed by private sectors except for the Sha Ling ones.

**12.3.2.7** Due to the shortage of land resulting from post-war immigration, the Hong Kong Government aimed to ‘concentrate as many burials as possible in the public cemetery at Wo Hop Shek and the urn cemetery at Sandy Ridge’ as a general burial policy (Ching 1986:41). In order to limit funerary land use, the requirement of exhumation of all coffin burials after six years in public cemeteries was part of government policy on cemeteries pre-1970. In addition, the practice of exhumation was further encouraged in the renewed burial policies introduced in 1970 and 1976 (Ching 1986:29-31). As stated in the Food & Environmental Hygiene Department web site, this practice remains a key element in the current burial policy:

- ‘Burials in aforesaid [Wo Hop Shek Cemetery, Cheung Chau Cemetery, Tai O Cemetery and Lai Chi Yuen Cemetery] public cemeteries are not permanent, but exhumable. Every year, the Food and Environmental Hygiene Department will issue an exhumation order in the Government Gazette, requiring the removal from graves of all human remains which have been interred in the aforesaid public cemeteries for more than six years. If the remains are not exhumed after expiry of the exhumation order, the Government will disinter the remains, cremate them, and re-inter the ashes in the Communal Grave at Sandy Ridge Cemetery.’ (FEHD, HKSAR 2013).

**12.3.2.8** The above statement also reflects the important role of Sandy Ridge Cemetery as a final home for unclaimed human remains. In fact, unclaimed graves from various demolished cemeteries, such as Shek O Cemetery, Kai Lung Wan East Cemetery, New Stanley Cemetery, New Kowloon Cemetery No.7 and Sham Wan Cemetery were relocated to Sandy Ridge Cemetery since its opening in 1950 (Tang 2011:58-68).

**12.3.2.9** As recorded in the memorial plaques, some of the previously mentioned private sections were established to accommodate relocated graves from demolished cemeteries as a result of urban development and burial policy. For example, some of the graves in the Sandy Ridge Fujin burial section were originally buried in Kai Lung Wan Cemetery in Kellett Bay in 1919. To match up with the demolition plan of the Kai Lung Wan Cemetery, grave relocations began in 1947. They were temporarily relocated to Ngau Chi Wan and Wo Hop Shek and finally permanently relocated to Sandy Ridge in 1957. Other demolished cemeteries relocated to Sandy Ridge included Kowloon Tong Cemetery, Shek Kip Mei Christian Cemetery, New Kowloon Cemetery No.2 (Little Sister of the Poor), Chaozhou & Fujin Cemeteries in New Kowloon Cemetery No.7 and New Kowloon Cemetery No.8 (partially) (Tang 2011:58-68).



### Lo Wu Village

**12.3.2.10** There are no historical villages within the assessment area. The nearest village is Lo Wu which is located at more than 300m from the project boundary. There are actually two Lo Wu villages located on both sides of the Shenzhen River: one is situated in the HKSAR in part of the Ta Kwu Ling region, and the other one is in the Luohu Region in Shenzhen. Although ‘Lo Wu’, originally called ‘Law Wu’ (螺湖), was marked on the 1897 map in the Guangdong Directory (Empson 1992:117) (**Appendix 12.1**), it is not included in the list of recognised villages under the New Territories Small House Policy (Lands Department 2009), which indicates that the current Lo Wu village in Hong Kong did not exist in 1898. Previous research revealed that the current Lo Wu village located next to the MTR Lo Wu Station is the home to a branch of the Yuen clan originating in Lo Wu Village in Shenzhen (ERM 2007:7.59).

### San Uk Ling

**12.3.2.11** San Uk Ling on Lin Ma Hang Road is approximately 300 years old and was settled by the Punti Cheung family from Wong Pui Leng according to local informants. The village used to have a wall but it was demolished some years ago. The village is situated at the base of a hill and most of the historical buildings have been replaced by modern buildings. A few heritage resources remain including the Cheung Ancestral Hall and the entrance gate (ERM 2007: SUL01-05).

### Muk Wu Nga Yiu

**12.3.2.12** The village of Muk Wu Nga Yiu was settled by members of the Hakka Kwong Clan from Guangdong Province after 1899 (as it does not appear in the list of villages from the survey of that year). The village is the site of a brick kiln that is believed to have ceased production in the mid-20th Century.

## **12.3.3 Desk-Based Study**

**12.3.3.1** As discussed in **Section 12.3.1**, a desk-based study has also included a review of previous studies in the project assessment area, which covered all land within the site boundary and a boundary of 50m around all work areas. The review of previous studies has been discussed below.

**Agreement No. CE 32/2010 (CE) Site Formation and Associated Infrastructural Works for Proposed Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Feasibility Study: Preliminary Environmental Review Report: Cultural Heritage**

**12.3.3.2** The Cultural Heritage section included a baseline study and a preliminary impact assessment. The findings for built heritage included the identification of fifteen pre-1950 historic clan graves, one shrine and the Grade 2 Nam Hang MacIntosh Fort.

- 12.3.3.3** Six graves were located at distances of 70m or greater from any proposed works and it was determined that these graves would not be adversely impacted by the construction or operation of the proposed project and no mitigation measures would be necessary.
- 12.3.3.4** Five graves were identified as being within the proposed works areas and would require relocation if the design and layout remain unchanged. Mitigation in the form of cartographic and photographic survey was recommended.
- 12.3.3.5** Four graves and the shrine were identified as being located close to proposed works areas. Direct impacts were not expected, but indirect impacts from vibration during the construction works were anticipated. A condition survey to be conducted prior to the commencement of construction works was recommended to determine safe limits on vibration levels and to identify the need for any additional protective measures.
- 12.3.3.6** The Grade 2 Nam Hang MacIntosh Fort was identified as being located 22m from a proposed road and slope works. Again, direct impacts were not identified but indirect impacts arising from vibration during the construction works were anticipated. A condition survey to be conducted prior to the commencement of construction works was recommended to determine safe limits on vibration levels and to identify the need for any additional protective measures.

**Agreement No. CE 34/2011(EP) Development of Organic Waste Treatment Facilities Phase 2 – Feasibility Study: Environmental Impact Assessment Study Report**

- 12.3.3.7** A built heritage field survey was conducted for the project and the built heritage resources relevant to the current study included a Tin Hau Temple and two historic clan graves.

**Planning Department: Agreement No. PLNG 13/2007, Survey on features with cultural heritage value in the Sha Tau Kok, Ta Kwu Ling and Ma Tso Lung Areas**

- 12.3.3.8** The village of Lo Wu was included as part of the field scan for this project and no features with cultural heritage value were identified.
- 12.3.3.9** The villages of Muk Wu Nga Yiu and San Uk Ling were included in the survey for this project. An ancestral hall of the Cheung clan, a residential building (No. 9 San Uk Ling Village House of the first row) and a village entrance gate in San Uk Ling were identified in the survey and are also within the assessment area. No features were identified in Muk Wu Nga Yiu in the current project assessment area.

## **12.3.4 Proposed and Declared Monuments**

- 12.3.4.1** According to the information from AMO's website, there are no proposed or Declared Monuments in the project assessment area.

## 12.3.5 Proposed and Graded Historic Buildings

12.3.5.1 There are no Proposed Graded Historic Buildings or New Items in the project assessment area.

12.3.5.2 There is one Graded Historic Building, the Grade 2 Nam Hang MacIntosh Fort (南坑). It is of a chain of seven such structures which also includes Pak Kung Au (伯公坳), Kong Shan (礦山), Pak Fu Shan (白虎山), Ngau Yiu (瓦窯), Ma Cho Lung (馬草壟) and Pak Hok Chau (白鶴洲). The forts were constructed on prominent hilltops overlooking the Shenzhen River (深圳河) between 1949 and 1953 to provide strategic advantage for border defence and to address the issue of Chinese refugees and unrest at the border. They were named after Police Commissioner Duncan William MacIntosh (in office, 1946-1953). They were dubbed “MacIntosh Cathedrals” because of their distinctive appearance against the skyline.

## 12.3.6 Nil Grade Built Heritage Items

12.3.6.1 Seven built heritage resources have been identified in the desk-based study. They consist of an Earth God Shrine, two Buddhist Shrines and Tin Hau Temple near Man Kam To Road and three structures in San Uk Ling Village (an entrance gate, ancestral hall and residential building).

12.3.6.2 The project assessment area for the proposed Lin Ma Hang Road widening has the potential to contain isolated nil built heritage resources, such as historic clan graves and shrines.

## 12.3.7 Historic Clan Graves

12.3.7.1 A total of 17 potential historic clan graves have been identified in the desk-based study as being located in the project assessment area based upon information from previous studies. Fifteen of these graves were identified as part of the feasibility stage of the current project and two were identified during the desk-based study for the current project. The graves will be reassessed as part of this BHIA to identify which shall be included as Historic Clan graves for assessment.

## 12.3.8 Results of the Built Heritage Field Survey

12.3.8.1 The following section presents the results of the built heritage field survey. A key plan of identified resources is shown in **Figure 12.3.3** and **Figure 12.3.10** for Sandy Ridge and Lin Ma Hang Road respectively.

### Graded Historic Buildings

12.3.8.2 The survey confirmed that the Grade 2 Nam Hang MacIntosh Fort (GB-01) is the only Graded Historic Building in the project assessment area. The fort is enclosed by a security fence and internal access was not available. A description of the fort and photographic record can be found in **Appendix 12.2**. The plan of the fort can be found in **Figure 12.3.4**.

### *Nil Grade Built Heritage Items*

**12.3.8.3** Seven items have been identified in the built heritage field survey; a Earth God Shrine (HB-01), two Buddhist Shrines (HB-06 and HB-07) and Tin Hau Temple (HB-02) on Man Kam To Road and San Uk Ling Village Entrance Gate (HB-03), Tsz Tong (HB-04) and No. 9 San Uk Ling Village House (HB-05). Descriptions and photographic record can be found in **Appendix 12.2** and location plans in **Figure 12.3.5** for the shrines, **Figure 12.3.6** for the temple and **Figure 12.3.11** for the three structures in San Uk Ling.

### *Historic Clan Graves*

**12.3.8.4** The built heritage survey included all of the graves identified at the preliminary environmental review stage of the project (Agreement No. CE 32/2010 (CE) Site Formation and Associated Infrastructural Works for Proposed Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery – Feasibility Study: Preliminary Environmental Review Report: Cultural Heritage) although urns of recent construction (Feasibility Study reference: G-05, G-13, G-14 and G-15) are not identified as historical clan graves, therefore, these are not included in this EIA. Graves noted in the field that had no inscription or recent graves with no information on generations have not been included. As well any graves outside of the 50m assessment area have also been excluded. The built heritage survey has identified a total of 11 historic clan graves (G-01 through G-11) all of which are located in the project boundary. The locations of the graves can be found in **Figure 12.3.7** (G-01 and G-02), **Figure 12.3.8** (G-03, G-04, G-05, G-06, G-07, G-08 and G-09), **Figure 12.3.4** (G-10), **Figure 12.3.9** (G-11) and the grave catalogue in **Appendix 12.3**.

## **12.3.9 Identification of Built Heritage Impacts**

**12.3.9.1** The site formation works for the proposed C&C facilities will include levelling of sections of the site for construction of the platforms for the proposed crematorium, funeral parlour, visitor service centre, columbarium and drop-off and pick-up area. Construction of retaining walls and cut and fill of slopes will also be undertaken. Additional works will include construction of at-grade access roads and viaducts and construction of watermains alignment along south side of Man Kam To Road. Hence, impact due to construction and operational phases will be addressed.

**12.3.9.2** The works at Lin Ma Hang Road will consist of road widening to 7.3m with a 2m footpath on one side. Hence, impact due to construction and operational phases will be addressed.

**12.3.9.3** The off-site works at the proposed pick-up and drop-off points except MTR Kwu Tung Station will all be conducted on existing transportation facilities and will consist only of placement of minor road furnishings. Hence, impacts from these proposed pick-up and drop off points are not anticipated. For MTR Kwu Tung Station (including the PTI and shuttle bus services area), it will be constructed under the Planning and Development Study on North East New Territories (NENT) Contract and will be available by 2026.

**12.3.9.4** In addition, the surplus inert construction and demolition (C&D) materials will be transported by vehicles to the designated barging point in Siu Lam (see **Figure 1.3**). The surplus inert C&D materials will be transported by barges for reuse in other concurrent projects. There will be minor construction works for the tipping halls and new ramps at the barging point area. The barging point is currently in use for the Express Rail Link project and it is located on reclamation and cut slopes on the coast. All these areas are located within existing land use for barging point and hence impacts are not anticipated.

### **12.3.10 Prediction and Evaluation of Built Heritage Impacts**

**12.3.10.1** The site formation and construction works at the proposed C&C facilities have the potential to create direct and indirect impacts to historic clan graves (G-01 to G-11), the MacIntosh Fort at Nam Hang (GB-01) and the Earth God Shrine (HB-01), Buddhist Shrines (HB-06 and HB-07) and Tin Hau Temple (HB-02) near Man Kam To Road.

**12.3.10.2** The proposed widening works at Lin Ma Hang Road has the potential to create indirect impacts to the three Nil Grade Built Heritage Items in San Uk Ling, San Uk Ling Village Entrance Gate (HB-03), the Cheung Ancestral Hall (HB-04) and No. 9 San Uk Ling Village House (HB-05).

**12.3.10.3** All the heritage resources within 50m of the project boundary are considered and those resources in close proximity (i.e. 5m or less from the proposed work areas) may be damaged through contact with machinery and equipment during the construction works and additional protective measures will be required as mitigation.

**12.3.10.4** The site formation works for the C&C facilities will cover a large area and will include the existing access roads to the existing graves. As such, safe public access to the historic clan graves may be affected at various stages during the construction phase and it will be necessary for safety precautions to be implemented to insure that members of the public can reach the grave locations safely.

**12.3.10.5** Direct impacts will occur when a built heritage resources is located within a proposed development, such as a road alignment or platform structure. These resources will require relocation. However, no adverse impacts to built heritage resources are expected from the current layout and proposed minor works at the barging point in Siu Lam.

**12.3.10.6** The impact assessment for the Graded Historic Building, Nil Grade Built Heritage Items and Historic Clan Graves are presented in **Table 12.1** to **Table 12.3**.

**Table 12.1** Impact assessment for the Graded Historic Building

Resource	Figure Ref	Description of Proposed Works	Minimum Distance from Works	Impact Assessment
MacIntosh Fort at Nam Hang (GB-01) (Grade 2)	12.3.4	Construction of access road / retaining wall / slope work	25m	The limit for ground borne vibration should be set at 7.5mm/s. If this is adhered to, no significant adverse impacts are expected to occur. <i>Acceptable Impact</i>

**Table 12.2** Impact assessment for Nil Grade Built Heritage Items

Resource	Figure Ref	Description of Proposed Works	Minimum Distance from Works	Impact Assessment
Earth God Shrine (HB-01)	12.3.5	Construction of access road	Within alignment of access road	The shrine will be directly impacted by the works and will require relocation. <i>Acceptable Impact with Mitigation</i> (See <b>Section 12.3.11</b> )
Tin Hau Temple (HB-02)	12.3.6	Construction of access road / retaining wall	15	The limit for ground borne vibration should be set at 25mm/s. If this is adhered to, no significant adverse impacts are expected to occur. <i>Acceptable Impact</i>
San Uk Ling Village Entrance Gate (HB-03)	12.3.11	Road widening along Lin Ma Hang Road	< 5m	The gate may be damaged by ground borne vibration and contact with machinery and equipment during the construction works. <i>Acceptable Impact with Mitigation</i> (See <b>Section 12.3.11</b> )
Cheung Ancestral Hall (HB-04)	12.3.11	Road widening along Lin Ma Hang Road	30m	The limit for ground borne vibration should be set at 25mm/s. If this is adhered to, no significant adverse

Resource	Figure Ref	Description of Proposed Works	Minimum Distance from Works	Impact Assessment
				impacts are expected to occur. <b>Acceptable Impact</b>
No. 9 San Uk Ling Village House (HB-05)	12.3.11	Road widening along Lin Ma Hang Road	25m	The limit for ground borne vibration should be set at 25mm/s. If this is adhered to, no significant adverse impacts are expected to occur. <b>Acceptable Impact</b>
Buddhist Shrine (HB-06)	12.3.5	Construction of watermains	< 5m	The works will occur in close proximity of the shrine. The shrine could be damaged by contact with machinery and equipment during the construction works or vibration damage. Safe public access may also be affected during the construction works. <b>Acceptable Impact with Mitigation</b> (See <b>Section 12.3.11</b> )
Buddhist Shrine (HB-07)	12.3.5	Construction of watermains/Construction of access road	<10m	The watermains construction and access road works will occur in proximity of the shrine. Vibration, contact with machinery and equipment storage during the construction works should be avoided. Safe public access may also be affected during the construction works. <b>Acceptable Impact with Mitigation</b> (See <b>Section 12.3.11</b> )

**Table 12.3** Impact assessment for Historic Clan Graves

Resource	Figure Ref	Description of Proposed Works	Minimum Distance from Works	Impact Assessment
Yuen Clan Urns and Plaque (G-01)	12.3.7	Construction of platform for columbarium	< 5m	The grave consists of urns and a plaque set directly into the ground. There is no formal grave structure. As the works will be very close to the urns and plaque there could be damaged by ground borne vibration and contact with machinery and equipment during the construction works. Safe public access may also be affected during the construction works. <b><i>Acceptable Impact with Mitigation</i></b> (See <b>Section 12.3.11</b> )
Cheung Clan Grave (G-02)	12.3.7	Construction of access road / retaining wall / viaduct	< 5m	The grave structure may be damaged by ground borne vibration and contact with machinery and equipment during the construction works. Safe public access may also be affected during the construction works. <b><i>Acceptable Impact with Mitigation</i></b> (See <b>Section 12.3.11</b> )
Yuen Clan Urns and Plaque (G-03)	12.3.8	No proposed works	> 150m	There are no works in proximity of the resource and access will not be affected. <b><i>No Expected Impacts</i></b>
Yuen Clan Grave (G-04)	12.3.8	No proposed works	> 150m	There are no works in proximity of the resource and access will not be affected. <b><i>No Expected Impacts</i></b>
Yuen Clan Grave	12.3.8	No proposed works	> 150m	There are no works in proximity of the resource



Resource	Figure Ref	Description of Proposed Works	Minimum Distance from Works	Impact Assessment
(G-05)				and access will not be affected. <b><i>No Expected Impacts</i></b>
Yuen Clan Grave (G-06)	<b>12.3.8</b>	No proposed works	> 150m	There are no works in proximity of the resource and access will not be affected. <b><i>No Expected Impacts</i></b>
Yuen Clan Grave (G-07)	<b>12.3.8</b>	No proposed works	> 150m	There are no works in proximity of the resource and access will not be affected. <b><i>No Expected Impacts</i></b>
Lee Clan Grave (G-08)	<b>12.3.8</b>	No proposed works	> 150m	There are no works in proximity of the resource and access will not be affected. <b><i>No Expected Impacts</i></b>
Yuen Clan Grave Plaque (G-09)	<b>12.3.8</b>	No proposed works	> 150m	There are no works in proximity of the resource and access will not be affected. <b><i>No Expected Impacts</i></b>
Yuen Clan Grave (G-10)	<b>12.3.4</b>	Construction of access road / retaining wall / slope work	> 100m	Public access may be affected during the construction works. <b><i>Acceptable Impact with Mitigation</i></b> (See <b>Section 12.3.11</b> )
Cheung Clan Grave (G-11)	<b>12.3.9</b>	Construction of access road / Construction of platform for crematorium, funeral parlour and visitor service centre / retaining wall / slope work / viaduct	> 50m	Public access may be affected during the construction works. <b><i>Acceptable Impact with Mitigation</i></b> (See <b>Section 12.3.11</b> )

## 12.3.11 Mitigation Measures

### Construction Phase

**12.3.11.1** Mitigation measures are recommended based upon the findings of the impact assessment and are presented in **Tables 12.4 to 12.6** below. The descriptions below will provide the detailed requirements for each of the mitigation actions.

### Condition Survey (CS)

**12.3.11.2** A condition survey will be carried out by qualified building surveyor or engineer in advance of works for Graded Historic Buildings and Nil Grade Built Heritage Items that may be affected by ground-borne vibration. The Condition Survey Report should contain descriptions of the structure, identification of fragile elements, an appraisal of the condition and working methods for any proposed monitoring and precautionary measures that are recommended.

**12.3.11.3** The condition survey report for the Graded Historic Building must be submitted to AMO for comment before construction activities commence. The location of proposed monitoring points in the building should avoid damaging the historic fabric and approved by the owner. The contractor should implement the approved monitoring and precautionary measures.

### Vibration Monitoring (VM)

**12.3.11.4** Vibration monitoring should be undertaken during the construction works to ensure that safe levels of vibration are not exceeded. A maximum level of 7.5mm/s for Grade 2 Historic Building and 25mm/s for Nil Grade Built Heritage Items should be adopted. The condition survey report should highlight if the limit should be lowered after the detailed study of the condition of the buildings and structures. A monitoring schedule, the location of monitoring equipment, the frequency of monitoring, reporting requirements and action plan should be included in the condition survey report. The location of any monitoring equipment in the building must be approved by the owner before installation.

### Provision of Buffer Zones (BZ)

**12.3.11.5** A buffer zone should be provided to separate the building or structure from the construction works. The buffer zone should be clearly marked out by temporary fencing. The buffer zone should be made at least 1m from the proposed works or if this is not possible as large as the site restrictions allow.

### Provision of Protective Covering (PC)

**12.3.11.6** Protective covering in the form of plastic sheeting on a movable fence should be provided for external walls and surfaces (that contain historical elements) in close proximity to works areas, i.e. areas where a buffer zone alone cannot provide protection from equipment and works activities.

**Provision of Safe Public Access (SPA)**

**12.3.11.7** Any proposed works in close proximity to buildings or structures used by the public for religious, ritual or funerary purposes, such as historic clan graves, have the potential to create an unsafe environment for members of the public.

**12.3.11.8** The contractor should ensure that safe public access if possible, through provision of clearly marked paths separated from the construction works areas is provided for any such affected cultural heritage resources. It is recommended that safe public access to the grave sites be provided during the construction works.

**Preservation by Record (PR)**

**12.3.11.9** A cartographic and photographic survey should be conducted for any built heritage resource that will require relocation prior to the construction works. The survey report should be submitted to AMO for record purposes.

**12.3.11.10** The recommended mitigation measures are presented in **Tables 12.4 to 12.6**.

**Table 12.4** Mitigation recommendations for the Graded Historic Building

Resource	Figure Ref	Impact Assessment	Mitigation Recommendations
MacIntosh Fort at Nam Hang (GB-01) (Grade 2)	12.3.4	The limit for ground borne vibration should be set at 7.5mm/s. If this is adhered to, no significant adverse impacts are expected to occur.	Condition survey / Vibration monitoring

**Table 12.5** Mitigation recommendations for Nil Grade Built Heritage Items

Resource	Figure Ref	Impact Assessment	Mitigation Recommendations
Earth God Shrine (HB-01)	12.3.5	The shrine is within the road alignment and must be relocated.	Preservation by Record/Relocation
Tin Hau Temple (HB-02)	12.3.6	The limit for ground borne vibration should be set at 25mm/s. If this is adhered to, no significant adverse impacts are expected to occur.	Condition survey / Vibration monitoring
San Uk Ling Village Village Entrance Gate (HB-03)	12.3.11	The gate may be damaged by ground borne vibration and contact with machinery and equipment during the	Condition Survey/ Vibration Monitoring/ Provision of Buffer Zones / Provision of

Resource	Figure Ref	Impact Assessment	Mitigation Recommendations
		construction works.	Protective Covering
Cheung Ancestral Hall (HB-04)	12.3.11	The limit for ground borne vibration should be set at 25mm/s. If this is adhered to, no significant adverse impacts are expected to occur.	Condition survey / Vibration monitoring
No. 9 San Uk Ling Village House (HB-05)	12.3.11	The limit for ground borne vibration should be set at 25mm/s. If this is adhered to, no significant adverse impacts are expected to occur.	Condition survey / Vibration monitoring
Buddhist Shrine (HB-06)	12.3.5	Damage from vibration and/or contact with machinery and equipment may occur during the construction works and public access may be restricted.	Condition Survey/Vibration Monitoring/Provision of Buffer Zones/ Provision of Protective Covering/ Provision of Safe Public Access
Buddhist Shrine (HB-07)	12.3.5	Damage from vibration and/or contact with machinery and equipment may occur during the construction works and public access may be restricted.	Condition Survey/Vibration Monitoring/Provision of Buffer Zones/ Provision of Protective Covering/ Provision of Safe Public Access

**Table 12.6** Mitigation recommendations for Historic Clan Graves

Resource	Figure Ref	Impact Assessment	Mitigation Recommendations
Yuen Clan Urns and Plaque (G-01)	12.3.7	Damage from ground borne vibration and contact with machinery and equipment may occur during the construction works and public access may be restricted.	Condition Survey/Vibration Monitoring/ Provision of Buffer Zones and Provision of Protective Covering / Provision of Safe Public Access
Cheung Clan Grave (G-02)	12.3.7		
Yuen Clan Urns and Plaque (G-03)	12.3.8	Sufficient distance from proposed works and access will not be affected.	No mitigation required.

Resource	Figure Ref	Impact Assessment	Mitigation Recommendations
Yuen Clan Grave (G-04)	12.3.8		
Yuen Clan Grave (G-05)	12.3.8		
Yuen Clan Grave (G-06)	12.3.8		
Yuen Clan Grave (G-07)	12.3.8		
Lee Clan Grave (G-08)	12.3.8		
Yuen Clan Grave (G-09)	12.3.8		
Yuen Clan Grave (G-10)	12.3.4	Public access may be affected during the construction works.	Provision of Safe Public Access
Cheung Clan Grave (G-11)	12.3.9	Public access may be affected during the construction works.	Provision of Safe Public Access

### 12.3.12 Residual Built Heritage Impacts

12.3.12.1 The mitigation measures as stated above will reduce impacts to an acceptable level and no residual impacts are expected to occur.

## 12.4 Construction Phase - Archaeology

### 12.4.1 Assessment Methodology

12.4.1.1 As stated in the Guidelines for Cultural Heritage Impact Assessment, the baseline study is used to compile a comprehensive inventory of all sites of archaeological interest within and in the environs of the project assessment area. The results are then presented in a report that provides both clear evidence that the required processes have been satisfactorily completed as well as a detailed inventory of all identified sites of archaeological interest.

12.4.1.2 The following tasks are undertaken in order to gather the necessary information for the compilation of the baseline study:

### **Task 1: Desk-based research**

**12.4.1.3** Firstly, desk-based research is carried out in order to identify any known or potential sites of archaeological interest within the project assessment area and to evaluate the cultural significance of these sites once identified. The following is a non-exhaustive list of resources that are consulted as part of the research programme:

- AMO published and unpublished papers and studies;
- Publications on relevant historical, anthropological and other cultural studies;
- Unpublished archival papers and records;
- Collections and libraries of tertiary institutions;
- Historical documents held in the Public Records Office, Lands Registry, District Lands Office, District Office and Museum of History;
- Cartographic and pictorial documentation; and
- Geotechnical information.

### **Task 2: Site visit**

**12.4.1.4** To supplement the information gathered in the desk-based study, a site visit is undertaken to assess the current status of the assessment area and also to make note of existing impacts.

### **Task 3: Archaeological Field Investigation (if required)**

**12.4.1.5** If the results of the desk-based study and site visit indicate that there is insufficient data for purposes of identification of sites of archaeological interest, determination of cultural significance and assessment of impacts, an archaeological field investigation programme will be designed and submitted to the AMO for approval. Once approved, a qualified archaeologist must apply for a licence to undertake the archaeological excavation, which must be approved by the Antiquities Authority before issuance. The archaeological field investigation will consist of the following steps:

#### **Field Scan**

**12.4.1.6** Field walking is conducted to identify archaeological deposits on the surface. The scanning of the surface for archaeological material is conducted, under ideal circumstances, in a systematic manner and covers the entire assessment area. Particular attention is given to exposed areas such as riverbed cuts, erosion areas, terraces, etc. Material and concentrations of finds are recorded, mapped at 1:1000 scale and collected during the field scanning and form part of the archive. Topography, surface conditions and existing impacts are noted during the field walking.

### Auger Survey

**12.4.1.7** Auger survey of the identified areas which are considered to be impacted by proposed works will be carried out in order to establish soil sequence, the presence/absence of cultural soils or deposits and their horizontal extent. The auger tool consists of a bucket, pole and handle and is vertically drilled by hand into the surface. When the bucket is filled with soil the auger is extracted and the soil emptied from the bucket. Soils are described and depth changes are measured inside the hole. The depth of any material found is also measured. The auger hole is abandoned when water table, the end of the auger or rock is reached or the auger bucket fails to hold the soil. The location of each auger hole test is marked on a 1:1000 scale map. The results of the auger tests provide one of the criteria used to position the test pit excavations.

### Test Pit Excavation

**12.4.1.8** Test pit excavations are carried out to verify the archaeological potential within a certain area. The choice for the location of the test pit excavation will depend on various factors such as desk-based information, landforms, field scan and auger test results as well as access issues.

**12.4.1.9** Hand digging of test pits measuring between 1 by 1 and 2 by 2 square meters will be carried out in order to determine the presence/absence of archaeological deposits and their stratigraphy. The size may vary due to close proximity to large trees, narrow terraces or other external factors. The test pit is hand excavated, contexts, finds and features are recorded, soils described and relevant depths measured. Artefacts are recorded and collected. Photographs of sections and other relevant information are taken and section and ground plans, if required, are drawn.

**12.4.1.10** Hand excavation will continue until rock or decomposing rock are reached and/or no potential for archaeological soils or deposits exist. Additionally the test pit will be abandoned when the water table is reached or when the depth of excavation poses safety problems (i.e. deeper than 1.2m vertical section).

**12.4.1.11** The hand excavated test pit is backfilled after full recording. Field records containing information regarding the physical location of the test pit, weather conditions, size and bench mark, description of the soils and their measured depths, artefact and feature finds are kept for each pit. Photographs are taken and drawings and plans produced, finds are bagged, labelled and stored for transport. The location of the test pit is mapped on a 1:1000 scale map.

#### **Task 4: Impact Assessment**

**12.4.1.12** The prediction and evaluation of both direct and indirect impacts will be undertaken to identify any potential adverse effects to all identified sites of archaeological interest within the project assessment area. A detailed description of the works and all available plans (with their relationship to the identified resources clearly shown) shall be included, to illustrate the nature and degree of potential impacts. The impact assessment will adhere to the detailed requirements of Annexes 10 and 19 of the EIAO-TM.

#### **Task 5: Mitigation Measures**

**12.4.1.13** As stated in the Guidelines for Cultural Heritage Impact Assessment “Preservation in totality must be taken as the first priority”. If such preservation is not feasible, as in the case where the need for a particular development can be shown to have benefits that outweigh the significance of the site of archaeological interest, a programme of mitigation measures will be designed and submitted to the AMO for approval. The mitigation measures should be clearly listed and the party responsible for implementation and timing of the measures will also be included. Examples of mitigation measures include; rescue excavation and archaeological watching brief (AWB).

### **12.4.2 Topographical and Geological Background**

**12.4.2.1** The project boundary as shown in **Figure 1.1** is mainly located onto undivided meta-sandstone with meta-conglomerate and phyllite hills and steep slopes of Sandy Ridge (**Plate 1** as in **Appendix 12.4**); in addition there are two bands of debris flow deposits along the northwest deposited during the Holocene and along the south during the Pleistocene (**Appendix 12.5**). Along the north under the current MTR Lo Wu Station lie clay/silt deposits (Qam). Along the south east of the assessment area there is a thin band of Holocene alluvial deposit. The proposed associated watermains located along Man Kam To Road is situated mainly on Pleistocene debris flow and terraced alluvial deposits with the southern part occupies the edge of phyllite, metasiltstone with metasandstone and graphite schist (**Appendix 12.5**).

**12.4.2.2** It has to be pointed out that the only area of archaeological interest, namely Yuen Leng Chai is located on a Holocene debris flow deposit to the north of Sandy Ridge, in very close proximity to estuarine and intertidal mud deposits. Pleistocene deposits on the other hand are known to have been occupied in ancient times in the territory. (**Appendix 12.5**). The road widening of the western end of Lin Ma Hang Road is largely located on Pleistocene debris flow deposits with a smaller Pleistocene terraced alluvium area and undivided, phyllite, metasiltstone with metasandstone and graphite schist at the works area’s northern end (**Appendix 12.6**). The road widening will begin on elevations from 10.2mPD in the south in front of San Uk Ling Village gradually ascending to around 13mPD in front of the Ex Sam Wo Public School



and 14.5mPD to the south of Muk Wu Yiu Nga Village after which it descends to 7.5mPD at the northern end.

**12.4.2.3** It has to be pointed out that the only area of archaeological interest, namely Yuen Leng Chai is located on a Holocene debris flow deposit to the north of Sandy Ridge, in very close proximity to estuarine and intertidal mud deposits. Pleistocene deposits on the other hand are known to have been occupied in ancient times in the territory. (Appendix 12.5). The road widening of the western end of Lin Ma Hang Road is largely located on Pleistocene debris flow deposits with a smaller Pleistocene terraced alluvium area and undivided, phyllite, metasiltstone with metasandstone and graphite schist at the works area's northern end (**Appendix 12.6**). The road widening will begin on elevations from 10.2mPD in the south in front of San Uk Ling Village gradually ascending to around 13mPD in front of the Ex Sam Wo Public School and 14.5mPD to the south of Muk Wu Yiu Nga Village after which it descends to 7.5mPD at the northern end.

**12.4.2.4** As discussed in **Section 1.3**, it is proposed to have off-site pick-up / drop-off points for shuttle buses at MTR Kwu Tung Station, MTR Fanling Station, existing Sheung Shui Landmark North Public Transport Interchange (PTI) and layby at Pak Wo Road near Flora Plaza. Given the conditions of these existing highway infrastructures, no excavation works would be required and only road furnishing would be conducted. All these off-site pick-up / drop-off areas except MTR Kwu Tung Station are actually within existing highway corridors and these areas would not be affected and hence impacts are not anticipated. For MTR Kwu Tung Station (including the PTI and shuttle bus services area), it will be constructed under the Planning and Development Study on North East New Territories (NENT) Contract and will be available by 2026.

**12.4.2.5** In addition, a barging point at Siu Lam currently used by the Express Rail Link project are added. All these areas are located within existing land use for office and barging point and hence impacts are not anticipated.

## **12.4.3 Archaeological Background**

**12.4.3.1** According to the latest information ([www.amo.gov.hk](http://www.amo.gov.hk)), there are no known Sites of Archaeological Interest within the assessment area. An unlisted area of archaeological interest, namely Yuen Leng Chai lies at about 25m and to the north of the project boundary. The site was first discovered in 2001 during the archaeological survey for the Shenzhen River Regulation Project: Artefacts dated to the Bronze Age, Song / Yuan and Ming / Qing dynasties were recovered (HKIA 2001). Subsequent rescue excavations yielded two Song / Yuan dynasty burial and Bronze Age pottery fragments (HKIA 2003). The original site no longer exists but the archaeological record was retrieved through survey and excavation and is preserved on record.

**12.4.3.2** Near Lin Ma Hang Road lies the Muk Wu Nga Yiu Kilns Site of Archaeological Interest (AM00-1607), where the four kilns were first recorded in 2000 during the Shenzhen River Regulation project. Three of the kilns are located in Nga Yiu Tsuen and one is located in Muk Wu Nga Yiu Tsuen. These kilns were used for brick and tile production with a history of approximately 100 years (HKIA 2001). The kilns were recorded above ground in 2001 and are located more than 150m away from the proposed works.

#### **12.4.4 Previous Terrestrial Archaeological Investigations**

**12.4.4.1** Four investigations were conducted within or in close proximity of the assessment area. A summary of these archaeological investigations are presented below:

##### **Second Territory-wide Archaeological Survey**

**12.4.4.2** A surface scan and 8 auger hole tests were conducted as part of the Second Territory-wide Archaeological Survey along Lin Ma Hang Road in 1997-1998 and no archaeological materials were identified (Second Territory-wide Survey 1997-1998).

##### **HKIA 2001. The 2000 Archaeological Survey & Assessment for Shenzhen River Regulation Project Stage III**

**12.4.4.3** An archaeological field investigation as part of the EIA for Shenzhen River Regulation Project was undertaken in 2000 for the above project. The entire area was located within the closed area, along the Shenzhen River. A Song / Yuen period site was identified at Yuen Leng Chai. Bronze Age, Song / Yuan and Ming / Qing finds were identified from surface scan, auger hole tests and test pit excavation carried out at Yuen Leng Chai.

**12.4.4.4** Several Warring States-Han dynasty geometric pottery surface finds were also collected at the site. In addition, four early 20th century kilns at Muk Wu Nga Yiu area were recorded (HKIA 2001).

**12.4.4.5** The field survey included a fieldscan and auger hole tests along Lin Ma Hang Road. Ming and Qing dynasty materials were discovered to the south of Muk Wu Wai Tsuen, in a field near the entrance of the village and at entrance gate of Muk Wu Wai (HKIA 2001).

##### **HKIA 2003. Rescue Excavation at Yuen Leng Chai**

**12.4.4.6** The rescue excavations followed the recommendations of the previous investigation. Since the site would be directly impacted by the proposed work, a rescue excavation was conducted in 2002-2003 prior to the construction work. Two well preserved burials dated to Song / Yuan period were recorded, along with some associated finds such as celadon bowls and cloth-pattern tiles and nine iron nails associated with the decayed coffins (HKIA 2003).

**ERM February 2013. Agreement No. CE 32/2010 (CE) Site Formation and Associated Infrastructural Works for Proposed Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery – Feasibility Study. Revised Final Preliminary Environmental Report**

**12.4.4.7** A desk-based review identified two undisturbed foot hill areas of low archaeological potential. One is located in the northwest near Lo Wu Village and another in the southeast of the assessment area. Only a small section of the area in the southeast near Sha Ling, a historical village however, fell within the assessment area. The area is deemed to have low archaeological potential.

## **12.4.5 Existing Conditions**

**12.4.5.1** The initial field visit was undertaken in August 2013. The assessment area consists mainly of steep hill slopes which have been terraced to allow for graves. Few foothill areas are within the assessment area; these are located on the northwest of the assessment area and to the south and east. The northwest area is largely occupied by MTR Lo Wu Station, railway and road leading to Lo Wu village (**Appendix 12.7**). The construction of these would have severely impacts original soil deposits which means there is no archaeological potential.

**12.4.5.2** The earliest topographical map showing Sandy Ridge dates from 1914 (**Appendix 12.8**). Few details are included on the map; the hills are surrounded by agricultural fields and there are no villages marked. A railway is already marked running along the west of the Ridge.

**12.4.5.3** The oldest aerial photograph dates from 1924 (**Appendix 12.9**). Very little details can be distinguished but the area surrounding the hills is in agricultural use, while on the lower slopes of the hills some 'bare' patches could be interpreted as graves. A path runs along the south, west and east of the Ridge. The area along the railway looks like it is under construction and Lo Wu Village looks like it is appearing, although it does not appear on the topographical map until 1957 (**Appendix 12.11**).

**12.4.5.4** On the 1939 and 1945 topographical maps, which are very similar, Sandy Ridge is already marked as an urn cemetery despite the fact that it did not officially become a cemetery until 1950 (Tang 2011:66-67) (**Appendix 12.10**); it is likely that it was added later. The 1957 topographical map shows grave sites along the south and south east of the ridge (**Appendix 12.11**). The terracing was also noticed during the field visit on a flat platform bridging the northern and southern slopes towards the east of Sandy Ridge (**Appendix 12.11** and **Appendix 12.12**).

- 12.4.5.5** The existing impacts consist mainly of terracing for cemetery use on the hills and lower slopes. In addition the railway, station and access road to Lo Wu are major impacts along the west and northwest of the assessment area. The associated watermains proposed along the south of Man Kam To Road will closely follow the road/footpath. Soil deposits would have been adversely disturbed during the road construction and subsequent road improvement and maintenance.
- 12.4.5.6** The field visit showed that the area along the southeast of the assessment area is partially in use for open storage with concrete platform coverings, gardens and tree nursery and some small pockets carry residential houses (**Plates 2 to 5** as in **Appendix 12.4**). In addition, major pipes cover the area along Man Kam To Road (**Plate 6** as in **Appendix 12.4**).
- 12.4.5.7** An additional field visit was undertaken to the Lin Ma Hang associated works area in February 2014. The road alignment is narrow two lane roads bordered by hill and lower slopes along the south and east of Lin Ma Hang Road and significantly lower lying areas on the other side. Large portions of the area along the alignment contain temporary or light industrial structures and surface covering while the rest is abandoned agricultural fields.
- 12.4.5.8** The proposed widening of the road includes 2m wide footpaths and will impact on the area alongside the current road.
- 12.4.5.9** A study of old maps and aerial photographs shows that between 1914 and 1969 only two villages were located along the Lin Ma Hang Road works alignment, namely San Uk Ling and Li Muk Fu (currently Muk Wu Nga Yiu). It shows agricultural use of the area where the current road runs with structures appearing along the road around 1980's (**Appendix 12.13**).

## **12.4.6 Identification of Archaeological Impacts**

- 12.4.6.1** The assessment area consists mainly of hills with steep slopes which have been partially terraced for the use as a cemetery and associated facilities. The steep hills have no archaeological potential (**Appendix 12.15**).
- 12.4.6.2** The area to the northwest (**Appendix 12.15**) is occupied by MTR Lo Wu Station, rail alignment and associated structures and facilities. In addition, there is a road leading to Lo Wu Village. The construction, maintenance and utilities associated with the railway facilities would have adversely impacted the archaeological potential of this area. In addition, the proposed works consist of the construction of a viaduct and while the area slightly overlaps with the area as of low archaeological potential; the impacts are limited to estuarine and intertidal deposits along the channelled river and boundary fence.
- 12.4.6.3** The associated watermains to be constructed along Man Kam To Road (**Appendix 12.15**) closely follows the current road alignment and will occur on already adversely disturbed deposits.

- 12.4.6.4** The area to the southeast within the assessment area (**Appendix 12.15**) is relatively small and includes the access road to cemetery and to the MacIntosh Fort and another small area further to the northeast. This south eastern area was deemed to have some archaeological potential.
- 12.4.6.5** In order to verify the archaeological potential of the southeast area, a field investigation was undertaken under the archaeological licence no.367, including a field scan where possible, auger hole testing programme of minimum 16 auger hole tests and 4 test pit excavations. The methodology followed AMO *Guidelines for Cultural Heritage Impact Assessments* (January 2012), for archaeological survey (see Section 1.4 task 3 of these guidelines).
- 12.4.6.6** The results of the field investigation indicated that the area immediately along the road consists mainly of a sterile natural debris flow deposits (Auger test 1 to 8, 16 and **Plates 1 and 2** as in **Appendix 12.14**) while further south fill deposits, possibly associated to the construction of four water supply pipes running along Man Kam To Road (**Plate 6** as in **Appendix 12.4**) were recorded. The area to the east is an alluvial wet area deposited along a stream (**Plates 7 and 8** as in **Appendix 12.4**). Within the area of the proposed crossing at the south of the proposed connection road to Man Kam To Road however, a cultural layer without material findings was recorded. The cultural layer consists of sterile brown very silt clay. (**Plates 1 and 2** as in **Appendix 12.14**)
- 12.4.6.7** The survey results from Test pit 4 suggest an archaeological deposit is present around 0.4 metres below the surface in the tested survey area within the proposed crossing at the south of the proposed connection road to Man Kam To Road. The date or interpretation of the cultural deposit however, is impossible as no material findings were present. Testing (AH 14 and 15) conducted in close proximity of test pit 4 indicate that the deposit may be small.
- 12.4.6.8** The western end of Lin Ma Hang Road is largely located on Pleistocene debris flow deposits with a small pocket of Pleistocene terraced alluvium and solid geology (**Appendix 12.6**). The existing impacts are from the actual construction of the road and maintenance works. Previous archaeological investigations indicate archaeological potential to the south of Muk Wu Wai Tsuen, while no findings further towards the road.
- 12.4.6.9** **Table 12.7** below presents a summary of the findings, assessment of potential and recommendations for further investigation, if appropriate.

**Table 12.7** Summary of findings, assessment of potential and recommendation for field investigation

Area <sup>[1]</sup>	Description	Identification of Impact	Action Required
Sandy Ridge hills	The hill slopes are relatively steep and parts of the hill have been	No archaeological potential due to steep slopes and	No further action.

Area <sup>[1]</sup>	Description	Identification of Impact	Action Required
	terraced for cemetery and associated facility use. This is where the proposed crematorium and columbarium related construction impacts are concentrated.	thin soil coverage.	
Northwest area	This area consists of debris flow and clay/silt deposits. The existing impacts including road and rail construction have affected archaeological potential. Some impacts will occur from proposed viaduct however, these are located on estuarine and intertidal deposits immediately adjacent to the channelled river and boundary fence.	No archaeological potential due to existing development impacts.	No further action.
Associated watermains alignment along Man Kam To Road	The proposed works are located on mainly Pleistocene terraced alluvium and debris flow. The existing impacts arising from the construction and ongoing maintenance of the road would have adversely impacted on archaeological potential	No archaeological potential due to existing road construction impacts.	No further action.
Southeast within assessment area	The area is located on Pleistocene debris flow at foot of hills. This area was previously identified as low archaeological potential in the “Agreement No. CE 32/2010 (CE) Site	Some potential due to minimal disturbance and location of base of foothills identified and tested during field survey. <b>(Figure</b>	Archaeological Watching Brief recommended for the crossing at the south of the proposed connection road to Man Kam To

Area <sup>[1]</sup>	Description	Identification of Impact	Action Required
	Formation and Associated Infrastructural Works for Proposed Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery – Feasibility Study. Revised Final Preliminary Environmental Report”. The proposed works include access road, viaduct and roundabout.	<b>12.3.12)</b>	Road area due to cultural soil deposit, but no material findings in Test pit 4 ( <b>Figure 12.3.12</b> ).
Lin Ma Hang Road	The area is located partially located on Pleistocene debris flow and terraced alluvium deposits.	Some disturbance during road construction. Previous investigations revealed Ming/Qing archaeological material south of Muk Wu Wai Tsuen but not in areas closer to the road.	A requirement will be included in the contract document to request the contractor to inform the AMO if any antiquities or supposed antiquities are unearthed during the construction.

Note:

[1] Location refers to **Appendix 12.15**.

## 12.4.7 Prediction and Evaluation of Archaeological Impacts

**12.4.7.1** The baseline review identified an area to the southeast of Sandy Ridge as having some archaeological potential. An archaeological field survey was conducted in May 2014 to verify this potential and the survey included fieldscan where possible, sixteen auger hole tests and four test pit excavations (**Figure 12.3.12**). The results of the survey indicate that the extent of disturbance of the lower hill slopes within the southeast corner of Sandy Ridge is greater than was expected. The tested area can roughly be divided into three parts: western part and southern part of the tested area and northern part of the crossing at the south of the proposed connection road to Man Kam To Road.

- 12.4.7.2** The auger test results and one test pit excavation indicated a natural soil stratigraphy consisting of top / sub soils overlaying hillwash at the western part and for most parts along the existing road (**Figure 12.3.12**). Few modern pottery fragments were recovered from the upper strata but the main deposit was sterile.
- 12.4.7.3** The auger tests conducted along the south of the licence area were inconclusive due to rocks/fill. Two test pit excavations confirmed the results of the auger tests that the area is filled with rocks and showed that artificial fill covers the south of the licence area (**Plates 3 to 8** as in **Appendix 12.14; Figure 12.3.12**). It suggests that with the construction of the water supply infrastructure from Dongjiang River in 1960's, the area was heavily modified (WSD 2013) (**Plates 5 and 6** as in **Appendix 12.4**).
- 12.4.7.4** A test pit excavation eastern area of the crossing at the south of the proposed connection road to Man Kam To Road showed a cultural layer (Plates 7 and 8 as in Appendix 12.4). Although the layer did not include material findings, it suggests an older occupation of the area as the layer was noticed at depths around 0.4 metre below the surface. Testing in close proximity of the test pit excavations (AH 14 and 15) indicate that the cultural deposit may be small. Archaeological Watching Brief is a fast and cost effective way of gathering more archaeological information whilst allowing the construction works to continue (Figure 12.3.13).

## 12.4.8 Mitigation Measures

- 12.4.8.1** Further action, in the form of an Archaeological Watching Brief (AWB) Programme is recommended at the proposed crossing at the south of the proposed connection road to Man Kam To Road at the south eastern foot slopes of Sandy Ridge, where a cultural deposit without material findings was noticed.
- 12.4.8.2** Along Lin Ma Hang Road, it is recommended that the engineer inform the AMO if any antiquities or supposed antiquities are unearthed during the construction phase.

## 12.4.9 Residual Archaeological Impacts

- 12.4.9.1** There are no residual impacts expected on archaeological deposits.

## 12.5 Operational Phase – Built Heritage

- 12.5.1.1** The operational phase of the project will consist of operation of crematorium and columbarium facilities and also the use of the widened section of Lin Ma Hang Road. 11 Historic Clan Graves and 7 Nil Grade Built Heritage Items have been identified and listed as below.

11 Historic Clan Graves:

- (G-01) Yuen Clan Urns and Plaque
- (G-02) Cheung Clan Grave



- (G-03) Yuen Clan Urns and Plaque
- (G-04) Yuen Clan Grave
- (G-05) Yuen Clan Grave
- (G-06) Yuen Clan Grave
- (G-07) Yuen Clan Grave
- (G-08) Lee Clan Grave
- (G-09) Yuen Clan Grave
- (G-10) Yuen Clan Grave
- (G-11) Cheung Clan Grave

7 Nil Grade Built Heritage Items:

- (HB-01) Earth God Shrine
- (HB-02) Tin Hau Temple
- (HB-03) San Uk Ling Village Entrance Gate
- (HB-04) Cheung Ancestral Hall
- (HB-05) No. 9 San Uk Ling Village House
- (HB-06) Buddhist Shrine
- (HB-07) Buddhist Shrine

## 12.5.2 Assessment Methodology

**12.5.2.1** The methodology for the identification of built heritage resources has been described in **Section 12.3.1** as part of the construction phase methodology. The methodology for assessment of impacts to built heritage resources during the operational phase consists of changes to the existing environment through addition of new buildings and structures, changes in use brought about by the new development and changes to the existing environmental character. The classification of impacts will be the same as for the construction phase.

## 12.5.3 Identification of Impacts

**12.5.3.1** During the operational phase historic buildings and structures may be visually impacted by newly constructed additions to the existing environment. In the case of the proposed C&C facilities, the only resources within the site consist of historic clan graves. As the additions to the environment will consist of funerary and burial facilities, they will be compatible with the current environment as a burial area.

**12.5.3.2** The widening of Lin Ma Hang Road will not change the current use of the road or adversely affect the village along Lin Ma Hang Road.

## 12.5.4 Prediction and Evaluation of Environmental Impacts

12.5.4.1 No adverse impacts are expected to arise from the operation of the proposed C&C facilities at Sandy Ridge or the road widening at Lin Ma Hang Road.

## 12.5.5 Mitigation Measures

12.5.5.1 No mitigation measures for built heritage resources will be required during the operational phase of the project.

## 12.5.6 Residual Environmental Impacts

12.5.6.1 No residual impacts have been identified with respect to built heritage resources.

## 12.6 Operational Phase - Archaeology

12.6.1.1 There are no additional impacts expected during the operational phase.

## 12.7 Conclusion

### 12.7.1 Built Heritage

12.7.1.1 One Graded Historic Building, 11 Historic Clan Graves and 7 Nil Grade Built Heritage Items have been identified in this BHIA report. Mitigation measures during the construction phase have been recommended as follows;

- The Grade 2 MacIntosh Fort at Nam Hang (GB-01) will require a condition survey and vibration monitoring during the construction works;
- The Earth God Shrine (HB-01) will be preserved by record and relocated;
- The Tin Hau Temple (HB-02), Cheung Ancestral Hall (HB-04) and House at No. 9 San Uk Ling Village House (HB-05) will require condition survey and vibration monitoring;
- San Uk Ling Village Entrance Gate (HB-03) will require condition survey, vibration monitoring, provision of buffer zone and protective covering;
- Buddhist Shrines (HB-06 and HB-07) will require condition survey, vibration monitoring, provision of buffer zone, protective covering and safe public access should be provided;
- Historic clan graves G-01, G-02, G-10 and G-11 should be provided with proper public access. In addition, condition survey, vibration monitoring, provision of buffer zone and protective covering should be provided for G-01 and G-02; and

- Historic clan graves G03, G-04, G-05, G-06, G-07, G-08, and G-09 are at sufficient distance of the proposed works and access will not be affected. Mitigation measures are not required.

**12.7.1.2** No adverse impacts have been identified during the operational phase and no residual impacts have been identified.

## 12.7.2 Archaeology

**12.7.2.1** An area of archaeological potential was identified in the desk-based review, namely the Pleistocene debris flow lower slopes of southeast Sandy Ridge.

**12.7.2.2** An archaeological field survey conducted at the former area indicated that the area was disturbed to a greater extent than previously understood, possibly during the construction of the water pipes. While auger tests and a test pit excavation to the west of the crossing at the south of the proposed connection road to Man Kam To Road indicate that this area has a natural sterile stratigraphy, a test pit within the area of the crossing at the south of the proposed connection road to Man Kam To Road revealed a sterile cultural deposit.

**12.7.2.3** An Archaeological Watching Brief (AWB) is recommended within the crossing at the south of the proposed connection road to Man Kam To Road to add to the understanding of this cultural soil without material findings. The AWB area is marked on **Figure 12.3.13**.

**12.7.2.4** Along Lin Ma Hang Road, it is recommended that the engineer inform the AMO if any antiquities or supposed antiquities are unearthed during the construction phase.

## 12.8 References

[12-1] Arup (2013), Civil Engineering and Development Department: Agreement No. CE 32/2010 (CE), Site Formation and Associated Infrastructural Works for Proposed Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery – Feasibility Study. Revised Final Preliminary Environmental Review Report

[12-2] Causeway Bay Central Library, Aerial Photograph Library:

- 1924 Library Reference: H18- 2
- 1987 Library Reference: CN1155
- 2000 Library Reference: CN27970
- 2010 supplied by client: DOP5000 Territory-wide Mosaic (December 2012 Release) taken August 2010

[12-3] Causeway Bay Central Library, Map Library:

- 1914, HF, sheet 2, 2 inches to a mile

- 1939/40, HB5-7 and HB5-6, scale 1:20,000
  - 1945, HB6, sheets 6 and 7, scale 1:20,000
  - 1957, L881, sheets 6 and 7, scale 1:25,000
  - 1968/69, L884, sheets 2C and 2A, scale 1:10,000
- [12-4] Ching, C.K. (1986), Culture and land use: a study of burial policy in Hong Kong. M.Soc.Sc. (Public Administration) dissertation, Department of Politics & Public Administration, University of Hong Kong
- [12.5] HKIA (2001), The 2000 Archaeological Survey & Assessment for Shenzhen River Regulation Project Stage III. (unpublished report)
- [12-6] HKIA (2003), Rescue Excavation at Yuen Leng Tsai. (unpublished report)
- [12-7] Hong Kong Geological Survey (1988), San Tin Sheet 2: Solid and Superficial Geology Map. Hong Kong: Geotechnical Control Office, Civil Engineering Services Department
- [12-8] Hong Kong Geological Survey (1988), Sheung Shui Sheet 3: Solid and Superficial Geology Map. Hong Kong: Geotechnical Control Office, Civil Engineering Services Department
- [12-9] Empson, H. (1992), Mapping Hong Kong: A Historical Atlas. Hong Kong: Government Information Services
- [12-10] “Extracts from a Report by Mr. Stuart Lockhart on the Extension of the Colony of Hong Kong” Laid before the Legislative Council of Hong Kong by Command of his Excellency the Governor. Secretary of State to Governor, Downing Street, 6th of January 1899
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- [12-14] Village Improvement Section, Lands Department, September 2009 Edition. List of Recognised Villages under the New Territories Small House Policy. [www.landsd.gov.hk/en/images/doc/rv0909.pdf](http://www.landsd.gov.hk/en/images/doc/rv0909.pdf). Accessed: 20.08.2013
- [12-15] ERM (2007), Agreement No. PLNG 13/2007, Survey on Features with Cultural Heritage Value in the Sha Tau Kok, Ta Kwu Ling and Ma Tso Lung Areas
- [12-16] Results of the Assessment of 1444 Historic Buildings (List of 1,444 Historic Buildings in Building Assessment (as of 27 December 2013) <http://www.aab.gov.hk>
- [12-17] Results of the Assessment of 1444 Historic Buildings (Brief Information on Grade 2 Historic Buildings) <http://www.aab.gov.hk>

- [12-18] Agreement No. CE 34/2011(EP) Development of Organic Waste Treatment Facilities Phase 2 – Feasibility Study: Environmental Impact Assessment Study Report (Draft)
- [12-19] Agreement No. CE 32/2010 (CE) Site Formation and Associated Infrastructural Works for Proposed Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Feasibility Study: Detailed Preliminary Environmental Review Report: Cultural Heritage
- [12-20] Planning Department: Agreement No. PLNG 13/2007, Suvey on features with cultural heritage value in the Sha Tau Kok, Ta Kwu Ling and Ma Tso Lung Areas.
- [12-21] Second Territory-wide Archaeological Survey 1997-1998

