

本署檔號  
OUR REF: ( ) in EP2/G/A/170  
來函檔號  
YOUR REF:  
電話  
TEL. NO.: 2835 1868  
圖文傳真  
FAX NO: 2591 0558  
電子郵件  
E-MAIL: slau@epd.gov.hk  
網址  
HOMEPAGE: <http://www.epd.gov.hk>

**Environmental Protection Department**  
**Branch Office**  
28th Floor, Southorn Centre,  
130 Hennessy Road,  
Wan Chai, Hong Kong.



環境保護署分處  
香港灣仔  
軒尼詩道  
一百三十號  
修頓中心廿八樓

9 August 2021

**By Registered Post & Fax**

MTR Corporation Limited

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

**Project Title: Northern Link**  
**(Application No. ESB-346/2021)**

I refer to your above application received on 30 June 2021 for an EIA Study Brief under Section 5(1)(a) of the EIA Ordinance.

In accordance with Section 5(7)(a) of the Ordinance and after public inspection of the project profile, I issue the attached EIA Study Brief no. ESB-346/2021 for your preparation of an EIA report.

Under Section 15 of the 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.info.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. Becky LAM (Tel: 2594 6324) 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. (**Attachment 1**).

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.

The Legislative Council passed the Air Pollution Control (Amendment) Bill 2021 on 28 April 2021 to adopt the new Air Quality Objectives which are scheduled to come into effect on 1 January 2022. I would like to draw your attention to the attached general notice entitled “The new Air Quality Objectives and assessment of air quality impact of a project under the Environmental Impact Assessment Ordinance (Cap. 499)” (**Attachment 2**).

Should you have any queries on the above application, please contact my colleague Mr. Vincent LAU at 2835 1115.

Yours sincerely,



(Stanley C F LAU)

Acting Principal Environmental Protection Officer  
for Director of Environmental Protection

Encl.

c.c. (w/o encl.)

ACE EIA Subcommittee Secretariat (Attn.: Ms. Becky LAM)



**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP. 499)**  
**SECTION 5 (7)**

**ENVIRONMENTAL IMPACT ASSESSMENT STUDY BRIEF NO. ESB-346/2021**

**PROJECT TITLE:** Northern Link  
(hereinafter known as the “Project”)

**NAME OF APPLICANT:** MTR Corporation Limited  
(hereinafter known as the “Applicant”)

**1. BACKGROUND**

- 1.1 An application (No. ESB-346/2021) for an Environmental Impact Assessment (EIA) Study Brief under section 5(1)(a) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by the Applicant on 30 June 2021 with a Project Profile (No. PP-629/2021) (hereinafter referred as the “Project Profile”).
- 1.2 The Project is to construct and operate a railway line to connect the Kam Sheung Road (KSR) Station on Tuen Ma Line (TML) with the future Kwu Tung (KTU) Station on Lok Ma Chau Spur Line (LMCSL) of East Rail Line. The indicative alignment and new stations of the Project are shown in the Appendix A in this Study Brief. The trains to be operated on the Project are electrically powered. The Project will comprise the following key components/works:
- (i) a railway of about 10.7 km in length between Kam Sheung Road (KSR) Station and Kwu Tung (KTU) Station;
  - (ii) five new stations, namely KSR Station, Au Tau (AUT) Station, Ngau Tam Mei (NTM) Station, San Tin (SAT) Station and KTU Station;
  - (iii) expansion of the existing Pat Heung Depot (PHD) and/or provision of new stabling sidings at other location in vicinity of the Project and its ancillary building(s);
  - (iv) associated facilities including pocket tracks, ventilation buildings, feeder stations and ancillary building facilities such as ventilation shafts, Emergency Access Points (EAPs)/Emergency Egress Points (EEPs) and other station associated facilities; and
  - (v) enabling works for potential southern extension to the south of KSR Station and potential bifurcation to Lok Ma Chau Loop and Huanggang Port to the north of SAT Station; and enabling works for potential extension to Ping Che Areas.
- 1.3 Based on the information provided in the Project Profile, the Project will comprise the following designated projects in Part 1, Schedule 2 of the EIAO :
- (i) Item A.2 – “A railway and its associated stations”

- (ii) Item A.4 – “*A railway siding, depot, maintenance workshop, marshalling yard or goods yard*”
  - (iii) Item A.7 – “*A road or railway tunnel more than 800m in length between portals*”
- 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 under different development scenarios and associated activities 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 and its staged implementation;
  - (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 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 potentially affected uses;
- (iv) to identify and quantify waste management requirements and to propose measures to mitigate these impacts;
- (v) to identify and quantify contaminated land within any Project area for development works and to propose measures to avoid disposal in the first instance;
- (vi) to identify and quantify any potential losses or damage to flora, fauna and natural habitats and fisheries activities/resources and to propose measures to mitigate these impacts;



- (vii) to identify any potential landscape and visual impacts and to propose measures to mitigate these impacts;
- (viii) to identify any adverse impacts on sites of cultural heritage and to propose measures to mitigate these impacts;
- (ix) to identify and quantify any potential hazard to life and to propose measures to mitigate these impacts if required;
- (x) to propose the provision of infrastructure or mitigation measures to minimize pollution, environmental disturbance and nuisance during the construction and operation of the Project;
- (xi) to investigate the feasibility, effectiveness and implications of the proposed mitigation measures;
- (xii) 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;
- (xiii) 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;
- (xiv) 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 the provision of any necessary modification;
- (xv) to design and specify the environmental monitoring and audit requirements; and
- (xvi) 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 sections 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, including alignments, design and construction methods of the Project with a view to deriving the preferred development option(s) that will avoid or minimize adverse environmental impact;
- (ii) potential air quality impacts on air sensitive receivers (ASRs) due to the construction of the Project;
- (iii) potential noise impacts on noise sensitive receivers (NSRs) arising from the construction and operation of the Project, including both airborne and/or groundborne construction noise, airborne and/or groundborne rail noise and noise from any fixed plant associated with the railway operation;
- (iv) potential water quality impacts on water sensitive receivers and the relevant water system(s) in the vicinity including the Deep Bay Water Control Zone, watercourses, rivers/streams, channels, etc. during the construction and operation of the Project;
- (v) potential sewerage and sewage treatment implications to cope with discharges from the stations/stabling sidings of the Project, taking into account the capacity requirements for the existing, committed and planned developments within the same sewage catchment;
- (vi) potential waste management implications arising from the construction and operation of the Project, including proper handling and disposal of C&D materials generated; and the monitoring/management measures to prevent disposal of C&D materials at places other than designated outlets;
- (vii) potential extent of land contamination within any Project area for development works and relevant mitigation measures;
- (viii) potential terrestrial and aquatic ecological impacts, in particular impacts on recognized sites of conservation importance and important habitats, arising from the construction and operation of the Project;
- (ix) potential fisheries impacts arising from the construction and operation of the Project;
- (x) potential landscape and visual impacts due to the construction and operation of the Project;
- (xi) potential cultural heritage impacts due to the construction and operation of the Project;



- (xii) potential hazard to life during construction and operation of the Project due to (a) liquid chlorine at Au Tau Water Treatment Works; and (b) explosives; and
- (xiii) potential cumulative impacts of the Project, through interaction or in combination with other existing, committed and planned projects in the vicinity of the Project.

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

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

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

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

The Applicant shall indicate the nature and status of Project decision(s) for which the EIA study is undertaken. The Applicant shall describe Project details that may affect the potential environmental impacts, including the proposed alignment, siting/design for stations, depot(s)/stabling sidings and associated/ancillary facilities such as ventilation buildings, ventilation shafts, EAPs/EEPs and other station associated facilities, construction methods, sequence of construction works and other major activities involved in the construction and operation of the Project, and use diagrams, plans and/or maps as necessary. The estimated duration of the construction phase and operation phase of the Project together with the programme within these phases shall be given. The land taken by the Project area, works areas 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**

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 consideration of alternative alignment, siting and design for stations, depot(s)/stabling sidings and associated/ancillary facilities such as ventilation buildings, ventilation shafts, EAPs/EEPs and other station associated facilities and the works areas/site offices, if any, construction methods and sequence of construction works for the Project. The key reasons for selecting the proposed development option(s) of the Project 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 recommended option 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. The EIA study shall follow the technical requirements specified below and in the Appendices of this EIA Study Brief.

### 3.4.3 **Air Quality Impact**

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

3.4.3.2 The assessment area for the air quality impact assessment shall be defined by a distance of 500 metres from the boundary of the Project area and the works of the Project as identified in the EIA study, 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 any proposed air sensitive receivers within the Project as identified in the EIA and areas where 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 nearby concurrent projects, if any.

3.4.3.3 The assessment of the air quality impacts arising from the construction of the Project shall follow the detailed technical requirements given in Appendix B of this EIA Study Brief.

### 3.4.4 **Noise Impact**

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

3.4.4.2 Assessment shall include construction noise, rail noise and fixed noise sources impacts on 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.

3.4.4.3 The noise impact assessment of the Project shall follow the detailed technical requirements given in Appendix C of this EIA Study Brief.

### 3.4.5 **Water Quality Impact**

3.4.5.1 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.

3.4.5.2 The assessment area for the water quality impact assessment shall include areas within 500 metres from the boundary of the Project area and shall cover the Deep Bay Water



Control Zone and other affected Water Control Zones as designated under the Water Pollution Control Ordinance (Cap. 358) and water sensitive receivers in the vicinity of the Project. The assessment area shall be extended to include other areas if they are found also being impacted during the course of the EIA study and have a bearing on the environmental acceptability of the Project.

3.4.5.3 The water quality impact assessment for the construction and operation of the Project shall follow the detailed technical requirements given in Appendix D of this EIA Study Brief.

#### 3.4.6 **Sewerage and Sewage Treatment Implications**

3.4.6.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing impacts on the downstream public sewerage, sewage treatment and disposal facilities as stated in section 6.5 in Annex 14 of the TM.

3.4.6.2 The assessment of the sewerage and sewage treatment implications for the Project shall follow the detailed technical requirements given in Appendix E 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 F of this EIA Study Brief.

#### 3.4.8 **Land Contamination**

3.4.8.1 The Applicant shall follow the guidelines for evaluating and assessing potential land contamination issue(s) as stated in sections 3.1 and 3.2 of Annex 19 of the TM respectively.

3.4.8.2 The assessment of the potential land contamination issue(s) shall follow the detailed requirements given in Appendix G of this EIA Study Brief.

#### 3.4.9 **Ecological Impact (Terrestrial and Aquatic)**

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 terrestrial and aquatic ecological impact assessment shall include areas within 500m from the boundary of the Project and associated works as well as any other areas likely to be impacted by the Project.

3.4.9.3 The ecological impact assessment for construction and operation of the Project shall follow the detailed technical requirements given in Appendix H of this EIA Study Brief.

#### 3.4.10 **Fisheries Impact**

3.4.10.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing

fisheries impacts as stated in Annexes 9 and 17 of the TM respectively.

3.4.10.2 The assessment area for fisheries impacts shall include areas within 500 metres from the boundary of the Project area. This assessment area shall be extended to include other areas if there 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 fish pond culture resources and activities as well as any watercourses which serve as water sources for fish pond areas.

3.4.10.3 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.

#### 3.4.11 **Landscape and Visual Impacts**

3.4.11.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing the landscape and visual impacts as stated in 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".

3.4.11.2 The assessment area for the landscape impact assessment shall include all areas within 500 metres from the boundary of the Project area 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 defined envelope shall be shown on a plan in the EIA report.

3.4.11.3 The landscape and visual impact assessment for the construction and operation of the Project shall follow the detailed technical requirements given in Appendix J of this EIA Study Brief.

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

3.4.12.1 The Applicant shall follow the criteria and guideline for evaluating and assessing the cultural heritage impacts as stated in section 2 of Annex 10 and section 2 of Annex 19 of the TM respectively.

3.4.12.2 The assessment area for the cultural heritage impact assessment shall be defined by a distance of 500 metres from the boundary of the Project area. The cultural heritage impact assessment shall include a Built Heritage Impact Assessment (BHIA) and an Archaeological Impact Assessment (AIA) for the construction and operation of the Project. It shall follow the detailed technical requirements given in Appendix K of this EIA Study Brief.

#### 3.4.13 **Hazard to Life**

3.4.13.1 The Applicant shall follow the criteria for evaluating hazard to life as stated in Annex 4 of the TM.

3.4.13.2 The hazard to life assessment for construction and operation of the Project shall follow the detailed technical requirements given in Appendix L.



### **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 M) 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 (e.g. green roof, vertical greening), 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 and Limitations, 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 component. The proposed use of any alternative assessment tool(s) or assumption(s) has 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 options and mitigation measures considered during the course of the EIA study, including alignment, design, scale, extent, as well as construction methods and sequences of works for the Project, with a view to



avoiding or minimizing adverse environmental impacts. A comparison of the environmental benefits and dis-benefits of applying different options and mitigation measures shall be made. This summary shall cover the key impacts and shall also form an essential part of the executive summary of the EIA report.

#### 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 from 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 N 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.
- 5.3 To facilitate enhanced public engagement in the EIA process, the Applicant shall produce 3-dimensional electronic visualizations of the findings of the EIA report so that the public can better understand the Project and the associated environmental issues. The EIA findings to be included in the 3-dimensional presentation shall be agreed with EPD and may include baseline environmental information, the environmental situations with or without the Project, associated works, supporting facilities and essential infrastructures, key mitigated and unmitigated environmental impacts, and key recommended environmental mitigation measures. The visualizations shall be based on the EIA report findings and shall be developed and constructed such that they can be accessed and viewed by the public through an internet browser and/or other tools of 3-dimensional electronic visualizations (i.e. Virtual Reality, Augmented Reality, Mixed Reality) at a reasonable speed and without the need for software license requirement at the user's end. The visualizations shall be submitted in 10 copies of CD-ROM, DVD±R or other suitable means as agreed with the Director.



## 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 sections 1.2 of this EIA Study Brief and in the Project Profile (No. PP-629/2021), 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 this EIA Study Brief, the Applicant shall apply to the Director for a fresh EIA Study Brief.

## 7. LIST OF APPENDICES

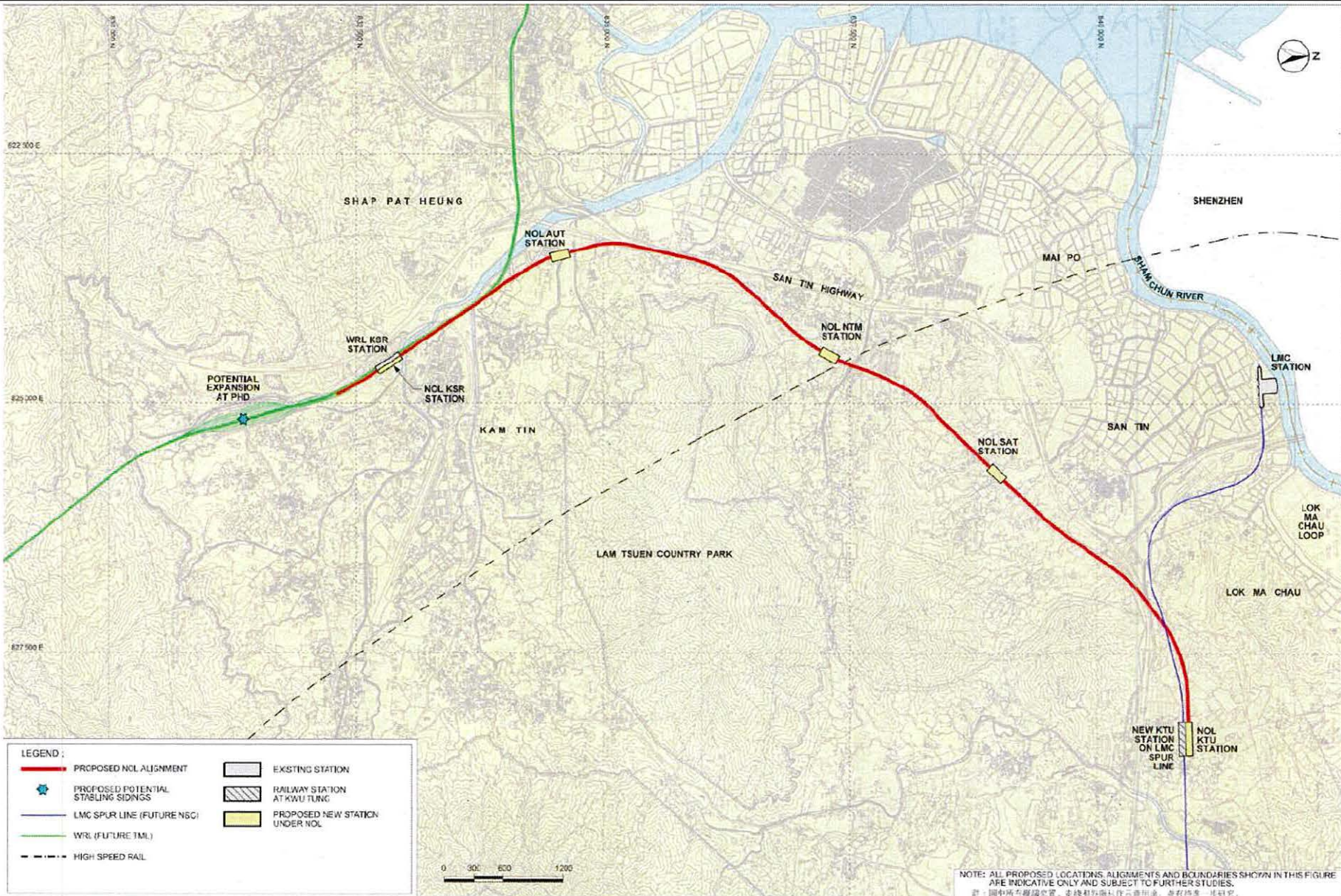
- 7.1 This EIA Study Brief includes the following appendices:

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 Sewerage and Sewage Treatment Implications
Appendix F	–	Requirements for Assessment of Waste Management Implication
Appendix G	–	Requirements for Land Contamination Assessment
Appendix H	–	Requirements for Ecological Impact Assessment (Terrestrial and Aquatic)
Appendix I	–	Requirements for Fisheries Impact Assessment
Appendix J		Requirements for Landscape and Visual Impact Assessment
Appendix K	–	Requirements for Cultural Heritage Impact Assessment
Appendix L	–	Requirements for Hazard to Life Assessment
Appendix M	–	Implementation Schedule of Recommended Mitigation Measures
Appendix N		Requirements for EIA Report Documents

--- END OF EIA STUDY BRIEF ---

August 2021  
Environmental Assessment Division  
Environmental Protection Department





NOTE: ALL PROPOSED LOCATIONS, ALIGNMENTS AND BOUNDARIES SHOWN IN THIS FIGURE ARE INDICATIVE ONLY AND SUBJECT TO FURTHER STUDIES.  
 註：圖中所有擬議位置、走線和界線均作參考用途，並有待進一步研究。

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**Project Title: Northern Link**  
 (This figure is prepared based on Figure 1 of Project Profile No.: PP-629/2021)  
 工程項目名稱：北環綫  
 (本圖是根據工程項目簡介 PP-629/2021 圖 1 編製)

**Environmental Study Brief No.: ESB-346/2021**  
 環評研究概要編號：

**Appendix A: Project Area Location Plan**  
 附錄 A: 項目範圍位置圖





**Requirements for Air Quality Impact Assessment**

The air quality 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 phase of the Project.
- (ii) Provision of an account, where appropriate, of the consideration/measures that have been taken into consideration during the planning of the Project to avoid and minimise the air pollution impacts. The Applicant shall consider alternative construction methods and phasing programmes to minimize the air quality impacts during construction stage of the Project.
- (iii) Projection of future year background air quality can be extracted from the “Pollutants in the Atmosphere and their Transport over Hong Kong” (PATH) model released by the Director. If a modification to the emission sources is to be adopted in the PATH model to update the projection of future year background air quality, details of the emission sources adopted in the modification 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 pollution 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 phase emission sources include excavation, stock piling, material handling, drill and blasting and vehicular movements on unpaved haul roads on site. Confirmation regarding the validity of the assumptions adopted and the magnitude of activities (e.g. volume of construction material to be handled, etc.), 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 impacts 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 identified within the assessment area and the Project area as defined in section 3.4.3.2 of this EIA Study Brief despite the incorporation of the dust control measures proposed, a quantitative assessment shall be carried out to evaluate the construction dust impacts at the identified ASRs. The Applicant shall follow the methodology set out in section 4 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 minimize concurrent dust impacts arising from different construction sites, for fugitive dust control. The Applicant shall also consider connecting construction plant and equipment to mains electricity supply and avoid use of diesel generators and diesel-powered equipment as far as practicable to minimize air quality impact arising from these equipment. 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 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 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 impacts of the Project.

- (iii) Calculation of the relevant pollutant emission rates for input to the model and map(s) showing the 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. In case of doubt, prior agreement between the Applicant and the Director on the specific modelling details should be sought.
- (iv) For projection of future background air quality, the Applicant may use EPD's 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. If any modification is made to the emission sources in PATH model or an alternative model is used, details of the emission sources adopted should be clearly presented. In general, major point sources located within 4 km from the identified ASRs shall be reviewed if they have direct contributions of air quality impacts to the ASRs on the concerned pollutants of the assessment. In such case, these point sources shall be simulated by dispersion model to account for their induced sub-grid scale spatial variations in background air quality. The exact approach shall be determined according to the case specific situation and subject to the agreement by the Director.
- (v) The Applicant shall calculate the cumulative air quality impacts 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 impacts at the identified ASRs arising from the Project. The predicted cumulative 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 effects 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 impacts 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 impacts in accordance with section 4.4.3 and s.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 work sheets 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.]*

Air quality modelling guidelines shall refer to guidelines 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)):

**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.
- 1.2 The Applicant shall conduct prevailing background noise surveys to determine the standards for evaluating noise impact from fixed noise sources. The respective noise environment should be documented 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 sections 5.3 and 5.4 of Annex 13 of the TM.
- 2.1.2 For ground-borne construction noise impact associated with the operation of powered mechanical equipment, in particular, tunnel boring machines or equivalent for tunnelling works, the Applicant shall propose assessment methodology and computational model which shall be confirmed with the Director, with reference to section 4.4.2 of the TM, prior to the commencement of the assessment. Site measurements at appropriate locations may be required in order to obtain the empirical input parameters required in the computational model.
- 2.1.3 To minimize the construction noise impact, alternative construction methods to replace percussive piling and blasting shall be considered as far as practicable. In case blasting cannot be avoided, it should be carried out, as far as practicable, outside the sensitive hours (7pm to 7am on Monday to Saturday and any time on a general holiday, including Sunday) and with the best practicable noise mitigation measures. For blasting that must be carried out during the above-mentioned sensitive hours, the noise impact associated with the removal of debris and rocks shall be fully assessed and mitigation measures should be recommended to reduce the construction noise impact.

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

- (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 area 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. Validity of the inventory shall be confirmed with the relevant government departments, authorities or the applicant's construction professionals and documented in the EIA report.

## 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 impacts 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 impacts 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 impacts 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

### *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.

## 2.6 Construction Noise Impact Monitoring and Audit

The Applicant shall, with reference to Section 8 and 21 of the TM, propose a construction noise mitigation plan so that both the verification of the inventory of noise sources, and the assessment of the effectiveness and practicality of all identified measures for mitigating the construction noise impact of the project, would be performed during the design, tendering and implementation stage of the construction works.

## 3. Rail Noise Assessment

### 3.1 Rail Noise Impact Assessment Methodology

The Applicant shall propose methodology and computational model (for ground-borne noise and air-borne noise assessment, if applicable) for agreement of the Director, with reference to Section 4.4.2 of the TM, prior to the commencement of the assessment.

### 3.2 Identification of Rail Noise Impact

#### 3.2.1 *Identification of Assessment Area and Noise Sensitive Receivers*

- (a) The Applicant shall propose the assessment area for agreement of the Director before commencing the assessment. The assessment area for the rail noise impact 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, committed and planned NSRs in the assessment area and select assessment points to represent identified NSRs for carrying out rail noise impact assessment described below.
- (c) The assessment points shall be confirmed with the Director prior to the commencement of the quantitative rail 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 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.
- (e) For planned noise sensitive land uses without committed site layouts, the Applicant should use the relevant landuse and planning parameters and conditions to work out representative site layouts for rail noise assessment purpose. However, such parameters and conditions together with any constraints identified shall be confirmed with the relevant responsible parties including Planning Department and Lands Department.

### 3.2.2. *Inventory of Noise Sources*

- (a) The Applicant shall identify and quantify an inventory of noise sources for rail noise impact assessment (for ground-borne noise and air-borne noise assessment, if applicable). The inventory of noise sources shall include the existing and planned railways within assessment area.
- (b) The Applicant shall allow for deterioration in rail and rolling stock condition from brand new to an operating level in the prediction of noise impact.
- (c) The Applicant shall provide the actual/updated source term data for the existing trains running on TML and LMCSL. The Applicant shall identify and review findings in previous relevant studies and supplement with on-site measurements, if necessary, to support the validity of the source term data to be adopted for the assessment. If new trains are to be deployed in future, the Applicant shall provide document or certificate with a methodology accepted by recognised national/international organisation for the source term for the new train type(s).
- (d) Site measurements shall be required in order to obtain the empirical input parameters required for the groundborne noise model.

## 3.3 Prediction and Evaluation of Rail Noise Impact

### 3.3.1 *Scenarios*

- (a) The Applicant shall quantitatively assess the rail noise impact, with respect to the criteria set in Annex 5 of the TM, of unmitigated scenario and mitigated scenario at assessment years of various operation modes including
  - (i) the worst operation mode which represents the maximum noise emission in connection of identified railways taking into account any other planned noise sources;
  - (ii) the interim/transient operation mode due to the phased/part implementation of the realigned/new railway of the Project; and
  - (iii) any other operation modes as confirmed with the Director.

### 3.3.2 *Prediction of Noise Impact*

- (a) The Applicant shall present the noise levels in Leq(30min) and Lmax during the day and at night at the NSRs at various representative floor levels (in m P.D.) on tables and plans of suitable scale.
- (b) The applicant shall also present the predicted air-borne rail noise impact (if applicable) in noise contours of Leq(30min) during the day and at night, with reference to Annex 5 of the TM, including contours for each scenario assessed under various operation modes, on plans of suitable scale and documented in the EIA report.
- (c) The assessment shall cover the cumulative rail noise impact associated with the existing and planned railways on the existing, committed and planned NSRs within assessment area.
- (d) The potential rail noise impact under different scenarios and operation modes 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 of the TM.

### 3.4 Mitigation of Rail Noise Impact

#### *Direct Mitigation Measures*

Where the predicted rail noise impact exceeds the criteria set in Annex 5 of the TM, the Applicant shall consider and evaluate direct mitigation measures including but not limited to noise barrier/enclosure, track form design, screening by noise tolerant buildings, 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.

### 3.5 Evaluation of Residual Rail 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 and evaluate the residual rail 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 of the TM.

## 4. Fixed Noise Sources Impact Assessment

### 4.1 Fixed Noise Sources Impact Assessment Methodology

The Applicant shall carry out fixed noise sources impact assessment from the Project in accordance with methodology in section 5.2 of Annex 13 of the TM.

### 4.2 Identification of Fixed Noise Sources Impact

#### 4.2.1 *Identification of Assessment Area and Noise Sensitive Receivers*

- (a) The Applicant shall propose the assessment area for agreement of the Director before commencing the assessment. The assessment area for the fixed noise impact 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, committed and planned NSRs in the assessment area and select assessment points to represent identified NSRs for carrying out fixed noise sources impact assessment described below.
- (c) The assessment points shall be confirmed with the Director prior to the commencement of the quantitative fixed noise sources 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.
- (e) For planned noise sensitive land uses without committed site layouts, the Applicant should use the relevant land use and planning parameters and conditions to work out representative site layouts for fixed noise sources impact assessment purpose. However, such parameters, conditions and site layouts together with any constraints identified shall be confirmed with the relevant responsible parties including Planning Department and Lands Department.

#### 4.2.2 *Inventory of Noise Sources*

- (a) The Applicant shall identify and quantify an inventory of noise sources for fixed noise sources impact assessment. The inventory of noise sources shall include, but not limited to fixed noise sources at the Pat Heung Depot (after expansion) and/or new stabling sidings, the electrical and mechanical equipment of the stations and other permanent and temporary industrial noise sources within the assessment area e.g. electrical and mechanical equipment of feeder stations, planned ventilation system(s) of building(s), etc.
- (b) The Applicant shall provide document or certificate, where applicable, accepted by recognized national/international organization, for the sound power level of each type of fixed noise sources.
- (c) Validity of the inventory shall be confirmed with the relevant government departments/authorities or applicant's railway operation professionals and documented in the EIA report.

### 4.3 Prediction and Evaluation of Fixed Noise Source Impact

#### 4.3.1 *Scenarios*

- (a) The Applicant shall quantitatively assess the fixed noise source impact with respect to criteria set in Annex 5 of the TM, of unmitigated scenario and mitigated scenario at assessment years of various operation modes including
  - (i) the worst operation mode which represents the maximum noise emission in connection of identified noise sources of the Project; and
  - (ii) any other operation modes as confirmed with the Director.

- (b) Validity of the above operational modes shall be confirmed with relevant departments/authorities or applicant's railway operation professionals and documented in the EIA report.

#### 4.3.2 *Prediction of Noise Impact*

- (a) The Applicant shall present the predicted noise levels in Leq (30 min) 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 fixed noise source impacts associated with the operation of the Project on existing, committed and planned NSRs within the assessment area.
- (c) The potential fixed noise source impacts under different scenarios shall be quantified by estimating the total number of dwellings, classrooms and other noise sensitive receivers that will be exposed to noise impacts exceeding the criteria set in Annex 5 in the TM.

#### 4.4 Mitigation of Fixed Noise Source Impact

##### *Direct Mitigation Measures*

Where the predicted fixed noise source impact exceeds the criteria set in Table 1A of Annex 5 of the TM, the Applicant shall consider and evaluate direct mitigation measures including but not limited to noise barrier/enclosure, acoustic louvres, screening by noise tolerant buildings, 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.

#### 4.5 Evaluation of Residual Fixed Noise Source 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 fixed noise source 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 impacts 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 physical, chemical and biological disruptions of the water system(s) arising from the construction and operation of the Project.
2. The Applicant shall predict and assess any water quality impacts arising from the construction and operation of the Project. Should quantitative assessment by mathematical modelling is necessary, the proposed modelling shall be approved by the Director before proceeding to modelling assessment.
3. The assessment shall include, but not be limited to the following:
  - (i) the water quality impacts of the site run-off, effluents generated from dewatering process associated with piling activities, grouting, concrete washing and tunneling works and those specified in the ProPECC Practice Note 1/94 during the construction phase;
  - (ii) the water quality impacts arising from dredging works, if required, including change in suspended solids and dissolved oxygen concentration, sediment plume dispersion, contaminant and nutrient release and any impacts which may be resulted in changing of water quality and impacts arising from potential viaduct construction during construction phase;
  - (iii) the water quality impacts of the surface runoff containing oil/grease and suspended solids and wastewater from air conditioning system and sewage during operation phase; and
  - (iv) the water quality impacts on drainage channels, natural streams and watercourses and other water sensitive receivers which may be affected by the Project.
4. The Applicant shall address water quality impacts due to the construction phase and operation phase of the Project. Essentially, the assessment shall address the following :
  - (i) collect and review background information on affected existing and planned water systems, their respective catchments and sensitive receivers which might be affected by the Project;
  - (ii) characterize water quality of the water systems and sensitive receivers, which might be affected by the Project based on existing best available information and through appropriate site survey and tests when existing data are insufficient;
  - (iii) identify and analyse relevant existing and planned future activities, beneficial uses and water sensitive receivers related to the affected water system(s). 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 any other relevant published land use plans, including plans and drawings published by Lands Department and any land use and development applications approved by the Town Planning Board;

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- (iv) identify pertinent water quality objectives and establish other appropriate water quality criteria or standards for the water system(s) and the sensitive receivers identified in (i), (ii) & (iii) above;
  - (v) review the specific construction methods and configurations, and operation of the Project to identify and predict the likely water quality impacts arising from the Project;
  - (vi) identify any alternation of any water courses, natural streams, ponds, wetlands; change of water holding/flow regimes of water bodies, change of ground water levels, change of catchment types or areas; erosion or sedimentation due to the Project and any other hydrological changes in the assessment area;
  - (vii) identify and quantify existing and likely future water pollution sources, including point discharges and non-point sources to surface water runoff, sewage from workforce and polluted discharge generated from the Project;
  - (viii) provide an emission inventory on the quantities and characteristics of those existing and future pollution sources in the assessment area. Field investigation and laboratory test shall be conducted as appropriate to fill relevant information gaps;
  - (ix) predict and quantify the impacts on the water system(s) and its/their sensitive receivers due to those alternations and changes identified in (vi) above, and the pollution sources identified in (vii) above. The prediction shall take into account and include possible different construction and operation phases of the Project;
  - (x) assess the cumulative impacts due to other related 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) analyze the provision and adequacy of existing and planned future facilities to reduce pollution arising from the point and non-point sources identified in (vii) above;
  - (xii) develop effective infrastructure upgrading or provision, contingency plan, water pollution prevention and mitigation measures to be implemented during the construction and operation phases so as to reduce the water quality impacts to within standards. Effluent generated from the Project shall require appropriate collection, treatment and disposal in considering the stressed condition within Deep Bay catchment. Requirements to be incorporated in the Project contract document shall also be proposed;
  - (xiii) investigate and develop best management practices and mitigation measures to reduce storm water and non-point source pollution, during construction and operation as appropriate;
  - (xiv) evaluate and quantify residual impacts on water system(s) and the sensitive receivers with regard to the appropriate water quality objectives, criteria, standards or guidelines;



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- (xv) should sewage treatment works be constructed under the Project, evaluate, predict and characterize the effluent characteristics of the Project with different levels of treatment and disinfection processes. The Applicant shall predict the effluent characteristics by making reference to the influent characteristics from sewage, anticipated performance of the treatment and disinfection processes (if applicable) at the proposed sewage treatment works, the findings of previous studies, and conducting additional samplings and tests if needed; and
  - (xvi) should sewage pumping station or sewage treatment works be constructed under the Project, recommend appropriate mitigation measures, including a contingency plan, to minimize the duration and impacts of temporary and accidental discharges during the operation stage of the Project.

**Appendix E****Requirements for Assessment of Sewerage and Sewage Treatment Implications**

1. The Applicant shall study and assess the need and impacts of discharging sewage to the existing/planned sewerage systems in Yuen Long/North Districts. The assessment shall include the following:
  - (i) investigate and review the adequacy of the existing/planned sewerage and sewage treatment facilities for absorbing part or all of the sewage discharge from the Project within the scope of EIA study as defined in section 3.2 above. The Applicant shall confirm in the EIA report that whether the existing/planned sewerage and sewage treatment facilities in Yuen Long/North Districts will provide adequate capacity for the Project. The appropriate treatment level of interim discharge, if required, shall be assessed;
  - (ii) the assessment should take into account any additional sewage flow and flow projections from other existing/planned developments to be connected to the existing/planned sewerage and sewage treatment facilities in Yuen Long/North Districts. The water quality impacts arising from the interim and ultimate effluent discharge, if any, shall be assessed;
  - (iii) based on the above items (i) and (ii), if the existing/planned sewerage layout or capacities cannot cope with the maximum discharge, the Applicant shall propose an optimal and cost-effective upgrading works to improve the existing/planned sewerage and sewage treatment facilities or to provide new sewerage system and sewage treatment facility to receive and treat the sewage arising during the construction and operation of the Project. Any proposed sewerage system and/or sewage treatment facility should be designed to meet the current government standards and requirements;
  - (iv) identify and quantify the water quality and ecological impacts due to the emergency discharge from new sewage treatment facility, pumping stations and sewer bursting discharge, and to propose measures to mitigate these impacts;
  - (v) identify the appropriate alignment and layouts of the new sewerage to connect to the existing/planned/future sewerage in Yuen Long/North District; investigate and assess the technical feasibility of connection (e.g. technical feasibility and details for direct connection to public sewer and sewage pumping station);
  - (vi) use/develop the latest version of the computer model “InfoWorks” or equivalent computer models to assess impacts of the development under different phases on the existing, planned or proposed sewerage networks in Yuen Long/North Districts, a copy of the model shall be submitted to EPD for record purpose.
  - (vii) set out the design, operation and maintenance requirements and identify the party responsible for the construction and maintenance of any proposed sewerage and sewage treatment facility, such as pumping station and sewage treatment facility (if recommended), including electrical and mechanical components to eliminate the problem of septicity incurred in long rising main(s) during low flows and to facilitate maintenance. The above shall be agreed by DSD and EPD (Twin rising mains for each pumping station should be provided to make sure that the proposed sewage rising mains are maintainable without shutting down and discharging untreated sewage into



the natural stream/drainage channel directly).

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

The assessment of waste management implications shall cover the following:

1. Analysis of Activities and Waste Generation

- (i) The Applicant shall identify the quantity, quality and timing of the wastes 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 and other wastes, floating refuse and other wastes which would be generated during the construction and operation phases.
- (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 the planning and design stages e.g. by modifying the design approach and in the construction phase for maximizing waste reduction shall be separately considered.
- (ii) 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 section (iv) below.
- (iii) The EIA report shall state 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 wastes identified; and
- (iv) The impacts 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.
- (v) In addition to the above, the EIA report shall also identify practicable means of avoiding illegal dumping and landfilling, particularly on ecological sensitive areas in the vicinity of the Project.



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### 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 for marine disposal option. 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 excavation/dredging methods to minimize excavation/dredging 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 G****Requirements for Land Contamination Assessment**

1. The Applicant shall identify the potential land contamination site(s) within the Project area (Appendix A refers) 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 uses 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-sections (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 Project 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 as soon as these sites become accessible.

**Appendix H****Requirements for Ecological Impact Assessment (Terrestrial and Aquatic)**

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 or minimise impacts on recognised sites of conservation importance and other ecologically sensitive areas and species of conservation importance. The assessment shall identify and quantify as far as possible the potential ecological impacts associated with the Project, both directly by loss of habitat, and indirectly by potential impacts such as human disturbance and/or change of water quality and/or hydrodynamic regime to natural environment, the associated wildlife groups/species and habitat connectivity between surrounding areas.
2. The assessment shall include the following major tasks:
  - (i) review the findings of relevant studies/surveys, and collate 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 impact assessment as required in the following sections;
  - (iii) carry out necessary ecological field surveys with a duration of at least 12 months covering the wet and dry seasons, and investigation to verify the information collected, fill the information gaps as identified in (ii) above, and to fulfil the objectives of the EIA study. The field surveys shall cover but not be limited to flora, fauna and any other habitats/species of conservation importance;
  - (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 recognised sites of conservation importance and ecologically sensitive areas, and assessment of whether these sites/areas will be affected by the Project;
    - (b) habitats maps of suitable scale (1:1000 to 1:5000) showing the types and locations of habitats and species of conservation importance in the assessment area;
    - (c) ecological characteristics of each habitat type such as size, vegetation and/or substrate type, species present, dominant species found, species diversity 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 photographs 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 importance, including the following:
- (a) natural and man-made wetland habitats including active and abandoned agricultural lands, fish ponds, ponds, marshes, and channelized/semi-natural/natural watercourses (both seasonal and non-seasonal) as well as the associated riparian habitats;
  - (b) roosting, foraging, breeding and/or feeding sites of odonates, mammals as well as resident and migratory birds in particular waterbirds and wetland-dependent species (e.g. Kam Tin River Main Drainage Channel, Sha Po Marsh, egretries in vicinity of the Project including Tung Shing Lane Egret, Kam Po Road Egret, Mai Po Lung Village Egret, Mai Po Village Egret and the egrets and herons breeding there, ardeid night roost at Sha Po and the ardeids roosting there);
  - (c) bird flight lines between roosting/breeding and feeding sites of resident and migratory birds over the project sites based on the latest scope of information of the Project. The Applicant shall submit a methodology statement in relation to bird flight path surveys for the agreement of the Director prior to its commencement of assessment;
  - (d) shrublands, grasslands and woodlands (e.g. fung shui wood, secondary woodland and plantation);
  - (e) vertebrates, including avifauna, mammals (both terrestrial and flying) and herpetofauna;
  - (f) stream associated fauna;
  - (g) macroinvertebrates, including butterflies and odonates;
  - (h) flora; and
  - (i) any other habitats or species identified as having special conservation importance by this EIA study.
- (vi) describe recognised sites of conservation importance and other ecological sensitive areas within and in the vicinity of the assessment area and assess whether these sites will be affected by the Project and associated works;

- (vii) using suitable methodology and considering also any works activities from other projects reasonably likely to occur at the same time, identify and quantify as far as possible any direct (e.g. loss of habitats, physical disturbance, etc.), indirect (e.g. changes in water qualities, hydrology, light, noise and other disturbance generated by the construction and operational activities, etc.), 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 roosting, foraging, feeding and breeding grounds, reduction of ecological carrying capacity and habitat fragmentation, and any other possible disturbance caused by the Project and associated works, and in particular the following:
- (a) ecological impacts of loss of habitats, in particular wetlands such as active and abandoned agriculture lands, fish ponds, marshes, channelised/semi-natural/natural watercourses, shrubland, grassland and woodland;
  - (b) noise, glare, dust, traffic and other human disturbance, and other deterioration of environmental quality to ecological sensitive areas and wildlife during construction and operation of the Project and associated works;
  - (c) direct loss of or disturbances to roosting sites of ardeids during construction and operation of the Project;
  - (d) impacts on resident and migratory birds as well as breeding egrets and herons due to loss of or disturbances to foraging, breeding and /or feeding grounds during construction and operation phases;
  - (e) indirect ecological impacts due to potential changes in water quality, hydrodynamics properties and hydrology on marshes, fishponds, ponds and channelized/semi-natural/natural watercourses, and other wetland habitats and alternation to riparian habitats during the construction and operation of the Project;
  - (f) impacts due to obstruction to wildlife corridor, habitat fragmentation and isolation;
  - (g) impacts due to ground-borne noise and vibration as well as groundwater drawdown to the recognised site of conservation importance, conservation areas and other ecologically sensitive areas and the associated wildlife;
  - (h) impacts on birds due to collision to transparent or semi-transparent or reflective noise barriers and building facades as well as disturbances to flight paths of breeding egrets and herons, and resident and migratory birds, between roosting/breeding and foraging grounds taking into account seasonal patterns during construction and operation of the Project; and
  - (i) cumulative impacts due to other planned and committed concurrent development projects at or near the Project area.
- (viii) evaluate ecological impacts based on the best and latest information available during the course of the EIA study, using quantitative approach as far as practicable



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and covering construction and operation phases of the Project;

- (ix) recommend possible and practicable mitigation measures (such as change of the alignment, alternative design and configuration of the Project, modification/change of construction methods, provision of buffer areas, etc.) to avoid, minimize and/or compensate for the adverse ecological impacts identified during the construction and operation phases of the Project;
- (x) evaluate the feasibility and effectiveness of the recommended mitigation measures and define the scope, type, location, implementation arrangement, resource 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 should be followed; and
- (xiii) review the need for and recommend any ecological monitoring programme required.

**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 any data gap and determine if there is any need for field surveys to collect adequate 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 short-term and long-term impacts on culture fisheries during the construction and operation of the Project.
3. The fisheries impact assessment shall include the following information:
  - (i) description of the physical environmental background;
  - (ii) description and quantification of the existing culture fisheries activities;
  - (iii) description and quantification of the existing culture fisheries resources;
  - (iv) identification of parameters (e.g. water quality parameters) and areas that are important to aquaculture activities;
  - (v) prediction and evaluation of any other direct/indirect, onsite/offsite impacts on aquaculture activities / resources such as potential loss or disturbance of fish ponds and water quality deterioration caused by the Project;
  - (vi) evaluation of cumulative impacts on aquaculture 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 of the Project and, if necessary, proposal for a monitoring and audit programme.



**Requirements for Landscape and Visual Impact Assessment**

1. The Applicant shall review relevant plan(s) and conduct surveys/studies to identify existing sensitive landscape characters and landscape resources (including Old and Valuable Trees (OVTs), potentially registered OVTs, trees of particular interest, trees with ecological/historical significance, and precious/endangered/protected/rare plant species such as *Aquilaria sinensis*), and recommend landscape areas of high landscape value, such as wetland, agricultural land, fishpond, Fung Shui woodland, secondary woodland, country park, coastal protection area, green belt, conservation area designations, watercourses and 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. Any conflict with the statutory town plan(s) and any published land use plans 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. 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 describe, appraise, analyse and evaluate the existing and planned landscape resources and character of the assessment area. A system shall be derived for judging landscape and visual impact significance. Annotated oblique aerial photographs and plans of suitable scale showing the baseline landscape character areas and landscape resources 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 and visual point of view. The sensitivity of the landscape framework and its ability to accommodate change shall be particularly focused on. 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 the potential landscape impacts as far as possible so as to illustrate the significance of such impacts arising from the proposed development. Clear mapping of the landscape impacts is required. Broad brush tree and vegetation survey shall be carried out and the impacts on existing trees shall be addressed. Cumulative landscape and visual impacts of the Project with other committed and planned developments shall be assessed.
3. The Applicant shall assess the visual impacts of the Project. Clear illustration including mapping of visual impacts is required. The assessment shall mainly include the following:
  - (i) identification and plotting of visual envelope of the Project;
  - (ii) appraisal of existing visual resources and character as well as the future outlook of the visual system of the assessment area;
  - (iii) identification and justification of the key groups of existing and planned sensitive receivers within the visual envelope with regard to views from ground level, sea level and elevated vantage points, and clearly indicate the sensitive receivers on a plan of appropriate scale;
  - (iv) description of the visual compatibility of the Project with the surrounding and the



- planned setting, its obstruction and interference with the key views of the study areas, and changes in visual amenity;
- (v) identification and description of the severity of visual impacts in terms of distance, nature and number of sensitive receivers. The glare impacts of the Project shall be considered in the assessment. Assessment on effectiveness of the proposed mitigation measures of visual impacts during the construction and operation phases shall be carried out by comparing the impacts with and without mitigation measures; and
  - (vi) evaluation and explanation with supportive arguments of factors considered in arriving the significance thresholds of visual impacts. The visual impacts should include presentation of an evaluation matrix derived for judging impact significance.
4. In evaluation of the potential glare impacts 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, layout, design, built-form and construction method that will avoid or reduce the identified landscape and visual impacts shall be evaluated for comparison before adopting other mitigation or compensatory measures to alleviate the impacts. The mitigation measures proposed shall not only be concerned with damage reduction but shall also include consideration of potential enhancement of existing landscape and visual quality. The Applicant shall recommend mitigation measures to minimize adverse effects identified above, including provision of a master landscape plan illustrating the landscape design and mitigation measures.
  6. The mitigation measures shall also include the preservation of vegetation and natural landscape resources, e.g. adopt alternative design to avoid or reduce impact on wetland, agricultural land, fishpond, Fung Shui woodland and secondary woodland, transplanting trees in good condition and value, provision of screen planting, re-vegetation of disturbed lands, compensatory planting, woodland restoration, peripheral landscape treatment to blend in with the surrounding environment, design of structures/chimneys, provision of finishes to structure, colour scheme and texture of material used and any measures to mitigate the impacts on the existing and planned land use and visually sensitive receivers. Parties shall be identified for the ongoing management and maintenance of the proposed mitigation works to ensure their effectiveness throughout the construction phase and operation phase of the Project, associated works, supporting facilities and essential infrastructures. A practical programme and funding proposal for the implementation, management and maintenance of the recommendation measures, and the parties responsible for all the mitigation measures from design stage to operation stage shall be provided.



7. Annotated illustration materials such as colour perspective drawings, plans and section/elevation diagrams, annotated 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. In particular, 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), 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 effectiveness of the proposed mitigation measures. Computer graphics shall be compatible with Microstation DGN file format. The Applicant shall record the technical details in preparing the illustration, which may need to be submitted for verification of the accuracy of the illustration. If any noise barriers/enclosures are proposed, the choice of their colours, design and materials should be compatible with the surrounding buildings and development context and their aesthetic designs should be considered.

**Appendix K****Requirements for Cultural Heritage Impact Assessment**1. Built heritage impact assessment (BHIA)

The Applicant shall conduct a built heritage impact assessment (BHIA), taking the results of the previous studies and other background of the site into account, to identify known and unknown built heritage items built in or before 1969 within the assessment area that may be affected by the Project and its associated works and to assess the direct and indirect impacts on built heritage items. The impacts include visual impacts, impacts on the fung shui/visual corridor of the historic buildings and structures through change of water-table, vibration caused by the Project. Assessment of impacts on cultural heritage shall also take full account of, and allow where appropriate, the Guidelines for Landscape and Visual Impact Assessment of Annex 18 of the TM. The Applicant shall demonstrate that all reasonable efforts have been made to avoid or keep the adverse impacts of built heritage items to the minimum through modification of design of the Project, or use of latest construction/engineering techniques. For those built heritage items that may still be directly and indirectly affected by the Project, the Applicant shall recommend practicable mitigation measures and monitoring to avoid or keep the adverse impacts to the minimum. A checklist including all the affected sites of cultural heritage, impacts identified, recommended mitigation measures as well as the implementation agent and period shall also be included in the EIA report.

2. Archaeological impact assessment (AIA)

The Applicant shall engage qualified archaeologist(s) to conduct an archaeological impact assessment (AIA), taking the results of previous studies and other background of the site into account, to evaluate the archaeological impacts imposed by the Project and its associated works. The scope of the AIA baseline study consisting of desk-top research and field evaluation (if found necessary), shall be submitted to the Antiquities and Monuments Office (AMO) and the Director prior to the commencement of the assessment for consideration. In case the existing information is inadequate or where the assessment area has not been adequately studied before, the archaeologist(s) shall conduct archaeological survey to assemble data. The archaeologist(s) shall obtain licence(s) from the Antiquities Authority prior to the commencement of archaeological survey(s). Based on existing and collected data, the Applicant shall evaluate whether the proposed developments and works associated with the Project are acceptable from archaeological preservation point of view. In case adverse impacts on archaeological heritage cannot be avoided, appropriate mitigation measures should be designed and recommended in the EIA report. If an archaeological survey is required, it shall follow detailed technical requirements to be given by AMO and the Director on archaeological survey, archaeological report and handling of archaeological finds and archives.

## 3. The Applicant shall draw necessary reference to relevant sections of the “Guidelines for Cultural Heritage Impact Assessment” including those on archaeological survey, archaeological report, and handling of archaeological finds and archives, if found necessary in desk-top research results.



**Requirements for Hazard to Life Assessment****Au Tau Water Treatment Works (AT WTW)**

1. The Applicant shall investigate methods to avoid and/or minimize risk to the Project due to Au Tau Water Treatment Works (AT WTW). The Applicant shall carry out hazard assessment to evaluate potential hazard to life during construction and operation stages of the Project due to AT WTW. The hazard assessment shall include the following:
  - (i) Identify hazardous scenarios associated with the storage, use and on-site transport of liquid chlorine at AT WTW and then determine a set of relevant scenarios to be included in a Quantitative Risk Assessment (QRA);
  - (ii) Execute a QRA of the set of hazardous scenarios determined in (i), expressing population risks in both individual and societal terms;
  - (iii) Compare individual and societal risks with the criteria for evaluating hazard to life stipulated in Annex 4 of the TM; and
  - (iv) Identify and assess practicable and cost-effective risk mitigation measures.

**Explosives**

2. The Applicant shall investigate alternative construction methods to avoid the use of explosives. The Applicant shall carry out hazard assessment as follows :-
  - (i) Identify hazardous scenarios associated with use, transport and overnight storage of explosives and then determine a set of relevant scenarios to be included in a QRA;
  - (ii) Execute a QRA of the set of hazardous scenarios determined in 2(i), expressing population risks in both individual and societal terms;
  - (iii) Compare individual and societal risks with the criteria for evaluating hazard to life stipulated in Annex 4 of the TM; and
  - (iv) Identify and assess practicable and cost-effective risk mitigation measures.
3. The hazard assessment shall also include a cumulative risk assessment of the Project, through interaction or in combination with other existing, committed and planned developments.
4. The methodology to be used in the hazard assessment shall be consistent with previous studies having similar issues (e.g. Shatin to Central Link – Tai Wai to Hung Hom Section (ESB-191/2008)).





**Appendix N****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 bilingual (in both English and Chinese) executive summary 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 bilingual (in both English and Chinese) executive summary 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. To facilitate public inspection of EIA report via EIAO Internet Website, the Applicant shall provide electronic copies of both the EIA report and the executive summary prepared in HyperText 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 the executive summary shall be included in the beginning of the document. Hyperlinks to figures, drawings and tables in the EIA report and the 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.

**MODUS OPERANDI OF THE  
ENVIRONMENTAL IMPACT ASSESSMENT SUBCOMMITTEE OF  
THE ADVISORY COUNCIL ON THE ENVIRONMENT**

**Purpose**

This paper sets out the *modus operandi* of the Environmental Impact Assessment (EIA) Subcommittee of the Advisory Council on the Environment (ACE) so as to facilitate smooth proceedings of subcommittee meetings. The current *modus operandi* was last updated and endorsed by ACE in July 2009.

**Background**

2. ACE is the Government's principal advisory body on matters relating to environmental protection and nature conservation. The terms of reference of ACE are –

- (a) to keep under review the state of the environment in Hong Kong; and
- (b) to advise the Government, through the Secretary for the Environment, on appropriate measures which might be taken to combat pollution of all kinds, and to protect and sustain the environment.

3. The EIA Subcommittee is set up under ACE to study EIA reports of major development projects. It also comments on strategic environmental assessment reports of major planning projects. The terms of reference of the EIA Subcommittee are –

- (a) to receive and study EIA reports of major development projects; and
- (b) to report on its deliberations and findings and make recommendations to ACE.



## **EIA Process**

4. ACE and the EIA Subcommittee are involved in three main stages of the EIA process, namely commenting on the project profiles for designated projects, selection of EIA reports for submission to ACE and commenting on selected EIA reports. In accordance with ETWB Technical Circular (Works) No. 13/2003, the statutory gazetting of a project under the relevant ordinances can be done in parallel with the EIA process. Separately, consultation with District Councils and other relevant parties may proceed in advance of or in parallel with the submission of EIA reports to the EIA Subcommittee.

## **Project Profiles**

5. Under section 5 of the EIA Ordinance, ACE and members of the public may comment on the project profile of a designated project within 14 days of it being advertised. It is hence not necessary for the EIA Subcommittee to present to the Director of Environmental Protection (DEP) the collective view of the EIA Subcommittee on project profiles. To ensure that comments on project profiles, if any, are given to DEP within the statutory time limit, individual ACE Members would write to DEP directly. Where necessary, the ACE Member may copy his/her comments to the Chairman and Members for information.

## **Selection of EIA Reports**

6. Project proponents of designated projects will have to present their EIA reports to ACE if they are required to submit the reports to the Council. Members of the EIA Subcommittee will be asked to select those projects which they consider should require a presentation to the EIA Subcommittee by the project proponent. The selection outcome is for internal planning of the schedule of the EIA Subcommittee and will not be divulged to the project proponent. Only those projects selected by half or more of EIA Subcommittee Members will be selected. The project proponent concerned will be notified of the selection outcome only after DEP has decided that the EIA report is ready for public inspection and submission to ACE for advice.

7. During the project selection process, if individual EIA Subcommittee Member has special concerns/comments on a certain project, he/she could draw the EIA Subcommittee Chairman's attention to his/her concerns/comments and the Chairman would consider the need to review the decision on selection of the EIA report for submission to ACE.

8. For projects not selected, the project proponent will be required to send the Executive Summary of the EIA report to the EIA Subcommittee. Members would pass their comments, if any, to DEP directly within the prescribed public inspection period and if necessary, copy his/her comments to the Chairman and Members of the EIA Subcommittee for information. At the ACE meeting immediately following the issue of the Executive Summaries of the EIA reports, the EIA Subcommittee Chairman will report to ACE about the submission of these Executive Summaries for information of Members and record as projects not selected for discussion.

### **Meeting Arrangements**

9. The EIA Subcommittee will basically meet on a monthly basis. Meetings will be held when there is submission of EIA report(s) or issue(s) to be discussed.

10. To facilitate focused discussion, the EIA Subcommittee will generally consider no more than two EIA reports in each meeting. EPD will prepare a paper on each EIA report to be submitted to the EIA Subcommittee highlighting the key environmental issues and major findings of the EIA study. Upon expiry of the report inspection period by the general public, EPD will summarize all public comments received during the period for consideration of the EIA Subcommittee. The project proponent, where applicable, will provide the EIA Subcommittee with a report on the site selection process of the project, setting out the alternative sites that have been considered and the reasons of the selection of the particular site when such information is not provided in the EIA report. The paper, the EIA report and the site report, if any, will normally be issued to EIA Subcommittee Members two weeks before the scheduled meeting. The summary of public comments will also be given to Members before the meeting. Members will be asked to indicate whether it is necessary for the project proponent to attend the meeting or the report could be considered by circulation. Project proponents will be informed accordingly before the scheduled meeting.

11. Summary of the public comments will also be provided to non-EIA Subcommittee Members for reference to facilitate their discussion of the EIA Subcommittee's recommendations at the next ACE meeting before the Council tenders its comments to DEP on the EIA report as provided for under the EIA Ordinance.

12. Members of the EIA Subcommittee may raise questions in writing on an EIA report before the scheduled meeting and the project proponent should provide written response to the Secretariat at least three working days before



the meeting.

13. Each discussion item on an EIA report would include a Presentation Session by the project proponent, a Question-and-Answer Session and Internal Discussion Sessions. The Presentation Session and the Question-and-Answer Session are open up for broadcasting and members of the public can view the sessions real time in the public viewing room. The EIA Subcommittee would allocate as much time to the Question-and-Answer Session as possible.

14. The presentation by the project proponent should cover, inter alia, the major conclusions and recommendations of the EIA study. In addition, the project proponent should provide a concise and objective account of the main concerns of the general public and interest groups made known during the EIA study and the public inspection stages, and explain how these concerns are addressed in the EIA study.

#### **Criteria for Assessing EIA Reports**

15. EIA reports will be assessed by the EIA Subcommittee according to the requirements of the Technical Memorandum on the EIA Process and the study brief of the individual projects issued by DEP.

#### **Recommendations to the Full Council**

16. The EIA Subcommittee can make one of the following recommendations to the full Council –

- (i) endorse the EIA report without condition; or
- (ii) endorse the EIA report with condition(s); or
- (iii) reject the EIA report and inform the proponent the right to go to the full Council.

17. If the EIA Subcommittee cannot reach a consensus (i.e. if two or more Members do not agree with the conclusion of the EIA Subcommittee) during the meeting, it may –

- (i) ask for a second submission to the EIA Subcommittee; or
- (ii) defer the decision to the full Council and highlight issues or reasons for not reaching a consensus for the full Council's deliberation.

18. Other than the scenario in paragraph 17 above or the EIA

Subcommittee Chairman considers it appropriate, the recommendations of the EIA Subcommittee will not be discussed in detail in the full Council.

### **Other Rules that apply to EIA Subcommittee Meetings**

19. Apart from the procedures mentioned above, the following rules also apply to EIA Subcommittee meetings –

- (i) the quorum for EIA Subcommittee meetings should be half of the number of EIA Subcommittee Members, including the Chairman;
- (ii) ACE Members who are not EIA Subcommittee Members may attend EIA Subcommittee meetings and participate in the discussion of the meetings but they shall not vote when votes are taken;
- (iii) Council Members and EIA Subcommittee Members should declare direct and indirect interest before deliberating on agenda items so that the EIA Subcommittee Chairman could decide whether they should take part in the discussion or in the case of EIA Subcommittee Members to vote;
- (iv) the confirmed minutes of the EIA Subcommittee (with Members' names deleted) are uploaded on the ACE's website for public inspection;
- (v) the Presentation Session and Question-and-Answer Session of a discussion item on an EIA report at the EIA Subcommittee meeting requiring the attendance of the project proponent team will be opened to the public. The opening up of these sessions is an administrative arrangement only. The open meeting arrangements are not applicable to internal discussion sessions of a discussion item on an EIA report and all other sessions of the meetings of the EIA Subcommittee;
- (vi) special meetings may be called to consider urgent items. The EIA Subcommittee will consider each case individually should there be requests for direct submissions to the full Council;
- (vii) there will not be a limit on the number of professionals/experts to be invited to each EIA Subcommittee meeting for items requiring their assistance. In these cases and where votes are



taken, these professionals/experts shall not vote; and

- (viii) to facilitate effective deliberation at meetings of the EIA Subcommittee, the EIA Subcommittee may appoint Members to advise the EIA Subcommittee on specific subject areas of EIA reports. The appointed Members would consider the assigned subjects of an EIA report, and seek advice from the relevant authorities designated under the EIAO as necessary before EIA Subcommittee meetings.

20. The revised *modus operandi* of the EIA Subcommittee has taken effect in April 2013 upon endorsement of ACE.

**EIA Subcommittee Secretariat  
April 2013**

**The New Air Quality Objectives  
and assessment of air quality impact of a project under  
the Environmental Impact Assessment Ordinance (“EIAO”) (Cap. 499)**

The Legislative Council passed the Air Pollution Control (Amendment) Bill 2021 on 28 April 2021 to –

- (a) adopt the new Air Quality Objectives (“AQOs”), at **Annex A**, with effect from 1 January 2022 in respect of the Air Pollution Control (Amendment) Ordinance 2021 and EIAO;
- (b) in relation to the EIAO, provide a transitional period to the effect that, for a project in respect of which an environmental permit (“EP”) has been issued under the EIAO before 1 January 2022, the new AQOs will not apply to an application for variation of an EP submitted within 36 months from 1 January 2022;
- (c) introduce an administrative measure that **new Government projects** for which EIA studies have not yet commenced should endeavour to adopt the new AQOs as far as practicable; and
- (d) on a best endeavours basis, a more stringent standard of 24-hour AQO for fine suspended particulates (FSP/PM<sub>2.5</sub>) at a concentration level of 50 µg/m<sup>3</sup> and the number of allowable exceedances of **18 days** per calendar year (in lieu of 35 days per calendar year as set out in the Amendment Bill) as the benchmark for conducting air quality impact assessment under the EIA studies.

2. As a general principle, a public officer shall apply the law prevailing at the time when he makes a decision. Hence, the Environmental Protection Department (EPD) will make the relevant decision under the EIAO based on the AQOs prevailing at the time of the decision. Some examples of decisions made under the EIAO are the decisions under –

- (a) section 5(9), 5(10) and 5(11) as to whether to grant the permission to apply directly for an EP;
- (b) section 6(3) of the EIAO as to whether an EIA report meets the requirements of the study brief and the Technical Memorandum (“TM”) issued under the EIAO;
- (c) section 8(3) of the EIAO as to whether to approve an EIA report;
- (d) section 10(3) of the EIAO as to whether to issue an EP; and
- (e) section 13 of the EIAO as to whether to grant a variation of an EP (subject to the transitional provision referred to in paragraph 1(b) above).



Application for approval of EIA report, permission to apply directly for an EP, EP, and variation of EP

3. It is important to note that the decision of EPD under the EIAO would be based on the AQOs prevailing **at the time of the decision**, not the time when the study brief of a project is issued or the time when an application under the EIAO is submitted. After an EIA report has been submitted to EPD, we may need to consult the relevant authorities pursuant to section 9.1 of the TM. Where EPD considers that the EIA report meets the requirements of the study brief and the TM, the EIA report will need to be exhibited for public inspection and may need to be sent to the Advisory Council on the Environment. Usually it takes about 6 months before EPD decides whether to approve an EIA report. The time taken will be longer if EPD needs to seek additional information from the applicant. Hence it is possible that an EIA report submitted to EPD before the new AQOs come into operation on 1 January 2022 may be considered suitable for public inspection under the existing AQOs, but the decision as to whether to approve the EIA report will be made based on the new AQOs if and when EPD makes that decision on or after 1 January 2022 as to whether to approve the EIA report. The same applies to cases where an application for permission to apply directly for an EP is submitted to EPD before the new AQOs come into operation on 1 January 2022, but the decision as to whether to grant the permission will be made based on the new AQOs if and when EPD makes that decision on or after 1 January 2022.

4. There may also be cases where the EIA report of a project has been approved or the permission to apply directly for an EP has been granted under the existing AQOs, but EPD will make the decision as to whether to issue the EP for the construction and / or operation of the project based on the new AQOs, if that decision is made on or after 1 January 2022. Similarly, there may also be cases where the EP of a project has been issued under the existing AQOs, but EPD will make the decision as to whether to grant a variation of the EP based on the new AQOs if that decision is made on or after 1 January 2022 (subject to the transitional provision referred to in paragraph 1(b) above).

5. If you are (or you are involved in) preparing or planning to prepare an application for approval of an EIA report, permission to apply directly for an EP, EP or variation of EP under the EIAO, you may wish to bear in mind the above and consider carefully whether your project may require decisions under the EIAO to be made after the new AQOs come into operation on 1 January 2022. If such an application is submitted after the new AQOs have come into operation, it has to contain adequate information demonstrating meeting the new AQOs. If an EIA report is submitted before the new AQOs come into operation, having regard to the possibility that decisions in relation to your project under the EIAO may be made after the new AQOs have come into operation (i.e. on or after 1 January 2022), you may consider including in the EIA report additional information to demonstrate meeting the new AQOs so that the EIA report will remain adequate for supporting future decisions of this department which may be made after the new AQOs have come into operation. Otherwise, you may be required to prepare a new EIA report with the information needed to demonstrate meeting the new AQOs.

### Air quality impact assessment

6. To help those who wish to carry out an air quality assessment using the new AQOs as the criteria, this department has updated the guidelines on air quality modelling and vehicle emission calculation. They are available together with other existing guidelines at the following links:

[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)

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

7. If you have any question on air quality impact assessment using the new AQOs as the criteria, you are welcome to contact our Ms. Emily Cheng at 2835 1221.

### Enquiry

8. For matters on application for approval of EIA report, EP, and variation of EP, please feel free to contact our Ms. Clara U at 2835 1837.



**The New Air Quality Objectives for Hong Kong**

<b>Pollutants</b>	<b>Averaging Time</b>	<b>Concentration (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>No. of exceedances allowed per calendar year</b>
Sulphur Dioxide ( $\text{SO}_2$ )	10-minute	500	3
	24-hour	<u>50</u>	3
Respirable Suspended Particulates (RSP/ $\text{PM}_{10}$ )	1-year	50	Not applicable
	24-hour	100	9
Fine Suspended Particulates (FSP/ $\text{PM}_{2.5}$ )	1-year	<u>25</u>	Not applicable
	24-hour	<u>50</u>	<u>35</u>
Nitrogen Dioxide ( $\text{NO}_2$ )	1-year	40	Not applicable
	1-hour	200	18
Ozone ( $\text{O}_3$ )	8-hour	160	9
Carbon Monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
Lead (Pb)	1-year	0.5	Not applicable