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

Environmental Impact Assessment Study Brief No. ESB-268/2014

Project Title: Development of Anderson Road Quarry Site – Road Improvement Works (hereinafter known as the "Project")

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

1. BACKGROUND

1.1 An application (No. ESB-268/2014) for an Environmental Impact Assessment (EIA) study brief under section 5(1)(a) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by the Applicant on 27 January 2014 with a project profile (No. PP-500/2014) for the Development of Anderson Road Quarry Site – Road Improvement Works (the Project Profile).

1.2 The Project has been identified as a designated project under Schedule 2 of the EIAO in the Development of Anderson Road Quarry (ARQ Development). The engineering feasibility study of the ARQ Development is a designated project under Schedule 3 of the EIAO, and a Schedule 3 EIA study is being carried out for the ARQ Development under the EIAO. The Project aims to improve the future traffic operation and to cater for the additional traffic demand from a population of 25,000 at the ARQ Development. The Project comprises construction and operation of the following components:

(i) widening of Lin Tak Road to single-2 lane with 2 long lay-bys at each bound of the road to allow for kerbside activities;

(ii) a new flyover overpassing the junction of Sau Mau Ping Road, Lin Tak Road and Tseung Kwan O Road for the traffic from Lin Tak Road to Sau Mau Ping Road;

(iii) a new westbound carriageway of the Clear Water Bay Road and a new U-turn facility;

(iv) widening a section of 130m length of the existing New Clear Water Bay Road westbound carriageway opposite to Shun Lee Estate from one lane to two lanes; and

(v) a new Shun Lee Tsuen Road slip road within the area of an existing slope to increase the merging length and to improve the sight line for traffic from Shun Lee Tsuen Road.

The location of the Project is given in Figures 1-3 of this EIA Study Brief.

1.3 The Project is a designated project by virtue of Item A1 of Schedule 2 of the EIAO: "*A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing road*".

1.4 Pursuant to section 5(7)(a) of the EIAO, the Director of Environmental Protection (the Director) issues this EIA study brief to the Applicant to carry out an EIA study.

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

(i) the overall acceptability of any adverse environmental consequences that are likely to arise as a result of the Project and associated works, and their staged implementation;

(ii) the conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences; 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 elements of community and environment likely to be affected by the Project and/or likely to cause adverse impacts to the Project, including natural and man-made environment and the associated environmental constraints;

(iii) to provide information on the consideration of alternative options of the Project including alternative siting, scale/size, extent, layout, alignment, design and construction methods with a view to avoiding and minimizing potential environmental impacts to environmentally sensitive areas and sensitive uses; to compare the environmental benefits and dis-benefits of different options; to provide reasons for selecting the preferred option(s) and to describe the part environmental factors played in the selection of preferred option(s);

(iv) to identify and quantify emission sources, including air and gaseous emission, noise emission, wastewater emission and waste generation) and determine the significance of impacts on sensitive receivers and potential affected uses;

(v) to identify and quantify any potential losses or damage to flora, fauna and natural habitats;

(vi) to identify and systematically evaluate any potential landscape and visual impacts and to propose measures to mitigate these impacts;

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

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

(ix) 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;

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

(xi) to investigate the extent of the secondary environmental impacts that may arise from the proposed mitigation measures and to identify constraints associated with the mitigation measures recommended in the EIA study, as well as the provision of any necessary modification; and

(xii) to design and specify environmental monitoring and audit requirements to ensure the effective implementation of the recommended environmental protection and pollution control measures.

3. DETAILED REQUIREMENTS OF THE EIA STUDY

3.1 The Purpose

The purpose of this EIA study brief is to scope the key issues of the EIA study and to specify the environmental issues that are required to be reviewed and assessed in the EIA study. The Applicant has to 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 complied with.

3.2 The Scope

3.2.1 The scope of this EIA study shall cover the Project and associated works mentioned in sub-section 1.2 above. The EIA study shall cover the combined impacts of the whole Project and the cumulative impacts of the existing, committed and planned developments in the vicinity of the Project in accordance with the requirements laid down in section 3.4 of the TM. The environmental impacts of on-site and off-site works and facilities associated with the Project shall be addressed. The EIA study shall address the likely key issues described below, together with any other key issues identified during the course of the EIA study:

(i) potential air quality impacts on sensitive receivers during construction and operation of the Project, including the construction dust emissions and the vehicular emissions during operation;

(ii) potential noise impacts on sensitive receivers during construction and operation of the Project, including noise generated by construction activities and traffic noise during operation;

(iii) potential water quality impact on relevant water system(s) including the Victoria Harbour (Phase One) Water Control Zone and relevant water sensitive receivers during construction and operation of the Project;

(iv) potential waste management implication arising from the construction of the Project, including handling and disposal of construction and demolition materials, chemical waste and general refuse;

(v) potential land contamination issue arising from the Project;

(vi) potential ecological impact, including habitat loss and fragmentation during construction and operation of the Project;

(vii) potential landscape and visual impacts due to the construction and operation of the Project;

(viii) potential landfill gas hazard on site during construction and operation of the Project; and

(ix) potential cumulative environmental impacts of the Project, through interaction or in combination with other existing, committed and planned projects such as the ARQ Development in the vicinity of the Project, and that those impacts may have a bearing on the environmental acceptability of the Project.

3.3 Need of the Project and Consideration of Alternatives

3.3.1 Need of the Project

The Applicant shall provide information on the need of the Project having due regard to the relationship between the Project and the ARQ Development, including the purpose, objectives and environmental benefits of the Project, and describe the scenarios with and without the Project.

3.3.2 Consideration of Alternative Development Options

The Applicant shall consider alternative development options including alternative siting, scale/size, extent, layout, alignment and design for the Project, provide justifications regarding how the proposed development option is arrived at, including the descriptions of the environmental factors considered in the option selection. A comparison of the environmental benefits and dis-benefits of alternative development options shall be made with a view to recommending the preferred option to avoid and minimize adverse environmental effects to the maximum practicable extent.

3.3.3 Consideration of Alternative Construction Methods and Sequences of Works

Taking into consideration the combined effect with respect to the severity and duration of the construction impacts to the affected sensitive receivers, the EIA study shall explore alternative construction methods and sequences of works for the Project, with a view to avoiding or minimizing prolonged adverse environmental impacts. A comparison of the environmental benefits and dis-benefits of applying different construction methods and sequence of works shall be made.

3.3.4 Selection of Preferred Scenario

Taking into consideration of the findings in sub-sections 3.3.2 and 3.3.3 above, the Applicant shall recommend/justify the adoption of the preferred scenario that will avoid or minimize adverse environmental effects arising from the Project, and adequately describe the part that environmental factors played in arriving at the final selection.

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 section 3.2 above. The Applicant shall make reference to the findings of the Schedule 3 EIA study of the ARQ Development in conducting the EIA study of the Project. The assessment shall be based on the best and latest information available during the course of the EIA study. The Applicant shall include in the EIA report details of the construction and operational programme and methodologies for the Project. The Applicant shall clearly state in the EIA report the time frame, staged implementation programme and works programme of the Project and other concurrent projects, and assess the cumulative environmental impacts from the Project and interacting projects as identified in the EIA study.

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

3.4.3 Air Quality Impact

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

3.4.3.2 The study area for the air quality impact assessment shall be defined by a distance of 500 metres from the boundary of the Project site, with consideration to be extended to include major existing, planned and committed air pollutant emission sources that may have a bearing on the environmental acceptability of the Project. The assessment shall include the existing, committed and planned sensitive receivers within the study area as well as areas where air quality may be potentially affected by the Project. The sensitive receivers shall include, but not limited to, those at Good Hope School, Shun Lee Estate, Shun Lee Disciplined Services Quarters, Shun Lee Tsuen Playground, Shun Lee Tsuen Park, Shun Chi Court, Kwun Tong Government Secondary School, Sienna Garden, Anderson Road No. 11 – Leighton Pavillion, Shun On Estate, Sau Mau Ping South Estate, Po Tat Estate, Hong Wah Court, Hing Tin Estate, St. Edward's Catholic Primary School, Lam Tin Estate, Lam Tin Park, Tak Tin Estate, S.K.H. Tak Tin Lee Shiu Keung Primary School and St. Paul's School (Lam Tin). The assessment shall also take into account the impacts of emission sources from nearby concurrent projects, if any. The assessment shall be based on the best

available information at the time of assessment.

3.4.3.3 The air quality impact assessment shall follow the detailed technical requirements given in Appendix A. The Applicant shall assess the air pollutant concentrations with reference to the relevant sections of the guidelines in Appendix A-1 attached to this EIA study brief, or other methodology as agreed by the Director. The Applicant shall also note that the PATH model may be used for estimating the future background concentrations by taking into account the major air pollutant emission sources in Hong Kong and nearby regions.

3.4.4 **Noise Impact**

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

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

3.4.4.3 The noise impact assessment shall follow the detailed technical requirements given in Appendix B.

3.4.5 **Water Quality Impact**

3.4.5.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing water quality impact as stated in Annexes 6 and 14 of the TM.

3.4.5.2 The study area for the water quality impact assessment shall include areas within 500 metres from the boundary of the Project site and shall cover Victoria Harbour (Phase One) Water Control Zone as designated under Water Pollution Control Ordinance. The study area can be extended to include other areas such as stream courses, existing and new drainage system, and the associated water system(s) in the vicinity if they are found also being affected by the Project during the EIA study and have a bearing on the environmental acceptability of the Project.

3.4.5.3 The water quality impact assessment shall follow the detailed technical requirements given in Appendix C.

3.4.6 **Waste Management Implication**

3.4.6.1 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.

3.4.6.2 The assessment of the waste management implication shall follow the detailed technical requirements given in Appendix D1.

3.4.7 **Land Contamination**

3.4.7.1 The Applicant shall follow the guidelines for evaluating and assessing potential land

contamination issue as stated in sections 3.1 and 3.2 of Annex 19 of the TM.

3.4.7.2 The assessment of the potential land contamination issue of the Project shall follow the detailed technical requirements given in Appendix D2.

3.4.8 Ecological Impact (Terrestrial)

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

3.4.8.2 The study area for the purpose of the terrestrial ecological impact assessment shall include areas within 500 metres distance from the boundary of the Project site and any other areas likely to be impacted by the Project.

3.4.8.3 The Applicant shall address the potential ecological impacts, including but not limited to the potential ecological impact on habitats such as the secondary woodlands on natural slopes and man-made slopes situated along the hillside to the south of the Clear Water Bay Road, and the natural watercourses at the junction of Lin Tak Road and Sau Mau Ping Road. The study area could be extended to include other areas such as stream courses and the associated ecological system(s) in the vicinity if they are found also being affected by the Project during the EIA study and have a bearing on the environmental acceptability of the Project.

3.4.8.4 The ecological impact assessment shall follow the detailed technical requirements given in Appendix E.

3.4.9 Landscape and Visual Impacts

3.4.9.1 The Applicant shall follow the criteria and guidelines as stated in Annexes 10 and 18 of the TM, the EIAO Guidance Note No. 8/2010 on "Preparation of Landscape and Visual Impact Assessment under the Environmental Impact Assessment Ordinance" and the report of "Landscape Value Mapping of Hong Kong" for evaluating and assessing the landscape and visual impacts.

3.4.9.2 The study area for the landscape impact assessment shall include areas within 100 metres distance from the boundary of the Project site. The study area for the visual impact assessment shall be defined by the visual envelope of the Project.

3.4.9.3 The landscape and visual impact assessments shall follow the detailed technical requirements given in Appendix F.

3.4.10 Landfill Gas Hazard

3.4.10.1 The Applicant shall follow the guidelines for evaluating and assessing landfill gas hazard as stated in Annexes 7 and 19 of the TM.

3.4.10.2 The assessment shall include the hazard associated with the closed landfills including Ma Yau Tong West Landfill, Ma Yau Tong Central Landfill and Jordan Valley Landfill.

3.4.10.3 The landfill gas hazard assessment shall follow the detailed technical requirements given in Appendix G.

3.4.11 Environmental Monitoring and Audit (EM&A) Requirements

3.4.11.1 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 EM&A requirements for the Project in the EIA study.

3.4.11.2 Subject to the confirmation of the EIA study findings, the Applicant shall comply with the requirements as stipulated in Annex 21 of the TM.

3.4.11.3 The Applicant shall prepare a Project Implementation Schedule (in the form of a checklist as shown in Appendix H) containing the EIA study recommendations and mitigation measures with reference to the implementation programme.

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 the EIA study brief, the Applicant shall apply to the Director for a fresh EIA study brief before commencement of the EIA study.

5. REPORT 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.

5.2 The Applicant shall provide the following summary information in the EIA report :

(i) 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.

(ii) 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.

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

To facilitate efficient retrieval, 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 all 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.

5.3 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 I of this EIA study brief. The Applicant shall, upon request, make additional copies of the above documents available to the public, subject to payment by the interested parties of full costs of printing.

6. OTHER PROCEDURAL REQUIREMENTS

6.1 If there is any change in the name of Applicant for this EIA study brief during the course of the EIA study, the Applicant must notify the Director immediately.

6.2 If there is any key change in the scope of the Project mentioned in sub-section 1.2 of this EIA study brief and in Project Profile (No. PP-500/2014), 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.

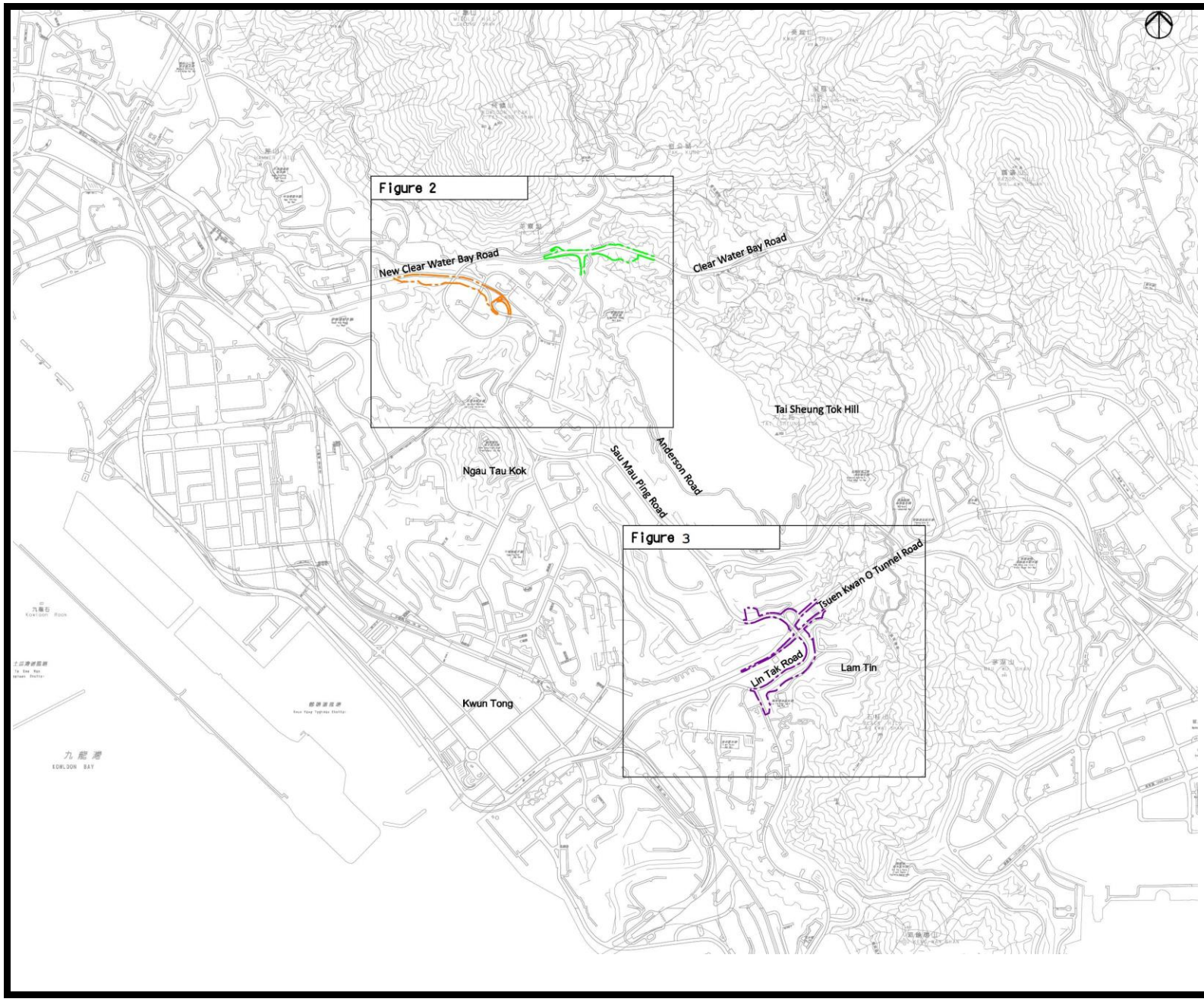
7. LIST OF FIGURES AND APPENDICES

7.1 This EIA study brief includes the following figures and appendices:

Figures 1-3 – Project Location Plan
Appendix [A] – Requirements for Air Quality Impact Assessment
Appendix [A-1] – Air Quality Modelling Guidelines
Appendix [B] – Requirements for Noise Impact Assessment
Appendix [C] – Requirements for Water Quality Impact Assessment
Appendix [D1] – Requirements for Assessment of Waste Management Implication
Appendix [D2] – Requirements for Land Contamination Assessment
Appendix [E] – Requirements for Ecological Impact Assessment
Appendix [F] – Requirements for Landscape and Visual Impact Assessment
Appendix [G] – Requirements for Landfill Gas Hazard Assessment
Appendix [H] – Implementation Schedule
Appendix [I] – Requirements for EIA Report Documents

--- END OF EIA STUDY BRIEF ---

March 2014
Environmental Assessment Division
Environmental Protection Department



Development of Anderson Road Quarry Site – Road Improvement Works

安達臣道石礦場用地發展 – 道路改善工程

Location Plan of the Project
工程項目的位置圖

This figure was prepared based on Figure 227724/E/0031 of the Project Profile (No.:PP-268/2014)
本圖是根據工程項目簡介（編號：PP-268/2014）圖 227724/E/0031 編制

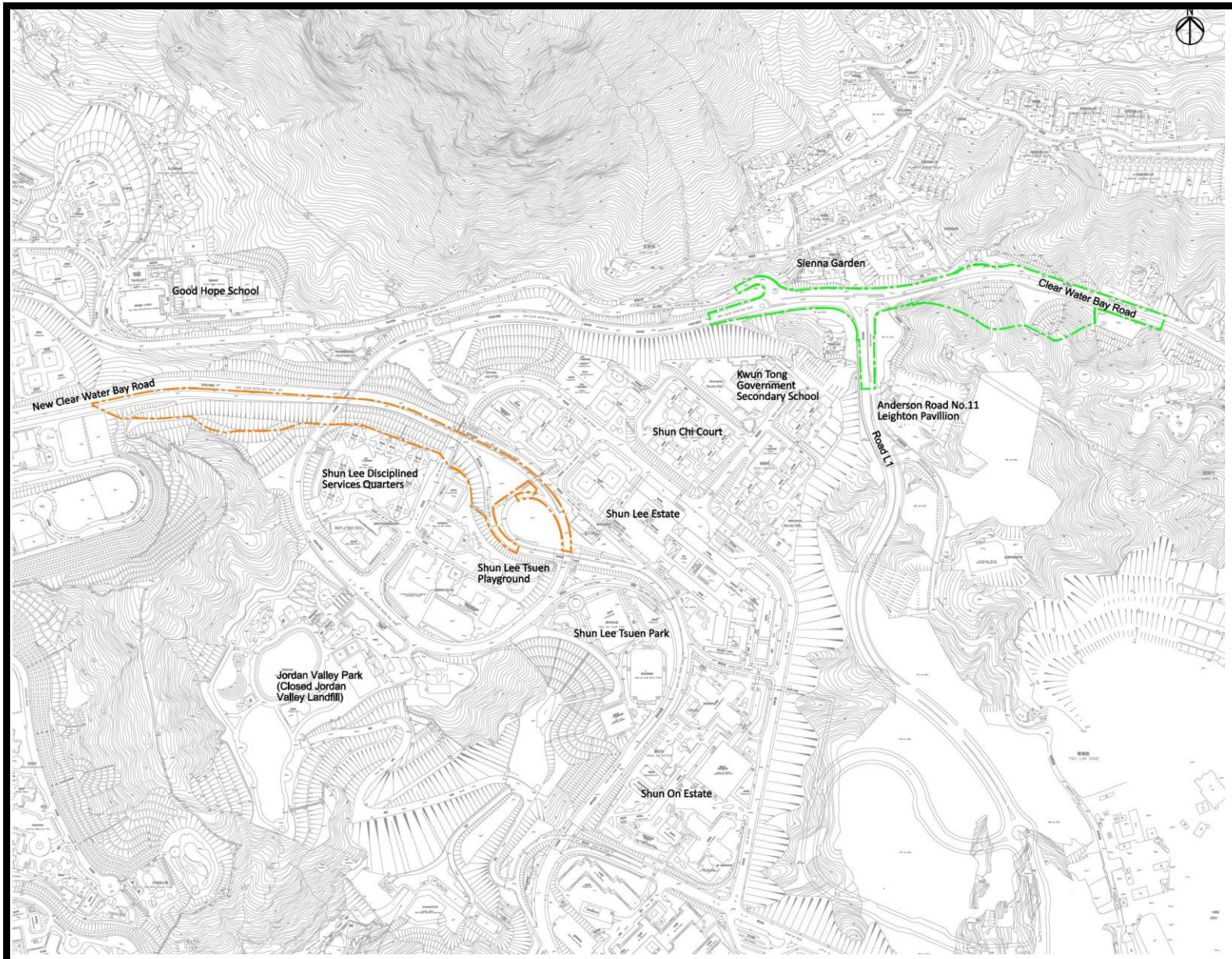
圖例 Legend

- Road Improvement Works (Clear Water Bay Road) 道路改善工程 (清水灣道)
- Road Improvement Works (Lin Tak Road Widening/ Lin Tak Road Flyover) 道路改善工程 (連德道)
- Road Improvement Works (Shun Lee Tsuen Road) 道路改善工程 (順利邨道)

Figure 1 附圖 1

EIA Study Brief No. ESB-268/2014

環評研究概要編號 ESB-268/2014



Development of Anderson Road Quarry Site – Road Improvement Works

安達臣道石礦場用地發展 – 道路改善工程

Location Plan of the Project
工程項目的位置圖

This figure was prepared based on Figure 227724/E/0032 of the Project Profile (No.:PP-268/2014)
本圖是根據工程項目簡介（編號：PP-268/2014）圖 227724/E/0032 編制

圖例 Legend

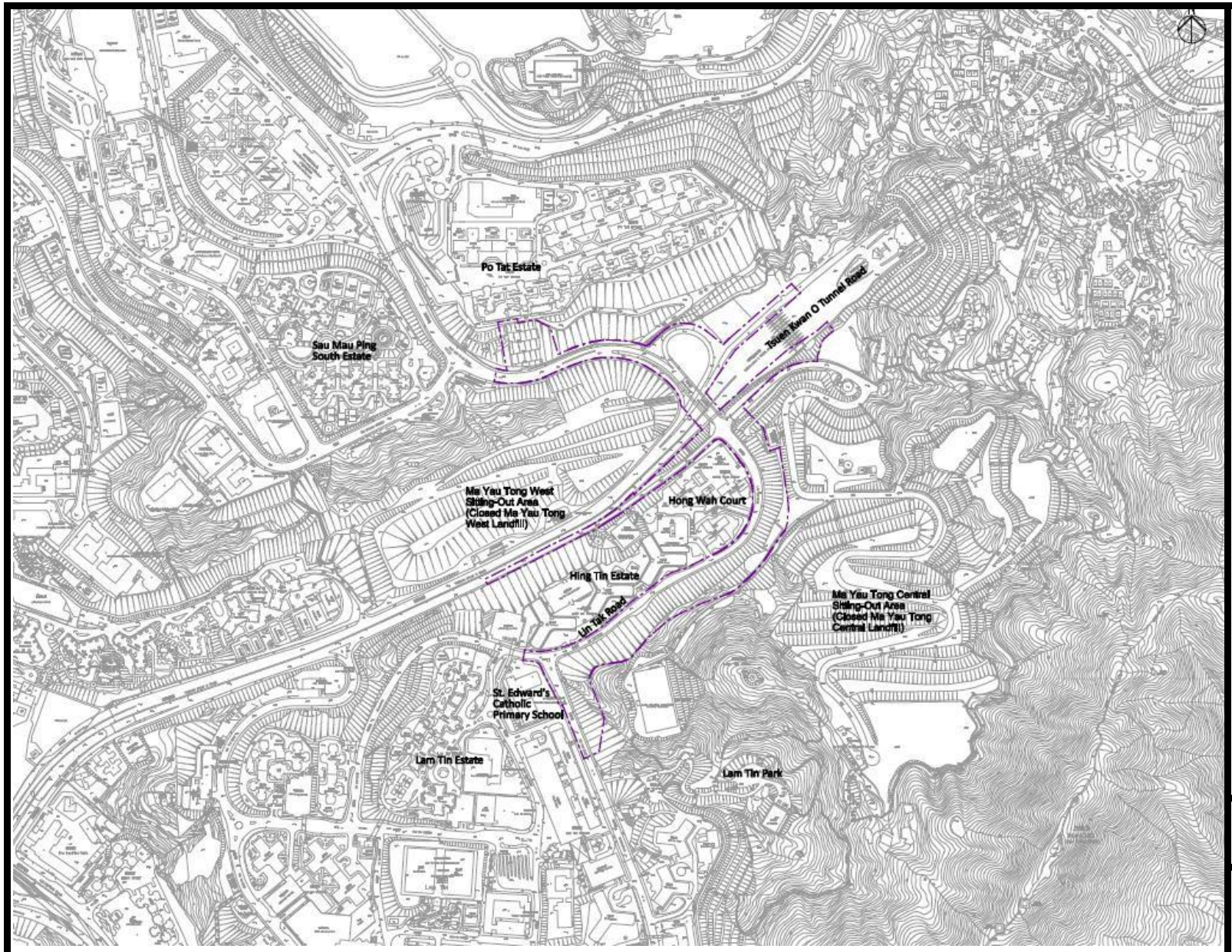
Road Improvement Works (Clear Water Bay Road)
道路改善工程 (清水灣道)

Road Improvement Works (Shun Lee Tsuen Road)
道路改善工程 (順利邨道)

Figure 2 附圖 2

EIA Study Brief No. ESB-268/2014

環評研究概要編號 ESB-268/2014



Development of Anderson Road Quarry Site – Road Improvement Works

安達臣道石礦場用地發展 – 道路改善工程

Location Plan of the Project
工程項目的位置圖

This figure was prepared based on Figure 227724/E/0033 of the Project Profile (No.:PP-268/2014)
本圖是根據工程項目簡介（編號：PP-268/2014）圖 227724/E/0033 編制

圖例 Legend

Road Improvement Works (Lin Tak Road Widening/ Lin Tak Road Flyover)
道路改善工程 (連德道)

Figure 3 附圖 3

EIA Study Brief No. ESB-268/2014

環評研究概要編號 ESB-268/2014

Appendix A

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) Giving an account, where appropriate, of the consideration/measures that had been taken into consideration in the planning of the Project to abate the air pollution impact. The Applicant shall consider alternative construction methods/phasing programmes, and alternative operation modes to minimize the air quality impact during construction and operation stages of the Project.

   (iii) Presentation of background air quality levels in the study area for the purpose of evaluating cumulative air quality impacts during construction and operation stages of the Project. If PATH (Pollutants in the Atmosphere and their Transport over Hong Kong) model is used to estimate the background air quality, details for the estimation of the emission sources to be adopted in the model runs should be clearly presented.

2. Identification of Air Sensitive Receivers (ASRs) and Examination of Emission / Dispersion Characteristics

   (i) Identification and description of existing, planned and committed ASRs that would likely be affected by the Project, including those earmarked on the relevant Outline Zoning Plans, Development Permission Area Plans, Outline Development Plans and Layout Plans and other relevant published land use plans, including plans and drawings published by Lands Department and any land use and development applications approved by the Town Planning Board. The Applicant shall select the assessment points of the identified ASRs that represent the worst impact point of these ASRs. A map clearly showing the location and description such as name of buildings, their uses and height of the selected assessment points shall be given. The separation distances of these ASRs from the nearest emission sources shall also be given.

   (ii) Provision of a list of air pollution emission sources, including any nearby emission sources which are likely to have impact on the Project based on the analysis of the constructional and operational activities in section 1 above. Examples of constructional stage emission sources include stock piling, vehicular movements on unpaved haul roads on site, etc. Examples of operational stage emission sources include exhaust emissions from vehicles and odour emissions from drainage channels, etc. Confirmation regarding the validity of the assumptions adopted and the magnitude of the activities (e.g. volume of construction material handled, etc.) shall be obtained from the relevant government departments / authorities and documented.

   (iii) Identification of chimneys and obtainment of relevant chimney emission data in the study area by carrying out a survey for assessing the cumulative air quality impact of air pollutants through chimneys. The Applicant shall ensure and confirm that the

chimney emission data used in their assessment have been validated and updated by their own survey. If there are any errors subsequently found in their chimney emission data used, the Applicant shall be fully responsible and the submission may be invalidated.

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

3. Construction Phase Air Quality Impact

(i) The Applicant shall follow the requirements stipulated under the Air Pollution Control (Construction Dust) Regulation to ensure that construction dust impacts are controlled within the relevant standards as stipulated in Section 1 of Annex 4 of the TM.

(ii) If the Applicant anticipates that the Project will give rise to significant construction dust impacts likely to exceed recommended limits in the TM at the ASRs despite the incorporation of the dust control measures proposed, a quantitative assessment should be carried out to evaluate the construction dust impact at the identified ASRs. The Applicant shall follow the methodology set out in section 5 below when carrying out the quantitative assessment.

(iii) A monitoring and audit programme for the construction phase of the Project shall be devised to verify the effectiveness of the control measures proposed so as to ensure proper construction dust control.

4. Operational Phase Air Quality Impact

(i) The Applicant shall assess the expected air pollutant impacts at the identified ASRs based on an assumed reasonably worst-case scenario under normal operating conditions. If the assessment indicates likely exceedances of the recommended limits in the TM at the development and the nearby ASRs, a quantitative assessment should be carried out to evaluate the operational phase air quality impacts at the identified ASRs. The Applicant shall follow the methodology set out in section 5 below when carrying out the quantitative assessment.

(ii) The air pollution impacts of future road traffic shall be calculated based on the highest emission strength from the road within the next 15 years upon commissioning of the proposed development. The Applicant shall demonstrate that the selected year of assessment represents the highest emission scenario given the combination of vehicular emission factors and traffic flow for the selected year. The Applicant shall propose Fleet Average Emission Factors for assessing vehicle emissions. If necessary, the Fleet Average Emission Factors shall be derived by a motor vehicle emission model such as EMFAC-HK model and documented in the EIA report. The Fleet Average Emission Factors used in the assessment shall be agreed with the Director. The traffic flow data and assumptions, such as the exhaust technology fractions, vehicle age/population distribution, traffic forecast and speed fractions, that are used in the assessment shall be presented in the form of both summary table(s) and graph(s).

(iii) 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.

(iv) A monitoring and audit programme for the operational phase of the Project shall be devised to verify the effectiveness of the control measures proposed 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 A-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. Detailed calculations of air pollutants emission rates for input to the modelling shall be presented in the EIA report. The Applicant must ensure consistency between the text description and the model files at every stage of submissions for review. In case of doubt, the Applicant shall seek prior agreement from the Director on the specific modelling details.

(ii) The Applicant shall identify the key/representative air pollution parameters (types of pollutants and averaging time concentrations) to be evaluated and provide explanation for selecting such parameters for assessing the impact of the Project. Ozone Limiting Method (OLM) or Discrete Parcel Method (DPM) or other method to be agreed with the Director shall be used to estimate the conversion ratio of NO_x to NO_2 if NO_2 has been identified as a key air pollutant.

(iii) The Applicant shall calculate the overall cumulative air quality impact at the ASRs identified under section 2 above and compare these results against the criteria set out in Section 1 of Annex 4 in the TM. The predicted air quality impacts (both unmitigated and mitigated) shall be presented in the form of summary table(s) and pollution contours, to be evaluated against the relevant air quality standards and on any effect they may have on the land use implications. Plans of a suitable scale should be used to present pollution contours to allow buffer distance requirements to be determined properly.

(iv) If there are any direct technical noise remedies recommended in the study, the air quality implication due to these technical remedies shall be assessed. For instance, if barriers that may affect dispersion of air pollutants are proposed, then the implications of such remedies on air quality impact shall be assessed. The Applicant shall highlight clearly the locations and types of agreed noise mitigating measures (where applicable), be they noise barriers and affected ASRs, on contour maps for easy reference.

6. Mitigation Measures for Non-compliance

The Applicant shall propose remedies and mitigating measures where the predicted air quality impact exceeds the criteria set in Section 1 of Annex 4 in the TM. These measures and any constraints on future land use planning shall be agreed with the relevant government departments/authorities and documented. The Applicant shall demonstrate quantitatively that the residual impacts after incorporation of the proposed mitigating measures will comply with the criteria stipulated in Section 1 of Annex 4 in the TM.

7. Submission of Model Files

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

Appendix A-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 judgement in applying this general information.]

The air quality modelling guidelines shall include the following guidelines as published on the website of the Environmental Protection Department (http://www.epd.gov.hk/epd/english/environmentinhk/air/guide_ref/guide_aqa_model.html):

i) Guidelines on Choice of Models and Model Parameters;

ii) Guidelines on Assessing the 'Total" Air Quality Impact (Revised);

iii) Guidelines on the Use of Alternative Computer Models in Air Quality Assessment (Revised);

iv) Guidelines on the Estimation of PM2.5 for Air Quality Assessment in Hong Kong; and

v) Guidelines on the Estimation of 10-minute Average SO2 Concentration for Air Quality Assessment in Hong Kong.

Appendix B

Requirements for Noise Impact Assessment

The noise impact assessment shall include the following:

1. Description of the Noise Environment

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

2. Construction Noise Impact Assessment

2.1 Construction Noise Impact Assessment Methodology

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

2.1.2 For ground-borne construction noise impact, the Applicant shall propose assessment methodology and computational model which shall be confirmed with the Director, with reference to Section 4.4.2 of the TM, prior to the commencement of the assessment. Site measurements at appropriate locations may be required in order to obtain the empirical input parameters required in the computational model.

2.2 Identification of Construction Noise Impact

2.2.1 Identification of Assessment Area and Noise Sensitive Receivers

(a) The Applicant shall propose the assessment area for agreement of the Director before commencing the assessment. The assessment area for the construction noise impact assessment shall generally include areas within 300 metres from the boundary of the Project and the works of the Project.

(b) The Applicant shall identify all existing NSRs in the assessment area and select assessment points to represent identified NSRs for carrying out quantitative construction noise impact assessment described below.

(c) The assessment points shall be confirmed with the Director prior to the commencement of the quantitative construction noise impact assessment and may be varied subject to the best and latest information available during the course of the EIA study.

(d) A map showing the location and description such as name of building, use, and floor of each and every selected assessment point shall be given. Photographs of existing NSRs shall be appended to the EIA report.

2.2.2 Inventory of Noise Sources

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

2.3 Prediction and Evaluation of Construction Noise Impact

2.3.1 Phases of Construction

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

2.3.2 Scenarios

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

2.3.3 Prediction of Noise Impact

(a) The Applicant shall present the predicted noise levels in Leq (30 min) dB(A) at the selected assessment points at various representative floor levels (in m P.D.) on tables and plans of suitable scale.

(b) The assessment shall cover the cumulative construction noise impact resulting from the construction works of the Project and other concurrent projects identified during the course of the EIA study on existing NSRs within the assessment area.

(c) The potential construction noise impact under different phases of construction shall be quantified by estimating the total number of dwellings, classrooms and other noise sensitive receivers that will be exposed to noise impact exceeding the criteria set in Annex 5 in the TM.

(d) The Applicant shall, as far as practicable, formulate a reasonable construction programme so that no work will be required in restricted hours as defined under the Noise Control Ordinance (NCO). In case the Applicant needs to evaluate whether construction works in restricted hours as defined under the NCO are feasible or not in the context of programming construction works, reference should be made to relevant technical memoranda issued under the NCO. Regardless of the results of construction noise impact assessment for restricted hours, the Noise Control Authority will process Construction Noise Permit (CNP) application, if necessary, based on the NCO, the relevant technical memoranda issued under the NCO, and the contemporary conditions/situations. This aspect should be explicitly stated in the noise chapter and the conclusions and recommendations chapter in EIA report.

2.4 Mitigation of Construction Noise Impact

2.4.1 Direct Mitigation Measures

Where the predicted construction noise impact exceeds the criteria set in Table 1B of Annex 5, TM, the Applicant shall consider and evaluate direct mitigation measures including but not limited to, movable barriers, enclosures, quieter alternative methods, re-scheduling, restricting hours of operation of noisy tasks, etc. The feasibility, practicability, programming and effectiveness of the recommended mitigation measures shall be assessed. Any direct mitigation measures recommended should be well documented in the report. Specific reasons for not adopting certain direct mitigation measures to reduce the noise to a level meeting the criteria in the TM or to maximize the protection for the NSRs as far as possible should be

clearly substantiated and documented in the EIA report.

2.5 Evaluation of Residual Construction Noise Impact

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

3. Road Traffic Noise Impact Assessment

3.1. Road Traffic Noise Impact Assessment Methodology

3.1.1. The Applicant shall carry out road traffic noise impact assessment in respect of each road section (within the meaning of Items A.1, A.7 and A.8 under Part I, Schedule 2 of the EIAO and other road sections) and the noise levels from combined road sections of the Project at the NSRs in accordance with methodology in paragraphs 5.1 of Annex 13 of the TM.

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

3.2. Identification of Road Traffic Noise Impact

3.2.1. Identification of Assessment Area and Noise Sensitive Receivers

(a) The Applicant shall propose the assessment area for agreement of the Director before commencing the assessment. The assessment area for the road traffic noise impact shall generally include areas within 300 metres from the boundary of the Project and the works of the Project.

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

(c) The assessment points shall be confirmed with the Director prior to the commencement of the quantitative road traffic noise impact assessment and may be varied subject to the best and latest information available during the course of the EIA study

(d) A map showing the location and description such as name of building, use, and floor of each and every selected assessment point shall be given. Photographs of existing NSRs shall be appended to the EIA report.

(e) For planned noise sensitive land uses without committed site layouts, the Applicant should use the relevant land use and planning parameters and conditions to work out representative site layouts for road traffic noise impact assessment purpose. However, such parameters and conditions together with any constraints identified shall be confirmed with the relevant responsible parties including Planning Department and Lands Department.

3.2.2. Inventory of Noise Sources

(a) The Applicant shall analyse the scope of the proposed road alignment(s) to identify road sections for the purpose of road traffic noise impact assessment. Road sections to be included in road traffic noise impact assessment shall be confirmed with the Director prior to the commencement of the assessment.

(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. Scenario

(a) The Applicant shall quantitatively assess the road traffic noise impact of the Project, with respect to the criteria set in Annex 5, TM, of unmitigated scenario and mitigated scenario at assessment year. The assessment year shall be made reference to Section 5.1 in Annex 13 of the TM.

(b) The Applicant shall provide the input data sets of traffic noise model prediction model adopted in the EIA study as requested by the Director for the following scenarios:

(i) Unmitigated scenario at assessment year;
(ii) Mitigated scenario at assessment year; and
(iii) Prevailing scenario for indirect mitigated measures eligibility assessment.

3.3.2. Prediction of Noise Impact

(a) The Applicant shall present the predicted noise levels in L10 (1 hour) dB(A) at the selected assessment points at various representative floor levels (in m P.D.) on tables and plans of suitable scale.

(b) The assessment shall cover the cumulative road traffic noise impact resulting from the road traffic noise due to the Project and existing road network on existing, committed and planned NSRs within the assessment area.

(c) The potential road traffic noise impact under different scenarios shall be quantified by estimating the total number of dwellings, classrooms and other noise sensitive receivers that will be exposed to noise impact exceeding the criteria set in Annex 5 in the TM

3.4. Mitigation of Road Traffic Noise Impact

3.4.1. Direct Mitigation Measures

(a) Where the predicted road traffic noise impact exceeds the criteria set in Annex 5, TM the Applicant shall consider and evaluate direct mitigation measures including but not limited to noise barrier/enclosure, etc. The feasibility, practicability, programming and effectiveness of the recommended mitigation measures shall be assessed. Any direct mitigation measures recommended should be well documented in the report. Specific reasons for not adopting certain direct mitigation measures to reduce the noise to a level meeting the criteria in the TM

or to maximize the protection for the NSRs as far as possible should be clearly quantified and documented in the EIA report.

(b) The total number of noise sensitive receivers that will be benefited from and be protected by the provision of direct mitigation measures should be provided. The total number of other noise sensitive receivers that will still be exposed to noise above the criteria with the implementation of all recommended direct mitigation measures shall be quantified.

(c) For planned noise sensitive uses which will still be affected even with practicable direct mitigation measures in place, the Applicant shall propose, evaluate and confirm the practicability of additional direct mitigation measures within the planned noise sensitive uses and shall make recommendations on how these noise sensitive uses will be designed for the information of relevant parties.

(d) The Applicant shall take into account agreed environmental requirements /constraints identified in the EIA study to assess the development potential of concerned sites which shall be made known to the relevant parties.

3.4.2. Indirect Mitigation Measures

(a) Upon exhaust of direct mitigation measures, where the predicted road traffic noise impact still exceeds the criteria set in Table 1A of Annex 5, TM, the Applicant shall consider indirect mitigation measures in the form of window insulation and air-conditioning and evaluate in accordance with Section 6.2 in Annex 13 of 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 recognized national/international organization or methodologies adopted for Hong Kong projects having similar issues on proposing an assessment methodology for determining eligibility of the indirect mitigation measures which shall be confirmed with the Director with reference to Section 4.4.2 of the TM, prior to the commencement of the assessment.

3.5. Evaluation of Residual Road Traffic Noise Impact

Upon exhaust of direct and indirect mitigation measures, if the mitigated noise impact still exceeds the relevant criteria in Annex 5 of TM, the Applicant shall identify, predict and evaluate the residual road traffic noise impact in accordance with Section 4.4.3 of the TM and Section 6.2 in Annex 13 of the TM.

Appendix C

Requirements for Water Quality Impact Assessment

1. The Applicant shall identify and analyse physical, chemical and biological disruptions of the water system(s) arising from the construction and operation of the Project.

2. The Applicant shall predict and assess any water quality impacts arising from the construction and operation of the Project.

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

   (i) the water quality impacts of the site run-off generated during the construction stage such as the effluents generated from dewatering associated with piling activities, grouting and concrete washing and those specified in the ProPECC Practice Note 1/94;

   (ii) the water quality impacts of the road runoff containing oil/grease and suspended solids during the operational stage; and

   (iii) the water quality impacts on river courses and drainages system around the work sites.

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 existing and planned water systems, their respective catchments and sensitive receivers which might be affected by the Project;

   (ii) characterize water quality of the water systems and sensitive receivers, which might be affected by the Project based on existing best available information or through appropriate site survey and tests;

   (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 landuse plans;

   (iv) identify pertinent water quality objectives and establish other appropriate water quality criteria or standards for the water system(s) and the sensitive receivers identified in (i), (ii) & (iii) above;

   (v) review the specific construction methods and configurations, and operation of the Project to identify and predict the likely water quality impacts arising from the Project;

(vi) identify any alternation of any water courses, natural streams, ponds, 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 study area;

(vii) identify and quantify existing and likely future water pollution sources, including point discharges and non-point sources to surface water runoff, sewage from workforce and polluted discharge generated from the Project;

(viii) provide a pollution load inventory on the quantities and characteristics of those existing and future pollution sources in the study area. Field investigation and laboratory test, shall be conducted as appropriate to fill relevant information gaps;

(ix) predict and quantify the impacts on the water system(s) include its/ their sensitive receivers due to those alternations and changes identified in (v) above, and the pollution sources identified in (vii) above. The prediction shall take into account and include possible different construction stages or sequences and different operation stages;

(x) assess the cumulative impacts due to other related concurrent and planned projects, activities or pollution sources within the study area that may have a bearing on the environmental acceptability of the Project;

(xi) analyze the provision and adequacy of existing and planned future facilities to reduce pollution arising from the point and non-point sources identified in (vii) above;

(xii) develop effective infrastructure upgrading or provision, contingency plan, water pollution prevention and mitigation measures to be implemented during construction and operation stages, so as to avoid and minimize the water quality impacts identified above. Requirements to be incorporated in the Project contract document shall also be proposed;

(xiii) investigate and develop best management practices to reduce storm water and non-point source pollution as appropriate; and

(xiv) evaluate and quantify residual impacts on water system(s) and the sensitive receivers with regard to the appropriate water quality objectives, criteria, standards or guidelines.

Appendix D1

Requirements for Assessment of Waste Management Implication

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 waste arising as a result of the construction activities of the Project based on the sequence and duration of these activities, e.g. construction and demolition materials (C&DM) and other wastes which will be generated during construction stage.

(ii) The Applicant shall adopt appropriate design, general layout, construction methods and programme to minimize the generation of public fill/inert C&DM and maximize the use of public fill/inert C&DM for other construction works.

2. Proposal for Waste Management

(i) Prior to considering the disposal options for various types of wastes, opportunities for reducing waste generation, on-site or off-site re-use and recycling shall be fully evaluated. Measures that can be taken in the planning and design stages e.g. by modifying the design approach and in the construction stage for maximizing waste reduction shall be separately considered.

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

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

Appendix D2

Requirements for Land Contamination Assessment

1. The land contamination assessment shall cover the following:

   (i) The Applicant shall identify all land lots and sites within the site boundary of the Project which, due to their past or present land uses, are potential contaminated sites. A detailed account of the present activities and all past land use history in relation to possible land contamination shall be provided. The list of potential contaminants which are anticipated to be found in these potential contaminated sites shall be provided and the relevant remediation options shall be discussed.

Appendix E

Requirements for Ecological Impact Assessment (Terrestrial)

1. In the ecological impact assessment, the Applicant shall examine the flora, fauna and other components of the ecological habitats within the study area. The aim shall be to protect, maintain or rehabilitate the natural environment. In particular, the Project shall avoid as far as possible impacts on recognized sites of conservation importance (e.g. Sites of Special Scientific Interest, Country Park, conservation areas) and other ecological sensitive areas (e.g. natural streams and woodlands). The assessment shall identify and quantify as far as possible the potential ecological impacts associated with the Project, both directly by physical disturbance and indirectly by changes of water quality and hydrodynamic regime to the natural environment and the associated wildlife groups and habitats / species arising from the construction and operation of the Project and associated works.

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 study area;

   (ii) evaluate the information collected, identify any information gap relating to the assessment of potential ecological impacts to terrestrial environment, and determine the ecological field surveys and investigations that are needed for a comprehensive assessment as required under the following sections;

   (iii) carry out any necessary ecological field surveys with a duration of a least four months covering the wet season, and investigations to verify the information collected, fill in the information gaps as identified under sub-section (ii) above, if any, and to fulfil the objectives of the EIA study. The field surveys shall include but not be limited to flora, fauna and any other habitats/species of conservation importance;

   (iv) establish the general ecological profile of the study area based on information collected in the tasks mentioned in sub-section (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 all recognized sites of conservation importance and assessment of whether these sites will be affected by the Project or not;
      (b) habitat maps of suitable scale (1:1000 to 1:5000) showing the types and locations of habitats and species of conservation interest in the study 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, inter-dependence of the habitats and species, and presence of any features of ecological importance;
      (d) representative colour photos of each habitat type and any important ecological features identified; and
      (e) species found that are rare, endangered and/or listed under local legislation, international conventions for conservation of wildlife / habitats or red data books.

   (v) investigate and describe the existing wildlife uses of various habitats with special

attention to those wildlife groups and habitats with conservation interest, including but not limited to the following :

(a) woodlands and plantations;
(b) wetlands including wet agricultural land, watercourses and associated riparian habitats;
(c) linkages of habitats within the assessment area;
(d) secondary woodlands on natural slopes and man-made slope;
(e) watercourse associated species (e.g. fish and crustaceans);
(f) avifauna including raptors, woodland and wetland dependent migratory bird species;
(g) other wildlife, including but not limited to mammals, herpetofauna, odonates and butterflies; and
(h) any other habitats / species identified as having special conservation interest by this EIA study.

(vi) describe recognized site of conservation importance in the study area, if any, and assess whether these site will be affected by the Project or not.

(vii) using suitable methodology, and considering also any works activities from other projects reasonably likely to occur at the time, identify and quantify as far as possible any direct (e.g. loss of habitats due to various elements such as excavation works and other associated works of the Project), indirect (e.g. changes in water qualities, hydrology, accidental discharge of untreated sewage, 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, reduction of species abundance/diversity, loss of feeding and breeding grounds, reduction of ecological carrying capacity and habitat fragmentation, in particular the following :

(a) loss of habitats such as woodlands and plantations
(b) disturbance to animals and plants;
(c) impacts due to habitat fragmentation and isolation;
(d) impacts due to potential changes in water quality, and hydrology on wetlands and riparian habitats during the construction and operation stages of the Project;
(e) impacts due to increase in human activities and disturbance during the construction and operation stages of the Project such as increase in light intensity; and
(f) cumulative impacts due to other planned and committed concurrent development projects at or near the Project area.

(viii) evaluate ecological impact based on the best and latest information available during the course of the EIA study, covering construction and operational phases of the Project as well as the subsequent management and maintenance requirement of the Project;

(ix) recommend possible alternatives, such as layout, design and alignment of the Project and modification / change of construction methods, and practicable mitigation measures to avoid, minimize and/or compensate for the adverse ecological impacts identified during construction and operation of the Project;

(x) evaluate feasibility and effectiveness of the recommended mitigation measures and definition of the scope, type, location, implementation arrangement, resources

requirement, subsequent management and maintenance of such measures;

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

(xii) evaluate the severity and acceptability of the residual ecological impacts and;

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

Appendix F

Requirements for Landscape and Visual Impact Assessments

1. The Applicant shall review relevant outline development plan(s), outline zoning plan(s), layout plan(s) or planning briefs and studies which may identify areas of high landscape value, e.g. green belt and woodland areas with sensitive landscape designations and visually sensitive areas/receivers. Any guidelines on landscape strategy, landscape framework, urban design concept, building height profiles, designed view corridors, open space network and landscape link that may affect the appreciation of the Project shall also be reviewed. The aim is to gain an insight to the future outlook of the area affected so as to assess whether the Project can fit into the surrounding setting. Any conflict with statutory town plan(s) shall be highlighted and appropriate follow-up action shall be recommended.

2. The Applicant shall describe, appraise, analyze and evaluate the existing and planned landscape resources and character of the study area. e.g. vegetation, woodland, streams and topography, etc. A system shall be derived for judging landscape impact significance as required under the TM. 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 and visual 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 settings. The landscape impact assessment shall quantify 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. A broad brush tree survey to identify dominant tree species, maturity, rarity and any plant species of conservation interest, etc. should be conducted within the study area to provide baseline information on the landscape resources and landscape character areas and the impacts on existing trees shall be summarized. Cumulative landscape and visual impacts of the Project with other existing, committed and planned developments in the study area shall be assessed.

3. The Applicant shall assess the visual impacts of the proposed Project. Clear illustration including mapping of visual impact is required. The assessment shall adopt a systematic methodology and include the following:

   (i) identification and plotting of visual envelope of the Project;

   (ii) identification of the key groups of existing and planned sensitive receivers within the visual envelope and their views at both ground level and elevated vantage points. Among other receivers, sensitive receivers shall include, but not limited to, nearby residents and villagers. Both long distance view and short distance view shall be covered in the assessment;

   (iii) assessment for evaluating visual impacts, by taking into account the factors affecting the sensitivity of receivers (including value and quality of existing views, availability and amenity alternative views, type and estimated number of receiver population, duration of view and degree of visibility) and the magnitude of change of view (including compatibility of the project with the surrounding landscape and planned setting, duration of impacts under construction and operation phases, scale of development, reversibility of change, viewing distance and potential blockage of view). The visual impacts of the

Project with and without mitigation measures shall also be included so as to demonstrate the effectiveness of the proposed mitigation measures; and

(iv) clear evaluations and explanation with supportive arguments of all relevant factors considered in arriving the significance thresholds of visual impacts.

4. The Applicant shall evaluate the merit and demerit of preservation in totality, in parts or total destruction of existing landscape and the establishment of a new landscape character area. Alternative location, site layout, development options, design and construction method that would avoid or reduce the identified landscape and visuals impacts shall first be considered and be evaluated for comparison before adopting other mitigation or compensatory measures to alleviate the impacts. The mitigation measures proposed shall not only be concerned with damage reduction but shall also include consideration of potential enhancement of the existing landscape and visual quality. The Applicant shall recommend mitigation measures to minimize the adverse effects identified above, including provision of a master landscape design.

5. The mitigation measures shall also include the preservation of vegetation, transplanting of trees of good amenity value, provision of screen planting, re-vegetation of disturbed lands, compensatory planting, re-provisioning of amenity areas and open spaces, design of structure, provision of finishes to structure, colour scheme and texture of material used and any measures to mitigate the disturbance of the existing land use. Parties shall be identified for the on-going management and maintenance of the proposed mitigation works to ensure their effectiveness throughout the operation phase of the Project. A practical programme and funding proposal for the implementation of the recommended measures shall be provided.

6. Annotated illustration such as coloured perspective drawings, plans and section/elevation diagrams, oblique aerial photographs, photographs taken at vantage points and computer-generated photomontage, particularly from but not limited to the most severely affected vantage points shall be adopted to illustrate the significance of the landscape and visual impacts of the Project in four stages i.e. existing conditions, unmitigated impacts at Day 1, mitigated impacts at Day 1 and residual impact at Year 10. Options of design schemes should be illustrated with photomontages to show the visual impact on the surrounding areas. True colour samples may be requested if found necessary and appropriate. Technical details in preparing the illustration, which may need to be submitted for verification of accuracy of the illustration shall be recorded. Computer graphics shall be compatible with Microstation DGN file format.

Appendix G

Requirements for Landfill Gas Hazard Assessment

1. The landfill gas hazard assessment shall include a qualitative risk assessment and landfill gas precautionary/protection design. Specifically, the assessment shall include the following tasks:

   (i) review background information and studies related to the closed landfills including Ma Yau Tong West Landfill, Ma Yau Tong Central Landfill and Jordan Valley Landfill.;

   (ii) identify the nature and extent of the sources, including the likely concentrations/amounts of hazardous emissions which might have the potential for causing impacts on the Project;

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

   (iv) identify the potential targets associated with the proposed facilities which are sensitive to the impacts of the hazardous emissions;

   (v) qualitatively assess the degrees of risk which the hazardous emissions may pose to the target for each of the source-pathway-target combinations;

   (vi) design suitable level of precautionary measures and the types of protection measures for the construction and operation of the Project; and

   (vii) identify monitoring requirement for assessing the adequacy and performance of the implemented protection measures.

Appendix H

Implementation Schedule

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/Duration of measures/ Timing of completion of measures	Implementation Agent	Implementation Stage **				Relevant Legislation & Guidelines
					Des	C	O	Dec	

** Des=Design; C=Construction; O=Operation; Dec=Decommissioning

Appendix I

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 50 copies of the executive summary (each bilingual in both English and Chinese) as required under section 6(2) of the EIAO to be supplied at the time of application for approval of the EIA report.

   (ii) When necessary, addendum to the EIA report and the executive summary submitted in item (i) above as required under section 7(1) of the EIAO, to be supplied upon advice by the Director for public inspection.

   (iii) 20 copies of the EIA report and 50 copies of the executive summary (each bilingual in both English and Chinese) with or without Addendum as required under section 7(5) of the EIAO, to be supplied upon advice by the Director for consultation with the Advisory Council on the Environment.

2. In addition, to facilitate public inspection of EIA report via EIAO Internet Website, the Applicant shall provide electronic copies of both the EIA report and executive summary prepared in Hyper Text Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF version 1.3 or later), unless otherwise agreed by the Director. For the HTML version, 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. Graphics in the report shall be in interlaced GIF format unless otherwise agreed by the Director.

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.