

本署檔號
OUR REF: (48) in Ax(2) to EP 2/N4/A/138
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 November 2021

By Registered Post & Fax

Highways Department

Dear Mr. HO,

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

Project Title: Tuen Mun Bypass
(Application No. ESB-348/2021)

I refer to your above application received on 4 October 2021 for an EIA Study Brief under Section 5(1)(a) of the EIA Ordinance.

In accordance with Section 5(7)(a) of the EIA Ordinance and after public inspection of the project profile, I issue the attached EIA Study Brief (No. ESB-348/2021) for your preparation of an EIA report.

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

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

If the EIA report is selected by ACE for submission and presentation, you are expected

to provide ACE with an account of the environmental issues arising from the project, major conclusions and recommendations of the EIA study. In particular, the main environmental concerns of the general public and interest groups who may be affected by the Project should be identified and addressed in the EIA study. As such, you are strongly advised to engage the public and interest groups during the course of the EIA study. Please find attached a copy of the “*Modus Operandi of the EIA Subcommittee of the Advisory Council on the Environment*” (**Attachment 1**) for your reference.

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

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. Tom TAM at 2835 1107.

Yours sincerely,



(Stanley C F LAU)
Principal Environmental Protection Officer
for Director of Environmental Protection

Encl.

c.c. (w/o encl.)

ACE EIA Subcommittee Secretariat (Attn. : Ms. Becky LAM) Fax: 2872 0603

**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_{2.5}) at a concentration level of 50 µg/m³ 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/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

Pollutants	Averaging Time	Concentration ($\mu\text{g}/\text{m}^3$)	No. of exceedances allowed per calendar year
Sulphur Dioxide (SO ₂)	10-minute	500	3
	24-hour	<u>50</u>	3
Respirable Suspended Particulates (RSP/PM ₁₀)	1-year	50	Not applicable
	24-hour	100	9
Fine Suspended Particulates (FSP/PM _{2.5})	1-year	<u>25</u>	Not applicable
	24-hour	<u>50</u>	<u>35</u>
Nitrogen Dioxide (NO ₂)	1-year	40	Not applicable
	1-hour	200	18
Ozone (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

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

ENVIRONMENTAL IMPACT ASSESSMENT STUDY BRIEF NO. ESB-348/2021

PROJECT TITLE: Tuen Mun Bypass
(hereinafter known as the “Project”)

NAME OF APPLICANT: HIGHWAYS DEPARTMENT
(hereinafter known as the “Applicant”)

1. BACKGROUND

- 1.1 An application (No.ESB-348/2021) for an Environmental Impact Assessment (EIA) study brief under section 5(1)(a) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by the captioned Applicant on 4 October 2021 with a project profile (No. PP-631/2021) (the Project Profile).
- 1.2 The Project is to construct and operate Tuen Mun Bypass, a dual two-lane carriageway connecting Tuen Mun-Chek Lap Kok Tunnel (TM-CLKT) in the south and Yuen Long Highway (YLH) (near Lam Tei Quarry) and Kong Sham Western Highway (KSWH) in the north. The location of the Project is shown in Appendix A and the scope of works is described as follows:
- (i) Construction of a road tunnel of about 7.5 km long running through Tuen Mun and Tai Lam Country Park, linking the TM-CLKT and the YLH and KSWH;
 - (ii) Construction of tunnel portals and associated facilities at Tuen Mun Area 40 and Lam Tei Quarry;
 - (iii) Construction of viaducts / at-grade roads from the southern tunnel portal to the roads under planning near Lung Mun Road/Mong Fat Street, and TM-CLKT at Tuen Mun Area 40;
 - (iv) Construction of viaducts / at-grade roads from the northern tunnel portal to YLH and KSWH at Lam Tei East Interchange;
 - (v) Provision of associated ventilation buildings, administration building and other ancillary buildings;
 - (vi) Re-provision of facilities affected by the proposed works;
 - (vii) Provision of possible adits and associated connection with existing roads;
 - (viii) Possible reclamation (less than 1ha) for a portion of seabed at the northeast corner of Tuen Mun Typhoon Shelter; and
 - (ix) Associated environmental protection and mitigation works.
- 1.3 Based on the information provided in the Project Profile, the Project will comprise the following designated projects:
- (i) Item A.1, Part I, Schedule 2 of the EIAO – “A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing roads”;

- (ii) Item A.7, Part I, Schedule 2 of the EIAO – “*A road or railway tunnel more than 800 m in length between portals*”; and
 - (iii) Item Q.1, Part I, Schedule 2 of the EIAO – “*All projects including new access roads, railways, sewers, sewage treatment facilities, earthworks, dredging works and other building works partly or wholly in an existing country park*”.
- 1.4 Pursuant to section 5(7)(a) of the EIAO, the Director of Environmental Protection (the Director) issues this EIA study brief to the Applicant to carry out an EIA study.
- 1.5 The purpose of this EIA study is to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project and associated works that will take place concurrently. This information will contribute to decisions by the Director on:
- (i) the overall acceptability of any adverse environmental consequences that are likely to arise as a result of the Project;
 - (ii) the conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences wherever practicable; and
 - (iii) the acceptability of residual impacts after the proposed mitigation measures are implemented.

2. OBJECTIVES OF THE EIA STUDY

2.1 The objectives of the EIA study are as follows:

- (i) to describe the Project and associated works together with the requirements and environmental benefits for carrying out the proposed project;
- (ii) to identify and describe the elements of the community and environment likely to be affected by the Project and/or likely to cause adverse impacts to the Project, including both the natural and man-made environment and the associated environmental constraints;
- (iii) to identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potential affected uses;
- (iv) to identify and quantify potential waste management issues and impacts arising as a result of the construction and operation activities of the Project;
- (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, evaluate and address any potential ecological impacts arising from the Project including impacts on recognised sites of conservation importance, as well as flora, fauna and natural habitats;
- (vii) to identify, evaluate and address any potential fisheries impacts arising from the Project;
- (viii) to identify any potential landscape and visual impacts and to propose measures to mitigate these impacts;

- (ix) to identify any adverse impacts on sites of cultural heritage and to propose measures to mitigate these impacts;
- (x) to identify potential hazard to life impacts, and to propose mitigation measures to mitigate these impacts;
- (xi) to propose the provision of infrastructure or mitigation measures so as to minimise pollution, environmental disturbance and nuisance during construction and operation of the Project;
- (xii) to investigate the feasibility, effectiveness and implications of the proposed mitigation measures;
- (xiii) 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;
- (xiv) to identify, assesses 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;
- (xv) 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;
- (xvi) to design and specify the environmental monitoring and audit requirements; and
- (xvii) to identify any additional studies necessary to implement the mitigation measures of 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 EIA study brief is to set out the purposes and objectives of the EIA study, the scope of environmental issues which shall be addressed, the requirements that the EIA study shall need to fulfil, and the necessary procedural and reporting requirements. The Applicant shall demonstrate in the EIA report whether the criteria in the relevant sections of the Technical Memorandum on the Environmental Impact Assessment Process of the Environmental Impact Assessment Ordinance (hereinafter referred to as “the TM”), are fully complied with.

3.2 The Scope

- 3.2.1 The scope of this EIA study shall cover the Project and associated works mentioned in section 1.2 of this EIA study brief. For the purpose of assessing whether the environmental impacts shall comply with the criteria of the TM, the EIA study shall address the key issues described below, together with any other key issues identified during the course of the EIA study:

- (i) environmental benefits and dis-benefits of different development options, alignments, design

- and construction methods of the Project with a view to deriving the preferred development option(s) that will avoid or minimise adverse environmental impact;
- (ii) potential air quality impact on air sensitive receivers (ASRs) due to the construction and operation of the Project;
 - (iii) potential noise impact on noise sensitive receivers (NSRs) due to the construction and operation of the Project;
 - (iv) potential water quality impact on water sensitive receivers (WSRs) and the relevant water system(s) in the vicinity due to the construction and operation of the Project;
 - (v) potential waste management implications arising from the construction and operation of the Project;
 - (vi) potential extent of land contamination within project area for development works and relevant mitigation measures;
 - (vii) potential hazard to life impact during the construction and operation of the Project due to (a) the Potentially Hazardous Installation (PHI), namely ExxonMobil Liquefied Petroleum Gas (LPG) storage installation at Tuen Mun Area 44, (b) LPG storage installation at Sam Shing Estate, (c) high pressure town gas transmission pipeline running along Yuen Long Highway and across the Lam Tei East Interchange and (d) the use, transport and overnight storage of explosives;
 - (viii) potential risks of landfill gas due to the Pillar Point Valley Restored Landfill on the Project;
 - (ix) potential terrestrial ecological impacts due to the construction and operation of the Project;
 - (x) potential fisheries impact due to the construction and operation of the Project and associated works;
 - (xi) potential landscape and visual impacts due to the construction and operation of the Project;
 - (xii) potential cultural heritage impacts due to the construction and operation of the Project; and
 - (xiii) potential cumulative environmental impacts of the Project, through interaction or in combination with other existing, committed and planned projects that may have a bearing on the environmental acceptability of the Project.

3.3 Description of the Project

3.3.1 Purpose(s) and Objectives of the Project

The Applicant shall provide information on the Project, including the purpose, objectives and environmental benefits of the Project, and describe the 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 the proposed alignment, design, construction methods, sequence of construction works and other major activities involved in the Project, using diagrams, plans and/or maps as necessary. The estimated duration of the construction phase and

operational phase of the Project together with the programme within these phases shall be given. The waters and/or land to be taken by the Project, construction sites and any associated access arrangements, auxiliary facilities and landscaping areas shall be shown on a scaled map. The land 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 alignment, design, construction methods and sequence of construction works for the Project. The key reasons for selecting the preferred development option(s) and the part environmental factors played in the selection shall be described. The main environmental impacts of different development options shall be compared with those of the Project and with the likely future environmental conditions in the absence of the Project.

3.4 **Technical Requirements**

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

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

3.4.3 The EIA study shall follow the technical requirements specified below and in the Appendices of this EIA study brief.

3.4.4 Air Quality Impact

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

3.4.4.2 The assessment area for the air quality impact assessment shall be defined by a distance of 500metres 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 areas where the air quality may be potentially affected by the Project. The assessment shall be based on the best available information at the time of the assessment. The assessment shall also take into account the impacts of emission sources from nearby concurrent projects, if any.

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

3.4.5 Noise Impact

- 3.4.5.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing noise impact as stated in Annexes 5 and 13 of the TM respectively.
- 3.4.5.2 Assessment shall include construction noise, road traffic noise and fixed noise sources impacts on the existing, committed and planned NSRs earmarked on the relevant Outline Zoning Plans, Development Permission Area Plans, Outline Development Plans, Layout Plans and other relevant published land use plans, including plans and drawings published by the Lands Department and any land use and development applications approved by the Town Planning Board, in the vicinity of the Project.
- 3.4.5.3 The noise impact assessment for the construction and operation of the Project shall follow the detailed technical requirements given in **Appendix C** of this EIA study brief.
- 3.4.6 **Water Quality Impact**
- 3.4.6.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing water pollution as stated in Annexes 6 and 14 of the TM respectively.
- 3.4.6.2 The assessment area for the water quality impact assessment shall include areas within 500 metres from the boundary of the Project and shall cover the North Western Water Control Zone and other affected Water Control Zones as designated under the Water Pollution Control Ordinance (Cap. 358) and the WSRs in the vicinity of the Project. The assessment area shall be extended to include other areas such as stream courses, existing and new drainage systems and other water system(s) in the vicinity, if they are found also being affected by the Project during the course of the EIA study and have a bearing on the environmental acceptability of the Project.
- 3.4.6.3 The water quality impact assessment for the construction and operation of the Project shall follow the detailed technical requirements given in **Appendix D** of this EIA study brief.
- 3.4.7 **Waste Management Implications**
- 3.4.7.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing waste management implications as stated in Annexes 7 and 15 of the TM respectively.
- 3.4.7.2 The assessment of the waste management implications arising from the construction and operation of the Project shall follow the detailed technical requirements given in **Appendix E** of this EIA study brief.
- 3.4.8 **Land Contamination**
- 3.4.8.1 The Applicant shall follow the 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.
- 3.4.8.2 The assessment of the potential land contamination issues shall follow the detailed technical requirements given in **Appendix F** of this EIA study brief.
- 3.4.9 **Hazard to Life**
- 3.4.9.1 The Applicant shall follow the criteria for evaluating hazard to life as stated in section 2 of Annex 4 of the TM.
- 3.4.9.2 The hazard to life assessment for construction and operation of the Project shall follow the detailed technical requirements given in **Appendix G** of this EIA study brief.

3.4.10 **Landfill Gas Hazard**

- 3.4.10.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing landfill gas hazard as stated in section 1.1(f) in Annex 7 and section 3.3 in Annex 19 of the TM respectively and the Landfill Gas Hazard Assessment Guidance Note issued by the Director.
- 3.4.10.2 The landfill gas hazard assessment for construction and operation of the Project shall follow the detailed technical requirements given in **Appendix H** of this EIA study brief.

3.4.11 **Ecological Impact (Terrestrial)**

- 3.4.11.1 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.
- 3.4.11.2 The assessment area for the purpose of the terrestrial ecological impact assessment shall include areas within 500 metres distance from the boundary of the Project and any other areas likely to be impacted by the Project. In particular, the Project shall avoid and/or minimise impacts on recognised sites of conservation importance and other ecological sensitive areas including the Tai Lam Country Park and Conservation Area at Lam Tei.
- 3.4.11.3 The ecological impact assessment for construction and operation of the Project shall follow the detailed technical requirements given in **Appendix I** of this EIA study brief.

3.4.12 **Fisheries Impact**

- 3.4.12.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing fisheries impact as stated in Annexes 9 and 17 of the TM respectively if the Project involves reclamation works.
- 3.4.12.2 The assessment area shall be the same as the assessment areas for Water Quality Impact Assessment described in section 3.4.6 of this EIA Study Brief. This assessment area shall be extended to include other areas if they are also found being impacted by the construction or operation of the Project during the course of the EIA study. Special attention should be given to loss or disturbance of fishing ground, water quality deterioration at sensitive receivers such as Fish Culture Zones, important spawning and nursery grounds of commercial fisheries resources in the western waters of Hong Kong.
- 3.4.12.3 The fisheries 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.

3.4.13 **Landscape and Visual Impacts**

- 3.4.13.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing landscape and visual impacts as stated in Section 1 of Annex 10 and Annex 18 of the TM respectively, and the EIAO Guidance Note No. 8/2010 "Preparation of Landscape and Visual Impact Assessment under the EIAO".
- 3.4.13.2 The assessment area for the landscape impact assessment shall include areas within 100 metres from the boundary of the Project, while the assessment area for the visual impact assessment shall be defined by the visual envelope of the Project. The defined visual envelope shall be shown on a plan in the EIA report.
- 3.4.13.3 The landscape and visual impact assessment for the construction and operation of the Project shall follow the detailed technical requirements given in **Appendix K** of this EIA study brief.

3.4.14 **Impact on Cultural Heritage**

- 3.4.14.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing the cultural heritage impact as stated in section 2 of Annex 10 and section 2 of Annex 19 of the TM respectively.
- 3.4.14.2 The assessment area for the cultural heritage impact assessment (CHIA) shall be defined by a distance of 300 metres from the boundary of the Project area. The CHIA shall include a Built Heritage Impact Assessment (BHIA), an Archaeological Impact Assessment (AIA) and a Marine Archaeological Investigation (MAI) for construction and operation of the Project.
- 3.4.14.3 The CHIA for the construction and operation of the Project shall follow the detailed technical requirements given in **Appendix L** of this EIA study brief.

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, key environmental problems avoided, compensation areas included and the environmental benefits of environmental protection measures recommended.

3.6.2 Summary of Environmental Impacts

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

3.6.3 Documentation of Key Assessment Assumptions, Limitation of Assessment Methodologies and related Prior Agreement(s) with the Director

The EIA report shall contain a summary including the assessment methodologies and key

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

3.6.4 Summary of Alternative Mitigation Measures

The EIA report shall contain a summary of alternative mitigation measures considered during the course of EIA study, including alignment, design, scale, extent, layout and mode of operation as well as construction methods, disposal/treatment methods and sequences of works for the Project, with a view to avoiding, minimising and mitigating adverse environmental impacts. A comparison of the environmental benefits and dis-benefits of applying different mitigation options 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 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 visualisations of the findings of the EIA report, including 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 so that the public can better understand the Project and the associated environmental issues. The visualisations 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 visualisations (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

visualisations 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 the Applicant for this EIA study brief during the course of EIA study, the Applicant must notify the Director immediately.
- 6.2 If there is any key change in the scope of the Project mentioned in section 1.2 of this EIA study brief and in Project Profile (No. PP-631/2021), 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 the EIA study brief, the Applicant shall apply to the Director for a fresh EIA study brief.

7. LIST OF APPENDICES

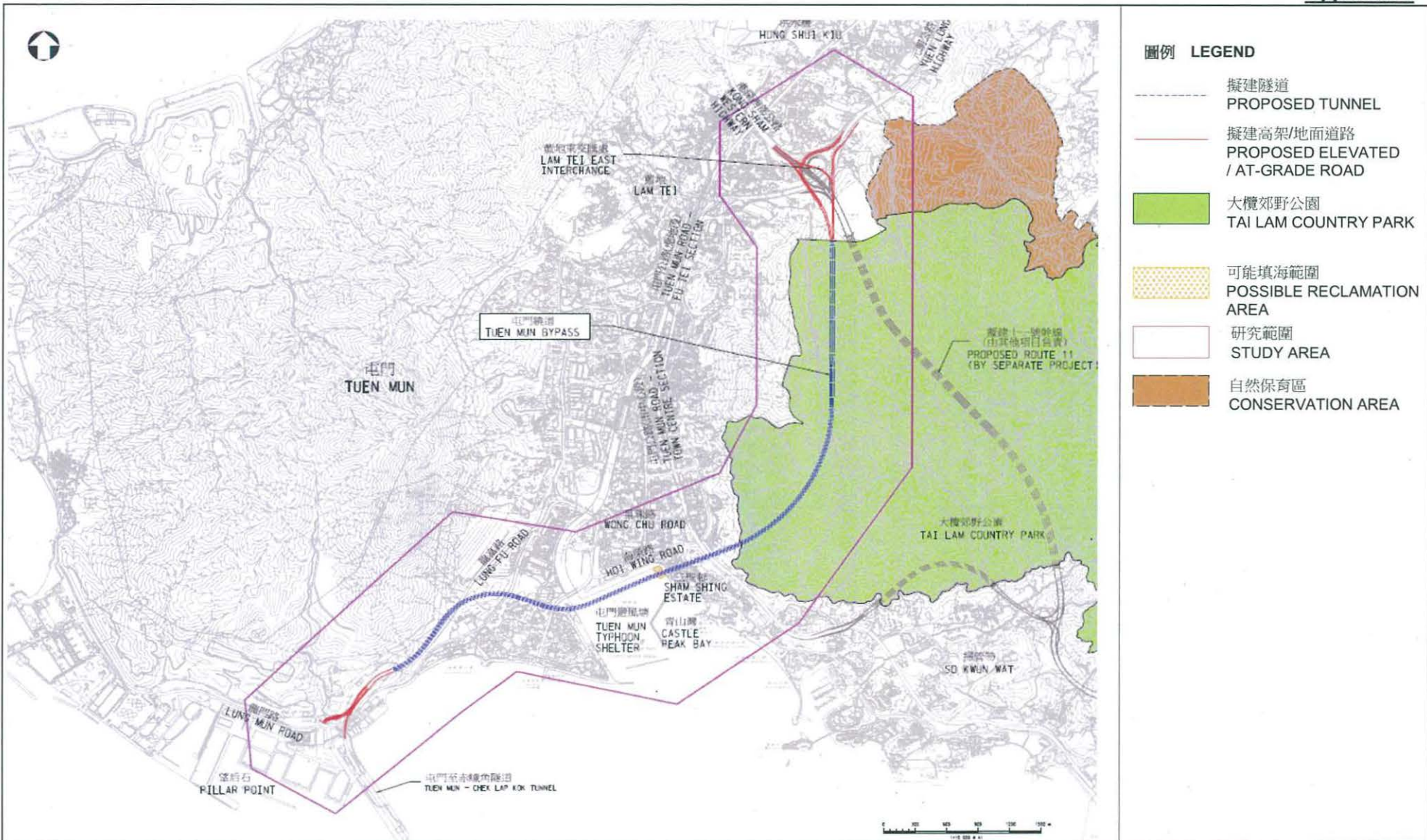
- 7.1 This EIA study brief includes the following appendices:

<u>Appendix A</u>	- Project Location Plan
<u>Appendix B</u>	- Requirements for Air Quality Impact Assessment
<u>Appendix C</u>	- Requirements for Noise Impact Assessment
<u>Appendix D</u>	- Requirements for Water Quality Impact Assessment
<u>Appendix E</u>	- Requirements for Assessment of Waste Management Implications
<u>Appendix F</u>	- Requirements for Land Contamination Assessment
<u>Appendix G</u>	- Requirements for Hazard to Life Assessment
<u>Appendix H</u>	- Requirements for Landfill Gas Hazard Assessment
<u>Appendix I</u>	- Requirements for Ecological Impact Assessment (Terrestrial)
<u>Appendix J</u>	- Requirements for Fisheries Impact Assessment
<u>Appendix K</u>	- Requirements for Landscape and Visual Impact Assessment
<u>Appendix L</u>	- Requirements for Cultural Heritage Impact Assessment
<u>Appendix M</u>	- Implementation Schedule of Recommended Mitigation Measures
<u>Appendix N</u>	- Requirements for EIA Report Documents

- END of EIA STUDY BRIEF -

November 2021
Environmental Assessment Division
Environmental Protection Department

Appendix A



圖例 LEGEND	
	擬建隧道 PROPOSED TUNNEL
	擬建高架/地面道路 PROPOSED ELEVATED / AT-GRADE ROAD
	大欖郊野公園 TAI LAM COUNTRY PARK
	可能填海範圍 POSSIBLE RECLAMATION AREA
	研究範圍 STUDY AREA
	自然保育區 CONSERVATION AREA

Project Title: Tuen Mun Bypass
(This figure is prepared based on Drawing number HMSTMB001-SK0001B of Project Profile No. PP-631/2021)

工程項目名稱：屯門繞道(本圖是根據工程項目簡介 PP-631/2021 圖則編號 HMSTMB001-SK0001B 編製)

EIA Study Brief No. : ESB-348/2021
環評研究概要編號 :

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



Appendix B**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 and operation stages 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 impact. The Applicant shall consider alternative construction methods, phasing programmes and alternative modes of operation to minimise the air quality impact during construction and operational stages of the Project.
- (iii) Projection of future year background air quality can be extracted from "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 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 and operation activities in section 1 above. Examples of construction stage emission sources include reclamation, site clearance, excavation, backfilling, vehicular movements, etc. Example of operational phase emission sources include industrial chimneys, vehicular emissions from the project and the road network within the assessment area. Confirmation regarding the validity of assumptions 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. Validity of the traffic flow and traffic speed prediction shall be confirmed with Transport Department and documented in the EIA report.
- (iii) Identification of chimneys and obtainment of relevant chimney emission data in the assessment area, where appropriate, by carrying out a survey for assessing the cumulative air quality impact of air pollutants through chimneys. The Applicant shall ensure and confirm the validity of the emission data used in their assessment. Any errors found in their emission data used may render the submission invalid.
- (iv) The emissions from any concurrent projects identified as relevant during the course of the EIA study shall be taken into account as contributing towards the overall cumulative air

quality impact. The impact 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 identified ASRs despite the incorporation of the dust control measures proposed, a quantitative assessment shall be carried out to evaluate the construction dust impact at the identified ASRs. The Applicant shall follow the methodology set out in section 5 below when carrying out the quantitative assessment.
- (iii) Where necessary, the Applicant shall consider and evaluate direct mitigation measures, including but not limited to water-spraying, re-scheduling construction programme to minimise concurrent dust impact arising from different construction sites, for fugitive dust control. The Applicant shall 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 the 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. Operational Phase Air Quality Impact

- (i) The Applicant shall assess the expected air quality impact at the identified ASRs based on an assumed reasonably worst-case scenario under normal operating conditions of the Project. If the assessment indicates likely exceedances of the recommended limits in the TM at the identified ASRs, a quantitative assessment should be carried out to evaluate the operational phase air quality impacts at the identified ASRs. The Applicant shall follow the methodology set out in section 5 below when carrying out the quantitative assessment.
- (ii) A monitoring and audit programme for the operational phase of the Project shall be devised to verify the effectiveness of the proposed control measures so as to ensure proper control of operational air quality impacts.

5. Quantitative Assessment Methodology

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

(types of pollutants and the averaging time concentrations) to be evaluated and provide explanation for selecting these parameters for assessing the impact of the Project.

- (iii) Calculation of the relevant pollutant emission rates for input to the model and map(s) showing road links and emission sources shall be presented in the EIA report. A summary table of the emission rates shall be presented in the EIA report. The Applicant shall ensure consistency between the text description and the model files at every stage of submission for review.
- (iv) For operational phase air quality impact assessment, the air pollution impacts of future road traffic shall be calculated based on the highest emission strength from the road vehicles in the assessment area within the next 15 years upon commissioning of the proposed roads. The Applicant shall demonstrate that the selected year of assessment represents the highest emission scenario given the combination of vehicular emission factors and traffic flow for the selected year. For construction phase air quality impact assessment, the Applicant shall demonstrate the use of the emission data of the future road traffic represents the highest emission scenario within the construction phase concerned. The Applicant may use EMFAC-HK model released by the Director to determine the Fleet Average Emission Factors, taking into account vehicle fleet mix and other necessary data on each road section. Vehicle emissions, including running, start/idling emission, at parking sites that would contribute significantly to the overall cumulative air quality impact at nearby ASRs shall be taken into account in the assessment. Unless otherwise agreed by the Director, the latest version of the EMFAC-HK model shall be used. Use of any alternatives to the EMFAC-HK model shall be agreed with the Director. The traffic forecast data and assumptions, such as the hourly traffic volume, average speed, vehicle composition, number of trips and soaking time data, the exhaust technology fractions, vehicle age/population distribution, etc. that are used in the assessment shall be presented.
- (v) Emissions from road traffic, marine traffic, other industrial sources and nearby concurrent projects within the assessment area, which contribute to the cumulative air quality impact of the identified ASRs, should be taken into account and be included in the dispersion models accepted by the Director.
- (vi) For projection of future background air quality, the Applicant may use the PATH model released by the Director, taking into consideration the major air pollutant emission sources projected for Hong Kong and nearby regions. Unless otherwise agreed by the Director, the latest version of the PATH model shall be used. 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 (as listed in the following web link: [https://www.epd.gov.hk/epd/sites/default/files/epd/List of major point sources v2.xlsx](https://www.epd.gov.hk/epd/sites/default/files/epd/List%20of%20major%20point%20sources%20v2.xlsx)) 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.
- (vii) The Applicant shall calculate the cumulative air quality impact at the identified ASRs and compare these results against the criteria set out in section 1 of Annex 4 in the TM. The predicted air quality impacts shall be presented in the form of summary table(s) and pollution contours, to be evaluated against the relevant air quality standards and on any effect they may have on the land use implications. Plans of a suitable scale shall be used to present pollution contours to allow buffer distance requirements to be determined properly.
- (viii) If vehicle tunnels and/or full enclosures are proposed in the Project, it is the responsibility of the Applicant to ensure that the air quality inside these proposed structures shall comply

with EPD's "Practice Note on Control of Air Pollution in Vehicle Tunnels". When assessing air quality impact due to emissions from tunnels/full enclosures, the Applicant shall ensure prior agreement with the relevant ventilation design engineer over the amount and the types/kinds of pollutants emitted from these full enclosures; and such assumptions shall be clearly and properly documented in the EIA report.

- (ix) If there are any direct technical noise remedies recommended in the study, their air quality impacts on the ASRs shall be assessed. The Applicant shall highlight clearly the locations and types of agreed noise mitigating measures (where applicable), be they noise barriers, road enclosures and their portals, and affected ASRs, on contour maps for reference.

6. 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 including but not limited to road design measures (e.g. alternative road alignment/exit to increase separation distance from ASRs, underground road, tunnel, roadside barrier/enclosure, etc.) pollution control technology measures (e.g. installation of air purification system at tunnel ventilation shaft, etc.) and traffic management measures (e.g. setting up restriction zone for heavy duty vehicles, low/zero emission zone for existing trunk roads, etc.) to reduce the air quality impact on the identified ASRs. The feasibility, practicability, programming and effectiveness of the recommended mitigation measures shall be assessed and documented in the EIA report. Specific reasons for not adopting certain workable mitigation measures to reduce the air quality to a level meeting the criteria in the TM or to maximise the protection of the ASRs as far as possible should be clearly substantiated and documented in the EIA report.

Evaluation of Residual Air Quality Impact

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

7. Submission of Emission Calculation Details and Model Files

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

Appendix B-1

Air Quality Modelling Guidelines

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

Air quality modelling guidelines shall refer to the guidelines published on the website of the Environmental Protection Department:

https://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.

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 Annex 13 of the TM. For tunnelling, ground-borne noise impact associated with the operation of powered mechanical equipment, in particular, tunnel boring machines or equivalent, shall be assessed. The Applicant shall propose assessment methodology and computational model for agreement of 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 ground-borne noise model.

2.1.2 Alternatively, the Applicant shall qualitatively demonstrate no adverse construction noise impact would be associated with the project if the Applicant commits to adopt quieter construction method and equipment during all construction stages. The Applicant shall, in any event, submit a construction noise management plan to the Director, which contains the quantitative construction noise impact assessment, the adopted quieter construction method and equipment, noise mitigation measures and the construction noise impact monitoring and audit programme, with reference to the updated and identified plant inventories once available and in any case before tendering or commencement of the project implementation. Any technical constraint that would hinder the use of these quieter construction method and equipment shall be evaluated and clearly recorded in the assessment.

2.1.3 Site formation or rock excavation by means of non-percussive quieter construction method such as chemical expansion agent or pulse plasma rock fragmentation shall be considered as far as practicable, and use of excavator-mounted breaker or blasting with explosives shall be kept in minimum. Any technical constraint that would hinder the use of these quieter construction method shall be evaluated and clearly recorded in the assessment. In case it is unavoidable to carry out rock blasting with explosive means, it shall be carried out, as far as practicable, during daytime, i.e. 7am to 7pm, on weekdays other than general holidays and with the best practicable noise mitigation measures. In addition to quieter construction method for site formation, to minimize the construction noise impact, alternative non-percussive piling construction methods (such as bored piles / helical piles, and press-in piler for sheet piles, to replace percussive piling) shall be proposed as far as practicable.

2.1.4 In case the Applicant would like to assess whether Construction Noise Permit could be issued or not for the tunnelling work in the context of programming construction works, the Applicant shall conduct construction noise impact assessment (including air-borne and ground-borne) associated with the operation of powered mechanical equipment, in particular, tunnel boring machines or equivalent for tunnelling work.

2.2 Identification of Construction Noise Impact

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

- (a) The Applicant shall propose the assessment area for agreement of the Director before commencing the assessment. The assessment area for the construction noise impact assessment shall generally include areas within 300 metres from the boundary of the Project and the works of the Project.
- (b) The Applicant shall identify all NSRs in the assessment area in accordance with Annex 13 of the TM and select assessment points to represent identified NSRs for carrying out construction noise impact assessment described below.
- (c) The assessment points shall be confirmed with the Director prior to the commencement of the 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 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.

Prediction and Evaluation of Construction Noise Impact

2.2.3 *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.

2.2.4 *Scenarios*

The Applicant shall 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.

2.2.5 *Prediction of Noise Impact*

- (a) The assessment shall cover the cumulative construction noise impact resulting from the construction works of the Project and other concurrent projects identified during the course of the EIA study on existing NSRs within the assessment area.
- (b) The potential construction noise impact under different phases of construction shall be assessed by estimating the total number of dwellings, classrooms and other noise sensitive receivers that will be exposed to noise impact exceeding the criteria set in Annex 5 in the TM.
- (c) 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.

2.3 Mitigation of Construction Noise Impact

Direct Mitigation Measures

The Applicant shall consider and evaluate the possible application of direct mitigation measures including but not limited to, quieter alternative methods (e.g. use of non-explosive chemical expansion agent, non-percussive construction method, etc.) and equipment (e.g. use of bored piles / helical piles, and press-in piler for sheet piles, to replace percussive piling), movable barriers, enclosures, 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 maximise the protection for the NSRs as far as possible should be clearly substantiated and documented in the EIA report.

2.4 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.

2.5 Construction Noise Impact Monitoring and Audit

The Applicant shall, with reference to section 8 and Annex 21 of the TM, propose a construction noise impact monitoring and audit programme and a construction noise management 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. Road Traffic Noise Impact Assessment

3.1 Road Traffic Noise Impact Assessment Methodology

3.1.1 The Applicant shall carry out road traffic noise impact assessment in respect of each road section (within the meaning of Items A.1 and A.7 under Part I, Schedule 2 of the EIAO and other road sections) and the noise levels from combined road sections of the Project at the NSRs in accordance with methodology in paragraphs 5.1 of Annex 13 of the TM.

3.1.2 *Input Data of Computational Model*

The Applicant shall provide the input data set of the road traffic noise computational model adopted in the assessment for various scenarios. The data shall be in electronic text file (ASCII format) containing road segments, barriers and NSRs information. CD-ROM(s) containing the above data shall be submitted together with the EIA report.

3.2 Identification of Road Traffic 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 road traffic 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 quantitative road traffic noise impact assessment described below.
- (c) The assessment points shall be confirmed with the Director prior to the commencement of the quantitative road traffic 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.
- (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 road traffic noise impact assessment purpose. However, such parameters and conditions together with the representative layouts and 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 analyse the scope of the proposed road alignment(s) to identify road sections for the purpose of road traffic noise impact assessment. Road sections to be included in road traffic noise impact assessment shall be confirmed with the Director prior to the commencement of the assessment. In determining whether the traffic noise impact due to road improvement project / works is considered significant, detailed information with respect to factors including at least the change of nature of road, change of alignment and change of traffic capacity or traffic composition, and change of traffic flow pattern in the associated road networks, shall be assessed. Figures showing extents of new / altered roads, existing roads and the associated road networks shall be provided in the EIA report
- (b) Validity of the traffic flow prediction of road sections for the purpose of road traffic noise impact assessment shall be confirmed with Transport Department and documented in the EIA report.

3.3 Prediction and Evaluation of Road Traffic Noise Impact

3.3.1 *Scenarios*

- (a) The Applicant shall quantitatively assess the road traffic noise impact of the Project, with respect to the criteria set in Annex 5 of the TM, of unmitigated scenario and mitigated scenario at assessment year. The assessment year shall be made reference to section 5.1 in Annex 13 of the TM.
- (b) The Applicant shall provide the input data sets of traffic noise model prediction model adopted in the EIA study as requested by the Director for the following scenarios:
 - (i) unmitigated scenario at assessment year;
 - (ii) mitigated scenario at assessment year; and
 - (iii) prevailing scenario for indirect mitigated measures eligibility assessment.

3.3.2 *Prediction of Noise Impact*

- (a) The Applicant shall present the predicted noise levels in L_{10} (1 hour) 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 road traffic noise impact resulting from the road traffic noise due to the Project and existing road network on existing, committed and planned NSRs within the assessment area.
- (c) The potential road traffic noise impact 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 impact exceeding the criteria set in Annex 5 in the TM.

3.4 Mitigation of Road Traffic Noise Impact

3.4.1 *Direct Mitigation Measures*

- (a) Where the predicted road traffic 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 low noise road surface, noise barrier/enclosure, 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 maximise the protection for the NSRs as far as possible should be clearly quantified and documented in the EIA report.
- (b) The total number of NSRs that will be benefited from and be protected by the provision of direct mitigation measures should be provided. The total number of other NSRs that will still be exposed to noise above the criteria with the implementation of all recommended direct mitigation measures shall be quantified.
- (c) For planned noise sensitive uses which will still be affected even with practicable direct mitigation measures in place, the Applicant shall propose, evaluate and confirm the practicability of additional direct mitigation measures within the planned noise sensitive uses and shall make recommendations on how these noise sensitive uses will be designed for the information of relevant parties.
- (d) The Applicant shall take into account agreed environmental requirements /constraints identified in the EIA study to assess the development potential of concerned sites which shall be made known to the relevant parties.

3.4.2 *Indirect Mitigation Measures*

- (a) Upon exhaust of direct mitigation measures, where the predicted road traffic noise impact still exceeds the criteria set in Table 1A of Annex 5 of the TM, the Applicant shall consider indirect mitigation measures in the form of window insulation and air-conditioning and evaluate in accordance with section 6.2 in Annex 13 of the TM.
- (b) The Applicant shall identify and estimate the total number of existing dwellings, classrooms and other noise sensitive elements which may qualify for indirect mitigation measures, the associated costs and any implications for such implementation.
- (c) For the purpose of determining eligibility of the affected premises for indirect mitigation measures, reference shall be made to methodology accepted by the recognised national/international organisation or methodologies adopted for Hong Kong projects having similar issues on proposing an assessment methodology for determining eligibility of the indirect mitigation measures which shall be confirmed with the Director with reference to section 4.4.2 of the TM, prior to the commencement of the assessment.

3.5 Evaluation of Residual Road Traffic Noise Impact

Upon exhaust of direct and indirect 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 road traffic noise impact in accordance with section 4.4.3 of the TM and section 6.2 in Annex 13 of the TM.

4. Fixed Noise Sources Impact Assessment

4.1 Fixed Noise Source Impact Assessment Methodology

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

4.1.2 Alternatively, the Applicant shall qualitatively demonstrate no adverse fixed noise impact would be associated with the project if the Applicant commits to adopt appropriate noise mitigation measures during all operation periods. The Applicant shall then submit a fixed noise source management plan to the Director, which contains the quantitative fixed noise source impact assessment, the adopted noise mitigation measures and the fixed noise source impact monitoring and audit programme, with reference to the identified plant inventories and utilisation schedule once available and in any case before commencement of the project.

4.2 Identification of Fixed Noise Sources Impact

4.2.1 *Identification of Assessment Area and Noise Sensitive Receivers (NSRs)*

- (a) The Applicant shall propose the assessment area for agreement of the Director before commencing the assessment. The assessment area for the fixed noise sources 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 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 condition to work out representative site layouts for fixed noise sources impact assessment purpose. However, such parameters and conditions together with the representative site layouts and 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 an inventory of noise sources for fixed noise sources impact assessment. The inventory shall include, but not limited to the ventilation system and other electrical and mechanical equipment of the ventilation shaft and any permanent or temporary industrial noise sources within the assessment area e.g. planned ventilation system(s) of

building(s), etc.

- (b) The Applicant shall provide document or certificate, with a methodology accepted by recognised national/international organisation, 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 and documented in the EIA report.

4.3 Prediction and Evaluation of Fixed Noise Sources Impact

4.3.1 *Scenarios*

- (a) The Applicant shall assess the fixed noise sources impact of the Project, with respect to the criteria set in Annex 5 of the TM, of unmitigated scenario and mitigated scenario at assessment year of various operation modes including, but not limited to,
 - (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 operation modes shall be confirmed with relevant departments/authorities and documented in the EIA report.

4.3.2 *Prediction of Noise Impact*

- (a) The assessment shall cover the cumulative fixed noise sources impact associated with the operation of the Project on existing, committed and planned NSRs within the assessment area.
- (b) The potential fixed noise sources impact under different scenarios shall be assessed by estimating the total number of dwellings, classrooms and other noise sensitive receivers that will be exposed to noise impact exceeding the criteria set in Annex 5 in the TM.

4.4 Mitigation of Fixed Noise Sources Impact

4.4.1 *Direct Mitigation Measures*

Where the predicted fixed noise sources 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 shall be well documented in the EIA 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 maximise 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 Sources 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 sources 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.

4.6 Fixed Noise Impact Monitoring and Audit

The Applicant shall, with reference to section 8 and Annex 21 of the TM, propose a fixed noise source management 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 fixed noise impact of the Project, would be performed during the design, tendering and implementation stage.

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, quantify 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 marine works, the site run-off generated during the construction stage such as the effluents generated from dewatering associated with tunnelling, piling activities, grouting and concrete washing and those specified in the ProPECC Practice Note 1/94 on “Construction Site Drainage”;
 - (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 possible reclamation during construction phase;
 - (iii) the water quality impacts of the surface runoff containing oil/grease and suspended solids during the operational stage; and
 - (iv) the water quality impacts on water gathering ground, typhoon shelters, beaches, river courses, drainages 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 operational 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) characterise 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;
 - (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 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 wastewater generated from the construction and operation of 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. Possible impacts include change in hydrology, flow regime, water quality and release of contaminants during marine works, etc. The prediction shall take into account and include possible different construction and operation stages 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) analyse the provision and adequacy of existing and planned future facilities to handle or 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 construction and operation stages so as to reduce the water quality impacts to within standards. Requirements to be incorporated in the Project contract document shall also be proposed;
- (xiii) investigate and develop best management practices to reduce storm water and non-point source pollution during construction and operation of the Project as appropriate; and
- (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. If the mitigated water quality impact still exceeds the relevant criteria in Annex 6 of the TM, the Applicant shall identify, predict and evaluate the residual water quality impact in accordance with section 4.4.3 of the TM and estimate the significance of the residual impact to the water system(s) and the water sensitive receivers.

Appendix E**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 operational activities of the Project, based on the sequence and duration of these activities, e.g. any dredged/excavated sediment/mud, construction and demolition (C&D) materials, floating refuse and other wastes which will be generated during construction and operational stages.
- (ii) The Applicant shall adopt appropriate design, general layout, construction methods and programme to minimise the generation of public fill/inert C&D materials and maximise 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 stage for maximizing waste reduction shall be separately considered.
- (ii) The Applicant shall consider alternative project designs/measures to avoid/minimize floating refuse accumulation/entrapment and measures/proposals for the potential floating refuse problem, e.g. streamlining the shoreline design; measures to improve the tidal flushing capacity; alternative seawall design to facilitate floating refuse collection; and regular collection of the floating refuse along the shoreline. Regarding the potential trapping of floating refuse along the shoreline of the Project, the Applicant shall estimate as far as practicable the amount of floating refuse to be found/trapped along the shoreline of the Project in construction and operation stages of the Project. The Applicant shall develop an effective plan/design to avoid/minimize the trapping of floating refuse. If floating refuse is identified and needs to be dealt with, the Applicant shall propose appropriate measures to deal with this floating refuse in a proper and acceptable manner e.g. to collect, recycle, reuse, store, transport and dispose of.
- (iii) After considering the opportunities for reducing waste generation and maximizing re-use, the types and quantities of 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 item (v) below;
- (iv) The EIA report shall also state clearly the transportation routings and the frequency of the trucks/vessels involved, any barging point or conveyor system to be used, the stockpiling areas and the disposal outlets for the wastes identified;
- (v) The impact caused by handling (including stockpiling, labelling, packaging and storage), collection, transportation and re-use/disposal of wastes shall be addressed in detail and appropriate mitigation measures shall be proposed. This assessment shall cover the following areas:
 - potential hazard;
 - air and odour emissions;
 - noise;
 - wastewater discharge; and

- public transport.

- (vi) In addition to the above, the EIA report shall also identify practicable means of avoiding illegal dumping and landfilling.

3. Dredging/Excavation 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 characterize the sediment/mud concerned shall be conducted for marine disposal option. The ranges of parameters to be analyzed; 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 practical dredging/excavation methods to minimize dredging/excavation and dumping requirements based on the criterion that existing sediment/mud shall be left in place and not to be disturbed as far as possible.

Appendix F**Requirements for Land Contamination Assessment**

1. The Applicant shall identify the potential land contamination site(s) within the 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-section (i) to (iii) below and propose measure 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). The CAP shall be documented in the EIA report.
 - (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 CAR and RAP, if available, 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 G**Requirements for Hazard to Life Assessment**

1. The Applicant shall investigate alternative method to avoid the use of explosives. The Applicant shall carry out hazard assessment as follows:
 - (i) Identify hazardous scenarios associated with the use, transport and overnight storage of the explosives during construction of the Project with a view to determining 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 1(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 to demonstrate the compliance with the Risk Guidelines.

2. The Applicant shall investigate methods to minimise risks from LPG storage and high pressure town gas pipeline. The Applicant shall carry out quantitative risk assessment for each of the LPG facilities, i.e. a Potential Hazardous Installation (PHI), namely ExxonMobil LPG storage installation at Tuen Mun Area 44, and the LPG storage installation at Sam Shing Estate to address the associated risks with operation of the high pressure gas pipelines during construction and operation of the Project. The Applicant shall follow the criteria for evaluating and assessing hazard to life as stated in Section 2 in Annex 4 of the TM after taking into account the increase in number of persons / populations during construction and operation phases of the Project. The Applicant shall also note that there is a high pressure town gas transmission pipelines (running along Yuen Long Highway and across the Lam Tei East Interchange) in the vicinity of the Project. A quantitative risk assessment shall be carried out to address the associated risks with operation of the high pressure gas pipelines during construction and operation of the Project. The hazard assessment shall include the following:
 - (i) Identify hazardous scenarios associated with the on-site transport, storage and use of gas as defined in the Gas Safety Ordinance (Cap.51) at the LPG Storage Installations, i.e. the PHI, namely ExxonMobil LPG storage installation at Tuen Mun Area 44, and the LPG storage installation at Sam Shing Estate, and then determine a set of relevant scenarios to be included in a Quantitative Risk Assessment (QRA);
 - (ii) Identify hazardous scenarios associated with operation of the high pressure town gas pipeline and determine a set of relevant scenarios to be included in a QRA
 - (iii) Execute a QRA of the set of hazardous scenarios determined in (i) and (ii), expressing population risks in both individual and societal terms;
 - (iv) Compare individual and societal risks with the criteria for evaluating hazard to life stipulated in Annex 4 of the TM; and
 - (v) Identify and assess practicable and cost-effective risk mitigation measures to demonstrate the compliance with the Risk Guidelines.

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 involving hazardous facilities in the vicinity of the Project.

4. The methodology to be used in the hazard assessment should be consistent with previous studies having similar issues.

Appendix H**Requirements for Landfill Gas Hazard Assessment**

1. The landfill gas hazard assessment shall include a qualitative risk assessment and landfill gas precautionary/protection design. Specifically, the assessment shall include the following tasks:
 - (i) review of background information and studies related to the existing Pillar Point Valley Restored Landfill;
 - (ii) identification of the nature and extent of the sources, including the likely concentrations and/or amounts of hazardous emissions which might have the potential for causing impacts on the Project;
 - (iii) identification of possible pathways through the ground, underground cavities, utilities or groundwater and the nature of these pathways through which hazardous emissions must traverse if they were to reach the Project
 - (iv) identification of the potential targets associated with the Project which are sensitive to the impacts of the hazardous emissions;
 - (v) qualitative assessment on the degrees of risk which the hazardous emissions may pose to the target for each of the source-pathway-target combinations;
 - (vi) design of suitable level of precautionary measures, types of protection measures and contingency plan for the Project; and
 - (vii) identification of monitoring requirements for assessing the adequacy and performance of the implemented protection measures.

Appendix I**Requirements for Ecological Impact Assessment (Terrestrial)**

The ecological impact assessment 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 (e.g. Tai Lam Country Park and Conservation Area at Lam Tei) and other ecological sensitive areas, which fall within the 500m assessment area. The assessment shall identify and quantify as far as possible the potential ecological impacts arising from the construction and operation of the Project and associated works, both directly by physical disturbance and indirectly by potential impacts such as change of water quality and hydrodynamic regime to the natural environment and the associated wildlife groups and habitats/species.
2. The assessment shall include the following major tasks:
 - (i) review the findings of relevant studies/surveys and collate the available information regarding the ecological characters of the assessment area;
 - (ii) evaluate the information collected, identify any information gap relating to the assessment of potential ecological impacts to terrestrial environment, and determine the ecological field surveys and investigations that are needed for a comprehensive assessment as required under the following sections;
 - (iii) carry out any necessary ecological field surveys with a duration of at least 6 months covering both wet and dry seasons, and investigations to verify the information collected, fill in the information gaps as identified under sub-section (ii) above, if any, and to fulfil the objectives of the EIA study. The field surveys shall cover the project footprint including those within and near Tai Lam Country Park; 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, conservation areas and other ecological sensitive areas, including Tai Lam Country Park and Conservation Area at Lam Tei;
 - (b) habitat maps of suitable scale (1:1000 to 1:5000) showing the types and locations of habitats and species of conservation interest in the assessment area;
 - (c) ecological characteristics of each habitat type such as size, vegetation type, species present, dominant species found, species richness and abundance of major taxa groups, community structure, seasonal patterns, ecological value, inter-dependence of the habitats and species, and presence of any features of ecological importance;
 - (d) representative colour photos of each habitat type and any important ecological features identified; and
 - (e) species found that are rare, endangered and/or listed under local legislation,

international conventions for conservation of wildlife/habitats or Red Data Books.

- (v) investigate and describe the existing wildlife uses of various habitats with special attention to those wildlife groups and habitats with conservation interest, including but not limited to the following:
 - (a) woodlands and plantations;
 - (b) watercourses especially natural, semi-natural and seasonal streams and associated riparian habitats;
 - (c) vertebrates (e.g. avifauna, mammals and herpetofauna);
 - (d) macroinvertebrates (e.g. butterflies and odonates);
 - (e) aquatic fauna including fish and crustaceans; and
 - (f) any other habitats/species identified as having special conservation interest by this EIA study.
- (vi) describe all recognised site of conservation importance, conservation areas and other ecological sensitive areas in the assessment area, including Tai Lam Country Park and Conservation Area at Lam Tei, and assess whether these sites will be affected on both temporary and permanent basis by the Project and associated works;
- (vii) using suitable methodology, and considering any works activities including both above-ground and under-ground works proposed under the Project and other concurrent projects, identify and quantify as far as possible any direct (e.g. loss of habitats), indirect (e.g. changes in water qualities, hydrology, light, noise, traffic and human activity 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 feeding and breeding grounds, reduction of ecological carrying capacity and habitat fragmentation, in particular the following:
 - (a) ecological impacts including direct, indirect and cumulative impacts on recognised sites of conservation importance, in particular Tai Lam Country Park and Conservation Area at Lam Tei highlighted in section 2(vi) due to the construction and operation of the Project;
 - (b) loss of habitats such as woodlands and natural streams;
 - (c) fragmentation of habitats on ecologically sensitive areas;
 - (d) impacts on flora and fauna arising from and/or associated with the proposed works e.g. direct mortality of fauna (e.g. road-kill), barrier effect on mobile species, disturbance impacts, including noise and vibration impacts;
 - (e) impact due to human activities, disturbance and other environmental impacts, such as changes in light and noise intensity, water quality and hydrology, during the construction and operation stages of the Project; and
 - (f) cumulative impacts due to other planned and committed concurrent development projects at or near the Project area.
- (viii) evaluate the significance and acceptability of the ecological impact using defined criteria in the TM and based on the best and latest information available during the course of the EIA study, using quantitative approach as far as practicable and covering construction and operational phases of the Project as well as the subsequent management and maintenance requirement of the Project;
- (ix) recommend possible and practicable mitigation measures such as alternative design and configuration of the Project, such as options involving avoid/minimise reclamation, and modification/change of construction methods to avoid, minimise and/or compensate for the adverse ecological impacts identified during construction of the Project;

- (x) evaluate feasibility and effectiveness of the recommended mitigation measures and define the scope, type, location, implementation arrangement, resources requirement, subsequent management and maintenance of such measures;
- (xi) determine and quantify as far as possible of 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 J**Requirements for Fisheries Impact Assessment**

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

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

1. The Applicant shall review relevant outline development plan(s), outline zoning plan(s), development permission area plan(s), layout plan(s), other published land use plan(s), planning brief(s) and/or studies which may identify areas of high landscape value e.g. country park, conservation area, woodland areas. Any guidelines on landscape and urban design strategies and frameworks that may affect the appreciation of the Project shall also be reviewed. The aim is to gain an insight to the future outlook of the area affected so as to assess whether the Project can fit into the surrounding setting based on a comparison of the scenarios with and without the Project. Any conflict with the statutory town plan(s) and any published land use plan(s) shall be highlighted and appropriate follow-up action shall be recommended. A system shall be derived for judging the landscape and visual impact significance as required under the Annexes 10 and 18 of the TM and the EIAO Guidance Note No. 8/2010 "Preparation of Landscape and Visual Impact Assessment under the EIAO". Cumulative landscape and visual impacts of the Project with other existing, committed and planned developments in the assessment area shall be assessed.
2. The Applicant shall assess the landscape impact of the Project. The Applicant shall describe, appraise, analyse and evaluate the existing and planned landscape resources and characters of the assessment area. Annotated oblique aerial photographs and plans of suitable scale showing the baseline landscape resources and landscape character areas and mapping of impact assessment shall be extensively used to present the findings of impact assessment. Descriptive text shall provide a concise and reasoned judgment from a landscape point of view. The assessment shall be particularly focused on the sensitivity of the landscape framework and its ability to accommodate change. The Applicant shall identify the degree of compatibility of the Project with the existing and planned landscape setting and scenic spot. The landscape impact assessment shall quantify and qualify potential landscape impact as far as possible, so as to illustrate the significance of such impact arising from the Project. Clear mapping of the landscape impact is required. Broad brush tree and vegetation survey shall be carried out and the impacts on existing trees and vegetation shall be addressed.
3. The Applicant shall assess the visual impact of the Project. Clear illustrations including mapping of visual impact is required. Descriptive text shall provide a concise and reasoned judgment from a visual point of view. Cumulative visual impact of the Project with other existing, committed and planned developments in the assessment area shall be assessed. The assessment shall include the following:
 - (i) identification and plotting of visual envelope of the Project;
 - (ii) appraisal of existing visual resources and characters as well as 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 and their views at sea level, ground level and elevated vantage points, and clearly indicate the sensitive receivers on a plan of appropriate scale. Prior to the submission of Landscape and Visual Impact Assessment (LVIA), the selection of viewpoints/vantage points shall be agreed with Planning Department and the Director;
 - (iv) description of the visual compatibility of the Project with the existing and planned visual context, and its obstruction and interference with the key views within the visual envelope and changes in visual quality;
 - (v) identification and description of the severity of visual impact in terms of nature, distance and number of sensitive receivers. The visual impact of the Project with and without mitigation

measures during construction and operation phase shall be included and illustrated so as to demonstrate the effectiveness of the proposed mitigation measures across time; and

- (vi) evaluation and explanation with supportive arguments of factors considered in arriving the significance thresholds of visual impact. The visual impacts should include presentation of an evaluation matrix derived for judging impact significance
4. 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 development options, alignment, design and construction methods that would avoid or reduce the identified landscape and visual impacts shall be considered and evaluated for comparison before adopting other mitigation or compensatory measures to alleviate the impacts. The applicant shall recommend mitigation measures which shall not only focus on damage reduction but also potential enhancement of existing landscape and visual quality of the area. The recommendations shall also be illustrated in landscape design and landscape/visual impact mitigation measure plan.
 5. The mitigation measures shall include preservation of vegetation and natural landscape resources, e.g. transplanting of trees in good condition and value, provision of screen planting, re-vegetation of disturbed area, woodland restoration, compensatory planting, erection of decorative screen hoarding compatible with surrounding setting, provisioning/reprovisioning of amenity areas and open spaces, design and layout of structures, provision of finishes to structures, colour scheme and texture of material used and any measures to mitigate the impact on existing and planned land uses and 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 operational phase of the Project. Agreement from relevant authorities responsible for funding, implementation, management and maintenance of proposed mitigation measures have to be obtained before including into the LVIA. A practical programme for the implementation of the recommended measures shall be provided.
 6. Annotated illustration materials such as coloured perspective drawings, plans and section/elevation diagrams, oblique aerial photographs, photographs taken at vantage points, and computer-generated photomontage shall be adopted to fully illustrate the landscape and visual impacts of the Project. 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 comparison of scenarios with and without the Project and the effectiveness of the proposed mitigation measures across time. Computer graphics shall be compatible with Microstation DGN file format. The Applicant shall record the technical details in preparing the illustrations, which may need to be submitted for verification of the accuracy of the illustrations. 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 L**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 1969 or before 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 impact, 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 impact 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 impact imposed by the Project and its associated works. The scope of the AIA 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 archaeologists shall conduct archaeological investigations to assemble data. The archaeologists shall obtain licences from the Antiquities Authority prior to the commencement of archaeological investigations. 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 impact on archaeological heritage cannot be avoided, appropriate mitigation measures should be designed and recommended in the EIA report.

If archaeological investigation is required, it shall follow detailed technical requirement to be given by AMO and the Director on archaeological survey, archaeological report and handling of archaeological finds and archives. The Applicant shall draw necessary reference to relevant sections of the "Guidelines for Cultural Heritage Impact Assessment" issued by the AMO for detailed requirement.

3. **Marine Archaeological Investigation (MAI)**

The Applicant shall conduct a marine archaeological investigation (MAI) following the Guidelines for MAI.

Guidelines for MAI

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

(1) Baseline Review

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

(2) Geophysical Survey

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

(2) Establishing Archaeological Potential

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

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

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

Report

Five copies of the final report should be submitted to the AMO. The copyright of the report should be clearly identified. To facilitate future research, please specify that the report can be made available to the public in the Reference Library of the Heritage Discovery Centre.

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