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9 February 2018

Pier Improvement Unit,  
CEO, CEDD,

**Environmental Impact Assessment (EIA) Ordinance, Cap.499**  
**Application for EIA Study Brief**

**Project Title: Pier Improvement at Lai Chi Wo**  
**(Application No. ESB-305/2017)**

I refer to your above application received on 27 December 2017 for an EIA Study Brief under Section 5(1)(a) of the EIA Ordinance.

In accordance with Section 5(7)(a) of the EIA Ordinance and after public inspection of the project profile, I issue the attached EIA Study Brief (No. ESB-305/2017) for your preparation of an EIA report.

Under Section 15 of the EIA Ordinance, the EIA Study Brief will be placed on the EIA Ordinance Register. It will also be placed on the EIA Ordinance website (<http://www.epd.gov.hk/eia/>).

You may submit an application for approval of the EIA report in accordance with Section 6(2) of the EIA Ordinance after its completion. Upon receipt of your application, this department will decide under Section 6(3) of the EIA Ordinance whether the EIA report meets the requirements of the EIA Study Brief and Technical Memorandum on EIA Process, and accordingly advise you under Section 6(4) of the EIA Ordinance whether a submission to the Advisory Council on the Environment (ACE) or its subcommittee is required. In this connection, you are required to provide sufficient copies of the Executive Summary of the EIA report to the Secretariat of the EIA Subcommittee of the Council for selection for submission when you submit the EIA report to this department for approval. Please liaise with Ms. Evelyn LEUNG (Tel: 2594 6323) regarding the details in due course.

If the EIA report is selected by ACE for submission and presentation, you are expected to provide ACE with an account of the environmental issues arising from the project, major conclusions and recommendations of the EIA study. In particular, the main environmental concerns of the general public and interest groups who may be affected by the Project should be identified and addressed in the EIA study. As such, you are strongly

advised to engage the public and interest groups during the course of the EIA study. Please find attached a copy of the "*Modus Operandi of the EIA Subcommittee of the Advisory Council on the Environment*" for your reference.

Please note that if you are aggrieved by any of the content of this EIA Study Brief, you may appeal under Section 17 of the EIA Ordinance within 30 days of receipt of this EIA Study Brief.

Should you have any queries on the above application, please contact my colleague Mr. Steve Li at 2835 1142.

Yours sincerely,



(Raymond W.M. WONG)

Principal Environmental Protection Officer  
for Director of Environmental Protection

**Environmental Impact Assessment Ordinance (Cap. 499), Section 5 (7)****Environmental Impact Assessment Study Brief No. ESB-305/2017****Project Title: Pier Improvement at Lai Chi Wo  
(hereinafter known as the “Project”)****Name of Applicant: Civil Engineering and Development Department  
(hereinafter known as the “Applicant”)****1. BACKGROUND**

- 1.1 An application (No. ESB-305/2017) for an Environmental Impact Assessment (EIA) study brief under section 5(1)(a) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by the captioned Applicant on 27 December 2017 with a project profile (No. PP-561/2017) (the Project Profile).
- 1.2 The Applicant proposes to improve the existing pier at Lai Chi Wo. The existing pier is approximately 64m long and 2.5m wide. The location of the Project as shown in the figure attached in the Project Profile is reproduced in **Appendix A** of this EIA study brief. The Project mainly comprises the following:
  - (i) Provision of temporary berthing and mooring facilities with temporary landing pontoon and steel structure supported by piles;
  - (ii) Modification of the existing pier including extending and widening the catwalk and the provision of a new pier head on pile foundation;
  - (iii) Demolition of portions of the existing pier structure; and
  - (iv) Demolition of temporary berthing and mooring facilities.
- 1.3 The Project is a designated project by virtue of Item Q.1, Part I, Schedule 2 of the EIAO, which specifies “*All projects including new access roads, railways, sewers, sewage treatment facilities, earthworks, dredging works and other building works partly or wholly in an existing or gazetted proposed country park or special area, a conservation area, an existing or gazetted proposed marine park or marine reserve, a site of cultural heritage, and a site of special scientific interest*”.
- 1.4 Pursuant to section 5(7)(a) of the EIAO, the Director of Environmental Protection (the Director) issues this EIA study brief to the Applicant to carry out an EIA study.
- 1.5 The purpose of this EIA study is to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project and associated works that will take place concurrently. This information will contribute to decisions by the Director on:
  - (i) the overall acceptability of any adverse environmental consequences that are likely to arise as a result of the Project;

- (ii) the conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences wherever practicable; and
- (iii) the acceptability of residual impacts after the proposed mitigation measures are implemented.

## 2. OBJECTIVES OF THE EIA STUDY

### 2.1 The objectives of the EIA study are as follows:

- (i) to describe the Project and associated works together with the requirements and environmental benefits for carrying out the proposed Project;
- (ii) to identify and describe the elements of the community and environment likely to be affected by the Project and/or likely to cause adverse impacts to the Project, including both the natural and man-made environment and the associated environmental constraints;
- (iii) to identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potential affected uses;
- (iv) to identify and quantify any potential losses or damage and other potential impacts to fisheries, flora, fauna and natural habitats;
- (v) to identify any potential landscape and visual impacts and to propose measures to mitigate these impacts;
- (vi) to identify any negative impacts on cultural heritage and to propose measures to mitigate these impacts;
- (vii) to propose the provision of infrastructure or mitigation measures so as to minimize pollution, environmental disturbance and nuisance during construction and operation of the Project;
- (viii) to investigate the feasibility, effectiveness and implications of the proposed mitigation measures;
- (ix) to identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and the cumulative effects expected to arise during the construction and operation phases of the Project in relation to the sensitive receivers and potential affected uses;
- (x) to identify, assess and specify methods, measures and standards, to be included in the detailed design, construction and operation of the Project which are necessary to mitigate these residual environmental impacts and cumulative effects and reduce them to acceptable levels;
- (xi) to investigate the extent of the secondary environmental impacts that may arise from the proposed mitigation measures and to identify constraints associated with the mitigation measures recommended in the EIA study, as well as provision of any necessary modification;
- (xii) to design and specify the environmental monitoring and audit requirements; and
- (xiii) to identify any additional studies necessary to implement the mitigation measures or monitoring and proposals recommended in the EIA report.

### **3. DETAILED REQUIREMENTS OF THE EIA STUDY**

#### **3.1 The Purpose**

- 3.1.1 The purpose of this study brief is to set out the purposes and objectives of the EIA study, the scope of environmental issues which shall be addressed, the requirements that the EIA study shall need to fulfil, and the necessary procedural and reporting requirements. The Applicant shall demonstrate in the EIA report whether the criteria in the relevant sections of the Technical Memorandum on the Environmental Impact Assessment Process of the Environmental Impact Assessment Ordinance (hereinafter referred to as “the TM”), are fully complied with.

#### **3.2 The Scope**

- 3.2.1 The scope of this EIA study shall cover the Project and associated works mentioned in section 1.2 of this EIA study brief. For the purpose of assessing whether the environmental impacts shall comply with the criteria of the TM, the EIA study shall address the key issues described below, together with any other key issues identified during the course of the EIA study:
- (i) environmental benefits and dis-benefits of different development options, siting, alignment, design and construction methods of the Project with a view to deriving the preferred development option(s) that will avoid or minimise adverse environmental impacts;
  - (ii) potential air quality impact on air sensitive receivers (ASRs) due to the construction of the Project and associated works;
  - (iii) potential noise impact on noise sensitive receivers (NSRs) due to the construction of the Project and associated works;
  - (iv) potential water quality impact on water sensitive receivers due to the construction of the Project and associated works, including but not limited to construction site drainage, discharge of stormwater, surface runoff, sewage and wastewater generated from the facilities taking into account the cumulative impact from the existing, committed and planned projects in the vicinity of the Project;
  - (v) potential waste management implications arising from the construction and operation of the Project and associated works;
  - (vi) the potential extent of land contamination within project area for development works and relevant mitigation measures;
  - (vii) potential ecological impact due to the construction and operation of the Project and associated works;
  - (viii) potential fisheries impact due to the construction and operation of the Project and associated works;
  - (ix) potential landscape and visual impacts, including potential glare impact, due to the construction and operation of the Project and associated works;
  - (x) the potential impacts on sites of cultural heritage including marine archaeological deposit in the seabed of the Project area likely to be affected during construction of the project; and
  - (xi) potential cumulative environmental impacts of the Project, through

interaction or in combination with other existing, committed and planned projects, that may have a bearing on the environmental acceptability of the Project.

### **3.3 Description of the Project**

#### **3.3.1 Purpose(s) and Objectives of the Project**

3.3.1.1 The Applicant shall provide information on the purpose(s) and objectives of the Project, and describe the environmental benefits of the Project and scenarios with and without the Project.

#### **3.3.2 Details of the Project**

3.3.2.1 The Applicant shall indicate the nature and status of Project decision(s) for which the EIA study is undertaken. The Applicant shall describe the proposed land uses, siting, alignment, size, design, construction methods, sequence of construction works, access arrangements and other major activities involved in the Project, using diagrams, plans and/or maps as necessary. The estimated duration of the construction phase and operational phase of the Project together with the programme within these phases shall be given. The land taken by the Project site(s), construction sites and any associated access arrangements, auxiliary facilities and landscaping areas shall be shown on a scaled map. The uses of the Project shall be described and the different land use areas shall be demarcated as appropriate.

#### **3.3.3 Background and History of the Project**

3.3.3.1 The Applicant shall provide information on the site location and site history of the Project, interactions with other projects, and the consideration of different development options, taking into account the principles of avoidance, minimizing and control of adverse environmental impacts. The options might include siting, alignment, size, design, construction methods, sequence of construction works and access arrangements for the Project. The key reasons for selecting the preferred development option(s) and the part environmental factors played in the selection shall be described. The main environmental impacts of different development options shall be compared with those of the Project and with the likely future environmental conditions in the absence of the Project.

### **3.4 Technical Requirements**

3.4.1 The Applicant shall conduct the EIA study to address all environmental aspects of the activities as described in the scope as set out above. The assessment shall be based on the best and latest information available during the course of the EIA study.

3.4.2 The Applicant shall include in the EIA report details of the construction programme and methodologies. The Applicant shall clearly state in the EIA report the time frame and work programmes of the Project and associated works and other concurrent projects, and assess the cumulative environmental impacts from the Project and associated works with all interacting projects, including staged implementation of the Project and associated works.

3.4.3 The EIA study shall follow the technical requirements specified below and in

the Appendices of this EIA study brief.

#### 3.4.4 **Air Quality Impact**

3.4.4.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing air quality impact as stated in section 1 of Annex 4 and Annex 12 of the TM respectively.

3.4.4.2 The assessment area for the air quality impact assessment shall be defined by a distance of 500 metres from the boundary of the Project and the works of the Project as identified in the EIA, which shall be extended to include major existing, committed and planned air pollutant emission sources identified to have a bearing on the environmental acceptability of the Project. The assessment shall include the existing, committed and planned sensitive receivers within the assessment area as well as areas where the air quality may be potentially affected by the Project. The assessment shall be based on the best available information at the time of the assessment. The assessment shall also take into account the impacts of emission sources from nearby concurrent projects, if any.

3.4.4.3 The assessment of the air quality impact arising from the construction of the Project shall follow the detailed technical requirements given in **Appendix B** of this EIA study brief.

#### 3.4.5 **Noise Impact**

3.4.5.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing noise impact as stated in Annexes 5 and 13 of the TM respectively.

3.4.5.2 Assessment shall include the construction noise impact assessment of the existing, committed and planned Noise Sensitive Receivers (NSRs) earmarked on the relevant Outline Zoning Plans, Development Permission Area Plans, Outline Development Plans, Layout Plans and other relevant published land use plans, including plans and drawings published by the Lands Department and any land use and development applications approved by the Town Planning Board, in the vicinity of the Project.

3.4.5.3 The noise impact assessment for the construction of the Project shall follow the detailed technical requirements given in **Appendix C** of this EIA study brief.

3.4.5.4 The Applicant shall, based on the best available information at the time, review, justify and seek the Director's agreement on whether operational noise impact assessment is to be carried out. If an operational noise impact assessment is needed, the Applicant shall propose, with justification, the criteria and methodology of the assessment for the agreement of the Director.

#### 3.4.6 **Water Quality Impact**

3.4.6.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing water pollution as stated in Annexes 6 and 14 of the TM respectively.

3.4.6.2 The assessment area for the water quality impact assessment shall include areas within 500 metres from the boundary of the Project and the works of the

Project, and shall cover the Mirs Bay Water Control Zone as designated under the Water Pollution Control Ordinance (Cap. 358), and the water sensitive receivers outside the 500 metres boundary but in the vicinity of the Project, including but not limited to the following sensitive receivers:

- (i) Yan Chau Tong Marine Park;
- (ii) Lai Chi Wo Beach SSSI;
- (iii) Fish culture zones at Sai Lau Kong and other nearby areas;
- (iv) Aquatic ecological habitats for marine organism including seagrass bed and coral communities at/near the existing pier at Lai Chi Wo; and
- (v) Fisheries resources and other fisheries sensitive receivers

The assessment area shall be extended to include stream courses, existing and new drainage systems in the vicinity of the Project, if they are found also being affected by the Project during the EIA study and have a bearing on the environmental acceptability of the Project.

3.4.6.3 The water quality impact assessment for the construction (including demolition of portions of the existing pier structure and temporary berthing and mooring facilities) and operation stages of the Project shall follow the detailed technical requirements given in **Appendix D** of this EIA study brief.

#### 3.4.7 **Waste Management Implications**

3.4.7.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing waste management implications as stated in Annexes 7 and 15 of the TM respectively.

3.4.7.2 The assessment of the waste management implications arising from the construction and operation of the Project shall follow the detailed technical requirements given in **Appendix E** of this EIA study brief.

#### 3.4.8 **Land Contamination**

3.4.8.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing potential land contamination issues as stated in sections 3.1 and 3.2 of Annex 19 of the TM.

3.4.8.2 The assessment of the potential land contamination issues shall follow the detailed technical requirements given in **Appendix F** of this EIA study brief.

#### 3.4.9 **Ecological Impact**

3.4.9.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing ecological impact as stated in Annexes 8 and 16 of the TM respectively.

3.4.9.2 The assessment area for the purpose of the terrestrial ecological impact assessment shall include areas within 500 metres distance from the boundary of the Project and the works of the Project as well as any other areas likely to be impacted by the Project. For aquatic ecological impact assessment, the



assessment area shall be the same as the assessment area for Water Quality Impact Assessment described in Section 3.4.6.2 of this EIA Study Brief.

3.4.9.3 The ecological impact assessment for the construction of the Project shall follow the detailed technical requirements given in **Appendix G** of this EIA study brief.

#### 3.4.10 **Landscape and Visual Impact**

3.4.10.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing landscape and visual impacts, including glare impact, as stated in Annexes 10 and 18 of the TM respectively, and the EIAO Guidance Note No. 8/2010 "Preparation of Landscape and Visual Impact Assessment under the EIAO" and the report of "Landscape Value Mapping in HK".

3.4.10.2 The assessment area for the landscape impact assessment shall include landscape character areas and landscape resources within 500 metres from the boundary of the Project and the works of the Project as identified in the EIA, while the assessment area for the visual impact assessment shall be defined by the visual envelope of the Project. The extent of the defined visual envelope shall be shown on a plan and documented in the EIA report.

3.4.10.3 The landscape and visual impact assessment for the construction and operation of the Project shall follow the detailed technical requirements given in **Appendix H** of this EIA study brief.

#### 3.4.11 **Fisheries Impact**

3.4.11.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing fisheries impact as stated in Annexes 9 and 17 of the TM respectively.

3.4.11.2 The assessment area shall be the same as the assessment area for Water Quality Impact Assessment described in Section 3.4.6.2 of this EIA Study Brief. This assessment area shall be extended to include other areas if they are also found being impacted by the construction or operation of the Project during the course of the EIA study. Special attention should be given to loss or disturbance of fishing ground, water quality deterioration at sensitive receivers such as Fish Culture Zones, spawning and nursery ground of commercial fisheries resources in the northeastern waters of Hong Kong, and proposed Fisheries Protection Areas.

3.4.11.3 The fisheries impact assessment for the construction and operation of the Project shall follow the detailed technical requirements given in **Appendix I** of this EIA study brief.

#### 3.4.12 **Impact of Cultural Heritage**

3.4.12.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing cultural heritage impacts as stated in Annexes 10 and 19 of the TM respectively.

3.4.12.2 A marine archaeological investigation (MAI) in the area to be affected by the marine works associated with the construction of the proposed pier improvement shall be carried out. The MAI shall follow the detailed

technical requirements in **Appendix J**. In the event that archaeological potential is identified after completion of the baseline review and the geophysical survey, a field investigation programme to ascertain the archaeological value of the affected seabed area shall be formulated, including the scope of works, methodology and time schedule, etc., for agreement with the Director. The Applicant shall also approach the Director for any additional specific requirements of the field investigation. If significant archaeological remains are identified during the field investigation, mitigation measures shall be designed and implemented in prior consultation with the Antiquities and Monuments Office.

- 3.4.12.3 The MAI shall be carried out by a qualified marine archaeologist and if field investigation is required, he/she shall obtain a licence from the Antiquities Authority under the provision of the Antiquities and Monuments Ordinance (Cap. 53).

### **3.5 Environmental Monitoring and Audit (EM&A) Requirements**

- 3.5.1 The Applicant shall identify and justify in the EIA study whether there is any need for EM&A activities during the construction and operation phases of the Project and, if affirmative, to define the scope of the EM&A requirements for the Project in the EIA study.
- 3.5.2 Subject to the confirmation of the EIA study findings, the Applicant shall comply with the requirements as stipulated in Annex 21 of the TM.
- 3.5.3 The Applicant shall prepare a project implementation schedule (in the form of a checklist as shown in **Appendix K**) containing all the EIA study recommendations and mitigation measures with reference to the implementation programme.

### **3.6 Presentation of Summary Information**

#### **3.6.1 Summary of Environmental Outcomes**

The EIA report shall contain a summary of key environmental outcomes arising from the EIA study, including estimated population protected from various environmental impacts, environmentally sensitive areas protected, environmentally friendly options considered and incorporated in the preferred option, environmental designs recommended, key environmental problems avoided, compensation areas included and the environmental benefits of environmental protection measures recommended.

#### **3.6.2 Summary of Environmental Impacts**

To facilitate effective retrieval of pertinent key information, the EIA report shall contain a summary table of environmental impacts showing the assessment points, results of impact predictions, relevant standards or criteria, extents of exceedances predicted, impact avoidance measures considered, mitigation measures proposed and residual impacts (after mitigation). This summary shall cover each individual impact and shall also form an essential part of the executive summary of the EIA report.

#### **3.6.3 Documentation of Key Assessment Assumptions, Limitation of Assessment**

### Methodologies and related Prior Agreement(s) with the Director

The EIA report shall contain a summary including the assessment methodologies and key assessment assumptions adopted in the EIA study, the limitations of these assessment(s) methodologies/assumptions, if any, plus relevant prior agreement(s) with the Director or other Authorities on individual environmental media assessment components. The proposed use of any alternative assessment tool(s) or assumption(s) have to be justified by the Applicant, with supporting documents based on cogent, scientific and objectively derived reason(s) before seeking the Director's agreement. The supporting documents shall be provided in the EIA report.

#### 3.6.4 Summary of Alternative Options and Mitigation Measures

The EIA report shall contain a summary of alternative development options and mitigation measures considered during the course of the EIA study, including but not limited to the alternative siting and alignment options, size, design, construction methods and sequence of construction works with a view to avoiding or minimizing adverse environmental impacts. A comparison of the environmental benefits and dis-benefits of applying different development options, and/or mitigation measures shall be made.

#### 3.6.5 Documentation of Public Concerns

The EIA report shall contain a summary of the main concerns of the general public, special interest groups and the relevant statutory or advisory bodies received and identified by the Applicant during the course of the EIA study, and describe how the relevant concerns have been taken into account.

## **4. DURATION OF VALIDITY**

- 4.1 The Applicant shall notify the Director of the commencement of the EIA study. If the EIA study does not commence within 36 months after the date of issue of this EIA study brief, the Applicant shall apply to the Director for a fresh EIA study brief before commencement of the EIA study.

## **5. REPORTING REQUIREMENTS**

- 5.1 In preparing the EIA report, the Applicant shall refer to Annex 11 of the TM for the contents of an EIA report. The Applicant shall also refer to Annex 20 of the TM, which stipulates the guidelines for the review of an EIA report. When submitting the EIA report to the Director, the Applicant shall provide a summary, pointing out where in the EIA report the respective requirements of this EIA study brief and the TM (in particular Annexes 11 and 20) have been addressed and fulfilled.
- 5.2 The Applicant shall supply the Director with hard and electronic copies of the EIA report and the executive summary in accordance with the requirements given in **Appendix L** of this EIA study brief. The Applicant shall, upon request, make additional copies of the above documents available to the public, subject to payment by the interested parties of full costs of printing.

## **6. OTHER PROCEDURAL REQUIREMENTS**

- 6.1 If there is any change in the name of Applicant for this EIA study brief during

the course of the EIA study, the Applicant must notify the Director immediately.

- 6.2 If there is any key change in the scope of the Project mentioned in section 1.2 of this EIA study brief and in Project Profile (No. PP-561/2017), the Applicant must seek confirmation from the Director in writing on whether or not the scope of issues covered by this EIA study brief can still cover the key changes, and the additional issues, if any, that the EIA study must also address. If the changes to the Project fundamentally alter the key scope of the EIA study brief, the Applicant shall apply to the Director for a fresh EIA study brief.

## **7. LIST OF APPENDICES**

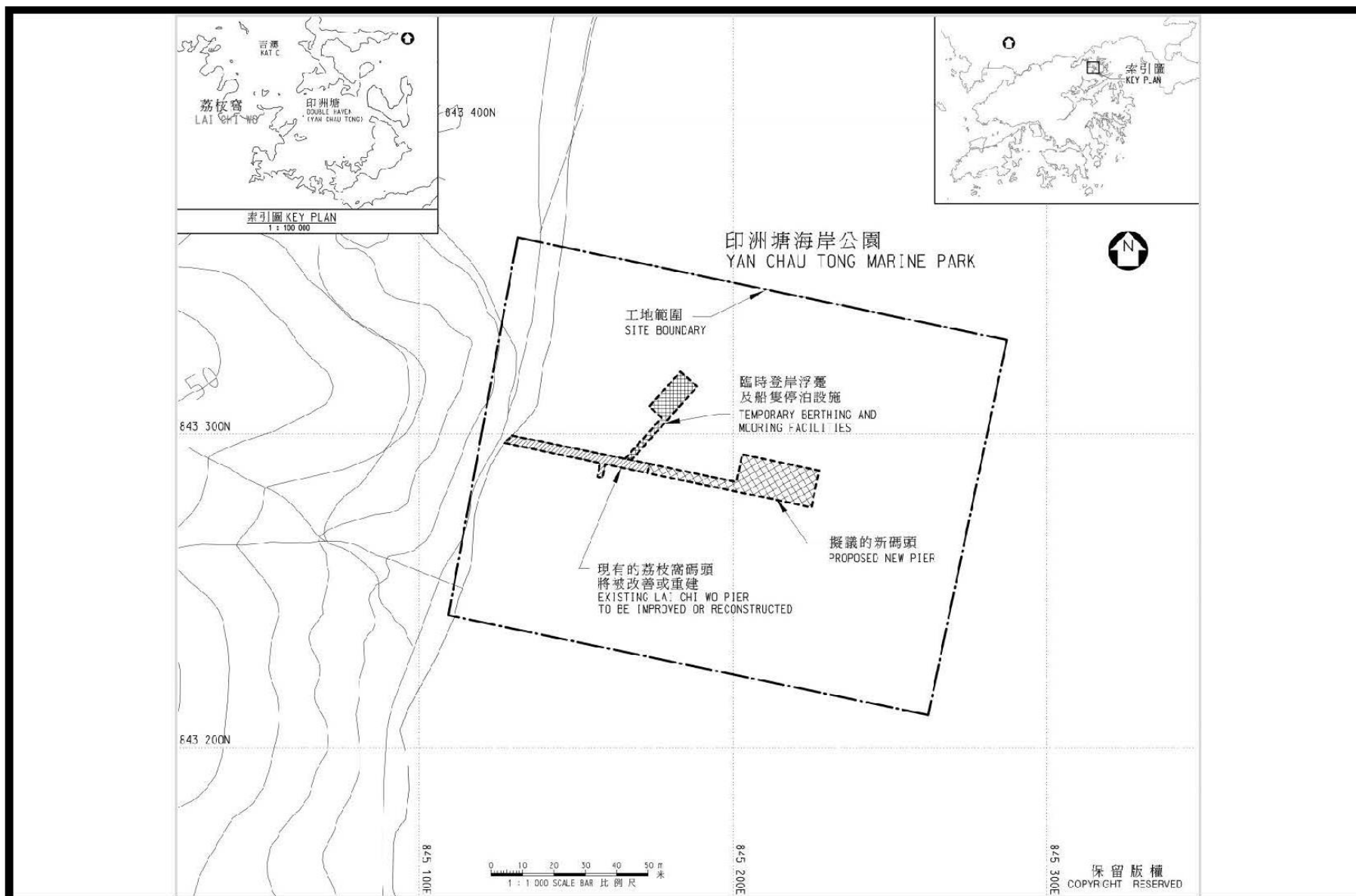
- 7.1 This EIA study brief includes the following appendices:

Appendix A - Project Location Plan  
Appendix B - Requirements for Air Quality Impact Assessment  
Appendix B-1 - Air Quality Modelling Guidelines  
Appendix C - Requirements for Noise Impact Assessment  
Appendix D - Requirements for Water Quality Impact Assessment  
Appendix E - Requirements for Assessment of Waste Management Implications  
Appendix F - Requirements for Land Contamination Assessment  
Appendix G - Requirements for Ecological Impact Assessment  
Appendix H - Requirements for Landscape and Visual Impact Assessment  
Appendix I - Requirements for Fisheries Impact Assessment  
Appendix J - Guidelines for Marine Archaeological Investigation (MAI)  
Appendix K - Implementation Schedule of Recommended Mitigation Measures  
Appendix L - Requirements for EIA Report Documents

--- END OF EIA STUDY BRIEF ---

February 2018  
Environmental Assessment Division,  
Environmental Protection Department

**Appendix A**



Project Title: Pier Improvement at Lai Chi Wo  
工程項目名稱：荔枝窩碼頭改善工程

(This figure is prepared based on Drawing No. PW-SK17-117 of Project Profile No.: PP-561/2017)  
(本圖是根據工程項目簡介編號：PP-561/2017 圖則編號PW-SK17-117編制)

EIA Study Brief No. : ESB-305/2017  
環評研究概要編號：

Appendix A: Project Location Plan  
附錄A：工程項目位置圖



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**Appendix B****Requirements for Air Quality Impact Assessment**

The air impact assessment shall include the following:

1. **Background and Analysis of Activities**
  - (i) Provision of background information relating to air quality issues relevant to the Project, e.g. description of the types of activities of the Project that may affect air quality during construction stage.
  - (ii) Provision of an account, where appropriate, of the consideration/measures that have been taken into consideration in the planning of the Project to avoid and minimize the air pollution impact. The Applicant shall consider alternative construction methods and phasing programmes to minimise the air quality impact during construction stage of the Project.
  - (iii) Presentation of background air quality levels in the assessment area for the purpose of evaluating cumulative air quality impacts during construction stage of the Project. If the PATH (Pollutants in the Atmosphere and their Transport over Hong Kong) model is used to estimate the future background air quality, details for the estimation of all emission sources to be adopted in the model runs should be clearly presented.
2. **Identification of Air Sensitive Receivers (ASRs) and Examination of Emission/Dispersion Characteristics**
  - (i) Identification and description of existing, committed and planned ASRs that would likely be affected by the Project, including those earmarked on the relevant Outline Zoning Plans, Development Permission Area Plans, Outline Development Plans, Layout Plans and other relevant published land use plans, including plans and drawings published by the Lands Department and any land use and development applications approved by the Town Planning Board. The Applicant shall select the assessment points of the identified ASRs that represent the worst impact point of these ASRs. A map clearly showing the location and description such as name of buildings, their uses and height of the selected assessment points shall be given. The separation distances of these ASRs from the nearest emission sources shall also be given.
  - (ii) Provision of a list of air pollutant emission sources, including any nearby emission sources which are likely to have impact related to the Project based on the analysis of the construction activities in section 1 above. Examples of construction stage emission sources include stock piling, blasting, concrete batching, material handling and vehicular movements on unpaved haul roads on site. Confirmation regarding the validity of assumptions and the magnitude of activities (e.g. volume of construction material to be handled, odour emission strength) shall be obtained from the relevant government departments/authorities, where applicable, and documented in the EIA report.
  - (iii) Identification of chimneys and obtainment of relevant chimney emission data in the assessment area, where appropriate, by carrying out a survey for assessing the cumulative air quality impact of air pollutants through chimneys. The Applicant shall ensure and confirm the validity of the emission data used

in their assessment. Any errors found in their emission data used may render the submission invalid.

- (iv) The emissions from any concurrent projects identified as relevant during the course of the EIA study shall be taken into account as contributing towards the overall cumulative air quality impact. The impacts at the existing, committed and planned ASRs within the assessment area shall be assessed, based on the best information available at the time of assessment.

### 3. Construction Phase Air Quality Impact

- (i) The Applicant shall follow the requirements stipulated under the Air Pollution Control (Construction Dust) Regulation to ensure that construction dust impacts are controlled within the relevant standards as stipulated in section 1 of Annex 4 of the TM.
- (ii) If the Applicant anticipates that the Project will give rise to significant construction dust impacts likely to exceed recommended limits in the TM at the ASRs despite the incorporation of the dust control measures proposed, a quantitative assessment shall be carried out to evaluate the construction dust impact at the identified ASRs. The Applicant shall follow the methodology set out in section 5 below when carrying out the quantitative assessment.
- (iii) Where necessary, the Applicant shall consider and evaluate direct mitigation measures, including but not limited to water-spraying, re-scheduling construction programme to minimise concurrent dust impact arising from different construction sites, for fugitive dust control. The Applicant shall describe the means of transportation and their routings involved, with a view to addressing potential dust nuisance caused by transportation activities. Any mitigation measures recommended for fugitive dust control should be well documented in the EIA report.
- (iv) A monitoring and audit programme for the construction phase of the Project shall be devised to verify the effectiveness of the proposed control measures so as to ensure proper control of fugitive dust emission.

### 4. Quantitative Assessment Methodology

- (i) The Applicant shall conduct the quantitative assessment by applying the general principles enunciated in the modelling guidelines in **Appendix B-1** while making allowance for the specific characteristic of the Project. This specific methodology must be documented in such level of details, preferably assisted with tables and diagrams, to allow the readers of the EIA report to grasp how the model has been set up to simulate the situation under study without referring to the model input files. In case of doubt, prior agreement between the Applicant and the Director on specific modelling details should be sought.
- (ii) For the purpose of assessing the compliance with the criteria as stated in section 1 of Annex 4 of the TM, the Applicant shall identify the key/representative air pollution parameters (types of pollutants and the averaging time concentrations) to be evaluated and provide explanation for selecting these parameters for assessing the impact of the Project.

- (iii) Calculation of the relevant pollutant emission rates for input to the model and map(s) showing road links and emission sources shall be presented in the EIA report. A summary table of the emission rates shall be presented in the EIA report. The Applicant shall ensure consistency between the text description and the model files at every stage of submission for review.
- (iv) The air pollution impacts of future road traffic shall be calculated based on the highest emission strength from the road vehicles in the assessment area within the next 15 years upon commissioning of the Project. The Applicant shall demonstrate that the selected year of assessment represents the highest emission scenario given the combination of vehicular emission factors and traffic flow for the selected year. The Applicant may use EMFAC-HK model released by the Director to determine the Fleet Average Emission Factors, taking into account vehicle fleet mix and other necessary data. Unless otherwise agreed by the Director, the latest version of the EMFAC-HK model shall be used. Use of any alternatives to the EMFAC-HK model shall be agreed with the Director. The traffic flow data and assumptions, such as the exhaust technology fractions, vehicle age/population distribution, traffic forecast and speed fractions, that are used in the assessment shall be presented.
- (v) For estimating the future background air quality, the Applicant may use the PATH model released by the Director, taking into consideration the major air pollutant emission sources projected for Hong Kong and nearby regions. Unless otherwise agreed by the Director, the latest version of the PATH model shall be used. Use of any alternatives to the PATH model shall be agreed with the Director. Details of the adopted emission sources should be presented.
- (vi) Ozone Limiting Method (OLM) or Discrete Parcel Method (DPM) or other appropriate method shall be used to estimate the conversion ratio of NO<sub>x</sub> to NO<sub>2</sub> if NO<sub>2</sub> has been identified as a key/representative air pollutant.
- (vii) The Applicant shall calculate the cumulative air quality impact at the identified ASRs and compare these results against the criteria set out in section 1 of Annex 4 in the TM. The Applicant shall also calculate the incremental air quality impact at the identified ASRs arising from the Project. The predicted air quality impacts (both unmitigated and mitigated) shall be presented in the form of summary table(s) and pollution contours, to be evaluated against the relevant air quality standards and on any effect they may have on the land use implications. Plans of a suitable scale shall be used to present pollution contours to allow buffer distance requirements to be determined properly.

## 5. Mitigation Measures for Air Quality Impact

### Consideration for Mitigation Measures

- (i) When the predicted air quality impact exceeds the criteria set in section 1 of Annex 4 in the TM, the Applicant shall consider mitigation measures to reduce the air quality impact on the identified ASRs. The feasibility, practicability, programming and effectiveness of the recommended mitigation measures shall be assessed and documented in the EIA report. Specific reasons for not adopting certain workable mitigation measures to reduce the air quality to a level meeting the criteria in the TM or to maximise the protection of the ASRs as far as possible should be clearly substantiated and documented in the EIA



report.

#### Evaluation of Residual Air Quality Impact

- (ii) Upon consideration of mitigation measures, if the mitigated air quality impact still exceeds the relevant criteria in Annex 4 of the TM, the Applicant shall identify, predict, and evaluate the residual air quality impact in accordance with Section 4.4.3 and Section 4.5.1(d) of the TM.

#### 6. Submission of Emission Calculation Details and Model Files

Input and output file(s) of model run(s) including those files for generating the pollution contours and emission calculations worksheets shall be submitted to the Director in electronic format together with the submission of the EIA report.

**Appendix B-1****Air Quality Modelling Guidelines**

*[The information contained in this Appendix is meant to assist the Applicant in performing the air quality assessment. The Applicant must exercise professional judgment in applying this general information.]*

The air quality modelling guidelines shall include the following guidelines as published on the website of the Environmental Protection Department:

([http://www.epd.gov.hk/epd/english/environmentinhk/air/guide\\_ref/guide\\_aqa\\_model.html](http://www.epd.gov.hk/epd/english/environmentinhk/air/guide_ref/guide_aqa_model.html)):

- i) Guidelines on Choice of Models and Model Parameters (Revised);
- ii) Guidelines on Assessing the “Total” Air Quality Impacts (Revised);
- iii) Guidelines on the Use of Alternative Computer Models in Air Quality Assessment;
- iv) Guidelines on the Estimation of PM<sub>2.5</sub> for Air Quality Assessment in Hong Kong;  
and
- v) Guidelines on the Estimation of 10-minute Average SO<sub>2</sub> Concentration for Air Quality Assessment in Hong Kong.

**Appendix C****Requirements for Noise Impact Assessment**

The noise impact assessment shall include the following:

**1. Description of the Noise Environment**

1.1 The Applicant shall describe the prevailing noise environment in the EIA report.

**2. Construction Noise Impact Assessment****2.1 Construction Noise Impact Assessment Methodology**

2.1.1 The Applicant shall carry out construction noise impact assessment (excluding percussive piling) of the Project during daytime, i.e. 7am to 7pm, on weekdays other than general holidays in accordance with methodology in paragraphs 5.3 and 5.4 of Annex 13 of the TM.

**2.2 Identification of Construction Noise Impact****2.2.1 *Identification of Assessment Area and Noise Sensitive Receivers (NSRs)***

- (a) The Applicant shall propose the assessment area for agreement of the Director before commencing the assessment. The assessment area for the construction noise impact assessment shall generally include areas within 300 metres from the boundary of the Project and the works of the Project.
- (b) The Applicant shall identify all existing NSRs in the assessment area and select assessment points to represent identified NSRs for carrying out quantitative construction noise impact assessment described below.
- (c) The assessment points shall be confirmed with the Director prior to the commencement of the quantitative construction noise impact assessment and may be varied subject to the best and latest information available during the course of the EIA study.
- (d) A map showing the location and description such as name of building, use, and floor of each and every selected assessment point shall be given. Photographs of existing NSRs shall be appended to the EIA report.

**2.2.2 *Inventory of Noise Sources***

The Applicant shall identify and quantify an inventory of noise sources for representative construction equipment for the purpose of construction noise impact assessment.

## 2.3 Prediction and Evaluation of Construction Noise Impact

### 2.3.1 *Phases of Construction*

The Applicant shall identify representative phases of construction that would have noticeable varying construction noise emissions at existing NSRs at the assessment area for agreement of the Director before commencing the construction noise impact assessment.

### 2.3.2 *Scenarios*

The Applicant shall quantitatively assess the construction noise impact, with respect to criteria set in Annex 5 of the TM, of unmitigated scenario and mitigated scenario at different phases of construction of the Project.

### 2.3.3 *Prediction of Noise Impact*

- (a) The Applicant shall present the predicted noise levels in Leq (30 min) dB(A) at the selected assessment points at various representative floor levels (in m P.D.) on tables and plans of suitable scale.
- (b) The assessment shall cover the cumulative construction noise impact resulting from the construction works of the Project and other concurrent projects identified during the course of the EIA study on existing NSRs within the assessment area.
- (c) The potential construction noise impact under different phases of construction shall be quantified by estimating the total number of dwellings, classrooms and other noise sensitive receivers that will be exposed to noise impact exceeding the criteria set in Annex 5 in the TM.
- (d) The Applicant shall, as far as practicable, formulate a reasonable construction programme so that no work will be required in restricted hours as defined under the Noise Control Ordinance (NCO). In case the Applicant needs to evaluate whether construction works in restricted hours as defined under the NCO are feasible or not in the context of programming construction works, reference should be made to relevant technical memoranda issued under the NCO. Regardless of the results of construction noise impact assessment for restricted hours, the Noise Control Authority will process Construction Noise Permit (CNP) application, if necessary, based on the NCO, the relevant technical memoranda issued under the NCO, and the contemporary conditions/situations. This aspect should be explicitly stated in the noise chapter and the conclusions and recommendations chapter in EIA report.

## 2.4 Mitigation of Construction Noise Impact

### 2.4.1 *Direct Mitigation Measures*

Where the predicted construction noise impact exceeds the criteria set in Table 1B of Annex 5 of the TM, the Applicant shall consider and evaluate direct mitigation measures including but not limited to, movable barriers, enclosures, quieter alternative methods, re-scheduling, restricting hours of operation of noisy tasks, etc. The feasibility, practicability, programming and effectiveness of the recommended mitigation measures shall be assessed. Any direct mitigation measures recommended

should be well documented in the report. Specific reasons for not adopting certain direct mitigation measures to reduce the noise to a level meeting the criteria in the TM or to maximize the protection for the NSRs as far as possible should be clearly substantiated and documented in the EIA report.

## 2.5 Evaluation of Residual Construction Noise Impact

Upon exhaust of direct mitigation measures, if the mitigated noise impact still exceeds the relevant criteria in Annex 5 of the TM, the Applicant shall identify, predict, evaluate the residual construction noise impact in accordance with section 4.4.3 of the TM and estimate the total number of existing dwellings, classrooms and other noise sensitive elements that will be exposed to residual noise impact exceeding the criteria set in Annex 5 in the TM.

**Appendix D****Requirements for Water Quality Impact Assessment**

1. The Applicant shall identify and analyse all physical, chemical and biological disruptions of the fresh water, ground water and marine water (the water systems in the assessment area ) arising from the construction and operation stages of the Project.
2. The Applicant shall predict, quantify and assess any water quality impacts arising from the construction and operation stages of the Project including, but not limited to, soil excavations, backfilling, bulk earth moving works, site runoff, sewage discharge from construction work force, on the water systems and the sensitive receivers including the Yan Chau Tong Marine Park (YCTMP) and the Lai Chi Wo Beach SSSI within the study area.
3. The Applicant shall take into account and include likely different construction and operation stages or sequences of the Project in the assessment. The assessment shall have regard to the frequency, duration, volume and flow rate of the discharges and its pollutant loading to water systems, potential overflow of the aforesaid water systems. The water quality impact assessment shall address the following:
  - (i) Collect and review background information on the existing and planned water systems, the respective catchments and sensitive receivers including the YCTMP, the SSSI and fisheries sensitive receivers which might be affected by the Project;
  - (ii) Characterize water and sediment quality of the water systems and sensitive receivers including the YCTMP, the SSSI and fisheries sensitive receivers, which might be affected by the Project based on existing best available information or through appropriate site survey and tests;
  - (iii) Identify and analyse relevant existing and planned future activities, beneficial uses and water sensitive receivers including the YCTMP, the SSSI and fisheries sensitive receivers related to the affected water systems. The Applicant should refer to, inter alia, those developments and uses earmarked on the relevant Outline Zoning Plans, Development Permission Area Plans, Outline Development Plans and Layout Plans, and other relevant published land use plans, including plans and drawings published by the Lands Department and any land use and development applications approved by the Town Planning Board;
  - (iv) Identify pertinent water quality objectives and establish other appropriate water quality criteria or standards for the water systems and the sensitive receivers identified in sub-sections (i), (ii) & (iii) above;
  - (v) Review the specific construction methods and configurations of the Project to identify and assess the likely water quality impacts arising from the Project;
  - (vi) Identify any alteration of water courses, natural streams, ponds, change of water holding and flow regimes, change of catchment types or areas, change of groundwater levels, erosion or sedimentation due to the Project and any other hydrological changes in the assessment area;

- (vii) Identify and quantify all water pollution sources, including point discharges and non-point sources to the water systems in the construction and operation stages of the Project, sewage and wastewater arising from the construction stage and any other polluted discharge generated from the Project;
- (viii) Provide an emission inventory on the quantities and characteristics of the pollution sources in the assessment area. Field investigation and laboratory test, shall be conducted as appropriate to fill relevant information gaps;
- (ix) Assess the impacts on the water systems and water sensitive receivers identified in 3(i), (ii) and (iii) above including the YCTMP, the SSSI and fisheries sensitive receivers due to the alterations, changes and the pollution sources identified above in 3(vi) and (vii). Possible impacts include change in hydrology, flow regime, water quality and release of sediments and other contaminants in the construction stage; as well as increase in marine traffic, boating and visitor activities in the operation stage of the Project, etc. The assessment shall take into account different construction stages of the Project;
- (x) Assess the cumulative impacts due to other concurrent and planned projects, activities or pollution sources within the assessment area that may have a bearing on the environmental acceptability of the Project;
- (xi) Assess the need to provide facilities to reduce pollution arising from the point and non-point sources identified in sub-section (vii) above;
- (xii) Develop effective contingency plan, water pollution prevention and mitigation measures to be implemented during the construction and operation stages of the Project. Measures shall be identified to prevent and minimize the water quality impact due to the Project. Requirements to be incorporated in the project contract document shall also be proposed;
- (xiii) Investigate and develop best management practices to reduce stormwater runoff, non-point source pollution and silty runoff during the construction and operation stages of the Project as appropriate.; and
- (xiv) Evaluate residual impacts on the water systems and the sensitive receivers with regard to the appropriate water quality objectives, criteria, standards or guidelines. If the mitigated water quality impact still exceeds the relevant criteria in Annex 6 of the TM, the Applicant shall evaluate the residual water quality impact in accordance with section 4.4.3 of the TM and estimate the significance of the residual impact to the water systems and the water sensitive receivers.

**Appendix E****Requirements for Assessment of Waste Management Implications**

The assessment of waste management implications shall cover the followings:

1. Analysis of Activities and Waste Generation

- (i) The Applicant shall identify the quantity, quality and timing of the waste arising as a result of the construction and operation activities of the Project, based on the sequence and duration of these activities, e.g. any dredged/excavated sediment/mud, construction and demolition (C&D) materials, floating refuse and other wastes which would be generated during construction and/or operation stages.
- (ii) The Applicant shall adopt appropriate design, general layout, construction methods and programme to minimize the generation of public fill/inert C&D materials and maximize the use of public fill/inert C&D materials for other construction works.

2. Proposal for Waste Management

- (i) Prior to considering the disposal options for various types of wastes, opportunities for reducing waste generation, on-site or off-site re-use and recycling shall be fully evaluated. Measures that can be taken in planning and design stages e.g. by modifying the design approach and in the construction stage for maximizing waste reduction shall be separately considered.
- (ii) The Applicant shall consider alternative project designs/measures to avoid/minimize floating refuse accumulation/entrapment and measures/proposals for the potential floating refuse problem, e.g. streamlining the shoreline design; measures to improve the tidal flushing capacity; alternative seawall design to facilitate floating refuse collection; and regular collection of the floating refuse along the shoreline. Regarding the potential trapping of floating refuse along the shoreline of the Project, the Applicant shall estimate as far as practicable the amount of floating refuse to be found/trapped along the shoreline of the Project in construction and operation stages of the Project. The Applicant shall develop an effective plan/design to avoid/minimize the trapping of floating refuse. If floating refuse is identified and needs to be dealt with, the Applicant shall propose appropriate measures to deal with this floating refuse in a proper and acceptable manner e.g. to collect, recycle, reuse, store, transport and dispose of.
- (iii) After considering the opportunities for reducing waste generation and maximizing re-use, the types and quantities of the wastes required to be disposed of as a consequence shall be estimated and the disposal methods/options for each type of wastes shall be described in detail. The disposal methods/options recommended for each type of wastes shall take into account the result of the assessment in sub-section (iv) below.
- (iv) The EIA report shall also state clearly the transportation routings and the frequency of the trucks/vessels involved, any barging point or conveyor system to be used, the stockpiling areas and the disposal outlets for the waste



identified.

- (v) The impact caused by handling (including stockpiling, labelling, packaging and storage), collection, transportation and re-use/disposal of wastes shall be addressed in detail and appropriate mitigation measures shall be proposed. This assessment shall cover the following areas:
- potential hazard;
  - air and odour emissions;
  - noise;
  - wastewater discharge;
  - ecology; and
  - public transport.

### 3. Excavation/Dredging and Dumping

- (i) The Applicant shall identify and estimate dredging/excavation, dredged/excavated sediment/mud transportation and disposal activities and requirements. Potential dumping ground to be involved shall also be identified. Appropriate field investigation, sampling and chemical and biological laboratory tests to characterise the sediment/mud concerned shall be conducted. The ranges of parameters to be analysed; the number, type and methods of sampling; sample preservation; chemical and biological laboratory test methods to be used shall be agreed with the Director (with reference to section 4.4.2(c) of the TM) prior to the commencement of the tests and document in the EIA report for consideration. The categories of sediment/mud which are to be disposed of in accordance with the Dumping at Sea Ordinance (DASO) shall be identified by both chemical and biological tests and their quantities shall be estimated. If the presence of contamination of sediment/mud which requires special treatment/disposal is confirmed, the Applicant shall identify the appropriate treatment and/or disposal arrangement and demonstrate its viability in consultation with relevant authorities.
- (ii) The Applicant shall identify and evaluate the practicable dredging/excavation methods to minimise dredging/excavation and dumping requirements based on the criterion that existing sediment/mud shall be left in place and not to be disturbed as far as possible

**Appendix F****Requirements for Land Contamination Assessment**

1. The Applicant shall identify the potential land contamination site(s) within the boundary of the Project and , if any, within the boundaries of associated areas (e.g. work areas) of the Project.
2. The Applicant shall provide a clear and detailed account of the present land use (including description of the activities, chemicals and hazardous substances handled, with clear indication of their storage and location, by reference to a site layout plan) and a complete past land use history, in chronological order, in relation to possible land contamination (including accident records and change of land use(s) and the like).
3. If any contaminated land uses as stated in Sections 3.1 and 3.2 of Annex 19 in the TM is identified, the Applicant shall carry out the land contamination assessment as detailed from sub-section (i) to (iii) below and propose measures to avoid disposal -:
  - (i) During the course of the EIA study, the Applicant shall submit a Contamination Assessment Plan (CAP) to the Director for endorsement prior to conducting an actual contamination impact assessment of the land or site(s). The CAP shall include proposal with details on representative sampling and analysis required to determine the nature and the extent of the contamination of the land or site(s). Alternatively, the Applicant may refer to other previously agreed and still relevant and valid CAP(s) for the concerned site(s).
  - (ii) Based on the endorsed CAP, the Applicant shall conduct a land contamination impact assessment and submit a Contamination Assessment Report (CAR) to the Director for endorsement. If land contamination is confirmed, a Remediation Action Plan (RAP) to formulate viable remedial measures with supporting documents, such as agreement by the relevant facilities management authorities, shall be submitted to the Director for approval. The Applicant shall then clean up the contaminated land or site(s) according to the approved RAP, and a Remediation Report (RR) to demonstrate adequate clean-up should be prepared and submitted to the Director for endorsement prior to the commencement of any development or redevelopment works within the Study Area. The CAP, CAR and RAP shall be documented in the EIA report.
  - (iii) If there are potential contaminated sites which are inaccessible for conducting sampling and analysis during the course of the EIA study, e.g. due to site access problem, the Applicant's CAP shall include:
    - (a) a review of the available and relevant information;
    - (b) an initial contamination evaluation of these sites and possible remediation methods;
    - (c) a confirmation of whether the contamination problem at these sites would be surmountable;
    - (d) a sampling and analysis proposal which shall aim at determining the nature and the extent of the contamination of these sites; and

- (e) where appropriate, a schedule of submission of revised or supplementary CAP, CAR, RAP and RR upon these sites become accessible.

## **Appendix G**

### **Requirements for Ecological Impact Assessment**

The ecological impact assessment shall cover both terrestrial and aquatic ecology and shall include the following:

1. The Applicant shall examine the flora, fauna and other components of the ecological habitats within the assessment area. The aim shall be to protect, maintain or rehabilitate the natural environment. In particular, the Project shall avoid as far as possible impacts on recognized sites of conservation importance and other ecological sensitive areas. The assessment shall identify and quantify as far as possible the potential ecological impacts associated with the Project, both directly by physical disturbance and indirectly by changes of water quality and hydrodynamic regime, to the natural environment and the associated wildlife groups and habitat/species arising from the Project including its construction and operation phases.
2. The assessment shall include the following major tasks:
  - (i) review the findings of relevant studies/surveys and collate the available information regarding the ecological characters of the assessment area;
  - (ii) evaluate the information collected, identify any information gap relating to the assessment of potential ecological impacts to terrestrial and aquatic environment, and determine the ecological field surveys and investigations that are needed for a comprehensive assessment as required under the following sections;
  - (iii) carry out any necessary ecological field surveys with a duration of at least 12 months covering both wet and dry seasons, and investigations to verify the information collected, fill in the information gaps as identified under sub-section (ii) above, if any, and to fulfil the objectives of the EIA study. The field surveys shall cover flora, fauna and any other habitats/species of conservation importance, and shall include surveys for intertidal/benthic communities, coral communities and seagrass bed. Collection of marine life and resources in the Marine Park, if needed, would require a permit in accordance with Marine Parks and Marine Reserves Regulation (Cap. 476A) Sections 15B and 17.;
  - (iv) establish the ecological profile of the assessment area based on information collected in the tasks mentioned in sub-sections (i) to (iii) above, and describe the characteristics of each habitat found; the data set should be comprehensive and representative covering the variations of the wet and dry seasons, and is up to date and valid for the purpose of this assessment. Major information to be provided shall include:
    - (a) description of the physical environment, including all recognized sites of conservation importance and assessment of whether these sites will be affected by the Project or not;
    - (b) habitat maps of suitable scale (1:1000 to 1:5000) showing the types and locations of habitats and species of conservation interest in the

assessment area;

- (c) ecological characteristics of each habitat type such as substrate type, size, vegetation type, species present, dominant species found, species richness and abundance of major taxa groups, community structure, seasonal patterns, ecological value, inter-dependence of the habitats and species, and presence of any features of ecological importance;
  - (d) representative colour photos of each habitat type and any important ecological features identified; and
  - (e) species found that are rare, endangered and/or listed under local legislation, international conventions for conservation of wildlife/habitats or Red Data Books.
- (v) investigate and describe the existing wildlife uses of various habitats with special attention to those wildlife groups and habitats with conservation interest, including but not limited to the following:
- (a) Marine Park and associated marine habitats;
  - (b) coral communities and seagrass bed; and
  - (c) any other habitats/species identified as having special conservation interest by this EIA study.
- (vi) describe all recognized site of conservation importance in the assessment area and its vicinity, including but not limited to
- (a) Yan Chau Tong Marine Park (YCTMP); and
  - (b) Lai Chi Wo Beach (LCWB) SSSI;
- assess potential construction and operation impacts of the Project on these sites.
- (vii) using suitable methodology, and considering also any works activities from other projects reasonably likely to occur at the time, identify and quantify as far as possible any direct, indirect, on-site, off-site, primary, secondary and cumulative ecological impacts on the wildlife groups and habitats identified such as destruction of habitats, potential diversion or modification of stream courses, disturbance to wildlife, reduction of species abundance/diversity, loss of feeding and breeding grounds, reduction of ecological carrying capacity and habitat fragmentation and in particular the followings;
- (a) loss of habitats and disturbance to corals, seagrasses, intertidal, subtidal, benthic communities, marine habitats of the YCTMP and the LCWB SSSI during the construction and operation of the Project;
  - (b) noise, glare, dust, traffic and other human disturbance to wildlife during the construction and operation stages of the Project such as increase in visitors;
  - (c) impacts due to potential changes in water quality, hydrodynamics properties and sedimentation hydrology as a result of marine works including demolition and underwater construction works, surface run-off

and discharges, marine traffic volume and visitors, underwater noise and other human disturbance on habitats as mentioned in (v) above, including the Yan Chau Tong Marine Park and its functionality, during the construction and operation stages of the Project; and

- (d) cumulative impacts due to other planned and committed concurrent development projects at or near the Project.
- (viii) evaluate ecological impact based on the best and latest information available during the course of the EIA study, using quantitative approach as far as practicable and covering construction and operational phases of the Project;
- (ix) recommend possible alternatives, such as modification of layout, design and/or construction methods, and practicable mitigation measures (such as restriction of works at specified season, adoption of appropriate construction methods and programme, provision of buffer areas, etc.) to avoid, minimize and/or compensate for the adverse ecological impacts identified during construction and operation of the Project;
- (x) evaluate feasibility and effectiveness of the recommended mitigation measures and define the scope, type, location, implementation arrangement, resources requirement, subsequent management and maintenance of such measures;
- (xi) determine and quantify as far as possible the residual ecological impacts after implementation of the proposed mitigation measures;
- (xii) evaluate the significance and acceptability of the residual ecological impacts using well-defined criteria in Annex 8 of the TM and determine if off-site mitigation measures are necessary to mitigate the residual impacts and if affirmative, guidelines and requirements laid down in Annex 16 of the TM shall be followed; and
- (xiii) review the need for and recommend any ecological monitoring programme required including but not limited to water quality monitoring, coral and seagrass monitoring in the YCTMP and the LCWB SSSI before, during and after the construction. If coral translocation is proposed as a mitigation measure, the effectiveness of such measure should be monitored.

**Appendix H****Requirements for Landscape and Visual Impact Assessment**

1. The Applicant shall review relevant Outline Development Plans, Outline Zoning Plans, Development Permission Area Plans, Layout Plans, other published land use plans, planning briefs and/or studies which may identify areas of high landscape value e.g. water course, conservation area, coastal protection area, green belt, woodland areas. Any guidelines on landscape and urban design strategies and frameworks that may affect the appreciation of the Project shall also be reviewed. The aim is to gain an insight to the future outlook of the area affected so as to assess whether the Project can fit into the surrounding setting based on a comparison of the scenarios with and without the Project. Any conflict with the statutory town plan(s) and any published land use plan(s) shall be highlighted and appropriate follow-up action shall be recommended. A system shall be derived for judging the landscape and visual impact significance as required under the Annexes 10 and 18 of the TM and the EIAO Guidance Note No. 8/2010 "Preparation of Landscape and Visual Impact Assessment under the EIAO". Cumulative landscape and visual impacts of the Project with other existing, committed and planned developments in the assessment area shall be assessed.
2. The Applicant shall assess the landscape impact of the Project. The Applicant shall describe, appraise, analyse and evaluate the existing and planned landscape resources and characters of the assessment area. Annotated oblique aerial photographs and plans of suitable scale showing the baseline landscape resources and landscape character areas and mapping of impact assessment shall be extensively used to present the findings of impact assessment. Descriptive text shall provide a concise and reasoned judgment from a landscape point of view. The assessment shall be particularly focused on the sensitivity of the landscape framework and its ability to accommodate change. The Applicant shall identify the degree of compatibility of the Project with the existing and planned landscape setting, recreation and tourism related uses, and scenic spot. The landscape impact assessment shall quantify and qualify potential landscape impact as far as possible, so as to illustrate the significance of such impact arising from the Project. Clear mapping of the landscape impact is required. Broad brush tree and vegetation survey shall be carried out and the impacts on existing trees and vegetation shall be addressed.
3. The Applicant shall assess the visual impact of the Project. Clear illustrations including mapping of visual impact is required. Descriptive text shall provide a concise and reasoned judgment from a visual point of view. Cumulative visual impact of the Project with other existing, committed and planned developments in the assessment area shall be assessed. The assessment shall include the following:
  - (i) identification and plotting of visual envelope of the Project;
  - (ii) identification and justifications of the key groups of existing and planned sensitive receivers within the visual envelope with regard to views from ground level and elevated vantage points, and clearly indicate the sensitive receivers on a plan of appropriate scale;
  - (iii) description of the visual compatibility of the Project with the existing and planned visual context, and its obstruction and interference with the key views within the visual envelope;

- (iv) identification and description of the severity of visual impact in terms of nature, distance and number of sensitive receivers. The glare impact of the Project shall also be considered in the assessment. The visual impact of the Project with and without mitigation measures shall be included and illustrated so as to demonstrate the effectiveness of the proposed mitigation measures across time; and
  - (v) evaluations and explanations with supportive arguments of factors considered in arriving the significance thresholds of visual impact.
4. In evaluation of the potential glare impact due to man-made light sources generated from the Project and associated works and recommending practicable mitigation measures, reference could be made to “Charter on External Lighting” and “Guidelines on Industry Best Practices for External Lighting Installations” promulgated by the Environment Bureau.
  5. The Applicant shall evaluate the merits of preservation in totality, in parts or total destruction of existing landscape and the establishment of a new landscape character area. In addition, alternative location, site layout, development options, design and construction methods that would avoid or reduce the identified landscape and visual impacts shall be considered and evaluated for comparison before adopting other mitigation or compensatory measures to alleviate the impacts. The Applicant shall recommend mitigation measures which shall not only focus on damage reduction but also potential enhancement of existing landscape and visual quality of the area. The recommendations shall also be illustrated in landscape design and landscape/visual impact mitigation measure plan.
  6. The mitigation measures annotated with quantification shall include preservation of vegetation and natural landscape resources, retaining existing trees, transplanting trees in good condition and value, provision of screen and/or buffer planting, re-vegetation of disturbed land, compensatory planting, woodland restoration, design of structure, provision of finishes to structures, colour scheme and texture of material used and any measures to mitigate the impact on existing and planned land uses and visually sensitive receivers. Parties shall be identified with in-principle agreement sought for the ongoing management and maintenance of the proposed mitigation works to ensure their effectiveness throughout the construction phase and operational phase of the Project. A practical programme for the implementation of the recommended measures shall be provided.
  7. Annotated illustrations such as coloured perspective drawings, plans and section/elevation diagrams, oblique aerial photographs, photographs taken at vantage points, and computer-generated photomontage shall be adopted to fully illustrate the landscape and visual impacts of the Project to the satisfaction of the Director. The landscape and visual impacts of the Project with and without mitigation measures from representative viewpoints, particularly from views of the most severely affected visually sensitive receivers (i.e. worst-case scenario) to be agreed by the Director, shall be properly illustrated in existing and planned setting at four stages (existing condition, Day 1 with no mitigation measures, Day 1 with mitigation measures and Year 10 with mitigation measures) by computer-generated photomontage so as to demonstrate the comparison of scenarios with and without the Project and the effectiveness of the proposed mitigation measures across time. Computer graphics shall be compatible with Microstation DGN file format. The Applicant shall record the technical details in preparing the illustrations, which may need to be submitted for

verification of the accuracy of the illustrations.



**Appendix I****Requirements for Fisheries Impact Assessment**

1. Existing information regarding the assessment area shall be reviewed. Based on the review results, the assessment shall identify data gap and determine if there is any need for field surveys to collect adequate and updated baseline information. If field surveys are considered necessary, the assessment shall recommend appropriate methodology, duration and timing for such surveys.
2. The fisheries impact assessment shall cover any potential direct, indirect, short-term and long-term impacts on capture and aquaculture fisheries during the construction and operation stages of the Project.
3. The fisheries impact assessment shall provide the following information:-
  - (i) description of the physical environmental background;
  - (ii) description and quantification as far as possible existing fisheries activities (e.g. capture fisheries, aquaculture, shellfish farming, collection, etc.);
  - (iii) description and quantification as far as possible the existing fisheries resources (e.g. major fisheries products and stocks, etc.);
  - (iv) identification of parameters (e.g. water quality parameters) and areas (e.g. breeding/spawning grounds, nursery grounds, reefs) that are important to fisheries;
  - (v) identification and quantification as far as possible any direct/indirect, onsite/offsite impacts on fisheries (e.g. water quality deterioration of fishing grounds/fish culture zones caused by the Project);
  - (vi) evaluation of cumulative impacts on fisheries due to other planned and committed concurrent development projects at or near the assessment area;
  - (vii) proposals of practicable mitigation measures with details on justification, description of and programme feasibility as well as staff and financial implications including those related to subsequent management and maintenance requirements of the measures; and
  - (viii) review for the need of monitoring during the construction and operation stages of the Project and, if necessary, proposal for a monitoring and audit programme.

**Appendix J****Guidelines for Marine Archaeological Investigation (MAI)**  
**(As at October 2010)**

The standard practice for MAI should consist of four separate tasks, i.e. (1) Baseline Review, (2) Geophysical Survey, (3) Establishing Archaeological Potential and (4) Remote Operated Vehicle (ROV)/Visual Diver Survey/Watching Brief. Marine archaeologists should make reference to the standard and guidance of the Institute for Archaeologists and English Heritage to carry out MAI.

**1. Baseline Review**

- 1.1 A baseline review should be conducted to collate the existing information in order to identify the potential for archaeological resources and, if identified, their likely character, extent, quality and value.
- 1.2 The baseline review will focus on known sources of archive data. It will include:
  - (a) Geotechnical Engineering Office (GEO) – the Department holds extensive seabed survey data collected from previous geological research.
  - (b) Marine Department, Hydrographic Office - the Department holds a substantial archive of hydrographic data and charts.
  - (c) The Royal Naval Hydrographic Department in the UK - the Department maintains an archive of all survey data collected by naval hydrographers.
  - (d) Relevant government departments should be consulted in order to obtain the information of dredging history (if any) on the proposed Project area. Area for sand dredging, mud disposal and allocated marine borrow area within Hong Kong should also be considered during the review.
- 1.3 The above data sources will provide historical records and more detailed geological analysis of submarine features which may have been subsequently masked by more recent sediment deposits and accumulated debris.

**2. Geophysical Survey**

- 2.1 Extensive geophysical survey of the study area should deploy high resolution boomer, side scan sonar, an echo sounder and high resolution multi beam sonar. The multi beam data must be presented as processed digital terrain models to facilitate the archaeological analysis. The data received from the survey would be analysed in detail to provide:
  - (a) Exact definition of the areas of greatest archaeological potential.
  - (b) Assessment of the depth and nature of the seabed sediments to define which areas consist of suitable material to bury and preserve archaeological material.

- (c) Detailed examination of the boomer and side scan sonar records to map anomalies in and on the seabed which may be archaeological material.
- (d) Detailed examination of the multi beam sonar data to assess the archaeological potential of the sonar contacts.

### **3. Establishing Archaeological Potential**

- 3.1 The data examined during Task 1 and 2 will be analysed to provide an indication of the likely character and extent of archaeological resources within the study area. This would facilitate formulation of a strategy for investigation.
- 3.2 The results would be presented as a written report and charts. If there is no indication of archaeological material there would be no need for further work.
- 3.3 Charts should be presented at the most appropriate scale and show each survey contact. Its dimensions and exact location should also be shown.

### **4. Remote Operated Vehicle (ROV)/Visual Diver Survey/Watching Brief**

- 4.1 Subject to the outcome of Task 1, 2 and 3, accepted marine archaeological practice would be to plan a field evaluation programme to acquire more detailed data on areas identified as having archaeological potential. The areas of archaeological interest can be inspected by ROV or divers. ROV or a team of divers with both still and video cameras would be used to record all seabed features of archaeological interest.
- 4.2 Owing to the heavy marine traffic in Hong Kong, the ROV/visual diver survey may not be feasible to achieve the target. If that is the case, an archaeological watching brief is the most appropriate way to monitor the dredging operations in areas of identified high potential to obtain physical archaeological information.
- 4.3 A sampling strategy for an archaeological watching brief would be prepared based on the results of Task 1, 2 and 3 to focus work on the areas of greatest archaeological potential. Careful monitoring of the dredging operations would enable immediate identification and salvage of archaeological material. If archaeological material is found, the Antiquities and Monuments Office (AMO) should be contacted immediately to seek guidance on its significance and appropriate mitigation measures would be prepared.
- 4.4 If Task 4 is undertaken, the results would be presented in a written report with charts.

### **Report**

Five copies of the final report should be submitted to the AMO for record.

**Appendix K**

**Implementation Schedule of Recommended Mitigation Measures**

<b>EIA Ref.</b>	<b>EM&amp;A Ref.</b>	<b>Recommended Mitigation Measures</b>	<b>Objectives of the Measure &amp; Main Concerns to Address</b>	<b>Who to implement the measure?</b>	<b>Location of the measure</b>	<b>When to implement the measure?</b>	<b>What standards or requirements for the measure to achieve?</b>

**Appendix L****Requirements for EIA Report Documents**

1. The Applicant shall supply the Director with the following number of copies of the EIA report and the executive summary:
  - (i) 30 copies of the EIA report and 30 copies of the executive summary (each bilingual in both English and Chinese) as required under section 6(2) of the EIAO to be supplied at the time of application for approval of the EIA report.
  - (ii) When necessary, addendum to the EIA report and the executive summary submitted in item (i) above as required under section 7(1) of the EIAO, to be supplied upon advice by the Director for public inspection.
  - (iii) 20 copies of the EIA report and 50 copies of the executive summary (each bilingual in both English and Chinese) with or without Addendum as required under section 7(5) of the EIAO, to be supplied upon advice by the Director for consultation with the Advisory Council on the Environment.
2. In addition, to facilitate public inspection of EIA report via EIAO Internet Website, the Applicant shall provide electronic copies of both the EIA report and executive summary prepared in Hyper Text Markup Language (HTML) and in Portable Document Format (PDF), unless otherwise agreed by the Director. For both of the HTML and PDF versions, a content page capable of providing hyperlink to each section and sub-section of the EIA report and executive summary shall be included in the beginning of the document. Hyperlinks to figures, drawings and tables in the EIA report and executive summary shall be provided in the main text from where respective references are made. The EIA report, including drawings, tables, figures and appendices shall be viewable by common web-browsers including Internet Explorer 8, Firefox 23, Chrome and Safari 8 or later versions as agreed by the Director, and support languages including Traditional Chinese, Simplified Chinese and English.
3. The electronic copies of the EIA report and the executive summary shall be submitted to the Director at the time of application for approval of the EIA report.
4. When the EIA report and the executive summary are made available for public inspection under section 7(1) of the EIAO, the content of the electronic copies of the EIA report and the executive summary must be the same as the hard copies and the Director shall be provided with the most updated electronic copies.
5. To promote environmentally friendly and efficient dissemination of information, both hardcopies and electronic copies of future EM&A reports recommended by the EIA study shall be required and their format shall be agreed by the Director.