2012年11月27日會議
討論文件

立法會發展事務委員會
有關保存在地盤發現的歷史遺跡的政策和事宜

目的

本文件就保育香港考古文物的現行措施及香港鐵路有限公司（“港鐵”）在金鐘夏慤花園工程地盤發現歷史遺蹟一事向議員提供資料。

法律保護

2. 《古物及古蹟條例》（“《古蹟條例》”）（香港法例第53章）就古物的發現及挖掘作出監管。《古蹟條例》旨在就香港的考古發現作出規管，並確保具特殊歷史價值的物件得以保存供社會大眾共享。《古蹟條例》力求在文物保育和發展之間取得適當平衡，以確保下一代一方面可享受改善的環境，另一方面亦能從過往有價值的古蹟中學習；並同時確保有需要的發展不會因爲要保存一些重要性較低的文物而遭到窒礙。

3. 根據《古蹟條例》第11條，任何人發現古物或假定古物，或知道古物或假定古物的發現，須隨即向古物事務監督（即發展局局長）或指定人士報告，並須採取一切合理措施予以保護；而古物事務監督及其授權的任何指定人士亦可進入及視察發現古物或假定古物的地點。《古蹟條例》第12條亦規定，除古物事務監督及其授權的指定人士外，其他人士須獲古物事務監督批給牌照，方可挖掘或搜尋古物。《古蹟條例》第13條訂明，古物事務監督須信納牌照申請人具備足夠科學訓練或經驗及有足夠人手及財務資源或其他資源供其運用，使其能進行令人滿意的挖掘及搜尋工作，以及能對挖掘及搜尋所發現的任何古物進行或安排進行妥善的科學研究，方可批給牌照，並可在牌照內就挖掘及搜尋工作的進行及被發現的物件的保存等附加其認爲適當的條件。此外，按《古蹟條例》第3條，古物事務監督如認爲任何地方或地點具有考古意義，可於諮詢古物諮詢委員會（“古諮會”），並在獲得行政長官的批准後，藉憲報宣布該處爲古蹟。

4. 《環境影響評估條例》（“《環評條例》”）（香港法例第499章）是政府對預防日後環境受破壞所作的努力的一部分。《環評條例》規定儘早適當地評估發展工程對環境造成的影響，以及確保有效地推行必要的預

防和緩解措施，以保護環境。《環評條例》有與香港考古文物保護相關的條文，並爲香港的考古文物提供進一步的保護。

5. 《環評條例》附表1訂明，“文化遺產地點”指“《古物條例》所界定的古物或古蹟(不論該古物或古蹟是一個地方、建築物、場地或構築物或遺蹟)，及古物古蹟辦事處（“古蹟辦”）識別爲具有考古學、歷史或古生物學價值的任何地方、建築物、場地或構築物或遺蹟”。根據《環評條例》的規定，所有指定工程項目均須進行環境影響評估研究，這在有需要時也包括爲文化遺產影響評估進行考古影響評估。工程項目倡議人須推行環境影響評估報告所規定的緩解措施，以盡量減少對有關文化遺產地點造成影響。

行政保護

6. 古蹟辦已把考古遺址一覽表（包括未被宣布爲古蹟的具考古價值的地點）連同標示遺址範圍的圖則，交予相關部門（例如規劃署、地政總署、土木工程拓展署、建築署、民政事務總署等）參考，以便有關部門能夠在工程項目或發展計劃的最初規劃階段，及早顧及考古遺址的保護事宜。古蹟辦定期更新一覽表予各相關部門傳閱。

7. 此外，當局自2008年起已規定所有新基本工程項目的倡議者和相關工務部門，須研究工程項目會否影響具有歷史及考古價值的地點及建築物。若有影響，便須進行文物影響評估，制定保育管理方案及保護指引，以確保歷史和文物建築及地點免受損壞；或倘若損壞屬無可避免時，須制定緩解措施，盡量把損壞減至最低。文物影響評估須交予古諮會考慮。文物影響評估機制確保工程項目由最初階段開始，已能就政府提出的發展需要與文物保育之間，取得最適當的平衡。它亦顯示政府決意加強文物保育工作，以及在初期便讓公眾參與。

港鐵在金鐘夏慤花園工程地盤發現歷史遺蹟

8. 港鐵現正進行南港島線(東段)工程。根據環境保護署署長按《環境條例》第10及第13條所發出的環境許可證，港鐵須確保南港島線(東段)工程按照獲批准的環境影響評估報告(“環評報告”)內的建議進行。獲批准的環評報告資料顯示，位於金鐘夏慤花園的工地，曾經用作軍事用途，當中的軍事設施包括威靈頓炮台。早年填海工程及其它建設項目已經把軍事設施(包括威靈頓炮台)破壞。但該地尚可能存有被擾亂的殖民時期有關軍事方面的遺跡。因此，環評報告建議，在金鐘夏慤花園工地施工期間，港鐵須委聘考古學家進行考古觀察，以監察挖掘工作，及須就緩解措施得到古蹟辦

的同意（相關章節見附件A）。有關於夏慤花園發現遺跡的時序如下：

時間	有關事項
2010 年 10 月	根據獲批准的南港島線(東段)工程環評報告建議，港鐵須在夏慤花園工地施工期間，委聘考古學家進行考古觀察。
2011 年 5 月	根據《古蹟條例》，港鐵委聘的考古學家（該考古學家曾多次參與香港的考古發掘）就有關考古工作向古物事務監督轄下的古蹟辦遞交牌照申請，列出考古觀察的操作安排(包括進行考古挖掘的範圍和方法，以及如有發現，會通知古蹟辦)。經古蹟辦審核，並獲得古諮會的支持下，古物事務監督向申請人發出牌照。
2011 年 6 月	港鐵委聘的考古學家通知古蹟辦在夏慤花園工地開始進行考古觀察。期間，古蹟辦與港鐵委聘的考古學家保持溝通以了解最新情況。
2012 年 9 月 25 日	古蹟辦接獲港鐵委聘的考古學家通報發現遺跡（相片見附件 B）。此通報是根據考古工作牌照的有關條款發出(即規定考古觀察須按牌照申請人在申請牌照時所提交的資料進行;而有關申請資料述明申請人如發現構築物遺跡須通知古蹟辦）。
2012 年 9 月 26 日	古蹟辦派內部具專業考古學訓練的博物館館長職系人員(“古蹟辦專業人員”）實地視察及與港鐵委聘的考古學家討論，雙方均認爲被發現的建築構件並不是威靈頓炮台的一部分，而是十九世紀中期的海堤的一小部分，並且海堤已受到早年多次工程所破壞。
2012 年 10 月上旬	港鐵委聘的考古學家指出由於所發現的遺跡是殘存海堤，海堤亦已受到早年多次工程所破壞，遺跡文物價值相對不高，且位於金鐘站擴建工程施工的主要位置，不宜原址保存，並建議以詳細紀錄的方法，包括利用照片、繪圖及

時間	有關事項
	文字方式紀錄。此建議是根據考古工作牌照的有關條款提出(即規定考古觀察須按牌照申請人在申請牌照時所提交的資料進行;而有關申請資料述明申請人須就發現的物品的跟進工作徵詢古蹟辦及取得其同意)。古蹟辦經研究後,同意上述處理方法,並建議將部分海堤的石塊保存下來,日後再利用及作適當詮釋。港鐵接納古蹟辦的建議,並已將狀況良好的石塊妥爲存放。
2012 年 10 月 18 日	古蹟辦專業人員再次實地視察,確定未有更多遺跡發現。

9. 目前,有關考古觀察的工作仍在進行。港鐵委聘的考古學家會於2013年中南港島線(東段)考古工作完成後,把詳細報告提交古蹟辦。一如其他考古發現的安排,古蹟辦會向古諮會匯報相關發現。雖然,於金鐘夏慤花園發現的遺跡只爲殘存海堤,文物價值相對不高,但鑑於公眾對是次發現的關注,古蹟辦於2012年11月1日已安排古諮會成員到港鐵工地現場視察。此外,古蹟辦亦安排了香港大學房地產及建設系專門研究香港採石業歷史的潘新華教授和其研究團隊的馬冠堯工程師,以及香港浸會大學歷史系研究軍事歷史的研究助理教授鄺智文博士到工地視察,進一步認定遺跡爲殘存海堤,而不是炮台遺跡。

總結

10. 於金鐘夏慤花園港鐵工程地盤的遺跡發現已按既定程序處理。發展局與古蹟辦正積極研究加強通報機制,使工程進行期間的考古發現能及早公布。

發展局
2012 年 11 月

11. Cultural Heritage Impact

11.1 Background

This section presents a cultural heritage impact assessment of the Project, identifying cultural heritage resources, assessing potential direct and indirect impacts from proposed works on these resources, and recommending mitigation measures where required.

11.2 Environmental Legislation, Standards and Guidelines

11.2.1 General

Legislation, Standards and Guidelines relevant to the consideration of cultural heritage impact of the Project include:

- Antiquities and Monuments Ordinance
- Environmental Impact Assessment Ordinance
- Hong Kong Planning Standards and Guidelines
- Technical Memorandum on Environmental Impact Assessment Process
- Guidelines for Cultural Heritage Impact Assessment
- Development Bureau Technical Circular (Works) No. 06/2009 - Heritage Impact Assessment Mechanism for Capital Works Projects

11.2.2 Antiquities and Monuments Ordinance

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

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

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

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

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

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

11.2.3 Environmental Impact Assessment Ordinance

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

11.2.4 Hong Kong Planning Standards and Guidelines

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

The guidelines also address the issue of the preparation of plans for the conservation of historical buildings, archaeological sites and other antiquities. It is noted that the existing Declared Monuments, Proposed Monuments and archaeological sites are listed in the explanatory notes of Statutory Town Plans and it is stated that prior consultation with AMO is necessary for any development, redevelopment and rezoning proposals affecting the Monuments and archaeological sites and their surrounding environments. It is also noted that planning intention for non-statutory town plans at the sub-regional level should include the protection of monuments, historical buildings, archaeological sites and other antiquities through the identification of such features on sub-regional layout plans. The appendices list the legislation and administrative controls for conservation, other conservation related measures in Hong Kong, and government departments involved in conservation.

11.2.5 Technical Memorandum on Environmental Impact Assessment Process

The general criteria and guidelines for evaluating and assessing impacts to Sites of Cultural Heritage are listed in Annexes 10 and 19 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). 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 details of scope and methodology for undertaking Cultural Heritage Impact Assessment, including baseline study, impact assessment and mitigation measures.

11.2.6 Guidelines for Cultural Heritage Impact Assessment

This document, as issued by the Antiquities and Monuments Office (AMO), outlines the specific technical requirement for conducting terrestrial archaeological and built heritage impact assessments and is based upon the requirements of the EIAO-TM. It includes the parameters and scope for the Baseline Study, specifically desk-based research and field evaluation. There are also guidelines encompassing reporting requirements and archive preparation and submission in the form of Guidelines for Archaeological Reports and Guidelines for the Handling of Archaeological Finds and Archives.

The prerequisite conditions for conducting impact assessment and mitigation measures are presented in detail, including the prediction and evaluation of impacts based upon five levels of significance (Beneficial, Acceptable, Acceptable with Mitigation Measures, Unacceptable and Undetermined). The guidelines also state that preservation in totality must be taken as the first priority and if this is not feasible due to site constraints or other factors, full justification must be provided.

Mitigation measures shall be proposed in cases with identified impacts and shall have the aim of minimising the degree of adverse impact and also where applicable providing enhancement to a heritage site through means such as enhancement of the existing environment or improvement to accessibility of heritage sites. The responsibility for the implementation of any proposed mitigation measures must be clearly stated with details of when and where the measures will be implemented and by whom.

11.2.7 Development Bureau Technical Circular (Works) No. 6/2009: Heritage Impact Assessment Mechanism for Capital Works Projects

The technical circular contains the procedures and requirements for assessing heritage impact arising from the implementation of new capital works projects as defined in Section 5 of the Technical Circular. It is stated in the document that the works agent will provide a checklist to the AMO of any heritage sites (as defined in the Technical Circular) situated within or within the vicinity of the project boundary (usually to be defined as not more than 50 metres measured from the nearest point of the project boundary, including works areas).

The identification of the heritage sites shall be undertaken at the earliest possible stage, preferably as part of the Technical Feasibility Statement. If the works boundary cannot be defined at this stage, the checklist shall be provided as soon as the project boundary has been defined. Upon receipt of the above information from the works agent, the AMO will determine if the proposed project will affect the heritage value of any heritage site and decide the necessity of conducting an Heritage Impact Assessment (HIA) based upon the submitted information.

If an HIA is required, the works agent shall submit a proposal for the scope of the HIA for AMO approval. Once the scope has been approved it will be the responsibility of the works agent to conduct the HIA.

11.3 Assessment Methodology

11.3.1 Archaeology

11.3.1.1 Baseline Study

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

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

Task 1: Desk-based research

Firstly, desk-based research is carried out in order to identify any known or potential sites of archaeological interest within the project study area and to evaluate the cultural significance of these sites once identified. The following is a non-exhaustive list of resources that are consulted as part of the research programme: the Antiquities and Monuments Office published and unpublished papers and studies; publications on relevant historical, anthropological and other cultural studies; unpublished archival papers and records; collections and libraries of tertiary institutions; historical documents held in the Public Records Office, Lands Registry, District Lands Office, District Office and Museum of History; cartographic and pictorial documentation; and geotechnical information.

Task 2: Site visit

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

Task 3: Field Evaluation (if required)

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

Field Scan

Field walking is conducted to identify archaeological deposits on the surface. The scanning of the surface for archaeological material is conducted, under ideal circumstances, in a systematic manner and covers the entire study area. Particular attention is given to areas of land undisturbed in the recent past and to exposed areas such as riverbed cuts, erosion areas, terraces, etc. During the field scanning, concentrations of finds are recorded, bagged and plotted on 1:1000 scale mapping and are retained as part of the archive. Topography, surface conditions and existing impacts are noted during the field walking.

Auger Testing Programme

Auger survey will be carried within the study area in order to establish soil sequence, the presence/absence of cultural soils or deposits and their horizontal extent.

The auger tool consists of a bucket, pole and handle and is vertically drilled by hand into the surface. When the bucket is filled with soil the auger is extracted and the soil emptied from the bucket. Soils are described and depth changes are measured inside the hole. The depth and type of any finds recovered are also recorded. The auger hole is abandoned when water table, the end of the auger or rock is reached or the auger bucket fails to hold the soil. The location of each auger hole test is marked on a 1:1000 scale map. The results of the auger tests provide one of the criteria used to position the test pit excavations.

Test Pit Excavation

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

Hand digging of test pits measuring between 1 by 1 and 2 by 2 metres is carried out in order to determine the presence/absence of archaeological deposits and their stratigraphy. The size may depend on close proximity to large trees, narrow terraces or other external factors. Hand excavation will continue until decomposing rock or sterile soils are reached and no potential for further cultural layers exists. A test pit will also be abandoned when the maximum safe working depth is reached or when, despite the use of appropriate and practicable dewatering measures, the effects of ground water prevent further excavation. In cases where sterile deposits or the maximum safe excavation limit cannot be reached, the AMO should be consulted prior to backfilling.

During excavation contexts, finds and features are recorded, soils are described and relevant depths measured. Artefacts are collected, bagged and labelled by context. Sections are photographed and drawn and, if required, ground plans are also photographed and/or drawn. The position of each test pit, its top and bottom levels and associated temporary bench mark are recorded by a qualified land surveyor and plotted on 1:1000 scale mapping. On completion of all recording and site inspection by the AMO, test pits are backfilled.

11.3.1.2 Impact Assessment

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

11.3.1.3 Mitigation Measures

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

11.3.2 Built Heritage

11.3.2.1 Desk-based Study

A desk-based study has been undertaken to determine the presence of built heritage resources in the project Study Area. Information has been gathered from the following sources:

- List of Declared Monuments and Graded Buildings as issued by the AMO
- Published and unpublished papers and studies

- Publications on relevant historical, anthropological and other cultural studies
- Unpublished archival, papers, records; collections and libraries of tertiary institutions
- Historical documents which can be found in Public Records Office, Lands Registry, District Lands Office, District Office, Museum of History
- Cartographic and pictorial documentation and
- Previous Built Heritage Impact Assessment's (BHIA) in the project study areas

11.3.2.2 Site Visits

Site visits have been conducted to identify any additional resources that were not covered by the desk-based study. The site visits particularly focussed on the area known to contain the former Aberdeen Battery, areas that have potential for containing historical graves on Ap Lei Chau and the former Victoria barracks site on Hong Kong Island. The identified resources have been recorded by photographic and cartographic record and this information has been included in the BHIA report. The current presentation of historic building/structures follows the logical order of the SIL(E) alignment for easy understanding by the public, thus it should be noted that the scale of the figures for this report is not in 1:1000 as this is considered inappropriate.

11.3.2.3 Definition of Features that Fall within the Scope of Built Heritage Resources

All pre-1950 structures, these include all built features, such as; domestic structures, ancestral halls, temples, shrines, monasteries and nunneries, village gates, village walls, sections of historical stone paving, wells, schools, any post-1950 structure deemed to possess features containing architectural or cultural merit; all pre-war clan graves and Cultural and Historical landscape features, such as fung shui woods and ponds, historical tracks and pathways, stone walls and terraces, ponds and other agricultural features.

11.3.2.4 Evaluation of Heritage Significance of Built Heritage Resources

There is currently no official standard for the evaluation of heritage resources in Hong Kong, and thus, the practice of categorising resources must be seen as an ongoing process that will be updated and improved as refinements and additional features are added to the existing information base. As such the following guide has been used for the current impact assessment:

- Declared or Proposed Monuments: **High**
- Graded Historic Buildings: **High**
- Government Historic Sites: **Moderate**
- Non-Graded Historical Buildings and Sites: **Low** (with potential to be evaluated to higher level if previously unknown significant features are identified)

11.3.2.5 Impact Assessment and Mitigation Recommendations

Prediction and identification of both direct and indirect impacts that may affect the built heritage resources within the project study area have been undertaken with special attention paid to the built heritage resources identified in the project Study Brief. Preservation in-situ is always the first priority for sites of Cultural Heritage. If preservation in totality is not possible, mitigation have been proposed to minimise the degree of adverse impact to the greatest possible extent, where appropriate. As well, any disturbance to Sites of Cultural Heritage that may cause physical damage have been avoided wherever possible through alteration of design, construction method or protective measures as appropriate.

11.4 Findings of the Desk-based Review

11.4.1 Archaeology

11.4.1.1 Geological and Topographical Background

As stated in **Section 2**, the proposed SIL(E) alignment would comprise a combination of above ground and underground elements.

Admiralty to Nam Fung Portal

The proposed works areas at Admiralty are both situated on modern fill over fine grained granite, beach deposits and marine sand. The approximate locations of the works areas near Admiralty on geological map is shown in **Figure 11.1**. The alignment would then run in tunnel form through solid geology until it reaches Wong Chuk Hang.

Wong Chuk Hang Area

South of the tunnel, the alignment would then cross an area of alluvial deposits, which stretches south-west from Wong Chuk Hang Village to the eastern edge of the now emptied Wong Chuk Hang Estate. It then runs in a westerly direction through an area at the junction between marine sand and solid geology until it reaches Ap Lei Chau. The proposed alignment on geological map is shown in **Figure 11.2**.

Ap Lei Chau

The proposed alignment is situated on a combination of solid geology with the proposed station situated on modern fill over marine sand as shown in **Figure 11.3**.

11.4.1.2 Archaeological Background

A brief overview of the archaeological background is provided below:

Admiralty

The area was earmarked for use by the British Military in the mid-19th century and reclamation was undertaken along the coast as early as 1863, as can be seen in the geological map in **Figure 11.1**. Some of the works areas are located within former coastal area (beach deposits), early reclamations (1863 and 1904) and a former British military site known as Wellington Battery. **Figures 11.4** and **11.5** show the historical maps of the area in 1856 and 1936-46 respectively (Empson 1992).

Wong Chuk Hang

There is one Declared Monument in the project study area, namely the Wong Chuk Hang Rock Carving. The rock carving is carved into a fine grained volcanic rock face and faces east. Although no archaeological deposits have been found to date in the vicinity of the rock carving, its presence indicates that this was an area where human activity took place in the past and that there is the potential for archaeological material associated with this activity to exist within the current project study area.

Part of the project study area at Wong Chuk Hang lies on alluvial deposits and has the potential to contain archaeological material associated with historical village settlement in the area. The current village of Wong Chuk Hang San Wai was settled approximately 150 years ago by members of the Chow and Cheung clans who were relocated from the original Wong Chuk Hang Village (also known as Little Hong Kong), which is believed to be at least 200 years old (Chow 1958). **Figure 11.6** shows a map of the area in 1895 (Empson 1992) while **Figure 11.7** shows an aerial photograph of the area in 1949 (GEO). The remains of the older village are situated on the hillside at the northern side of the Aberdeen Tunnel Road (Li 1955). It is also possible that an historical settlement associated with incense trade could be located in the project study area as the nearby Shek Pai Wan was a shipping centre for export of incense (Iu 1983).

Ap Lei Chau

An archaeological site was identified by Schofield in the 1920s and Heanley also identified lime kilns on the island in the 1930s (Rogers *et al*. 1997). It was noted in the report of the 1997 Territory Wide Archaeological Survey that any traces of former archaeological sites had been destroyed by reclamation or development (Rogers *et al*. 1997).

11.4.1.3 Previous Investigations

Planning and Development Study on Hong Kong Island South and Lamma Island Cultural Heritage Impact Assessment (AAL 2001)

The project study area for the Archaeological Impact Assessment included Wong Chuk Hang. Field testing was undertaken and an area of archaeological potential located east of the Aberdeen Tunnel was identified in woodland directly to the west of Wong Chuk Hang San Wai. The area consisted of abandoned agricultural land with moderate vegetation growth. A map highlighting the area is shown in **Figure 11.8**. Archaeological Watching Brief (Archaeological Monitoring) during construction phase of any proposed project was recommended in the report.

Repositioning and Long Term Operation Plan of Ocean Park – Environmental Impact Assessment Study (Maunsell Aecom 2006)

An Archaeological Impact Assessment (AIA) was undertaken as part of the EIA study and areas of archaeological potential were identified at the north-western end of Ocean Park as indicated in **Figure 11.9**. Mitigation for the project included the undertaking of an Archaeological Survey (See below).

Ocean Park Archaeological Survey for the Repositioning and Long Term Operation Plan of Ocean Park (Wang Fei /Horizon Asia Ltd. 2008)

Accordingly to AMO, an archaeological investigation was undertaken by Mr. Wang Fei within the footprints of the above identified area of archaeological potential. No archaeological materials or cultural layers were identified.

11.4.2 Built Heritage

11.4.2.1 Background of the Study Area

Admiralty

This section of the study area was utilised by the British Military from the mid 19th Century and a view of the original layout of the Victoria Barracks is shown in **Figure 11.10**, taken from an 1880 map. The explosive magazine can be seen in the lower right hand corner of the map. The map also shows the location of Flagstaff House (which was at that time called Head Quarters House). The section of a 1930-1945 map in **Figure 11.11** shows all of the Graded Historic Buildings and Flagstaff House (a Declared Monument) in their historical settings.

Wong Chuk Hang

The general description of the history for this area has been covered in the **Section 11.4.1.2** on archaeological background. Additionally, as the area has been found to contain historical settlements (firstly, Little Hong Kong and later Wong Chuk Hang San Wai) there is the potential for the sections of the study area near Nam Fung Portal to contain historical graves. An historical map from 1845 as shown in **Figure 11.12**, shows the historical village of Little Hong Kong and the agricultural nature of the surrounding area.

Ap Lei Chau

The island was formerly a centre for fisher families and the two Graded Temples (Shui Yuet Temple and Hung Shing Temple) on the island dating to the 18th and 19th Centuries, respectively are believed to have been built by the local inhabitants. The study area also covers the area that contains the remnants of the former Aberdeen Battery. The Battery was constructed shortly before the outbreak of World War II and was destroyed by its own personnel on December 24 1941, just prior to the surrender of Hong Kong. It is noted that the only remaining features of the battery are a few ruined concrete structures and some damaged walls located near the upper section of the WSD service reservoir road (Ko 1996). The location is shown in **Figure 11.13**. The hilly area around the service reservoir also has the potential to contain historical graves.

11.4.2.2 Declared Monuments (Sites of Cultural Heritage)

Flagstaff House (AM77-0003) DM-2

The building, originally built for Major General George Charles D'Aguilar in 1846 is the oldest still surviving western building in Hong Kong. It was originally known as Headquarters House. The building, which was renamed Flagstaff house around 1932, functioned as the residence of the commander of the British forces in Hong Kong until 1978. The building is currently in use as a museum of Teaware. Location is shown in **Figure 11.14.1** and photographs in **Plates 2a, 2b** and **2c** in **Appendix 11.5**.

Wong Chuk Hang Rock Carving (AM83-0307) DM-1

The rock carving is carved into a fine grained volcanic rock face along the edge of a stream in a wooded area. It is believed to date from the Bronze Age. The designs of the carving have been described as meandering and spiral in nature and it has also been suggested that they may represent stylised animal

eyes. The rock carving is the furthest from the sea to be discovered to date in Hong Kong. Location is shown in **Figure 11.16** and photographs in **Plates 1a** and **1b** in **Appendix 11.5**.

11.4.2.3 Graded Historic Buildings as of 16 April 2010

Admiralty

Main Block and Annex of the Old British Military Hospital at No. 10 Borrett Road (Grade 1) AM88-0402(01) (GB-5)

The building was constructed in 1903 and opened in 1907 and consisted of a main and annex blocks. It received damage from shelling during World War II and was used by the Japanese occupying forces. After the War it continued to be used as a military hospital until 1967. After this time it was the premises of Hong Kong Island School until 1979 and government offices until 1988. After this time it has been rented out to various parties. Location is shown in **Figure 11.14.1** and photographs in **Plates 7a, 7b** and **7c** in **Appendix 11.5**.

Old Victoria Barracks, Former Explosive Magazine at Justice Drive Central (Grade 1) (GB-6)

The Explosive Magazine compound consists of two former magazine buildings and a laboratory. The site is also characterised by a series of earthen mound known as traverses which were constructed to absorb the impact of any accidental explosions. The site is currently undergoing restoration works for adaptive reuse. Location is shown in **Figure 11.14.1** and photographs in **Plates 8a, 8b** and **8c** in **Appendix 11.5**.

Old Victoria Barracks, Montgomery Block at No. 42B Kennedy Road Central (Grade 1) AM77-0085(02)(GB-7)

The block was constructed between 1900 and 1909 by the British Military. The building was used by the Japanese during World War II. The entire barracks were handed back to the Hong Kong Government in 1979. The building has been used as offices for charity groups since being handed back to the government. Location is shown in **Figure 11.14.1** and photographs in **Plates 9a** and **9b** in **Appendix 11.5**.

Old Victoria Barracks, Roberts Block at No. 42A Kennedy Road Central (Grade 1) AM77-0085(03)(GB-8)

The block was constructed between 1900 and 1909 by the British Military. The building was used by the Japanese during World War II. The entire barracks were handed back to the Hong Kong Government in 1979. The building has been used as a charity facility by the Jockey Club since 1986. Location is shown in **Figure 11.14.1** and photographs in **Plates 10a** and **10b** in **Appendix 11.5**.

Old Victoria Barracks, Wavell Block at Hong Kong Park Cotton Tree Drive Central (Grade 1) AM77-0085(04) (GB-9)

The block was constructed between 1900 and 1909 by the British Military. The building was used by the Japanese during World War II. The entire barracks were handed back to the Hong Kong Government in 1979. The building is currently in use as the education centre of the Hong Kong Park Aviary. Location is shown in **Figure 11.14.1** and photograph in **Plate 11a** in **Appendix 11.5**

Old Victoria Barracks, Rawlinson House Grade 1 (GB-10)

The building was constructed in the early 20th Century as the residence for the chief of staff (Deputy Commander of the British Forces in Hong Kong). The structure is rectangular and two storeys in height. The ground floor is in use as the Cotton Tree drive Marriage Registry and the first floor is the Hong Kong Park Management Office. Location is shown in **Figure 11.14.1** and photographs in **Plates 12** and **13** in **Appendix 11.5**.

Old Victoria Barracks Block GG (ADM-1) Grade 2

The old barracks building is two storey and rectangular and dates to the early part of the 20th Century. It is currently abandoned. Location is shown in **Figure 11.14.1**. As the site is currently inaccessible due to construction works it was not possible to provide a photograph.

Wong Chuk Hang

Aberdeen Technical School, Main Building and Annex at No. 1 Wong Chuk Hang Road (Grade 3) AM92-0504(01) (GB-3)

The facility was built in 1935 and was funded by the Hon. Fung Ping Shan and Sir Robert Ho Tung. The school was built in an international style. During World War II, the school building was used first by the British forces as a naval base and then by the Japanese as a seaplane base. Location is shown in **Figure 11.15** and photographs in **Plates 5a**, **5b** and **5c** in **Appendix 11.5**.

Old Aberdeen Police Station Main Building at No. 116 Aberdeen Main Road Grade 2 (GB-11)

The Police Station was constructed in 1891 as a replacement for an earlier building. It was attacked and badly damaged by the Japanese during the Second World War. The building reopened as a Police Station after the war and remained as such until 1969 when the station was moved to a new facility. The old police station has been used by various government departments between 1969 and 1995, when it became a youth centre known as the Warehouse run by an NGO. Location is shown in **Figure 11.15** and photographs in **Plates 44a** and **44b** in **Appendix 11.5**.

Old House at No. 10 Wong Chuk Hang San Wai (Grade 2) AM78-0181(GB-4)

The house was built between 1890 and 1899 by the Chow family and is one of the few remaining examples of a traditional village house to be found on Hong Kong Island. The building underwent renovation in 1996 and is currently managed by the Antiquities and Monuments Office. Location is shown in **Figure 11.16** and photographs in **Plates 6a, 6b** and **6c** in **Appendix 11.5**.

Hung Shing Temple at No. 9 Hung Shing Street, Ap Lei Chau (Grade 1) AM86-0356 (GB-1)

The temple is situated overlooking Aberdeen Harbour. It was originally constructed by fishing families of the area in 1773 and is dedicated to Kwong Lee Hung Shing Tai Wong, a protective deity of fishermen. Location is shown in **Figure 11.13** and photographs in **Plates 3a** and **3b** in **Appendix 11.5**.

Shui Yuet Temple at No. 181 Main Street Ap Lei Chau (Grade 3) AM86-0357 (GB-2)

The temple was originally constructed in 1866 and is believed to have been built by the local people of the area. The temple is dedicated to the Goddess of Mercy, Kwun Yam. Location is shown in **Figure 11.13** and photographs in **Plates 4a, 4b** and **4c** in **Appendix 11.5.**

11.4.2.4 Proposed Graded Historic buildings as of 16 April 2010

Admiralty

No. 33 Magazine Gap Road (ADM-3) Proposed to become a Grade 3 Historic building

The structure was built before 1924 and was renovated between 1945 and 1952. It has been used as a dormitory for HSBC staff since 1980. The location can be seen in **Figure 11.14.2** and photographs in **Plates 41a** and **41b** in **Appendix 11.5**.

Wong Chuk Hang

Holy Spirit Seminary Old Block (Proposed to become a Grade 1 Historic Building) and Chapel (Proposed to become a Grade 3 Historic Building) (WCH-18)

The old block of the seminary was built in the 1930's and consists of brick and cut stone walls. The building contains a mixture of Chinese and Western Architectural styles (Chinese Renaissance with Italian Florentine elements. The location of the structure can be found in **Figure 11.15** and photographs in **Plates 42a** and **42b** in **Appendix 11.5**. The chapel has been described as Chinese Modern Eclectic in style. The chapel dates to 1956.

11.4.2.5 Non-Graded Historical Items

Admiralty

Stone Marker from the former Victoria Barracks (ADM-2)

Granite rectangular slab from the Royal Navy with inscription of an anchor and 1910, with 34 at the top of the stone (relocated to lawn of Flagstaff House). Location is shown in **Figure 11.14.1** and photograph in **Plate 14a** in **Appendix 11.5**.

No. 15 Middle Gap Road (ADM-4)

The original building on this was constructed between 1948 and 1950 and was originally used as the residence for staff of the South British Insurance Company Limited. It was a two storey mansion style building of Italianate Renaissance style with many ornamental features in ornate styles including Baroque porticos, arches and balustrades. The building was rebuilt approximately 20 years ago. The location can be seen in **Figure 11.14.2** and photographs in **Plates 43a and 43b** in **Appendix 11.5**.

Wong Chuk Hang

Tai Wong Ye Temple on Heung Yip Road (WCH-1)

Architecturally modern style concrete structure with entrance gate supported by round stone columns. Inscriptions on column and plaque in gold colour. The tiles of the decorative roofing are also gold in colour. The exterior of the building contains porcelain pictures that have been donated by worshippers at the temple. Location is shown in **Figure 11.15** and photographs in **Plates 15a and 15b** in **Appendix 11.5**.

Shrine situated along side of nullah on Heung Yip Road (WCH-19)

The shrine is situated along the side of the path next to the existing nullah, it consists of a modern concrete tile covered box style structure with open front and adjacent plaque set on concrete platform. Location is shown in **Figure 11.15** and photograph in **Plate 15c** in **Appendix 11.5**.

Village structures in Wong Chuk Hang San Wai

The village of Wong Chuk Hang San Wai contains a number of older buildings that have been heavily modified and modernised. The majority of the structures have had all traditional decorative features removed from the exterior walls. Modern doors, windows and extensions have been added. The recorded buildings described below, whilst containing structural elements pre-dating 1950, have been so heavily modified as to contain no architectural value. It should be noted, that the village does contain a Graded Historic Building (No.10 Wong Chuk Hang San Wai) and this structure is not included in the above stated appraisal. The locations of the recorded structures are shown in **Figure 11.17** and photographs in **Plate 6** No. 10 Wong Chuk Hang San Wai and **Plates 16** through **31** for the remainder of the heritage resources in the village.

- Village House (WCH-2) - Single storey, brick and pounded earth structure with Hakka style tile roof. No decorative features
- Village House (WCH-3) - Terrace unit with white painted façade and tile roof
- Village House (WCH-4) - Terrace unit with modernised exterior
- Village House (WCH-5) - Two storey pitched tile roof structure with brick pounded earth exterior walls (render covered)
- Village House (WCH-6) - Courtyard terrace style end unit with modernised exterior. Tile roof with traditional ridge
- Village House (WCH-7) - Courtyard terrace style unit with modernised façade, tile roof on main section and render covered rear wall
- Village House (WCH-8) - Courtyard style terrace unit with modernised façade with parapet, rear wall render covered, tile roof on main section, flat roof front
- Village House (WCH-9) - Courtyard terrace style unit with modernised façade, tile roof on main section and render covered rear wall
- Village House (WCH-10) - Courtyard style terrace end unit with modernised façade, side wall has frieze panels, traditional tile roof on main section
- Village House (WCH-11) - Courtyard style terrace end unit with render covering exterior walls, no decorative features, tile roof over main section
- Village House (WCH-12) - Two storey structure with modernised exterior
- Village House (WCH-13) - Two storey terrace row end unit with cut granite stone exterior walls, flat roof
- Village House (WCH-14) - Two storey row unit with fully modernised exterior
- Village House (WCH-15) - Terrace row unit with modernised exterior features
- Village House (WCH-16) - Two storey end terrace unit. Modernised exterior features

- Shrine (WCH-17) - Rectangular stone block with inscription set into concrete base.

Ap Lei Chau

Tai Wong Temple (ALC-1)

Small modern structure, concrete with tile covering, single room with altar. Decorative tile exterior wall coverings. Location is shown in **Figure 11.13** and photographs in **Plates 32a** and **32b** in **Appendix 11.5**.

Earth God Shrine (ALC-2)

There are three shrine structures all modern and metal entrance gate. Square shaped modern concrete open sided enclosure (tile covering) with altar, open fronted shrine with decorative green tile roof and small box shrine set on concrete (tile covered platform). Location can be seen on **Figure 11.13** and photograph in **Plate 33a** in **Appendix 11.5**.

Historical Grave on Lee Nam Road (Grave GR-1)

The grave consists of an inscribed granite rectangular shaped stone set into the hillside, the date of the grave is 1937. Location is shown in **Figure 11.13** and photograph in **Plate 35a** in **Appendix 11.5**.

Historical Graves near the Tai Wong Temple (Grave GR-2 and GR-2a)

The larger grave (GR2) consists of a large armchair style enclosure with concrete covering. There is rubble covering the grave and it is abandoned. Location is shown in **Figure 11.13** and photograph in **Plate 36a** in **Appendix 11.5.** The smaller grave (GR2a) consists of an armchair style concrete enclosure filled in with rubble and debris. Location is shown in **Figure 11.13** and photograph in **Plate 36b** in **Appendix 11.5**.

Graves on Hillside near Lee Nam Road (Graves GR-3, GR-4, GR-5 and GR-6)

The graves consist on concrete enclosures and all show signs that they are not undergoing regular maintenance. The location of the graves can be seen on **Figure 11.13** and photographs in **Plates 37** through **40** in **Appendix 11.5.**

Remains of the Former Aberdeen Battery (ALC-3)

The structural remains of the battery are in ruinous condition and overgrown with vegetation. The remains consist of sections of concrete walls and foundations. Location is shown in **Figure 11.13** and photographs in **Plates 34a, 34b** and **34c** in **Appendix 11.5**.

11.4.2.6 Previous Investigations in the Project Study Area

Planning and Development Study on Hong Kong Island South and Lamma Island Cultural Heritage Impact Assessment (AAL 2001)

The village of Wong Chuk Hang San Wai was included in the study area for this project and the identified built heritage structures in the village were included in the catalogue of the Built Heritage Impact Assessment (BHIA) report. The results of the survey identified 34 resources in the village.

Repositioning and Long Term Operation Plan of Ocean Park – Environmental Impact Assessment Study (Maunsell Aecom 2006)

The village of Wong Chuk Hang San Wai was included in the study area for this project and the identified built heritage structures in the village were included in the catalogue of the BHIA report. The village was resurveyed for the project and 16 resources were identified.

Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel (Black & Veatch 2006)

The study area for the built heritage impact assessment included the former explosive magazine of the Old Victoria Barracks and the structures were included in the catalogue for the report. At the time of the survey (which dates back to 2004) the compound was derelict and not undergoing regular maintenance and the structures were found to be in need of repair.

11.5 Identification of Environmental Impact

11.5.1 Archaeology

11.5.1.1 Construction Phase

Although there is no known archaeological sites located within or in close proximity to the proposed works sites, as discussed in **Section 11.4**, based on desk-based review, some proposed works sites are evaluated as having some archaeological potential, direct impacts to potential buried archaeological deposits may still arise as a result of the project.

11.5.1.2 Operation Phase

There would be no impacts to archaeological resources during the operation phase.

11.5.2 Built Heritage

11.5.2.1 Construction Phase

Details of project design and construction works are described in **Section 2**. Any heritage resources located within close proximity to works areas or railway alignment may be impacted through:

- Direct impact to historical buildings and structures through demolition
- Indirect impact from ground-borne vibration arising from tunnelling and drill and blast activities
- Damage from contact with equipment and machinery to buildings and structures in close proximity to the works sites

11.5.2.2 Operation Phase

Impact on cultural heritage during operation phase of the Project would include:

- Indirect visual impacts to historic buildings from permanent above ground structures, such as viaducts, stations and ventilation buildings

11.6 Prediction and Evaluation of Environmental Impact

11.6.1 Assessment of Archaeological Potential

The archaeological potential for each section of the Study Area is presented in below:

N.B. Only areas with identified direct impacts from the proposed works (e.g. Works Sites) will be included in this assessment. Works Areas for site office, equipment and material storage etc. would be above ground and temporary and would not involve major excavation works and therefore were not considered for evaluation of archaeological potential as buried archaeological resources would only be impacted by development groundworks.

Areas of impact	Archaeological potential	Assessment of archaeological potential	Recommendations
(A) Admiralty			
i. Proposed Works Site at Harcourt Garden			
Harcourt Garden ***(Figure 11.22)***	Some archaeological potential	As shown in the geological map (refer to **Figure 11.1**), the southern part of the site is situated on 1863 reclamation; the north-western part of the site is also situated on early reclamation of 1904; whilst the north-eastern edge of the site is situated on more modern reclamations dating from 1945 and 1964. The approximate locations of the original shoreline and past military structures are marked on **Figures 11.4** (1856 map), **11.5** (1936-46 map), **11.18** (1936-46 map overlying 1880 map), and **11.41** (alignment map). Part of the Wellington Battery and Military Hospital were located approximately within the proposed works site at Harcourt Garden. The purpose of highlighting such areas is not necessarily to identify the exact locations of past military structures but, rather, is intended as a guide to those areas having the potential to produce artefactual (e.g. cannons) and structural (e.g. masonry) remains relating to the historical military use of such areas. Given the successive redevelopment of the areas in question here (see below), demolition, robbing out and disturbance are to be expected – as are disturbed remains within a general area of archaeological potential associated with the former Military Cantonment of Victoria City in the late 19th Century. Here is a brief description of the recent change of land use of Admiralty area: As seen in **Figures 11.36** (1957 map), **11.37** (1963 map) and **11.38** (1977 map), before the 1980s the general area of Admiralty was mainly occupied by military structures associated with the British Navy. The entire area has gone through profound changes in the past few decades: Queensway was straightened in the mid 1970s to meet traffic needs (**Figure 11.38** – 1977 map); before the construction of Harcourt Garden in the mid 1990s, the former Wellington Battery and the Admiralty Dock site was occupied by several structures (**Figure 11.39** – 1986 map); Wellington Barracks and Victoria Barracks were later replaced by Pacific Place and other modern	Archaeological watching brief is recommended.

Areas of impact	Archaeological potential	Assessment of archaeological potential	Recommendations
		complexes. Four 19th-century cannons were recovered recently in a construction site located within the boundary of the former Victoria Barracks near the junction of Supreme Court Road and Justice Drive (Ming Pao 20.09.08). According to a plan showing the underground section of the proposed cut-and-cover station box in Harcourt Garden (**Figure 11.40**, Arup 2009), the existing modern disturbance is only situated in the upper part of the fill. The exception being the eastern edge of the works site, which is occupied by an existing underground car park (**Figure 11.41)**. Any archaeological deposits/ remains would have been severely disturbed by the construction of the latter car park.	
ii. Proposed Works Site S1			
Hong Kong Park ***(Figure 11.23)***	No archaeological potential	Situated on solid geology and fill over solid geology. In addition, the works area is located along steep slopes of Hong Kong Park.	No further action required
(B) Nam Fung Portal to Admiralty			
i. Drill & Blast Tunnel			
Nam Fung Road, western edge of Mount Cameron, Magazine Gap, Hong Kong Park and Queensway ***(Figures 11.21 – 11.27)***	No archaeological potential	The proposed deep-lying drill-and-blast tunnel section is well below the reach of any potential archaeological deposits. In addition, the proposed tunnel is situated on solid geology and runs through a mountainous area.	No further action required.
(C) Wong Chuk Hang			
i. Proposed Works Sites S7c, S7d & S7e			
South-west of Wong Chuk Hang Tsuen ***(Figure 11.28)***	Some archaeological potential	The woodland area is situated in alluvial deposits. As seen in 1949 aerial photograph (**Figure 11.7**), the area was originally used for cultivation.	Archaeological watching brief is recommended.
ii. Proposed Works Sites S7			
West of Wong Chuk Hang Tsuen ***(Figure 11.28)***	Some archaeological potential	The woodland area is situated in alluvial deposits. As seen in 1949 aerial photograph (**Figure 11.7**), the area was originally used for cultivation.	Archaeological watching brief is recommended.
iii. OCP Station			
Wong Chuk Hang Bus Depot and former Hong Kong School of Motoring ***(Figure 11.29)***	Low archaeological potential	The proposed station site is situated on alluvial deposits. The proposed Connecting Footbridge alignment is located within the area of archaeological potential identified as part of the EIA Study of the Repositioning and Long Term Operation Plan of Ocean Park (AAL 2006) (refer to **Figure 11.9** – the area previously highlighted for archaeological survey is situated immediately to the south-east of the proposed OCP site). According to AMO, the report for the field survey conducted in 2007 concluded that there were no archaeological findings resulting from the work (Wang 2008). Another archaeological investigation was carried out in 2001 for the LPG Filling Station project.	No further action is required.

Areas of impact	Archaeological potential	Assessment of archaeological potential	Recommendations
		The tested area was located immediately to the west of the current site. A total of five test pits were conducted (see **Figure 11.20** for location). Two hand-excavated test pits were located on the hillock and three machine-excavated pits were located in the car park area at the hillock's base. The results of the two hand-excavated pits revealed a disturbed layer of less than 1m depth, followed by decomposed rocks. Original alluvial deposits underneath a layer of 3m deep fill were identified at the bottom of the three machine-excavated trenches, whereupon the water table was also encountered. Only redeposited finds of modern period were retrieved from Test Pit 3 at the car park area (AMO 2001). According to available borehole data, fill up to 9m depth was recorded in the proposed OCP site, in some areas followed by colluvium or alluvium, or completely decomposed tuff. Water table across the site was recorded at an approximate depth of 3 to 4m. Although the original alluvial and colluvial layers underneath the artificial fill may be impacted by the proposed construction work, based upon the negative findings in nearby areas (Wang 2008, AMO 2001), the potential for buried in situ archaeological deposits appears to be low.	
iv. Proposed Works Site next to OCP Station [including Proposed Works Site S9]			
Near Ocean Park Road (S9) and the existing bus depot ***(Figure 11.29)***	Low archaeological potential	The proposed works site is situated on alluvial deposits. Two hand-excavated test pits (located on the hillock) and three machine-excavated pits (located in the car park area at the hillock's base) were conducted in this proposed Works Site in 2001 for the LPG Filling Station project. The results of the two hand-excavated pits revealed a disturbed layer of less than 1m depth, followed by decomposed rocks. Original alluvial deposits underneath a layer of 3m deep fill were identified at the bottom of the three machine-excavated trenches, whereupon water table was also encountered. Only redeposited finds of modern period were retrieved from Test Pit 3 at the car park area (AMO 2001). Development groundworks would be limited to the proposed viaduct piers located at the southern edge of this Works Site next to Ocean Park Road, where there is disturbance from previous utilities.	No further action is required.
v. WCH Station			
Heung Yip Road and Wong Chuk Hang Nullah ***(Figure 11.30)***	No archaeological potential	Situated on modern reclamation fill and solid geology. In addition, there has been extensive disturbance from utilities along Heung Yip Road and the construction of the nullah.	No further action required.
vi. WCH Depot			
Now empty Wong Chuk Hang Estate ***(Figure 11.30)***	No archaeological potential	Situated entirely on solid geology. According to the initial geotechnical study, rock is anticipated to be encountered in the centre and northern edge, with soft ground at the southern side. Blasting is anticipated in order to excavate the rock. In addition, the area is heavily developed	No further action required.

Areas of impact	Archaeological potential	Assessment of archaeological potential	Recommendations
		with extensive disturbance from the construction of Wong Chuk Hang Estate.	
vii. Proposed Foundation works for the viaducts and Proposed Works Site S10			
Wong Chuk Hang San Wai ***(Figure 11.29)***	Some archaeological potential	The proposed Works Site S10 is situated on alluvial deposits. Field testing was undertaken in this area in 2000 as part of the AIA for the HKIS & LI Project. An area of archaeological potential was identified in the woodland area located immediately to the west of Wong Chuk Hang San Wai (AAL 2001), see ***Figure 11.8***. No existing underground utilities are known in this woodland area. **Figure 11.35** highlights the area of archaeological potential for Works Site S10. Should the proposed piers fall within this highlighted area, archaeological watching brief during construction phase would be required. Remainder of the area is located on slopes, major roads and carriageways.	Archaeological watching brief is recommended (see ***Figure 11.35*** for proposed pier locations requiring archaeological watching brief)
viii. Proposed Foundation works for the viaducts and Proposed Works Site S12			
Along Wong Chuk Hang Nullah ***(Figures 11.30 & 11.34)***	No archaeological potential	These proposed piers are mainly located on reclamation fill, solid geology (steep slopes) or within the footprints of the existing nullah. Although some of the piers are located on alluvium and outside the existing nullah, they are situated along Ocean Park Road, with extensive impacts from utilities and groundworks of the road.	No further action required.
ix. Proposed Works Site B5			
South of Ocean Court ***(Figure 11.34)***	No archaeological potential	The proposed works site is situated entirely on recent reclamation.	No further action required.
x. Proposed Works Site Underneath Existing Viaduct (Ap Lei Chau Bridge Road)			
Rocky shore to the west of Holy Spirit Seminary ***(Figure 11.34)***	No archaeological potential	The proposed works site is situated along steep rocky shore.	No further action required.
(D) Ap Lei Chau			
i. Proposed Works Site B3			
East of Sham Wan Towers ***(Figure 11.34)***	No archaeological potential	Situated entirely on solid geology and very steep slopes.	No further action required.
ii. Proposed Works Site B4			
Ap Lei Chau Bridge Road ***(Figure 11.34)***	No archaeological potential	Located on solid geology along the existing Ap Lei Chau Bridge Road.	No further action required.
iii. Proposed Works Site S8 of LET Station			
Wah Ting Street ***(Figure 11.33)***	No archaeological potential	Northern end of the proposed works site is situated on fill. Rest of the site is located along steep slopes.	No further action required.
iv. Cut-and-cover Tunnel (LET) [including Proposed Works Site S11]			
Near Sham Wan Towers	No archaeological potential	Situated entirely on solid geology and along very steep slopes. In addition, the area is heavily	No further action required.

Areas of impact	Archaeological potential	Assessment of archaeological potential	Recommendations
(Figures 11.33 & 11.34)		developed.	
v. Proposed Works Sites of LET Station			
Lei Tung Estate ***(Figure 11.33)***	No archaeological potential	Situated entirely on solid geology with extensive disturbance from the construction of Lei Tung Estate.	No further action required.
vi. Drill & Blast Tunnel & Station Cavern (LET)			
Lei Tung Estate ***(Figures 11.32-11.34)***	No archaeological potential	The proposed deep-lying drill-and-blast tunnel section is well below the reach of any potential archaeological deposits. In addition, the proposed tunnel is situated on solid geology and partially runs through a mountainous area.	No further action required.
viii. SOH - (including SOH Station)			
South Horizon Drive, Yi Nam Road, Lee Nam Road and adjacent slopes ***(Figure 11.31)***	No archaeological potential	North-western part is situated on reclaimed land over marine sand; south-eastern part is situated on solid geology (steep slopes). As well, the area of South Horizons is heavily developed. In addition, the proposed tunnel connecting to the SOH Station would be constructed with mining method and is below the reach of any potential archaeological deposits.	No further action required.
ix. Proposed Works Site S4			
Lee Nam Road (north of Lee Nam Road Sitting Out Area No.2) ***(Figure 11.32)***	No archaeological potential	Situated along very steep slopes and solid geology with thin soil cover.	No further action required.

11.6.2 Built Heritage

11.6.2.1 Construction Phase

Declared Monuments (Sites of Cultural Heritage)

Table 11.1: Assessment of Impacts to Declared Monuments from Surface Works (Construction Phase)

Resource	Approximate Horizontal Distance to Works	Description of Works	Impact Assessment
Flagstaff House (DM-2) **Figure 11.14.1**	140 m	Works site (S1) for ventilation shaft	Based upon the distance, the works would not adversely impact on the Declared Monument.
Wong Chuk Hang Rock Carving (DM-1) **Figure 11.16**	85 m	Works site (S7) for ventilation building	Based upon the distance, the works would not adversely impact on the Declared Monument.

Table 11.2: Assessment of Impacts to Declared Monuments from Tunnel Formation (Construction Phase)

Resource	Approximate Slant Distance to Works	Description of Works	Impact Assessment
Flagstaff House (DM-2) **Figure 11.14.1**	240 m	Tunnel Formation	Based upon the distance, the works would not adversely impact on the Declared

Resource	Approximate Slant Distance to Works	Description of Works	Impact Assessment
			Monument.
Wong Chuk Hang Rock Carving (DM-1) **Figure 11.16**	190 m	Tunnel Formation	The rock carving does not contain structural elements and will not be impacted by the proposed tunnel formation.

Graded Historic Buildings (as of 16 April 2010)

Table 11.3: Assessment of Impacts to Graded Historic Buildings from Surface Works (Construction Phase)

Resource	Approximate Horizontal Distance to Works	Description of Works	Impact Assessment
Old Victoria Barracks, Wavell Block (GB-9) **Figure 11.14.1**	215 m	Works site (S1) for ventilation shaft	No impacts would occur from the proposed works based upon the distance from the structure.
Old Victoria Barracks, Roberts Block (GB-8) **Figure 11.14.1**	75 m	Works site (S1) for ventilation shaft	No impacts would occur from the proposed works based upon the distance from the structure.
Old Victoria Barracks, Montgomery Block (GB-7) **Figure 11.14.1**	105 m	Works site (S1) for ventilation shaft	No impacts would occur from the proposed works based upon the distance from the structure.
Old Victoria Barracks, Former Explosive Magazine (GB-6) **Figure 11.14.1**	145 m	Works site (S1) for ventilation shaft	No impacts would occur from the proposed works based upon the distance from the structure.
Main Block and Annex of the Old British Military Hospital (GB-5) **Figure 11.14.1**	165 m	Works site (S1) for ventilation shaft	No impacts would occur from the proposed works based upon the distance from the structure.
Old Victoria Barracks Rawlinson House (GB-10) **Figure 11.14.1**	280 m	Works site (S1) for ventilation shaft	No impacts would occur from the proposed works site based upon the distance from the structure
Old Aberdeen Police Station Main Building (GB-11) **Figure 11.15**	250 m	Works site for construction access	No impacts would occur from the proposed works site based upon the distance from the structure
Old House at No. 10 Wong Chuk Hang San Wai (GB-4) **Figure 11.16**	100 m	Works site for construction of viaduct	No impacts would occur from the proposed works site based upon the distance from the structure
Aberdeen Technical School, Main Building and Annex (GB-3) **Figure 11.15**	160 m	Works site for construction of viaduct	No impacts would occur from the proposed works site based upon the distance from the structure
Hung Shing Temple on Ap Lei Chau (GB-1)	120 m	Works Site (S8) for entrance & adit at Ap Lei Chau Main Street	The vibration levels for works in this area are not expected to exceed 25 mm/s and no

Resource	Approximate Horizontal Distance to Works	Description of Works	Impact Assessment
Figure 11.13			adverse impacts are expected.
Shui Yuet Temple on Ap Lei Chau (GB-2) **Figure 11.13**	260 m	Works Site (S8) for entrance & adit at Ap Lei Chau Main Street	The vibration levels for works in this area are not expected to exceed 25 mm/s and no adverse impacts are expected.
Old Victoria Barracks: Block GG (ADM-1) **Figure 11.14.1**	78 m	Works site (S1) for ventilation shaft	No impacts would occur from the proposed works based upon the distance from the structure.

Table 11.4: Assessment of Impacts to Graded Historic Buildings from Tunnel Formation (Construction Phase)

Resource	Approximate Slant Distance to Works	Description of Works	Impact Assessment
Hung Shing Temple on Ap Lei Chau (GB-1) **Figure 11.13**	140 m	Underground works site for tunnel formation	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s.
Shui Yuet Temple on Ap Lei Chau (GB-2) **Figure 11.13**	285 m	Underground works site for tunnel formation	No impacts would occur from the proposed works based upon the distance from the structure
Main Block and Annex of the Old British Military Hospital (GB-5) **Figure 11.14.1**	172 m (Vertical)	Underground works area for tunnel formation	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s.
Old Victoria Barracks, Former Explosive Magazine (GB-6) **Figure 11.14.1**	162 m	Underground works area for tunnel formation	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s.
Old Victoria Barracks, Montgomery Block (GB-7) **Figure 11.14.1**	170 m	Underground works site for tunnel formation	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s.
Old Victoria Barracks, Roberts Block (GB-8) **Figure 11.14.1**	148 m	Underground works site for tunnel formation	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s.
Old Victoria Barracks, Wavell Block (GB-9) **Figure 11.14.1**	225 m	Underground works site for tunnel formation	Based upon the distance, the works would not adversely impact on the structure.
Old Victoria Barracks Rawlinson House (GB-10) **Figure 11.14.1**	333 m	Underground works site for tunnel formation	Based upon the distance, the works would not adversely impact on the structure.
Old Victoria Barracks: Block GG (ADM-1) **Figure 11.14.1**	110 m	Underground works site for tunnel formation	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s.

Proposed Graded Historic Buildings

Table 11.5: Assessment of Impacts to Proposed Graded Heritage Resources from Surface Works (Construction Phase)

Resource	Approximate Horizontal Distance to Works	Description of Works	Impact Assessment
Holy Spirit Seminary – Old Block (WCH-18) **Figure 11.15**	30 m	Works site for viaduct construction	The vibration levels for works in this area are not expected to exceed 25 mm/s and no significant impacts are expected.
Holy Spirit Seminary – Chapel (WCH-18) **Figure 11.15**	30 m	Works site for viaduct construction	The vibration levels for works in this area are not expected to exceed 25 mm/s and no significant impacts are expected.

Table 11.6: Assessment of Impacts to Proposed Graded Heritage Resources from Tunnel Formation (Construction Phase)

Resource	Approximate Slant Distance to Works	Description of Works	Impact Assessment
No. 33 Magazine Gap Road (ADM-3) **Figure 11.14.2**	355 m	Underground works site for tunnel formation	No impacts would occur from the proposed works based upon the distance from the structure

Other Built Heritage Items

Table 11.7: Assessment of Impacts to Other Built Heritage Resources from Surface Works in Admiralty (Construction Phase)

Resource	Approximate Horizontal Distance to Works	Description of Works	Impact Assessment
Royal Navy Stone Marker (ADM-2) **Figure 11.14.1**	170 m	Works site (S1) for ventilation shaft	No impacts to the stone would occur based on distance

Table 11.8: Assessment of Impacts to Other Built Heritage Resources from Tunnel Formation in Admiralty (Construction Phase)

Resource	Approximate Slant Distance to Works	Description of Works	Impact Assessment
Royal Navy Stone Marker (ADM-2) **Figure 11.14.1**	266 m	Underground works site for tunnel formation	The stone does not contain any structural features that are sensitive to vibration damage, no adverse impacts would occur.
No. 15 Middle Gap Road (ADM-4)	337 m	Underground works site for tunnel formation	No impacts would occur from the proposed works based upon the distance from the structure

Table 11.9: Assessment of Impacts to Other Built Heritage Resources in Wong Chuk Hang (Construction Phase)

Resource	Approximate Horizontal Distance to Works	Description of Works	Impact Assessment
Tai Wong Ye Temple (WCH-1) **Figure 11.15**	Adjacent to the boundary of above ground works site	Works site for the construction of viaduct	The proposed works may cause damage to the temple through contact with machinery. Safe public access to the temple may be restricted by the construction works.
	60 m	Minor blasting works for the depot construction	The vibration levels for works in this area are not expected to exceed 25 mm/s and no adverse impacts are expected.
Shrine (WCH-19) **Figure 11.15**	Within works site		The proposed works will include demolishing the shrine.
Village House (WCH-2)	45 m		The vibration levels for works in this area are not expected to exceed 25 mm/s and no adverse impacts are expected.
Village House (WCH-3)	40 m		
Village House (WCH-4)	40 m		
Village House (WCH-5)	30 m		
Village House (WCH-6)	50 m		
Village House (WCH-7)	50 m		The village does not have a traditional rural setting and would not be visually impacted by the proposed works.
Village House (WCH-8)	50 m		
Village House (WCH-9)	50 m		
Village House (WCH-10)	50 m		
Village House (WCH-11)	40 m		
Village House (WCH-12)	40 m		
Village House (WCH-13)	25 m		
Village House (WCH-14)	10 m		
Village House (WCH-15)	25 m		
Village House (WCH-16)	25 m		
Shrine (WCH-17)	Adjacent to boundary of above ground works site		The proposed works may cause damage to the shrine through contact with machinery. Safe public access may be restricted during the construction works.

Table 11.10: Assessment of Impacts from Surface Works to Other Built Heritage Resources on Ap Lei Chau (Construction Phase)

Resource	Approximate Horizontal Distance to Works	Description of Works	Impact Assessment
Tai Wong Temple (ALC-1) **Figure 11.13**	222 m	Works site for SOH station	No impacts would occur from the proposed works based upon the distance.

Resource	Approximate Horizontal Distance to Works	Description of Works	Impact Assessment
Earth God Shrine (ALC-2) **Figure 11.13**	148 m	Works site for Entrance & Adit on Ap Lei Chau Main Street	No impacts would occur from the proposed works based upon the distance.
Remains of the Former Aberdeen Battery (ALC-3) **Figure 11.13**	145 m	Works site for SOH station	No impacts would occur from the proposed works based upon the distance.
Grave (GR-1) **Figure 11.13**	80 m	Works site for SOH station	No impacts would occur from the proposed works based upon the distance.
Grave (GR-2 and 2A) **Figure 11.13**	200 m	Works site for SOH station	No impacts would occur from the proposed works based upon the distance.
Grave (GR-3) **Figure 11.13**	90 m	Works site for SOH station	No impacts would occur from the proposed works based upon the distance.
Grave (GR-4) **Figure 11.13**	105 m	Works site for SOH station	No impacts would occur from the proposed works based upon the distance.
Grave (GR-5) **Figure 11.13**	90 m	Works site for SOH station	No impacts would occur from the proposed works based upon the distance.
Grave (GR-6) **Figure 11.13**	275 m	Works site for SOH station	No impacts would occur from the proposed works based upon the distance.

Table 11.11: Assessment of Impacts from Tunneling Works to Other Built Heritage Resources on Ap Lei Chau (Construction Phase)

Resource	Approximate Slant Distance to Works	Description of Works	Impact Assessment
Tai Wong Temple (ALC-1) **Figure 11.13**	430 m	Underground works site for tunnel formation	No impacts would occur from the proposed works based upon the distance.
Earth God Shrine (ALC-2) **Figure 11.13**	148 m	Underground works site for tunnel formation	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s.
Remains of the Former Aberdeen Battery (ALC-3) **Figure 11.13**	85 m	Underground works site for tunnel formation	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s.
Grave (GR-1) **Figure 11.13**	80 m	Underground works site for tunnel formation	No impacts would occur from the proposed works based upon the distance.
Grave (GR-2 and 2A) **Figure 11.13**	390 m	Underground works site for tunnel formation	No impacts would occur from the proposed works based upon the distance.
Grave (GR-3) **Figure 11.13**	95 m	Underground works site for tunnel formation	No impacts would occur from the proposed works based upon the distance.
Grave (GR-4) **Figure 11.13**	102 m	Underground works site for tunnel formation	No impacts would occur from the proposed works based

Resource	Approximate Slant Distance to Works	Description of Works	Impact Assessment
			upon the distance.
Grave (GR-5) **Figure 11.13**	73 m (Vertical)	Underground works site for tunnel formation	No impacts would occur from the proposed works based upon the distance.
Grave (GR-6) **Figure 11.13**	175 m	Underground works site for tunnel formation	No impacts would occur from the proposed works based upon the distance.

11.6.3 Operational Phase

11.6.3.1 Declared Monuments

Table 11.12: Assessment of Impacts to Declared Monuments (Operation Phase)

Resource	Distance to nearest above ground structure	Impact Assessment
Wong Chuk Hang Rock Carving (DM-1) **Figure 11.16**	There are no proposed permanent above ground structures in the vicinity of the rock carving.	No adverse impacts would occur during the operational phase.
Flagstaff House (DM-2) **Figure 11.14.1**	There are no proposed permanent above ground structures in the vicinity of the building.	No adverse impacts would occur during the operational phase.

11.6.3.2 Graded Historic Buildings

Table 11.13: Assessment of Impacts to Graded Historic Buildings (Operation Phase)

Resource	Distance to nearest above ground structure	Impact Assessment
Main Block and Annex of the Old British Military Hospital (GB-5) **Figure 11.14.1**	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.
Old Victoria Barracks, Former Explosive Magazine(GB-6) **Figure 11.14.1**	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.
Old Victoria Barracks, Montgomery Block (GB-7) **Figure 11.14.1**	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.
Old Victoria Barracks, Roberts Block (GB-8) **Figure 11.14.1**	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.
Old Victoria Barracks, Wavell Block (GB-9) **Figure 11.14.1**	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.
Old Victoria Barracks Rawlinson House (GB-10)	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.

Resource	Distance to nearest above ground structure	Impact Assessment
Figure 11.14.1		
Old Aberdeen Police Station, Main Building (GB-11) **Figure 11.15**	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.
Aberdeen Technical School, Main Building and Annex (GB-3) **Figure 11.15**	190 m (Viaduct)	The structure is situated at sufficient distance that no adverse impacts would occur during the operation phase.
Old House at No. 10 Wong Chuk Hang San Wai (GB-4) **Figure 11.16**	90 m (Viaduct)	The building is situated at the back of the village and does not overlook the proposed viaduct, no visual impacts would arise from the railway operation.
Hung Shing Temple on Ap Lei Chau (GB-1) **Figure 11.13**	130 m (Station entrance)	The structure is situated at sufficient distance that no adverse impacts would occur during the operation phase.
Shui Yuet Temple on Ap Lei Chau (GB-2) **Figure 11.13**	275 m (Station entrance)	The structure is situated at sufficient distance that no adverse impacts would occur during the operation phase.
Old Victoria Barracks: Block GG (ADM-1) **Figure 11.14.1**	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.

Table 11.14: Assessment of Impacts to Proposed Graded Historic Buildings in Admiralty (Operation Phase)

Resource	Distance to nearest above ground structure	Impact Assessment
No. 33 Magazine Gap Road (ADM-3) **Figure 11.14.2**	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.

Table 11.15: Assessment of Impacts to Proposed Graded Historic Buildings in Wong Chuk Hang (Operation Phase)

Resource	Approximate Horizontal distance to nearest above ground structure	Impact Assessment
Holy Spirit Seminary – Old Block (WCH-18) **Figure 11.15**	50 m	The existing environmental setting of the compound is urban and the proposed viaduct will not cause any adverse impacts.
Holy Spirit Seminary – Chapel (WCH-18) **Figure 11.15**	50 m	

11.6.3.3 Other Built Heritage Resources

Table 11.16: Assessment of Impacts to Other Built Heritage Resources in Admiralty (Operation Phase)

Resource	Distance to nearest above ground structure	Impact Assessment
Royal Navy Stone Marker (ADM-2) **Figure 11.14.1**	There are no proposed above ground permanent structures in the vicinity of the stone marker.	No adverse impacts would occur during the operation phase.

Resource	Distance to nearest above ground structure	Impact Assessment
No. 15 Middle Gap Road (ADM-4) **Figure 11.14.2**	There are no proposed above ground permanent structures in the vicinity of the building.	No adverse impacts would occur during the operation phase.

Table 11.17: Assessment of Impacts to Other Built Heritage Resources in Wong Chuk Hang (Operation Phase)

Resource	Approximate Horizontal distance to nearest above ground structure	Impact Assessment
Tai Wong Ye Temple (WCH-1) **Figure 11.15**	Adjacent to the proposed viaduct.	Because of the extremely close proximity, the viaduct would cause visual impacts to the temple.
Shrine (WCH-19) **Figure 11.15**	Not applicable as the shrine will be demolished prior to the operational phase.	The shrine will be demolished during the construction phase. No mitigation is necessary for operational phase
Village House (WCH-2) **Figure 11.17**	The front of the village is situated approximately 45 m from the proposed viaduct.	The traditional agricultural setting of the village has been altered through past development in the area and the viaduct would not impact on the existing cultural environment of the village.
Village House (WCH-3)		
Village House (WCH-4)		
Village House (WCH-5)		
Village House (WCH-6)		
Village House (WCH-7)		
Village House (WCH-8)		
Village House (WCH-9)		
Village House (WCH-10)		
Village House (WCH-11)		
Village House (WCH-12)		
Village House (WCH-13)		
Village House (WCH-14)		
Village House (WCH-15)		
Village House (WCH-16)		
Shrine (WCH-17)	Adjacent to the proposed viaduct.	The shrine is currently located at the roadside and the viaduct will not adversely impact on the environmental setting of the shrine.

Table 11.18: Assessment of Impacts to Other Built Heritage Resources on Ap Lei Chau (Operation Phase)

Resource	Distance to nearest above ground structure	Impact Assessment
Tai Wong Temple (ALC-1) **Figure 11.13**	There are no proposed above ground permanent structures in the vicinity of the temple.	No adverse impacts would occur during the operation phase.
Earth God Shrine (ALC-2) **Figure 11.13**	There are no proposed above ground permanent structures in the vicinity of the shrine.	No adverse impacts would occur during the operation phase.
Grave (GR-1) **Figure 11.13**	There are no proposed above ground permanent structures in the vicinity of the grave.	No adverse impacts would occur during the operation phase.
Grave (GR-2 and 2A)	There are no proposed above	No adverse impacts would occur during the

Resource	Distance to nearest above ground structure	Impact Assessment
Figure 11.13	ground permanent structures in the vicinity of the grave.	operation phase.
Grave (GR-3) **Figure 11.13**	There are no proposed above ground permanent structures in the vicinity of the grave.	No adverse impacts would occur during the operation phase.
Grave (GR-4) **Figure 11.13**	There are no proposed above ground permanent structures in the vicinity of the grave.	No adverse impacts would occur during the operation phase.
Grave (GR-5) **Figure 11.13**	There are no proposed above ground permanent structures in the vicinity of the grave.	No adverse impacts would occur during the operation phase.
Grave (GR-6) **Figure 11.13**	There are no proposed above ground permanent structures in the vicinity of the grave.	No adverse impacts would occur during the operation phase.
Remains of the Former Aberdeen Battery (ALC-3) **Figure 11.13**	The ruins are not situated in the vicinity of any proposed above ground structures.	No adverse impacts would occur during the operation phase.

11.7 Mitigation of Adverse Environmental Impact

11.7.1 Archaeology

Any development encroaching on sites of archaeological interest should be avoided as far as possible. Any unavoidable impacts on these sites of archaeological interest should be addressed with appropriate mitigation measures, such as:

- Preservation *in situ*
- Full-scale excavation prior to construction works
- Survey to identify the potential for archaeological deposits in areas of interest after removal of hard surface but prior to construction phase
- Archaeological watching brief programme, whereby a qualified archaeologist monitors the excavation works in areas of interest during the construction phase. The mitigation measures should be agreed with the Antiquities and Monuments Office and be designed and implemented by the project proponent

A summary for the proposed mitigation measures are provided in the following section.

11.7.1.1 Construction Phase

Admiralty

Although the archaeological potential of this area is considered to be low as a result of disturbances from previous construction projects, there is still the potential for the presence of isolated or disturbed archaeological material, especially in areas of early reclamation along former coastline and sites associated with the Military Cantonment of Victoria City, which have the potential to contain building foundations relating to military aspects of the early colony. Archaeological watching brief is therefore recommended for Harcourt Garden. Details of the archaeological watching brief would have to be agreed with the AMO.

Wong Chuk Hang

The proposed project has the potential to directly impact on areas evaluated as having some archaeological potential. Archaeological watching brief during construction phase is therefore recommended for Proposed Works Sites S7, S7c-e and S10. Details of the archaeological watching brief would have to be agreed with the AMO.

For the OCP Station, based upon available information, the archaeological potential is evaluated as being low due to the negative findings in nearby areas (AMO 2001, Wang 2008). No further mitigation measures are therefore recommended.

Ap Lei Chau

Based upon the geological background and development history of Ap Lei Chau, it is not expected that the proposed alignment, works areas or station sites would impact on any areas of archaeological potential. No further action is recommended for this area.

11.7.1.2 Operation Phase

No mitigation measure is required during the operation phase.

11.7.2 Built Heritage

11.7.2.1 Construction Phase

Declared Monuments (Sites of Cultural Heritage)

Table 11.19: Mitigation Recommendations for Declared Monuments (Construction Phase)

Resource	Identified Impact	Mitigation Recommendation
Wong Chuk Hang Rock Carving (DM-1) **Figure 11.16**	Based upon the distance of the proposed works, no adverse impacts will occur.	No mitigation required.
Flagstaff House (DM-2) **Figure 11.14 .1**	Based upon the distance of the proposed works, no adverse impacts will occur.	No mitigation required.

Graded Historic Buildings

Table 11.20: Mitigation Recommendations for Graded Historical Buildings (Construction Phase)

Resource	Identified Impact	Mitigation Recommendation
Hung Shing Temple on Ap Lei Chau (GB-1) **Figure 11.13**	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s or other appropriate level	Through the control of vibration levels from the proposed construction works, vibration impact could be reduced to an acceptable level. Appropriate vibration monitoring will be agreed with BD/ GEO under the requirement of the Building Ordinance.
Shui Yuet Temple on Ap Lei Chau (GB-2) **Figure 11.13**	No identified impact	No mitigation required.
Aberdeen Technical School, Main Building	No identified impact	No mitigation required.

Resource	Identified Impact	Mitigation Recommendation
and Annex (GB-3) **Figure 11.15**		
Old House at No. 10 Wong Chuk Hang San Wai (GB-4) **Figure 11.16**	No identified impact	No mitigation required.
Old Aberdeen Police Station, Main Building (GB-11) **Figure 11.15**	No identified impact	No mitigation required.
Main Block and Annex of the Old British Military Hospital (GB-5) **Figure 11.14.1**	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s or other appropriate level	Through the control of vibration levels from the proposed construction works, vibration impact could be reduced to an acceptable level. Appropriate vibration monitoring will be agreed with BD/ GEO under the requirement of the Building Ordinance.
Old Victoria Barracks, Former Explosive Magazine(GB-6) **Figure 11.14.1**	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s or other appropriate level	Through the control of vibration levels from the proposed construction works, vibration impact could be reduced to an acceptable level. Appropriate vibration monitoring will be agreed with BD/ GEO under the requirement of the Building Ordinance.
Old Victoria Barracks, Montgomery Block (GB-7) **Figure 11.14.1**	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s or other appropriate level	Through the control of vibration levels from the proposed construction works, vibration impact could be reduced to an acceptable level. Appropriate vibration monitoring will be agreed with BD/ GEO under the requirement of the Building Ordinance.
Old Victoria Barracks, Roberts Block (GB-8) **Figure 11.14.1**	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s or other appropriate level	Through the control of vibration levels from the proposed construction works, vibration impact could be reduced to an acceptable level. Appropriate vibration monitoring will be agreed with BD/ GEO under the requirement of the Building Ordinance.
Old Victoria Barracks, Wavell Block (GB-9) **Figure 11.14.1**	No identified impact	No mitigation required.
Old Victoria Barracks Rawlinson House (GB-10) **Figure 11.14.1**	No identified impact	No mitigation required.
Old Victoria Barracks: Block GG (ADM-1) **Figure 11.14.1**	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s or other appropriate level	Through the control of vibration levels from the proposed construction works, vibration impact could be reduced to an acceptable level. Appropriate vibration monitoring will be agreed with BD/ GEO under the requirement of the Building Ordinance.

Proposed Historic Buildings

Table 11.21: Mitigation Recommendations for Proposed Graded Historical Buildings (Construction Phase)

Resource	Identified Impact	Mitigation Recommendation
Holy Spirit Seminary – Old Block (WCH-18) **Figure 11.15**	No identified impact	No mitigation required.

Resource	Identified Impact	Mitigation Recommendation
Holy Spirit Seminary – Chapel (WCH-18) **Figure 11.15**	No identified impact	No mitigation required.
No. 33 Magazine Gap Road (ADM-3) **Figure 11.14.2**	No identified impact	No mitigation required.

Other Built Heritage Resources

Table 11.22: Mitigation Recommendations for Other Built Heritage Resources in Admiralty (Construction Phase)

Resource	Identified Impact	Mitigation Recommendation
Royal Navy Stone Marker (ADM-2) **Figure 11.14.1**	No identified impact	No mitigation required.
No. 15 Middle Gap Road (ADM-4) **Figure 11.14.2**	No identified impact	No mitigation required.

Table 11.23:Mitigation Recommendations to Other Built Heritage Resources in Wong Chuk Hang (Construction Phase)

Resource	Identified impact	Mitigation Recommendation
Tai Wong Ye Temple (WCH-1) **Figure 11.15**	The construction works may cause damage to the temple and safe public access may be restricted	A buffer zone will not be possible due to site restrictions. Therefore it is recommended that protective covering for the exterior walls in the vicinity of the works be provided in the form of plastic sheeting subject to the agreement with the premise landlord. Safe public access should be provided to the temple, separated from the works area by temporary fencing.
Shrine (WCH-19) **Figure 11.15**	The shrine will be demolished as part of the works.	A full cartographic and photographic survey should be conducted prior to the demolition of the shrine.
Village House (WCH-2) **Figure 11.17**	The front of the village is situated 45 m from the proposed viaduct	The traditional agricultural setting of the village has been altered through past development in the area and the viaduct will not impact on the existing environmental setting of the village.
Village House (WCH-3)		
Village House (WCH-4)		
Village House (WCH-5)		
Village House (WCH-6)		
Village House (WCH-7)		
Village House (WCH-8)		
Village House (WCH-9)		
Village House (WCH-10)		
Village House (WCH-11)		
Village House (WCH-12)		
Village House (WCH-13)		
Village House (WCH-14)		

Resource	Identified impact	Mitigation Recommendation
Village House (WCH-15)		
Village House (WCH-16)		
Shrine (WCH-17)	The construction works may cause damage to the shrine and safe public access may be restricted	It is recommended that a buffer zone (minimum of 5 metres or if this is not possible as large as site restrictions allow) should be provided between the works and the shrine. Safe public access should be provided to the shrine, separated from the works area by temporary fencing.

Table 11.24: Mitigation Recommendations to Other Built Heritage Resources on Ap Lei Chau (Construction Phase)

Resource	Identified Impact	Mitigation Recommendations
Tai Wong Temple (ALC-1) **Figure 11.13**	No identified impact	No mitigation required
Earth God Shrine (ALC-2) **Figure 11.13**	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s or other appropriate level	Through the control of vibration levels from the proposed construction works, vibration impact could be reduced to an acceptable level. Appropriate vibration monitoring will be agreed with BD/ GEO under the requirement of the Building Ordinance.
Grave (GR-1) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-2 and 2A) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-3) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-4) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-5) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-6) **Figure 11.13**	No identified impact	No mitigation required
Remains of the Former Aberdeen Battery (ALC-3) **Figure 11.13**	Indirect vibration impacts from tunnel formation works may occur if vibration limits exceed 25 mm/s or other appropriate level	Through the control of vibration levels from the proposed construction works, vibration impact could be reduced to an acceptable level. Appropriate vibration monitoring will be agreed with BD/ GEO under the requirement of the Building Ordinance.

11.7.2.2 Operation Phase

Declared Monuments

Table 11.25: Mitigation Recommendations for Declared Monuments (Operation Phase)

Resource	Identified Impact	Mitigation Recommendation
Wong Chuk Hang Rock Carving (DM-1) **Figure 11.16**	No identified impact	No mitigation required
Flagstaff House (DM-2) **Figure 11.14.1**	No identified impact	No mitigation required

Graded Historic Buildings

Table 11.26: Mitigation Recommendations for Graded Historical Buildings (Operation Phase)

Resource	Identified Impact	Mitigation Recommendation
Hung Shing Temple on Ap Lei Chau (GB-1) **Figure 11.13**	No identified impact	No mitigation required
Shui Yuet Temple on Ap Lei Chau (GB-2) **Figure 11.13**	No identified impact	No mitigation required
Aberdeen Technical School, Main Building and Annex (GB-3) **Figure 11.15**	No identified impact	No mitigation required
Old House at No. 10 Wong Chuk Hang San Wai (GB-4) **Figure 11.16**	No identified impact	No mitigation required
Old Aberdeen Police Station, Main Building **(GB-11)** **Figure 11.15**	No identified impact	No mitigation required.
Main Block and Annex of the Old British Military Hospital (GB-5) **Figure 11.14.1**	No identified impact	No mitigation required
Old Victoria Barracks, Former Explosive Magazine(GB-6) **Figure 11.14.1**	No identified impact	No mitigation required
Old Victoria Barracks, Montgomery Block (GB-7) **Figure 11.14.1**	No identified impact	No mitigation required
Old Victoria Barracks, Roberts Block (GB-8) **Figure 11.14.1**	No identified impact	No mitigation required
Old Victoria Barracks, Wavell Block (GB-9) **Figure 11.14.1**	No identified impact	No mitigation required
Old Victoria Barracks **Rawlinson House (GB-10)** **Figure 11.14.1**	No identified impact	No mitigation required
Old Victoria Barracks: Block GG (ADM-1) **Figure 11.14.1**	No identified impact	No mitigation required

Proposed Graded Built Heritage Resources

Table 11.27: Mitigation Recommendations for Proposed Graded Built Heritage Resources in Admiralty (Operation Phase)

Resource	Identified Impact	Impact Assessment
No. 33 Magazine Gap Road (ADM-3)	No identified impact	No mitigation required

Resource	Identified Impact	Impact Assessment
Figure 11.14.2		

Table 11.28: Mitigation Recommendations for Proposed Graded Built Heritage Resources in Wong Chuk Hang (Operation Phase)

Resource	Identified Impact	Impact Assessment
Holy Spirit Seminary – Old Block (WCH-18) **Figure 11.15**	No identified impact	No mitigation required
Holy Spirit Seminary – Chapel- (WCH-18) **Figure 11.15**	No identified impact	No mitigation required

Table 11.29: Mitigation Recommendations for Other Built Heritage Resources in Admiralty (Operation Phase)

Resource	Identified Impact	Impact Assessment
Royal Navy Stone Marker (ADM-5) **Figure 11.14.1**	No identified impact	No mitigation required
No.15 Middle Gap Road (ADM-4) **Figure 11.14.2**	No identified impact	No mitigation required

Table 11.30: Mitigation Recommendations to Other Built Heritage Resources in Wong Chuk Hang (Operation Phase) WCH-2 through WCH-17 on Figure 11.17

Resource	Identified Impact	Mitigation Recommendations
Tai Wong Ye Temple (WCH-1) **Figure 11.15**	Because of the extremely close proximity, the viaduct will cause visual impacts to the temple.	No specific mitigation will be required under the CHIA requirements. The Landscape and Visual impacts to the temple will be adequately mitigated as part of the LVIA requirements.
	The forecourt of the temple will possibly undergo minor modifications / improvements to allow alignment with roads and access paths.	The modifications will improve access to the temple and are considered beneficial. No mitigation will be required.
Shrine (WCH-19) **Figure 11.15**	No impact	No mitigation required.

Village House (WCH-2)	No identified impact	No mitigation required
Village House (WCH-3)		
Village House (WCH-4)		
Village House (WCH-5)		
Village House (WCH-6)		
Village House (WCH-7)		
Village House (WCH-8)		
Village House (WCH-9)		
Village House (WCH-10)		
Village House (WCH-11)		
Village House (WCH-12)		
Village House (WCH-13)		
Village House (WCH-14)		
Village House (WCH-15)		
Village House (WCH-16)		
Shrine (WCH-17)	No identified impact	No mitigation required

Table 11.31: Mitigation Recommendations to Other Built Heritage Resources on Ap Lei Chau (Operation Phase)

Resource	Identified Impact	Mitigation Recommendations
Tai Wong Temple Temple (ALC-1) **Figure 11.13**	No identified impact	No mitigation required
Earth God Shrine (ALC-2) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-1) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-2 and GR-2a) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-3) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-4) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-5) **Figure 11.13**	No identified impact	No mitigation required
Grave (GR-6) **Figure 11.13**	No identified impact	No mitigation required
Remains of the Former Aberdeen Battery (ALC-3) **Figure 11.13**	No identified impact	No mitigation required

11.8 Environmental Monitoring and Audit

11.8.1 Archaeology

During the construction phase an archaeological watching brief should be conducted in the following areas (**Table 11.32**) by a qualified archaeologist. The archaeologist must submit a proposal for scope and methodology for the watching brief to the AMO for approval once the construction programme has been finalised and prior to the licence application. The granting of such licence by the Antiquity Authority may take up to 8 weeks after submission of the application form and the required information.

Table 11.32: Areas requiring archaeological watching brief during the construction phase

Areas of Impacts	Location of Works Sites	Basis for archaeological potential	Figure No.
Admiralty			
1. Harcourt Garden Works Site	Harcourt Garden	Wellington Battery and other military structures associated with the Military Cantonment of Victoria City	**Figure 11.22**
Wong Chuk Hang			
4. Works Sites S7c, d, e	Southwest of Wong Chuk Hang Tsuen	Alluvial soil near historical village	**Figure 11.28**
5. Works Site S7	West of Wong Chuk Hang Tsuen	Alluvial soil near historical village	**Figure 11.28**
6. Pier Columns within Works Site S10	Wong Chuk Hang San Wai	Alluvial soil near historical village	**Figure 11.29**
Ap Lei Chau			
None			

No impacts to archaeological resources will occur during the operation phase.

11.8.2 Built Heritage

It should be noted that the implementation of mitigation measures is outside of the Jurisdiction of the EIAO. Therefore, the appropriate vibration monitoring on the affected built heritage resources will be agreed with BD/ GEO under the requirement of the Building Ordinance. Vibration levels must be controlled to levels not exceeding 25mm/s or other appropriate level. Vibration monitoring should be carried out by the Contractor. The following structures would require monitoring during the construction phase; , Old Victoria Barrack Former Explosive Magazine (GB-6), Old Victoria Barracks Montgomery Block (GB-7), Old Victoria Barracks Roberts Block (GB-8), Old British Military Hospital Main Building and Annex (GB-5), Hung Shing Temple on Ap Lei Chau (GB-1), Old Victoria Barracks Block GG (ADM-1), Earth God Shrine on Ap Lei Chau (ALC-2) and Remains of the former Aberdeen Barracks on Ap Lei Chau (ALC-3).

During the construction phase, protective covering in the form of plastic sheeting should be provided for the exterior walls of the Tai Wong Ye Temple (WCH-1) in the vicinity of the construction works, subject to the agreement with the premise landlord. Safe public access should be provided to the temple, separated from the works area by temporary fencing. A full cartographic and photographic record of the shrine (WCH-19) should be undertaken prior to demolition. It is recommended that a buffer zone (minimum of 5m or if this is not possible as large as site restrictions allow) should be provided for the shrine (WCH-17). The buffer zone should be marked by temporary fencing. It should be noted that the above mitigation will not fall under

the EIAO requirements. The project proponent will undertake to implement the mitigation and the details of implementation including responsible parties and the programme which will be implemented under a separate mechanism to be agreed with relevant government departments and the AMO.

11.9 Conclusion

With the implementation of the recommended mitigation measures, the SIL(E) would have no adverse impacts on the cultural heritage resources in the study area during both construction and operation phases. It should be noted that the above mitigation on built heritage will not fall under the EIAO requirements. The project proponent will undertake to implement the mitigation and the details of implementation including responsible parties and the programme which will be implemented under a separate mechanism to be agreed with relevant government departments and the AMO.

11.10 References

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Websites

AMO Website

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