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23 June 2023

By Registered Post

Civil Engineering and Development Department

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

Project Title: Development of Tseung Kwan O Area 137 and Associated Reclamation Sites
(Application No. ESB-360/2023)

I refer to your above application received on 21 May 2023 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-360/2023) 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. Sally SHEK (Tel: 2594 6324) regarding the details in due course.

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

Should you have any queries on the above application, please contact my colleague Mr. Alex TANG at 2835 1140.

Yours sincerely,

(Miss Queenie Y. C. NG)
Acting Principal Environmental Protection Officer
for Director of Environmental Protection

Encl.

c.c. (w/o encl.)
ACE EIA Subcommittee Secretariat (Attn.: Ms. Sally SHEK) 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

Environmental Impact Assessment Ordinance (Cap. 499), Section 5(7)

Environmental Impact Assessment Study Brief No. ESB-360/2023

Project Title: Development of Tseung Kwan O Area 137 and Associated Reclamation Sites (hereinafter known as the "Project")

Name of Applicant: Civil Engineering and Development Department (hereinafter known as the "Applicant")

1. BACKGROUND

1.1 An application (No. ESB-360/2023) 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 11 May 2023 with a project profile (No. PP-654/2023) (the Project Profile).

1.2 The Applicant proposes to conduct a study with detailed assessments for finalising the development proposals of the Project, i.e. development at Tseung Kwan O (TKO) Area 137 and associated reclamation sites. The tentative proposed development areas are about 101 hectares (ha) at TKO Area 137 including about 20 ha of land to be created through reclamation, and about 25 ha at the land off TKO Area 132 through reclamation and slope-cutting. The locations of the tentative proposed developments and the study area of the Project are shown in the plan attached in the Project Profile which is reproduced as shown in **Appendix A** of this EIA study brief.

1.3 TKO Area 137 is planned to be developed into a new community mainly for residential developments accommodating a total population of around 135,000, while some land uses within TKO Area 137 are reserved for government, institution and community (GIC) uses, retail and commercial facilities, recreational and open space, as well as infrastructures. The initial proposed elements in TKO Area 137 include the following:

(i) sewage treatment works (STW);

(ii) electricity substations;

(iii) a liquefied petroleum gas (LPG) filling station;

(iv) healthcare and welfare facilities;

(v) schools;

(vi) community hall;

(vii) public transport interchanges;

(viii) sports centres;

(ix) a swimming pool complex;

(x) natural terrain hazard mitigation works.

1.4 The land to be created off TKO Area 132 will be used for accommodating the following proposed facilities:-

(i) a public fill transfer facility (PFTF);

(ii) a construction waste handling facility (CWHF);

(iii) a refuse transfer station (RTS);

(iv) a concrete batching plant (CBP);

(v) a marine refuse collection point (MRCP); and

(vi) strategic electricity facilities (EFs) involving electricity substation.

1.5 In addition, the Project would also explore potential developments that may be identified during the course of the study, such as:

(i) Provision of water service reservoir, sewage pumping station, salt water pumping station;

(ii) cavern formation for accommodation of suitable public facilities; and

(iii) natural terrain hazard mitigation works at/adjacent to TKO Area 132.

1.6 The Project is a designated project (DP) under Item 1 of Schedule 3 of the EIAO, which specifies that an "Engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100,000". The Project also includes individual work items (e.g. proposed facilities) that may fall under Schedule 2 of the EIAO. Based on the information provided in the Project Profile, the proposed facilities identified as potential DPs in Part I, Schedule 2 of the EIAO include the following:-

(i) Item A.8 – A road or railway bridge more than 100 m in length between abutments;

(ii) Item C.1 – Reclamation works (including associated dredging works) more than 5 ha in size;

(iii) Item C.2 – Reclamation works (including associated dredging works) more than 1 ha in size and a boundary of which (c) is less than 100m from an existing residential area;

(iv) Item C.4 – A breakwater more than 1 km in length or a breakwater extending into a tidal flushing channel by more than 30% of the channel width;

(v) Item F.1 – Sewage treatment works with an installed capacity of more than 15,000 m^3 per day;

(vi) Item F.2 – Sewage treatment works (a) with an installed capacity of more than 5,000 m^3 per day and; (b) a boundary of which is less than 200 m from the nearest boundary of an existing or planned (i) residential area and (iii) educational institution;

(vii) Item F.6 – A submarine sewage outfall;

(viii) Item G.2 – A refuse transfer station;

(ix) Item G.5 – A facility for the treatment of construction waste (a) with a designed capacity

of not less than 500 tonnes per day; and (b) a boundary of which is less than 200 m from an existing or planned (i) residential area;

(x) Item H.1 – A 400 kV electricity substation and transmission line; and

(xi) Item Q.1 – Earthworks partly or wholly in an existing country park.

1.7 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.

1.8 The purpose of this EIA study is to provide information on the nature and extent of environmental impacts arising from the construction and operation stages of the Project and associated activities that will take place concurrently. This information will contribute to decisions by the Director on:

(i) the overall acceptability of any adverse environmental consequences that are likely to arise as a result of the Project;

(ii) the conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences wherever practicable; and

(iii) the acceptability of residual impacts after the proposed mitigation measures are implemented.

2. OBJECTIVES OF THE EIA STUDY

2.1 The objectives of the EIA study are as follows:

(i) to describe the Project and associated works together with the requirements and environmental benefits for carrying out the Project;

(ii) to identify and describe the elements of the community and environment likely to be affected by the Project and/or likely to cause adverse impacts to the Project, including both the natural and man-made environment and the associated environmental constraints;

(iii) to identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potential affected uses, and to propose measures to mitigate these impacts;

(iv) to identify and quantify any potential impacts from point and non-point pollution sources on the identified water systems and sensitive receivers and to propose measures to mitigate these impacts;

(v) to identify and quantify potential waste management requirements and to propose measures to mitigate these impacts;

(vi) to identify and quantify contaminated land within the Project area, and to propose measures to avoid disposal in the first instance;

(vii) to identify, evaluate and address any potential ecological impacts arising from the Project and to propose measures to mitigate these impacts;

(viii) to identify and quantify the fisheries impacts and to propose measures to mitigate these impacts;

(ix) to identify any potential landscape and visual impacts and to propose measures to mitigate these impacts;

(x) to identify any negative impacts on cultural heritage and to propose measures to mitigate these impacts;

(xi) to identify potential hazard to life impacts and to propose mitigation measures to mitigate these impacts;

(xii) to assess and propose safety and precautionary measures for minimising risks due to landfill gas migration or leachate contamination;

(xiii) to identify any impacts from electric and magnetic fields and to propose measures to mitigate these impacts;

(xiv) to propose the provision of infrastructure or mitigation measures so as to minimize pollution, environmental disturbance and nuisance during the construction and operation stages of the Project;

(xv) to investigate the feasibility, practicability, effectiveness and implications of the proposed mitigation measures;

(xvi) to identify, predict and evaluate the residual environmental impacts (i.e. after practicable mitigation) 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;

(xvii) to identify, assess and specify methods, measures and standards, to be included in the detailed design, construction and operation of the Project which are necessary to mitigate these residual environmental impacts and cumulative effects and reduce them to acceptable levels;

(xviii) 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;

(xix) to design and specify the environmental monitoring and audit requirements;

(xx) to identify any additional studies necessary to implement the mitigation measures and proposals recommended in the EIA report; and

(xxi) to identify DP(s) listed under Schedule 2 of the EIAO as part of the Project for assessment under the EIA study.

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 Sections 1.2 to 1.5 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) potential air quality impacts on existing and planned air sensitive receivers (ASRs) during construction and operation of the Project. Consideration shall be given to assessing the air quality impacts during different phases of the Project on the residents of the Project upon population intake;

(ii) potential noise impacts on existing and planned noise sensitive receivers (NSRs) due to the construction and operation of the Project including noise impacts from construction activities, road traffic, fixed noises and rail noise. Consideration shall be given to assess the noise impacts during different phases of the Project on the residents of the Project upon population intake;

(iii) potential hydrodynamic and water quality impacts caused by the Project (e.g. reclamation and dredging (if any), discharge of sewage effluent from facilities such as sewage treatment works, etc.) on water sensitive receivers (WSRs) and relevant water system(s) in the vicinity due to the construction and operation of the Project;

(iv) potential sewerage and sewage treatment implications to cope with discharges from population and any development from the Project, taking into account the capacity requirements for the existing, committed and planned developments within the same sewage catchment;

(v) potential waste management implications arising from the construction and operation of the Project;

(vi) potential land contamination within Project area for development works and relevant mitigation measures;

(vii) potential ecological impacts (terrestrial and marine) due to the construction and operation of the Project including impacts on the Clear Water Bay Country Park resulting from the development works and the natural terrain hazard mitigation works (if applicable);

(viii) potential fisheries impacts due to construction and operation of the Project;

(ix) potential landscape impact due to the construction and operation of the Project;

(x) potential visual impact due to the operation of the Project;

(xi) potential cultural heritage impacts, including built heritage, sites of cultural heritage, and marine archaeological (if applicable), due to the construction and operation of the Project;

(xii) potential hazard to life impact during the construction and operation of the Project;

(xiii) potential landfill gas hazard due to construction and operation of the Project;

(xiv) potential impacts from exposure to electric and magnetic field;

(xv) 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. Consideration shall be given to account for impacts from potential concurrent projects, including but not limited to the planned desalination plant at TKO Area 137, South East New Territories (SENT) Landfill and the SENT Landfill extension (covering the potential interfacing issues and impacts in the events of its closure/full restoration at a later date), Tseung Kwan O – Lam Tin Tunnel, Cross Bay Link, housing developments in TKO, and the planned Tseung Kwan O Line Southern Extension (TKOLSE); and

(xvi) identification of individual DPs proposed under the Project that fall under Schedule 2 of the EIAO, in addition to those mentioned in Section 1.6 of this EIA study brief to ascertain whether the findings of this EIA study have adequately addressed the environmental impacts of those DPs; and where necessary to identify the outstanding issues that need to be assessed and addressed in any further detailed EIA studies.

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(s), 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 land uses, design, scale/size, 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 water 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, minimising and control of adverse environmental impacts. The options might include siting, scale/size, extent, layout, configuration/orientation, 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 the 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 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. In particular, the avoidance and minimization of industrial and residential (I/R) interface problems arising from the close proximity of industrial developments to the proposed residential developments of the Project shall be explored, with a view to avoiding or reducing the I/R interface problems as far as practicable.

3.4.4 Air Quality Impact

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

3.4.4.2 The assessment area for the air quality impact assessment shall be defined by a distance of 500 metres from the boundary of the proposed development and 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 air sensitive receivers within the assessment area as well as any proposed air sensitive receivers within the proposed development as identified in the EIA and 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. Odour impact shall also be assessed. 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 The assessment area for the noise impact assessment shall be defined by a distance of 300 metres from the boundary of the proposed development and works of the Project as identified in the EIA. The assessment area shall be extended to include noise sensitive receivers (NSRs) at distances over 300 metres from the boundary of the proposed development and works of the Project, which may be affected by the construction and operation of the Project and have a bearing on the environmental acceptability of the Project. The assessment shall cover the potential noise impacts due to the construction and operation of the Project, including construction noise, road traffic noise, fixed noise sources and marine traffic noise impacts on the existing, committed and planned NSRs reflected 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 as well as any proposed noise sensitive receivers within the proposed development of the Project as identified in the EIA. Rail noise impact from concurrent project(s), if any, on the Project should also be assessed.

3.4.5.3 The noise impact assessment for the construction and operation stages 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 proposed development and works of the Project as identified in the EIA; and shall also cover the Junk Bay Water Control Zone, Eastern Buffer Water Control Zone and other affected Water Control Zone(s) as designated under the Water Pollution Control Ordinance (Cap. 358) and the water sensitive receivers (WSRs) in the vicinity of the Project. WSRs including, but not limited to, fish culture zone, coral, seawater intake for Tseung Kwan O Salt Water Pumping Station, seawater intake for the proposed salt water pumping station (if any), seawater intake for the planned desalination plant at TKO Area 137, cooling water intake, marine benthic communities and intertidal habitat and proposed Tseung Kwan O Water Sports Centre in the above area shall be assessed in the water quality assessment. 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 Sewerage and Sewage Treatment Implications

3.4.7.1 The Applicant shall evaluate and assess the impacts on the downstream public sewerage, sewage treatment and disposal facilities. The assessment of the sewerage and sewage treatment implications for the Project shall follow the detailed technical requirements given in **Appendix E** of this EIA study brief.

3.4.8 Waste Management Implications

3.4.8.1 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.

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

3.4.9 Land Contamination

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

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

3.4.10 Ecological Implication (Terrestrial and Marine)

3.4.10.1 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.

3.4.10.2 The assessment area for the purpose of the terrestrial ecological impact assessment shall include areas within 500 metres distance from the boundary of the proposed development and works of the Project as identified in the EIA, and any other areas likely to be impacted by the Project.

3.4.10.3 For marine ecological impact assessment, the assessment area shall be the same as the assessment area for Water Quality Impact Assessment described in Section 3.4.6.2 of this EIA study brief and any other areas likely to be impacted by the Project.

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

3.4.11 Fisheries Impact

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

3.4.11.2 The assessment area for fisheries impact assessment shall be the same as the assessment area for Water Quality Impact Assessment described in Section 3.4.6.2 of this EIA study brief. This assessment area shall be extended to include other areas if they are found also being impacted by the construction or operation of the Project during the course of the EIA study. Special attention should be given to potential loss or disturbance of fishing ground, fisheries habitat, important spawning and nursery grounds of commercial fisheries resources, water quality deterioration at sensitive receivers such as fish culture zones.

3.4.11.3 The fisheries 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 Landscape and Visual Impact

3.4.12.1 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 latest version of the EIAO Guidance Note "Preparation of Landscape and Visual Impact Assessment under the EIAO" published on the website of the Environmental Protection Department, unless otherwise agreed by the Director.

3.4.12.2 The assessment area for the landscape impact assessment shall include areas within 100 metres from the boundary of the proposed development and works of the Project as identified in the EIA, while the assessment area for the visual impact assessment shall be defined by the visual envelope of the Project. The defined visual envelope shall be shown on a plan in the EIA report.

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

3.4.13 Impact of Cultural Heritage

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

3.4.13.2 The assessment area for the cultural heritage impact assessment (CHIA) shall be defined by a distance of 300 metres from the boundary of the proposed developments and works of the Project as identified in the EIA. 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.

3.4.13.3 The CHIA for the construction and operation of the Project shall follow the detailed technical requirements of the BHIA, AIA and MAI are shown in **Appendix K** and **Appendix K-1** of this EIA study brief.

3.4.14 Hazard To Life

3.4.14.1 The Applicant shall follow the criteria for evaluating hazard to life as stated in Section 2 of Annex 4 of the TM.

3.4.14.2 The hazard to life assessment for construction and operation of the Project shall follow the detailed technical requirements given in **Appendix L** of this EIA study brief.

3.4.15 Landfill Gas Hazard

3.4.15.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing landfill gas hazards as stated in Annexes 7 and 19 of the TM respectively. In particular, the landfill gas hazard assessment shall be carried out in accordance with the latest version of "Landfill Gas Hazard Assessment Guidance Note" issued by the Director and shall entail two main components, which are qualitative risk assessment and landfill gas precautionary/protection design.

3.4.15.2 The landfill gas hazard assessment for construction and operation of the Project shall follow the detailed technical requirements given in **Appendix M** of this EIA study brief.

3.4.16 Impact from Electric and Magnetic Field

3.4.16.1 The Applicant shall follow the guidelines issued by the International Commission on Non-ionizing Radiation Protection (ICNIRP) in 1998 in assessing the impacts from the exposure to electric and magnetic fields generated from the proposed electricity substation and transmission line.

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 N**) containing 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, such as alignment, design, location, scale, extent, land use and layout options as well as construction methods, disposal/treatment methods and sequences of works for the Project, with a view to avoiding, minimizing 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 O** 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 and the corresponding raw data with necessary setting(s) that enable full migration into EPD's platform 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 Sections 1.2 to 1.5 of this EIA study brief and in Project Profile (No. PP-654/2023), the Applicant must seek confirmation from the Director in writing on whether or not the scope of issues covered by this EIA study brief can still cover the key changes, and the additional issues, if any, that the EIA study must also address. If the changes to the Project fundamentally alter the key scope of the EIA study brief, the Applicant shall apply to the Director for a fresh EIA study brief.

7. LIST OF APPENDICES

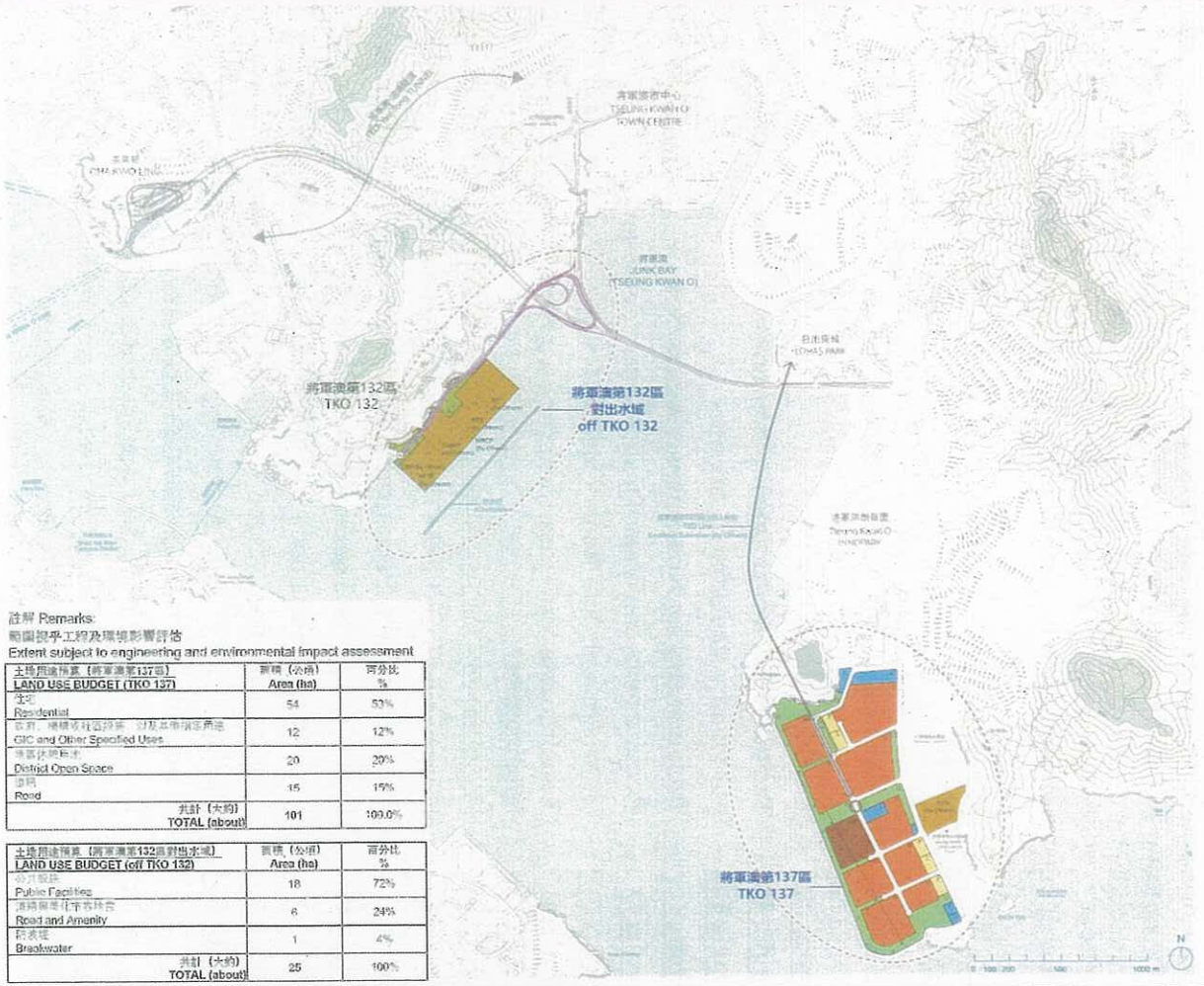
7.1 This EIA study brief includes the following appendices:

Appendix A – Project Location Plan
Appendix B – Requirements for Air Quality Impact Assessment
Appendix B-1 – Air Quality Modelling Guidelines
Appendix C – Requirements for Noise Impact Assessment
Appendix D – Requirements for Water Quality Impact Assessment
Appendix D-1 – Hydrodynamic and Water Quality Modelling Requirements
Appendix E – Requirements for Assessment of Sewerage and Sewage Treatment Implications
Appendix F – Requirements for Assessment of Waste Management Implications
Appendix G – Requirements for Land Contamination Assessment
Appendix H – Requirements for Ecological Impact Assessment (Terrestrial and Marine)
Appendix I – Requirements for Fisheries Impact Assessment
Appendix J – Requirements for Landscape and Visual Impact Assessment
Appendix K – Requirements for Cultural Heritage Impact Assessment
Appendix K-1 – Guidelines for Marine Archaeological Investigation
Appendix L – Requirements for Hazard to Life Assessment
Appendix M – Requirements for Landfill Gas Hazard Assessment
Appendix N – Implementation Schedule of Recommended Mitigation Measures
Appendix O – Requirements for EIA Report Documents

– END of EIA STUDY BRIEF –

June 2023
Environmental Assessment Division
Environmental Protection Department

Appendix A



圖例 LEGEND

- 研究區界線 Study Area Boundary
- 將軍澳-油塘隧道（為《跨越2030年的鐵路及主要幹道策略性研究》涵蓋） Tseung Kwan O - Yau Tong Tunnel (Subject to RMR2030+ Study)
- 將軍澳第132區對出水域擬議道路 Proposed road to off TKO 132
- 將軍澳線南延線（海底/地底隧道）（為《跨越2030年的鐵路及主要幹道策略性研究》涵蓋） Tseung Kwan O Line Southern Extension (Underwater/Underground Tunnel) (Subeject to RMR2030+ Study)
- 擬議鐵路站（為《跨越2030年的鐵路及主要幹道策略性研究》涵蓋） Proposed Railway Station (Subject to RMR2030+ Study)

* 擬議鐵路站站位僅供參考。
The location for proposed railway station is for reference only

土地用途 LAND USE

- 住宅 Residential
- 混合用途 Mixed Use
- G 政府設施 Government
- E 教育 Education
- STW 污水處理廠 Sewage Treatment Works
- EF 電力設施 Electricity Facilities
- RTS 廢物轉運站 Refuse Transfer Station
- CWMF 建築廢物處理設施 Construction Waste Handling Facilities
- MRCP 海上垃圾收集站 Marine Refuse Collection Point
- CBP 混凝土配料廠 Concrete Batching Plant
- PFTF 公眾填料轉運設施 Public Fill Transfer Facility
- O 休閒用地 Open Space
- A 市容美化用地 Amenity
- 擬議填海 Proposed Reclamation
- 道路 Road

註解 Remarks:
範圍視乎工程及環境影響評估
Extent subject to engineering and environmental impact assessment

土地用途預算（將軍澳第137區） LAND USE BUDGET (TKO 137)	面積（公頃） Area (ha)	百分比 %
住宅 Residential	54	53%
政府、機構或社區設施、休閒及康體設施 GIC and Other Specified Uses	12	12%
休閒用地 District Open Space	20	20%
道路 Road	15	15%
共計（大約） TOTAL (about)	101	100.0%

土地用途預算（將軍澳第132區對出水域） LAND USE BUDGET (off TKO 132)	面積（公頃） Area (ha)	百分比 %
公共設施 Public Facilities	18	72%
道路與市容美化 Road and Amenity	6	24%
防波堤 Breakwater	1	4%
共計（大約） TOTAL (about)	25	100%

Project Title: Development of Tseung Kwan O Area 137 and Associated Reclamation Sites
工程項目名稱: 將軍澳第137區發展及相關填海用地的發展

(This figure is prepared based on Plan 1 of Project Profile No.: PP-654/2023)
(本圖是根據工程項目簡介編號 PP-654/2023 圖則 1 編製)

EIA Study Brief No.: ESB-360/2023
環評研究概要編號 : ESB-360/2023

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 operation stages of the Project.

   (iii) Presentation of background air quality levels in the assessment area for the purpose of evaluating the cumulative air quality impacts during construction and operation stages of the Project. 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 reflected on the relevant Outline Zoning Plans, Development Permission Area Plans, Outline Development Plans, Layout Plans and other relevant published land use plans, including plans and drawings published by the Lands Department and any land use and development applications approved by the Town Planning Board. The Applicant shall select the assessment points of the identified ASRs that represent the worst impact point of these ASRs. A map clearly showing the location and description such as name of buildings, their uses and height of the selected assessment points and the separation distances of these ASRs from the nearest emission sources shall also be given. For phased development, the Applicant shall review the development programme and, where appropriate, to include occupiers of earlier phases as ASRs of construction phase impacts if they may be affected by works of later phases.

   (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 slope cutting, excavation and site formation, reclamation and filling, cavern formation, stock piling, material handling and vehicular movements on unpaved haul roads on site, etc. Examples of operational stage emission sources include exhaust emissions from vehicles; marine vessels; chimney emissions from Synthetic Natural Gas (SNG) Production Plant for SENT Landfill; odour emissions from SENT Landfill and the SENT Landfill extension, the proposed sewage treatment facilities, sewage pumping station (if any), CWHF, RTS, MRCP, dust emissions from the proposed

PFTF, CWHF and CBP, etc. Confirmation regarding the validity of assumptions and the magnitude of activities (e.g. volume of construction material to be handled, odour emission strength, 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.

(iii) Identification of existing and potential chimneys and obtainment of relevant chimney emission data in the assessment area, where appropriate, by carrying out a survey for assessing the cumulative air quality impact of air pollutants through chimneys. The Applicant shall ensure and confirm the validity of the emission data used in their assessment. Any errors found in their emission data used may render the submission invalid.

(iv) The emissions from any concurrent projects identified as relevant during the course of the EIA study shall be taken into account as contributing towards the overall cumulative air quality impact. The impacts at the existing, committed and planned ASRs within the assessment area as well as at the proposed air sensitive uses within the proposed development of the Project 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 effectively controlled. Construction dust assessment should be conducted qualitatively to ensure that the Air Pollution Control (Construction Dust) Regulation is complied with.

(ii) 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 minimise air quality impact arising from the construction machinery. 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.

(iii) 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 and potential odour impact at the identified ASRs within the assessment area as defined in Section 3.4.4.2 of this study brief based on an assumed reasonably worst-case scenario under normal operating conditions of the Project.

(ii) If the assessment indicates likely exceedances of the recommended limits in the TM at the development and the identified ASRs, a quantitative assessment should be carried out to evaluate the operational phase air quality and odour impacts at the development and the

identified ASRs. The Applicant shall follow the methodology set out in Section 5 below when carrying out the quantitative assessment.

(iii) If necessary, 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, marine transport route 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 and marine traffic shall be calculated based on the highest emission strength from the road vehicles and marine vessels in the assessment area within the next 15 years after the first population intake year of the Project or within the next 5 years after the full population intake year of the Project, whichever is later. The Applicant shall demonstrate that the selected year of assessment represents the highest emission scenario given the combination of vehicular/marine emission factors and traffic flow for the selected year. The Applicant may use EMFAC-HK model released by the Director to determine the Fleet Average Emission Factors, taking into account vehicle fleet mix and other necessary data on each road section. Vehicle emissions, including running, start/idling emission, at existing and future parking sites, if any, that would contribute significantly to the overall cumulative air quality impact at the development and the 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 (referred in Section 2.3 of EPD's "Guidelines on Assessing the 'TOTAL' Air Quality Impacts") located within 4 kilometres 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 development and 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 cover the whole assessment area, 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 over the whole assessment area 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 EIA study, the air quality implication due to these technical remedies 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

6.1 Consideration for Mitigation Measures

6.1.1 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 to maximise separation distance from ASRs, roadside barrier/enclosure, etc.), planning measures (e.g. increase separation distance from ASRs to proposed sewage treatment works, PFTF, RTS, CWHF, CBP, MRCP, etc.), pollution control technology measures (e.g. installation of deodorization system at proposed sewage treatment works, RTS, MRCP, etc., and installation of air pollution control equipment at CBP, chimney exhaust, if any), and traffic management measures (e.g. setting up restriction zone for heavy duty vehicles, low/zero emission zone for existing trunk roads and roads of the project, 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.

6.2 Evaluation of Residual Air Quality Impact

6.2.1 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

7.1 All input and output file(s) of model run(s) including those files for the generation of 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 latest version of 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.

1.2 The Applicant shall conduct prevailing background noise surveys to determine the standards for evaluating noise impact from fixed noise sources. The respective noise environment shall be documented in the EIA report.

2 Construction Noise Impact Assessment

2.1 Construction Noise Impact Assessment Methodology

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

2.1.2 The Applicant shall conduct a qualitative assessment in the EIA to demonstrate no adverse construction noise impact would be associated with the project by adopting quieter construction method and equipment during the construction stages. The Applicant shall firstly identify the major noise sources/activities, then propose the corresponding quiet construction methods and noise mitigation measures, and commit to submitting a Construction Noise Management Plan (CNMP) to the Director.

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 proposed development and works of the Project as identified in the EIA.

(b) The Applicant shall identify the existing, committed and planned NSRs in the assessment area and select assessment points to represent identified NSRs for carrying out construction noise impact assessment.

(c) The assessment points shall be confirmed with the Director before commencing the 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.

2.3 Mitigation of Construction Noise Impact

2.3.1 The Applicant shall consider and evaluate the application of direct mitigation measures including but not limited to, quieter construction method and equipment, barriers, enclosures, etc. The feasibility, practicability, programming and effectiveness of the recommended mitigation measures shall be qualitatively assessed. Any direct mitigation measures recommended shall be well documented in the report. Specific reasons for not adopting certain direct mitigation measures to maximise the protection for the NSRs as far as possible should be clearly substantiated and documented in the EIA report.

2.4 Construction Noise Management Plan (CNMP)

2.4.1 The Applicant shall propose to submit a CNMP to the Director. The CNMP shall contain 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 noise mitigation measures once available and in any case before the tender invitation if there is any change to the construction noise mitigation measures recommended in the EIA report and before the commencement of construction of the project. Any technical constraint that would hinder the use of these quieter construction method and equipment shall be evaluated and clearly recorded in the assessment.

2.4.2 The CNMP shall include an implementation schedule clearly listing out the mitigation measures, the implementation party, location and timing of implementation. Mitigation measures recommended and requirements specified in the CNMP shall be fully implemented.

3 Road Traffic Noise Impact Assessment

3.1 Road Traffic Noise Impact Assessment Methodology

3.1.1 The Applicant shall calculate traffic noise levels in respect of each road section and the overall noise levels from combined road sections (including existing, new/altered road sections) at the NSRs. The Applicant shall propose the assessment methodology for agreement of the Director before commencing the assessment in accordance with Section 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 proposed development and works of the Project as identified in the EIA.

(b) The Applicant shall identify 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.

(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 shall 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 appropriate new and existing 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*

3.3.1.1 The Applicant shall consider different phases of the Project in the road traffic noise impact assessment.

3.3.1.2 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(s). The assessment year(s) shall be made reference to Section 5.1 in Annex

13 of the TM.

3.3.1.3 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(s);
(ii) mitigated scenario at assessment year(s); 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 the surrounding 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, screening by noise tolerant building, 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 the recommended direct mitigation measures shall be quantified.

(c) For planned noise sensitive uses which will still be affected even with practicable direct mitigation measures at source 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 and agreement 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 6.3 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

3.5.1 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 6.3 in Annex 13 of the TM.

4 Fixed Noise Sources Impact Assessment

4.1 Fixed Noise Sources Impact Assessment Methodology

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

4.1.2 The Applicant shall conduct a qualitative assessment to demonstrate no adverse fixed noise sources impact would be associated with the project by committing to adopt appropriate noise mitigation measures during the operation periods. The Applicant shall identify the major noise sources/activities, and commit to submitting a Fixed Noise Source Management Plan (FNMP) to the Director.

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 proposed development and works of the Project as identified in the EIA.

(b) The Applicant shall identify the existing, committed and planned NSRs in the assessment area and select assessment points to represent identified NSRs for carrying out the 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 shall use the relevant land use and planning parameters and conditions to work out representative site layouts for fixed noise sources impact assessment purpose. However, such parameters and conditions together with 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 of noise sources shall include noise associated with the operations of the Tseung Kwan O InnoPark, landfill and the planned desalination plant at TKO Area 137, and planned fixed noise sources (e.g. sewage treatment works, sewage pumping station (if any), equipment installations and barging operation at the RTS, CWHF, PFTF, CBP, MRCP, EFs, etc).

(b) The Applicant shall provide document or certificate, where applicable, 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 where applicable and documented in the EIA report.

4.3 Mitigation of Fixed Noise Sources Impact

4.3.1 The Applicant shall consider and evaluate the application of direct mitigation measures including but not limited to quieter equipment, silencer, barrier, enclosures, screening by noise tolerant building, etc. The feasibility, practicability, programming and effectiveness of the recommended mitigation measures shall be qualitatively assessed. Any direct mitigation measures recommended should be well documented in the report. Specific reasons for not adopting certain direct mitigation measures to maximise the protection for the NSRs as far as possible should be clearly substantiated and documented in the EIA report.

4.4 Fixed Noise Source Management Plan (FNMP)

4.4.1 The Applicant shall propose to submit a FNMP to the Director. The FNMP will contain the quantitative fixed noise source impact assessment, noise mitigation measures and the fixed noise source impact monitoring and audit programme, with reference to the updated and identified inventories once available and in any case before commencement of construction of the Project.

4.4.2 The FNMP shall include an implementation schedule clearly listing out the mitigation measures, the implementation party, location and timing of implementation. Mitigation measures recommended and requirements specified in the FNMP shall be fully implemented.

5 Rail Noise Impact Assessment

5.1 The Applicant shall carry out railway noise impact assessment in respect of air-borne (where applicable) and ground-borne noise arising from the planned railway lines (where applicable) within the assessment area in the course of the EIA study, with respect to the acceptable levels contained in Table 1A in Annex 5 of the TM. The Applicant shall propose assessment area, 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.

5.2 Identification of Rail Noise Impact

(a) The Applicant shall identify planned NSRs in the proposed developments in the assessment area and select assessment points to represent identified NSRs for carrying out rail noise impact assessment.

(b) The Applicant shall identify and quantify as far as practicable an inventory of noise sources taking into consideration railway traffic data, railway design, type of rolling stock, and allow for deterioration in rail and rolling stock condition from brand new to an operating level, the reasonable worst case scenario and any other planned noise sources.

(c) The Applicant shall present the potential noise impact in Leq(30min) during the day and at night at the NSRs at various representative floor levels (in m P.D.) on tables and plans of suitable scale.

5.3 Mitigation of Rail Noise Impact

5.3.1 Based on the above noise assessment result, the Applicant shall define the constraints including assumed configuration of the railway (e.g. underground, viaduct or at grade), and make recommendations for noise amelioration / direct mitigation measures for any planned NSR which would be subject to predicted noise level in excess of the relevant planning criteria and statutory limits in the appropriate design year.

6 Marine Traffic Noise Impact Assessment

6.1 The Applicant shall carry out marine traffic noise impact assessment including noise from manoeuvring of vessels during operational phase of the Project. The Applicant shall propose the assessment area, criteria and assessment methodology for agreement of the Director (with reference to Section 4.4.2(c) of the TM) prior to the commencement of the assessment.

6.2 Identification of Marine Traffic Noise Impact

(a) The Applicant shall identify existing, committed and planned NSRs in the assessment area and select assessment points to represent identified NSRs for carrying out marine traffic noise impact assessment. Quantitative assessment at the identified NSRs shall be compared against the relevant criteria or limits.

6.3 Mitigation of Marine Traffic Noise Impact

(a) The Applicant shall make recommendations for direct mitigation measures for NSR which would be subject to predicted noise impacts from marine traffic.

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 by appropriate mathematical modelling and/or other techniques proposed by the Applicant and approved by the Director. The mathematical modelling requirements are set out in **Appendix D-1**. Possible impacts due to the reclamation, sewage outfall and breakwater construction; dredging (including dredge and non-dredge approach), loading and unloading operation, filling and other marine works activities; effluent discharge, thermal/ cooling water discharge and biocide discharge (if any); discharge including emergency overflow from the sewage treatment works, submarine sewage outfall and sewage pumping stations (if any); and site runoff shall include but not limited to changes in hydrology, flow regime, water and sediment quality, marine and freshwater organisms/community. The prediction shall include possible different construction and operation stages or sequences of the Project. Affected sensitive receivers shall be identified by the assessment tool with indications of degree of severity.

3. The assessment shall include, but not limited to the following:

   (i) the potential hydrodynamic impact and water quality impact due to any reclamation, breakwater and change in coastline;

   (ii) the water quality impacts of including but not limited to impacts on suspended solid level, dissolved oxygen concentration, contaminant and nutrient release arising from marine works (e.g. reclamation, dredging, filling, construction of breakwater and outfall, etc.) and those specified in the ProPECC Practice Note 1/94 on "Construction Site Drainage", during construction;

   (iii) the water quality impacts of surface runoff containing oil/grease and suspended solids, wastewater from commercial/industrial activities (e.g. CBP, RTS, EFs, MRCP, PFTF, etc.) and sewage during the operational stage;

   (iv) the water quality impacts on fish culture zone, coral, seawater intake for Tseung Kwan O Salt Water Pumping Station, seawater intake for proposed salt water pumping station (if any), seawater intake for the planned desalination plant at TKO Area 137, cooling water intake, marine benthic communities and intertidal habitat, proposed Tseung Kwan O Water Sports Centre and other water sensitive receivers which may be affected by the Project;

   (v) the water quality impact due to any groundwater contamination during construction and operation of cavern, if any;

   (vi) analysis on operation arrangement of the proposed sewage treatment works with regard to the sewage treatment level and effluent quality, frequency, duration, volume and flow rate of the discharges, discharge location and their corresponding pollutants;

   (vii) the water quality impacts of temporary discharge (if any), accidental discharge, emergency discharge, and discharge under normal operation from the potential sewage

pumping station and salt water pumping station (if any), and the proposed sewage treatment works during operation stage of the Project, which shall include the impact on the receiving water bodies and water sensitive receivers (in particular fish culture zone, coral, seawater intake for Tseung Kwan O Salt Water Pumping Station, seawater intake for the planned desalination plant at TKO Area 137, cooling water intake, marine benthic communities and intertidal habitat);

(viii) the water quality impact of alternative sewage collection, treatment and disposal if the proposed sewage treatment works option is not feasible. The impact of additional sewage connection to the Tseung Kwan O Sewage Treatment Works and HATS system shall be quantitatively addressed;

(ix) the water quality impacts due to creation of embayment of water body by the reclamation (such as the corner zone to the north of TKO Area 132 additional reclamation); and potential of marine refuse entrapment; and

(x) the water quality impacts due to construction and operation of the new submarine sewage outfall.

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) and (iii) above;

(v) review the specific construction methods and configurations, and operation of the Project to identify any change of shoreline or bathymetry and change of flow regimes; identify and predict the likely water quality impacts arising from the Project;

(vi) identify any alteration 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 discharges to the water system(s), dredging and filling for reclamation construction and marine works; sewage from workforce and future occupants/users, thermal/ cooling water discharge, discharge containing biocide (if any), dredging (including possible maintenance dredging), and other polluted discharge generated from the construction and operation of the Project, contaminant release from works on marine sediment and sediment release or re-suspension from works into water bodies;

(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) report the adequacy of the existing sewerage and sewage treatment facilities for the handling, treatment and disposal of wastewater arising from the Project as required in Section 3.4.7 of this EIA study brief;

(x) identify and quantify the water quality impacts based on the findings and recommendations from the Sewerage and Sewage Treatment Implications Assessment under Section 3.4.7 of this EIA study brief. The water quality concerns shall include, but not limited to, possible sewage overflow or emergency discharge due to capacity constraints of the sewerage system, and emergencies arising from the Project;

(xi) predict and quantify the impacts on the water system(s) and its/their sensitive receivers due to those alterations and changes identified in (vi) above, and the pollution sources identified in (vii) above. Possible impacts include change in hydrology, flow regime, groundwater contamination, water quality and release of contaminants during dredging, filling and other marine works, etc. The prediction shall take into account and include possible different construction and operation stages of the Project;

(xii) assess the cumulative impacts due to other related concurrent and planned projects (e.g. Tseung Kwan O Line Southern Extension, proposed sewage treatment works, etc.), activities or pollution sources that may have a bearing on the environmental acceptability of the Project. The Applicant shall propose the assessment boundary of cumulative impact for agreement of the Director;

(xiii) 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 (in particular to avoid any adverse impact on the seawater quality in the vicinity of the proposed seawater intake of the planned desalination plant at TKO Area 137, Tseung Kwan O Salt Water Pumping Station, existing and potential sea water intake/ pumping station (if any) as far as practicable);

(xiv) develop effective infrastructure upgrading or provision, contingency plan, water pollution prevention and mitigation measures to be implemented during construction and operation stages, including temporary/accidental/emergency sewage discharge in the case of sewage treatment works and sewage pumping station, so as to reduce the water quality impacts to within standards (in particular to avoid any adverse impact on the seawater quality in the vicinity of the proposed seawater intake of the planned desalination plant at TKO Area 137, Tseung Kwan O Salt Water Pumping Station, existing and potential sea water intake/ pumping station (if any) as far as practicable),

and measures to prevent and reduce water quality impact of chemical spillage during construction and operation stages of the Project. Requirements to be incorporated in the Project contract document shall also be proposed;

(xv) assess temporary/accidental/emergency discharge of sewage of the Project on water sensitive receivers, in particular fish culture zone, coral, seawater intake for Tseung Kwan O Salt Water Pumping Station, seawater intake for the planned desalination plant at TKO Area 137, cooling water intake, marine benthic communities and intertidal habitat and other water sensitive receivers identified during the course of the EIA study. The Applicant shall submit an assessment methodology and the assessment criteria on temporary/accidental/emergency discharge of sewage for agreement with the Director. The Applicant shall consult Water Services Department (WSD) on the assessment criteria for the seawater intake points of the planned desalination plant at TKO Area 137, Tseung Kwan O Salt Water Pumping Station, and potential salt water pumping station (if any);

(xvi) investigate and develop best management practices to reduce storm water and non-point source pollution during construction and operation of the Project as appropriate;

(xvii) recommend appropriate mitigation measures, including a contingency plan, to minimise the duration and impact of emergency discharges during operation stage of the Project; and

(xviii) 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 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;

(xix) evaluate, predict and characterise the effluent characteristics of the sewage treatment works of the Project with different levels of treatment and disinfection processes. The Applicant shall predict the effluent characteristics by making reference to the influent characteristics from sewage, anticipated performance of the treatment and disinfection processes (if applicable) at the proposed sewage treatment works, the findings of previous studies, and conducting additional samplings and tests if needed; and

(xx) should sewage pumping station or sewage treatment works be constructed under the proposed development, recommend appropriate mitigation measures, including a contingency plan, to minimise the duration and impacts of temporary/accidental/ emergency discharges during the operation stage of the Project.

Appendix D-1

Hydrodynamic and Water Quality Modelling Requirements

1. Water Quality Modelling Plan

(i) The Applicant shall submit a Water Quality Modelling Plan for agreement with EPD before commencement of modelling assessment. The Plan shall demonstrate that the models meet the requirements as stipulated under the sections of Modelling Software, Model Details – Setup, Calibration and Validation, and Model Details – Simulation (Sections 2 to 4) in this Appendix. The Plan shall also set out the methodology for the modelling assessment in accordance with the requirements as stipulated under the Modelling Assessment section (Section 5) in this Appendix.

2. Modelling Software

(i) The modules, D-Flow Flexible Mesh and D-Water Quality, of the Delft3D Flexible Mesh (DFM) Suite modelling software shall be used to simulate the far field hydrodynamic and water quality conditions of the water bodies under different representative scenarios of this EIA study.

(ii) An initial dilution model shall be used to characterize the initial mixing of the effluent discharge, and to estimate the terminal level and size of the plume to be fed into the far field water quality model where necessary. The initial dilution model shall have been proven with successful applications locally and overseas (such as Cormix and VISJET).

3. Model Details – Setup, Calibration and Validation

(i) The Applicant shall locally refine the DFM model provided by EPD (HK-DFM Model, version 202210 or later, available in the Centralised Environmental Database of EPD), and update the model input such as pollution loading inventory, coastline, bathymetry, and other model configurations, where necessary, to suit the needs of this EIA study.

(ii) The HK-DFM Model refined by the Applicant shall be properly calibrated and validated against the latest available field data and checked against the original HK-DFM Model before use in this EIA study. The field data set for calibration and validation shall be agreed with EPD.

(iii) If nested modelling is considered to be absolutely necessary, the Applicant shall use the refined HK-DFM Model (refers to paragraphs (i) and (ii) of Section 3 of this Appendix) to generate the open boundary conditions for the nested / detailed local model as appropriate. The Applicant shall demonstrate that the use of the nested / detailed local model will not eliminate the essential features for hydrodynamic and water quality processes in the area of concern. In addition, the Applicant shall demonstrate to the satisfaction of EPD that the results of the nested / detailed local model at key monitoring points are highly consistent with and closely resembling those of the refined HK-DFM Model in selected scenario(s) for the EIA study (e.g. the baseline scenario) as well as available field data.

(iv) In addition to the model simulation of selected study period including calibration and validation runs, proper model spin-up shall be carried out to ensure that the model results have largely stabilised. Spin-up test results shall be provided to demonstrate that the model is sufficiently spun up to minimize any numerical artifacts from initial conditions.

(v) For the purpose of calibration and validation, the model shall run for at least a real sequence of 15-day spring-neap tidal cycle (excluding model spin up) each for the dry and the wet seasons.

(vi) The hydrodynamic model shall satisfactorily reproduce the observed variations of tide level and tidal current (in terms of magnitude and direction), and the temporal variations of salinity along the water column. In general, model calibration and validation shall achieve the following level of fitness with field data as far as possible.

Parameters	Level of fitness with field data
(a) tidal elevation (@)	< 8 %
(b) maximum phase error at high water and low water	< 20 minutes
(c) maximum current speed deviation	< 30 %
(d) maximum phase error at peak speed	< 20 minutes
(e) maximum direction error at peak speed	< 15 degrees
(f) maximum salinity deviation	< 2.5 ppt

@ Root mean square of the error including the mean and fluctuating components shall meet the criteria at no less than 80% of the monitoring stations in the model domain.

4. Model Details – Simulation

(i) The water quality modelling results shall be qualitatively explainable, and any identifiable trend and variations in water quality shall be reproduced by the model. The water quality model shall be able to simulate and take account of the interaction of dissolved oxygen, phytoplankton, organic and inorganic nitrogen, phosphorus, silicate, BOD, salinity, temperature, suspended solids, contaminants release of dredged and disposed material, air-water exchange, *E. coli* and benthic processes. Reference shall be made to Water Quality Objectives (WQOs) of the corresponding Water Control Zone (WCZ) as appropriate.

(ii) The model shall take into account the processes of settling, deposition, erosion and re-suspension when assessing impacts of sediment loss due to marine works. The values of the modelling parameters shall be agreed with EPD. Contaminants release and DO depletion during dredging and dumping shall be simulated by the model.

(iii) The model shall incorporate the physical processes of thermal discharge and flow abstraction, buoyancy effect of the thermal plume, and surface heat exchange when assessing impacts of thermal discharge. Dispersion of biocides in the discharge shall also be simulated with appropriate decay rates.

(iv) In general, grid size within and around the assessment area of the Project shall be less than 400 m in open waters and less than 75 m around discharge points or sensitive receivers. The grid shall also be able to reasonably represent coastal features existing and proposed in the Project. The grid schematization shall be agreed with EPD.

(v) The pollution load inventory for water quality modelling shall include both the background and project pollution loads. The Applicant may adopt the pollution load inventory provided by EPD as the background pollution loads. Any update or revision to the background pollution loads as well as the project pollution loads shall be justified and agreed with EPD.

5. Modelling Assessment

(i) The assessment shall include both the construction and operation stages of the Project. Potential impacts of the water quality due to the Project, and potential changes in hydrodynamic regime due to any breakwater construction, reclamation, other works involving coastline and bathymetry

changes, and/or major discharges (such as brine discharge from desalination plants) under the Project shall be assessed. Where appropriate, the assessment shall also include maintenance dredging. Scenarios to be assessed shall cover the baseline condition and scenarios with various different options proposed by the Applicant in order to quantify the environmental impacts and improvements that will be brought about by these options. Corresponding pollution load, bathymetry and coastline shall be adopted in the model setup.

(ii) If applicable, the assessment shall cover accidental spillage associated with the Project. Potential locations, quantities and rates of spill shall be identified and quantified. The spill modelling shall cover combinations of different tides, wind and seasonal conditions. The methodology for modelling spill and scenarios to be covered should be agreed with EPD.

(iii) The water quality model shall run for a complete year to assess water quality impacts during operation stage of the Project. Construction stage impacts, thermal discharge, and floating refuse and debris entrapment, where appropriate, shall be assessed by simulating at least a 15-day spring-neap tidal cycle in both the dry and wet seasons.

(iv) For temporary discharges via the emergency outfall, the potential affected area and sensitive receivers, and the associated impacts shall be assessed using modelling. The Applicant shall estimate the temporary discharge loading, pattern and duration. The worst case scenario, such as discharge near slack water of neap tide, shall be simulated. The simulation period shall be at least a 15-day spring-neap tidal cycle in both the dry and wet seasons, and long enough for the recovery of the receiving water to the status before the discharge. Detailed methodology shall be agreed with EPD.

(v) Compliance of WQOs and other relevant criteria in the relevant WCZs during both the construction and operation stages of the Project shall be assessed.

(vi) Any changes in hydrodynamic regime shall be assessed with the model run for at least a 15-day spring-neap tidal cycle in both the dry and wet seasons. Daily erosion/sedimentation rate on identified sensitive receivers shall be computed and assessed with relevant criteria.

(vii) The impacts of water quality and/or hydrodynamic changes on identified sensitive receivers shall be assessed.

(viii) Cumulative impacts due to other projects, activities or pollution sources within a boundary to be agreed with the EPD shall also be predicted and quantified.

(ix) If nested modelling is adopted (paragraph (iii) of Section 3 of this Appendix) and the modelling results indicates that certain scenarios are sensitive/critical, e.g. where the predicted water quality only marginally meets the WQOs, the Applicant may be required to verify the findings from the nested model by re-running the identical scenarios using the refined HK-DFM Model (refers to paragraphs (i) and (ii) of Section 3 of this Appendix), if deemed necessary by EPD.

(x) All modelling input data and results shall be submitted in digital media to EPD upon request.

Appendix E

Requirements for Assessment of Sewerage and Sewage Treatment Implications

1. The Applicant shall study and assess the impacts of discharging sewage to the existing / planned sewerage systems. The assessment shall include the following :

(i) investigate and review to establish whether there is adequate capacity for the sewage arising from the Project in the existing, committed and planned sewerage systems, and sewage treatment works, taking into account the sewage arising from the existing sources, and committed and planned developments within the sewage catchment. The Applicant shall quantitatively address the impacts of the maximum discharge from the development on the sewerage system under different development phases. The appropriate treatment level of interim and ultimate discharge, if required, and alternative sewage treatment and disposal options (e.g. diversion of sewage to HATS) shall be assessed. The water quality impacts arising from the interim and ultimate effluent discharge, if any, shall be assessed in accordance with Section 3.4.6 of this EIA study brief;

(ii) based on the above item (i), if the existing / planned sewerage layout or capacities cannot cope with the maximum discharges, the Applicant shall propose an optimal and cost-effective upgrading works to improve the existing / planned sewerage and sewage treatment facilities or to provide new sewerage and sewage treatment facilities to receive and treat the sewage arising during construction and operation of the Project. Any proposed sewerage system and / or sewage treatment facility should be designed to meet the current government standards and requirements;

(iii) employ the latest version of the computer model "InfoWorks" or equivalent computer models to assess impacts of future development under different phases on the existing and planned sewerage networks. A copy of the model shall be submitted to EPD for record purpose;

(iv) propose and undertake required measures to mitigate any forecast shortfalls in the sewerage system as a result of the Project under different development phases and demonstrate the proposed measures would be adequate for the maximum discharge from the Project under different development phases. Any proposed sewerage system and / or sewage treatment facility should be designed to meet the current government standards and requirements and agreed by DSD and EPD; and

(v) identify and quantify the water quality impacts due to the emergency discharge from new sewage treatment plant / pumping station, if any, and sewer bursting discharge, and to propose measures to mitigate these impacts;

(vi) identify and propose the appropriate alignment and layouts of the new sewerage to connect to the existing / planned / future sewerage systems, and investigate and assess the technical feasibility of connection (e.g. technical feasibility and details for connection to public sewer and sewage pumping station); and

(vii) set out the design, operation and maintenance requirements and undertake or obtain agreement to undertake the construction and maintenance of any proposed sewerage and sewage treatment facilities, such as sewage treatment plant(s) and pumping station(s) (if recommended), including electrical and mechanical components to eliminate the problem of septicity incurred in long rising mains during low flows and to facilitate maintenance.

The above shall be agreed by DSD and EPD. (Twin rising mains for each pumping station should be provided to make sure that the proposed sewage rising mains are maintainable without shutting down and discharging untreated sewage into the natural stream / drainage channel directly).

Appendix F

Requirements for Assessment of Waste Management Implications

The assessment of waste management implications shall cover the following:

1. Analysis of Activities and Waste Generation

(i) The Applicant shall identify the quantity, quality and timing of the wastes arising as a result of the construction and 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, sludge and screenings from sewage treatment works 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, including sewage being screened, 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 maximising waste reduction shall be separately considered.

(ii) After considering the opportunities for reducing waste generation and maximising re-use, the types and quantities of the wastes required to be disposed of as a consequence shall be estimated and the disposal methods/options for each type of wastes shall be described in detail. The disposal methods/options recommended for each type of wastes shall take into account the result of the assessment in item (iv) below.

(iii) The EIA report shall 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; and

(iv) 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.

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

3. Excavation/Dredging and Dumping

(i) The Applicant shall identify and estimate dredging/excavation, dredged/excavated sediment/mud transportation and disposal activities and requirements. Potential dumping ground to be involved shall also be identified. Appropriate field investigation, sampling, and chemical and biological laboratory tests to characterise the sediment/mud concerned shall be conducted for marine disposal option. The ranges of parameters to be analysed; the number, type and methods of sampling; sample preservation; chemical and biological laboratory test methods to be used shall be agreed with the Director (with reference to Section 4.4.2(c) of the TM) prior to the commencement of the tests and document in the EIA report for consideration. The categories of sediment/mud which are to be disposed of in accordance with the Dumping at Sea Ordinance (DASO) shall be identified by both chemical and biological tests and their quantities shall be estimated. If the presence of contamination of sediment/mud which requires special treatment/disposal is confirmed, the Applicant shall identify the appropriate treatment and/or disposal arrangement and demonstrate its viability in consultation with relevant authorities.

(ii) The Applicant shall identify and evaluate the practical dredging/excavation methods to minimise dredging/excavation and dumping requirements based on the criterion that existing sediment/mud shall be left in place and not to be disturbed as far as possible.

Appendix G

Requirements for Land Contamination Assessment

1. The Applicant shall identify the potential land contamination site(s) within the boundary of the proposed development and works of the Project (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 uses (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 of the TM is identified, the Applicant shall carry out the land contamination assessment as detailed below and propose measures to avoid disposal:

   (i) The Applicant shall conduct a site appraisal to identify the potential contamination sources that may have impacted the Project site.

   (ii) If potential land contamination sources are identified within the boundary of the proposed development and works of the Project, the Applicant shall conduct site investigation for contamination 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 endorsement. The Applicant shall remediate the contaminated land or site(s) according to the endorsed RAP, and a Remediation Report (RR) to demonstrate completion of remediation should be prepared and submitted to the Director for endorsement prior to the commencement of any proposed development or works of the Project. 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 site appraisal 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 site appraisal, CAR, RAP and RR as soon as these sites become accessible.

Appendix H

Requirements for Ecological Impact Assessment (Terrestrial and Marine)

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 including Clear Water Bay Country Park and other ecologically sensitive areas and species of conservation importance. The assessment shall identify and quantify as far as possible the potential ecological impacts associated with the Project, both directly by 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 and marine environment, and determine the ecological field surveys and investigations that are needed for a comprehensive impact assessment as required under the following Sections;

   (iii) carry out any necessary ecological field surveys with a duration of at least nine months covering both wet and dry season, and investigation to verify the information collected, fill in the information gaps as identified under sub-section (ii) above, if any, and to fulfil the objectives of the EIA study. The field surveys shall cover flora, fauna and any other habitats/species of conservation importance, and shall include intertidal survey, benthic survey, and underwater dive survey for coral communities and associated species;

   (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, 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 recognised sites of conservation importance including Clear Water Bay Country Park and other ecologically sensitive areas, and assessment of whether these sites/areas will be affected by the Project;

      (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 and/or substrate 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 Lists;

(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;

(b) flora species of conservation importance including but not limited to *Marsdenia Lachnostoma* and *Habenaria linguella*;

(c) natural streams and associated riparian habitats;

(d) vertebrates including avifauna, mammals, fish (e.g. *Stiphodon atropurpureus*) and herpetofauna;

(e) macroinvertebrates including butterflies, odonates and fireflies;

(f) the intertidal, subtidal soft-bottom and hard-bottom habitats (e.g. coral communities);

(g) the coral recipient site(s) in western Junk Bay; and

(h) any other habitats/species identified as having special conservation interest by this EIA study.

(vi) using suitable methodologies (including but not limited to those adopted in other relevant EIA studies in Hong Kong), and considering any works activities from other projects reasonably likely to occur at the time, identify and quantify as far as possible any direct (e.g. loss of habitats), indirect (e.g. changes in water qualities, hydrodynamics properties, hydrology, noise and other disturbance generated by the construction and operational activities, etc.), on-site, off-site, primary, secondary and cumulative ecological impacts on the wildlife groups and habitats identified such as destruction of habitats, potential diversion or modification of stream courses, disturbance to wildlife, reduction of species abundance/diversity, loss of feeding and breeding grounds, reduction of ecological carrying capacity and habitat fragmentation and any other possible disturbance caused by the Project, in particular the following:

(a) loss of habitats as mentioned in Section (v) above;

(b) direct, indirect and cumulative impacts on Clear Water Bay Country Park due to the construction and operation of the Project;

(c) disturbance to animal and plants, especially those as mentioned in Section (v) above;

(d) indirect impacts due to potential changes in the water quality, hydrodynamics properties, sedimentation hydrology as a result of surface run-off and discharges on habitats as mentioned in Section (v) above during the construction and operation stages of the Project; and

(e) cumulative impacts due to other planned and committed concurrent development projects at or near the proposed development of the Project.

(vii) evaluate the ecological impact based on the best and latest information available during the course of the EIA study, using quantitative approach as far as practicable and covering construction and operation phases of the Project;

(viii) recommend possible and practicable mitigation measures (such as alternative design and configuration of the Project and modification/change of construction methods, etc.) to avoid, minimise and/or compensate for the adverse ecological impacts identified during construction and operation of the Project, including but not limited to:

(a) avoidance of direct impact on the coral recipient site(s) in western Junk Bay;

(b) exploration of alternatives to avoid/minimise impacts on the Clear Water Bay Country Park;

(c) locating the discharge points of the proposed sewage treatment works properly to avoid/ minimize impacts to ecological sensitive receivers; and

(d) mitigation measures such as eco-engineered seawalls and breakwaters with a wave-like configuration and providing multiple facings to the sun and wave, subtidal artificial reefs and oyster baskets should also be explored;

(ix) 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;

(x) determine and quantify as far as possible the residual ecological impacts after implementation of the proposed mitigation measures;

(xi) 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

(xii) review the need for and recommend any ecological monitoring programme required.

Appendix I

Requirements for Fisheries Impact Assessment

1. Existing information regarding the assessment area shall be reviewed. Based on the review results, the assessment shall identify 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, on-site/offsite, short-term/long-term impacts on capture and culture fisheries during the construction and operation phases of the Project.

3. The fisheries impact assessment shall provide the following information:-

   (i) description of the physical environmental background;

   (ii) description and quantification of the existing fisheries activities;

   (iii) description and quantification of the existing fisheries resources/production;

   (iv) identification of parameters (e.g. water quality parameters) and areas that are important to fisheries and will be affected;

   (v) prediction and evaluation of any direct/indirect, onsite/offsite impacts on fisheries arising from the proposed discharge of sewage effluent under normal and emergency situations;

   (vi) prediction and evaluation of any other direct/indirect, onsite/offsite impacts on fisheries (such as potential loss or disturbance of fishing grounds, fisheries production and operations, fisheries resources and habitats, important spawning or nursery grounds of commercial fisheries resources, water quality deterioration at sensitive receivers such as fish culture zones) caused by the Project;

   (vii) evaluation of cumulative impacts on fisheries;

   (viii) where necessary, proposals of feasible, practicable and effective alternatives and/or mitigation measures; and

   (ix) review for the need of monitoring during the construction and operation phases of the Project and associated works and, if necessary, propose a monitoring and audit programme.

Appendix J

Requirements for Landscape and Visual Impact Assessment

1. 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 latest version of the EIAO Guidance Note "Preparation of Landscape and Visual Impact Assessment under the EIAO" published on the website of the Environmental Protection Department, unless otherwise agreed by the Director. Landscape impact during both construction and operation phase and visual impact during operation phase within the assessment area shall be assessed. 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 (e.g. coastline) and characters of the assessment area including those landscape design proposed under the Project. 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 and survey on Old and Valuable Trees and trees of particular interest within the assessment area shall be carried out and the impacts on them, in particular flora species of conservation importance regardless of size, shall also be addressed. Cumulative landscape and visual impacts of the Project with other committed and planned developments shall be assessed.

3. The Applicant shall assess the visual 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 (including residents along the coast of Hong Kong Island East) 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 Visual Impact Assessment (VIA), the selection of viewpoints/vantage points shall be agreed with Planning Department and the Director;

   (iv) evaluation of the magnitude of change in terms of visual composition, visual obstruction and visual change of the Project with the existing and planned visual context, and sensitivity of viewers in terms of types of viewers and value of existing views;

(v) the visual impact of the Project with and without mitigation measures during 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 location, layout, development options, alignment, design, built-form 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 buffer 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, facade treatment, creation of interesting landscape or visual features 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 implementation 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. 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.

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 at operation stage 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), unless otherwise agreed by the Director, by computer-generated photomontage so as to demonstrate the comparison of scenarios with and without the Project and the effectiveness of the proposed mitigation measures across time. Computer graphics shall be compatible with Microstation DGN file format. The Applicant shall record the technical details in preparing the illustrations, which may need to be submitted for verification of the accuracy of the illustrations.

Appendix K

Requirements for Cultural Heritage Impact Assessment

1. Built Heritage Impact Assessment (BHIA)

The Applicant shall conduct a built heritage impact assessment (BHIA), taking the results of the previous studies and other background of the site into account, to identify known and unknown built heritage items within the assessment area that may be affected by the Project and its associated works and to assess the possible direct and indirect impacts on the identified built heritage items. The impacts include visual impacts, impacts on the fung shui/visual corridor of the historic buildings and structures through change of water-table, vibration caused by the Project. Assessment of impacts on cultural heritage shall also take full account of, and allow where appropriate, the Guidelines for Landscape and Visual Impact Assessment of Annex 18 of the TM. The Applicant shall demonstrate that 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 appropriate protective/monitoring/mitigation measures in accordance with the assessment results and agreed by the Antiquities and Monuments Office (AMO). A checklist including 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 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 AMO and the Director prior to the commencement of the assessment for consideration. In case the existing information is inadequate or where the assessment area has not been adequately studied before, the archaeologist(s) shall conduct archaeological investigations to assemble data. The archaeologist(s) shall obtain licence(s) from the Antiquities Authority under the Antiquities and Monuments Ordinance (Cap. 53) prior to the commencement of archaeological investigation(s). Based on existing and collected data, the Applicant shall evaluate whether the proposed developments and works associated with the Project are acceptable from archaeological preservation point of view. In case adverse 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)

(a) The Applicant shall engage a marine archaeologist(s) to conduct a marine archaeological review based on the best available information to identify whether there is any potential existence of sites or objects of cultural heritage within the seabed that will be affected by the marine works of the Project, whether the identified issues can

be mitigated. The review can take into account the scope and nature of proposed marine works, the results of previous marine archaeological investigations, the dredging history and other diving records, etc. The assessment area shall include areas to be affected by the marine works of the Project.

(b) A MAI shall be carried out to ascertain the archaeological value of the affected seabed area. The Applicant shall propose a programme of investigation, including the scope of works, methodology and time schedule, etc. for agreement with AMO. The MAI shall be carried out by marine archaeologist(s) who shall obtain a licence from the Antiquities Authority under the provision of the Antiquities and Monuments Ordinance (Cap. 53) for the marine archaeological work. If significant archaeological remains are identified, and if they would be affected, strong justifications should be provided, and mitigation measures shall be designed and agreed by the AMO before implementation and implemented to the satisfaction of AMO.

4. The Applicant shall draw necessary reference to relevant sections of the "Guidelines for Marine Archaeological Investigation (MAI) (as at 4 May 2020)" in **Appendix K-1**, including those on archaeological survey, archaeological report, and handling of archaeological finds and archives, if found necessary in desk-top research results.

Appendix K-1

Guidelines for Marine Archaeological Investigation (MAI)
(As at 4 May 2020)

The standard practice for MAI should consist of four separate tasks, i.e. (1) Baseline Review, (2) Geophysical Survey, (3) Establishing Archaeological Potential and (4) Remote Operated Vehicle (ROV)/Visual Diver Survey/Watching Brief. Marine archaeologists should make reference to the standard and guidance of the 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 assessment area should deploy high resolution boomer, side scan sonar, an echo sounder and high resolution multi beam sonar. The multi beam data must be presented as processed digital terrain models to facilitate the archaeological analysis. The data received from the survey would be analysed in detail to provide:

(a) Exact definition of the areas of greatest archaeological potential.

(b) Assessment of the depth and nature of the seabed sediments to define which areas consist of suitable material to bury and preserve archaeological material.

(c) Detailed examination of the boomer and side scan sonar records to map anomalies in and on the seabed which may be archaeological material.

(d) Detailed examination of the multi beam sonar data to assess the archaeological potential of the sonar contacts.

3 Establishing Archaeological Potential

3.1 The data examined during Task 1 and 2 will be analysed to provide an indication of the likely character and extent of archaeological resources within the assessment area. This would facilitate formulation of a strategy for investigation.

3.2 The results would be presented as a written report and charts. If there is no indication of archaeological material there would be no need for further work.

3.3 Charts should be presented at the most appropriate scale and show each survey contact. Its dimensions and exact location should also be shown.

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

4.1 Subject to the outcome of Task 1, 2 and 3, accepted marine archaeological practice would be to plan a field evaluation programme to acquire more detailed data on areas identified as having archaeological potential. The areas of archaeological interest can be inspected by ROV or divers. ROV or a team of divers with both still and video cameras would be used to record all seabed features of archaeological interest.

4.2 Owing to the heavy marine traffic in Hong Kong, the ROV/visual diver survey may not be feasible to achieve the target. If that is the case, an archaeological watching brief is the most appropriate way to monitor the dredging operations in areas of identified high potential to obtain physical archaeological information.

4.3 A sampling strategy for an archaeological watching brief would be prepared based on the results of Task 1, 2 and 3 to focus work on the areas of greatest archaeological potential. Careful monitoring of the dredging operations would enable immediate identification and salvage of archaeological material. If archaeological material is found, the 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.

5 Report

5.1 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 L

Requirements for Hazard to Life Assessment

Hazardous Facilities

1. The Applicant shall investigate methods to avoid and/or minimize risks from dangerous goods (DG) due to the existing and/or planned hazardous facilities. The Applicant shall carry out hazard assessment to evaluate potential hazard to life due to the hazardous facilities (including but not limited to the planned desalination plant at TKO Area 137, town gas pipeline, synthetic natural gas production plant, LPG filling stations, explosives off-loading pier, and potential biogas production and storage at the proposed sewage treatment works) during construction and operation stages of the Project. The hazard assessment shall include the following:

   (i) Identify hazardous scenarios associated with the manufacture, on-site transport, storage and use of dangerous goods in the hazardous facilities and then determine a set of relevant scenarios to be included in a Quantitative Risk Assessment (QRA);

   (ii) Execute a QRA of the set of hazardous scenarios determined in 1(i) above, 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.

Explosives

2. The Applicant shall investigate alternative construction methods to avoid the use of explosives. The Applicant shall conduct a review of the risks from the use, transport and overnight storage of explosives (if any) during construction and operation of the Project, and assess if risk to life is a key issue with respect to Risk Guidelines given in Annex 4 of the TM. QRA for the use, transport and overnight storage of explosives for the Project shall be conducted if, and only if, risk to life is a key issue with respect to Risk Guidelines following the requirements in Section 12.1 of the TM.

3. If a QRA for the use, transport and overnight storage of explosives for the Project is required, the Applicant shall carry out hazard assessment as follows:

   (i) Identify hazardous scenarios associated with the use, transport and overnight storage of the explosives and then determine a set of relevant scenarios to be included in a QRA;

   (ii) Execute a QRA of the set of hazardous scenarios determined in 2(i) above, 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.

4. The hazard assessment shall also include a cumulative risk assessment of the Project, through interaction and in combination of the existing, committed and planned developments.

5. The methodology to be used in the hazard assessments shall be consistent with previous studies having similar issues (e.g. Hazard to Life Assessment in the EIA study of the desalination plant at TKO Area 137).

Appendix M

Requirements for Landfill Gas Hazard Assessment

1. The assessment shall include, but not limited to, the following key technical tasks:

   (i) review of background information (including landfill gas monitoring data) and studies related to SENT Landfill, and the SENT Landfill extension;

   (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 impacts on the Project and impacts from the Project to the potential receivers;

   (iii) identification of the possible pathways through the ground, underground cavities, utilities or ground water, and the nature of these pathways through which the hazardous emissions must traverse if they were to reach the Project;

   (iv) identification of the potential receivers associated with the Project which are sensitive to the impacts of the hazardous emissions;

   (v) qualitative assessment on the degree of risk which the hazardous emissions may impose on the receivers for each of the source-pathway-receiver combinations;

   (vi) design and implementation of suitable level of precautionary / protection measures and contingency plan for the Project and the potential receivers, if needed, in rendering the proposed development as safe as reasonably practicable; and

   (vii) establishment and implementation of a maintenance and monitoring programme for ensuring the continued performance of the implemented precautionary / protection measures.

Appendix N

Implementation Schedule of Recommended Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Measures & Main Concerns to Address	Who to Implement the Measure?	Location of the Measure	When to Implement the Measure?	What Standards or Requirements for the Measure to Achieve?

Appendix O

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 20 copies of the executive summary (each bilingual in both English and Chinese) with or without Addendum as required under Section 7(5) of the EIAO, to be supplied upon advice by the Director for consultation with the Advisory Council on the Environment.

2. In addition, to facilitate public inspection of EIA report via EIAO Internet Website, the Applicant shall provide electronic copies of both the EIA report and executive summary prepared in Hyper Text Markup Language (HTML) and in Portable Document Format (PDF), unless otherwise agreed by the Director. For both of the HTML and PDF versions, a content page capable of providing hyperlink to each section and sub-section of the EIA report and executive summary shall be included in the beginning of the document. Hyperlinks to figures, drawings and tables in the EIA report and executive summary shall be provided in the main text from where respective references are made. The EIA report, including drawings, tables, figures and appendices shall be viewable by common web-browsers including the latest version of Microsoft Edge, Mozilla Firefox, Safari, Google Chrome or any web browsers 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.