

## 11. CULTURAL HERITAGE IMPACT ASSESSMENT

### 11.1 Introduction

This *Section* presents the results of the cultural heritage impact assessment (CHIA) for the construction and operation of the proposed Project in South Lantau. It summarises information gathered from a literature review and field surveys to establish the baseline built heritage and archaeological conditions. Potential impacts have been evaluated and measures have been recommended to mitigate potentially adverse impacts, where appropriate.

In accordance with *Clause 3.4.8.2* and *Appendix I* of the *EIA Study Brief*, this cultural heritage impact assessment includes Marine Archaeological Investigation (MAI), Built Heritage Impact Assessment (BHIA) and Archaeological Impact Assessment (AIA) for construction and operation of the Project.

### 11.2 Legislation Requirement & Assessment Criteria

The following legislation and guidelines are applicable to the assessment of sites of cultural heritage, marine archaeological and historic resources in Hong Kong:

- *Annexes 10 and 19 of the EIAO-TM under EIAO (Cap 499), entitled “Criteria for Evaluating Visual and Landscape Impact, and Impact on Sites of Cultural Heritage”, and “Guidelines for Assessment of Impact on Sites of Cultural Heritage and Other Impacts” respectively.;*
- *Antiquities and Monuments Ordinance (Cap 53);*
- *Land (Miscellaneous Provisions) Ordinance (Cap 28);*
- *Hong Kong Planning Standards and Guidelines;*
- *Guidelines for Cultural Heritage Impact Assessment; and*
- *Guidelines for Marine Archaeological Investigation.*

#### 11.2.1 Environmental Impact Assessment Ordinance (Cap 499)

According to the *EIAO, Schedule 1 Interpretation*, “Sites of Cultural Heritage” are defined as:

“an antiquity or monument, whether being a place, building, site or structure or a relic, as defined in the Antiquities and Monuments Ordinance and any place, building, site, or structure or a relic identified by the Antiquities and Monuments Office to be of archaeological, historical or paleontological significance”.

Technical Memorandum on the EIA Process (EIAO-TM)

The technical scope of cultural heritage impact assessments is defined within *Annex 10* of the *EIAO-TM* which states that the criteria for evaluating impacts to sites of cultural heritage should include the following:

- 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; and
- Adverse impacts on sites of cultural heritage shall be kept to an absolute minimum.

The *EIAO-TM* outlines the approaches required in investigating and assessing the impacts on sites of cultural heritage. The following sections of the *EIAO-TM* are applicable:

Annex 19: “There is no quantitative standard in deciding the relative importance of these sites, but in general, sites of unique archaeological, historical or architectural value will be considered as highly significant. A baseline study shall be conducted: (a) to compile a comprehensive inventory of places, buildings, sites and structures of architectural, archaeological and historical value within the proposed project area; and (b) to identify possible threats of, and their physical extent, destruction in whole or in part of sites of cultural heritage arising from the proposed project.”

The *EIAO-TM* also outlines the criteria for assessment of impact on sites of cultural heritage in the *Annex 10* as detailed in the previous section.

The *EIAO-TM* also outlines the approach in regard to the preservation in totality; and in part to cultural resources:

Annex 19: “Preservation in totality will be a beneficial impact and will enhance the cultural and socio-economical environment if suitable measures to integrate the sites of cultural heritage into the proposed project are carried out. If, due to site constraints and other factors, only preservation in part is possible, this must be fully justified with alternative proposals or layout designs, which confirm the impracticability of total preservation.”

#### 11.2.2 Antiquities and Monuments Ordinance (Cap 53)

In addition to the *EIAO*, the heritage resources of Hong Kong are protected by a range of legislative and planning mechanisms. The *Antiquities and Monuments Ordinance (Cap 53) (AM Ordinance)* provides statutory protection against the threat of development on declared monuments, historical buildings and sites of archaeological interest to enable their preservation for posterity. The *AM Ordinance* also establishes the statutory procedures to be followed in making such a declaration.

The Ordinance defines an antiquity as a relic (a movable object made before 1800) and a place, building, site or structure erected, formed or built by human agency before the year 1800. The Ordinance also states, amongst other things, that the discovery of an antiquity shall be reported to the Authority (Secretary for Development); that ownership of all relics discovered after 1976 shall be vested in the Government; that the Authority can declare a place, building, site or structure to be a monument, historical building or site of archaeological interest or paleontological site or structure (and therefore introducing certain additional controls for these sites); and that licences and permits can be granted for excavation and for other work.

In practice, the Antiquities and Monuments Office (AMO) also identifies Deemed Monuments <sup>(1)</sup> and then seeks to reach agreements with the owners of the monuments to provide for specific measures that will ensure preservation. Deemed Monuments have the potential to be upgraded to statutory Declared Monuments under the *AM Ordinance*.

A large range of potential sites of cultural heritage, among which are historical buildings and structures and sites of archaeological interest, have been identified and recorded by AMO in addition to those for which a declaration has been made under the *AM Ordinance*.

Historic buildings and structures are recorded by AMO according to the grading system summarised in *Table 11.1*.

Table 11.1 – The Grading of Historic Buildings

Grade	Description
1	Buildings of outstanding merit, which every effort should be made to preserve if possible
2	Buildings of special merit; efforts should be made to selectively preserve
3	Buildings of some merit; preservation in some form would be desirable and alternative means could be considered if preservation is not practicable

It should be noted that the grading of historic buildings is intended for AMO's internal reference only and has no statutory standing. Although there are no statutory provisions for the protection of recorded sites of archaeological interest and historic buildings and features (including deemed, graded and recorded), the Government has established a set of administrative procedures <sup>(2)</sup> for giving consideration to the protection of these resources.

Over the years, surveys have been undertaken to identify sites of archaeological interest in Hong Kong. The AMO has established boundaries for the identified sites and a set of administrative procedures for the protection of the known sites of archaeological interest. However, the present record of sites of archaeological interest is known to be incomplete as many areas have not yet been surveyed. Therefore, procedures and mechanisms which enable the preservation and formal notification of previously unknown archaeological resources that may be revealed or discovered during project assessment or construction, must be identified and implemented at an early stage of the planning of a project.

*Section 11* of the *AM Ordinance* requires any person who discovers an antiquity, or supposed antiquity, to report the discovery to the Antiquities Authority. By implication, construction projects need to ensure that the Antiquities Advisory Board

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(1) Deemed Monument – a building that has been identified by AMO as historically significant. The owner of the building has entered an agreement with AMO to allow restoration work to take place and reasonable access for the public. This designation provides no legal protection over the building under the *AM Ordinance*.

(2) Administrative procedures are adopted by AMO with the intention to protect sites of archaeological and historical interests that not protected under the provisions of *AM Ordinance*. For example, reserve area may be imposed on a particular area or building consultation with AMO for advice when development within the reserve area is proposed. These AMO measures are referred to as administrative procedures.

(AAB)<sup>(3)</sup> is formally notified of archaeological resources which are discovered during the assessment or construction of a project.

#### 11.2.3 Land (Miscellaneous Provisions) Ordinance (Cap 28)

Under this *Ordinance*, it is required that a permit be obtained for any excavation within government land prior to commencement of any excavation work commencing.

#### 11.2.4 Hong Kong Planning Standards and Guidelines

The HKPSG, *Chapter 10 (Conservation)*, provides general guidelines and measures for the conservation of historical buildings, sites of archaeological interest and other antiquities.

#### 11.2.5 Guidelines for Cultural Heritage Impact Assessment (CHIA)

The guidelines stated in *Appendix I-2* of the *EIA Study Brief No. ESB-209/2009* provides details on the criteria for the CHIA which includes a baseline study, field evaluation and impact assessment.

#### 11.2.6 Marine Archaeological Investigation (MAI) Guidelines

The guidelines stated in *Appendix I-1* of the *EIA Study Brief No. ESB-209/2009* provide details on the standard practices, procedures and methodology that must be utilised in determining the marine archaeological potential, presence of archaeological artefacts and establishing suitable mitigation measures. The first step, a Stage 1 MAI, involves a baseline review, geophysical survey and establishing archaeological potential. Subject to the results of the Stage 1 MAI, a Stage 2 MAI investigation which may include Remote Operated Vehicle (ROV)/Visual Diver Survey/Watching Brief, may be required.

### 11.3 Baseline Condition

In accordance with the requirements given in *Appendix I-2* of the *EIA Study Brief*, the Study Area for the cultural heritage impact assessment covers the land-based project sites, including sites for sewers, sewage pumping stations and STW, and marine-based footprint of the proposed submarine effluent outfall. [Figure 11.1](#) shows the Study Areas for the CHIA (land-based) and MAI (marine-based).

A desktop review was conducted to determine the baseline conditions within the Study Area, identify resources of potential cultural heritage and archaeological value, and identify potential information gaps for the baseline conditions. The literature reviewed includes:

- Archive databases and publications of the Antiquities and Monuments Office (AMO);

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(3) The Antiquities and Monuments Office is the entry point to pass information to the AAB. The AAB is a statutory body consisting of expertise in relevant fields to advise on any matters relating to antiquities and monuments.

- Historical and academic publications on terrestrial cultural heritage <sup>(4)</sup>;
- Databases and publications on marine cultural heritage <sup>(5)</sup>;
- EIA Report for Improvement to Tung Chung Road Between Lung Tseng Tau and Cheung Sha <sup>(6)</sup>;
- EIA Report for 132 kV Supply Circuit from Pui O via Chi Ma Wan Peninsula via Sea Crossing towards Cheung Chau <sup>(7)</sup>;
- Project Profile for Asia-America Gateway (AAG) Cable Network, South Lantau <sup>(8)</sup>; and
- Project Profile for Telecommunication Installation at Lot 591SA in DD328, Tong Fuk, South Lantau Coast and the Associated Cable Landing Work in Tong Fuk, South Lantau for the North Asia Cable (NAC) Fibre Optic Submarine Cable System <sup>(9)</sup>.

Where information gaps are identified from the literature review, baseline cultural heritage surveys were conducted to provide up-to-date baseline information on both the terrestrial and marine cultural heritage resources of the Study Area.

Findings of the desktop review and baseline field surveys of the Study Area is summarised in the following sections.

### 11.3.1 Desktop Review

#### 11.3.1.1 General Topography

The Study Area is protected by two main mountains from the north Lantau Peak or Fung Wong Shan with 934 m in height and Sunset Peak or Tai Tung Shan with 869 m in height. The Study Area is mainly aligned along the south coastline of Lantau or the South Lantau Road. The Study Area at the south is mainly bays comprising Shui Hau Wan, Tong Fuk Miu Wan, Cheung Sha Beach, San Shek Wan and Pui O Wan from west to east. The western end of the Study Area is protected by a headland with two hills, namely the Shek Mun Shan and Luk Keng Shan and at the eastern end of the Study Area lies the Chi Ma Wan Peninsula. Due to the long coastline in between the headland and the peninsula the natural protection is

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(4) This includes publications on local geography, geology, historical, architectural, ethnological, religion and other related cultural studies, unpublished theses, clan genealogies, village records, local inscriptions and other historical documents and old maps and pictures.

(5) This includes geophysical data held by the Geotechnical Engineering Office, hydrographic data and charts held by Marine Department, old navigation charts and archival charts held by the Royal Navy in the UK, archives held by AMO.

(6) Mouchel Asia Ltd (2002) Improvement to Tung Chung Road from Lung Tseng Tau to Cheung Sha: EIA Report. EIA Register No. AEIAR-061/2002.

(7) Mott Connell Limited (2001) 132 kV Supply Circuit from Pui O via Chi Ma Wan Peninsula via Sea Crossing towards Cheung Chau: EIA Report. EIA Register No. AEIAR-051/2002.

(8) Atkins & EGS (2007) Asia-America Gateway (AAG) Cable Network, South Lantau: Project Profile. DIR-160/2007.

(9) ERM (2000) Telecommunication Installation at Lot 591SA in DD328, Tong Fuk, South Lantau Coast and the Associated Cable Landing Work in Tong Fuk, South Lantau for the North Asia Cable (NAC) Fibre Optic Submarine Cable System: Project Profile. DIR-031/2000.

considered not sufficient so that Cheung Sha Beach is exposed to strong wind and waves in particular those from the south.

### 11.3.1.2 General History

In the period between 6,000 and 2,000 years ago, aboriginal peoples inhabiting the Study Area were from the Yue (越) ethnic group and were Austronesian. Evidence of this is supported by the decoration patterns, shapes, techniques of Bronze Age and Early Iron Age pottery found in or close to the Study Area. Many scholars regard the south China coastal area as the motherland of Austronesian peoples, a location they inhabited before they migrated to the islands of Pacific Ocean and Southeast Asia about 4,000 years ago.

Yue people, also called the “Hundreds Yue” (百越) people, were scattered across the coastal areas of Southeast China. They comprised different tribes and had different surnames. This is recorded in AD first to second century Chinese history book such as Shiji (History Record 史記) and Hanshu (Book of Han Dynasty 漢書). In terms of language, folklore and physical characteristics, there were differences between Yue people and Han people whom inhabited northern and central China.

When south China became an administrative territory of the Chinese central government in 221 BC, the Yue people began to share the Han culture and language and became Han people. In 208 BC, Han people from northern China and Yue people from south China established the state of Canton, the name of this southern state was Nan Yue (Southern Yue). No detailed historical records for the Study Area can be found for the period from the Han Dynasty to the Tang Dynasty (206 BC to AD 907).

Hong Kong including Lantau Island was governed by the Chinese Emperor from the Qin Dynasty (221 - 206 BC) onwards. Initially, it was governed by the Panyu (番禺) County. Up until the Han Dynasty (206 BC - AD 220), it was governed by Bolaw (博羅) County. Later, it was governed by the Bao'an (寶安) County during the Sui Dynasty (AD 581 - 618) and then by the Dongguan (東莞) County from AD 757 - 1572.

In the 9<sup>th</sup> Century, Hong Kong established itself as a major salt production centre. Salt production fields were distributed all around Hong Kong and the west bank of Pearl River such as Tai O. The study of local genealogy indicates that five major clan groups, the Pangs, the Lius, the Haus, the Mans and the Tangs, were believed to be the first settlers in the northern New Territories since the southern Song Dynasty area. However, not much historical record is available for the outlying Islands, including Lantau Island.

During the 15<sup>th</sup> century the coastal areas of Dongguan County were attacked by marauding bandits and pirates. In order to protect against the bandits and pirates, Xin'an County (新安縣) was set up in 1573.<sup>(10)</sup> According to the record of the Xin'an Gazetteer (新安縣志), Hong Kong was zoned within the Xin'an County.

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(10) Hayes, James, (1974), “The Hong Kong Region: Its Place in Traditional Chinese Historiography and Principal Events since the Establishment of Hsin-An Country in 1573”. *Journal of the Hong Kong Branch of the Royal Asiatic Society*, vol. 14. Hong Kong. Pp117-118

This area covered two fifths of the County. In 1586 and 1643 two editions of the Xin'an Gazetteer were published but both of them were lost.

In 1661, the Coastal Evacuation was promulgated by the Qing Dynasty Emperor in order to stifle the supply of the Anti-Manchu troops in Taiwan, people living along the coast of Guangdong were moved 50 *li* (里) inland. The Hong Kong settlers were forced to move back to China until 1669 when the Boundary Extension was promulgated and the Hong Kong settlers moved back to their villages.

The population and economy of Xin'an County was strongly affected by the Coastal Evacuation. It is recorded that about 16,000 persons from Xin'an were driven inland but only 1648 of those who left are said to have returned.<sup>(11)</sup> When the Boundary Extension was promulgated, newcomers, in particular the Hakka people, were encouraged to immigrate to the Hong Kong and they did so during the late 17<sup>th</sup> and early 18<sup>th</sup> century.

There is not much historical record to understand history of the villages in the Study Area. The Study Area is now covered under the Island District administrative region. The earliest record of local villages within the Study Area is the Xin'an Gazetteer 1688 edition. The Study Area was governed under the Xin'an County Administrative Divisions in 1688. A Xiang -Dou -Tu -Cun (鄉 - 都 - 圖 - 村) system was used to subdivide the region for taxation purposes. Villages within the Study Area recorded at that time comprised: Shui Hau Tsuen (水口村) and Tong Fuk Tsuen (塘福村).

#### 11.3.1.3 Built Heritage Resources

For built heritage, the desktop review indicates that limited built heritage survey has been conducted in the Study Area. However, based on the information available from the AMO four historic buildings, Lin Kong Tong, Cheung Ancestral Hall, Nos. 49 & 50 Shui Hau, and Hung Shing Temple, are listed in the *List of the Historic Buildings in Building Assessment (as of 20 May 2016)*. *Table 11.2* below summarized their information. [Figures 11.2 to 11.5](#) show the locations of the four historic buildings. Details of these historic buildings are presented in the Final Site Investigation, Surveys and Testings Report (Volume 2 – Environmental, Part 3) (SI Report Part 3) in [Annex 11B](#).

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(11) *ibid*, P119

Table 11.2 – Information of Four Historic Buildings Recorded by the AMO <sup>(12)</sup>

Place	Features Code	Figure No.	Site Name	Grade/ Proposed Grade	Description
Shui Hau	SH-HB-7	<a href="#">Figures 11.4 and 11.7</a>	No.49-50 Shui Hau	Proposed Grade 3	Number in the list: 1057 Ownership: Private  The residential houses were constructed with stone and bricks. Each unit is probably consisted of a courtyard/flat roofed room in front and a pitched clay-tile-roofed building at the back. Each unit is one-bay wide and facing southeast. They were built in 1920s but are currently abandoned. Decorative green colored glazed poles fence could be found on the top of the door.
Tong Fuk	TF-HB-1	<a href="#">Figures 11.5 and 11.19</a>	Hung Shing Temple	Nil grade confirmed on 4 Feb 2010	Number in the list: 1421 Ownership: Private  The temple is a stone and cement structure which was built in 1802 and rebuilt in 1965. It has green glazed-tiled-roof, which the southern bay is a recessed entrance with decorations at its ridge. The front of the structure has been covered with colored ceramic tiles. It has a fenced front yard with an incense burner and four flag pole placing in front. There are also copper/iron bell (1802), wood tablets and two big plaster statues showcasing its history.
Pui O	PO-HB-8	<a href="#">Figures 11.3 and 11.26</a>	Cheung Ancestral Hall (張氏祠堂)	Grade 3 confirmed on 31 Aug 2010.	Number in the list: 1128 Ownership: Private  The ancestral hall is also called Yu Tak Tong (裕德堂), belongs to the dominant inhabitants-- Cheung Clan, in the multi-clan village of Pui O Lo Wai. It was probably built in the late Qing Dynasty.
Ham Tin	HT-HB-4	<a href="#">Figures 11.2 and 11.27</a>	Lin Kong Tong (蓮江堂)	Grade 3 confirmed on 22 Jan 2010.	Number in the list: 867 Ownership: Private  Lin Kong Hall serves the dual-purpose of ancestral hall and meeting place to the elder branch of the Cheungs, the leading lineage in Pui O Lo Wan. It was probably built in the late Qing Dynasty. It is adjacent to Cheung Study Hall (張氏家塾) (HT-HB-5).

#### 11.3.1.4 Terrestrial Archaeological Resources

The desktop review indicates that archaeological surveys had previously been conducted in the Study Area (*Table 11.3*), only very limited archaeological information of the Study Area is available. Detailed backgrounds, and key findings reported in previous surveys are presented in sub-sections below.

(12) AMO (2016) *List of the Historic Buildings in Building Assessment* (as of 20 May 2016)



**Table 11.3 – List of Archaeological Surveys Conducted adjacent to the Project**

<b>Project</b>	<b>Major Survey Location</b>	<b>Type of Survey</b>	<b>Field Survey Period</b>
Improvement to Tung Chung Road from Lung Tseng Tau to Cheung Sha (13)	Cheung Sha	Terrestrial field scan, augering and test pit excavation	March 2002
132 kV Supply Circuit from Pui O via Chi Ma Wan Peninsula via Sea Crossing towards Cheung Chau(14)	Pui O and Chi Ma Wan	Terrestrial field scan, augering and test pit excavation, and marine geophysical surveys	October – December 2000
Telecommunication Installation at Lot 591SA in DD328, Tong Fuk, South Lantau Coast and the Associated Cable Landing Work in Tong Fuk, South Lantau for the North Asia Cable (NAC) Fibre Optic Submarine Cable System(15)	Tong Fuk	Terrestrial archaeological surface collection surveys and marine geophysical surveys	January 2000
Asia-America Gateway (AAG) Cable Network, South Lantau(16)	Tong Fuk	Marine geophysical surveys	September 2007

(a) **Sub-Sections Desktop Findings**

As the Study Area covers a large extent, for archaeology, the Study Area is subdivided into six sections with reference to their locations in associated with the villages and proposed Project facilities as shown in [Figure 11.6](#) and [Table 11.4](#) below:

(13) Mouchel Asia Ltd (2002). *EIA Report of AEIAR-061/2002-Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha* [http://www.epd.gov.hk/eia/register/report/eiareport/eia\\_0752002/EIA%20Report/Sect11.htm#c11](http://www.epd.gov.hk/eia/register/report/eiareport/eia_0752002/EIA%20Report/Sect11.htm#c11) (accessed on 25/7/2016)

(14) Mott Connell Limited (2001). *EIA Report of 132 kV Supply Circuit from Pui O via Chi Ma Wan Peninsula via Sea Crossing towards Cheung Chau* [http://www.epd.gov.hk/eia/register/report/eiareport/eia\\_0652001/EIA/HTML/DATA/SECT7\\_2.HTM](http://www.epd.gov.hk/eia/register/report/eiareport/eia_0652001/EIA/HTML/DATA/SECT7_2.HTM) (accessed on 25/7/2016)

(15) Project Profile of *Telecommunication Installation at Lot 591SA in DD328, Tong Fuk, South Lantau Coast and the Associated Cable Landing Work in Tong Fuk, South Lantau for the North Asia Cable (NAC) Fibre Optic Submarine Cable System* [http://www.epd.gov.hk/eia/register/profile/latest/e\\_dir31.pdf](http://www.epd.gov.hk/eia/register/profile/latest/e_dir31.pdf) (accessed on 25/7/2016)

(16) Project Profile of *Asia-America Gateway (AAG) Cable Network, South Lantau* <http://www.epd.gov.hk/eia/register/profile/latest/dir160/dir160.pdf> (accessed on 25/7/2016)

Table 11.4 – Sections of the Study Area by Village Locations and Proposed Project Facilities

Sections	Village Location	Proposed Project Facilities (a)
A	Shui Hau	Village Sewer, Trunk Sewer, Rising Mains and Shui Hau Trunk SPS
B	Tong Fuk	Village Sewer, Trunk Sewer, Tong Fuk Trunk SPS and Rising Mains
C	Cheung Sha	Village Sewer, Trunk Sewer, Cheung Fu Street Trunk SPS, Cheung Sha Trunk SPS and Rising Mains
D	San Shek Wan	Village Sewer, Trunk Sewer, San Shek Wan Trunk SPS, Rising Mains and San Shek Wan STW
E	Pui O	Village Sewer, Trunk Sewer, Pui O Trunk SPS and Rising Mains
F	Ham Tin	Village Sewer and Trunk Sewer

Note: (a) Village Sewers and Trunk Sewers in all sections include manholes and gravity pipes.

(i) Section A – Shui Hau

This section covers the Shui Hau Village from the western most part of the Study Area to the proposed Shui Hau Trunk SPS.

Geology and Topography

The solid geology of Section A comprises of rhyolite lava and tuff of Lantau Formation, coarse ash crystal tuff of Yim Tin Tsai Formation and feldsparphyric rhyolite intrusion. Superficial deposits consist of alluvium (silt, sand and gravel), back beach deposits (sand) and beach deposits (sand, cobbles and boulders) (see [Figure 11.7a](#)).

The main topographical feature in Shui Hau is the tidal flat. It occupies a valley formed an estuary when first flooded about 6,000 years age. Since then, the river sediment has infilled the bay. A sand bar has built up across the valley and now forms a beach that separates the clayey paddy fields from the muddy sands. <sup>(17)</sup>

Historical Background

The settlement, Shui Hau Tsuen (水口村), in Shui Hau was recorded in the 1819 edition of *Xin'an Gazetteer* (新安縣志), under the governing of the Office of Deputy Magistrate of *Guanfu* (官富司). <sup>(18)</sup>

(17) Bernie Owen and Shaw Raynor (2007) *Hong Kong landscapes: shaping the barren rock*. Hong Kong: Hong Kong University Press.

(18) 舒懋官 修. 王崇熙 纂. (1819 (1974)). 《新安縣志》。台北：成文出版社。

## Archaeological Background

At the east of this Section, parts of the proposed sewer, manholes and the Shui Hau Trunk SPS fall within the Tong Fuk Miu Wan Site of Archaeological Interest.

The Tong Fuk Miu Wan Site of Archaeological Interest was first discovered by the Hong Kong Archaeological Society (HKAS) <sup>(19)</sup>. A territorial wide archaeological survey was conducted by Peacock and Nixon from 1982 to 1985 including investigation at the Tong Fuk Miu Wan Site of Archaeological Interest in a larger extend. The Tong Fuk Miu Wan Site of Archaeological Interest had been divided into two parts, the East and West. The Tong Fuk Miu Wan West was recorded before by the Hong Kong Archaeological Society (HKAS); the Tong Fuk Miu Wan East was first recorded by Peacock and Nixon in their survey where surface observation, four trenches and seven auger holes were conducted. Peacock and Nixon concluded that the formation of terraces have heavily disturbed the archaeological deposits on the hillslope and the farmland and they considered that little, if any, archaeological potential remains <sup>(20)</sup>.

Further survey was conducted by the Antiquities and Monuments Office (AMO) in 1997 to affirm Peacock and Nixon's conclusion where two test pits and 16 auger holes were conducted east to the hill. In this survey, Late-Neolithic or Early-Bronze Age pottery, chipped stones, stone cores and stone fragments were unearthed. The result indicated that *in-situ* archaeological remains exist <sup>(21)</sup>.

### (ii) Section B – Tong Fuk

This section covers from the proposed rising mains east of the Shui Hau Trunk SPS to the eastern end of Tong Fuk Beach.

## Geology and Topography

The solid geology of Section B comprises of rhyolite lava and tuff from Lantau Formation, coarse ash crystal tuff from Yim Tin Tsai Formation and eutaxite form Cheung Shan Member with intrusive fine-grained syenite and feldsparphyric rhyolite. Superficial deposits consist of alluvium (silt, sand and gravel), slope debris (sand, gravel, cobbles and boulders in silt matrix), back beach deposits (sand) and beach deposits (sand, cobbles and boulders) (see [Figure 11.7a](#)).

The topographical features in Section B includes a bay (Tong Fuk Miu Wan) at the west of Tong Fuk, a northwest-southeast running stream along the valley north of Tong Fuk, a pebble beach south of Tong Fuk and a delta. Pebbles transported by the stream deposited in the delta, and polished by strong waves from the sea and form a pebble beach of 10m high <sup>(22)</sup>.

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(19) B.A.V. Peacock and T.J.P. Nixon (1986) *Report of the Hong Kong Archaeological Survey. Vol. III, Part 3*. Unpublished. (Archives of the Antiquities and Monuments Office. Call no.: ID7).

(20) *ibid.*; and Peacock and Nixon (1988) *The Hong Kong Archaeological Survey: Subsurface Investigation Reports*. Hong Kong: Antiquities & Monuments Office.

(21) Antiquities and Monuments Office (AMO). 1997. *South Lantau Archaeological Survey 1997*. Unpublished. (Archives of the Antiquities and Monuments Office. Call no.: LU16)

(22) Owen and Raynor, *op. cit.*, p. 163.

## Historical Background

The settlement, Tong Fuk Tsuen (塘福村), was recorded in the 1819 edition of *Xin'an Gazetteer* (新安縣志), under the governing of the Office of Deputy Magistrate of *Guanfu* (官富司)<sup>(23)</sup>.

## Archaeological Background

On the west, part of the rising mains situate in the Tong Fuk Miu Wan Site of Archaeological Interest (see above regarding details of the archaeological site).

Between the Tong Fuk Miu Wan and the Tong Fuk Beach, part of the proposed sewers, manholes and the Tong Fuk Trunk SPS are situated in the Tong Fuk Site of Archaeological Interest.

A survey-cum-rescue excavation was conducted in 2000 by ERM in the Tong Fuk Site of Archaeological Interest where Bronze Age hard pottery shreds were unearthed and a prehistoric stone structure was identified. The highest mPD level where the cultural layer was found is +11.31 mPD<sup>(24)</sup>.

### (iii) Section C – Cheung Sha

This section covers the area from the western end of the Cheung Sha Beach to the proposed Cheung Sha Trunk SPS.

## Geology and Topography

The solid geology of Section C comprised of coarse ash crystal tuff from Yim Tin Tsai Formation and ash lithic crystal tuff from Shing Mun Formation with feldsparphyric rhyolite and granodiorite intrusion. Superficial deposits consist of slope debris (sand gravel, cobbles and boulders in silt marix), alluvium (silt, sand and gravel), back beach deposits (sand) and beach deposits (sand, cobbles and boulders) (see [Figure 11.7a](#) and [11.7b](#)).

The main topographical features in this Section are a beach and headlands. The Cheung Sha Beach is the longest beach in Hong Kong which exposes to strong sea waves and feed by sand from streams and headlands<sup>(25)</sup>.

## Historical Background

No known historical record about Cheung Sha identified.

## Archaeological Background

Part of the proposed sewers, manholes, rising mains, and the Cheung Sha Trunk SPS are located within the Cheung Sha Ha Tsuen Site of Archaeological Interest.

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(23) 舒懋官, op. cit.

(24) Environmental Resources Management (ERM) (2000) *South Lantau Coast Phase I - Archaeological Field Evaluation*. Unpublished; and (2000) *South Lantau Coast Phase II - Archaeological Rescue Excavation*. Unpublished.

(25) Owen and Raynor, op. cit., p. 160.

The Cheung Sha Ha Tsuen Site of Archaeological Interest was first discovered and investigated during the territorial wide archaeological survey conducted by Peacock and Nixon between 1982 and 1985. It was named as the Cheung Sha Site of Archaeological Interest by Peacock and Nixon. Surface observation and one trench were conducted. Surface observation finds included a polished stone adze, coarse pottery, stone flakes, kiln furniture and structures were identified. Artefacts unearthed from test trench included coarse ware, hard geometric, ceramic kiln furniture, stone chips and flakes, pumice and historical and recent stoneware. Peacock and Nixon concluded that the Cheung Sha Ha Tsuen Site of Archaeological Interest has moderate significance, because of its well preserved and stratified deposit. However, disturbances of prehistoric remains may have occurred in Tang Dynasty due to the construction of the lime kiln. Yet, *in situ* deposit may yet to be found in some parts of the sandbody <sup>(26)</sup>.

In 1997, another survey was conducted by AMO. Two test pits and seven auger holes were conducted. Fragments of kiln materials and a possible *in situ* Tang Dynasty kiln were unearthed and recorded respectively. It confirmed the existence of Tang Dynasty archaeological deposit. However, the presence of pre-historic archaeological remain cannot be determined from the survey findings <sup>(27)</sup>.

An Archaeological Impact Assessment (AIA) for the project *Planning and Engineering Study of Private Housing Development at Cheung Sha, Lantau – Feasibility Study* was conducted in 2008. Field investigation near Cheung Sha Sheung Tsuen concluded that no archaeological potential near the village <sup>(28)</sup>.

#### (iv) Section D – San Shek Wan

This section covers area from the Squatter Control (Islands) Lantau Field Office to the proposed San Shek Wan STW.

#### Geology and Topography

The solid geology of this Section comprised of coarse ash crystal tuff from Yim Tin Tsai Formation with feldsparphyric rhyolite intrusion. Superficial deposits consist of slope debris (sand gravel, cobbles and boulders in silt matrix) and beach deposits (sand, cobbles and boulders) (see [Figure 11.7b](#)).

The main topographical features in this Section are a boulder beach and a number of streams running into the sea from the valleys north of the San Shek Wan.

#### Historical Background

No known historical record mentioned San Shek Wan.

#### Archaeological Background

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(26) Peacock and Nixon (1988). *The Hong Kong Archaeological Survey: Subsurface Investigation Reports*. Hong Kong: Antiquities & Monuments Office.

(27) Antiquities and Monuments Office (AMO), op. cit.

(28) Civil Engineering and Development Department (CEDD). (2008) *Planning and Engineering Study of Private Housing Development at Cheung Sha, Lantau – Feasibility Study: Draft Paper, Archaeological Impact Assessment (AIA)*. Unpublished.

No site of archaeological interest was identified in this section. The adjacent sites of archaeological interest are the Cheung Sha Ha Tsuen Site of Archaeological Interest at the west and the Pui O Site of Archaeological Interest at the east. It is understood that no archaeological survey has been conducted in this section.

(v) Section E – Pui O

This section covers area from the east of the proposed San Shek Wan Trunk STW to the west of Ham Tin San Tsuen.

#### Geology and Topography

The solid geology of this Section mainly comprised of intrusive fine-grained quartz syenite. Superficial deposits consist of alluvium (silt, sand and gravel), slope debris (sand gravel, cobbles and boulders in silt matrix), raised beach deposits (sand) and beach deposits (sand) (see [Figure 11.7b](#)).

The main topographical features in this Section comprised three raised beach and a number of streams running into the sea from the valleys north of the Pui O Beach, and feed the delta with sand.

#### Historical Background

Pui O was originally known as Lo Bui O in Late Ming Dynasty and Early Qing Dynasty. As firstly documented in Chinese texts in the 14<sup>th</sup> century to early 15<sup>th</sup> century, it is found that human settlement was established in Pui O during that period. Pui O village was listed in the 1688 edition of the Xin'an Gazetteer. The Ho and Cheung Hakka clans occupied the Pui O and Ham Tin villages.

#### Archaeological Background

Part of the proposed sewers, manholes, rising mains and Pui O Trunk SPS are situated in the Pui O Site of Archaeological Interest.

The Pui O Site of Archaeological Interest was first recorded by the Hong Kong University Archaeology Team in 1957 when debris from lime kilns was found. A survey was conducted by Peacock and Nixon in 1982 and followed by two excavations led by W. Meacham in 1983 and 1984. In 1983 excavation, it took place at the 2<sup>nd</sup> raised beach, a partial kiln, a large slaking pit, burials of Six Dynasties and Qing Dynasty were found <sup>(29)</sup>. In 1984 excavation, it took place further east of the previous excavation at the 2<sup>nd</sup> raised beach, the slaking pit and burials were cleared and recorded, Qing Dynasty pottery shards were found <sup>(30)</sup>.

Later on, three surveys were conducted in 1997 by AMO and in 2001 and 2003 by ERM. During the 1997 survey, auger testing at the 2<sup>nd</sup> raised beach retrieved only one shred of Qing pottery <sup>(31)</sup>.

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(29) Willian Meacham (1983) "Pui O." *Journal of the Hong Kong Archaeological Society* X: 60 – 69.

(30) Meacham (1985) "Pui O." *Journal of the Hong Kong Archaeological Society* XI: 113 – 118.

(31) Antiquities and Monuments Office (AMO) , op. cit.

Surveys conducted in 2001 and 2003 covered the 2<sup>nd</sup> raised beach and the 3<sup>rd</sup> raised beach (located at Pui O Public School). For the 2001 survey, ERM was commissioned by the CLP Power via Mott Connell Ltd. to assess the archaeological potential along Chi Ma Wan Road in Pui O.<sup>(32)</sup> One test pit measured 3 m x 3 m and 20 hand auger holes were bored, reaching 2.5 m below ground where a dark layer with pumice was identified.

In the 2003 survey, ERM was commissioned by AMO to undertake an archaeological investigation along Chi Ma Wan Road and Pui O on Lantau Island. Three test pits of 2 m x 1.5 m and 20 auger holes were conducted. Only secondary deposit of Qing Dynasty, such as, pottery, porcelain and tile shards were unearthed. Also, no cultural layer has been identified at the 3<sup>rd</sup> raised beach. The report concluded that along the Chi Ma Wan Road, starting from the Pui O Public School to the football field in the proximity of Pui O Trunk SPS and its associated rising mains/ sewers has no archaeological potential and did not need further survey<sup>(33)</sup>.

(vi) Section F – Ham Tin

This section covers the area of Ham Tin San Tsuen and Ham Tin Kau Tsuen up to the eastern boundary of the Study Area.

Geology and Topography

The solid geology of this Section mainly comprised of intrusive fine-grained quartz syenite. Superficial deposits consist of alluvium (silt, sand and gravel), slope debris (sand gravel, cobbles and boulders in silt matrix), estuarine deposits (mud and sand), raised beach deposits (sand) and beach deposits (sand) (see [Figure 11.7b](#)).

The main topographical feature in this Section is a modern beach – Pui O Beach.

Historical Background

See *Section E* above regarding the general history of Pui O which is similar to Ham Tin.

Archaeological Background

No site of archaeological interest was identified in this Section. The closest known archaeological site is the Pui O Site of Archaeological Interest located 4m from this Section where the south-east end of the proposed sewer and manholes locate.

(b) Sites of Archaeological Interest within the Study Area

*Table 11.5* listed out the identified sites of archaeological interest within the Study Area. *Figures 11.8 to 11.11* show their boundaries.

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(32) Mott Connell Limited (2001). *EIA Report of 132 kV Supply Circuit from Pui O via Chi Ma Wan Peninsula via Sea Crossing towards Cheung Chau* [http://www.epd.gov.hk/eia/register/report/eiareport/eia\\_0652001/EIA/HTML/DATA/SECT7\\_2.HTM](http://www.epd.gov.hk/eia/register/report/eiareport/eia_0652001/EIA/HTML/DATA/SECT7_2.HTM) (accessed on 25/7/2016)

(33) Environmental Resources Management (ERM) (2003) *Archaeological Investigation along Chi Ma Wan Road, Pui O, Lantau Island*. Unpublished. (Archives of the Antiquities and Monuments Office. Call no.: LU46)

Table 11.5 – Summary of Sites of Archaeological Interest Identified within the Study Area

Site Name	AMO Reference	Sections in which the Site of Archaeological Interests Situated	Surveyed Years	Figure
Tong Fuk Miu Wan Site of Archaeological Interest	AM82-0305	Sections A and B	1982 and 1997	<a href="#">Figure 11.8</a>
Tong Fuk Site of Archaeological Interest	AM00-1603	Sections B	2000	<a href="#">Figure 11.9</a>
Cheung Sha Ha Tsuen Site of Archaeological Interest	AM90-0440	Section C	1982 and 1997	<a href="#">Figure 11.10</a>
Pui O Site of Archaeological Interest	AM78-0203	Section E	1982, 1997, 2001 and 2003	<a href="#">Figure 11.11</a>

### 11.3.1.5 Marine Archaeological Resources

The desktop review indicates that the MAI Study Area has limited potential to contain underwater cultural heritage sites, and the United Kingdom Hydrographic Office's (UKHO) Wreck files revealed no shipwrecks or other potential cultural heritage sites in the MAI Study Area.

No marine archaeological investigations have been conducted in the MAI Study Area. Limited information on marine archaeology in the south Lantau area is available. Previous relevant projects are listed in *Table 11.3* and no archaeological materials were identified in these projects

### 11.3.2 Summary of Field Survey Findings

As information gaps are identified from the desktop review, baseline cultural heritage surveys, which included a built heritage survey and a terrestrial archaeological field survey, were conducted to provide up-to-date baseline information on the terrestrial cultural heritage resources of the Study Area. Marine archaeological survey was also undertaken as part of the EIA.

DSD has commissioned a cultural heritage consultant to carry out archaeological survey and built heritage survey and the Final Site Investigation, Surveys and Testings Report (Volume 2 – Environmental, Part 3) (SI Report Part 3) to present the findings has been prepared. The SI Report Part 3 is detailed in [Annex 11B](#).

The Project layout has been modified during the EIA stage. However, as the changes were minor, the archaeological surveys and built heritage survey results are considered sufficient for establishing the archaeological potential and identifying the potential impacted built heritage of the study area. Based on the SI Report Part 3, archaeological potential evaluation on the area identified to be with archaeological potential and impact assessment on built heritage have been updated. The reassessment findings are incorporated into this EIA Report and presented in the following sections.



### 11.3.2.1 Built Heritage Survey Findings

The built heritage survey was conducted by Mr Wang Wenjian and Ms Liu Mao, the cultural heritage consultant, in February 2012. Thirty-eight (38) historic built structures, 14 historic graves and one historic landscape feature are identified within the CHIA Study Area. These identified built heritage features are listed in Tables 11.6 and 11.7. The key plan of identified built heritage is shown in [Figure 11.16](#). Their locations in 1:1000 maps and photographic records are shown in the SI Report Part 3 in [Annex 11B](#) of this EIA Report.

Table 11.6 – Built Heritage Features Identified within the CHIA Study Area

Place	Features Code	Figure No.	Site Name	Description
Shui Hau	SH-HB-1	<a href="#">Figure 11.17</a>	Chan Ancestral Hall (陳氏宗祠)	The ancestral hall is a modern cement structure and facing southeast. A couplet in the front: "宗支奕大,世澤綿長"; tablet on the top of the door: "奕世其昌". Wall surface was covered by pink ceramic tiles.
	SH-HB-2	<a href="#">Figure 11.17</a>	No.25-26 Shui Hau	The residential houses were constructed with brick, cement and stone and were with clay-tiled roof. Both units are one-bay wide and facing southeast. Their layout should be identical but No.26 is currently abandoned.
	SH-HB-3	<a href="#">Figure 11.17</a>	No.35 Shui Hau	The residential house was constructed with brick and mortar and was with clay-tiled roof. It is one-bay wide and facing southeast. It should be built before 1950 based on the architectural style. It is currently abandoned. Wall surface was coloured in yellow.
	SH-HB-4	<a href="#">Figure 11.17</a>	Earth-god Shrine	The shrine is located on a cement platform (8.5m x 8m) and facing Southwest. There is a huge tree and some rocks behind. The shrine is constructed with cement, brick and stone. Two incense burners could be found and the earth-gods are presented by two stones placing inside the shrine. The shrine is painted in red.
	SH-HB-5	<a href="#">Figure 11.17</a>	No.53 Shui Hau	The residential house was constructed with stone and mortar and was with clay-tiled roof. It is facing southeast. It should be built before 1950. It is currently abandoned. Wall surface was painted white and decorative fence could be found on the top of the door.
	SH-HB-6	<a href="#">Figure 11.17</a>	No.57 Shui Hau	The residential house was constructed with stone and cement and was with clay-tiled roof. It is two-bay wide and facing southeast. It should be built before 1950 but is currently abandoned. Some wall surface was painted yellow and wood crossbeam could be found.
	SH-HB-8	<a href="#">Figure 11.17</a>	No.46 Shui Hau	The residential house was constructed with stone and mortar and was with clay-tiled roof. It is two-bay wide and facing southeast. The south bay is a recessed entrance. It should be built before 1950. Wood crossbeam was found.
	SH-HB-9	<a href="#">Figure 11.17</a>	No.52 Shui Hau	The residential house was constructed with stone and mortar. It has flat roof constructed with metal plate. It is one-bay wide and facing southeast. It should be built before 1950. Decorative fence could be found on the top of the door.

Place	Features Code	Figure No.	Site Name	Description
	SH-HB-10	<a href="#">Figure 11.17</a>	Ancestral Hall	The ancestral hall was a small modern concrete structure with single-pitched roof. Wooden ancestral tablets were placed inside but it was also served as a store room. Residents said it was "太公屋".
	SH-HB-11	<a href="#">Figure 11.17</a>	Earth-god Shrine	The shrine is located on a cement platform (1.25m X 1.3m). It is an open cement structure with back and side walls. The earth-god is represented by a stone and an incense burner is placed in front of it.
Tong Fuk	TF-HB-2	<a href="#">Figure 11.20</a>	Earth-god Shrine	The shrine is located on a cement platform (5.5m X 2.8m), with huge rocks and tree behind. It is facing South and is a stone and cement structure painted in pink. A stone is placed to represent the earth-god. The stone candle holder placed in front of the earth god is carved with "福祿壽".
	TF-HB-3	<a href="#">Figure 11.20</a>	Kwan Ti Temple	The temple is a concrete structure with fence wall surrounded. The temple is painted in pink with its front wall decorated with ceramic tiles. It is also decorated with green glazed tiled pitched roof and yellow wall frieze.
	TF-HB-4	<a href="#">Figure 11.20</a>	Earth-god Shrine	The shrine is a stone, brick and cement structure occupying 9m X 6m and faces West. There is a huge rock with stone fence behind it and a tree besides it.
	TF-HB-5	<a href="#">Figure 11.20</a>	Earth-god Shrine	The shrine is a stone, brick and cement structure and painted pink. It faces 180 and sits on a cement platform (4.8m X 4.8m) and with a huge rock behind. A stone candleholder decorated by Chinese characters "福祿壽" is placed.
Cheung Sha	CS-HB-1	<a href="#">Figure 11.21</a>	Earth-god Shrine	The shrine is located next to No. 17 Cheung Sha Ha Tsuen and facing 264. It is an open cement structure on cement platform (1m X 1m).
	CS-HB-2	<a href="#">Figure 11.21</a>	Earth-god Shrines	The shrines are located on both sides of a tree and a huge rock. They are sheltered cement and stone structure with incense holder placed inside.
	CS-HB-3	<a href="#">Figure 11.22</a>	Earth-god Shrine	The shrine is an open stone structure on cement platform (3m X 1.7m).
	CS-HB-4	<a href="#">Figure 11.22</a>	Earth-god Shrine	The shrine is an open stone and cement structure on cement platform (3.6m X 3.8m).
San Shek Wan	SSW-HB-1	<a href="#">Figure 11.23</a>	Mao Ancestral Hall (毛氏祖祠)	The ancestral hall is a modern concrete structure facing southeast. It was rebuilt in 1983. It is decorated by brown ceramic tiles.
	SSW-HB-2	<a href="#">Figure 11.23</a>	Earth-god Shrine	The shrine is a cement structure with sheltered on rocks (0.7m X 0.8m). Two statues are placed for worship.
Pui O	PO-HB-1	<a href="#">Figure 11.26</a>	Earth-god Shrine	The shrine is a stone structure sits on granite platform. It has a foreground constructed by cement (1.5m X 1.9m).
	PO-HB-2	<a href="#">Figure 11.26</a>	Well with Shrine	The shrine is part of the fencing wall surrounding the well, with a stone as the god statue. The well is currently covered by metal net.
	PO-HB-3	<a href="#">Figure 11.26</a>	Wen Ancestral Hall (溫氏宗祠)	The ancestral hall is a concrete structure with metal roofing. An altar and a shrine were placed inside the house.
	PO-HB-4	<a href="#">Figure 11.26</a>	Earth-god Shrine	The shrine is cement structure with stone tablet. It is surrounded by the stone wall (PO-HB-5)
	PO-HB-5	<a href="#">Figure 11.26</a>	Stone Wall	The wall is (7.2m X 5m) and associate with an earth-god shrine (PO-HB-4)

Place	Features Code	Figure No.	Site Name	Description
	PO-HB-6	<a href="#">Figure 11.26</a>	Earth-god Shrine	The shrine is a stone and cement structure with incense holder only. It is backed by a huge rock.
	PO-HB-7	<a href="#">Figure 11.26</a>	Wen Ancestral Hall (溫氏宗祠)	The ancestral hall is a stone structure with metal pitched roof. Indoor is inaccessible.
	PO-HB-9	<a href="#">Figure 11.26</a>	Earth-god Shrine	The shrine is a granite structure with back wall constructed by a stack of stones. The incense holder is decorated by carved pattern.
	PO-HB-10	<a href="#">Figure 11.25</a>	Ho Ancestral Hall (何氏公祠)	The ancestral hall is also called Lo Kong Tong (廬江堂). It was built in 1969 and rebuilt in 2008. It is a modern concrete building.
	PO-HB-11	<a href="#">Figure 11.25</a>	Earth-god Shrine	The shrine is a semi-circular structure with back wall. A stone is placed to represent the earth god. It is near Kwan Kung Shrine (PO-HB-12).
	PO-HB-12	<a href="#">Figure 11.25</a>	Kwan Kung Shrine (關公祠)	The shrine is a small cement structure and is near the Earth-god Shrine (PO-HB-11). The couplet is written "精忠昭日月，義勇壯山河".
	PO-HB-13	<a href="#">Figure 11.25</a>	Law Ancestral Hall (羅氏宗祠)	The ancestral hall is also called Tsuen Mau Tong (全茂堂). It is a modern concrete structure with bricks decoration and was rebuilt / renovated in 1991.
Ham Tin	HT-HB-1	<a href="#">Figure 11.27</a>	Earth-god Shrine	The shrine is of Wing On Bridge (永安橋) as its stone tablet is written as "永安橋神位". It is constructed by bricks and cement.
	HT-HB-2	<a href="#">Figure 11.27</a>	Wing On Bridge (永安橋)	The bridge is constructed by granite stone slabs, though modification at its base could be observed. It has its shrine (HT-HB-1) at one end.
	HT-HB-3	<a href="#">Figure 11.27</a>	Earth-god Shrine	The shrine is constructed with cement and granite stone. A stone is placed to represent the earth-god.
	HT-HB-5	<a href="#">Figure 11.27</a>	Cheung Study Hall (張氏家塾) and Si Tak Tong (四德堂)	The buildings should also belong to the elder branch of the Cheungs, the leading lineage in Pui O Lo Wan. The roofs of both buildings were modified.
	HT-HB-6	<a href="#">Figure 11.28</a>	Well with Shrine	The well is circled by short fencing wall with a shrine opposite the opening of the wall. The stone tablet of the shrine is carved with "水". The well is currently covered by metal cover.
	HT-HB-7	<a href="#">Figure 11.28</a>	Earth-god Shrine	The arm-chair shaped shrine is constructed by stone.

Note: TF-HB-6 identified in SI Report is not included in this table as and TF-HB-6 is outside the CHIA Study area.

Table 11.7 – Other Built Heritage Identified within the CHIA Study Area

Place	Features Code	Figure No	Site Name	Construction/ (Renovation) Year	Description
Shui Hau	SH-HG-1	<a href="#">Figure 11.17</a>	Ho Clan Grave	Probably in Ming Dynasty/ (1913)	According to headstone inscription, the male deceased is from the Ho family.
	SH-HG-2	<a href="#">Figure 11.17</a>	Chan Clan Grave	(1955)	According to headstone inscription, the male deceased is from the Chan family.
	SH-HG-3	<a href="#">Figure 11.18</a>	Cheung Clan Grave	(1873)	According to headstone inscription, the male deceased is from the Cheung family.
Tong Fuk	TF-HG-1	<a href="#">Figure 11.19</a>	Chau Clan Grave	unknown	According to headstone inscription, the male deceased is from the Chau family.
	TF-HL-1	<a href="#">Figure 11.20</a>	Fung Shui Forest	N/A	Two huge trees with altar

Cheung Sha	CS-HG-1	<a href="#">Figure 11.22</a>	Cheung Clan Grave	unknown	According to headstone inscription, the deceased is a couple from the Cheung family.
San Shek Wan	SSW-HG-1	<a href="#">Figure 11.23</a>	Grave with unknown owner	unknown	The grave is ruined.
	SSW-HG-2	<a href="#">Figure 11.23</a>	Mao Clan Grave	(1921)	According to headstone inscription, the male deceased is from the Mo family.
	SSW-HG-3	<a href="#">Figure 11.24</a>	Cheung Clan Grave	(1813)	There are two separate headstones. According to headstone inscriptions, both male and female deceased are from the Cheung family.
Pui O	PO-HG-1	<a href="#">Figure 11.25</a>	Cheung and Ho Grave	(1908)	According to headstone inscription, the male deceased are from Cheung and Ho family.
Ham Tin	HT-HG-1	<a href="#">Figure 11.27</a>	Cheung and Wan Clan Grave	1878	There are three separate headstones. According to headstone inscriptions, the deceased are female from the Cheung and Wan family.
	HT-HG-2	<a href="#">Figure 11.27</a>	Grave with unknown owner	(1859)	According to headstone inscription, the deceased is from the 24 <sup>th</sup> generation of the clan.
	HT-HG-3	<a href="#">Figure 11.28</a>	Cheung Clan Grave	(1860 and 1995)	According to headstone inscription, the female deceased is from the Cheung family.
	HT-HG-4	<a href="#">Figure 11.28</a>	Ho Clan Grave	(1811)	According to headstone inscription, the male deceased is from the 20 <sup>th</sup> generation of the Ho family.
	HT-HG-5	<a href="#">Figure 11.28</a>	Ho Clan Grave	(1799)	According to headstone inscription, the male deceased is from the 20 <sup>th</sup> generation of the Ho family.

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### 11.3.2.2 Terrestrial Archaeological Survey Findings

An Archaeological Proposal defining the fieldwork scope for this Project was agreed with AMO. Ms Liu Mao, a qualified archaeologist of the cultural heritage consultant, obtained the *License to Excavate and Search for Antiquities* from the *Antiquities Authority* under the *AM Ordinance* to conduct the archaeological field survey (hereafter refer as the AS).

The AS was completed in February 2012. It comprised of about 250,000 m<sup>2</sup> of field walking areas, 46 auger holes and 32 test pits in accordance with the agreed Archaeological Proposal. Table 11.8 summarizes the findings of the AS. Only auger holes or test pits with archaeological findings are presented in Table 11.8. For details of overall AS results, please refer to the SI Report Part 3 in [Annex 11B](#) of this EIA Report.

Table 11.8 – Summary of Findings of the Archaeological Survey

Section	Village Location	Test Pit No.	Context (Soil Characteristics)	Archaeological Findings	Figure No. in Annex 11B
A	Shui Hau	SHT4	C2 (greyish black clay)	One blue-and-white porcelain shard	3.2
B	Tong Fuk	TFT6	C5 (greyish red sand with pebbles at bottom)	One Neolithic red coarse pottery	3.3
C	Cheung Sha	CST1	C2 (grey sand with tree roots)	One red stone ware shard; one kiln brick; four kiln props	3.6
		CST2	C3 (dark brown silt with modern garbage)	Three black stoneware; two red tiles; three kiln props	3.6
			C4 (reddish brown fine sand)	One bead; three bricks; two saggers; one brick with glaze layer	3.6
			C5 (red fine sand, very hard)	One burned clay	3.6
		CST3	C3 (greyish black sand)	Three pottery kiln props	3.6
D	San Shek Wan	SST3	C1 (light black surface soil)	Seven blue-and-white porcelain shards	3.8
E	Pui O	POT2	C1 (light black surface soil with rubbles)	Six blue-and-white porcelain shards	3.11
		POT6	C3 (greyish brown sand)	One late historical or modern black stoneware	3.12
F	Ham Tin	N/A	N/A	N/A	N/A

### 11.3.2.3 Archaeological Potential Evaluation

As there is no general acceptable predictive model to evaluate the archaeological potential in Hong Kong, reference was made based on overseas examples and past local examples, evaluation of the characteristics of landscapes of sites, archaeological sites and geological characteristic in Hong Kong and the general human settlement pattern to design for the factors for evaluation of archaeological potential. It should be noted that the factors for evaluation of archaeological potential is established for this Project only.

- Landforms: river terraces and alluvial terraces are favourable for ancient settlements;
- Superficial Sediment: deposits of alluvium or colluvium may contain archaeological remains or serve to conceal ancient landscapes which would have attracted ancient settlements;
- Gradient of ground surface: flat ground with a gradient ranging from 0 to 5 degrees are favourable for settlements; and

- Topography: valley floodplains, lower foothills and spurs in valley bottoms are favourable places for settlements.

In addition to the above natural factors, other factors as described below also contribute to the evaluation of archaeological potential:

- Records of past and present archaeological investigations: archaeological investigations conducted relevant to the CHIA Study Area would provide valid field data for evaluation of archaeological potential of a place. The presence of known archaeological remains and finds spots in or near the CHIA Study Area provide indication for the presence of archaeological remains; and
- Past and present land use: Although an area may contain favourable natural factors for ancient settlement, evidence for ancient settlements could be destroyed by subsequent landuse such as road works developments.

Based on the above factors, the CHIA Study Area had been evaluated based on the criteria for assigning levels of archaeological potential as presented in Table 11.9a.

Table 11.9a –Levels of Archaeological Potential

Levels of Archaeological Potential	Description
None	Where archaeological remains not likely exist (e.g. areas of bedrock or modern reclamation), or where identifiable land use has clearly destroyed any remains that might have existed.
Low	Where archaeological remains may once have existed, but where the survival of such remains will have been significantly affected by past and /or present landuse (e.g. in densely urbanised areas) or areas subject to erosion such as on mid or upper hill slopes, or where long-standing marsh or floodplain conditions are assumed to have migrated against past settlement.
Medium	Where topographical and geological features indicate that remains may survive, but where detailed information is lacking and, in addition, where there has been low or moderate impact from past or present landuse.
High	Where archaeological sites, finds spots, and/or standing structures are known; and/or where topographical and/or geological factors are likely to have been conducive to past settlement; and/or where historic and/or oral sources indicate settlement to be of long standing duration; and where landuse impact is low.

The AS has revealed that no archaeological potential exist in most of the proposed alignments, SPSs and STW, as no archaeological remains was found near those proposed alignments. For those test pits with findings as presented in Table 11.8 above, based on the factors for evaluation of archaeological potential and the criteria to assign for archaeological potential, their archaeological potential evaluation for proposed alignments, SPSs and STW nearby are provided in Table 11.9b below. The findings based on the alignments modified during the EIA stage are also incorporated.

Table 11.9b – Summary of Archaeological Potential Evaluation

Section	Village Location	Evaluation
A	Shui Hau	<p>Only one small porcelain shard was found in abandoned field and it dates from Qing Dynasty to Modern period. It is an isolated secondary deposits. Considering the results of the test-pitting, <b>most of the proposed works in Section A have no archaeological potential</b>. Some proposed works fall within the Tong Fuk Miu Wan Site of Archaeological Interest. SHT1 and SHT2 were conducted and revealed that boulders of the bedrock located immediately beneath the modern fill layer (See <i>Figure 3.2</i> in <i>Annex 11B</i>). However, as Late-Neolithic or Early-Bronze Age pottery, chipped stones, stone cores and stone fragments have been unearthed in past within the Tong Fuk Miu Wan Site of Archaeological Interest, the chance of discovering archaeological remains cannot be ruled out. Thus, <b>the proposed works within the Tong Fuk Miu Wan Site of Archaeological Interest have low archaeological potential</b> (see <i>Figure 11.12</i>).</p>
B	Tong Fuk	<p>TFT6 is located at water course currently running. The pottery shard identified in TFT6 is disturbed and a secondary deposit. However, some proposed works fall within the Tong Fuk Miu Wan Site of Archaeological Interest and the Tong Fuk Site of Archaeological Interest where Late-Neolithic or Early-Bronze Age and Bronze Age artefacts have been unearthed in the past excavations within these sites of archaeological interest, the chance of discovering archaeological remains cannot be ruled out. Thus, <b>some of the proposed works within the Tong Fuk Miu Wan Site of Archaeological Interest and the Tong Fuk Site of Archaeological Interest have low archaeological potential</b> (see <i>Figures 11.12</i> and <i>11.13</i>). Auger holes TFA3 to TFA7 and test pits TFT4 to TFT5 were conducted within the Tong Fuk village. The overall results of these auger holes and test pits reveal debris flow deposit on the upper part of the slope and modern fill or sewer deposit at the bottom of the slope within the Tong Fuk village. Considering the degree of disturbance of the recent land use, <b>the archaeological potential of the proposed works of Section B within the Tong Fuk village is considered to be none; while the rest of the proposed works in Section B have no archaeological potential</b> as well.</p>
C	Cheung Sha	<p>CST1, CST2 and CST3 are located along the foot of a low terrace close to the modern beach at Cheung Sha Ha Tsuen. In these three test pits, sausage-like kiln props were identified. This kind of kiln props can be dated to the Tang Dynasty. In test pit CST2, a layer of hard red sandy layer was identified at the bottom of the test pit. It is likely formed by kiln firing. Thus, it is possible that the layer is either very close to a kiln or belongs to part of a kiln structure. As the closest proposed alignment is about 12m away from test pit CST3, layer containing kiln props may not extend to where the proposed alignment locates as there is a considerable distance between them. As the extent of the kiln props is still uncertain, it is considered that the area where the <b>concerned proposed alignment is located has medium archaeological potential</b> (see <i>Figure 11.14</i> for the alignment in blue colour). Moreover, another section of <b>sewer alignment is located along the edge of raised beach</b> (i.e. area with geology as Qbs), which is area favourable for ancient human settlement and with high potential for revealing archaeological remains (see <i>Figure 11.14</i> for the alignment in brown colour). Therefore it is also considered to <b>have medium archaeological potential</b>. Moreover, as some proposed works fall within the Cheung Sha Ha Tsuen Site of Archaeological Interest where <i>in-situ</i> Tang Dynasty kiln was found in past surveys, the chance of discovering archaeological remains cannot be ruled out. Thus, some of <b>the proposed works within the Cheung Sha Ha Tsuen Site of Archaeological Interest have low archaeological potential</b> (see <i>Figure 11.14</i>). CST4 and CST5 were conducted at the proposed Cheung Fu Street Trunk Sewage Pumping Station (See <i>Figure 3.5</i> in <i>Annex 11B</i>). <b>Layer of boulders of the bedrock was reached beneath the modern fill layer, revealing no archaeological potential</b>. The rest of the proposed works in Section C have no archaeological potential as it is located along the current road which was graded during its construction.</p>

Section	Village Location	Evaluation
D	San Shek Wan	All test-pits conducted stopped at bed rock layer with no archaeological remains unearthed except SST3, where Qing Dynasty porcelain shards were only identified in surface soil. It is relatively recent and also possibly disturbed. Thus, there is <b>no archaeological potential in Section D</b> (See Figures 3.7 to 3.9 in <a href="#">Annex 11B</a> ).
E	Pui O	<p>Within the village area on upper slope, Qing Dynasty porcelain shards were identified in surface soil in POT2 (See Figure 3.11 in <a href="#">Annex 11B</a>). However, it is relatively recent and also possibly disturbed. Besides, all test pits in this area encounters huge boulders beneath the modern fill, where archaeological remains are not likely able to be preserved. Thus, there is <b>no archaeological potential in the area</b> (See Figure 3.11 in <a href="#">Annex 11B</a>).</p> <p>Along the raised beach area, all test pits stopped at the sterile layer of sandy deposits or huge boulders, only one black stoneware shard dating to the Qing dynasty or modern time was identified, which indicates a lack of archaeological potential in the surveyed area. However, some proposed works fall within the Pui O Site of Archaeological Interest, where archaeological remain dated to the Six Dynasties period the earliest in the past excavations in the raised beach area, the chance of discovering archaeological remains cannot be completely ruled out. Thus, based on the previous desktop review, <b>some of the proposed works within the Pui O Site of Archaeological Interest have low archaeological potential</b> (see <a href="#">Figure 11.15</a>); while <b>the rest of the proposed works in Section E have no archaeological potential</b> (See Figures 3.10 and 3.11 in <a href="#">Annex 11B</a> and <a href="#">Figure 11.15</a>).</p>
F	Ham Tin	All the archaeological works in this section stopped by modern fill deposits and huge boulders with no archaeological remains identified. Besides, the topography of this section has been widely modified in the recent past due to constructions of houses, roads, and drainage projects. Therefore, there is <b>no archaeological potential in Section F</b> (See Figure 3.13 in <a href="#">Annex 11B</a> ).

### Marine Archaeological Survey

Under this Project, a geophysical survey has been conducted in October to November 2010. The geophysical survey data obtained were processed by geophysicists and reviewed by a marine archaeologist. No any underwater archaeological or cultural heritage features on or below the seabed is located. Therefore, based on the desktop review and review of the geophysical survey data, no marine archaeological resources are identified in the MAI Study Area. The full *Marine Archaeological Investigation Report* is in [Annex 11A](#) of this EIA report.



## 11.4 Potential Sources of Impact

### 11.4.1 Construction Phase

The construction phase of a development may have direct or indirect impacts to heritage sites. Such impacts may arise from the following activities:

- Direct loss of potential heritage or archaeological remains due to construction works, such as land excavation and dredging;
- Direct damage to the historic buildings by close contact with the machinery and construction materials; and
- Potential vibration impact on built heritages due to construction works.

### 11.4.2 Operation Phase

The operation phase of a development may have direct or indirect impacts to heritage sites from the following activities:

- Indirect impact on access for future archaeological surveys; and
- Permanent access disturbance to built heritage if the built heritage is conserved within the developed area. Above ground structures and future access to the built heritage may be blocked due to the new structures.

## 11.5 Impact Assessment

### 11.5.1 Built Heritage Impact Assessment (BHIA)

The potential built heritage impact assessment is presented in Table 11.10 below. Any potential air, noise or landscape and visual impacts on the identified built heritage items have been assessed in Sections 7, 8 and 10 of this EIA report respectively.

Table 11.10 – BHIA for Built Heritage Features

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
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#### *Confirmed Grade 3 Historic Buildings*

PO-HB-8	Cheung Ancestral Hall (張氏祠堂)	1	<p><b>Construction Phase:</b> Potential vibration impact and damage to the historic building by close contact with the machinery is anticipated due to its close proximity to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figures 11.3 and 11.26</a>
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Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
HT-HB-4	Lin Kong Tong (蓮江堂)	1.6	<p><b>Construction Phase:</b> The structure is newly renovated and in good condition by the time it was surveyed. Potential vibration impact is anticipated due to the close distance to the proposed alignment when the works is carried out. Potential damage to the historic buildings by close contact with the machinery and construction materials is anticipated as it is close to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	Figures 11.2 and 11.27

*Proposed Grade 3 Historic Building*

SH-HB-7	No.49-50 Shui Hau	2	<p><b>Construction Phase:</b> The proposed alignment is located about 2m from the front of the structure. Potential vibration impact is anticipated. Potential damage to the historic buildings by close contact with the machinery and construction materials is anticipated.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	Figures 11.4 and 11.7
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Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
<i>Nil Grade Historic Building</i>				
TF-HB-1	Hung Shing Temple	66.9	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<p><a href="#">Figures 11.5</a> and <a href="#">11.19</a></p>
<i>Historic Built Structure</i>				
SH-HB-1	Chan Ancestral Hall (陳氏宗祠)	2.5	<p><b>Construction Phase:</b> The structure is a modern building with good condition when it was surveyed. Potential impact may be a concern due to the close distance to the proposed alignment when the work is carried out.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<p><a href="#">Figure 11.17</a></p>
SH-HB-2	No.25-26 Shui Hau	0.4	<p><b>Construction Phase:</b> Potential vibration impact and damage to the historic building by close contact with the machinery and construction materials is anticipated due to its close proximity to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<p><a href="#">Figure 11.17</a></p>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
SH-HB-3	No.35 Shui Hau	6.9	<p><b>Construction Phase:</b> Potential impact is anticipated minimal as the structure is with sufficient distance (approx. 6.9m) away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.17</a>
SH-HB-4	Earth-god Shrine	6.8	<p><b>Construction Phase:</b> Potential impact is anticipated minimal as the structure is located on a soft ground and with sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.17</a>
SH-HB-5	No.53 Shui Hau	1.5	<p><b>Construction Phase:</b> Potential vibration impact is anticipated minimal at the rear side of the structure as the proposed alignment is located on a platform which is a soft ground behind the structure. But potential vibration impact is anticipated at its front and west side. Potential damage to the historic buildings by close contact with the machinery and construction materials is also anticipated as it is close to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.17</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
SH-HB-6	No.57 Shui Hau	1.9	<p><b>Construction Phase:</b> Potential vibration impact is anticipated at the rear side of the structure; but potential vibration impact is anticipated minimal on the front side as the structure is located on a platform above the proposed alignment. Potential damage to the historic buildings by close contact with the machinery and construction materials is anticipated as it is close to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.17</a>
SH-HB-8	No.46 Shui Hau	2	<p><b>Construction Phase:</b> Potential vibration impact is anticipated minimal on the rear side as the structure is located on a platform above the proposed alignment. Potential damage to the historic buildings by close contact with the machinery and construction materials is anticipated as it is close to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.17</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
SH-HB-9	No.52 Shui Hau	1.5	<p><b>Construction Phase:</b> Potential vibration impact is anticipated at the front side of the structure; but potential vibration impact is anticipated minimal on the rear side as the structure is located on a platform above the proposed alignment. Potential damage to the historic buildings by close contact with the machinery and construction materials is anticipated as it is close to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.17</a>
SH-HB-10	Ancestral Hall	8.7	<p><b>Construction Phase:</b> Potential impact is anticipated minimal as the structure is in good condition without structural crack and also with sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.17</a>
SH-HB-11	Earth-god Shrine	19.6	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to its location (below the slope with a soft ground) and the large separation distance.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.17</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
TF-HB-2	Earth-god Shrine	5.7	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment. The proposed alignment is located on a platform behind the structure.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.20</a>
TF-HB-3	Kwan Ti Temple	5	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment. The proposed alignment is located on a platform behind the structure.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.20</a>
TF-HB-4	Earth-god Shrine	1	<p><b>Construction Phase:</b> Potential vibration impact and damage of the historic building by close contact to the machinery and construction materials is anticipated due to its close proximity to the proposed alignment</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure.</p>	<a href="#">Figure 11.20</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
TF-HB-5	Earth-god Shrine	5	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.20</a>
CS-HB-1	Earth-god Shrine	2.8	<p><b>Construction Phase:</b> Potential impact is anticipated minimal as the structure is located on a platform above the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.21</a>
CS-HB-2	Earth-god Shrines	1.9	<p><b>Construction Phase:</b> Potential vibration impact is anticipated minimal as the structure is located on soft ground which vibrations could be absorbed and with sufficient distance away from the proposed alignment. However, potential damage to the historic buildings by close contact with the machinery and construction materials is anticipated as it is close to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.21</a>



Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
CS-HB-3	Earth-god Shrine	1.9	<p><b>Construction Phase:</b> Potential vibration impact is anticipated minimal as the structure is a solid stone on a platform building on soft ground, and thus with sufficient distance away from the proposed alignment. However, potential damage to the historic buildings by close contact with the machinery and construction materials is anticipated as it is close to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.22</a>
CS-HB-4	Earth-god Shrine	12.4	<p><b>Construction Phase:</b> Potential impact is anticipated minimal as the structure is located on soft ground and with sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.22</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
SSW-HB-1	Mo Ancestral Hall (毛氏祖祠)	1.3	<p><b>Construction Phase:</b> The structure is a modern building with good condition by the time it was surveyed. Potential impact may be a concern due to the close distance to the proposed alignment when the works is carried out.. Besides, potential damage to the historic buildings by close contact with the machinery and construction materials is anticipated as it is close to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.23</a>
SSW-HB-2	Earth-god Shrine	23.7	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.23</a>
PO-HB-1	Earth-god Shrine	5	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.26</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
PO-HB-2	Well with Shrine	16.4	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.26</a>
PO-HB-3	Wan Ancestral Hall (溫氏宗祠)	4.8	<p><b>Construction Phase:</b> Potential impact is anticipated minimal as the structure is a new construction and with sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.26</a>
PO-HB-4	Earth-god Shrine	1.5	<p><b>Construction Phase:</b> Potential vibration impact and damage to the historic building by in contact to the machinery and construction materials are anticipated due to its close proximity to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.26</a>
PO-HB-5	Stone Wall	0.5	<p><b>Construction and Operation Phase:</b> Potential vibration impact and damage to the historic building by in contact to the machinery and construction materials are anticipated due to its close proximity to the proposed alignment.</p>	<a href="#">Figure 11.26</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
PO-HB-6	Earth-god Shrine	11.7	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.26</a>
PO-HB-7	Wan Ancestral Hall (溫氏宗祠)	1.9	<p><b>Construction Phase:</b> Potential vibration impact is anticipated minimal as the structure is located on a platform constructed by rock. Potential damage to the historic buildings by close contact with the machinery and construction materials is also anticipated as it is close to the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.26</a>
PO-HB-9	Earth-god Shrine	3.7	<p><b>Construction Phase:</b> Potential vibration impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.26</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
PO-HB-10	Ho Ancestral Hall (何氏公祠)	22.6	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.25</a>
PO-HB-11	Earth-god Shrine	25.9	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.25</a>
PO-HB-12	Kwan Kong Temple (關公祠)	25.6	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.25</a>
PO-HB-13	Law Ancestral Hall (羅氏宗祠)	14.8	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.25</a>

<b>Features Code</b>	<b>Site Name</b>	<b>Approximate Distance from the proposed alignment (m)</b>	<b>Construction Phase and Operation Phase Impact Assessment</b>	<b>Figure No</b>
HT-HB-1	Earth-god Shrine	25.2	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.27</a>
HT-HB-2	Wing On Bridge	7.5	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.27</a>
HT-HB-3	Earth-god Shrine	12	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.27</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
HT-HB-5	Cheung Study Hall (張氏家塾) and Si Tak Tong (四德堂)	1.6	<p><b>Construction Phase:</b> The structure is in good condition when it was surveyed. Potential impact is anticipated due to the close distance to the proposed alignment when the works is carried out. Besides, potential damage to the historic building by close contact to the machinery and construction materials is anticipated</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.27</a>
HT-HB-6	Well with Shrine	9.8	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.28</a>
HT-HB-7	Earth-god Shrine	11.3	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.28</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
<i>Historic Graves</i>				
SH-HG-1	Ho Clan Grave	9.9	<p><b>Construction Phase:</b> Potential impact is anticipated minimal as the structure is on a slope above and with sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.17</a>
SH-HG-2	Chan Clan Grave	89.5	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure11.17</a>
SH-HG-3	Cheung Clan Grave	2.4	<p><b>Construction Phase:</b> Potential impact is anticipated minimal as the structure is separated by soft ground from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.18</a>
TF-HG-1	Chau Clan Grave	42.2	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.19</a>



Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
CS-HG-1	Cheung Clan Grave	18 (to the rising main) 20 (to the pumping station) 50 (to the proposed sewer)	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment and pumping station.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.22</a>
SSW-HG-1	Grave with unknown owner	23.7	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.23</a>
SSW-HG-2	Mo Clan Grave	94.8	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.23</a>
SSW-HG-3	Cheung Clan Grave	78.2	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.24</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Construction Phase and Operation Phase Impact Assessment	Figure No
PO-HG-1	Cheung and Ho Grave	47.6	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.25</a>
HT-HG-1	Cheung and Wan Clan Grave	7.7	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.27</a>
HT-HG-2	Grave with unknown owner	42.3	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.27</a>
HT-HG-3	Cheung Clan Grave	6.4	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to sufficient distance away from the proposed alignment.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.28</a>

<b>Features Code</b>	<b>Site Name</b>	<b>Approximate Distance from the proposed alignment (m)</b>	<b>Construction Phase and Operation Phase Impact Assessment</b>	<b>Figure No</b>
HT-HG-4	Ho Clan Grave	63.1	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.28</a>
HT-HG-5	Ho Clan Grave	65.5	<p><b>Construction Phase:</b> Potential impact is anticipated minimal due to large separation from the proposed alignments.</p> <p><b>Operation Phase:</b> Potential impact is anticipated minimal as the proposed alignment is an underground structure and there is no new (above ground) structure to be built.</p>	<a href="#">Figure 11.28</a>
Historic Landscape Features				
TF-HL-1	Fung Shui Forest	0	<p><b>Construction and Operation Phase:</b> Direct impact is anticipated as the proposed alignment will cross through the forest</p>	<a href="#">Figure 11.20</a>

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### 11.5.2 Archaeological Impact Assessment (AIA)

Two sections of the proposed sewer alignment in Cheung Sha Beach within the boundary of Cheung Sha Ha Tsuen Site of Archaeological Interest in Section C have been evaluated to have medium archaeological potential (see [Figure 11.14](#) for the sewer alignment in blue and brown colour). As the proposed sewerage works for this proposed alignment requires excavation to about 1.5m to 2.5m below ground level, potential direct impact on archaeological deposit that may survive in this Site of Archaeological Interest is anticipated and mitigation measures are proposed in Section 11.6.2.

Nevertheless, the concerned proposed alignment is located approximately 12m away from the kiln related remains identified in CST1 to CST3. As the extent of the kiln props is still uncertain, potential direct impact is still possible on the archaeological remains. The potential impact is considered acceptable with mitigation measures proposed in Section 11.6.2.

Some works area as presented in [Figures 11.12](#), [11.13](#), [11.14](#) and [11.15](#) have been evaluated to have low archaeological potential. As archaeological field survey has revealed that only very few isolated/disturbed artefacts were identified, the chance of direct impact on those relatively less significant archaeological remains is very low. Therefore, the potential impact is considered acceptable with mitigation measures proposed in Section 11.6.2.

For the rest of the proposed alignments, SPSs and STW, no adverse impact is anticipated as no archaeological potential is identified.

### 11.5.3 Marine Archaeological Impact Assessment (MAI)

As no marine archaeological resources are identified in the marine works area, no unacceptable impact on any marine archaeological resources is anticipated.

## 11.6 Mitigation Measures

Based on the currently available information for the cultural heritage impact assessment as presented above, the following mitigation measures during construction stage are recommended. No mitigation measure during operation stage is recommended.

### 11.6.1 Built Heritage Mitigation Measure

#### 1. Refinement of Alignment

For historic landscape feature TF-HL-1, direct impact is anticipated as they are located on the proposed alignment. It is recommended to refine the proposed alignment to avoid the direct impact to these items in the detailed design stage of this Project.

#### 2. Baseline Condition Survey and Baseline Vibration Impact Assessment

For Grade 3 Historic Buildings HT-HB-4 and PO-HB-8; and Proposed Grade 3 Historic Building SH-HB-7; historic buildings SH-HB-1, SH-HB-2, SH-HB-5, TF-HB-4, CS-HB-1, CS-HB-2, CS-HB-3, PO-HB-4, PO-HB-5, PO-HB-7, HT-HB-5, SSW-HB-1, SH-HB-6, SH-HB-8, SH-HB-9 and SH-HG-3, as they are located in close proximity to the proposed alignment, potential construction vibration impact is anticipated. Therefore, it is recommended that prior to commencement of the construction works, a baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor and a qualified structural engineer to define the vibration limit and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase to ensure the construction performance meets with the vibration and settlement monitoring criteria to be agreed with AMO. A maximum level of 5mm/s for Grade 1, 7.5 mm/s for Grade 2 and 3 Historic Building and 15mm/s for Nil Grade heritage structures should be adopted. For settlement limits, an Alert/ Alarm/ Action level of 6mm/ 8mm/ 10mm should be followed.. Only baseline condition survey and baseline vibration impact assessment of the graded and proposed graded buildings should be submitted to the AMO for comment before the commencement of construction works..

3. No Mitigation Measures

Except the abovementioned sites, the remaining built heritage sites are located at large separation distance from the proposed Project. Therefore, direct and indirect impacts on these heritage sites during the construction and operation phases of the Project are not anticipated, and no mitigation measures are considered necessary.

4. Provision of Proper Protection Measures

Safe public access, buffer zones and protective covering should be provided to the built heritage during and after the proposed works. If construction works will be conducted within 1m from the walls/structures of the built heritage, proper protection measure such as fencing and cover-up of nylon/ plastic sheets for the walls/structures of the built heritage shall be carried out.

Table 11.11 below summarises mitigation measures recommended for each feature.

Table 11.11 – BHIA for Built Heritage Features

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Mitigation Measures	Figure No.
			1. Refinement of alignment 2. Baseline condition survey and baseline vibration impact assessment 3. No measures required 4. Provision of Proper Protection Measures	
<b>Grade 3 Historic Buildings</b>				
PO-HB-8	Cheung Ancestral Hall (張氏祠堂)	1	2, 4	<a href="#">Figures 11.3</a> and <a href="#">11.26</a>
HT-HB-4	Lin Kong Tong (蓮江堂)	1.6	2, 4	<a href="#">Figures 11.2</a> and <a href="#">11.27</a>
<b>Proposed Grade 3 Historic Building</b>				
SH-HB-7	No.49-50 Shui Hau	2	2, 4	<a href="#">Figures 11.4</a> and <a href="#">11.7</a>
<b>Nil Grade Historic Building</b>				
TF-HB-1	Hung Shing Temple	66.9	3	<a href="#">Figures 11.5</a> and <a href="#">11.19</a>
<b>Historic Built Structure</b>				
SH-HB-1	Chan Ancestral Hall (陳氏宗祠)	2.5	2, 4	<a href="#">Figure 11.17</a>
SH-HB-2	No.25-26 Shui Hau	0.4	2, 4	<a href="#">Figure 11.17</a>
SH-HB-3	No.35 Shui Hau	6.9	3	<a href="#">Figure 11.17</a>
SH-HB-4	Earth-god Shrine	6.8	3	<a href="#">Figure 11.17</a>
SH-HB-5	No.53 Shui Hau	1.5	2, 4	<a href="#">Figure 11.17</a>
SH-HB-6	No.57 Shui Hau	1.9	2, 4	<a href="#">Figure 11.17</a>
SH-HB-8	No.46 Shui Hau	2	2, 4	<a href="#">Figure 11.17</a>
SH-HB-9	No.52 Shui Hau	1.5	2, 4	<a href="#">Figure 11.17</a>
SH-HB-10	Ancestral Hall	8.7	3	<a href="#">Figure 11.17</a>
SH-HB-11	Earth-god Shrine	19.6	3	<a href="#">Figure 11.17</a>
TF-HB-2	Earth-god Shrine	5.7	3	<a href="#">Figure 11.20</a>
TF-HB-3	Kwan Ti Temple	5	3	<a href="#">Figure 11.20</a>
TF-HB-4	Earth-god Shrine	1	2, 4	<a href="#">Figure 11.20</a>
TF-HB-5	Earth-god Shrine	5	3	<a href="#">Figure 11.20</a>
CS-HB-1	Earth-god Shrine	2.8	2, 4	<a href="#">Figure 11.21</a>
CS-HB-2	Earth-god Shrines	1.9	2, 4	<a href="#">Figure 11.21</a>
CS-HB-3	Earth-god Shrine	1.9	2, 4	<a href="#">Figure 11.22</a>
CS-HB-4	Earth-god Shrine	12.4	3	<a href="#">Figure 11.22</a>
SSW-HB-1	Mo Ancestral Hall (毛氏祖祠)	1.3	2, 4	<a href="#">Figure 11.23</a>
SSW-HB-2	Earth-god Shrine	23.7	3	<a href="#">Figure 11.23</a>
PO-HB-1	Earth-god Shrine	5	3	<a href="#">Figure 11.26</a>
PO-HB-2	Well with Shrine	16.4	3	<a href="#">Figure 11.26</a>
PO-HB-3	Wan Ancestral Hall (溫氏宗祠)	4.8	3	<a href="#">Figure 11.26</a>
PO-HB-4	Earth-god Shrine	1.5	2, 4	<a href="#">Figure 11.26</a>
PO-HB-5	Stone Wall	0.5	2, 4	<a href="#">Figure 11.26</a>
PO-HB-6	Earth-god Shrine	11.7	3	<a href="#">Figure 11.26</a>

Features Code	Site Name	Approximate Distance from the proposed alignment (m)	Mitigation Measures	Figure No.
			1. Refinement of alignment 2. Baseline condition survey and baseline vibration impact assessment 3. No measures required 4. Provision of Proper Protection Measures	
PO-HB-7	Wan Ancestral Hall (溫氏宗祠)	1.9	2, 4	<a href="#">Figure 11.26</a>
PO-HB-9	Earth-god Shrine	3.7	3	<a href="#">Figure 11.26</a>
PO-HB-10	Ho Ancestral Hall (何氏公祠)	22.6	3	<a href="#">Figure 11.25</a>
PO-HB-11	Earth-god Shrine	25.9	3	<a href="#">Figure 11.25</a>
PO-HB-12	Kwan Kong Temple (關公祠)	25.6	3	<a href="#">Figure 11.25</a>
PO-HB-13	Law Ancestral Hall (羅氏宗祠)	14.8	3	<a href="#">Figure 11.25</a>
HT-HB-1	Earth-god Shrine	25.2	3	<a href="#">Figure 11.27</a>
HT-HB-2	Wing On Bridge	7.5	3	<a href="#">Figure 11.27</a>
HT-HB-3	Earth-god Shrine	12	3	<a href="#">Figure 11.27</a>
HT-HB-5	Cheung Study Hall (張氏家塾) and Si Tak Tong (四德堂)	1.6	2, 4	<a href="#">Figure 11.27</a>
HT-HB-6	Well with Shrine	9.8	3	<a href="#">Figure 11.28</a>
HT-HB-7	Earth-god Shrine	11.3	3	<a href="#">Figure 11.28</a>
<b>Historic Graves</b>				
SH-HG-1	Ho Clan Grave	9.9	3	<a href="#">Figure 11.17</a>
SH-HG-2	Chan Clan Grave	89.5	3	<a href="#">Figure 11.17</a>
SH-HG-3	Cheung Clan Grave	2.4	2, 4	<a href="#">Figure 11.18</a>
TF-HG-1	Chau Clan Grave	42.2	3	<a href="#">Figure 11.19</a>
CS-HG-1	Cheung Clan Grave	18 (to the rising main) 20 (to the pumping station) 50 (to the proposed sewer)	3	<a href="#">Figure 11.22</a>
SSW-HG-1	Grave with unknown owner	23.7	3	<a href="#">Figure 11.23</a>
SSW-HG-2	Mo Clan Grave	94.8	3	<a href="#">Figure 11.23</a>
SSW-HG-3	Cheung Clan Grave	78.2	3	<a href="#">Figure 11.24</a>
PO-HG-1	Cheung and Ho Grave	47.6	3	<a href="#">Figure 11.25</a>
HT-HG-1	Cheung and Wan Clan Grave	7.7	3	<a href="#">Figure 11.27</a>
HT-HG-2	Grave with unknown owner	42.3	3	<a href="#">Figure 11.27</a>
HT-HG-3	Cheung Clan Grave	6.4	3	<a href="#">Figure 11.28</a>
HT-HG-4	Ho Clan Grave	63.1	3	<a href="#">Figure 11.28</a>
HT-HG-5	Ho Clan Grave	65.5	3	<a href="#">Figure 11.28</a>
<b>Historic Landscape Features</b>				
TF-HL-1	Fung Shui Forest	0	1	<a href="#">Figure 11.20</a>

During the construction period, it is recommended that no mechanical equipments, such as excavator, shall be operated within 20m from the boundary of the above-mentioned built heritage features that may be potentially impacted. Only handheld tools and handheld electric driven equipments shall be used for the works in the 20m from these features. All construction tools, construction materials, excavated materials or any materials generated from the works under this Project shall keep clear of these built heritage features.



## 11.6.2 Archaeological Mitigation Measure

First of all, in pursuant to the *Antiquities and Monuments Ordinance*, the project proponent will inform the AMO immediately in case of discovery of antiquities or supposed antiquities in the course of soil excavation works in construction stage in the proposed works area including the areas of proposed works with no or low archaeological potential.

### Communication Plan

A Communication Plan will be prepared before the commencement of construction works to communicate event of discovery of antiquities or supposed antiquities to the AMO. The plan shall include specific contact person at each level and their contact numbers. The plan shall be prepared by the contractor and approved by the engineer, and circulated among the relevant parties to solicit their comments prior to the approval. A document presenting the Communication Plan will be posted in site office(s) for reference. In the event of discovery of antiquities or supposed antiquities, the AMO shall be informed immediately for site inspection and agreement on the follow up action if required. The contractor shall arrange necessary measures as agreed with the AMO to protect and secure the discovered object(s) and also the location of discovery, which may include temporary suspension of works, under the instruction of the engineer if necessary and appropriate for protection/ further investigation on the discovered object(s).

### Proposed Works within Sites of Archaeological Interest

All site staff, including workers, who will be responsible for the excavation works within Sites of Archaeological Interest, will be formally briefed with the Communication Plan to make sure that they are fully comprehend with the procedures of discovering remain(s) within Sites of Archaeological Interest.

### Survey-cum-Rescue Excavation for Medium Archaeological Potential Area

Since potential impact on the medium archaeological potential area where the proposed alignment will be located in the Cheung Sha Beach within the boundary of Cheung Sha Ha Tsuen Site of Archaeological Interest in Section C and realignment of proposed sewer has been considered where possible and the current alignment represents the preferred option, it is recommended that a survey-sum-excavation be conducted at the concerned areas as shown in [Figure 11.14](#) for the proposed sewer alignments in blue and brown colour before the commencement of the excavation work of the proposed alignment to define the precise archaeological deposits extent and to preserve the archaeological resources as far as possible. Further test pits will be carried out as appropriate for a survey to refine the demarcation of archaeological deposit area for the excavation. The scope and work programme of the survey-cum-rescue excavation will be agreed with AMO prior to commencement. The Survey-cum-Rescue Excavation will be conducted by a qualified archaeologist and shall include, but not limited to the following tasks:

- Prepare a Survey-Cum-Rescue Excavation Proposal to define the scope of work and agree it with the AMO;

- Obtain a *License to Excavate and Search for Antiquities* from the Authority under the *AM Ordinance (Cap. 53)* by the qualified Archaeologist for the required fieldworks of the archaeological works;
- Conduct Survey-Cum-Rescue Excavation before the commencement of the excavation work of the concerned sewer alignment by a qualified archaeologist;
- Conduct proper recording in accordance with normal archaeological practice;
- Collect and process identified finds according to the AMO's *Guidelines for Handling of Archaeological Finds and Archives (As at 28 November 2011)*; and
- Prepare a Survey-Cum-Rescue Excavation Report upon completion of the archaeological works in accordance with the AMO's *Guidelines for Archaeological Reports (As at April 2011)*.

#### In Case of Change in Project Boundary

However, it should be noted that the archaeological impact assessment covered only the study area as shown in [Figure 11.1](#). If the project boundary changes in later stage of the Project to cover additional area not covered in the EIA, the need for further archaeological survey and subsequent impact assessment should be reviewed and AMO should be consulted.

#### 11.6.3 Marine Archaeology Mitigation Measure

As no marine archaeological resource is identified, no impact is anticipated and therefore no mitigation measure is considered necessary.

### 11.7 Residual Impacts

With the implementation of the mitigation measures as recommended above, no residual construction and operation impacts on cultural heritage resources is anticipated.

### 11.8 Environmental Monitoring & Audit

#### 11.8.1 Built Heritage

Refinement of the proposed alignment adjacent to historic landscape feature TF-HL-1 is recommended to avoid the direct impact.

For the remaining built heritage potentially impacted, as mentioned in Section 11.6.1, prior to commencement of the construction works, a baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor and a qualified structural engineer to define the vibration limit and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase to ensure the construction performance will meet with the vibration criteria (PNAP APP 137). Only baseline condition survey and baseline vibration impact assessment of the graded and proposed graded

buildings should be submitted to the AMO for comment before the commencement of construction works.

During the construction period, no mechanical equipments, such as excavator, shall be operated within 20m from the identified built heritage and only handheld tools and handheld electric driven equipments shall be used. All construction tools, construction materials, excavated materials or any materials generated from the works under this project shall keep clear of the built heritage structures.

Safe public access, buffer zones and protective covering should be provided to the built heritage during and after the proposed works. If construction works will be conducted within 1m from the walls/structures, of the built heritage, proper protection measure such as fencing and cover-up of nylon/ plastic sheets for the walls/structures of the built heritage shall be carried out.

#### 11.8.2 Archaeological Resources

A Communication Plan to communicate event of discovery of antiquities or supposed antiquities to the AMO will be prepared by the contractor before the commencement of construction works. The plan shall be approved by the engineer, and circulated among the relevant parties prior to approval. A document presenting the plan should be posted in site office(s) for reference.

All site staff, including workers, who will be responsible for the excavation works within the Sites of Archaeological Interest will be formally briefed with the Communication Plan to make sure that they are fully comprehended the procedures of discovering remain(s) within Sites of Archaeological Interest.

A Survey-cum-Rescue Excavation shall be conducted at the concerned area along the proposed sewer alignment with medium archaeological potential as shown in [Figure 11.14](#) for the sewer alignment in blue and brown colour before the commencement of the excavation work of the proposed alignment to define the precise archaeological deposits extent and to preserve the archaeological resources as far as possible. Further test pits will be carried out as appropriate for a survey to refine the demarcation of archaeological deposit area for the excavation. The scope and work programme of the survey-cum-rescue excavation will be agreed with AMO prior to commencement. The Survey-cum-Rescue Excavation will be conducted by a qualified archaeologist and shall include, but not limited to the following tasks:

- Prepare a Survey-cum-Rescue Excavation Proposal to define the scope of work and agree it with the AMO;
- Obtain a *License to Excavate and Search for Antiquities* from the Authority under the *AM Ordinance by the qualified Archaeologist* for the required fieldworks of the archaeological works;
- Conduct Survey-cum-Rescue Excavation before the commencement of the excavation work of the concerned sewer alignment by a qualified archaeologist;
- Conduct proper recording in accordance with normal archaeological practice;

- Collect and process identified finds according to the AMO's *Guidelines for Handling of Archaeological Finds and Archives (As at 28 November 2011)*; and
- Prepare a Survey-cum-Rescue Excavation Report upon completion of the archaeological works in accordance with the AMO's *Guidelines for Archaeological Reports (As at April 2011)*.

## **11.9 Conclusions**

This Section of the EIA has identified the cultural heritage resources within the CHIA and MAI Study Areas, evaluated the potential cultural heritage impacts associated with the construction and operation of the proposed Project in South Lantau. The purpose of the assessment is to evaluate the acceptability of predicted impacts to potential sites of cultural heritage.

A desktop review supplemented by field surveys identified two Grade 3 and one proposed Grade 3 historic building, one nil grade historic building, 38 historic built structures, 14 historic graves and one historic landscape feature, four sites of archaeological interest, in which Cheung Sha is area of medium to low archaeological potential and Shui Hau, Tong Fuk, Pui O are of low archaeological potential areas within the proposed Project Site.

Potential impact to a total of 20 built heritage features (comprising historic landscape feature TF-HL-1; Grade 3 Historic Buildings HT-HB-4 and PO-HB-8; Proposed Grade 3 Historic Building SH-HB-7; historic buildings SH-HB-1, SH-HB-2, SH-HB-5, TF-HB-4, CS-HB-1, CS-HB-2, CS-HB-3, PO-HB-4, PO-HB-5, PO-HB-7, HT-HB-5, SSW-HB-1, SH-HB-6, SH-HB-8, SH-HB-9 and SH-HG-3) have been identified during construction stage of the Project and appropriate mitigation measures have been recommended for the concerned built heritage features to avoid and minimise the impact. These mitigation measures include refinement of proposed alignment, baseline condition survey and baseline vibration impact assessment to be conducted by a qualified building surveyor and a qualified structural engineer prior to construction commencement, control of mechanical equipments operation, and adoption of handheld tools within 20m from concerned built heritage features and adoption of proper protection measures for works close to concerned built heritage features.

Potential archaeological impact has been identified at an area with medium archaeological potential and four areas with low archaeological potential. Appropriate mitigation measures such as a Communication Plan, proper site staff briefing and survey-cum-rescue excavation have been recommended to mitigate the impacts.

With the implementation of the recommended mitigation measures, it is anticipated that there will be no construction and operational residual impacts and the adverse cultural heritage impacts is anticipated to be in acceptable level.