

CONTENTS

10. CULTURAL HERITAGE IMPACT ASSESSMENT 1

10.1 Introduction..... 1

10.2 Relevant Legislation and Guidelines..... 1

10.3 Assessment Methodology..... 2

10.4 Cultural Heritage Baseline Condition..... 3

10.5 Cultural Heritage Impact Assessment 10

10.6 Mitigation Measures 12

10.7 Residual and Cumulative Impacts..... 13

10.8 Environmental Monitoring & Audit 14

10.9 Conclusions..... 14

10.10 Bibliography 15

Figures

- Figure 10.1 Cultural Heritage Assessment Area and Works Area
- Figure 10.2 Geology for Cultural Heritage Assessment Area
- Figure 10.3 Test Pits and Auger Holes Locations recorded from Previous Studies

Tables

- Table 10.1 Site of Archaeological Interest in the CHAA
- Table 10.2 Summary of Previous Archaeological Works Conducted and the Archaeological Discovery
- Table 10.3 Archaeological Potential Evaluation
- Table 10.4 Identified Graded Historic Buildings
- Table 10.5 Identified Built Heritage Items
- Table 10.6 Impact Assessment on Built Heritage Items within 50m from The Works Area
- Table 10.7 Recommended 3As levels for Grade 3 Heritage Sites from The Works Area

Appendices

- Appendix 10.1 Built Heritage Survey Report for Ta Kwu Ling

10. CULTURAL HERITAGE IMPACT ASSESSMENT

10.1 Introduction

10.1.1 This Section presents the Cultural Heritage Impact Assessment (CHIA) associated with the construction and operation of the Project in accordance with Clause 3.4.12 and Appendix J of the EIA Study Brief No. ESB-322/2019.

10.2 Relevant Legislation and Guidelines

10.2.1 The following legislation and guidelines are applicable to the CHIA in Hong Kong:

- Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and the associated Technical Memorandum on the EIA Process (EIAO TM);
- Antiquities and Monuments Ordinance (Cap 53) (A&M Ordinance);
- Guideline for Cultural Heritage Impact Assessment; and
- Hong Kong Planning Standards and Guidelines (HKPSG).

Environmental Impact Assessment Ordinance (Cap 499)

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

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

10.2.3 The technical scope of CHIA defined within Annex 10 of the EIAO TM states that the criteria for evaluating impacts to sites of cultural heritage should include the following:

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

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

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

10.2.5 The EIAO TM also outlines the criteria for assessment of impact on sites of cultural heritage as follows:

Annex 10: “The criteria for evaluating impact on sites of cultural heritage includes: (a) The general presumption in favour of the protection and conservation of all sites of cultural heritage because they provide an essential, finite and irreplaceable link between the past and

the future and are points of reference and identity for culture and tradition; (b) Adverse impacts on sites of cultural heritage shall be kept to the absolute minimum.”

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

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

Antiquities and Monuments Ordinance

- 10.2.7 In addition to the EIAO, the heritage resources of Hong Kong are protected by a range of legislative and planning mechanisms. The A&M Ordinance (Cap 53) provides statutory protection of best examples of Hong Kong’s heritage. The A&M Ordinance also establishes the statutory procedures to be followed in making such a declaration.

“This Ordinance provides for the preservation of objects of historical, archaeological and palaeontological interest....”

- 10.2.8 The A&M Ordinance defines an antiquity as a relic (a movable object made before 1800) and a place, building, site or structure erected, formed or built by human agency before the year 1800. The A&M Ordinance also states, amongst other things, that: the discovery of an antiquity shall be reported to the Antiquities Authority (Secretary for Development); that ownership of all relics discovered after the commencement of the A&M Ordinance shall vest in the Government; that the Authority can declare a place, building, site or structure to be a monument, historical building or archaeological or palaeontological site or structure (and therefore introducing certain additional controls for these sites); and that licences and permits can be granted for excavation and other works in relation to antiquities.
- 10.2.9 Section 11 of the A&M Ordinance requires any person who discovers an antiquity, or supposed antiquity, to report the discovery to the Antiquities Authority.

Requirements for Cultural Heritage Impact Assessment (CHIA)

- 10.2.10 Appendix J of the EIA Study Brief No. ESB-322/2019 provides requirements on conducting archaeological and built heritage impact assessment.

Hong Kong Planning Standards and Guidelines (HKPSG)

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

10.3 Assessment Methodology

- 10.3.1 The CHIA follows the criteria and guidelines in Annexes 10 and 19 of the EIAO TM. It also follows the Requirements for CHIA, as stated in Appendix J the EIA Study Brief No. ESB-322/2019 and the Cultural Heritage Assessment Area (CHAA) is defined by a distance of 300m from the boundary of the Works Area of the Project area as shown in **Figure 10.1**. The CHIA comprises the following tasks.

Baseline Study

- 10.3.2 A desktop review was conducted based on best available information such as review of relevant studies, aerial photos, historical and current maps and historical documents held by

Government departments, public libraries and the Hong Kong Heritage Discovery Centre Reference Library to identify the cultural heritage resources within the CHAA. A full bibliography is provided in *Section 10.10*.

Built Heritage Survey

10.3.3 A built heritage survey was conducted by a contracted consultant to identify known and unknown built heritage items in the CHAA that may be affected by the Project and its associated works. The findings are summarized in *Section 10.4* and detailed in *Appendix 10.1*.

10.3.4 The coding method for the recording of built heritage resources used is as follows:

- Graded Historic Building by the Antiquities Advisory Board and new item for grading assessment (GB);
- Additional surveyed Built Heritage buildings, structures and features (HB);
- Clan Grave (G); and
- Fung Shui Features (FS).

Impact Assessment

10.3.5 Based on the findings and analysis of the baseline condition, a CHIA including Archaeological Impact Assessment (AIA) and Built Heritage Impact Assessment (BHIA) for the construction and operation of the Project was conducted to assess the direct and indirect impacts on the identified cultural heritage resources including buildings / structures both at grade level and underground which were built on or before 1969 with cultural heritage significance. Should cultural heritage impact be identified, appropriate practicable mitigation measures and monitoring to avoid or keep the adverse impact to the minimum are recommended. A checklist including all the affected sites of cultural heritage, impacts identified, recommended measures as well as the implementation agent and period are included in implementation schedule of the EM&A. The AIA is conducted by a qualified archaeologist, Mr Raymond Ng, according to Clause 2 of the Requirements for CHIA in Appendix J of the EIA Study Brief No. ESB-322/2019.

10.4 Cultural Heritage Baseline Condition

Topographical Background

10.4.1 The CHAA is located at the north part of the New Territory in the North District, near the north boundary of HKSAR. It is located in Ta Kwu Ling, south of the Shenzhen River. The Ta Kwu Ling area is bounded by the ridges of Robin's Nest (Hung Fa Leng (紅花嶺)) in the east including Wong Mau Hang Shan (黃茅坑山) and Wo Keng Shan (禾徑山); Cheung Shan (長山) and Tsung Shan (松山) in the south; Wa Shan (華山) and Cham Shan (杉山) in the southwest and Lo Shue Ling (老鼠嶺) at the west.

10.4.2 The existing watercourse sections TKL04 and TKL05 are branches of Ping Yuen River (also known as River Ganges) at the lowland area of Ta Kwu Ling and they are the subject of the Project. It collects water from Wo Keng Shan and Cheung Shan at the east, runs across the flat land and merges into the Shenzhen River. Watercourse section TKL05 generally flows from southeast towards north; while watercourse TKL04 generally flows from east to west and connects to TKL05. Areas along both sides of the River branches are mainly abandoned/active agricultural lands, rural village areas and small factories or workshops.

Historical Background

- 10.4.3 There is not much historical record to understand history of the villages in the CHAA. However, the study of the genealogy of clan groups indicated that settlements in the CHAA existed since the Song Dynasty. The New Territories was occupied by five main clan groups, the Tang, Man, Liu, Hau and Pang clans since the Song Dynasty.
- 10.4.4 The earliest record of local villages within the CHAA is the 1819 edition of Xin'an Gazetteer. The villages mentioned in the Xin'an Gazetteer including:
- Liwucun (Lei Uk) (李屋);
 - Daputian (Tai Po Tin) (大埔田); and
 - Pingyang (坪洋).
- 10.4.5 The villagers of Ta Kwu Ling used to use leather drum for communication to keep out of the many bandits and pirates who plagued the area. It is believed that the Ta Kwu Ling may be named after this, meaning "Hit Drum Range".
- 10.4.6 The CHAA used to be paddy fields with historic villages engaged in farming. During the 20th century, many of the paddy field progressively converted into cultivation crops and both sides of major roads such as Ping Che Road become dominated by factories, open storage, car repairing works etc.

Geological Background

- 10.4.7 The solid geology of the CHAA is the Tai Mo Shan Formation (JTM) (see **Figure 10.2**). It is Jurassic volcanic rocks with an age of approximately 164.6 ± 0.7 million years before present. The formation comprises rhyolitic coarse ash lithic crystal tuffs (CEDD 2010).
- 10.4.8 The superficial deposits are all Quaternary deposits, comprise of alluvium (Qa), terraced alluvium (Qpa) and debris flow deposits (Qpd) (see **Figure 10.2**). The distribution is that the earlier deposits of Pleistocene, terraced alluvium (Qpa) and debris flow deposits (Qpd), concentrated around the small hills of the Tai Mo Shan Formation (JTM); while the later deposit of Holocene, alluvium (Qa), situated at modern streams and rivers (Hong Kong Government 1991).
- 10.4.9 Ancient people usually inhabited on the foothill and terrace and close to watercourse, and therefore, these areas are of archaeological potential. At the hill slope area, the superficial deposit is the Late Pleistocene colluvial deposit (see Qpd (Quaternary Pleistocene debris) in **Figure 10.2**). Further down slope is the Late Pleistocene terraced alluvium (raised terraces) (see Qpa (Quaternary Pleistocene alluvium) in **Figure 10.2**). At the lowland plain area (usually 1.5 m to 2.5 m lower than alluvial terraces), the superficial deposit is the alluvium flood plain deposit (see Qa (Quaternary alluvium) in **Figure 10.2**).

Archaeological Background

- 10.4.10 Desktop review identified one Site of Archaeological Interest (SAI) listed by AMO within the CHAA as presented in **Table 10.1** and the location is shown in **Figure 10.1**.

Table 10.1 Site of Archaeological Interest in the CHAA

| Site Name | Name | Closest Distance from the Works Area (m) |
|--------------|---|--|
| Ping Che SAI | Subsurface investigation in 2000 recorded the remains of a dwelling foundation of Ming and Qing periods together with some ceramic sherds found at the site | 269 |

10.4.11 In the past decades, numerous archaeological investigations were conducted within/adjacent to the CHAA. **Table 10.2** and **Figure 10.3** summarised previous archaeological works conducted and the archaeological discoveries.

Table 10.2 Summary of Previous Archaeological Works Conducted and the Archaeological Discovery

| Year | Summary of Archaeological Works Conducted | Summary of Discovery |
|------|---|--|
| 2000 | An archaeological survey undertaken at Ping Che Kau Tsuen ⁽¹⁾ . | Ming to Qing Dynasty building materials through surface collection and Song dynasty ceramics were identified in test pit excavation in Ping Che Kau Tsuen. |
| 2003 | Extensive and phased archaeological investigations were conducted under the EIA study for the Planning and Development Study on North East New Territories ⁽²⁾ from October to November 2000 and June to August 2001 respectively. Please refer “2003 Survey” in Figure 10.3 for spots/area with discovery; auger holes and test pits conducted in Ping Che/Ta Kwu Ling area that fall within the CHAA. | Although ceramic shards dated between Song Dynasty and Qing Dynasty were discovered. They were all surface finds. Two fragments of Bronze Age net pattern shards and Song celadon shards were discovered at Ha Shan Kai Wat but no cultural layer was identified. The report concluded that the flood plain of Shui Hau has no archaeological potential and the artifacts found in Ha Shan Kai Wat area were secondary deposits in nature. |
| 2012 | An archaeological survey (2012 Survey) for Drainage Channel TKL05 as part of the EIA of Drainage Improvement in Northern New Territories – Package C (Remaining Works) ⁽³⁾ was conducted. The survey included surface scan of open areas at designated locations; drilled 11 auger holes and excavated 13 test pits. Please refer “2012 Survey” in Figure 10.3 for auger holes and test pits locations. | The survey result identified no sign of archaeological deposits in the surveyed area. |

⁽¹⁾ Hong Kong Institute of Archaeology (HKIA) 2000. The Archaeological Survey and Assessment at Ping Che.

⁽²⁾ Maunsell Consultants Asia Limited. 2003. Chapter 10: Impacts on Sites of Cultural Heritage of the EIA for the Planning and Development Study on North East New Territories, Hong Kong: Government of the HKSAR.

⁽³⁾ Hong Kong Institute of Archaeology, 2012, Contract No. DP03/2011/130CD Drainage Improvement in Northern New Territories – Package C (Remaining Works) Archaeological Survey for Drainage Channel TKL05 Final Report, for Drainage Services Department, Hong Kong: Government of the HKSAR. (Unpublished Report)

| Year | Summary of Archaeological Works Conducted | Summary of Discovery |
|------|---|--|
| 2012 | Archaeological field survey for the North East New Territory New Development Area EIA Study (2012 NENT Survey) ⁽⁴⁾ : Surface scan, a total of 56 auger holes and 51 test pits were conducted. Of which 17 auger holes and 16 test pits were located in Ping Che/Ta Kwu Ling Area. Please refer to “2012 NENT Survey” in Figure 10.3 for surface scanned area, auger holes and test pits locations within or adjacent to the CHAA. | The survey result identified two archaeological potential areas at the Ping Che/Ta Kwu Ling area. One of them is located between Sheung Shan Kai Wat and Ha Shan Kai Wat outside the CHAA. Another archaeological potential area is at Kat Tin approximately 156 m from the Works Area of the Project (see Figure 10.3). |

Archaeological Potential Evaluation

10.4.12 Preliminary design of the excavation method for the Project included:

- General site clearance and formation of a proper access for transportation of equipment and Construction & Demolition Material;
- Mechanical dredging method may be adopted to remove sediments by grabs, buckets, or similar device;
- The excavation machine may perform direct dredges on river bed after flow diversion and on-shore dredges or on-barge dredges would also be considered;
- Removed sediment could be placed nearby on land, in adjacent barge or directly in a truck/rail car; and
- After excavation, sediment will be transported to a suitable disposal site.

10.4.13 It is notable that the excavation method is preliminary design only, actual implementation may vary according to site condition or change in Project design.

10.4.14 Based on the latest available data regarding the CHAA and the Project development, a set of assumptions for the soil excavation has been adopted in this archaeological potential evaluation:

- All excavation depth measure from existing ground level;
- All excavation works will reach the average excavation depth of approximately 5m;
- Soil excavation may take place in any location within the Works Area; and
- No soil excavation of any depth under this Project will take place outside the Works Area.

10.4.15 Based on the above mentioned desktop study result, the archaeological potential evaluation within the Works Area is presented in **Table 10.3**.

(4)AECOM Asia Company Limited, 2012, Archaeological Field Survey Final Report for the North East New Territories New Developments Areas Planning and Engineering Study, for Civil Engineering and Development Department, Hong Kong: Government of the HKSAR.

Table 10.3 Archaeological Potential Evaluation

| Location | Surveys Conducted, Findings & Justification of Evaluation (Refer to Figure 10.3) | Assessed Archaeological Potential |
|---------------------------------------|--|-----------------------------------|
| Drainage Channel TKL04 | <p>Survey Conducted in the Works Area:</p> <ul style="list-style-type: none"> ● 2 auger holes (2003 Survey) ● Surface scan (2012 NENT Survey) <p>Survey Findings: The surveys identified no archaeological deposits with significance.</p> <p>Justification of the Evaluation: The auger holes and test pits from 2003 Survey, 2012 Survey and 2012 NENT Survey were conducted in Qa and Qpa in the surveyed area of the same superficial geology but no archaeological deposits were identified. According to auger holes in adjacent area conducted in 2003, the surveys located at Qa and Qpa and no archaeological deposits were identified.</p> | None |
| Drainage Channel TKL05 | <p>Survey Conducted in the Works Area:</p> <ul style="list-style-type: none"> ● 1 auger holes and 1 test pits (2012 Survey) ● Surface scan and 2 test pits (2012 NENT Survey) <p>Survey Findings: The surveys identified no archaeological deposits with significance.</p> <p>Justification of the Evaluation: The surveys identified no sign of archaeological deposits in the surveyed area.</p> <p>According to auger holes in adjacent area conducted in 2003, the surveys located at Qa and Qpa and no archaeological deposits were identified.</p> <p>The surveyed area including the Works Area of this Project is concluded to have no archaeological potential.</p> <p>Extensive archaeological surveys were conducted adjacent to this area but no significant archaeological deposits have been identified.</p> <p>Therefore, it is concluded that the Works Area of Drainage Channel TKL05 is of no archaeological potential.</p> | None |
| Road Drainage System at Ping Che Road | <p>Survey Conducted:</p> <ul style="list-style-type: none"> ● Surface scanning by the Ping Che Road (2012 NENT Survey) ● A number of auger holes were conducted by the Ping Che Road (2003 Survey). <p>Survey Findings: The surveys identified no archaeological deposits with significance.</p> <p>Justification of the Evaluation: The Works Area are located in disturbed ground along existing Ping Che Road with underground utilities. Therefore, it is of no archaeological potential.</p> | None |
| Drainage works at Ping Yeung Village | <p>Survey Conducted: Surface scanning and 1 test pit, 1 auger hole were conducted adjacent to the southern and northern end of the drainage works (2012 NENT Survey)</p> <p>Survey Findings: The survey identified no archaeological deposits with significance</p> <p>Justification of the Evaluation: Previous archaeological work of the area identified no archaeological deposits. The Works Area are located in disturbed ground along existing Ping Yuen Road with underground utilities. Therefore, it is of no archaeological potential.</p> | None |

- 10.4.16 Having evaluated the available information for the assessment of the archaeological potential of potential affected area in the Works Area, no archaeological potential has been identified. As a result, the area in the Works Area is concluded to have no archaeological potential.
- 10.4.17 In case of any changes in the Project design, the project proponent should inform the AMO and evaluate the archaeological potential of the additional area that are not covered in this assessment.

Built Heritage

- 10.4.18 Desktop review supplemented by built heritage survey conducted in February 2020 identified no declared or proposed monuments and Government identified sites in the CHAA.
- 10.4.19 Eight Graded historic buildings and one new built heritage item for grading assessment are identified in the CHAA but outside the Works Area. They are listed in **Table 10.4**, locations are shown in **Figure 10.1** and detailed in **Appendix 10.1**.

Table 10.4 Identified Graded Historic Buildings and New Item for Grading Assessment

| Site Code | Name | Grading | Nearest distance to Works Area (m) | Figure number Reference in Appendix 10.1 |
|---|--|--------------------|------------------------------------|--|
| Graded Historic Buildings | | | | |
| GB-01 | Wing Kit Study Hall | 3 | 82 | 4 |
| GB-02 | Ng Ancestral Hall | 3 | 219 | 3 |
| GB-03 | Village Houses Nos. 35-37 Fung Wong Wu | 3 | 204 | 3 |
| GB-04 | Yeung Ancestral Hall (Ta Kwu Ling) | 3 | 206 | 3 |
| GB-06 | Chan Ancestral Hall (Sit Wan Tso) | 3 | 41 | 9 |
| GB-07 | Sit Kin Ancestral Hall | 3 | 50 | 9 |
| GB-08 | Nos. 138-139 Ping Yeung | 2 | 289 | 10 |
| GB-09 | Tin Hau Temple (Ping Che) | 3 | 287 | 14 |
| New Items for Grading Assessment | | | | |
| GB-05 | Village Houses Nos 24-27 Fung Wong Wu | Pending to grading | 186 | 3 |

- 10.4.20 In addition to Graded historic buildings and new built heritage item for grading assessment, 81 built heritage items are identified in the CHAA. They are listed in **Table 10.5**. Their detail descriptions, locations and photographic records are provided in **Appendix 10.1**.

Table 10.5 Identified Built Heritage Items

| Site Code | Name | Nearest distance to Works Area (m) | Figure Reference in Appendix 10.1 |
|-----------|---|------------------------------------|-----------------------------------|
| HB-01 | Village Houses Nos. 1 & 2, Kan Tau Wai | 202 | 2 |
| HB-02 | Village House No. 4A, Kan Tau Wai | 194 | 2 |
| HB-03 | Village Houses Nos. 6A, 6, 7, Kan Tau Wai | 171 | 2 |
| HB-04 | Village Houses Nos. 10A and 10, Kan Tau Wai | 161 | 2 |
| HB-05 | Well and associated Shrine of Kan Tau Wai | 145 | 2 |

| Site Code | Name | Nearest distance to Works Area (m) | Figure Reference in Appendix 10.1 |
|-----------|---|------------------------------------|-----------------------------------|
| HB-06 | Village Houses Nos. 15-17, Kan Tau Wai | 178 | 2 |
| HB-07 | Village Houses Nos. 23B & 23C, Kan Tau Wai | 192 | 2 |
| HB-08 | Fuk Tak Temple, No.30, Kan Tau Wai | 222 | 2 |
| HB-09 | Village Houses Nos. 27A, 30A, 30B Kan Tau Wai | 210 | 2 |
| HB-10 | Village House No. 60, Ping Che Lo Wai | 274 | 14 |
| HB-11 | Hung Shing and Earth Shrine, Kan Tau Wai | 278 | 2 |
| HB-12 | Banyan tree and Associated Shrine, Kan Tau Wai | 214 | 2 |
| HB-13 | Village God Shrine, Fung Wong Wu | 266 | 3 |
| HB-14 | Village House No.5, Ping Yeung | 26 | 8 |
| HB-15 | Village Houses Nos. 1-3, Ping Yeung | 21 | 8 |
| HB-16 | Village House No. 9, Ping Yeung | 41 | 8 |
| HB-17 | Village Houses Nos. 30-31, Fung Wong Wu | 218 | 3 |
| HB-18 | Village House No.29, Fung Wong Wu | 212 | 3 |
| HB-19 | Village House No. 4, Ping Che Yuen Ha | 92 | 13 |
| HB-20 | Village Houses Nos. 22-23, Fung Wong Wu | 206 | 3 |
| HB-21 | Village Houses Nos.17-18, Fung Wong Wu | 184 | 3 |
| HB-22 | Village House Nos. 21, 21A, Fung Wong Wu | 218 | 3 |
| HB-23 | Gate of House, No.15B Fung Wong Wu | 220 | 3 |
| HB-24 | Village well, Fung Wong Wu | 128 | 3 |
| HB-25 | Fuk Tak and Village God Shrine, Fung Wong Wu | 126 | 3 |
| HB-26 | Village House No.18, Tong Fong | 118 | 4 |
| HB-27 | Village Houses Nos. 20-24, Tong Fong | 131 | 4 |
| HB-28 | Fuk Sin Tai, Nos. 8-9 Tong Fong | 98 | 4 |
| HB-29 | Village Houses Nos. 3-5, Tong Fong | 67 | 4 |
| HB-30 | Village God Shrine Tong Fong | 81 | 4 |
| HB-31 | Village House No. 36A, Lei Uk | 133 | 5 |
| HB-32 | Village House No. 34A, Lei Uk | 107 | 5 |
| HB-33 | Lei Ancestral Hall, No.7A, Lei Uk | 104 | 5 |
| HB-34 | Yin Fei Tong, No. 6A, Lei Uk | 93 | 5 |
| HB-35 | Village House No. 1A, Lei Uk | 61 | 5 |
| HB-36 | Village House No. 25A, Lei Uk | 79 | 5 |
| HB-37 | Village House Nos. 41A-C, Lei Uk | 162 | 5 |
| HB-38 | Well and associated Shrine, Lei Uk | 195 | 5 |
| HB-39 | Village House Nos. 12A & 12B, Lei Uk | 116 | 5 |
| HB-40 | Fuk Tak/Village Shrine, Lei Uk | 22 | 5 |
| HB-41 | Pak Kung Shrine, Tai Po Tin | 64 | 7 |
| HB-42 | Well and Shrine, Tai Po Tin | 64 | 7 |
| HB-43 | Village Houses Nos. 51, 52, 53-53B and 54-56 Ping Yeung | 3 | 8 |
| HB-44 | Village House No. 57, Ping Yeung | 15 | 8 |
| HB-45 | Direction Stone, Ping Yeung | 65 | 8 |

| Site Code | Name | Nearest distance to Works Area (m) | Figure Reference in Appendix 10.1 |
|---|---|------------------------------------|-----------------------------------|
| HB-46 | Village Houses Nos. 63-65, Ping Yeung, Ta Kwu Ling | 28 | 8 |
| HB-47 | Village House No. 46, Ping Yeung | 56 | 8 |
| HB-48 | Village House behind house No. 9 Ping Yeung | 42 | 9 |
| HB-49 | Chan Ancestral Hall, No. 98 Ping Yeung | 26 | 9 |
| HB-50 | Village Houses Nos. 94-96, Ping Yeung | 30 | 9 |
| HB-51 | Tin Hau Shrine, Ping Yeung | 6 | 9 |
| HB-52 | Village Houses Nos. 133, 134 and 3 adjacent ruins, Ping Yeung | 54 | 9 |
| HB-53 | Pak Kung Shrine and Fuk Fu Plaque, Ping Yeung | 4 | 11 |
| HB-54 | Village Shrine, Ping Che Yuen Ha | 6 | 13 |
| HB-55 | Tai Wong Yeh shrine, Ping Yeung | 1 | 11 |
| HB-56 | Kwan Tei Shrine, Ping Yeung | 5 | 11 |
| HB-57 | Village Shrine, Ping Che Kat Tin | 156 | 12 |
| HB-58 | Chan Boundary Stone | 20 | 11 |
| HB-59 | Pak Kung Shrine, Ping Che Kat Tin | 207 | 12 |
| HB-60 | Village House No. 40, Ping Che Kat Tin | 230 | 12 |
| HB-61 | Pak Kung shrine, Ping Che Kat Tin | 110 | 12 |
| HB-62 | Earth God Shrine, Ping Che Yuen Ha | 114 | 13 |
| HB-63 | Village House No. 52, Ping Che Lo Wai | 161 | 14 |
| HB-64 | Tai Wong and Pak Kung Shrine, Ping Che Lo Wai | 240 | 14 |
| HB-65 | Village House No. 57 Ping Che Lo Wai | 270 | 14 |
| HB-66 | Village House No.8 Kan Tau Wai | 170 | 2 |
| HB-67 | Village House No.23 Kan Tau Wai | 195 | 2 |
| HB-68 | Village Houses Nos. 15-17, Tong Fong | 110 | 4 |
| HB-69 | Village House No. 3, Lei Uk | 75 | 5 |
| HB-70 | Village House No. 26A, Lei Uk | 77 | 5 |
| HB-71 | Ping Yeung Public School | 85 ^(a) | 16 |
| HB-72 | Sing Ping School, Ping Che | 6 ^(a) | 15 |
| G-01 | Leung Clan Grave | 52 | 15 |
| G-02 | Man Clan Grave | 20 | 15 |
| FS-01 | Kan Tau Wai Fung Shui Woodland | 158 | 2 |
| FS-02 | Fung Wong Wu Fung Shui Woodland | 100 | 3 |
| FS-03 | Lei Uk Fung Shui Woodland | 6 | 6 |
| FS-04 | Tong Fong Fung Shui Woodland | 126 | 4 |
| FS-05 | Tai Po Tin Fung Shui Woodland | 50 | 7 |
| FS-06 | Ping Yeung Fung Shui Woodland | 78 | 8 |
| FS-07 | Ping Che Kat Tin Fung Shui Woodland | 142 | 12 |
| FS-08 | Ping Che Lo Wai Fung Shui Woodland | 213 | 14 |
| Notes: | | | |
| a) Measure from the closest building structure to the works area in the compound. | | | |

10.5 Cultural Heritage Impact Assessment

Archaeological Impact Assessment

- 10.5.1 The Ping Che SAI is located 269 m from the Works Area, no impact is anticipated.
- 10.5.2 As evaluated in **Sections 10.4.12 to 10.4.17** above, the Works Area is of no archaeological potential. Therefore, potential impact on archaeological resources is not anticipated.
- 10.5.3 However, in case of change of the Works Area of the Project, the project proponent should

inform the AMO and evaluate the archaeological potential of additional area that was not covered in this assessment and recommend the need for further archaeological action.

Built Heritage Impact Assessment

- 10.5.4 As there is no declared or proposed monuments and Government identified sites in the CHAA, no impact is anticipated.
- 10.5.5 The eight Graded historic buildings and one new built heritage item for grading assessment listed in **Table 10.4** are located over 40m from the Works Area of the Project, direct impact arising from the construction work of the Project is not anticipated. Potential indirect vibration impact, settlement and tilting of most of these buildings are not anticipated due to the large separation distance (over 80m) of the buildings from the Works Area. However, potential adverse physical impact, vibration impact, settlement and tilting of two Grade 3 historic buildings (GB-06 and GB-07) may be a concern as they are located close to (within 50m) the Works Area.
- 10.5.6 Potential direct impact to most of the built heritage items identified and listed in **Table 10.5** is not anticipated due to the far separation distance (over 50m) of them away from the Works Area. However, potential vibration impact, settlement and tilting of a number of them as listed in **Table 10.6** may be a concern as they are located close to (within 50m) the Works Area. The impact assessment is further discussed in **Table 10.6**.

Table 10.6 Impact Assessment on Built Heritage Items within 50m from The Works Area

| Site Code | Name | Nearest Distance to Works Area (m) | Impact Assessment |
|-----------|--|------------------------------------|--|
| HB-14 | Village House No.5, Ping Yeung | 26 | Direct impact is not anticipated. However, potential construction vibration impact, settlement and tilting may be a concern during construction stage of the Project. |
| HB-15 | Village Houses Nos. 1-3, Ping Yeung | 21 | |
| HB-16 | Village House No. 9, Ping Yeung | 41 | |
| HB-43 | Village Houses Nos. 51, 52, 53-53B and 54-56, Ping Yeung | 3 | |
| HB-44 | Village House No. 57 Ping Yeung | 15 | |
| HB-46 | Village Houses Nos. 63-65, Ping Yeung, Ta Kwu Ling | 28 | |
| HB-48 | Village House behind house No. 9 Ping Yeung | 42 | |
| HB-49 | Chan Ancestral Hall, No. 98 Ping Yeung | 26 | |
| HB-50 | Village Houses Nos. 94-96, Ping Yeung | 30 | |
| HB-72 | Sing Ping School, Ping Che | 6 | |
| HB-40 | Fuk Tak/Village Shrine, Lei Uk | 22 | Direct impact is not anticipated. However, potential construction vibration impact may be a concern during construction stage of the Project. Rituals held at the shrine may be affected during construction period. |
| HB-51 | Tin Hau Shrine, Ping Yeung | 6 | |
| HB-53 | Pak Kung Shrine and Fuk Fu Plaque, Ping Yeung | 1-4 | |
| HB-54 | Village Shrine, Ping Che Yuen Ha | 6 | |
| HB-55 | Tai Wong Yeh Shrine, Ping Yeung | 1 | |
| HB-56 | Kwan Tei Shrine, Ping Yeung | 5 | |
| HB-58 | Chan Boundary Stone | 20 | The boundary stone is a simple stone |

| Site Code | Name | Nearest Distance to Works Area (m) | Impact Assessment |
|-----------|----------------|------------------------------------|---|
| | | | structure on soft ground while the Works Area is located along existing Road far away from the boundary stone. Direct and indirect impact is not anticipated. |
| G-02 | Man Clan Grave | 20 | The grave is located on soft ground while the Works Area is located along Ping Che Road far away from the grave. Direct and indirect impact is not anticipated. |

- 10.5.7 With regard to Lei Uk Fung Shui Woodland (FS-3) and Tai Po Tin Fung Shui Woodland (FS-5), although they are located close to (within 50m) the Works Area, direct and indirect adverse impacts are not anticipated as no structure of historic value in the Woodlands will be impacted.

10.6 Mitigation Measures

Archaeological Mitigation Measures

- 10.6.1 The Ping Che Site of Archaeological Interest is located far away (269 m) from the Works Area of the Project, no excavation works of the project will exist in or adjacent to the Ping Che Site of Archaeological Interest, therefore no adverse archaeological impact due to the proposed development is anticipated.
- 10.6.2 No archaeological potential area has been identified in the Works Area of the Project, no archaeological impact arising from the proposed work is anticipated. Therefore, no mitigation measure is required.
- 10.6.3 As a precautionary measure, the project proponent and his/her contractor are required to inform AMO immediately when any antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered during the course of works.

Built Heritage Mitigation Measures

- 10.6.4 Since no impact on declared or proposed monuments and Government identified sites has been identified, no mitigation measure is required.
- 10.6.5 Except GB-06 and GB-07, none of the six Graded historic buildings and the new built heritage item for grading assessment will be impacted by the Project due to the large separation distance from the proposed Works Area. Thus, no mitigation measure is required for these graded historic buildings and the new built heritage item.
- 10.6.6 Special attention should be paid to avoid potential adverse physical impact arising from the proposed works to two Grade 3 historic buildings (GB-06 and GB-07). Design proposal, method of works and choice of machinery should be targeted to minimize potential adverse impacts to these heritage sites.
- 10.6.7 With regard to potential vibration impact, settlement and tilting of two Grade 3 historic buildings (GB-06 and GB-07), it is recommended that during pre-construction stage of the Project and implemented by the works contractor, a baseline condition survey and baseline vibration impact assessment be conducted for these two historic buildings by a qualified building surveyor or qualified structural engineer to evaluate on the necessary construction

monitoring and structural strengthening measures for AMO's consideration. If any vibration and building movement induced from the proposed works should be monitored to ensure no disturbance and physical damages made to the heritage sites during the course of works, monitoring proposal for the heritage sites, including checkpoint locations, installation details, response actions for each of the Alert/ Alarm/ Action (3As) levels and frequency of monitoring should be submitted for AMO's consideration. Recommended 3As levels for Grade 3 heritage sites are as shown in **Table 10.7**:

Table 10.7 Recommended 3As levels for Grade 3 Heritage Sites from The Works Area

| Items to be monitored | 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)

- 10.6.8 Most of the built heritage items identified in the CHAA will not be impacted by the construction work of the Project as they are far away from the Works Area of the Project. Therefore, no mitigation measure is required. However, potential indirect impacts on sixteen (16) the built heritage items (HB-14, HB-15, HB-16, HB-40, HB-43, HB-44, HB-46, HB-48, HB-49, HB-50, HB-51, HB-53, HB-54, HB-55, HB-56 and HB-72) are identified. The recommended mitigation measures are described below:
- 10.6.9 During pre-construction stage of the Project implemented by the works contractor, a baseline condition survey and baseline vibration impact assessment should be conducted for sixteen (16) built heritage items (HB-14, HB-15, HB-16, HB-40, HB-43, HB-44, HB-46, HB-48, HB-49, HB-50, HB-51, HB-53, HB-54, HB-55, HB-56 and HB-72) by a qualified building surveyor or qualified structural engineer to define the vibration limit (a vibration limit at 15mm/s could be adopted for the built heritage items) and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase to ensure the construction performance meets with the vibration standard.
- 10.6.10 As a precautionary measure, it is recommended that during construction stage of the Project adjacent to six (6) built heritage items (HB-40, HB-51, HB-53, HB-54, HB-55 and HB-56), proper access and space shall be allowed to the shrines so that the local practice of rituals will not be affected.

10.7 Residual and Cumulative Impacts

- 10.7.1 With the implementation of the recommended mitigation measures, no adverse residual cultural heritage impact is anticipated.
- 10.7.2 No cumulative cultural heritage impacts is anticipated.
- 10.7.3 Referring to the latest information provided by DSD on the interfacing projects, the concurrent projects include sewerage system upgrading works nearby Ping Che Road and drainage improvement works in Ping Yuen River. With the implementation of control measures during construction as presented in the Preliminary Environmental Review Reports of these concurrent projects, no adverse impact is anticipated. Considered the scale and nature of the cumulative project, no adverse cumulative impact would be anticipated. To further minimise the potential cumulative impacts during construction phase, it is

recommended that the contractor shall plan the works area of the close proximity work sections which will not overlap with the works area of interfacing project as far as practical.

10.8 Environmental Monitoring & Audit

- 10.8.1 Special attention should be paid to avoid potential adverse physical impact arising from the proposed works to two Grade 3 historic buildings (GB-06 and GB-07). Design proposal, method of works and choice of machinery should be targeted to minimize potential adverse impacts to these heritage sites.
- 10.8.2 During pre-construction stage of the Project and implemented by the works contractor, a baseline condition survey and baseline vibration impact assessment be conducted for two Grade 3 historic buildings (GB-06 and GB-07) by a qualified building surveyor or qualified structural engineer to define the vibration limit and to evaluate on the necessary construction monitoring and structural strengthening measures for AMO's consideration.
- 10.8.3 During pre-construction stage of the Project, a baseline condition survey and baseline vibration impact assessment should be conducted for sixteen (16) built heritage items (HB-14, HB-15, HB-16, HB-40, HB-43, HB-44, HB-46, HB-48, HB-49, HB-50, HB-51, HB-53, HB-54, HB-55, HB-56 and HB-72) by a qualified building surveyor or qualified structural engineer to define the vibration limit and to evaluate if construction vibration monitoring and structural strengthening measures are required during construction phase to ensure the construction performance meets with the vibration limit to be adopted. As a precautionary measure, it is also recommended that during construction stage of the Project adjacent to six (6) built heritage items (HB-40, HB-51, HB-53, HB-54, HB-55 and HB-56), proper access and space shall be allowed to the shrines so that the local practice of rituals will be not affected.

10.9 Conclusions

- 10.9.1 The Ping Che Site of Archaeological Interest is located far away (269 m) from the Works Area of the Project, due to the large separation distance of the Site from the Works Area, no impact is anticipated and thus, no mitigation measure is required.
- 10.9.2 No archaeological potential area has been identified at the Works Area of the Project. No archaeological impact is anticipated and thus no mitigation measures is required. However, in case of change of the Works Area of the Project, the project proponent should inform the AMO and evaluation the archaeological potential of additional area that was not covered in this assessment and recommend the need for further archaeological action.
- 10.9.3 As a precautionary measure, the project proponent and his/her contractor are required to inform AMO immediately when any antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered during the course of works.
- 10.9.4 Desktop review supplemented by field visits and built heritage survey identified no declared or proposed monuments and Government identified sites in the CHAA. No impact to these items is anticipated and thus no mitigation measures is required.
- 10.9.5 Six Graded historic buildings (GB-01 to GB-04, GB08 and GB09) and one new built heritage item for grading assessment (GB-05) identified will not be impacted by the Project due to their large separation distance from the works are of the Project. No mitigation measure is required.
- 10.9.6 Special attention should be paid to avoid potential adverse physical impact arising from the

proposed works to two Grade 3 historic buildings (GB-06 and GB-07). Design proposal, method of works and choice of machinery should be targeted to minimize potential adverse impacts to these heritage sites.

- 10.9.7 With regard to potential vibration impact, settlement and tilting of two Grade 3 historic buildings (GB-06 and GB-07) may be a concern, it is recommended that during pre-construction stage of the Project and implemented by the works contractor, a baseline condition survey and baseline vibration impact assessment be conducted for these two historic buildings by a qualified building surveyor or qualified structural engineer to evaluate on the necessary construction monitoring and structural strengthening measures for AMO's consideration.
- 10.9.8 Most of the built heritage items identified in the CHAA will not be impacted by the construction work of the Project as they are far away from the Works Area of the Project. Therefore, no mitigation measure is required. However, potential impacts on sixteen (16) built heritage items HB-14, HB-15, HB-16, HB-40, HB-43, HB-44, HB-46, HB-48, HB-49, HB-50, HB-51, HB-53, HB-54, HB-55, HB-56 and HB-72 are identified. Appropriate mitigation measures including baseline condition survey and baseline vibration impact assessment to be conducted by qualified building surveyor or qualified structural engineer during pre-construction stage of the Project. As a precautionary measure, it is also recommended that during construction stage of the Project adjacent to six (6) HB-40, HB-51, HB-53, HB-54, HB-55 and HB-56, proper access and space shall be allowed at/to the shrines so that the local practice of rituals will be not affected.
- 10.9.9 With the implementation of the mitigation measures recommended, the potential impact of the Project during construction phase would be diminished and controlled to acceptable levels, no adverse residual impacts and cumulative impacts are anticipated.
- 10.9.10 Referring to the latest information provided by DSD on the interfacing projects, the major scopes include sewerage system upgrading works nearby Ping Che Road and drainage improvement works in Ping Yuen River. With implementation of control measures during construction, no adverse impact is anticipated. Considered the scale and nature of the cumulative project, no adverse cumulative impact would be anticipated. To further minimise the potential cumulative impacts during construction phase, it is recommended that the contractor shall plan the works area of the close proximity work sections which will not overlap with the works area of interfacing project as far as practical.

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END OF TEXT