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## 12. IMPACT ON CULTURAL HERITAGE

### 12.1 Introduction

12.1.1.1 This section presents the cultural heritage impact assessment (CHIA) for the construction and operation of the Project. The CHIA, which covers Built Heritage Impact Assessment (BHIA) and Archaeological Impact Assessment (AIA) has been conducted in accordance with the requirements given in Clause 3.4.13 and Appendix L of the EIA Study Brief (No. ESB-340/2021).

### 12.2 Environmental Legislation, Standards and Guidelines

12.2.1.1 Legislation and standards that are relevant to the CHIA include the following:

- Environmental Impact Assessment Ordinance (EIAO) (Cap.499) and Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM)
- Guidance Note on Assessment of Impact on Sites of Cultural Heritage in Environmental Impact Assessment Studies
- Antiquities and Monuments Ordinance (A&MO) (Cap.53)
- Hong Kong Planning Standards and Guidelines (HKPSG)
- Guidelines for Cultural Heritage Impact Assessment (GCHIA)
- Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers - Ground-borne Vibrations and Ground Settlements Arising from Pile Driving and Similar Operations (PNAP APP-137)
- Guidelines for Handling of Archaeological Finds and Archives
- Guidelines for Archaeological Reports

*Environmental Impact Assessment Ordinance (EIAO) and EIAO-TM Annexes 10 and 19*

12.2.1.2 The EIAO was implemented on 1 April 1998. It aims to avoid, minimize and control the adverse impacts on the environment of designated projects, through the EIA process and the Environmental Permit (EP) system.

12.2.1.3 According to Schedule 1 of the EIAO, **Site of Cultural Heritage** refers to “an antiquity or monument, whether being a place, building, site or structure or a relic, as defined in the Antiquities and Monuments Ordinance (Cap. 53) and any place, building, site, or structure or a relic identified by the Antiquities and Monuments Office to be of archaeological, historical or palaeontological significance.”<sup>1</sup>

12.2.1.4 Annexes 10 and 19 of EIAO-TM provide the criteria and guidelines for evaluating the impacts to Sites of Cultural Heritage. It is stated in Annex 10 that all adverse impacts to Sites of Cultural Heritage shall be kept to an absolute minimum and that the general presumption of impact assessment shall be in favour of the protection and conservation of all Sites of Cultural Heritage. Annex 19 provides the guidelines for assessment of impact on Sites of Cultural Heritage, including the commonly adopted approaches and methodologies.

12.2.1.5 In the context of the EIAO-TM and the EIA Study Brief, the objectives of the EIA study are, inter alia, to identify any negative impacts on the Sites of Cultural Heritage and to propose measures to mitigate these impacts.

*Guidance Note on Assessment of Impact on Sites of Cultural Heritage in Environmental Impact Assessment Studies*

12.2.1.6 The *Guidance Note* assists the understanding of the requirements of the EIAO-TM in assessing impact on Sites of Cultural Heritage in EIA studies.

<sup>1</sup> Hong Kong e-Legislation. Cap. 499 Environmental Impact Assessment Ordinance. Retrieved from [https://www.elegislation.gov.hk/hk/cap499?xpid=ID\\_1438403274391\\_002](https://www.elegislation.gov.hk/hk/cap499?xpid=ID_1438403274391_002).

*Antiquities and Monuments Ordinance (A&MO) (Cap.53)*

- 12.2.1.7 The *Ordinance* provides the statutory framework for the preservation of objects of historical, archaeological and palaeontological interest and for matters ancillary thereto or connected therewith. The *Ordinance* contains the statutory procedures for the Declaration of Monuments. Under the *Ordinance*, a “monument” means a place, building, site or structure which is declared to be a monument, historical building or archaeological or paleontological site or structure under Section 3 of the Ordinance.

*Hong Kong Planning Standards and Guidelines (HKPSG)*

- 12.2.1.8 Chapter 10 of *HKPSG* covers planning considerations relevant to conservation. It also details the principles of conservation, the conservation of natural landscape and habitats, declared monuments, historic buildings, sites of archaeological interest and other heritage items, and addresses the issue of enforcement. The appendices list the legislation and administrative controls for conservation, other conservation related measures in Hong Kong, and Government departments involved in conservation.

*Guidelines for Cultural Heritage Impact Assessment (GCHIA)*

- 12.2.1.9 The document outlines the technical requirements for conducting terrestrial built heritage and archaeological impact assessments. A comprehensive CHIA comprises of a baseline study including both desk-top research and field evaluation, an impact assessment associated with appropriate mitigation measures. The evaluation of impacts based upon five levels of significance, including beneficial impact, acceptable impact, acceptable impact with mitigation measures, unacceptable impact and undetermined impact.

*Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers - Ground-borne Vibrations and Ground Settlements Arising from Pile Driving and Similar Operations (PNAP APP-137)*

- 12.2.1.10 This practice note provides guidelines on the control of ground-borne vibrations and ground settlements generated from pile driving or similar operations with a view to minimising possible damage to adjacent properties and streets.

*Guidelines for Handling of Archaeological Finds and Archives*

- 12.2.1.11 The document details the technical requirements for handling archaeological finds and archives of the archaeological fieldworks to fulfil the conditions of a *Licence to Excavate and Search for Antiquities*. The archaeological finds and archives shall be sorted, managed and hand overed to AMO according to the guidelines when the post-excavation research and excavation report have been completed and accepted by AMO.

*Guidelines for Archaeological Reports*

- 12.2.1.12 The document outlines the general requirements and guidelines in the writing, formatting, and submission of the archaeological reports to fulfil the conditions of a *Licence to Excavate and Search for Antiquities*.

## **12.3 Assessment Methodology**

- 12.3.1.1 Following the requirement in Clause 3.4.13.2 of the EIA Study Brief, the CHIA consists of a BHIA and an AIA. The BHIA is to identify known and unknown built heritage items within or near the Project area, while the AIA is to assess the possible impact on any archaeological resources fall within the Project area. The assessment methodology for BHIA and AIA are described below.

- 12.3.1.2 The assessment area of the CHIA covers all area within 500m from the site boundary of the Project as illustrated in **Figure 12.1**. According to paragraph 2.2 of Annex 19 to the

EIAO-TM, a baseline study, which serves as the basis of CHIA, has two purposes: (1) to compile a comprehensive inventory of places, buildings, sites and structures of architectural and historical value within the proposed Project area; and (2) 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.

- 12.3.1.3 Through the baseline study, Sites of Cultural Heritage, if any, are identified and assessed against the relevant criteria in Annex 10 to the EIAO-TM. In addition, other heritage resources are also identified for a thorough stocktaking and understanding on the resulting impact assessment. This is to give a comprehensive account on the heritage resources in the vicinity of the proposed development area.

#### *Built Heritage*

- 12.3.1.4 A desktop review has been conducted to identify any built heritage based on examination on the following resources:

- List of proposed and declared monuments<sup>2</sup>;
- List of the 1,444 historic buildings<sup>3</sup> and list of new items for grading assessment<sup>4</sup> by the AAB;
- Government historic sites identified by the AMO<sup>5</sup>;
- Previous related EIA studies, publications and monographs on relevant historical and geographical issues;
- Unpublished archival papers and records, and collection and libraries of tertiary institutions; and
- Geological and historical maps, aerial photos and relevant visual archives.

- 12.3.1.5 Site visits has been conducted in the assessment area on 7 December to 10 December 2021, 20 January 2022, 27 June 2022, 14 September 2022 and 23 September 2022 to evaluate the current condition of the built heritage and identify any additional items that have not been covered by the desktop review. The results are presented in **Section 12.5**.

- 12.3.1.6 The potential direct and indirect impacts on the built heritage and other identified items during the construction and operation phases of the Project have been assessed in the CHIA by following the procedures and requirements of GCHIA and Annexes 10 and 19 of the EIAO-TM.

- 12.3.1.7 Mitigation measures are proposed in the CHIA for all affected built heritage and other identified items to minimize any adverse impacts when necessary.

#### *Archaeology*

- 12.3.1.8 A desktop review has been conducted to identify any potential existence of archaeological resources based on examination on the following resources:

- List of sites of archaeological interest<sup>6</sup> identified by the AMO;
- Previous related EIA studies and archaeological reports;
- Related publications and monographs on relevant archaeological, historical and geographical issues;
- Unpublished archival papers and records, and collection and libraries of tertiary institutions; and

<sup>2</sup> Antiquities and Monuments Office. *Declared Monuments in Hong Kong (as at 20 May 2022)*. Retrieved from [https://www.amo.gov.hk/filemanager/amo/common/form/DM\\_Mon\\_List\\_e.pdf](https://www.amo.gov.hk/filemanager/amo/common/form/DM_Mon_List_e.pdf).

<sup>3</sup> Antiquities Advisory Board. *List of the 1,444 Historic Buildings with Assessment Results (as of 16 August 2023)*. Retrieved from [https://www.aab.gov.hk/filemanager/aab/en/content\\_29/AAB-SM-chi.pdf](https://www.aab.gov.hk/filemanager/aab/en/content_29/AAB-SM-chi.pdf).

<sup>4</sup> Antiquities Advisory Board. *List of New Items for Grading Assessment with Assessment Results (as of 7 September 2023)*. Retrieved from [https://www.aab.gov.hk/filemanager/aab/en/content\\_29/list\\_new\\_items\\_assessed.pdf](https://www.aab.gov.hk/filemanager/aab/en/content_29/list_new_items_assessed.pdf).

<sup>5</sup> Antiquities and Monuments Office. *Government Historic Sites Identified by AMO (as at May 2022)*. Retrieved from [https://www.amo.gov.hk/filemanager/amo/common/form/build\\_hia\\_government\\_historic\\_sites.pdf](https://www.amo.gov.hk/filemanager/amo/common/form/build_hia_government_historic_sites.pdf).

<sup>6</sup> Antiquities and Monuments Office. *List of Sites of Archaeological Interest in Hong Kong (as at Nov 2012)*. Retrieved from [https://www.amo.gov.hk/filemanager/amo/common/form/list\\_archaeolog\\_site\\_eng.pdf](https://www.amo.gov.hk/filemanager/amo/common/form/list_archaeolog_site_eng.pdf).

- Geological and historical maps, aerial photos and relevant visual archives.

- 12.3.1.9 An Archaeological Action Plan (AAP) was prepared and submitted in August 2022 in accordance with the *Guidelines for Handling of Archaeological Finds and Archives* and *Guidelines for Archaeological Reports* established by the Antiquities and Monuments Office (AMO) for the application of the *Licence to Excavate and Search for Antiquities* (the Licence) to cover the field survey works for the AIA. The AAP outlined the background, objectives, scope, and methodology, as well as the programme and staffing arrangement of the AIA under this application.
- 12.3.1.10 The Licence (No. 471) was issued on 2 November 2022 by the Antiquities Authority. The fieldworks were commenced on 16 November 2022 and completed on 7 December 2022. The findings from the fieldworks under Licence No. 471 are presented in **Section 12.6.2**.
- 12.3.1.11 The potential impacts that may affect the possible archaeological resources during the construction and operation phases of the Project have been assessed in the CHIA by following the procedures and requirements of GCHIA and Annexes 10 and 19 of the EIAO-TM.
- 12.3.1.12 In case adverse impacts on archaeological resources cannot be avoided, appropriate mitigation measures would be designed and recommended in this CHIA to minimize the impacts.

## 12.4 Background of the Assessment Area

### 12.4.1 Geographical and Geological Background

#### *Physical Geography*

- 12.4.1.1 The Project (**Figure 12.1**) is situated at San Tin (新田) near Lok Ma Chau (落馬洲). It is on the southern coast of the Shenzhen River (深圳河), bounded the hilly landscape of Ki Lun Shan (麒麟山) to the east, Ngau Tam Shan (牛潭山) to the south and large area of fishponds to the west. The terrestrial elevation within the Project boundary is generally ranged between +3mPD to +40mPD, while the small hills at the southwest and southeast of the Project are at approximately +60mPD and +80mPD respectively.
- 12.4.1.2 The Project comprises of river valleys, with aspects roughly faces northwest. Gradients of land within in the Project boundary is roughly between <math><1^\circ</math> to

#### *Past Landscape*

- 12.4.1.3 Past landscape before modern development can be revealed from the geology. The superficial geology of the Project (**Figure 12.2**)<sup>7</sup> is comprised of river valleys and coastal landscape. River valleys are found to the south of the San Tin Highway within the Project boundary, while the coastal landscape was once located near the San Sham Road Junction to the north of the Project.
- 12.4.1.4 River valleys were formed on Jurassic volcanic bedrock (JTM), forming the small hill in the region. Debris flow deposits (Qpd) was formed during the Pleistocene covering the JTM as slope of the small hills. River running in the region during the Pleistocene formed the second river terrace (Qpa), while the first river terrace (Qa) was formed later due to a drop in sea level at around 6,000 BP<sup>8</sup>.
- 12.4.1.5 The coastal landscape can be identified by the estuary deposits (Qam) and the offshore seabed (underwater) is reflected by the marine deposit (QHH).

<sup>7</sup> Geotechnical Control Office. (1988). *Hong Kong Geological Survey Sheet 2*. Government of Hong Kong.

<sup>8</sup> Fyfe, J. A et al. (2000). *The Quaternary Geology of Hong Kong*. Hong Kong: Civil Engineering Department.

### Human Geography

- 12.4.1.6 Traditional settlements around the Project are clustered in two particular areas, namely San Tin (the *Man* clan) and Mai Po (米埔). Both clusters are located on low-lying areas in close proximity to fishponds to the north and northwest. The *Man* clan in San Tin had branched out to Chau Tau (洲頭) and Shek Wu Wai (石湖圍). Chau Tau is located to the northeast of the main San Tin cluster, while Shek Wu Wai is located to the south of the San Tin cluster across the San Tin Highway.
- 12.4.1.7 A historical map in 1866<sup>9</sup> recorded there were village establishments in Lok Ma Chau, *Tso Tau* (“灶頭”, current Chau Tau), San Tin and Mai Po. The flat land and coastal area were mostly used as cultivation fields, while hilly areas were generally used as burial grounds.
- 12.4.1.8 Castle Peak Road was constructed between 1911 and 1920, which was one of the main roads connecting Sham Shui Po (深水埗), Tuen Mun (屯門), Yuen Long (元朗) and Sheung Shui (上水). Other than this modern road, aerial photos between 1924 and 1956 showed that there is no significant change to the settlement patterns and agricultural land use.
- 12.4.1.9 Since the 1960s, scattered houses and structures were built by the Chinese immigrants at the south of the Castle Peak Road, occupying agricultural fields rapidly<sup>10</sup>. They relied on vegetation cultivation for subsistence.
- 12.4.1.10 The industrialisation of Hong Kong and imports of low-priced food from Mainland China in the 1950s and 1960s had influenced the key economic activities in San Tin, changing from rice cultivation to vegetation cultivation<sup>11</sup>. The paddy fields to northwest of San Tin were gradually transformed into fishponds since 1960s<sup>12</sup> (**Figure 12.7**), while the hill lands owned by the *Man* clan were rented to *Chiu Chow* (潮州) immigrants who then successfully cultivated vegetables<sup>13</sup>.
- 12.4.1.11 Construction of San Tin Highway commenced in the late 1980s as part of the Route 9 (also known as New Territories Circular Road) in Hong Kong. At the same time, a strip of fishponds had been filled to construct Lok Ma Chau Control Point<sup>14</sup>. Upon the completion of the Highway and the Control Point, the agricultural landscape to the south of the San Tin Highway has been largely transformed into temporary storage and open car parks area (**Figure 12.3** and **Figure 12.8**).

### 12.4.2 Historical Background

#### *Qin to Yuan Dynasties (221 BC – AD 1368)*

- 12.4.2.1 Clues of human settlements in Hong Kong region can be found in historic textual records such as *Shiji* (史記) and *Hanshu* (漢書), both written in the first century BC to first century AD. These records describe that Yue ethnic groups (also known as *Hundreds of Yue* (百越)) were scattered in south China. The *Yue* ethnic groups were comprised of different tribes bearing various surnames and can be differentiated from the *Han* ethnic group who lived in central China in terms of physical characteristics, language, and folklore.

<sup>9</sup> Volonteri, Simeone. & Brockhaus, F. A. & Volonteri, Simeone. (1866). *Map of the San-On District, (Kwangtung Province) drawn from actual observations made by an Italian Missionary of the Propaganda in the course of his professional labors during a period of four years : being the first and only map hitherto published, May 1866 = Xin'an Xian quan tu*. Retrieved from <http://nla.gov.au/nla.obj-231220841>.

<sup>10</sup> Lands Department. (1961). *1:10000, 30000ft., F41\_625-0023 [aerial photo]*. Retrieved from HKMS2.0. <https://www.hkmapservice.gov.hk/OneStopSystem/map-search>.

<sup>11</sup> Johnson, Elizabeth. (2000). *Recording a rich heritage: research on Hong Kong's "New Territories"*. Hong Kong: Leisure & Cultural Services Department.

<sup>12</sup> Lands Department. (1963). *1:27000, 13500 ft., V81A\_857-0013R [aerial photo]*. Lands Department.

<sup>13</sup> Johnson, Elizabeth. (2000). *Recording a rich heritage: research on Hong Kong's "New Territories"*. Hong Kong: Leisure & Cultural Services Department.

<sup>14</sup> Lands Department. (1988). *1:8000, 4000ft., A13139 [aerial photo]*. Lands Department.

- 12.4.2.2 The Yue people were gradually assimilated into the Han culture when southern China became an administration territory of the central government since Qin dynasty (221-206BC). During the Qin period, the Guangdong region was subordinated to Panyu (番禺) County. In 208 BC, Southern Yue State (南越國) was established around the Guangdong region by military officials, who were sent from the Qin Court to conquer the Yue in the south. Following the collapse of Qin's political power in the north, Han dynasty (206BC-AD220)<sup>15</sup> began. Southern Yue State was soon becoming a vassal state of Han before integrated into the Han Empire.
- 12.4.2.3 Between Han and early Eastern Jin dynasties (AD317-330), Hong Kong was subordinated to Bolou (博羅) County<sup>16</sup>. Later in the Eastern Jin dynasty to Tang dynasty (AD331-AD756), Hong Kong was subordinated to Bao'an (寶安) County. After AD757, Hong Kong was subordinated to Dongguan (東莞) County and followed by Song dynasty (AD960-1279) and Yuan dynasty (AD1271-1368)<sup>17</sup>.
- 12.4.2.4 However, it is noted that currently there is no historical or archaeological evidence to support the presence of human settlement within the Project.
- Ming to Qing Dynasties (AD1368 – 1912)*
- 12.4.2.5 During the 15<sup>th</sup> century, the coastal areas of Dongguan County suffered from frequent marauding bandit and pirate attacks. Xin'an (新安) County was thus set up in AD1573 to defend such attacks. According to Xin'an Gazetteer (新安縣誌)<sup>18</sup>, the modern region of Hong Kong fell within the Xin'an County.
- 12.4.2.6 The village settlements in San Tin could be dated back to the early Ming dynasty. San Tin was once occupied by various clans such as the Puns, the Lams and the Maks<sup>19</sup>. These clans relocated to other areas after the Mans' settlement in San Tin during the Yongle reign (1403-1424) of Ming dynasty<sup>20</sup>. Little record on these clans is available.
- 12.4.2.7 In 1661, Coastal Evacuation Order was compelled by the Qing Court in order to stifle the anti-Manchu troops in Taiwan. People living in coastal area were forced to move 50 li (里) (approximately 25 km) inland, including the New Territories inhabitants. The Order was lifted in 1669. However, after the coastal evacuation, population dropped severely. During the Shunzhi reign (1643-1661), the population of Xin'an County was recorded as 6,851. The population dropped to 2,172 in 1664 during the enforcement of the Order. After the Order was lifted, people were encouraged to move back to Xin'an County during late 17<sup>th</sup> to early 18<sup>th</sup> centuries. In 1671, the population increased to 3,972, 1,648 people were encouraged to move back during 1669-1671<sup>21</sup>.
- 12.4.2.8 Xin'an Gazetteer had recorded the villages located within the Xin'an County. Lat Ma Chau ("勒馬州", current Lok Ma Chau) was listed in the Gazetteer edited in the 27<sup>th</sup> year of Kangxi reign (1688). San Tin Tsuen (新田村), Chau Tau Tsuen (洲頭村) and Mai Po ("米步", current Mai Po "米埔") were listed in both editions<sup>22</sup>.

<sup>15</sup> 司馬遷 (c.a. 91BC)。史記 卷一百一十三 南越列傳 第五十三。北京：中華書局 (1959)。

<sup>16</sup> Although the boundary between Boluo (博羅) County and Panyu (番禺) County during Han to East Jin period is unclear, it is generally suggested that Hong Kong region belonged to Boluo County at that time, according to Xin'an Gazetteer (1819), Social Change in Hong Kong Before and After the Early Qing Clearance (1986), and Brief History of Ancient Shenzhen (1997). However, Professor Jao Tsung-I (2005) discussed that the area belonged to Panyu based on the inscriptions on bricks of Lei Cheng Uk Han Tomb.

<sup>17</sup> 劉智鵬、劉蜀永 (編) (2020)。方志中的古代香港-《新安縣志》香港史料選。香港：三聯書店 (香港) 有限公司。

<sup>18</sup> Ibid.

<sup>19</sup> 陳六霞、洪小麗 (1985)。田野工作報告-新田區總報告。

<sup>20</sup> 嚴瑞源 (2005)。新界宗族文化之旅。香港：萬里。

<sup>21</sup> 靳文謨修、鄧文蔚纂 (1688)。新安縣志。在廣東省地方志辦公室編，廣東歷代方志集成：廣州府部 (二六) [康熙]新安縣志 [嘉慶]新安縣志。廣東：嶺南美術出版社。

<sup>22</sup> 劉智鵬、劉蜀永 (編) (2020)。方志中的古代香港-《新安縣志》香港史料選。香港：三聯書店 (香港) 有限公司。

- 12.4.2.9 After the First Opium War (1839-1842) between the Qing government and the British Empire, the Qing government "...ceded ... the Island of Hongkong, to be possessed in perpetuity by ... Great Britain" signed in 1842 under the *Treaty of Peace, Friendship, and Commerce Between Her Majesty The Queen of Great Britain and Ireland and the Emperor of China* (also known as the *Treaty of Nanking* (南京條約))<sup>23</sup>. The Qing government lost the Second Opium War (1856-1860), which led to the ceding Kowloon as a dependency of Hong Kong under the *Convention of Peace Between Her Majesty and The Emperor of China* (also known as the *Convention of Peking* (北京條約)) in 1860<sup>24</sup>. At the turn of the 20<sup>th</sup> century, *The Convention between the United Kingdom and China, Respecting an Extension of Hong Kong Territory* (also known as the *Second Convention of Peking* (第二北京條約)) signed between the British and the Qing government in 1898 allowed the British colony to "... enlarged under lease ... [for] ninety-nine years."<sup>25</sup>
- 12.4.2.10 In the *Report on the Extension of the Colony of Hong Kong* in 1898, San Tin, Lok Ma Chau and *Cho Tau* ("灶頭", current Chau Tau) were recorded, under the Shenzhen district section, while Mai Po was in the Yuen Long district section. The four settlements were recorded as *Punti* (本地), with a population of 3,000 (San Tin), 160 (Lok Ma Chau), 250 (Cho Tau) and 150 (Mai Po) respectively<sup>26</sup>.
- Modern period (after 1912)*
- 12.4.2.11 No major historic event took place in the San Tin area until the WWII. According to a research conducted by the Hong Kong Baptist University, the Japanese troops invaded Hong Kong on 8<sup>th</sup> December 1941. The troops have travelled via the Castle Peak Road at San Tin from Lok Ma Chau with no significant battle took place in the region<sup>27</sup>.
- 12.4.2.12 The Federation of Vegetable Marketing Co-operative Societies, Ltd (新界蔬菜產銷合作社有限責任聯合總社) was established in 1953 by farmers with an aim to improve vegetable production and collective marketing<sup>28</sup>. There were twenty-six societies under the Federation. Two of them were located in the agricultural fields of the San Tin area, namely the Sun Tin Vegetable Marketing Co-operative Society, Ltd. (新田蔬菜產銷有限責任合作社) in Siu Hum Tsuen (小壩村) and the Mai Po Lung Vegetable Marketing Co-operative Society, Ltd. (米埔隴蔬菜產銷有限責任合作社) in Mai Po Lung Tsuen (米埔隴村). Both were founded in 1960s.
- 12.4.2.13 New villages were established in San Tin in the 20<sup>th</sup> century. Adjacent to the border, Ha Wan Tsuen (下灣村) was established by fishermen from Shenzhen who rented the cultivation fields and fishponds from the *Cheung* clan of Lok Ma Chau for living. After the establishment of the People's Republic of China, people were not allowed to pass the border freely, thus they settled and established new village<sup>29</sup>. A branch village Ha Wan Fisherman San Tsuen (下灣漁民新村) were established in the 1980s<sup>30</sup>. Festival would be held annually on the 20<sup>th</sup> day of the first month on the Lunar calendar to worship Earth God<sup>31</sup>.

<sup>23</sup> Mayers, William Fredrick. (1902, 4<sup>th</sup> edition). *Treaties Between the Empire of China and Foreign Powers*. Shanghai: North-China Hera Treaty of London (1871).

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> 劉智鵬 (編) (2010)。展拓界址：英治新界早期歷史探索。香港：中華書局（香港）有限公司。

<sup>27</sup> History in Data Project website (Accessed on 16th December 2021) Hong Kong 1941. Retrieved from <https://digital.lib.hkbu.edu.hk/1941hkbattle/en/research-team.php>.

<sup>28</sup> 菜聯社。菜聯社簡介。檢自：<http://fedvmcs.org/intro.php>。

<sup>29</sup> 阮志 (2014)。入境問禁：香港邊境禁區史。香港：三聯書店(香港)有限公司。

<sup>30</sup> Lands Department. (1984). *1:1 000 2-SE-3D (Ed 1984-03\_2)*. Lands Department.

<sup>31</sup> 阮志 (2014)。入境問禁：香港邊境禁區史。香港：三聯書店(香港)有限公司。

12.4.2.14 New scattered settlements and residences were also observed to the south of Castle Peak Road in the early 1960s<sup>32 33</sup>. These newly established villages, including Ki Lun Tsuen (麒麟村), Shek Wu Wai San Tsuen (石湖圍新村), Mai Po Lung Tsuen, Siu Hum Tsuen and Yau Tam Mei Tsuen (攸潭美村), expanded rapidly in the late 1960s<sup>34</sup> and occupied the lands along Shek Wu Wai Road, Ka Lung Road and in the Ngau Tam Mei river valley.

### 12.4.3 Archaeological Background

#### *Previously Surveyed Area Within the Assessment Area*

12.4.3.1 The earliest documented archaeological survey in San Tin area dates back to 1980, when surface collection and test pits were carried out in the southwest of San Tin next to Mai Po village. Another archaeological survey involving test pits excavation and hand augering was conducted to the north of San Tin Highway next to Chau Tau Tsuen and Pak Shek Au in 2002 as part of the Sheung Shui to Lok Ma Chau Spur Line project. Additionally, in 2013, field scanning was conducted on the small hills near San Sham Road in the north of San Tin for the Development of Lok Ma Chau Loop project.

12.4.3.2 However, these past archaeological field surveys were focused on the Lok Ma Chau area in the north-eastern Project area and to the north of the San Tin Highway. Hence, the archaeological information of San Tin area remains constrained.

12.4.3.3 A review of the findings of the previous archaeological works and archaeological assessment in close relation to the Project are summarised in the sections below and illustrated in **Figures 12.4 to 12.6**.

#### *Mai Po Site of Archaeological Interest<sup>35</sup>*

12.4.3.4 A cache of 344 bronze coins dated to the Song dynasty was first recovered by local villagers in Mai Po in 1980. The site of discovery was on the foot of slope at a narrow strip of lowland connecting to an isolated hill of +26.4mPD in height. It was of volcanic with undifferentiated alluvium and was once on the coastline. The size of the site was approximately 20m by 20m.

12.4.3.5 A surface collection of artefacts was carried out by the Antiquities and Monuments Office (AMO) across the site of discovery in the same year subsequently. A further 150 coins and other artefacts, including celadon and modern stoneware sherds, were found in a soil heap. Two 1m by 2m trenches were partially excavated to 15cm deep at the location with the highest artefact concentration. However, no archaeological deposit was identified. A second surface observation was carried out in 1985, but the site of discovery had been destroyed by a housing development. No artefacts or indication of any remaining archaeological potential were identified. It was concluded that the area of development had no further significance and the artefacts uncovered shall be fully analysed, conserved, and documented. Another discovery of bronze cash coins from the Song dynasty near Mai Po Lung Tsuen was reported to AMO by the locals in 2003<sup>36</sup>, detailed information about the discovery location and others are not available.

12.4.3.6 The discovery of Song dynasty bronze coins in Mai Po serves as confirmation of its archaeological significance. Moreover, the area has been designated as one of the sites of archaeological interest (SAI) in Hong Kong, highlighting its notable archaeological significance. While the developed portion of the Mai Po SAI has been determined to lack archaeological potential, its surrounding areas continue to hold archaeological potential.

<sup>32</sup> Lands Department. (1956). 1:10020, 16700ft., F21\_564-0119 [aerial photo]. Lands Department.

<sup>33</sup> Lands Department. (1963). 1:7800, 3900ft., 1963-0133 [aerial photo]. Lands Department.

<sup>34</sup> Lands Department. (1972). 1:6000, 3000ft., 02650 [aerial photo]. Lands Department.

<sup>35</sup> Peacock, B.A.V. and Nixon, T.J.P. (1985). "Summary Site Data Sheet Of Mai Po, Site No. 02/01", in *Report of the Hong Kong Archaeological Survey. 3.ab(1985-6): pp. 1-3*. Unpublished, Antiquities and Monuments Office, Ref. no. ID5.

<sup>36</sup> Antiquities and Monuments Office. Mai Po Site of Archaeological Interest. Geographic Information System on Hong Kong Heritage. Retrieved from <https://gish.amo.gov.hk/internet/index.html?lang=en-us>.

*Sheung Shui to Lok Ma Chau Spur Line (Register No.: AEIAR-052/2002)*<sup>37</sup>

- 12.4.3.7 An archaeological survey comprising of surface field scanning, eighty seven (87) augering tests and five test pits were carried out at the northern San Tin area from Lok Ma Chau to Ho Sheung Heung (河上鄉). In relation to this Project, Unit 5 in Pak Shek Au (白石凹), Unit 6 to the south of Castle Peak Road, Unit 7 in Pun Uk Tsuen (潘屋村), Unit 8 at the hill to the west of Lok Ma Chau Road and Unit 9 to the east of Chau Tau are concerned for being within or in the vicinity of the Project boundary. In particular, Unit 8 and Unit 9 are located within the Project, while Unit 5, Unit 6 and Unit 7 are located partially within the Project boundary (**Figure 12.5**).
- 12.4.3.8 Modern village ware sherds and fragments were discovered in three augering test locations (**No. 6, 10 and 12 of Unit 7 in Figure 12.5**) and one test pit (1\* in **Figure 12.5**) conducted near Pun Uk Tsuen. No archaeological material was found in the archaeological survey conducted in Unit 5, Unit 6, Unit 8 and Unit 9. The auger hole test results of Unit 5, Unit 6, Unit 7 and Unit 8 indicate a thin soil cover over weathered bedrock or colluvium. The auger hole tests in Unit 9 shows the area is waterlogged, indicating the area has a wet alluvial sequence.
- 12.4.3.9 Based on the information provided in the report, the archaeological survey conducted for the Sheung Shui to Lok Ma Chau Spur Line project appears to be legitimate and thorough. The identification of modern village ware sherds and fragments in specific locations adds to the understanding of the archaeological potential in the surveyed area. Additionally, the detailed descriptions of the soil conditions in different units provided valuable insights for future archaeological investigations in the region.

*Improvements to San Tin Interchange (Register No.: AEIAR-077/2004)*<sup>38</sup>

- 12.4.3.10 The study assessed the archaeological potential of the area surrounding the proposed San Tin Interchange alignment (**Figure 12.4**). As the area was underwater and estuarine from the early prehistory to the early 20<sup>th</sup> century, it was concluded to have no archaeological potential.
- 12.4.3.11 The assessment in the study is considered comprehensive and takes into consideration the historical environmental factors that could impact the presence of archaeological remains. The acknowledgement of the underwater and estuarine geology is crucial in determining its archaeological potential. Consequently, the conclusion that the area has no archaeological potential seems justified based on the available information.

*North East New Territories New Development Areas Planning and Engineering Study – Investigation, Environmental Impact Assessment Report (Register No.: AEIAR-175/2013)*<sup>39</sup>

- 12.4.3.12 The North East New Territories New Development Areas Planning and Engineering Study – Investigation (NENT NDA Study) had evaluated the archaeological potential of Kwu Tung North and the findings are presented in the NENT NDA EIA Report (Register No.: AEIAR-175/2013).
- 12.4.3.13 An archaeological survey was conducted in the NENT NDA Study, in which thirty nine (39) auger holes and thirty five (35) test pits were carried out in the NENT NDA area. The archaeological survey was primarily focus on the Kwu Tung area. No archaeological survey was conducted at Pak Shek Au and northern San Tin. Based on the results in the 2001

<sup>37</sup> Kowloon-Canton Railway Corporation. (2002). *Sheung Shui to Lok Ma Chau Spur Line Environmental Impact Assessment Report*. [https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_0712001/Content/Content.htm](https://www.epd.gov.hk/eia/register/report/eiareport/eia_0712001/Content/Content.htm).

<sup>38</sup> Highways Department. (2004). *Improvements to San Tin Interchange Environmental Impact Assessment Report. 9 Cultural Heritage Impact*. [https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_0932004/eiareport/Sect\\_9%20CHIA.htm](https://www.epd.gov.hk/eia/register/report/eiareport/eia_0932004/eiareport/Sect_9%20CHIA.htm).

<sup>39</sup> New Territories North and West Development Office, Civil Engineering and Development Department. (2013). *North East New Territories New Development Areas Planning and Engineering Study – Investigation Final Environmental Impact Assessment Report. 11 Cultural Heritage*. [https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_2132013/eia/pdf/ch\\_11\\_text.pdf](https://www.epd.gov.hk/eia/register/report/eiareport/eia_2132013/eia/pdf/ch_11_text.pdf).

Planning and Development Study on North East New Territories, this archaeological survey in 2013, landscape characteristics, as well as past and present land use, their Report has evaluated the archaeological potential of the Kwu Tung (古洞) area to the north and south of the Fanling Highway.

- 12.4.3.14 The study identified areas with low archaeological potential in view of their topographical and geological features that were not suitable for human settlements but good for human subsistence catchment. No or very limited archaeological deposits was found in the archaeological surveys conducted in these areas. It was recommended that the construction contractor should inform the AMO immediately in case of discovery of antiquities during the construction phase. For areas with no archaeological potential, as archaeological remains are not likely to exist or have been destroyed due to past land use or site formation works done, no mitigation measure was proposed in the study.
- 12.4.3.15 While no archaeological survey conducted within the Project area, the NENT NDA Study had assessed the archaeological potential of Pak Shek Au and northern San Tin that falls within the Project boundary (**Figure 12.5**) based on previous studies, landscape characteristics, and land use history. The study concluded that the archaeological potential of these areas was considered low. It is worth mentioning that the report does not explicitly address the observation that the test pit excavation was not conducted in the proximity, but much further away in the Kwu Tung area. This may have an impact on the accuracy and reliability of the conclusions drawn regarding the archaeological potential of the Project area.

*Development of Lok Ma Chau Loop (Register No.: AEIAR-176/2013)<sup>40</sup>*

- 12.4.3.16 The EIA Report for Development of Lok Ma Chau Loop (Register No.: AEIAR-176/2013) has evaluated the archaeological potential of Lok Ma Chau area including Lok Ma Chau, Pun Uk Tsuen and Chau Tau Tsuen (**Figure 12.6**). Lower hill slopes and former shorelines of the islands and islets were identified to have moderate archaeological potential as their environment was favourable to the prehistoric or early historic period settlement. Field scanning was then carried out on these areas (**Figure 12.6**). No sign of archaeological potential was identified.
- 12.4.3.17 Although no archaeological potential was discovered, these lower hillocks was assessed to have moderate archaeological potential based on their environmental features. For areas occupied by dumped sediment; stoney and skeletal soils at higher elevation with shallow sedimentary bedrock, they were identified to have low archaeological potential. The developed road and infrastructure area were of no archaeological potential.
- 12.4.3.18 As shown in **Figure 12.6**, the study area of Lok Ma Chau Loop Development falls within the Project boundary, such as a hillock west of Lok Ma Chau Road and another west of Pun Uk Tsuen, were considered to have moderate archaeological potential based on their environmental features. Field scanning was conducted in these areas, but no signs of archaeological potential were identified. Despite this, the report still assessed the lower hillocks to have moderate archaeological potential based on their environmental characteristics. On the other hand, areas occupied by dumped sediment at higher elevations with shallow sedimentary bedrock were identified as having low archaeological potential. The developed road and infrastructure areas were deemed to have no archaeological potential.
- 12.4.3.19 It is notable that the conclusion in this report appears to contradict the conclusion drawn in the Sheung Shui to Lok Ma Chau Spur Line report (**Sections 12.4.3.7 to 12.4.3.9** refer), where archaeological potential was identified in surrounding areas. This discrepancy raises questions regarding the consistency and reliability of the assessments made in both reports. Further clarification or additional information may be necessary to reconcile these

<sup>40</sup> Civil Engineering and Development Department. (2013). *Planning and Engineering Study on Development of Lok Ma Chau Loop – Investigation - Environmental Impact Assessment. 10 Cultural Heritage Impact*. [https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_2122013/PDF/EIA/S10%20-%20CH%20v16.pdf](https://www.epd.gov.hk/eia/register/report/eiareport/eia_2122013/PDF/EIA/S10%20-%20CH%20v16.pdf).

conflicting conclusions and ensure a comprehensive understanding of the archaeological potential in the Lok Ma Chau area, in particular to the hillock west of Lok Ma Chau Road and another west of Pun Uk Tsuen.

*Agreement No. CE 28/2019 (CE) Study on Phase One Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Feasibility Study – Report on Environmental Review<sup>41</sup>*

- 12.4.3.20 Eleven areas of archaeological potential (Areas A to K) were identified during the Feasibility Stage of this Project (**Figure 12.6**) mainly based on desktop study. They were considered to have archaeological potential due to their similar geological settings to other sites with known archaeological interest, while it is worth noting that no archaeological investigation was conducted during the Feasibility Stage to verify their archaeological potential. **Table 12.4.1** summarised the description of each archaeological potential area identified in Feasibility Stage (FS) report.
- 12.4.3.21 The FS report emphasised on locating the former coastline and lower hillslope (mainly on Pleistocene alluvial deposits, “Qpa” on geological maps) that favours prehistoric human activities. Such emphasis can be seen on the description of each proposed archaeological potential area (**Table 12.4.1** refers).
- 12.4.3.22 While the report suggested the landscape of the proposed archaeological potential areas were similar to other known sites of archaeological interest with prehistoric finds, no reference and comparison to any particular prehistoric site(s) was made. It should be noted that the prehistoric sites in Hong Kong area are mostly located on coastal raised beaches, such as in Ngau Hom Shek, Yung Long and Lung Kwu Tan in Deep Bay. Yet this pattern was not acknowledged in their proposed archaeological potential areas.
- 12.4.3.23 While its justifications were mostly based on the assumption that a former coastline situated in San Tin area before present times, the location of the shoreline was not indicated. The report appears to assume the geological deposits Pleistocene alluvial deposits (Qpa) as an indicator of former coastline. The location of the former coastline ranged from +4.5mPD (in Area K) to +10mPD (in Area A). It is however unlikely for sea level to have a wide range of variation in a small locale.
- 12.4.3.24 During the review of the report, it is noted that Areas J and K (**Figure 12.6** refers) were considered to have archaeological potential different from the findings presented in the NENT NDA EIA Report which concluded the areas were of low archaeological potential (**Figure 12.5** refers).
- 12.4.3.25 Considering the report’s emphasis on environmental arguments and very little on archaeological studies, further studies would be required to find out the archaeological potential in detail.

**Table 12.4.1 Areas of Archaeological Potential in Previous Feasibility Study<sup>42</sup>**

Area of Archaeological Potential	Description	Potential Cultural Deposits
Area A	Located at elevations between +10mPD and +38.5mPD east of Shek Wu Wai. It includes a small hillock surrounded by Pleistocene terraced alluvium (Qpa) and was near the former shoreline.	Lower hillslopes and former shorelines may have the potential for prehistoric deposits.

<sup>41</sup> Planning Department and Civil Engineering and Development Department. (2021). *Study on Phase One Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Feasibility Study – Report on Environmental Review*. 11 Cultural Heritage Impact.

<sup>42</sup> *Ibid.*

Area of Archaeological Potential	Description	Potential Cultural Deposits
Area B	Located on Pleistocene terraced alluvium (Qpa) near former coastline with elevations between +7mPD and +10mPD.	Not specified
Area C	Consists of small hillock with elevations between +7mPD and +21mPD adjacent to foothill areas of Pleistocene debris flow deposits and was near former shorelines.	Lower hillslopes and former shorelines may have the potential for prehistoric deposits.
Area D	Consists of two small hillocks and adjacent foothill areas with elevations between +9mPD and +24mPD.	
Area E	Located on Pleistocene terraced alluvium with elevations between +9mPD and +13mPD in Shek Wu Wai San Tsuen near former coastline.	Not specified
Area F	Located along lower hillslopes near former coastline with elevations between +7mPD and +25mPD located in northern and eastern Ko Hang.	Lower hillslopes and former shorelines may have the potential for prehistoric deposits.
Area G and Shek Wu Wai Village	<p>Shek Wu Wai village is a village with a history of 300 to 500 years where green bricks were manufactured.</p> <p>Remainder of Area G consists of hillock with maximum elevation of +40mPD and adjacent foothill areas near the former coastline. The hillock is presently used as a clan burial ground.</p>	<p>Historical period deposits.</p> <p>Lower hillslopes and former shorelines may have the potential for prehistoric deposits.</p>
Area H	Located in the north of Luk Mei Tsuen and to the west of Ki Lun Road. It includes hillock and adjacent foothill areas near the former coastlines and elevations between +8mPD and +40mPD. Part of it is being used as clan burial grounds.	Lower hillslopes and former shorelines may have the potential for prehistoric deposits.
Area I	Located in Ki Lun Tsuen at the foothill of Hadden Hill near former coastline with elevations between +5mPD and +17mPD.	
Area J	It is situated in lower hillslopes and adjacent foothill areas of north-western Hadden Hill near the former coastline at elevations between +7mPD and +25mPD.	
Area K	It is situated in the eastern part of Chau Tau near the former coastline at elevations between +4.5mPD and +21mPD.	

## 12.5 Built Heritage Impact Assessment

### 12.5.1 Overview of Built Heritage and Other Identified Items Within the Assessment Area

12.5.1.1 A total of 176 built heritage and other identified items have been identified within the Project boundary and the 500m assessment area. In relations to their locations to the Project boundary, no declared monuments, proposed monuments, graded historic buildings, buildings in the list of new items for grading assessment with assessment results and Government historic sites are located within the Project boundary. Five other identified items with no grade accorded are located within the Project boundary. The remaining 171 built heritage and other identified items are located within the 500m assessment area but

outside the Project boundary. A summary of built heritage and other identified items based on their status is presented in **Table 12.5.1**.

**Table 12.5.1 Summary of Built Heritage and Other Identified Items Based on Their Status within 500m Assessment Area**

Category	Status	Quantities	Total
Built Heritage	Declared Monument	2	176
	Grade 1 Historic Building	1	
	Grade 2 Historic Building	5	
	Grade 3 Historic Building	4	
Other Identified Items	No Grading	1	
	No Grade Accorded <sup>43</sup>	163	

## 12.5.2 Identification of Built Heritage and Other Items

### *Declared Monuments and Graded Historic Buildings*

12.5.2.1 Twelve (12) built heritage, including two declared monuments, one grade 1 historic building, five grade 2 historic buildings and four grade 3 historic buildings are identified within of the assessment area, but all of them are located outside the Project boundary. They are summarised in **Table 12.5.2**.

12.5.2.2 Records of the declared monuments and graded historic buildings are presented in the **Cultural Heritage Resources and Other Identified Items Recording Sheets No. 1 to No. 11** in **Appendix 12.1.1**.

### *Other Identified Items*

12.5.2.3 Among the 164 other identified items, 152 are located within village and 12 of them is outside village.

12.5.2.4 The full list of 152 other identified items within village is presented in **Table 2** in **Appendix 12.2**. The short form of the village name is used in assigning reference number for each other identified item. A list of villages within the Project boundary and 500m assessment area with summary of other identified items is presented in **Table 12.5.3**.

12.5.2.5 A list of 12 other identified items located outside village is presented in **Table 3** in **Appendix 12.2**. For those located outside village with no grade accorded, "BH" is adopted for their reference number.

12.5.2.6 A total of five other identified items are located within the Project. All of them have no grade accorded and are out of the list of 1,444 historic buildings. They are summarised in **Table 12.5.4**. They are discussed separately in the following sections.

12.5.2.7 Only villages/ areas with built heritage and other identified items are discussed in the following assessment.

The Man Clan of San Tin: Yan Shau Wai, Tung Chan Wai, Fan Tin Tsuen, Wing Ping Tsuen, On Lung Tsuen, Tsing Lung Tsuen, San Lung Tsuen, Chau Tau Tsuen and Shek Wu Wai (V1-V9)

12.5.2.8 The ancestor of the *Man* clan in Guangdong region was *Man Tin Shui* (文天瑞) (1240-1298), the younger cousin of the Duke of *Xin* (信國公) *Man Tin Cheung* (文天祥) (1236-1283). He

<sup>43</sup> Buildings with no grade accorded refer to buildings that are out of the list of the 1,444 historic buildings and has not previously been included under grading assessment by the Antiquities Authority, yet still have possible significance in cultural heritage.

fled to Guangdong in face of the invasion of Mongol Empire<sup>44</sup>. The seventh generation of *Man Tin Shui – Man Sai Gor* (文世歌) arrived at Tuen Mun and later settled in San Tin during the *Yongle* reign (1403-1424) of Ming dynasty<sup>45</sup>. His descendants resided in the three walled villages and six villages (三圍六村), namely Yan Sau Wai, Tung Chan Wai, Shek Wu Wai, On Lung Tsuen, Wing Ping Tsuen, Fan Tin Tsuen, San Lung Tsuen, Tsing Lung Tsuen and Chau Tau Tsuen. The exact establishment year of each village is unknown. Yan Sau Wai was the earliest settlement among the nine villages<sup>46</sup> with a history of over 500 years (i.e. established in the 15<sup>th</sup> century)<sup>47</sup>. The clan continued to expand in the mid Qing dynasty (1636–1912) and developed Chau Tau Tsuen and Shek Wu Wai, which were outside the main cluster<sup>48</sup>.

- 12.5.2.9 The *Man* clan was forced to leave and abandoned their houses and farmlands due to the implementation of the Coastal Evacuation Order. They returned to San Tin after the Order was lifted in 1669<sup>49</sup>. The Man Ancestral Hall was then rebuilt, and new ancestral halls were constructed as the clan expanded.
- 12.5.2.10 Traditionally the *Man* clan mainly relied on crop cultivation and fish farming for living. They were famous for a wine made by a special type of red grain they yielded<sup>50</sup>. Following the change of farm economy in San Tin in the late 1950s, many *Mans* of working age had emigrated abroad to seek for better job opportunities. The fields were then rented to outsiders for vegetation cultivation<sup>51</sup>. Although they moved to the United Kingdom and other European countries, the *Mans* would send their money back to support their families in Hong Kong, such as providing financial contribution to reconstruct their family houses and renovate their temples in San Tin<sup>52</sup>.
- 12.5.2.11 Traditional festivals held by the *Man* clan of San Tin include, but not limited to:
- Chinese New Year
  - Spring and Autumn Sacrificial Rites (春秋二祭)
  - *Dim dang* (點燈) in ancestral halls
  - *Ching Ming* Festival (清明節)
  - *Chung Yeung* Festival (重陽節)
  - *Da Jiu* (打醮) (every three years)<sup>53</sup>
  - Tin Hau Festival (天后誕) and *Je Fu* (借庫) in Tung Shan Temple
- 12.5.2.12 A total of 99 other items are identified. Records of these nine villages can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheets No. 12 to No. 20** in **Appendix 12.1.2**.

<sup>44</sup> For ease of discussion in this report, *Man Tin Shui* would be referred as the first generation ancestor of the *Man* clan in Guangdong region.

<sup>45</sup> 嚴瑞源 (2005)。新界宗族文化之旅。香港：萬里。

<sup>46</sup> 饒玖才 (2012)。香港的地名與地方歷史(下)–新界。香港：天地圖書。

<sup>47</sup> Antiquities Advisory Board. *Historic Building Appraisal - Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai, San Tin, Yuen Long, N.T.* Retrieved from [https://www.aab.gov.hk/filemanager/aab/common/historicbuilding/en/N186\\_Appraisal\\_En.pdf](https://www.aab.gov.hk/filemanager/aab/common/historicbuilding/en/N186_Appraisal_En.pdf).

<sup>48</sup> 饒玖才 (2012)。香港的地名與地方歷史(下)–新界。香港：天地圖書。

<sup>49</sup> Antiquities Advisory Board. *Historic Building Appraisal – Man Ancestral Hall, Fan Tin Tsuen, San Tin, Yuen Long.* Retrieved from [https://www.aab.gov.hk/filemanager/aab/common/historicbuilding/en/75\\_Appraisal\\_En.pdf](https://www.aab.gov.hk/filemanager/aab/common/historicbuilding/en/75_Appraisal_En.pdf).

<sup>50</sup> 黃佩佳(2017)。香港本地風光·附新界百詠。香港：商務。

<sup>51</sup> Johnson, Elizabeth. (2000). *Recording a rich heritage: research on Hong Kong's "New Territories"*. Hong Kong: Leisure & Cultural Services Department.

<sup>52</sup> Watson, J. L. and Watson, R.S. (2011)。鄉土香港：新界的政治、性別及禮儀 (*Village Life in Hong Kong: Politics, Gender, and Ritual in the New Territories*) (張婉麗、盛思維譯)。香港：香港中文大學。

<sup>53</sup> Tai Ping Ching Chiu (太平清醮) was once held in the village but later discontinued. The *Mans* now practice *Hung Man Ching Chiu* (洪文清醮) every three years which is a one-day event. The last *Hung Man Ching Chiu* was carried out in 2019.

#### Lok Ma Chau (V10)

- 12.5.2.13 Lok Ma Chau Village was established by the *Cheung* clan originated from *Zhang Jia Wei, Ge Tang* of Shenzhen (深圳隔塘張家圍) in early Qing dynasty. Their traditional subsistence was fish farming in the Shenzhen River<sup>54</sup>.
- 12.5.2.14 The existing village is in a grid pattern of two columns and about seven rows of houses. A central street runs from north-northwest to east-southeast of the village. A total of 16 other items are identified. Records of Lok Ma Chau can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheets No. 21** in **Appendix 12.1.2**.

#### Pun Uk Tsuen (V11)

- 12.5.2.15 The *Pun* clan had settled in San Tin area before the arrival of the *Man* clan. The clan relocated to the northern area of San Tin around the same time as the rapid expansion of the *Man* clan<sup>55</sup>.
- 12.5.2.16 The existing village has around three rows of houses. Each row has approximately 11 to 14 house units. A total of 12 other items are identified. Records of Pun Uk Tsuen can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheets No. 22** in **Appendix 12.1.2**.

#### Mai Po Tsuen (V12)

- 12.5.2.17 Mai Po Tsuen is divided into Mai Po Lo Wai (米埔老圍) and Mai Po San Tsuen (米埔新村). Mai Po Lo Wai is mainly occupied by the *Mans, Fungs* and *Chans* while Mai Po San Tsuen is mainly occupied by the *Wongs*<sup>56</sup>. It is believed that Mai Po Tsuen was established 200 to 400 years ago.
- 12.5.2.18 The existing Mai Po Lo Wai has around four to five rows of houses, with about 17 house units in each row. A central street runs from the west to the east of the village, connecting an entrance gate and a temple. The existing Mai Po San Tsuen has roughly five rows of houses arranged relatively loosely. An ancestral hall of the *Wong* clan is located at the centre. A total of 20 other items are identified. Records of Mai Po Tsuen can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheets No. 23** in **Appendix 12.1.2**.

#### Mai Po Lung Tsuen (V13)

- 12.5.2.19 Located to the south of Castle Peak Road and bounded by small hills, Mai Po Lung Tsuen was probably founded by the Chinese immigrants in the 1960s, occupying a strip of agricultural fields in a river valley. According to the inscription on the couplet at the Heroes Temple in the village, they were originated from *Huizhou Hai Lu Feng* (惠州海陸豐) (current the City of *Shanwei*, 汕尾市). Squatters are scattered across the village area without a united orientation. The village was separated due to the construction of San Tin Highway.
- Other Identified Items Located within the Project
- 12.5.2.20 A total of two other items are identified within the village, namely Tin Tak Heroes Temple (MPL01) and Mai Po Lung Vegetable Marketing Co-operative Society, Ltd (MPL02).
- 12.5.2.21 MPL01 consists of three individual temples worshipping multiple deities, including a Fuk Tak Temple to the east, a Tin Hau Temple in the middle and a Heroes Temple to the west. They share a large open space in front. The compound is bounded by an enclosing wall and has an entrance gate to the east of the compound. Within the compound, Tin Hau

<sup>54</sup> 阮志 (2016)。香港跨境村莊及文化遺產。香港：三聯。

<sup>55</sup> 陳六霞、洪小麗 (1985)。田野工作報告 – 新田區總報告。

<sup>56</sup> Antiquities and Monuments Section, U.S.D. (1987). *Survey on historical rural architecture in San Tin Area*.

Temple was constructed in the 1960s<sup>57</sup>, followed by Fuk Tak Temple (first appeared in 1972 aerial photo<sup>58</sup>) and Heroes Temple. According to the villagers, the Heroes Temple was relocated to the existing location due to the construction of San Tin Highway in the late 1980s.

12.5.2.22 MPL02 comprises of two individual buildings. Built on an elevated platform, the buildings are single-story buildings with a pitched roof. They are Utilitarian in style with no decoration. Simple staircase is attached to the front of the platform providing access. As one of the vegetable marketing cooperative societies, the venue is a testimony of the agricultural cooperative movement in the New Territories in the latter half of the 20th century.

12.5.2.23 Details and photo records of Mai Po Lung Tsuen can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheets No. 24** in **Appendix 12.1.2**.

#### Siu Hum Tsuen (V14)

12.5.2.24 Siu Hum Tsuen is located to the north of San Tin Barracks. The lack of ancestral hall and temples implied that this village was unlikely to be set up during the historical period. It is also noted that the layout of the village does not conform into other known villages of historical periods in this area, which has a grid pattern formed by rows of houses. Based on aerial photo study, Siu Hum Tsuen was settled in around the 1960s (**Figure 12.7** refers), coinciding with periods of immigrants from China who fled to Hong Kong in face of the political instability in China during the post-war period.

- Other Identified Item Located within the Project

12.5.2.25 One other item is identified, namely Sun Tin Vegetable Marketing Co-operative Society Ltd. (SHT01).

12.5.2.26 The building is a single-story building built on an elevated platform. It has a pitched roof made of corrugated sheets. The front porch is extended with a simple structural frame formed by thin columns, providing more sheltered space in front of the building. The building is Utilitarian in style. According to a signage nearby, the site has been established about 60 years ago (around 1960s) for collection and transportation of vegetables. As one of the vegetable marketing cooperative societies, the venue is a testimony of the agricultural cooperative movement in the New Territories in the latter half of the 20th century.

12.5.2.27 Details and photo records of Siu Hum Tsuen can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheets No. 25** in **Appendix 12.1.2**.

#### Yau Tam Mei Tsuen (V15)

12.5.2.28 According to the appraisal of Wai Cheung Ancestral Hall, the building was dated to 1887 (丁亥) suggesting that there were people settling in the west of the Ngau Tam Mei area in the late 19<sup>th</sup> century. Most of the dwellings in Ngau Tam Mei are squatters. The settlers came to Ngau Tam Mei in the early 20<sup>th</sup> century. They are Hakka people from mainland China. They had to rent or purchase lands from the San Tin landowners.

12.5.2.29 According to a survey in 1987<sup>59</sup>, a village representative claims that people in San Tin named this place “鰲” (Ao) instead of “牛” (Ngau) originally because of a whale (鰲魚) located at the entrance of the village. People probably named this place “牛潭美” (Ngau Tam Mei) afterwards. The place is renamed as “攸潭美” (Yau Tam Mei) since the villagers

<sup>57</sup> Lands Department. (1968). *1:1 200 75-NW-C (Ed 1968-09)*. Lands Department.

<sup>58</sup> Lands Department. (1972). *1:6000, 3000ft., 02652 [aerial photo]*. Lands Department.

<sup>59</sup> Antiquities and Monuments Section, U.S.D. (1987). *Survey on historical rural architecture in San Tin Area*.

find the word “牛” (literally mean “cow”) distasteful<sup>60</sup>. According to a website source<sup>61</sup>, the renaming happened when the Yau Tam Mei School was built in 1931. It is a multi-clan village with the *Chus*, *Yeungs*, *Cheungs* and *Laus* being the majority.

- 12.5.2.30 The village is located to the north and south of the river. Squatters are scattered across the village area without a united orientation. Two other items are identified. Details and photo records of Yau Tam Mei Tsuen can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheets No. 26** in **Appendix 12.1.2**.

*Other Identified Items Outside Village in 500m Assessment Area*

- 12.5.2.31 In addition to the villages, there are also other identified items located outside village but within the 500m assessment area. They are listed in **Table 3** in **Appendix 12.2** and the details are presented in **Cultural Heritage Resources and Other Identified Items Recording Sheets No. 27 to No. 33** in **Appendix 12.1.3**.

Tam Mei Barracks (BH01) and San Tin Barracks (BH02)

- 12.5.2.32 The barracks at Tam Mei and San Tin were first appeared in the 1952 topographic map<sup>62</sup> with the names of “*Tam Mi Camp*” and “*Norwegian Farm Camp*”. According to the correspondence between the Hong Kong Land Forces and Colonial Secretariat, Norwegian Farm Camp in San Tin was temporary construction “erected at the time of the 1950/51 crisis”<sup>63</sup>. After the end of the Korean War, the British reduced the size of the garrison in Hong Kong<sup>64</sup>. In 1961, Tam Mi Camp and Norwegian Farm Camp were proposed to be rebuilt into a permanent barrack in 1961<sup>65</sup>. Norwegian Farm Camp was renamed as “*Cassino*” in the same year<sup>66</sup>.

- 12.5.2.33 According to the 1994 Exchange of Notes between the Chinese Government and the British Government on the Arrangements for the Future Use of the Military Sites in Hong Kong, from 1<sup>st</sup> July 1997, Cassino Lines and Tam Mi Camp would be handed over to the People’s Republic of China for defence purposes by the military forces stated in Hong Kong<sup>67</sup>. Record of Tam Mei Barracks and San Tin Barracks can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheet No. 27** in **Appendix 12.1.3**.

- 12.5.2.34 BH01 and BH02 have significance in cultural heritage in historical perspective. They reflect the defence role of Hong Kong during the cold war period.

- 12.5.2.35 Due to restricted access to the Tam Mei Barracks and San Tin Barracks, further assessment on their architectural appraisal and condition, as well as the potential environmental impact imposed by the Project is not available at this stage.

Gurkha Cemetery (BH03)

- 12.5.2.36 The Gurkha Cemetery is part of the former Cassino Lines (current San Tin Barracks, BH02) in San Tin. Site formation was observed in the 1954 aerial photo<sup>68</sup> and the Cemetery was completed as shown in the 1956 aerial photo<sup>69</sup>. It is currently managed by the *Commonwealth War Graves Commission*. Record of Gurkha Cemetery can be found in

<sup>60</sup> 陳六霞、洪小麗 (1985)。田野工作報告 – 新田區總報告。

<sup>61</sup> eElderly. (2017). 街知巷聞：攸潭美小學 荒廢 11 年何時見光? eElderly. Retrieved from <https://www.e123.hk/zh-hant/news/386822>.

<sup>62</sup> Great Britain. War Office. General Staff. Geographical Section. (1952). *San Tin: Hong Kong and the New Territories*. Retrieved from <http://digitalarchive.mcmaster.ca/islandora/object/macrepo%3A66895>.

<sup>63</sup> Public Records Office. (1961). *Renaming of Army Camps*. HKRS156-1-1217.

<sup>64</sup> Chi Man, Kwong, & Yiu Lun, Tsoi. (2014). *Eastern Fortress: A Military History of Hong Kong, 1840–1970*. Hong Kong: Hong Kong University Press.

<sup>65</sup> Public Records Office. (1961). *Camps Required in Long Term*. HKRS934-7-72.

<sup>66</sup> Public Records Office. (1961). *Renaming of Army Camps*. HKRS156-1-1217.

<sup>67</sup> Hong Kong Government. (1994). *The Future of the Defence Estate*. Hong Kong: Sino-British Joint Liaison Group.

<sup>68</sup> Lands Department. (1954). 1:25029, 29200ft, V81A\_550-0078 [aerial photo]. Lands Department.

<sup>69</sup> Lands Department. (1956). 1:10020, 16700ft, F22\_561-0056 [aerial photo]. Lands Department.

**Cultural Heritage Resources and Other Identified Items Recording Sheet No. 28 in Appendix 12.1.3.**

San Tin Post Office (BH04)

- 12.5.2.37 San Tin Post Office was constructed in 1964 as response to the increasing demands for postal services in San Tin. The opening ceremony was held by the then Acting Postmaster-General Cecil George Folwell in 1964<sup>70</sup>. Record of San Tin Post Office can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheet No. 29 in Appendix 12.1.3.**

Tun Yu School (BH05)

- 12.5.2.38 Tun Yu School (惇裕學校) was established by the *Man* clan in San Tin in 1953. In the 1930s, education on Chinese classics was provided in the Man Ancestral Hall. It was later transformed into a primary school named Tun Yu School (惇裕學校) since 1941<sup>71</sup>. In view of the increase in student number, a request for a new school was made by villages to the Education Department. The construction of the school was funded by the *Man* clan and the government and completed in 1953<sup>72</sup>. Record of Tun Yu School can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheet No. 30 in Appendix 12.1.3.**

Mans' Boundary Stone (BH06)

- 12.5.2.39 The date of erection of the Boundary Stone is unknown. Based on the inscriptions on the Stone, it was set up by the *Man* clan in San Tin to establish their ownership of the hills. Record of the Man's Boundary Stone can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheet No. 31 in Appendix 12.1.3.**

Graves of Man Clan (BH07 – BH11)

- 12.5.2.40 People believed burying their ancestors at a good *fung shui* (風水) spot could bring good fortune to their descendants. Graves of important persons of the *Man* clan or well-known *fung shui* graves of the *Man* clan are identified, including Grave of Man Lun Fung ("麒麟吐玉書") (BH07), Grave of Man Chung Luen (BH08), Grave of Mrs Man Ng (BH09), Grave of Man Chu Shui (BH10) and Grave of Mrs Man Leung (BH11). Record of the graves of *Man* clan can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheet No. 32 in Appendix 12.1.3.**

Grave of Chong Yin Kei (BH12)

- 12.5.2.41 Located in Pak Shek Au, the grave of *Chong Yin Kei* (莊彥其) is a traditional Chinese grave with unusual size. The grave was erected in the 12<sup>th</sup> year of *Guangxu* reign (1886). The grave is approximately 11m in width, 15m in length and over 2m in height. It is southwest oriented. It is also known as one of the famous *fung shui* spots, namely *Hot Ma Yam Chuen* ("渴馬飲泉", literally means thirsty house drinking from spring). Record of this grave can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheet No. 33 in Appendix 12.1.3.**

- Other Identified Items Located within the Project

- 12.5.2.42 The Grave of Man Chung Luen (BH08) and Grave of Mrs Man Leung (BH11) are located within the Project.

<sup>70</sup> 方便鄉民郵遞 新田郵局今開幕 署理郵政司符偉略主持 (1964年6月25日)。華僑日報，第三張第二頁。

<sup>71</sup> Antiquities Advisory Board. *Historic Building Appraisal – Man Ancestral Hall, Fan Tin Tsuen, San Tin, Yuen Long*. Retrieved from [https://www.aab.gov.hk/filemanager/aab/common/historicbuilding/en/75\\_Appraisal\\_En.pdf](https://www.aab.gov.hk/filemanager/aab/common/historicbuilding/en/75_Appraisal_En.pdf).

<sup>72</sup> 惇裕學校。創校歷史。檢自：<http://www.tys.edu.hk/it-school/php/webcms/public/index.php3?refid=2057&mode=published&nocache1645771948&lang=zh>。

- 12.5.2.43 *Man Chung Luen* (文頌鑾) is the 21<sup>st</sup> generation ancestor of the *Man* clan and was granted with the title of “*Tai Fu*” (senior official). The grave buried *Man Chung Luen* and his wives, his father (*Man Si Hou*, 文時嶠) and mother (Mrs. *Man Tang*) and grandparents (*Man Yu Om*, 文瑜菴, and Mrs. *Man Tang*). According to the inscription on the tablet, *Man Chung Luen*, his father and grandfather held the title of *Chief of Fengzheng* “奉政大夫”, an upper rank five (正五品) civil servant without office in the Qing court. His principal wife, mother and grandmother held the title of “五品宜人” (literally meaning “wife of rank five officials”). The grave (BH08) was reconstructed in 1980.
- 12.5.2.44 Mrs *Man Leung* (文母梁氏夫人) was the 20<sup>th</sup> generation ancestor of the *Man* clan. According to the inscriptions on the tablet, this grave buried Mrs *Man Leung* and her two daughters-in-law – Mrs. *Man Cheung* and Mrs. *Man Chan*, the first and second wife of *Man Chu Shui* (文珠水) (who was buried at BH10). It is known as one of the famous *fung shui* spots of *Man* clan, namely *Kam Kwai To Chu* (“金龜吐珠”, literally meaning “golden turtle expectorating pearl”). The grave (BH11) was reconstructed in 1964.
- 12.5.2.45 Details and photo records of these graves can be found in **Cultural Heritage Resources and Other Identified Items Recording Sheet No. 32** in **Appendix 12.1.3**.

**Table 12.5.2 Declared Monument and Graded Historic Building within 500m Assessment Area**

Ref. No.	Built Heritage	Year of Construction	Status	Approximate Distance from Project Boundary
DM19	Man Lun Fung Ancestral Hall	17 <sup>th</sup> century	Declared Monument	220m
DM32	Tai Fu Tai	1865	Declared Monument	256m
HB75	Man Ancestral Hall (San Tin)	First built in 1444, rehabilitated and built in the early 18 <sup>th</sup> century	Grade 1 Historic Building	305m
HB318	Man San Ye Ancestral Hall	Mid-18 <sup>th</sup> century	Grade 2 Historic Building	305m
HB406	Ming Yuen Tong Ancestral Hall	1750s	Grade 2 Historic Building	232m
HB496	Lok Ma Chau Police Station	1915	Grade 2 Historic Building	175m
HB557	Mi Tak Study Hall, Main Block	Around 1870	Grade 2 Historic Building	170m
HB558	Mi Tak Study Hall, Ancillary Building	Around 1870	Grade 2 Historic Building	165m
HB948	No. 22 San Lung Tsuen	1880s	Grade 3 Historic Building	240m
HB959	No. 21 San Lung Tsuen	1880s	Grade 3 Historic Building	237m
HB973	Tung Shan Temple	Unknown, renovated in 1893, 1970 and 2014	Grade 3 Historic Building	104m
HBN186	Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai	First built in 15 <sup>th</sup> century, restored in the 18 <sup>th</sup> century	Grade 3 Historic Building	90m

**Table 12.5.3 Distribution of Other Identified Items in Villages within the Assessment Area**

Village Code	Village Name	No. of Other Identified Items	Within the Project (Yes/No)	Figure Number (with prefix "60670882/A34/")
V1	Yan Shau Wai (仁壽圍)	11	No	Figure 12.11
V2	Tung Chan Wai (東鎮圍)	7	No	Figure 12.12
V3	Fan Tin Tsuen (蕃田村)	50	No	Figure 12.13
V4	Wing Ping Tsuen (永平村)	5	No	Figure 12.14
V5	On Lung Tsuen (安龍村)	5	No	Figure 12.15
V6	Tsing Lung Tsuen (青龍村)	7	No	Figure 12.16
V7	San Lung Tsuen (新龍村)	4	No	Figure 12.17
V8	Chau Tau Tsuen (洲頭村)	9	No	Figure 12.18 to 12.19
V9	Shek Wu Wai (石湖圍)	1	No	Figure 12.20
V10	Lok Ma Chau (落馬洲)	16	No	Figure 12.21
V11	Pun Uk Tsuen (潘屋村)	12	No	Figure 12.23
V12	Mai Po Tsuen (米埔村)	20	No	Figure 12.24 to 12.25
V13	Mai Po Lung Tsuen (米埔隴村)	2	Yes	Figure 12.26 to 12.27
V14	Siu Hum Tsuen (小磡村)	1	Yes	Figure 12.28
V15	Yau Tam Mei Tsuen (攸潭美村)	2	No	Figure 12.29
-	Hop Shing Wai (合盛圍)	0	Yes	Not Applicable
-	Ha Wan Tsuen (下灣村)	0	Yes	Not Applicable
-	Ha Wan Fisherman San Tsuen (下灣漁民新村)	0	No	Not Applicable
-	Shek Wu Wai San Tsuen (石湖圍新村)	0	Yes	Not Applicable
-	Ki Lun Tsuen (麒麟村)	0	Yes	Not Applicable
-	Luk Mei Tsuen (鹿尾村)	0	Yes	Not Applicable
-	Pang Loon Tei (彭龍地)	0	Yes	Not Applicable

**Table 12.5.4 Summary of Other Identified Items Located Within the Project**

Ref. No.	Name	Year of Construction	Corresponding Sections	Records of Cultural Heritage Resources and Other Identified Items in Appendix 12.1
MPL01	Tin Tak Heroes Temple	1960s to 1980s	Section 12.5.2.21	Appendix 12.1.2 Cultural Heritage Resources and Other Identified Items Recording Sheet No. 24
MPL02	Mai Po Lung Vegetable Marketing Co-operative Society Ltd.	1960s	Section 12.5.2.22	
SHT01	Sun Tin Vegetable Marketing Co-operative Society Ltd.	1960s	Section 12.5.2.26	Appendix 12.1.2 Cultural Heritage Resources and Other Identified Items Recording Sheet No. 25
BH08	Grave of Man Chung Luen	Reconstructed in 1980	Section 12.5.2.43	Appendix 12.1.3 Cultural Heritage Resources and Other Identified
BH11	Grave of Mrs Man Leung	Reconstructed in 1964	Section 12.5.2.44	

Ref. No.	Name	Year of Construction	Corresponding Sections	Records of Cultural Heritage Resources and Other Identified Items in Appendix 12.1
				Items Recording Sheet No. 32

### 12.5.3 Identification and Evaluation of Potential Impacts

12.5.3.1 Among the 176 built heritage and other identified items, five of them are within the Project, while the remaining 171 built heritage and other identified items are outside the Project boundary. The following discussion on the impact to built heritage and other identified items will be based on their relations to the Project.

12.5.3.2 The potential impacts are classified into five levels of significance:

- a) Beneficial impact: the impact is beneficial if the Project will enhance the preservation of the heritage site(s);
- b) Acceptable impact: if the assessment indicates that there will be no significant effects on the heritage site(s);
- c) Acceptable impact with mitigation measures: if there will be some adverse effects, but these can be eliminated, reduced or offset to a large extent by specific measures, such as conducting a follow-up Conservation Proposal or Conservation Management Plan for the affected heritage site(s) before the commencement of work in order to avoid any inappropriate and unnecessary interventions to the buildings;
- d) Unacceptable impact: if the adverse effects are considered to be too excessive and are unable to mitigate practically; and
- e) Undetermined impact: if the significant adverse effects are likely, but the extent to which they may occur or may be mitigated cannot be determined from the Project. Further detailed study will be required for the specific effects in question.

#### *Construction Phase*

#### Built Heritage and Other Identified Items Within the Project Boundary

12.5.3.3 No declared monuments, proposed monuments, graded historic buildings, buildings in the list of new items for grading assessment with assessment results and Government historic sites are located within the Project boundary. Five other items are identified within the Project boundary, namely Tin Tak Heroes Temple (MPL01), Mai Po Lung Vegetable Marketing Co-operative Society Ltd. (MPL02), Sun Tin Vegetable Marketing Co-operative Society Ltd. (SHT01), Grave of Man Chung Luen (BH08) and Grave of Mrs Man Leung (BH11).

#### (1) Direct Impacts

12.5.3.4 Referring to **Figure 12.37**, MPL01 and MPL02 fall within “O” and / or “OU” land use under the Project. SHT01 is located on a proposed road alignment (“Road L9”). Direct impact due to demolition would be anticipated.

(2) Indirect Impacts

- 12.5.3.5 BH08 and BH11 will fall within “GB” with permitted burial ground under the Project (**Figure 12.37** refers). As no site formation or construction works to be carried out in these land uses, they will be remained in situ and no direct impact is anticipated.
- 12.5.3.6 Since they are surrounded by other development zones with less than 100m of distance in between, potential indirect impact of ground borne vibration, tilting and settlement is anticipated for these graves during the construction phase. Temporary change of access may be required for BH08 and BH11 during the construction stage.

Built Heritage and Other Identified Items Within the Assessment Area but Outside the Project Boundary

- 12.5.3.7 A total of 12 declared monuments and graded historic buildings and 159 other identified items are located outside the Project boundary but within the 500m assessment area. Further assessment on Tam Mei Barracks (BH01) and San Tin Barracks (BH02) are not available due to restricted access. Noting that this Project does not directly alter the Barracks, they are thus not considered in this impact assessment. The following impact assessment would thus focus on the 12 declared monuments and graded historic buildings and 157 other identified items.

(1) Direct Impact

- 12.5.3.8 No built heritage and other identified items would be directly impacted by the Project that lies within the assessment area but outside the Project boundary.

(2) Indirect Impacts

- 12.5.3.9 One grade 3 historic building, namely Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai (HBN186) is located approximately 90m from the Project boundary. As no construction works would be carried outside the Project boundary, no direct impact is anticipated. However, it was observed from site visits that the existing condition of the built heritage is not ideal with its northeast and southeast enclosing walls being suffered in serious deterioration, deformation and vegetation. Due to its vibration-sensitive and dilapidated structures, potential adverse indirect impacts of ground borne vibration, tilting and settlement are anticipated during the construction phase.
- 12.5.3.10 Seven other identified items, including Structure Between No. 5 and No. 7 of Shek Wu Wai (SWW01), Yeung Hau Temple (San Tin) (MPT01), Gurkha Cemetery (BH03), Man’s Boundary Stone (BH06), Grave of Man Lun Fung (“麒麟吐玉書”) (BH07), Grave of Man Chu Shui (BH10) and Grave of Chong Yin Kei (BH12) would be indirectly impacted, due to the close proximity within the items and the Project boundary, potential adverse indirect impacts of ground borne vibration, tilting and settlement are anticipated during the construction phase.
- 12.5.3.11 MPT01 is located right next to the Project boundary close to Castle Peak Road which is one of the main entry points into the Project site. While no construction would encroach into the building footprint, heavy flow of construction trucks and machineries is anticipated. Potential adverse direct impact of damage or disturbance to the structure through contacting with construction machineries and trucks may be anticipated from the Project during the construction phase.
- 12.5.3.12 Due to the close proximity of MPT01 and BH12 to the Project boundary, it might have potential dust accumulation from the works area nearby to the building and the grave.
- 12.5.3.13 As the existing access roads of BH03, BH07 and BH10 would fall within the Project boundary, change of access may be anticipated on them during the construction phase.

(3) No Impact

- 12.5.3.14 The remaining 11 declared monuments and graded historic buildings and 150 other identified items would not be directly or indirectly impacted due to the considerable distance between the built heritage and other identified items and the Project boundary.

*Operation Phase*

- 12.5.3.15 No direct impact is anticipated by the Project during the operation phase to all the built heritage and other identified items in concern.
- 12.5.3.16 The increase of population and enhanced transportation network in the proposed development would encourage the locals to visit the built heritage in the vicinity, in particular for the two declared monuments (Man Lun Fung Ancestral Hall (DM19) and Tai Fu Tai (DM32)). The increased flow in the region offers opportunities for heritage promotion and cultural tourism such that the history of the *Man* clan and San Tin could be better known.
- 12.5.3.17 A summary of the potential adverse impacts on built heritage and other identified items is presented in **Table 12.5.5**. The built heritage and other identified items with potential adverse impacts anticipated are presented in **Figure 12.38**.

**Table 12.5.5 Summary of Potential Adverse Impacts on Built Heritage and Other Identified Items**

Ref. No.	Name	Proposed Land Use			Potential Impacts and Assessment
		Area	Land Use	Others	
Direct Impacts					
MPL01	Tin Tak Heroes Temple	OU.5.3	OU	-	Removal of the buildings may be required. Direct impact of demolition is anticipated. <b>Acceptable impact with mitigation measures.</b>
MPL02	Mai Po Lung Vegetable Marketing Co-operative Society Ltd.	O.1.3, OU.1.11	O, OU	-	
SHT01	Sun Tin Vegetable Marketing Co-operative Society Ltd.	-	-	Road L9	Removal of the building may be required. Direct impact of demolition is anticipated. <b>Acceptable impact with mitigation measures.</b>
Indirect Impacts					
HBN186	Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai	-	-	-	Located approximately 90m from the Project boundary. Potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement are anticipated due to its vibration-sensitive and dilapidated structures. <b>Acceptable impact with mitigation measures.</b>
SWW01	Structure Between No. 5 and No. 7, Shek Wu Wai	-	-	-	Located approximately 47m from the Project boundary. Potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement are anticipated due to development in proximity. <b>Acceptable impact with mitigation measures.</b>
MPT01	Yeung Hau Temple (San Tin)	-	-	-	Located right next to the Project boundary. Potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement are anticipated due to development in proximity. As it is located next to Castle Peak Road, damage or disturbance to building fabrics through contacting with heavy construction machineries and trucks may be anticipated during the construction phase. It may also be impacted by dust accumulation during construction phase. <b>Acceptable impact with mitigation measures.</b>
BH03	Gurkha Cemetery	-	-	-	Located approximately 12m from the Project boundary. Potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement, especially to the old granite headstones, are anticipated due to development in proximity. Temporary change of access is also anticipated. <b>Acceptable impact with mitigation measures.</b>
BH06	Mans' Boundary Stone	-	-	-	Located approximately 33m from the Project boundary. Potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement are anticipated due to development in proximity. <b>Acceptable impact with mitigation measures.</b>

Ref. No.	Name	Proposed Land Use			Potential Impacts and Assessment
		Area	Land Use	Others	
BH07	Grave of Man Lun Fung ("麒麟吐玉書")	-	-	-	Located approximately 30m from the Project boundary. Potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement and temporary change of access are anticipated due to the development in proximity. <b>Acceptable impact with mitigation measures.</b>
BH08	Grave of Man Chung Luen	GB*.5.1	GB* (Green Built with Permitted Burial Ground)	-	As no site formation or construction works to be carried out in the "GB" with permitted burial ground zone, the grave will be preserved in situ. Since it is surrounded by other development zones with less than 100m of distance in between, potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement and temporary change of access are anticipated. <b>Acceptable impact with mitigation measures.</b>
BH10	Grave of Man Chu Shui	-	-	-	Located approximately 10m from the Project boundary. Potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement and temporary change of access are anticipated due to the development in proximity. <b>Acceptable impact with mitigation measures.</b>
BH11	Grave of Mrs Man Leung	GB*.5.1	GB* (Green Built with Permitted Burial Ground)	-	As no site formation or construction works to be carried out in the "GB" with permitted burial ground zone, the grave will be preserved in situ. Located approximately 12m from the proposed road development, potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement and temporary change of access are anticipated. <b>Acceptable impact with mitigation measures.</b>
BH12	Grave of Chong Yin Kei	-	-	-	Located approximately 7.5m from the Project boundary. Potential adverse indirect impacts of ground-borne vibration, tilting and ground settlement are anticipated due to the development in proximity. It may also be impacted by dust accumulation during construction phase. <b>Acceptable impact with mitigation measures.</b>

## 12.5.4 Mitigation Measures

### *Construction Phase*

#### (1) Cartographic and Photographic Record

12.5.4.1 Direct impact of demolition is anticipated for Tin Tak Heroes Temple (MPL01), Mai Po Lung Vegetable Marketing Co-operative Society Ltd. (MPL02) and Sun Tin Vegetable Marketing Co-operative Society Ltd. (SHT01) due to need for development. Preservation by record must be carried out before its demolition. A comprehensive record through 3D scanning, video recording and cartographic and photographic recording should be conducted by the project proponent of subsequent developer(s) prior to any construction works. A copy of these records should be provided to AMO for record purpose and future use, such as research, exhibition and educational programmes.

#### (2) Monitoring of ground-borne vibration, tilting and ground settlement

12.5.4.2 Monitoring of ground-borne vibration, tilting and ground settlement, shall be employed for Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai (HBN186) during the site formation and construction phases. The monitoring should be incorporated with a set of Alert, Alarm and Action (3As) system strictly following AMO's monitoring requirements for grade 3 historic building. The 3As levels for grade 3 historic building recommended by AMO are presented in **Table 12.5.6**.

12.5.4.3 The actual 3As criteria should be agreed with the AMO prior to the commencement of construction works. A monitoring proposal, including checkpoint locations, installation details, response actions to be taken when reaching each of the Alert/ Alarm/ Action (3As) levels and frequency of monitoring should be submitted to AMO and relevant stakeholder(s) for consideration before commencement of the works. Prior agreement and consent should be sought from the owner(s), stakeholder(s) and relevant Government department(s) for the installation of monitoring points on the built heritage before commencement of the works. Record of monitoring should be submitted regularly to AMO during the construction. AMO should be alerted in case any irregularities are observed.

12.5.4.4 Monitoring of ground-borne vibration, tilting and ground settlement is also proposed to be employed for Yeung Hau Temple (San Tin) (MPT01) and Structure between No. 5 and No. 7, Shek Wu Wai (SWW01) during the site formation and construction phases under Buildings Ordinance.

12.5.4.5 The monitoring should be incorporated with a set of Alert, Alarm and Action (3As) system strictly following the requirements set out in Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers - Ground-borne Vibrations and Ground Settlements Arising from Pile Driving and Similar Operations (PNAP APP-137) on vibration-sensitive and dilapidated buildings<sup>73</sup>. If the alert level is exceeded, the monitoring frequency should be increased. If the alarm level is exceeded, the design of the construction may have to be amended. If the action level is exceeded, all works should be stopped. Empirical guidelines on the 3As criteria provided in PNAP APP-137 during construction phase are quoted in **Table 12.5.7**. The actual 3As criteria shall be further confirmed via an assessment on the effects of ground-borne vibrations, settlements and tilting on MPT01 and SWW01.

12.5.4.6 Prior agreement and consent should be sought from the owner(s), stakeholder(s) and relevant Government department(s) for the installation of monitoring points on the building before commencement of the works. Record of monitoring should be submitted regularly

<sup>73</sup> Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers - Ground-borne Vibrations and Ground Settlements Arising from Pile Driving and Similar Operations. Retrieved on <https://www.bd.gov.hk/doc/en/resources/codes-and-references/practice-notes-and-circular-letters/pnap/APP/APP137.pdf>.

to the Buildings Department during the construction under Buildings Ordinance. Buildings Department should be alerted in case any irregularities are observed.

- 12.5.4.7 Seven other identified items may experience impacts of ground borne vibration, tilting and settlement, namely Gurkha Cemetery (BH03), Mans' Boundary Stone (BH06), Grave of Man Lun Fung ("麒麟吐玉書") (BH07), Grave of Man Chung Luen (BH08), Grave of Man Chu Shui (BH10), Grave of Mrs Man Leung (BH11) and Grave of Chong Yin Kei (BH12). With an aim to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and structural strengthening measures are required during construction phase, a baseline condition survey and baseline vibration impact assessment should be conducted for these non-building structures by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments. This is to ensure the construction performance meets with the vibration standard stated in the EIA report. Should monitoring of ground-borne vibration, tilting and ground settlement be required, the monitoring procedures shall refer to **Section 12.5.4.5** and **Section 12.5.4.5**.

(3) Safe Access

- 12.5.4.8 The entrance door of MPT01 leads directly to the Project boundary. A safe access route shall be maintained for visitors during the construction stage.
- 12.5.4.9 There would be a temporary change of access to BH03, BH07, BH08, BH10 and BH11 during the construction phase. A safe access route to these burial grounds should be maintained for conducting any mitigation measures, in particular during *Ching Ming Festival*, *Chung Yeung Festival* and *Purkha Divas*.

(4) Protective Barrier

- 12.5.4.10 The contractors should enforce protocol to forbid any light machinery, such as handheld jackhammer, or heavy machinery to come into direct contact with MPT01, which is located right next to the Project boundary. Physical protective barriers/ covers or intervention/cushioning materials, including but not limited to covering or sheltering, shall be provided during the proposed construction works to separate the works areas from the structure. No piling works shall be allowed within the protective zone. No worker or any construction related equipment(s) and material(s) should trespass the protective zone. The contractor should propose the actual extent of the protective zone and suitable protective covering materials to the satisfaction of AMO prior to the commencement of the proposed construction works.

(5) Dust Suppression

- 12.5.4.11 Implementation of mitigation measures in the *Air Pollution Control (Construction Dust) Regulation*, dust suppression measures and good site practice should be observed by the project proponent during the construction phase in order to avoid dust accumulation on the MPT01 and BH12.

(6) No Mitigation Measure Required

- 12.5.4.12 For the remaining 11 declared monuments and graded historic buildings and 150 other identified items, no potential adverse impact is anticipated. Hence, no mitigation measure is required.

*Operation Phase*

- 12.5.4.13 As no adverse impacts to all the built heritage and other identified items in concern during the operation phase, no mitigation measure is required.
- 12.5.4.14 A summary of mitigation measures on built heritage and other identified items is presented in **Table 12.5.8**.

**Table 12.5.6 Proposed 3As Limiting Criteria for Vibration, Settlement, Tilting Monitoring for Grade 3 Historic Building**

Type of Monitoring for	Alert	Alarm	Action
Vibration (PPV)	5mm/s	6mm/s	7.5mm/s
Settlement	6mm	8mm	10mm
Tilting	1/2000	1/1500	1/1000

(Note: Monitoring criteria would be subjected to review upon updates of grading status of heritage sites.)

**Table 12.5.7 Guidelines on 3As Criteria Recommended in PNAP APP-137**

Building Type	Guide values of maximum ppv (mm/sec)	
	Transient Vibration	Continuous Vibration
Vibration-sensitive/ dilapidated buildings	7.5	3.0

Instrument	Criterion	Alert	Alarm	Action
Ground settlement marker	Total settlement	12mm	18mm	25mm
Services settlement marker	Total settlement & Angular distortion	12mm or 1:600	18mm or 1:450	25mm or 1:300
Building tilting marker	Angular distortion	1:1000	1:750	1:500

**Table 12.5.8 Summary of Mitigation Measures on Built Heritage and Other Identified Items**

Ref. No.	Name	Proposed Land Use			Recommended Mitigation Measures
		Area	Land Use	Others	
MPL01	Tin Tak Heroes Temple	OU.5.3	OU	-	A comprehensive record through 3D scanning, video recording and cartographic and photographic recording should be conducted by the project proponent of subsequent developer(s) prior to any construction works. A copy of these records should be provided to AMO for record purpose and future use, such as research, exhibition and educational programmes.
MPL02	Mai Po Lung Vegetable Marketing Co-operative Society Ltd.	O.1.3, OU.1.11	O, OU	-	A comprehensive record through 3D scanning, video recording and cartographic and photographic recording should be conducted by the project proponent of subsequent developer(s) prior to any construction works. A copy of these records should be provided to AMO for record purpose and future use, such as research, exhibition and educational programmes.
SHT01	Sun Tin Vegetable Marketing Co-operative Society Ltd.	-	-	Road L9	A comprehensive record through 3D scanning, video recording and cartographic and photographic recording should be conducted by the project proponent of subsequent developer(s) prior to any construction works. A copy of these records should be provided to AMO for record purpose and future use, such as research, exhibition and educational programmes.
HBN186	Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai	-	-	-	Monitoring of ground-borne vibration, tilting and ground settlement is required.
SWW01	Structure Between No. 5 and No. 7, Shek Wu Wai	-	-	-	Monitoring of ground-borne vibration, tilting and ground settlement is required.
MPT01	Yeung Hau Temple (San Tin)	-	-	-	Monitoring of ground-borne vibration, tilting and ground settlement is required.  A safe access route shall be maintained for visitors during the construction stage.  Physical protective barriers/ covers or intervention/cushioning materials, including but not limited to covering or sheltering, shall be provided during the proposed construction works to

Ref. No.	Name	Proposed Land Use			Recommended Mitigation Measures
		Area	Land Use	Others	
					<p>separate the works areas from the structure. No piling works shall be allowed within the protective zone. No worker or any construction related equipment(s) and material(s) should trespass the protective zone.</p> <p>Implementation of mitigation measures in the <i>Air Pollution Control (Construction Dust) Regulation</i>, dust suppression measures and good site practice should be observed by the project proponent during the construction phase.</p>
BH03	Gurkha Cemetery	-	-	-	<p>A baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments, in order to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and structural strengthening measures are required during construction phase.</p> <p>A safe access route to the Cemetery should be maintained, in particular during <i>Purkha Divas</i>.</p>
BH06	Mans' Boundary Stone	-	-	-	<p>A baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments, in order to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and structural strengthening measures are required during construction phase.</p>
BH07	Grave of Man Lun Fung ("麒麟吐玉書")	-	-	-	<p>A baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments, in order to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and structural strengthening measures are required during construction phase.</p>

Ref. No.	Name	Proposed Land Use			Recommended Mitigation Measures
		Area	Land Use	Others	
					A safe access route to the Cemetery should be maintained, in particular during <i>Ching Ming</i> Festival and <i>Chung Yeung</i> Festival.
BH08	Grave of Man Chung Luen	GB*.5.1	GB* (Green Built with Permitted Burial Ground)	-	<p>A baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments, in order to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and structural strengthening measures are required during construction phase.</p> <p>A safe access route to the Cemetery should be maintained, in particular during <i>Ching Ming</i> Festival and <i>Chung Yeung</i> Festival.</p>
BH10	Grave of Man Chu Shui	-	-	-	<p>A baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments, in order to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and structural strengthening measures are required during construction phase.</p> <p>A safe access route to the Cemetery should be maintained, in particular during <i>Ching Ming</i> Festival and <i>Chung Yeung</i> Festival.</p>
BH11	Grave of Mrs Man Leung	GB*.5.1	GB* (Green Built with Permitted Burial Ground)	-	A baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments, in order to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and

Ref. No.	Name	Proposed Land Use			Recommended Mitigation Measures
		Area	Land Use	Others	
					<p>structural strengthening measures are required during construction phase.</p> <p>A safe access route to the Cemetery should be maintained, in particular during <i>Ching Ming</i> Festival and <i>Chung Yeung</i> Festival.</p>
BH12	Grave of Chong Yin Kei	-	-	-	<p>A baseline condition survey and baseline vibration impact assessment should be conducted by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments, in order to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and structural strengthening measures are required during construction phase.</p> <p>Implementation of mitigation measures in the <i>Air Pollution Control (Construction Dust) Regulation</i>, dust suppression measures and good site practice should be observed by the project proponent during the construction phase.</p>

## 12.5.5 Evaluation of Residual Impacts

12.5.5.1 No declared monument or Site of Cultural Heritage was identified within the Project area and hence no adverse impact is anticipated. For other heritage resources, should the mitigation measures on built heritage and other identified items mentioned in **Section 12.5.4** be implemented, the adverse impacts could be mitigated. No residual impact is anticipated on built heritage and other identified items.

## 12.5.6 Environmental Monitoring and Audit

### *Construction Phase*

#### (1) Cartographic and Photographic Record

12.5.6.1 Tin Tak Heroes Temple (MPL01), Mai Po Lung Vegetable Marketing Co-operative Society Ltd. (MPL02) and Sun Tin Vegetable Marketing Co-operative Society Ltd. (SHT01) should be preserved by record if direct impact of demolition is imminent. A comprehensive record through 3D scanning, video recording and cartographic and photographic recording should be conducted by the project proponent of subsequent developer(s) prior to any construction works. A copy of these records should be provided to AMO for record purpose and future use, such as research, exhibition and educational programmes.

#### (2) Monitoring of ground-borne vibration, tilting and ground settlement

12.5.6.2 Monitoring of ground-borne vibration, tilting and ground settlement, shall be employed for Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai (HBN186) during the site formation and construction phases. The monitoring should be incorporated with a set of Alert, Alarm and Action (3As) system strictly following AMO's monitoring requirements for grade 3 historic building. The 3As levels for grade 3 historic building recommended by AMO are presented in **Table 12.5.6**.

12.5.6.3 The actual 3As criteria should be agreed with the AMO prior to the commencement of construction works. A monitoring proposal, including checkpoint locations, installation details, response actions to be taken when reaching each of the Alert/ Alarm/ Action (3As) levels and frequency of monitoring should be submitted to AMO and relevant stakeholder(s) for consideration before commencement of the works. Prior agreement and consent should be sought from the owner(s), stakeholder(s) and relevant Government department(s) for the installation of monitoring points on the built heritage before commencement of the works. Record of monitoring should be submitted regularly to AMO during the construction. AMO should be alerted in case any irregularities are observed.

12.5.6.4 Monitoring of ground-borne vibration, tilting and ground settlement is also proposed to be employed for Yeung Hau Temple (San Tin) (MPT01) and Structure between No. 5 and No. 7, Shek Wu Wai (SWW01) during the site formation and construction phases under Buildings Ordinance.

12.5.6.5 The monitoring should be incorporated with a set of Alert, Alarm and Action (3As) system strictly following the requirements set out in Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers - Ground-borne Vibrations and Ground Settlements Arising from Pile Driving and Similar Operations (PNAP APP-137) on vibration-sensitive and dilapidated buildings<sup>74</sup>. If the alert level is exceeded, the monitoring frequency should be increased. If the alarm level is exceeded, the design of the construction may have to be amended. If the action level is exceeded, all works should be stopped. Empirical guidelines on the 3As criteria provided in PNAP APP-137 during construction phase are quoted in **Table 12.5.7**. The actual 3As criteria shall be further

<sup>74</sup> Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers - Ground-borne Vibrations and Ground Settlements Arising from Pile Driving and Similar Operations. Retrieved on <https://www.bd.gov.hk/doc/en/resources/codes-and-references/practice-notes-and-circular-letters/pnap/APP/APP137.pdf>.

confirmed via an assessment on the effects of ground-borne vibrations, settlements and tilting on MPT01 and SWW01.

- 12.5.6.6 Prior agreement and consent should be sought from the owner(s), stakeholder(s) and relevant Government department(s) for the installation of monitoring points on the building before commencement of the works. Record of monitoring should be submitted regularly to the Buildings Department during the construction under Buildings Ordinance. Buildings Department should be alerted in case any irregularities are observed.
- 12.5.6.7 Seven other identified items may experience impacts of ground borne vibration, tilting and settlement, namely Gurkha Cemetery (BH03), Mans' Boundary Stone (BH06), Grave of Man Lun Fung ("麒麟吐玉書") (BH07), Grave of Man Chung Luen (BH08), Grave of Man Chu Shui (BH10), Grave of Mrs Man Leung (BH11) and Grave of Chong Yin Kei (BH12). With an aim to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and structural strengthening measures are required during construction phase, a baseline condition survey and baseline vibration impact assessment should be conducted for these non-building structures by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments. This is to ensure the construction performance meets with the vibration standard stated in the EIA report. Should monitoring of ground-borne vibration, tilting and ground settlement be required, the monitoring procedures shall refer to **Section 12.5.4.5** and **Section 12.5.4.6**.

(3) Safe Access

- 12.5.6.8 The entrance door of Yeung Hau Temple (San Tin) (MPT01) leads directly to the Project boundary. A safe access route shall be maintained for visitors during the construction stage.
- 12.5.6.9 There would be a temporary change of access to Gurkha Cemetery (BH03), Grave of Man Lun Fung ("麒麟吐玉書") (BH07), Grave of Man Chung Luen (BH08), Grave of Man Chu Shui (BH10) and Grave of Mrs Man Leung (BH11) during the construction phase. A safe access route to these burial grounds should be maintained for conducting any mitigation measures, in particular during *Ching Ming* Festival, *Chung Yeung* Festival and *Purkha Divas*.

(4) Protective Barrier

- 12.5.6.10 The contractors should enforce protocol to forbid any light machinery, such as handheld jackhammer, or heavy machinery to come into direct contact with Yeung Hau Temple (San Tin) (MPT01), which is located right next to the Project boundary. Physical protective barriers/ covers or intervention/cushioning materials, including but not limited to covering or sheltering, shall be provided during the proposed construction works to separate the works areas from the structure. No piling works shall be allowed within the protective zone. No worker or any construction related equipment(s) and material(s) should trespass the protective zone. The contractor should propose the actual extent of the protective zone and suitable protective covering materials to the satisfaction of AMO prior to the commencement of the proposed construction works.

(5) Dust Suppression

- 12.5.6.11 Implementation of mitigation measures in the *Air Pollution Control (Construction Dust) Regulation*, dust suppression measures and good site practice should be observed by the project proponent during the construction phase in order to avoid dust accumulation on the Yeung Hau Temple (San Tin) (MPT01) and Grave of Chong Yin Kei (BH12).

*Operation Phase*

- 12.5.6.12 As no adverse impacts to all the built heritage and other identified items in concern during the operation phase, no mitigation measure is required.

## 12.5.7 Conclusion

- 12.5.7.1 The village settlements in San Tin could be dated back to the early Ming dynasty. Baseline study, comprises of desktop research and field evaluation, has identified two declared monuments, one grade 1 historic building, five grade 2 historic buildings, four grade 3 historic buildings and 164 other identified items. Due to restricted access to Tam Mei Barracks (BH01) and San Tin Barracks (BH02), they are not considered in the impact assessment.
- 12.5.7.2 Beneficial impact is anticipated on Man Lun Fung Ancestral Hall (DM19), Tai Fu Tai (DM32) and Gurkha Cemetery (BH03) as opportunities on heritage promotion and cultural tourism could be enhanced by the Project.
- 12.5.7.3 No direct impact is anticipated on any declared monument; hence, no particular mitigation measure is necessary for the conservation and preservation of Sites of Cultural Heritage and the requirements in Annexes 10 and 19 of the TM have been met. In addition, no direct impact is also anticipated on any proposed monument, graded historic building and Government historic site.
- 12.5.7.4 For other identified items, direct impact of demolition is anticipated for Tin Tak Heroes Temple (MPL01), Mai Po Lung Vegetable Marketing Co-operative Society Ltd. (MPL02) and Sun Tin Vegetable Marketing Co-operative Society Ltd. (SHT01). A comprehensive record through 3D scanning, video recording and cartographic and photographic recording should be conducted prior to any construction works for record purpose and future use, such as research, exhibition and educational programmes.
- 12.5.7.5 Potential adverse impacts of ground borne vibration, settlement and tilting is anticipated for one grade 3 historic building (HBN186) and nine other identified items (SWW01, MPT01, BH03, BH06-BH08, BH10-BH12) due to their conditions or close proximity to the development sites.
- 12.5.7.6 Monitoring of ground-borne vibration, tilting and ground settlement is proposed to be employed for Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai (HBN186) and other identified items impacted by ground-borne vibration, tilting and ground settlement. A baseline condition survey and baseline vibration impact assessment should be conducted for non-building structures namely Gurkha Cemetery (BH03), Mans' Boundary Stone (BH06), Grave of Man Lun Fung ("麒麟吐玉書") (BH07), Grave of Man Chung Luen (BH08), Grave of Man Chu Shui (BH10), Grave of Mrs Man Leung (BH11) and Grave of Chong Yin Kei (BH12) by a qualified building surveyor or qualified structural engineer to define the vibration limit and to evaluate if ground-borne vibration, tilting and ground settlement monitoring and structural strengthening measures are required during construction phase.
- 12.5.7.7 As the access roads of BH03, BH07, BH08, BH10 and BH11 will fall within the Project boundary, temporary change of access is possible. A safe access route to these burial grounds should be maintained for conducting any mitigation measures, in particular during *Ching Ming Festival*, *Chung Yeung Festival* and *Purkha Divas*. For MPT01, as its entrance door directly leads to the works area, a safe access shall be maintained for visitors during the construction stage.
- 12.5.7.8 Damages of building fabrics via contacting with construction machineries and construction trucks may be anticipated for Yeung Hau Temple (San Tin) (MPT01) due to its close distance to Project boundary and the Castle Peak Road, which would be one of the main entry points of construction machineries and trucks into the development areas. Physical protective barriers/ covers or intervention/cushioning materials, including but not limited to covering or sheltering, shall be provided during the proposed construction works to separate the works areas from the structure. No piling works shall be allowed within the protective zone. No worker or any construction related equipment(s) and material(s) should trespass the protective zone. The contractor should propose the actual extent of the

protective zone and suitable protective covering materials to the satisfaction of AMO prior to the commencement of the proposed construction works.

- 12.5.7.9 Implementation of mitigation measures in the *Air Pollution Control (Construction Dust) Regulation*, dust suppression measures and good site practice should be observed by the project proponent during the construction phase in order to avoid dust accumulation on the Yeung Hau Temple (San Tin) (MPT01) and Grave of Chong Yin Kei (BH12).
- 12.5.7.10 No impact is anticipated for the remaining 11 declared monuments and graded historic buildings and 150 other identified items. Therefore, no mitigation measure is required and the requirements in Annexes 10 and 19 of the TM have been met.

## 12.6 Archaeological Impact Assessment

### 12.6.1 Desktop Study

12.6.1.1 Previous archaeological findings from prehistoric period have uncovered evidence of past human occupation in Hong Kong. Archaeological sites from the prehistory have been discovered on the relatively flat area along coastal beaches in the western Hong Kong near the Zhujiang River Delta<sup>75</sup>. Prehistoric archaeological remains have been found in locations such as Lau Fau Shan, Ngau Hom Shek and Mong Tseng. The geographical condition in these areas would have made them attractive places for human settlement during the prehistoric period. **Table 12.6.1** presents the known archaeological periods previously identified in Hong Kong, with sensitive landscape to each period in general.

**Table 12.6.1 Known Archaeological Periods in Hong Kong**

Period	Years	Representative Sites	Landforms with Archaeological Potential
Middle to Late Neolithic	7000BC – 3500BC	Lung Kwu Chau, Tai Wan (Lamma Island), Yung Long	Coastal plains, low hills, river terraces near estuaries
Bronze Age	3500BC – 2500BC	Tai Wan (Lamma Island), Lo So Shing, Man Kwok Tsui	
Song Dynasty	AD960 – AD1279	Mong Tseng Wai, Tai Hom Tsuen	plains, valleys, river terraces
Ming and Qing Dynasty	AD1368 – AD1912	Chok Ko Wan, Kowloon Walled City	

12.6.1.2 Based on the geographical and geological background, the Project site was previously a coastal landscape with estuary fed from the river valleys in the south. As a result, much of the northwestern area within the Project area was located on an offshore seabed in the past, which was uninhabitable and has no archaeological potential (**Section 12.4.1.5** refers). On the other hand, the fishponds situated within the Project area have already removed archaeological materials (if any) due to the nature of their construction methods. Traditional villages settled at San Tin was once on the coast backed by a small hill. While Mai Po SAI, a site with deposits from historical period, was once situated on a small hill also on the coast. The settlement patterns during the historical period seems to favour coastal settings.

12.6.1.3 Most of traditional villages in San Tin settled on river terraces or on the coast in close proximity to small hills. The San Tin area was mainly occupied by the *Man* clan since the Ming dynasty (including Yan Shau Wai, Tung Chan Wai, Fan Tin Tsuen, Wing Ping Tsuen, On Lung Tsuen, Tsing Lung Tsuen, San Lung Tsuen), while Pun Uk Tsuen was settled around the same time as the rapid expansion of the *Man* clan. On the other hand, Chau Tau Tsuen and Shek Wu Wai of the *Man* clan, Lok Ma Chau and Mai Po Tsuen are believed to be of later period in Qing dynasty. These traditional villages would have historical significance as past human activities in these villages would yield abundant archaeological materials in situ. Moreover, surviving structures are identified within these villages

<sup>75</sup> 商志譚、吳偉鴻 (2010)。香港考古學敘研。北京：文物出版社。

supporting settlement history in historical period. Therefore, they would be considered to have high archaeological potential in historical period<sup>76</sup>.

- 12.6.1.4 No major historic events, such as battles, arrival of historic figures took place at the Project site. There is no notable structure in relations to any historic events (such as monument, fort, bridge, air-raid shelter etc.) within the Project site. Hence the land use of the Project site has traditionally be residential settlements with agricultural fields and / or fishponds.
- 12.6.1.5 The closest SAI to the Project is Mai Po SAI. Part of the Project would encroach on the north-eastern portion of the Mai Po SAI which is currently occupied by buildings with concrete pavements covering the ground surface.
- 12.6.1.6 While the previous archaeological investigations/surveys as discussed in **Section 12.4.3** had covered part of the north-eastern area of the Project site, most of the site has not been surveyed archaeologically to provide a holistic understanding on its archaeological potential. Noting that there had been no archaeological survey (and hence no data is available), and that the alluvial nature of soils in this area might be suitable for past human activities (such as agriculture in the historical period), archaeological potential within the Project area cannot be denied entirely based on desktop analysis only. Yet, it is possible to determine areas where the soil had been heavily disturbed, which contain no archaeological potential.
- 12.6.1.7 Some land uses and landscape are considered to have no archaeological potential (i.e. archaeological remains unlikely exist), and / or locations with heavy modern disturbances in which the surface soil had been removed, these include:
- Former Coast;
  - Cut slopes;
  - Natural streams;
  - Ponds;
  - Roads; and
  - Development(s) where site formation works had been carried out.
- 12.6.1.8 In addition, past archaeological investigations conducted in the vicinity had also surveyed and confirmed the archaeological potential of areas in Lok Ma Chau, Pak Shek Au and Kwu Tung located within the assessment area (**Section 12.4.3** refers).
- 12.6.1.9 A review on the archaeological potential on the assessment area based on desktop study with the latest Project area and assessment area adopted in this report is shown in **Figure 12.66**.
- 12.6.1.10 Based on the conditions, status and accessibility of the lands within the Project boundary, archaeological surveys in the forms of field scanning or test pit excavation were conducted for the locations as shown in **Figures 12.40 to 12.58** under the Licence No. 471, to obtain more archaeological information for the AIA. Details of the archaeological field survey are presented below.

## 12.6.2 Archaeological Field Survey

- 12.6.2.1 A total of 51.39 hectares of land have been field scanned and two test pits have been excavated within the Licence Area of Licence No. 471 between 16<sup>th</sup> November and 7<sup>th</sup> December 2022. The fieldworks covered field scanning over fifteen (15) areas and two (2) test pit excavations. The findings of the archaeological surveys have been reported to AMO in an Archaeological Impact Assessment Report and adopted for assessing

<sup>76</sup> The assessment criteria on whether a traditional village would be considered to have high archaeological potential are specific to this Report only. The application of such criteria on assessing traditional village in other situations or assessments should be subject to further review.

archaeological impact arising from the Project in this Archaeological Impact Assessment Chapter.

### *Field Scanning*

#### Approach and Methodology

- 12.6.2.2 Field scanning was conducted between 16<sup>th</sup> November and 7<sup>th</sup> December 2022 for 13 days on natural terrains, mostly on small hills to the south of San Tin Highway. Field scanning aimed to discover any archaeological remains on ground surface and/or exposed soil profile.
- 12.6.2.3 The scanning was conducted in a systematic manner in which the site will be covered as far as practicable. Surface findings are photographed, collected, and presented in this AIA Report. Particular attention has been given to exposed areas such as riverbed cuts, erosion areas and terrace cuts.
- 12.6.2.4 The field scanning area has been divided into fifteen (15) areas, and have been named A1, A2, A3 etc, where A stands for “Area”. The location of field scanning area is shown in **Figure 12.39**. Furthermore, areas with relatively thinner vegetation have been selected to conduct intensive field scanning by removing the light vegetation covered (**Figure 12.40 to Figure 12.58**). The intensive area was selected:
- i. in close proximity to existing graves, where the soil has been disturbed. If there is any archaeological material that was once buried beneath, it could have been exposed on the ground surface.
  - ii. in areas that have relatively gentle slope beside a nearby hillslope. If there were artefacts on the slope, they could have been transported downslope and accumulate there through natural actions.
  - iii. in areas where there is no violation to the burial grounds and any associated ritualistic features and traditions (such as gravestones, shrines, kam tap, etc.).

#### Site Constrains

- 12.6.2.5 It is noted that most lands within the Project area is either occupied by privately as buildings, paved car parks, open storage, cultivation or fishponds. Archaeological survey has therefore been focusing on land suitable for field scanning, where natural terrain is exposed and on government land.
- 12.6.2.6 All fifteen area has been extensively covered as far as practical except area A7. Area A7 comprises of two areas, including a small hillock located within Pang Loon Tei village and the lower hillslopes of Ngau Tam Shan along the southeast boundary of the Project area (**Figure 12.39**). Access routes to the small hillock was blocked by temporary structures or fencing (Photo A7.2 to Photo A7.4 in **Appendix 12.5** refer). The trail leading to the lower hillslopes of Ngau Tam Shan had been abandoned and blocked by heavy vegetation (Photo A7.1 in **Appendix 12.5** refers). Field scanning is thus unable to be conducted in area A7.

#### Field Scanning Results

- 12.6.2.7 A total of thirty-one (31) pieces of blue and white porcelain sherds have been collected from three field scanning areas A5, A10 and A12. Finds number naming uses the site code (STLMC2022), follow by area name (A1 to A15) and bag number (start from 001 for each area) (e.g. STLMC2022-A4-001).
- 12.6.2.8 In addition, a total number of twenty (20) brown glazed sherds, thirty-five (35) modern ceramics sherds, eight (8) roof tiles, one (1) grey brick fragment and eleven (11) undiagnosed ceramics sherds are collected from the field scanning areas. However, these

findings lack datable characteristics in terms of morphology, decoration style, or are modern materials. Hence, they are not discussed.

- 12.6.2.9 Records of the field scanning in Area 1 to Area 15 are supplemented in **Appendix 12.3.1**. Notable blue and white porcelain sherd findings yielded in A5, A10 and A12 are discussed below.

#### Findings from A5

- 12.6.2.10 One (1) piece of blue and white porcelain sherd has been recovered. The finding location is next to a local grave with thick vegetation. No associated material can be identified with this finding. Hence, this finding is considered an isolated one.

- 12.6.2.11 STL2022-A5-001 is a rim blue and white porcelain rim sherd of a bowl, with “川” pattern drawn on the exterior. The interior of the sherd has no decoration or painting. The diameter of the original vessel cannot be discerned as the sherd is too small. (**Plate 12.6.1**). Based on the pattern, it is possible the sherd was manufactured from the Tai Po Wun Yiu (大埔碗窑)<sup>77</sup>. This sherd could be dated to the *Jiaqing* reign<sup>78</sup>.



**Plate 12.6.1 Blue and white porcelain sherd: STL2022-A5-001**

#### Findings from A10

- 12.6.2.12 Twenty nine (29) pieces of blue and white porcelain sherds have been recovered from A10 (**Plate 12.6.2** and **Plate 12.6.3** refer). The location of the findings is on a vacant land with frequent construction materials (modern tiles, cements) and rubbish (plastic pieces, and other domestic wastes) to the northwest side of Shek Wu Wai village. The distribution pattern did not render any particular features. The mixing of these blue and white porcelain sherds with construction materials and rubbish of modern origin suggests that they were possibly secondary deposits from demolition of village houses nearby, while the lack of notable building foundation remains on site suggested that they are possible secondary in nature.

- 12.6.2.13 Based on the decoration style, these blue and white porcelain sherds were products from Tai Po Wun Yiu<sup>79 80</sup>.

<sup>77</sup> 區家發、周世榮、曾廣億、佟寶銘、馬恩生 (1997)。香港大埔碗窑青花瓷窑址：調查及研究。香港：香港區域市政局。

<sup>78</sup> 郭學雷 (2001)。香港大埔碗窑再認識。古物古蹟辦事處。摘自 <https://www.amo.gov.hk/filemanager/amo/common/form/Wun-Yiu.pdf>。

<sup>79</sup> 區家發、周世榮、曾廣億、佟寶銘、馬恩生 (1997)。香港大埔碗窑青花瓷窑址：調查及研究。香港：香港區域市政局。

<sup>80</sup> 郭學雷 (2001)。香港大埔碗窑再認識。古物古蹟辦事處。摘自 <https://www.amo.gov.hk/filemanager/amo/common/form/Wun-Yiu.pdf>。



Plate 12.6.2 Blue and White Porcelain Sherds (Exterior Side): STLMC2022-A10-001 and STLMC2022-A10-002



Plate 12.6.3 Blue and White Porcelain Sherds (Interior Side): STLMC2022-A10-001 and STLMC2022-A10-002

Findings from A12

12.6.2.14 Among the modern sherds, one (1) blue and white porcelain sherd is discovered. It is a bowl sherd with complete profile from rim to foot ring with no decoration or painting

observed. The glaze covered the rim and body on the interior and exterior, while the interior base and the exterior foot ring remains unglazed.

12.6.2.15 No datable feature is observed on this sherd. Given its discovery along with modern wares, it is possible the sherd is from the Qing dynasty *terminus post quem*.



Plate 12.6.4 Blue and White Porcelain Sherd (Exterior Side): STL2022-A12-001

Table 12.6.2 Summary of Artefacts Collected from the Field Scanning for STL2022

Field Scanning Area	Blue and White Porcelain	Brown Glazed	Modern Ceramics	Roof Tile	Grey Brick	Undiagnosed Ceramics
A1		1		6		
A2			7			1
A3				2		1
A4		1	1			
A5	1					
A6			15			
A8		4				2
A9						
A10	29	14	1			5
A11						
A12	1		11			2
A13					1	
A14						
A15						
<b>Total</b>	31	20	35	8	1	11

*Test Pit Excavation*

Site Constrains

12.6.2.16 It is noted that most lands suitable for field scanning are currently used as burial grounds by the Man clan. To respect the local traditions and avoid unnecessary hostility, no

intrusive archaeological survey (such as test pit excavation and auger hole test) has been carried out on those lands. Test pits placed within the survey area were at some distance to the local burial grounds (**Figure 12.3** refers).

#### Test Pit Excavation Results

- 12.6.2.17 Two (2) test pit excavations (and subsequent backfilling) were carried out between 5<sup>th</sup> and 7<sup>th</sup> December 2022. The test pit excavations aimed to establish the horizontal spread of cultural layer and the depth of cultural layer(s), as well as to discover the presence of any buried archaeological remains. Two (2) test pits with a dimension of 2.0m by 1.0m have been excavated with vertical test pit walls and rectangular shape in plan. The location of the two test pits, named TP1 and TP2 (where TP stands for “Test Pit”), is shown in **Figure 12.58**. Land survey has been carried out on 22<sup>nd</sup> December 2022.
- 12.6.2.18 Due to recent modern rubbish dumps as well as the collapse of trees after the adverse summer weather, the tentative location for both TP1 and TP2 proposed in the AAP are slightly relocated. The relocation has considered avoidance of potential enormous amount of fill soils, safety on site, as well as avoidance of recent disturbance on site. Both test pits have been placed to ensure the archaeological potential could be discern from the proposed location (and thus verifying the archaeological potential assessment from the NENT report).
- 12.6.2.19 Test pits were placed in a North-South orientation for ease of field recording. The excavation has reached the sterile layer using hand-held tools. Hand-held auger hole drilling has been performed on TP1 upon reaching the bottom of the test pit in order to verify that the excavation reached the sterile layer. Attempt has been made to TP2 for hand-held auger hole drilling, but since the regolith materials contained too many cobbles and are too firm, the auger was not successful and have to be abandoned.
- 12.6.2.20 No artefact has been identified in TP1 and TP2. Stratigraphy and record of each test pit are presented in **Appendix 12.3.2**. The findings of the two test pits are discussed below.

#### Findings from TP1 and TP2

- 12.6.2.21 Both TP1 and TP2 are located to the north of a local drainage channel running from east to west and drains into the Shenzhen River, which in turn runs to the north and in parallel direction of Castle Peak Road – Chau Tau.
- 12.6.2.22 TP1 consists of two major strata in nine contexts that could reflect the natural and artificial event(s) that took place in this area. Underground water level emerged at approximately +3.65mPD during the excavation. An auger hole was drilled at the base of TP1 to a depth of 1.3m before the soil could not be hold by the auger.
- Top (first) layer (Context C101 to C108): Modern fill soil
    - No artefact is identified in this stratum;
    - C101 to C105 and C107 are modern fill soils;
    - C106 is a concrete structure within these fill soils; and
    - C108 is the cut of the concrete structure C106.
  - Second layer (Context C109): Alluvial soil. Underground water emerged at approximately +3.65mPD during the excavation.
    - No artefact is identified in this stratum;
    - C109 is a soft reddish brown sandy clay that represents the alluvium soil commonly see in this region. This context is also the limit of excavation.
- 12.6.2.23 TP2 consists of two major strata with five context that could reflect the natural and artificial event(s) that took place in this area. Auger hole has been attempted at the base of TP2, but hard objects (rocks) has hindered all attempts.

- Top (first) layer (Context C201 to C204): Modern Fill Soil
  - No artefact is identified in this stratum;
  - C201 to C204 are modern fill soils;
- Second layer (Context C205): Regolith (decomposed bedrock)
  - No artefact is identified in this stratum;
  - C205 is a very soft light olive brown silty clay the decomposed bedrock in this area. This context is also the limit of excavation.

#### *Analysis and Interpretation of Fieldwork Results*

##### Interpretation of the Test Pit Excavation Data

- 12.6.2.24 The phenomena of the fill soils identified in these two test pits revealed that the area to the north of San Tin Highway within the Project area has been disturbed. The level of disturbance has reached sterile layer (alluvium at underground water level at TP1, and the decomposed regolith in TP2).
- 12.6.2.25 This result verified the low archaeological potential assessed under the NENT NDA Study. The lack of archaeological materials and notable cultural layer in both test pits abide by the assessment result of the NENT NDA Study that the area has low archaeological potential.

##### Interpretation of the Field Scanning Data

- For Areas A1 and A2
- 12.6.2.26 Areas A1 and A2 have yielded no archaeological finds. They are burial grounds and have been severely disturbed. The lack of findings is in line with the assessment in Sheung Shui to Lok Ma Chau Spur Line, which have assessed that there is no archaeological potential in these areas (**Section 12.4.3.8** refers), while the assessment for the development of Lok Ma Chau Loop project (**Section 12.4.3.17** refers) is rejected. Therefore, field scanning areas A1 and A2 are concluded to have no archaeological potential, abide by the assessment of the Sheung Shui to Lok Ma Chau Spur Line project.
- For Area A10
- 12.6.2.27 Among the thirty one (31) pieces of blue and white porcelain sherds, twenty nine (29) were found in area A10 to the northwest of Shek Wu Wai. Meanwhile, isolated pieces were discovered in areas A5 and A12. These pieces could be diagnostic to the Qing dynasty<sup>81</sup> *terminus post quem*. However, pieces in area A10 were discovered in the context of a waste deposit along with many modern waste materials, suggesting that they were secondary deposits. Nevertheless, these findings indicated that Shek Wu Wai has human activities since the Qing dynasty. Hence, A10 is deemed to have moderate archaeological potential in historical period.
- 12.6.2.28 The discovery of blue and white porcelain sherds in A10 also confirms the assessment in FS stage that Area G and Shek Wu Wai Village has cultural deposits in historical period (**Table 12.4.1** and **Figure 12.6** refer).
- For the remaining field scanned areas A3 to A6, A8, A9, A11 to A15
- 12.6.2.29 While one piece of blue and white porcelain sherd was discovered in the field scanning at A5 and A12 respectively, the findings were isolated with no relationship to any notable phenomenon. Their presence lacks correlations with past human activities and thus could not be inferred to contain archaeological potential for these areas.

<sup>81</sup> 郭學雷 (2001)。香港大埔碗窰再認識。古物古蹟辦事處。摘自 <https://www.amo.gov.hk/filemanager/amo/common/form/Wun-Yiu.pdf>。

- 12.6.2.30 On the other hand, areas A3 to A6, A8, A11 to A13 are burial grounds. The construction of graves involves excavation and site formation works. Soil would have been severely disturbed. Any potential archaeological remains that was once buried would have already been unearthed in the process and would either be disposed on the nearby ground surface. As these areas lack considerable substantial archaeological findings from the survey, they are thus considered to have low archaeological potential.
- 12.6.2.31 Areas A9 and A14 contains many modern trashes, and some signs of site flattening in modern times that would have already disturbed the ground. As no archaeological material is identified, the area is considered to have no archaeological potential.
- 12.6.2.32 A7 is generally inaccessible due to fencing of the area and dense vegetation. Hence, field scanning was unable to be conducted and the archaeological potential of the area was not concluded.
- 12.6.2.33 A15 has narrow strips of natural terrain among developed areas (such as roads, open storage, etc. No archaeological material is identified. As NENT NDA EIA Study has concluded that the area has low archaeological potential, the result of this survey supported that justification.
- 12.6.2.34 The archaeological potential based on desktop study and archaeological fieldwork results under this Project is shown in **Figure 12.67**.

Archaeological Team

- 12.6.2.35 A team of professional staff and skilled labours led by the Licensed Archaeologist had participated in the archaeological fieldworks for this Project. Key members of the archaeological team are presented in **Table 12.6.3**.

**Table 12.6.3 Archaeological Team**

Personnel	Role	Responsibility	Organisation
Anna Chung	Project Director	Representative of AECOM	AECOM
Lai Pak Kin Patrick	Project Manager	Contact point for the archaeological works of this project; Liaise with AMO and project proponent regarding issues arise in relation to this <i>Licence</i> ; and Supervise the progress of the archaeological works conducted by the Licensed Archaeologist;	AECOM
	Senior Archaeologist	Assist Licensed Archaeologist to conduct archaeological survey at supervisory level; Prepare the required deliverables for Licensed Archaeologist to review; and Supervise archaeological survey on site;	
Dr. Li Long Lam	Licensed Archaeologist and Leader of the	Review all archaeological information collected;	Sub consultant of AECOM

Personnel	Role	Responsibility	Organisation
	Archaeological Team	Supervise archaeological survey on site; Review all archaeological analysis presented in the AIA Report; and Review and sign on documents and deliverables in relation to this <i>Licence</i> .	
Li Lok Lam	Assistant Archaeologist	Assist the Licensed Archaeologist to carry out necessary tasks in relation to this <i>Licence</i> .	AECOM
Nip Wei Hei	Assistant Archaeologist		AECOM
So Wan Ching	Assistant Archaeologist		AECOM
Choi Shing Hon	Assistant Archaeologist		AECOM
Ng Wing Yan	Assistant Archaeologist		AECOM

Difference between Licence Area and the Confirmed Scheme of Project Area Adopted for AIA

- 12.6.2.36 To obtain archaeological information on the tentative Project area which have not been surveyed before and facilitate the design of STLMC DN, this archaeological field survey was conducted before finalisation on the design of Project area and land resumption.
- 12.6.2.37 The Licence Area for this archaeological field survey was based on the tentative Project area dated August 2022, but refinement of Project area was proposed after August 2022 according to the latest Project’s design and land status. Despite the changes in the Project area, the locations where archaeological fieldworks were performed are largely within the latest Project area. The data retrieved from the fieldworks would still be applicable for analysing the archaeological potential of the latest Project area.

**12.6.3 Preliminary Review of Archaeological Potential**

*Understanding on the Ancient Landscape*

- 12.6.3.1 The changes in sea level had shaped the landscape of Hong Kong. Around 6,000 years BP, the postglacial sea levels in Hong Kong in general had reached a high point that was approximately 1m to 3m above current levels<sup>82</sup>. As a result, the coastline at 6,000 years BP was further inland than the present coastline.
- 12.6.3.2 In the case of San Tin, the licensed archaeologist believes that the prehistoric shoreline would have been located further inland to the lower hillsides of *Ngau Tam Shan* and *Ki Lun Shan* (**Figure 12.59** refers). This is further supported by the lack of prehistoric archaeological materials found in this area. It is believed that prehistoric population would have settled in higher grounds along the eastern and southern boundary of the Project area, where the elevation was dry enough for past human activities.
- 12.6.3.3 Over time, the landscape gradually changed. San Tin is situated at the estuary of Shenzhen River and several local rivers. Prior to the river channelisation, Shenzhen River was wider and the coastline was further inland. This shift is supported by the presence of marine sand deposit (QHH) reaching the north of the San Tin villages (**Figure 12.2** refers).

<sup>82</sup> Fyfe, J. A et al. (2000). The Quaternary Geology of Hong Kong. Hong Kong: Civil Engineering Department.

Local rivers of San Tin originated from the *Ngau Tam Shan* in the south would have carried sediments, forming a sandbar deposit at the estuary (as identified by Qam on geological map; **Figure 12.2** refers).

- 12.6.3.4 The presence of numerous fishponds with water levels close to the current ground surface supports the argument. In the Shek Wu Wai area, these fishponds can be seen from aerial photos taken in 1963 (**Figure 12.7** refers), indicating the utilisation of water resources for aquaculture. This suggests the existence of an available water source, which may have contributed to the formation of a lagoon. Furthermore, the water levels are approximately 30cm below the existing ground surface at an elevation of around +7mPD. The flat plain topography of the region, combined with the near-surface underground water level, further strengthens the argument for the previous presence of a lagoon. The close proximity of the water table to the ground surface indicates that this landscape is favourable to underground water accumulation, characteristic of lagoon formation. Therefore, the combination of these factors provides compelling evidence that a lagoon existed prior to agricultural development in the region.
- 12.6.3.5 The licensed archaeologist and his team propose that the formation of lagoons can be attributed to the development of sandbars between two local spurs: one located at the western foothills of Tit Hang Shan in Lok Ma Chau, and the other being a small hill at Mai Po (**Figure 12.59** refers). Gradually, these sandbars would have formed a similar alignment parallel to the modern San Tin Highway, effectively separating the sea water of the Deep Bay from the waters draining from the catchment areas among the hills of *Ki Lun Shan* and *Ngau Tam Shan*. Small hills scattered in the inland plain areas around Shek Wu Wai would have formed small islands within the lagoon during that period.
- 12.6.3.6 It is believed that the sandbar was formed before the Ming dynasty, as the San Tin villages of the Man clan was settled during that time. The lagoons were then converted into agricultural lands and fishponds by the locals, taking advantage of the fertile lagoon sediments and abundant water resources. Site visits have been conducted within the assessment area in July and August 2023 to further review. No contradiction to this argument in the current landscape and land use of the site during the latest site visits were noted.
- Preliminary Review of Archaeological Potential*
- 12.6.3.7 It is relatively well-known that as prehistoric human activities favoured coastal environment. Broad brush understanding is that prehistoric findings could possibly be found along the lower hillslopes, in particular to the east and south of the Project area (**Figure 12.59** refers). Similar landscape with prehistoric finds has been found at SAIs like Sheung Shui Wa Shan SAI and Tsat Sing Kong SAI.
- 12.6.3.8 As the lagoon landscape is anticipated to have existed from after the prehistoric period to until approximately 1,000 BP before the Ming dynasty during which the sandbars and the associated lagoons were formed, the ancient sandbar could contain archaeological finds in historical period. Bronze coins dated to the Song dynasty were discovered at Mai Po SAI (**Sections 12.4.3.4 to 12.4.3.6** refer). Hop Shing Wai and Mai Po Lung were situated on the presumed sandbar and may yield archaeological deposits, especially from the Tang dynasty. The north-facing valley at the former coastline of Hop Shing Wai resembles the landscape of Sha Tsui Tau SAI in Tung Chung, where archaeological deposits dating to Tang dynasty were discovered.
- 12.6.3.9 Since the Ming dynasty, the *Man* clan settled in San Tin during the *Yongle* region (AD1403 to 1424) of Ming dynasty (**Sections 12.4.2.6** refers) and has established multiple villages in the region. Mai Po Tsuen was probably established 200 to 400 years ago. These villages situated in the coastal area may have archaeological potential in historical period, particularly from Ming dynasty.
- 12.6.3.10 Nevertheless, the economic activities and land use in San Tin have changed drastically in the modern period (**Sections 12.4.2.13 to 12.4.2.14** refer). Construction of fishponds, site

formation works for property development and infrastructure works have disturbed the archaeological information (if any) contained in the soil, while the level of disturbance is uncertain.

- 12.6.3.11 As detailed in **Section 12.6.2**, the archaeological survey results show that most of the surveyed areas are considered to have no or low archaeological potential, except Area A10 that is considered to have moderate archaeological potential in historical period. On the other hand, while previous two surveys at Lok Ma Chau presented different results on the archaeological potential, the field survey under this project revealed and confirmed that this area has no archaeological potential (**Section 12.6.2.26** refers).
- 12.6.3.12 However, the surveys are still limited by the site constraints in land accessibility and are mainly by means of field scanning focusing on government land where natural terrain is exposed. The archaeological potential of the Project area could not be fully assessed by desktop review and field survey.
- 12.6.3.13 In order to produce a more conclusive result for the AIA, a predictive model has been adopted to facilitate the evaluation of archaeological potential of the unsurveyed area and those areas where archaeological potential was not concluded by archaeological surveys and desktop review as detailed in the sections below (**Figures 12.60** and **61** refer for the result of the predictive model<sup>83</sup>; **Figure 12.68** refers for the areas with archaeological potential based on desktop and fieldwork results, together with the prediction modelling results with the review by the Licensed Archaeologist).

#### **12.6.4 Application of Archaeological Predictive Modelling for Archaeological Potential Assessment in Unsurveyed Area or Area Where Archaeological Potential Unconfirmed**

##### **Development of Archaeological Prediction Models**

- 12.6.4.1 In order to establish as much as possible on the archaeological potential in the unsurveyed area or area where archaeological potential unconfirmed within the Project boundary, the licensed archaeologist and his team have adopted the Geographical Information System (GIS) tool in the form of predictive modelling. This predictive modelling has served as a supporting tool for the licensed archaeologist to carry out a comprehensive archaeological analysis on the favourable landscape for past human activities within the Project area, as well as to verify the hypothesis on the ancient landscape and areas having higher likelihood of archaeological finds as discussed above.
- 12.6.4.2 A machine learning model, Maximum Entropy Modelling (MaxEnt), was utilised to predict archaeological potential via analysing the relationship between the location of known archaeological sites and their environmental variables. Two prediction models, one for prehistoric period and one for historical period, were established. Details of the methodology of the archaeological predictive modelling are presented in **Appendix 12.4**.
- 12.6.4.3 The predictive model can provide useful initial indication of archaeological potential, but it should be used cautiously and cannot be taken at face value due to inherent limitations. While the environmentally deterministic approach has been criticised for minimising cultural factors, it also has value in identifying potential environmental influences on past human decisions. Biases in the data and methodology can affect the accuracy of the results. However, with the experience and interpretation of the licensed archaeologist of this Project together with the archaeological investigation conducted under this Project and previous archaeological surveys to complement, validate and refine the output of the predictive model, the biases could be minimised. Site visits have been conducted within the

<sup>83</sup> MaxEnt model results on Figures 12.60 and 12.61 are on Unsurveyed Area (Figure 12.67 refer).

assessment area in July and August 2023 to further review. No contradiction to prediction model results during the latest site visits were noted.

*Archaeological Prediction Model Results*

- 12.6.4.4 A summary of areas with high likelihood of archaeological deposits within the 500m assessment area that were predicted by the archaeological prediction model is presented in **Table 12.6.4**. Detailed results of the archaeological prediction model are provided in **Appendix 12.4**.
- 12.6.4.5 The predictive model for prehistoric period has identified eight (8) areas of having high likelihood of archaeological deposits in prehistoric period, namely Mai Po Area, Hop Shing Wai Area, San Tin Area, Mai Po Lung Area, Siu Hum Tsuen Area, Pang Loon Tei Area, Hang Tau Area and Ngau Tam Mei (North) Area. These areas are generally located in coastal flats and hill foots and their locations are shown in **Figure 12.60**.
- 12.6.4.6 The prediction model for historical period has identified four (4) areas having high likelihood of archaeological deposits in historical period, namely Mai Po Area, Hop Shing Wai Area, San Tin Area and Shek Wu Wai Area. These areas are generally located in coastal flats and their locations are shown in **Figure 12.61**.

**Table 12.6.4 Summary of Areas Having High Likelihood of Archaeological Deposits Within 500m Assessment Area Predicted by Archaeological Prediction Models in Unsurveyed Area or Area Where Archaeological Potential Unconfirmed**

Areas with Likelihood of Having Archaeological Deposits	Model for Prehistoric Period ( <u>Figure 12.60</u> )	Model for Historical Period ( <u>Figure 12.61</u> )	In Relation to Project Area
<b>Mai Po Area*</b>	✓	✓	<b>Partially within Project area</b>
<b>Hop Shing Wai Area</b>	✓	✓	<b>Within Project area</b>
San Tin Area	✓	✓	Outside Project area
<b>Mai Po Lung Area</b>	✓		<b>Within Project area</b>
<b>Siu Hum Tsuen Area</b>	✓		<b>Partially within Project area</b>
<b>Pang Loon Tei Area</b>	✓		<b>Partially within Project area</b>
Hang Tau Area	✓		Outside Project area
Ngau Tam Mei (North) Area	✓		Outside Project area
<b>Shek Wu Wai Area</b>		✓	<b>Within Project area</b>

Notes:

- ✓ Within (fully or partially) the Project area
- ✓ Outside the Project area but within the 500m assessment area
- \* For areas outside the existing Mai Po Site of Archaeological Interest

## 12.6.5 Evaluation of Archaeological Potential

12.6.5.1 After considering all the information collected during desktop review, past archaeological investigations/ surveys<sup>84 85 86 87 88 89 90</sup>, the archaeological survey for this Project, the archaeological prediction model results, as well as with consideration of modern disturbance, the archaeological potential of various areas within the 500m assessment area were evaluated. The evaluation has been cross-validated with the interpretation of licensed archaeologist as discussed in **Section 12.6.3**. Based on the evaluation, the archaeological potential of the assessment area has been identified and grouped into the following categories:

- **No Archaeological Potential Area** – Where archaeological remains are unlikely to exist, including areas of former coast that is unsuitable for human settlement due to previously submerged underwater, disturbed/developed areas where archaeological deposits if any have been destroyed; and/or where has been confirmed to have no archaeological potential by previous archaeological investigation/survey and/or the archaeological survey under this Project.
- **Low Archaeological Potential Area** – Where archaeological remains may once have existed, but where the survival of such remains would have been significantly affected by past and/or present disturbance/development (e.g. grave areas); and/or where low-lying lands with ancient sandbar character but subject to inundation; and/or where has been confirmed to have low archaeological potential by previous archaeological investigation/survey and/or the archaeological survey under this Project.
- **Moderate Archaeological Potential Area** – Where geographical and geological features are likely to have been conducive to past human settlement and/or indicate that archaeological remains may survive, but where detailed investigation/survey is lacking and where has been low or moderate impact from past or present disturbance/development; and/or where has been confirmed to have moderate archaeological potential by previous archaeological investigation/survey and/or the archaeological survey under this Project.
- **High Archaeological Potential Area** – Where archaeological sites, finds spots, and/or standing structures are known<sup>91</sup>; and/or where geographical and/or geological factors are likely to have been conducive to past human settlement with no or low impact from past or present disturbance/development; areas inside the sites of archaeological interest<sup>92</sup> identified by the AMO; and/or where has been confirmed to have high

<sup>84</sup> Peacock, B.A.V. and Nixon, T.J.P. (1985). "Summary Site Data Sheet Of Mai Po, Site No. 02/01", in *Report of the Hong Kong Archaeological Survey. 3.ab(1985-6)*; pp. 1-3. Unpublished, Antiquities and Monuments Office, Ref. no. ID5.

<sup>85</sup> Antiquities and Monuments Office. Mai Po Site of Archaeological Interest. Geographic Information System on Hong Kong Heritage. Retrieved from <https://gish.amo.gov.hk/internet/index.html?lang=en-us>.

<sup>86</sup> Kowloon-Canton Railway Corporation. (2002). *Sheung Shui to Lok Ma Chau Spur Line Environmental Impact Assessment Report*. [https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_0712001/Content/Content.htm](https://www.epd.gov.hk/eia/register/report/eiareport/eia_0712001/Content/Content.htm).

<sup>87</sup> Highways Department. (2004). *Improvements to San Tin Interchange Environmental Impact Assessment Report. 9 Cultural Heritage Impact*. [https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_0932004/eiareport/Sect\\_9%20CHIA.htm](https://www.epd.gov.hk/eia/register/report/eiareport/eia_0932004/eiareport/Sect_9%20CHIA.htm).

<sup>88</sup> New Territories North and West Development Office, Civil Engineering and Development Department. (2013). *North East New Territories New Development Areas Planning and Engineering Study – Investigation Final Environmental Impact Assessment Report. 11 Cultural Heritage*.

[https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_2132013/eia/pdf/ch\\_11\\_text.pdf](https://www.epd.gov.hk/eia/register/report/eiareport/eia_2132013/eia/pdf/ch_11_text.pdf).

<sup>89</sup> Civil Engineering and Development Department. (2013). *Planning and Engineering Study on Development of Lok Ma Chau Loop – Investigation - Environmental Impact Assessment. 10 Cultural Heritage Impact*.

[https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_2122013/PDF/EIA/S10%20-%20CH%20v16.pdf](https://www.epd.gov.hk/eia/register/report/eiareport/eia_2122013/PDF/EIA/S10%20-%20CH%20v16.pdf).

<sup>90</sup> Planning Department and Civil Engineering and Development Department. (2021). *Study on Phase One Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Feasibility Study – Report on Environmental Review. 11 Cultural Heritage Impact*.

<sup>91</sup> The grading criteria presented in this Section are specific to this Report only. The traditional villages identified within the 500m assessment area are considered to have high archaeological potential on the basis that they were established during historical period where past human settlements and activities are normal and have surviving structures supporting their settlement history (Section 12.5 on Built Heritage Impact Assessment refers). The application of this grading criteria on assessing the archaeological potential for traditional village should be subject to further review in other situations or assessments.

<sup>92</sup> Antiquities and Monuments Office. *List of Sites of Archaeological Interest in Hong Kong (as at Nov 2012)*. Retrieve from [https://www.amo.gov.hk/filemanager/amo/common/form/list\\_archaeolog\\_site\\_eng.pdf](https://www.amo.gov.hk/filemanager/amo/common/form/list_archaeolog_site_eng.pdf).

archaeological potential by previous archaeological investigation/survey and/or the archaeological survey under this Project.

- 12.6.5.2 Details of the discussion on the archaeological potential are presented in the sections below. Archaeological potential derived from desktop study, fieldwork results, and ancient landscape are presented in **Figure 12.66**, **Figure 12.67**, and **Figure 12.59** respectively. To facilitate the discussion in the next sections on impact assessment and mitigation measures, a specific term “Archaeologically Sensitive Area (ASA)” is adopted to refer to the area having moderate or high archaeological potential within the Project boundary that require to be further surveyed/studied.

*No Archaeological Potential Area*

Confirmed in Archaeological Survey for this Project

- 12.6.5.3 The archaeological survey conducted for this Project concluded field scanning areas A9 and A14 (**Figure 12.39**) have no archaeological potential. They contain many modern trashes, and some signs of site flattening in modern times that would have already disturbed the ground. As no archaeological material is identified, the areas are considered to have no archaeological potential.

Former Offshore Area

- 12.6.5.4 The former offshore area before modern development is established based on the geological deposits in the area. Area with superficial deposits of marine mud or marine sand indicates it was previously submerged under water. Due to its unsuitability for human settlement, area beyond the former coastline (i.e. the sea) would have no archaeological potential.

Disturbed/Developed Area

- 12.6.5.5 Based on desktop study, it is noted that the assessment area has experienced heavy modern disturbance, such as infrastructure and property development, cut slopes and fishponds. As the site formation and construction works of these modern developments would involve soil disturbance, archaeological deposits, if any, would have been destroyed. Therefore, the developed/ disturbed area would have no archaeological potential.

Confirmed in Previous Archaeological Surveys and Archaeological Survey for this Project

- Lok Ma Chau Area and Area South of Lok Ma Chau

- 12.6.5.6 While previous two surveys at Lok Ma Chau presented different results on the archaeological potential, the field survey under this Project revealed and confirmed that this area has no archaeological potential (**Section 12.6.2.26** refers).

*Low Archaeological Potential Area*

Confirmed in Archaeological Survey for this Project

- 12.6.5.7 Based on the archaeological survey findings of this Project, it is noted that field scanning areas A3 to A6, A8, A11 to A13 have been severely disturbed by grave construction. As the construction of graves involves excavation and site formation works, the soil would have been severely disturbed. Any potential archaeological remains would be unearthed, and either being disposed on the nearby ground surface. As these areas lack considerable substantial archaeological findings from the survey, they are thus considered to have low archaeological potential.

Confirmed in Previous Archaeological Surveys and Archaeological Survey for this Project

- Pak Shek Au Area

12.6.5.8 Past archaeological investigation for the Development of Lok Ma Chau Loop<sup>93</sup> and North East New Territories New Development Areas Planning and Engineering Study<sup>94</sup> have deemed the area in Pak Shek Au with “low” and “nil” archaeological potential (**Figure 12.5** and **Figure 12.6** refer). Field scanning in A15 and the two test pits conducted under this Project (**Figure 12.58**) also yielded no archaeological finds. The area is thus confirmed the assessment in NENT NDA Study as low archaeological potential for area to the north and south of San Tin Highway, and no archaeological potential for developed areas.

Interpretation of Ancient Landscape

12.6.5.9 Given the understanding of ancient landscape, the area between the presumed sandbar and the former shoreline was a lagoon (**Figure 12.59** refers). This area would be inundated (**Sections 12.6.3.1 to 12.6.3.12** refer). As a result, the low-lying inland area of San Tin is considered to have low archaeological potential.

Interpretation on Settlement History in San Tin Area

12.6.5.10 Every village within the Project area has been accounted for and included in our findings (**Section 12.4.2** regarding the historical background of the Project area, as well as **Sections 12.5.2.8 to 12.5.2.30** regarding the detailed history of each village in the assessment area refer). Our review of historical documents and extensive research ensures that no village has been overlooked or left out from our analysis. Existing traditional villages, namely Yan Shau Wai (V1), Tung Chan Wai (V2), Fan Tin Tsuen (V3), Wing Ping Tsuen (V4), On Lung Tsuen (V5), Tsing Lung Tsuen (V6), San Lung Tsuen (V7), Chau Tau Tsuen (V8), Shek Wu Wai (V9), Lok Ma Chau (V10), Pun Uk Tsuen (V11) and Mai Po Tsuen (V12), would have high archaeological potential as past human activities in these villages would yield abundant archaeological materials *in situ*<sup>95</sup>.

12.6.5.11 The rest of the Project area have no other traditional village. For areas with no considerable amount of archaeological discovery nor in close proximity to the existing traditional villages, they are unlikely to contain archaeological potential. Other villages, such as Mai Po Lung Tsuen (V13), Siu Hum Tsuen (V14), Hop Shing Wai, Ha Wan Tsuen, Ha Wan Fisherman San Tsuen, Shek Wu Wai San Tsuen, Ki Lun Tsuen, Luk Mei Tsuen, and Pang Loon Tei, were established in the 20<sup>th</sup> century and contain no / low archaeological potential based on their settlement history.

Archaeological Prediction Model Results

12.6.5.12 The archaeological prediction models have assessed the likelihood of archaeological deposits within the assessment area (**Figure 12.60** and **Figure 12.61**). Areas with higher probabilities have values closer to 1, while areas with lower probabilities have values closer to 0. Areas with likelihoods below 0.7 consist of many low-lying agricultural lands and fishponds connected by rivers and streams, which are located on the presumed lagoon area as discussed in **Sections 12.6.3.1 to 12.6.3.6**.

<sup>93</sup> Civil Engineering and Development Department. (2013). *Planning and Engineering Study on Development of Lok Ma Chau Loop – Investigation - Environmental Impact Assessment. 10 Cultural Heritage Impact*. [https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_2122013/PDF/EIA/S10%20-%20CH%20v16.pdf](https://www.epd.gov.hk/eia/register/report/eiareport/eia_2122013/PDF/EIA/S10%20-%20CH%20v16.pdf).

<sup>94</sup> New Territories North and West Development Office, Civil Engineering and Development Department. (2013). *North East New Territories New Development Areas Planning and Engineering Study – Investigation Final Environmental Impact Assessment Report. 11 Cultural Heritage*. [https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_2132013/eia/pdf/ch\\_11\\_text.pdf](https://www.epd.gov.hk/eia/register/report/eiareport/eia_2132013/eia/pdf/ch_11_text.pdf).

<sup>95</sup> The assessment criteria on whether a traditional village would be considered to have high archaeological potential are specific to this Report only. The application of such criteria on assessing traditional village in other situations or assessments should be subject to further review.

- 12.6.5.13 The continuous agricultural activities that took place, coupled with persistent high water level, suggested that the surface soil underwent significant disturbance, rendering it inhospitable for lasting human habitation. Moreover, from field scanning in the highest lands between the lagoon (A3 to A6) yielded no substantiating proof of past human presence in these areas. This resounding absence of any evidences reinforces the notion that sustained settlement was impractical in this region in both historical and prehistoric period. Consequently, it can be concluded that these areas hold no significant archaeological potential and were unsuitable for past human habitation. Therefore, despite the model have predicted some locations to have a higher likelihood of archaeological deposits in prehistoric period, these wet and low-lying lands shall be considered as low archaeological potential area.
- 12.6.5.14 The model also predicts the lower hillslopes around a small hillock to the west of Ka Lung Road might have a higher probability in having archaeological remains. However, the size of this hillock shall also be considered. During the ancient times, this hillock would be an island inside the lagoon. It is relatively small that was not favourable to human settlements or activities. Its size is similar to the hillocks next to Lok Ma Chau Road (field scanning area A1 and A2), which contains no archaeological finds and confirmed to have no archaeological potential.
- 12.6.5.15 Furthermore, while preliminary assessment suggested that the eastern and southern hills of *Ki Lun Shan* and *Ngau Tam Shan* were the higher grounds suitable for prehistoric settlement, not the whole area was suitable for past human settlement. The western lower hillslope of *Ki Lun Shan*, the headland between Pang Loon Tei ASA and Siu Hum Tsuen (East) ASA, the headland between Siu Hum Tsuen (East) ASA and Siu Hum Tsuen (West) ASA, as well as the hillslope between Siu Hum Tsuen (West) ASA and Mai Po SAI are not sheltered environment. As past human preferred sheltered landscape which could provide them with defence and protection from threats, environment that are relatively exposed would have lower probability in having archaeological remains. Therefore, unsheltered landscape along the prehistoric shoreline would be considered as low archaeological potential area. The ASA mentioned in this paragraph would be discussed in the section afterwards. (**Figure 12.68** refers).

*Moderate Archaeological Potential Area*

Shek Wu Wai Area

- Archaeological Prediction Model Results

- 12.6.5.16 Locating to the north of the existing Shek Wu Wai village and next to San Tin Highway, Shek Wu Wai Area was predicted to have archaeological deposits in historical period by the archaeological prediction model (**Figure 12.61** refers). It is situated on river terraces that would have favoured human settlement in the historical period. The elevation ranges from +4mPD to +8mPD approximately and slopes range from 1° to 9° approximately. It sits on the colluvial deposits and is in close proximity to alluvial deposits (within 40 meters). Within Shek Wu Wai Area, the model suggests that area with a probability over 0.7 would have a higher likelihood of containing archaeological deposits from historical period.

- Confirmed in Archaeological Survey for this Project

- 12.6.5.17 To the south of the model predicted area, field scanning area A10 has discovered surface finds with blue and white porcelain sherds. Although the artefacts were identified along with many other modern waste deposits on the ground surface, the nature of this waste deposit was possible from the nearby Shek Wu Wai when older buildings were demolished for the newer village houses. The archaeological finds are likely to be secondary deposits as refuse by the past humans in Shek Wu Wai. It is concluded to have moderate archaeological potential in the archaeological survey for this Project (**Figure 12.67** refers).

- Establishing Archaeologically Sensitive Area

12.6.5.18 To take the model prediction results and field scanning results into account, area to the north of Shek Wu Wai village is considered to have moderate archaeological potential on the basis that there were discoveries of blue and white porcelain sherds and the area was in close proximity to the traditional village Shek Wu Wai (**Section 12.6.2.27** refers). Both the model predicted area (probability over 0.7) and field scanning area with archaeological finds (area A10) have constituted to the extent of Shek Wu Wai ASA (**Figure 12.62** refers).

#### Mai Po Lung Area

- Archaeological Prediction Model Results

12.6.5.19 Mai Po Lung Area was predicted to have archaeological deposits in prehistoric period by the archaeological prediction model (**Figure 12.60** refers). The area is located on a low-lying coastal plain with characteristics that would have favoured human settlements. The elevation ranges from +4mPD to +31mPD (mean = +11mPD) and slopes range from 2° to 20° (mean = 7°) approximately. It is located close to the coast, between 228m and 560m approximately. Within Mai Po Lung Area, the model suggests that area with a probability over 0.7 would have a higher likelihood of containing archaeological deposits from prehistoric period.

- Previous Archaeological Finds

12.6.5.20 Bronze coins dated to Song dynasty has previously been reported by the locals of Mai Po Lung village.

- Consideration over Modern Disturbance

12.6.5.21 The archaeological potential of Mai Po Lung Area had been impacted by modern development. Settlements were observed in the southern Mai Po Lung Area since the early 1960s and developed into the current Mai Po Lung village (**Section 12.4.2.14** refers).

- Establishing Archaeologically Sensitive Area

12.6.5.22 Separated by San Tin Highway, the northern Mai Po Lung Area is considered to have high archaeological potential in prehistoric period (**Figure 12.62** refers). As it is located within Project area, the extent had constituted to Mai Po Lung (North) ASA (**Figure 12.63** refers).

12.6.5.23 Considering the southern area might experience more disturbance from road construction and village development yet a jar of coins dated to the Song dynasty was reported in 2003, the southern Mai Po Lung Area is considered to have moderate archaeological potential (**Figure 12.62** refers). As it is located within Project area, the extent had constituted to Mai Po Lung (South) ASA (**Figure 12.63** refers).

#### *High Archaeological Potential Area*

#### Mai Po Lung Area

- Establishing Archaeologically Sensitive Area

12.6.5.24 As discussed above in **Sections 12.6.5.19** to **12.6.5.23**, the Mai Po Lung (North) ASA is considered to have high archaeological potential in prehistoric period (**Figure 12.63** refers).

#### Mai Po Area

- Traditional Village and Archaeological Prediction Model Results

- 12.6.5.25 Mai Po Area was predicted to have archaeological deposits both in prehistoric and historical period by the archaeological prediction model (**Figure 12.60** and **Figure 12.61** refer). It has a coastal landscape that would have favoured prehistoric and historical human settlements.
- 12.6.5.26 The land sits at an elevation approximately between +4mPD and +32mPD (mean = +12mPD) with a slope generally lower than 10°. The area is close to the coast, between 85m and 633m approximately. It faces west towards the Shenzhen River and Deep Bay. Such coastal setting has been known to have supported historical settlement such as the village cluster at San Tin and the Mai Po Lo Wai, as well as prehistoric sites on the coast of Deep Bay in Tuen Mun. The area is also near to the Mai Po SAI, which has known archaeological potential. It is believed to be located on a sandbar in ancient landscape which is considered to have high likelihood of archaeological remains in prehistoric and historical periods. Within Mai Po Area, the model suggests that area with a probability over 0.7 would have a higher likelihood of containing archaeological deposits from prehistoric and historical period.
- Establishing Archaeologically Sensitive Area
- 12.6.5.27 Mai Po Area is considered to have high archaeological potential in prehistoric and historical period (**Figure 12.62** refers). The portion falls within the Project boundary, together with the encroached portion of Mai Po SAI, have constituted to the extent of Mai Po ASA (**Figure 12.63** refers).
- Hop Shing Wai Area
- Archaeological Prediction Model Results
- 12.6.5.28 Hop Shing Wai Area was predicted to have archaeological deposits both in prehistoric and historical period by the archaeological prediction model (**Figure 12.60** and **Figure 12.61** refer). It has a coastal landscape that would have favoured prehistoric and historical human settlements.
- 12.6.5.29 Similar to Mai Po Area, it has a coastal landscape that would have supported prehistoric and historical human settlements. The land sits at an elevation approximately between +4mPD and +43mPD (mean = +9mPD) with slopes generally lower than 10°. The area is close to the coast, between 30m and 295m approximately. It is located in close vicinity to other known historical settlement such as the village cluster at San Tin and Mai Po Lo Wai. It is also similar to known prehistoric coastal setting in the southwestern coast of Deep Bay in Tuen Mun. It is believed to be located on a sandbar in ancient landscape which is considered to have high likelihood of archaeological remains in prehistoric and historical periods. Within Hop Shing Wai Area, the model suggests that area with a probability over 0.7 would have a higher likelihood of containing archaeological deposits from prehistoric and historical period.
- Establishing Archaeologically Sensitive Area
- 12.6.5.30 The original landscape of this area was on the coast prior modern development in the 20<sup>th</sup> century. However, the degree of the disturbance to archaeological potential in this area remains uncertain by the existing land use being temporary storage (which may have involved some site formation works). Thus, the area is assumed to have high archaeological potential dating from prehistoric and historical period (**Figure 12.62** refers) and constitute to the extent of Hop Shing Wai ASA (**Figure 12.63** refers).

### Siu Hum Tsuen Area and Pang Loon Tei Area

- Archaeological Prediction Model Results

12.6.5.31 Siu Hum Tsuen Area and Pang Loon Tei Area were predicted to contain archaeological deposits in prehistoric period by the archaeological prediction model (**Figure 12.60** refers). The areas have a river terrace landscape on gentle hill slopes that would have favoured settlement during the prehistoric period.

12.6.5.32 They are also comparable to other SAIs with known archaeological potential. Similar landscape can be found in SAI of prehistoric period, such as Po Leng SAI and Sheung Shui Wa Shan SAI, which are also located on river terrace at the foot of hills. Both areas are located on a higher elevation between +2mPD and +48mPD (mean = +25mPD) and on steeper slopes between 1° and 18° (mean = 8°) approximately since they are situated on hill slopes. They are also further away from the coast, over 1,000m to 2,000m away. Meanwhile, the geology of the area is mainly alluvial and colluvial deposits (Qa, Qpa and Qpd), features typical of river terrace. These areas have landscape setting similar to the Po Leng SAI to the east (outside the assessment area), where prehistoric findings have been found. The model suggests that area with a probability over 0.7 would have a higher likelihood of containing archaeological deposits from prehistoric and historical period.

- Establishing Archaeologically Sensitive Area

12.6.5.33 The identification of Siu Hum Tsuen Area and Pang Loon Tei Area by the model echoes with the preliminary assessment on the archaeological potential within the Project area by the licensed archaeologist where prehistoric findings could possibly be found along the lower hillslopes, in particular to the east and south of the Project area (**Sections 12.6.3.1 to 12.6.3.6** refer). While some of the Pang Loon Tei Area might have been covered by lagoon which existed from after the prehistoric period to until approximately 1,000 BP before the Ming dynasty (**Section 12.6.3.8** refers), unlike rivers which would wash the soil away constantly, the water would store in the lagoon. As a result, the lagoon would only cover the prehistoric remains (if any) but would not remove them. Therefore, the archaeological potential in prehistoric periods of Siu Hum Tsuen Area and Pang Loon Tei Area would not be diminished by the formation of lagoons.

12.6.5.34 As areas located outside the Project boundary would not be affected by the proposed developments (**Figure 12.62** refers), the extents of Siu Hum Tsuen Area and Pang Loon Tei Area have been further refined to within the Project boundary and constitute to the Siu Hum Tsuen (West) ASA, Siu Hum Tsuen (East) ASA and Pang Loon Tei ASA (**Figure 12.63** refers).

### San Tin Area

- Traditional Village and Archaeological Prediction Model Results

12.6.5.35 San Tin Area was predicted to have archaeological deposits in prehistoric and historical period by the archaeological prediction model (**Figure 12.60** and **Figure 12.61** refer).

12.6.5.36 The area has known historical potential as the villages in San Tin could be dated to the early Ming dynasty. The San Tin Area is a flat coastal plain with an elevation between +2mPD and +10mPD and slopes of 0° to 4° approximately. The villages of San Tin are situated in front of a small hill facing northwest. They are close to the coast, between 90m and 446m approximately. These landscape characteristics (a low-lying, gently sloping coastal plain close to a source of fresh water) are features that would have favoured human settlements. The presence of Ming dynasty villages indicates the area has high potential to contain archaeological remains dating from this period.

12.6.5.37 As San Tin Area is located outside the Project boundary (**Figure 12.62** refers), it is not considered as an archaeologically sensitive area located within the Project boundary.

### Hang Tau Area

- Archaeological Prediction Model Results

12.6.5.38 Hang Tau Area was predicted to have archaeological potential from prehistoric period by the archaeological prediction model (**Figure 12.60** refers). It is located on the eastern side of Saddle Pass between Ki Lun Shan and Ngau Tam Shan. The area is located on a hillslope within a river valley. Within the 500m assessment area, its geology mainly comprises of alluvial and colluvial deposits (Qa, Qpa and Qpd), which are features typical of river terrace. It is located on a higher elevation between +14mPD and +40mPD approximately and on steeper slopes between 1° and 16° approximately. It is noted that the extent of the Hang Tau Area might extend beyond the 500m assessment area.

12.6.5.39 The area is located outside the Project boundary (**Figure 12.62** refers), it would not be affected by the proposed developments. Thus, it is not considered as an archaeologically sensitive area located within the Project area.

### Ngau Tam Mei (North) Area

- Archaeological Prediction Model Results

12.6.5.40 Ngau Tam Mei (North) Area was predicted to have archaeological potential from prehistoric period by the archaeological prediction model (**Figure 12.60** refers). The area is located on a southern hillslope of Ngau Tam Shan within the Ngau Tam Mei river valley. Within the 500m assessment area, its geology mainly comprises of colluvial deposits (Qpd) with some alluvial deposits (Qa and Qpa) in the south. It is located on a higher elevation between +14mPD and +28mPD approximately and on steeper slopes between 2° and 15° approximately. It is noted that the extent of the Ngau Tam Mei (North) Area might extend beyond the 500m assessment area.

12.6.5.41 The area is located outside the Project boundary (**Figure 12.62** refers) and would not be affected by the proposed developments. Thus, it is not considered as an archaeologically sensitive area located within the Project area.

### Chau Tau Area

- Traditional Village

12.6.5.42 As Chau Tau Tsuen is a traditional village established probably in the Qing dynasty, human activities and settlement during historical period was normal. Therefore, it is deemed to have high archaeological potential in historical period.

12.6.5.43 This area is outside the Project boundary (**Figure 12.62** refers) and would not be affected by the proposed developments. Thus, it is not considered as an archaeologically sensitive area located within the Project area.

### Shek Wu Wai Tsuen Area

- Traditional Village

12.6.5.44 As Shek Wu Wai is a traditional village established probably in the Qing dynasty, human activities and settlement during historical period was normal. Therefore, it is deemed to have high archaeological potential in historical period.

12.6.5.45 This area is outside the Project boundary (**Figure 12.62** refers) and would not be affected by the proposed developments. Thus, it is not considered as an archaeologically sensitive area located within the Project area.

Lok Ma Chau Tsuen Area

- Traditional Village

12.6.5.46 As Lok Ma Chau Tsuen is a traditional village established in the early Qing dynasty, human activities and settlement during historical period was normal. Therefore, it is deemed to have high archaeological potential in historical period.

12.6.5.47 This area is outside the Project boundary (**Figure 12.62** refers) and would not be affected by the proposed developments. Thus, it is not considered as an archaeologically sensitive area located within the Project area.

Pun Uk Tsuen Area

- Traditional Village

12.6.5.48 As Pun Uk Tsuen is a traditional village probably established in Ming dynasty, human activities and settlement during historical period was normal. Therefore, it is deemed to have high archaeological potential in historical period.

12.6.5.49 This area is outside the Project boundary (**Figure 12.62** refers) and would not be affected by the proposed developments. Thus, it is not considered as an archaeologically sensitive area located within the Project area.

*Summary of Archaeologically Sensitive Areas Within the Project Area*

12.6.5.50 Based on previous archaeological survey results, archaeological survey results in this Project, preliminary assessment on archaeological potential by the licensed archaeologist and his team, archaeological prediction model results and modern disturbance, a total of thirteen areas of moderate and high archaeological potential are identified within the 500m assessment area, namely Shek Wu Wai Area, Mai Po Lung Area, Mai Po Area, Hop Shing Wai Area, Siu Hum Tsuen Area, Pang Loon Tei Area, San Tin Area, Hang Tau Area, Ngau Tam Mei (North) Area, Chau Tau Area, Shek Wu Wai Tsuen Area, Lok Ma Chau Tsuen Area and Pun Uk Tsuen Area (**Figure 12.62** refers). The overlapping areas between archaeological potential areas and the Project area would constitute to ASAs. A total of eight ASAs are identified within the Project. They are listed in **Table 12.6.5**. Their indicative locations are presented **Figure 12.63**.

**Table 12.6.5 Archaeologically Sensitive Areas Identified within Project Area**

Archaeologically Sensitive Areas	Description
Mai Po ASA	The ASAs were predicted to contain archaeological potential in prehistoric period and historical period based on desktop analysis. Both areas are located to the west of San Tin along the ancient coastline. The two areas share features that resemble a coastal flatland landscape and is in front of a hillslope. Such features are favourable to human settlement in both prehistoric and historical period. In addition, bronze coins dated to the Song dynasty were found in the Mai Po SAI and in its vicinity. The context of such discoveries is unique in Hong Kong. Past human activities are likely to be found within the SAI and in the vicinity.
Hop Shing Wai ASA	
Mai Po Lung (North) ASA	The ASAs were predicted to contain archaeological potential in prehistoric period based on desktop analysis. It is located to the west of San Tin along ancient coastline. It is situated on a low-lying coastal plain with characteristics that would have favoured human settlements. Despite modern disturbance, the remaining areas may still have potential in prehistoric period.  Furthermore, for Mai Po Lung (South) ASA, although coins dated to Song dynasty has previously been reported by the locals of Mai Po Lung village, there
Mai Po Lung (South) ASA	

Archaeologically Sensitive Areas	Description
	lacks information to support any archaeological argument regarding the context of this encounter.
Shek Wu Wai ASA	Shek Wu Wai ASA was confirmed to have moderate archaeological potential based on desktop analysis and archaeological survey. The northern area next to San Tin Highway was predicted to have archaeological potential in historical period in the archaeological prediction model. Moreover, archaeological findings were discovered further down south, between the model predicted area and Shek Wu Wai village (Area A10 in <b>Figure 12.39</b> ). Blue and white porcelains were found indicating an archaeological potential dating to the historical period, Qing dynasty specifically. Since Shek Wu Wai itself is a traditional village, past human activities dated to historical period are likely to be found near the village. Therefore, the area is confirmed to have moderate archaeological potential.
Siu Hum Tsuen (East) ASA	The three ASAs were predicted to have archaeological potential in prehistoric period based on desktop analysis. They are sitting on river terraces that are favourable to prehistoric settlement. The river terraces are located within the valley in the San Tin facing north to the Shenzhen River and Deep Bay. The sea level in the prehistoric period is likely to be higher than the present sea level, the lowland within the valley in San Tin is likely to be covered with water. The areas in Siu Hum Tsuen and Pang Loon Tei are likely to be located near the ancient coastline. The coastal setting is favourable to prehistoric settlement. Hence, the three ASAs contain archaeological potential in prehistoric period.
Siu Hum Tsuen (West) ASA	
Pang Loon Tei ASA	

## 12.6.6 Identification and Evaluation of Potential Impacts

12.6.6.1 Mai Po Site of Archaeological Interest is encroached by the Project, while eight archaeologically sensitive areas are identified within the Project. The following discussion on the impact to archaeology will be based on their relations to the Recommended Outline Development Plan (RODP) (**Figure 12.64** refers).

12.6.6.2 The potential impacts are classified into five levels of significance:

- f) **Beneficial impact:** the impact is beneficial if the Project will enhance the preservation of the heritage site(s);
- g) **Acceptable impact:** if the assessment indicates that there will be no significant effects on the heritage site(s);
- h) **Acceptable impact with mitigation measures:** if there will be some adverse effects, but these can be eliminated, reduced or offset to a large extent by specific measures, such as conducting a follow-up Conservation Proposal or Conservation Management Plan for the affected heritage site(s) before the commencement of work in order to avoid any inappropriate and unnecessary interventions to the sites of archaeological interest and areas identified with archaeological potential;
- i) **Unacceptable impact:** if the adverse effects are considered to be too excessive and are unable to mitigate practically; and
- j) **Undetermined impact:** if the significant adverse effects are likely, but the extent to which they may occur or may be mitigated cannot be determined from the Archaeological Impact Assessment. Further detailed study will be required for the specific effects in question.

### *Construction Phase*

#### For Archaeologically Sensitive Areas

- 12.6.6.3 Hop Shing Wai ASA is planned as “OU(I&T)” and “Road” under the Project. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in the area.
- 12.6.6.4 Mai Po ASA is planned as “RSc”, “G/IC”, “OU”, “A”, “OU(EPP)” and “Road”. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in the area. In addition, part of the area is planned as “GB” with permitted burial ground, no impact would be anticipated as soil disturbance is unlikely to occurred.
- 12.6.6.5 Mai Po Lung (North) ASA is planned as “O”. As this open space is reserved for an egret (Section 10 on Ecology of EIA report refers), no impact on archaeology from this Project is anticipated, subjected to the detailed design of this area. However, should works involve soil disturbance occurred (such as tree planting and infrastructure works) during the construction phase, direct impact would be anticipated.
- 12.6.6.6 Mai Po Lung (South) ASA is planned as “OU”, “Road” and “G/IC”. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in the area.
- 12.6.6.7 In addition, part of the area in Mai Po Lung (South) ASA is planned as “GB” and “GB” with permitted burial ground, no impact would be anticipated as soil disturbance is unlikely to occurred.
- 12.6.6.8 Shek Wu Wai ASA is partly planned as “E”, “A”, “OU” and “Road”. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in the area. In addition, part of the area is planned as “GB”, no impact would be anticipated as soil disturbance is unlikely to occurred.
- 12.6.6.9 Siu Hum Tsuen (West) ASA is planned as “RSc”, “OU(MU)”, “E”, “O” and “Road”. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in the area.
- 12.6.6.10 Siu Hum Tsuen (East) ASA is planned as “O” and “Road”. Direct impact would be anticipated should works involve soil disturbance occurred during the construction phase in the area.
- 12.6.6.11 Pang Long Tei ASA is partly planned as “OU(I&T)”, “OU(LSW)”, “OU”, “A” and “Road”. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in the area. In addition, part of the area is planned as GB” with permitted burial ground, no impact would be anticipated as soil disturbance is unlikely to occurred.

#### For Areas of Low Archaeological Potential within Project Area

- 12.6.6.12 For areas of low archaeological potential within Project area, the impact on archaeology is considered minimal and acceptable.

#### For Areas of No Archaeological Potential within Project Area

- 12.6.6.13 For areas of no archaeological potential within Project area, no impact on archaeology is anticipated.

For Areas with High Archaeological Potential Outside Project Boundary

12.6.6.14 The archaeological prediction model has assessed and identified areas of high archaeological potential located within the 500m assessment area. For the areas fall outside the Project boundary such as San Tin Area, Chau Tau Area and the remaining portion of the Siu Hum Tsuen Area outside the Project boundary, no impact from the Project is anticipated.

*Operation Phase*

12.6.6.15 No impact to archaeology is anticipated during the operation phase of the Project since archaeological impact, if any, would have been mitigated before or during the construction phase.

12.6.6.16 A summary of the potential impacts on archaeology is presented in **Table 12.6.6**.

**Table 12.6.6 Summary of Potential Impacts on Archaeology**

Area	Impact Assessment	Impact Level
Mai Po Lung (South) ASA	<p>The archaeologically sensitive areas are located within the Project boundary. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in these areas.</p> <p>No impact would be anticipated during the operation phase.</p>	<p>Acceptable impact with mitigation measures</p>
Shek Wu Wai ASA		
Hop Shing Wai ASA		
Mai Po ASA		
Siu Hum Tsuen (West) ASA		
Siu Hum Tsuen (East) ASA		
Pang Loon Tei ASA		
Mai Po Lung (North) ASA	<p>Mai Po Lung (North) ASA is planned as “O” under the Project. As this open space is reserved for an egretry, no impact on archaeology from this Project is anticipated, subjected to the detailed design of this area.</p>	<p>No impact (Subjected to detailed design)</p>
Areas of Low Archaeological Potential within Project Area	<p>Direct impact during construction stage is minimal and acceptable.</p> <p>No impact would be anticipated during the operation phase.</p>	<p>Acceptable impact</p>
Areas of No Archaeological Potential within Project Area	<p>No impact would be anticipated during the construction phase and operation phase.</p>	<p>No impact</p>
Areas of High Archaeological Potential Outside Project Boundary	<p>As the construction works will not be carried out outside the Project boundary, no impact is anticipated during construction phase.</p> <p>No impact would be anticipated during the operation phase.</p>	<p>No impact</p>

## 12.6.7 Mitigation Measure

### *Construction Phase*

#### Shek Wu Wai ASA and Mai Po Lung (South) ASA

- 12.6.7.1 The existing Shek Wu Wai ASA and Mai Po Lung (South) ASA have experienced some level of modern disturbance due to construction of open storages and carparks. The archaeological deposits (if any) within these two areas might have been disturbed. Moreover, the archaeological finds in field scanning area A10 are secondary deposits and the archaeological potential is not high. Furthermore, the jar of coins dated to the Song dynasty reported in 2003 did not inform any archaeological information. This shed uncertainty to the nature of archaeological findings in Mai Po Lung (South) ASA. Nevertheless, to ensure protection to the archaeological information, an Archaeological Watching Brief is thus recommended to be carried out in Shek Wu Wai ASA and Mai Po Lung (South) ASA should works involve soil disturbance occurred (such as site formation) during the construction phase. The objective of the Archaeological Watching Brief is to ensure the protection and preservation of any potential archaeological deposits, particularly those from Song and Ming-Qing dynasties, that may exist within the Shek Wu Wai ASA and Mai Po Lung (South) ASA. The project proponent or future subsequent developer(s) should employ an archaeologist who must obtain a *Licence to Excavate and Search for Antiquities* from the Antiquities Authority prior the commencement of the fieldworks. The scope, methodology and programme of the archaeological works shall be agreed with AMO.

#### Hop Shing Wai ASA, Mai Po ASA, Siu Hum Tsuen (West) ASA, Siu Hum Tsuen (East) ASA and Pang Loon Tei ASA

- 12.6.7.2 These ASAs are either occupied privately as buildings, paved car parks and open storages or have their accessibility restricted by security measures such as fencing. As a result, they cannot be accessed for this survey, leading to a lack of archaeological information. To confirm their archaeological potential and propose adequate mitigation measures for the archaeological deposits (if any), further archaeological survey at later stages after land resumption but before site formation works is recommended. The survey shall be conducted by an archaeologist who must obtain a *Licence to Excavate and Search for Antiquities* from the Antiquities Authority prior the commencement of the fieldworks. The scope, methodology and programme of the archaeological survey shall be agreed with AMO.
- 12.6.7.3 In particular, Mai Po ASA includes Mai Po SAI, which holds significant archaeological potential. Previous archaeological discovery indicated the discovery of jars of coins dating back to the Song dynasty in this area. Given the exceptional nature of these archaeological findings, the objective of the archaeological survey should take into account the unique context of these discoveries. The survey team should thoroughly review the available finding reports to determine if any specific conditions regarding the burial of these jars of coins exist.
- 12.6.7.4 Opportunity to conduct archaeological fieldwork as soon as possible after land resumption would be considered by the Project Proponent.

#### Mai Po Lung (North) ASA

- 12.6.7.5 The area of Mai Po Lung (North) ASA is reserved as an egretty (**Section 10** on Ecology of EIA report refers). No impact on archaeology is anticipated, no mitigation measure is required, subjected to the detailed design of this area. Should construction works involving soil disturbance are anticipated during the detailed design stage, project proponent should review the impact assessment and propose adequate mitigation measures to AMO for approval.

For Areas Within the Project Boundary

- 12.6.7.6 For areas of low archaeological potential within the Project boundary, direct impact is considered acceptable and no mitigation measure is required.
- 12.6.7.7 For areas of no archaeological potential within the Project boundary, no impact to archaeology is anticipated, hence, no mitigation measure is required.
- 12.6.7.8 However, as a precautionary measure, if antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered, the project proponent is required to inform AMO immediately for discussion of appropriate mitigation measures to be agreed by AMO before implementation by the project proponent to the satisfaction of AMO.

For Areas of High Archaeological Potential Outside the Project Boundary

- 12.6.7.9 No impact to the areas of high archaeological potential outside the Project boundary is anticipated, no mitigation measure is required.

*Operation Phase*

- 12.6.7.10 No impact to archaeology is anticipated in the operation phase as archaeological impact, if any, would have been mitigated before or during the construction phase. Hence no mitigation measure is required.
- 12.6.7.11 A summary of mitigation measures on archaeological resources is presented in **Table 12.6.7** and **Figure 12.65**.

**Table 12.6.7 Summary of Further Archaeological Works and Mitigation Measures on Archaeology**

Area	Archaeological Potential	Impact Assessment	Impact Level	Further Archaeological Works and Mitigation Measure
Shek Wu Wai ASA	Moderate	Shek Wu Wai ASA and Mai Po Lung (South) ASA are located within the Project boundary and contains archaeological potential. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in the area.	Acceptable impact with mitigation measures	Archaeological Watching Brief is recommended to be carried should works involve soil disturbance occurred (such as site formation) during the construction phase.  No mitigation measure is required during the operation phase.
Mai Po Lung (South) ASA	Moderate			
Hop Shing Wai ASA	High	These areas are located within the Project boundary and contain archaeological potential. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in these areas.  No impact would be anticipated during the operation phase.	Acceptable impact with mitigation measures	Further archaeological survey at later stages after land resumption but before site formation works is recommended.  No mitigation measure is required during the operation phase.  Opportunity to conduct archaeological fieldwork as soon as possible after land resumption would be considered by the Project Proponent.
Mai Po ASA	High			
Siu Hum Tsuen (West) ASA	High			
Siu Hum Tsuen (East) ASA	High			
Pang Loon Tei ASA	High			
Mai Po Lung (North) ASA	High	The area of Mai Po Lung (North) ASA is reserved for an egret (Section 10 on Ecology of EIA report refers). No impact on archaeology is anticipated, no mitigation measure is required, subjected to the detailed design of this area.	No impact (Subjected to detailed design)	No mitigation measure is required.  Should construction works involving soil disturbance are anticipated during the detailed design stage, project proponent should review the impact assessment and propose adequate mitigation measures to AMO for approval.  No mitigation measure is required during the operation phase.
Areas within Project Boundary	Low	Direct impact during construction stage is minimal and acceptable.	Acceptable impact	If antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered, the project proponent is required to inform AMO immediately for discussion of appropriate mitigation measures to be agreed by AMO before implementation by the project proponent to the satisfaction of AMO.  No mitigation measure is required during the operation phase.
	No	No impact to archaeology is anticipated.	No impact	
Areas of High Archaeological Potential Outside Project Boundary	High	As the construction works will not be carried out outside the Project boundary, no impact is anticipated during construction phase.	No impact	No mitigation measure is required during construction phase and operation phase.

## 12.6.8 Evaluation of Residual Impacts

- 12.6.8.1 No Site of Cultural Heritage was identified within the Project area and hence no adverse impact is anticipated. For other archaeological resources, should the mitigation measures mentioned in **Section 12.6.7** be implemented, the adverse impacts could be mitigated. No residual impact is anticipated on archaeological resources.

## 12.6.9 Environmental Monitoring and Audit

### *Construction Phase*

#### Shek Wu Wai ASA and Mai Po Lung (South) ASA

- 12.6.9.1 Archaeological Watching Brief is recommended to be carried out in Shek Wu Wai ASA and Mai Po Lung (South) ASA should works involve soil disturbance occurred (such as site formation) during the construction phase. The objective of the Archaeological Watching Brief is to ensure the protection and preservation of any potential archaeological deposits, particularly those from Song and Ming-Qing dynasties, that may exist within the Shek Wu Wai ASA and Mai Po Lung (South) ASA. The project proponent or future subsequent developer(s) should employ an archaeologist who must obtain a *Licence to Excavate and Search for Antiquities* from the Antiquities Authority prior the commencement of the fieldworks. The scope, methodology and programme of the archaeological works shall be agreed with AMO.

#### Hop Shing Wai ASA, Mai Po ASA, Siu Hum Tsuen (West) ASA, Siu Hum Tsuen (East) ASA and Pang Loon Tei ASA

- 12.6.9.2 These ASAs are either occupied privately as buildings, paved car parks and open storages or have their accessibility restricted by security measures such as fencing. These areas cannot be accessed, thus lack archaeological information from this survey. Further archaeological survey at later stages after land resumption but before site formation works is recommended. The survey shall be conducted by an archaeologist who must obtain a *Licence to Excavate and Search for Antiquities* from the Antiquities Authority prior the commencement of the fieldworks. The scope, methodology and programme of the archaeological survey shall be agreed with AMO.
- 12.6.9.3 In particular, Mai Po ASA includes Mai Po SAI, which holds significant archaeological potential. Previous archaeological discovery indicated the discovery of jars of coins dating back to the Song dynasty in this area. Given the exceptional nature of these archaeological findings, the objective of the archaeological survey should take into account the unique context of these discoveries. The survey team should thoroughly review the available finding reports to determine if any specific conditions regarding the burial of these jars of coins exist.
- 12.6.9.4 Opportunity to conduct archaeological fieldwork as soon as possible after land resumption would be considered by the Project Proponent.

#### Mai Po Lung (North) ASA

- 12.6.9.5 The area of Mai Po Lung (North) ASA is reserved for an egret (Section 10 on Ecology of EIA report refers). No impact on archaeology is anticipated, no mitigation measure is required, subjected to the detailed design of this area. Should construction works involving soil disturbance are anticipated during the detailed design stage, project proponent should review the impact assessment and propose adequate mitigation measures to AMO for approval.

For areas within the Project Boundary

- 12.6.9.6 If antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered, the project proponent is required to inform AMO immediately for discussion of appropriate mitigation measures to be agreed by AMO before implementation by the project proponent to the satisfaction of AMO.

*Operation Phase*

- 12.6.9.7 No impact to archaeology is anticipated in the operation phase as archaeological impact, if any, would have been mitigated before or during the construction phase. Hence no mitigation measure is required.

**12.6.10 Conclusion**

- 12.6.10.1 Desktop research, archaeological field survey and archaeological prediction models have been used to evaluate the archaeological potential of the Project.

- 12.6.10.2 No direct impact is anticipated on any known Sites of Cultural Heritage; hence, no particular mitigation measure is necessary for the conservation and preservation of them and the requirements in Annexes 10 and 19 of the TM have been met.

- 12.6.10.3 Eight archaeologically sensitive areas are identified within the Project boundary, namely Shek Wu Wai ASA, Hop Shing Wai ASA, Mai Po ASA, Mai Po Lung (North) ASA, Mai Po Lung (South) ASA, Siu Hum Tsuen (West) ASA, Siu Hum Tsuen (East) ASA and Pang Loon Tei ASA. Direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase in these areas.

*Shek Wu Wai ASA and Mai Po Lung (South) ASA – Archaeological Watching Brief*

- 12.6.10.4 Archaeological watching brief is recommended to be carried out in Shek Wu Wai ASA and Mai Po Lung (South) ASA should works involve soil disturbance occurred (such as site formation) during the construction phase. The objective of the Archaeological Watching Brief is to ensure the protection and preservation of any potential archaeological deposits, particularly those from Song and Ming-Qing dynasties, that may exist within the Shek Wu Wai ASA and Mai Po Lung (South) ASA. The project proponent or future subsequent developer(s) should employ an archaeologist who must obtain a *Licence to Excavate and Search for Antiquities* from the Antiquities Authority prior the commencement of the fieldworks. The scope, methodology and programme of the archaeological works shall be agreed with AMO.

*Hop Shing Wai ASA, Mai Po ASA, Siu Hum Tsuen (West) ASA, Siu Hum Tsuen (East) ASA and Pang Loon Tei ASA – Further Archaeological Survey*

- 12.6.10.5 These ASAs are either occupied privately as buildings, paved car parks and open storages or have their accessibility restricted by security measures such as fencing. These areas cannot be accessed, thus lack archaeological information from this survey. Further archaeological survey at later stages after land resumption but before site formation works is recommended. The survey shall be conducted by an archaeologist who must obtain a *Licence to Excavate and Search for Antiquities* from the Antiquities Authority prior the commencement of the fieldworks. The scope, methodology and programme of the archaeological survey shall be agreed with AMO.
- 12.6.10.6 In particular, Mai Po ASA includes Mai Po SAI, which holds significant archaeological potential. Previous archaeological discovery indicated the discovery of jars of coins dating back to the Song dynasty in this area. Given the exceptional nature of these archaeological findings, the objective of the archaeological survey should take into account the unique context of these discoveries. The survey team should thoroughly review the available

finding reports to determine if any specific conditions regarding the burial of these jars of coins exist.

*Mai Po Lung (North) ASA – No Mitigation Measure Required*

- 12.6.10.7 The area of Mai Po Lung (North) ASA is reserved for an egret (Section 10 on Ecology of EIA report refers). No impact on archaeology is anticipated, no mitigation measure is required, subjected to the detailed design of this area. Should construction works involving soil disturbance are anticipated during the detailed design stage, project proponent should review the impact assessment and propose adequate mitigation measures to AMO for approval.

*For areas within the Project Boundary – Precautionary Measure*

- 12.6.10.8 If antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered, the project proponent is required to inform AMO immediately for discussion of appropriate mitigation measures to be agreed by AMO before implementation by the project proponent to the satisfaction of AMO.

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