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19 February 2019

Hospital Authority

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

**Project Title: A Rooftop Helipad at New Acute Hospital at Kai Tak Development Area
(Application No. ESB-311/2019)**

I refer to your above application received on 10 January 2019 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-311/2019) for your preparation of an EIA report.

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

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

If the EIA report is selected by ACE for submission and presentation, you are expected to provide ACE with an account of the environmental issues arising from the project, major conclusions and recommendations of the EIA study. In particular, the main environmental concerns of the general public and interest groups who may be affected by the Project should be identified and addressed in the EIA study. As such, you are strongly advised to engage the public and interest groups during the course of the EIA study. Please find attached a copy of the "*Modus Operandi of the EIA Subcommittee of the Advisory Council on the Environment*" 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. Raymond LAI at 2835 1129.

Yours sincerely,



(Sunny CW CHEUNG)

Principal Environmental Protection Officer
for Director of Environmental Protection

Environmental Impact Assessment Ordinance (Cap. 499), Section 5 (7)**Environmental Impact Assessment Study Brief No. ESB-311/2019****Project Title: A Rooftop Helipad at New Acute Hospital at Kai Tak Development Area
(hereinafter known as the “Project”)****Name of Applicant: Hospital Authority
(hereinafter known as the “Applicant”)****1. BACKGROUND**

- 1.1 An application (No. ESB-311/2019) 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 10 January 2019 with a project profile (No. PP-574/2019) (the Project Profile).
- 1.2 The New Acute Hospital (NAH) which is under construction in the Kai Tak Development Area (KTDA) will be a major acute hospital and a designated trauma centre in central Kowloon providing a comprehensive range of acute hospital services to serve the general public. The Applicant considers that it is essential to have a helipad located at the Acute Block of the NAH, where the Accident & Emergency Department is located, in order to provide rapid and seamless transfer of patients / survivors from special cases for prompt and appropriate treatment. The helipad is proposed to be located at the rooftop of the Acute Block of the NAH as shown in **Figure 1**. The proposed helipad will not be used for any commercial flights. The Project is to construct and operate a helipad on the roof of the Acute Block of the NAH to enhance the overall efficiency and effectiveness of the emergency response of NAH.
- 1.3 The helipad will be constructed according to the Government Flying Service (GFS) Helicopter Landing Site Specification Guidelines. The operation of the proposed helipad will be under the management of the Applicant. The helipad will be at about 117 mPD and about 40 metres in diameter subject to changes to suit the actual site constraints.
- 1.4 The Project is a designated project by virtue of Item B.2 of Schedule 2, Part I of the EIAO, which specifies “*A helipad within 300 m of existing or planned residential development*”.
- 1.5 Pursuant to section 5(7)(a) of the EIAO, the Director of Environmental Protection (the Director) issues this Environmental Impact Assessment (EIA) study brief to the Applicant to carry out an EIA study.
- 1.6 The purpose of the EIA study is to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project and associated works that will take place concurrently. This information will contribute to decisions by the Director on:
 - (i) the overall acceptability of any adverse environmental consequences that are likely to arise as a result of the Project;
 - (ii) the conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences wherever practicable; and
 - (iii) the acceptability of residual impacts after the proposed mitigation measures are implemented.

2. OBJECTIVES OF THE EIA STUDY

2.1 The objectives of the EIA study are as follows:

- (i) to describe the Project and associated works together with the requirements and environmental benefits for carrying out the proposed project;
- (ii) to identify and describe the elements of the community and environment likely to be affected by the Project and/or likely to cause adverse impacts to the Project, including both the natural and man-made environment and the associated environmental constraints;
- (iii) to provide information on the consideration of alternative siting, design, layout and configuration/orientation of the helipad, flight paths, and alternative types of helicopters, management measures diverting patients under different levels of emergency to alternative hospitals with a view to avoiding or 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 that environmental factors played in the selection of preferred option(s);
- (iv) to identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potential affected uses;
- (v) to identify and systematically evaluate any potential visual impact from the helipad and associated structures and lighting during operation of the Project and to propose measures to mitigate these impacts;
- (vi) 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;
- (vii) to investigate the feasibility, practicality, effectiveness and implications of the proposed mitigation measures;
- (viii) to identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and the cumulative effects expected to arise during the construction and operation phases of the Project in relation to the sensitive receivers and potential affected uses;
- (ix) to identify, assesses and specify methods, measures and standards, to be included in the detailed design, construction and operation of the Project which are necessary to mitigate these residual environmental impacts and cumulative effects and reduce them to acceptable levels;
- (x) 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
- (xi) to design and specify the 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

3.1.1 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 the 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 due to the construction and operation of the Project, including the construction dust emissions and exhaust emissions from helicopter;
- (ii) potential hazard to life impact during the construction and operation of the Project due to the potentially hazardous facilities, including in particular the Kerry Dangerous Goods Warehouse at 7 Kai Hing Road and the LPG Filling Station at Cheung Yip Street;
- (iii) potential noise impacts on sensitive receivers due to the construction and operation of the Project, including the noise generated by construction activities and operational noise from operation of the helipad and helicopters;
- (iv) potential waste management implications arising from the construction and operation of the Project, including construction & demolition materials, general refuse and chemical wastes;
- (v) potential visual impact from operation of the Project in particular the helipad and associated structures to be erected and lighting during night time; and
- (vi) potential water quality impacts during construction and operation of the Project.

3.3 Description of the Project

3.3.1 Purpose(s) and Objectives of the Project

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

3.3.2 Details of the Project

3.3.2.1 The Applicant shall indicate the nature and status of Project decision(s) for which the EIA study is undertaken. The Applicant shall describe the siting, design, size, construction methods, sequence of construction works, access arrangements and other major activities involved in the construction and operation of the Project, using diagrams, plans and/or maps as necessary. The estimated duration of the construction phase and operation phase of the Project together with the programme within these phases shall be given. The land / premises 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 uses of the Project shall be described and the different land use areas shall be demarcated as appropriate.

3.3.3 Background and History of the Project

3.3.3.1 The Applicant shall provide information on the site location and site history of the Project, any related projects and the consideration of different practicable siting options, taking into account the principles of avoidance, minimizing and control of adverse environmental impacts. The options might include siting, size, design, construction methods, sequence of construction works and access arrangements for the Project with a view to deriving the preferred option(s) that will avoid and/or minimize adverse

environmental impacts. The key reasons for selecting the preferred siting option(s) and the part environmental factors played in the selection shall be described. The main environmental impacts of the difference practicable siting option(s) shall be compared with those of the Project and with the likely future environmental conditions in the absence of the Project.

3.3.4 Consideration of Alternative Development Options

3.3.4.1 The Applicant shall consider alternative development options including alternative design, layout and configuration/orientation of the helipad, flight paths, and alternative types of helicopters, and management measures diverting patients under different levels of emergency to alternative hospitals for the Project, provide background information on the consideration of alternative siting and 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 or minimize adverse environmental effects to the maximum practicable extent.

3.4 **Technical Requirements**

3.4.1 The Applicant shall conduct the EIA study to address all environmental aspects of the activities as described in the scope as set out above. The assessment shall be based on the best and latest information available during the course of the EIA study. The Applicant shall include in the EIA report details of the construction and operation 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 the 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 construction and operation air quality impacts as stated in section 1 of Annex 4 and Annex 12 of the TM respectively.

3.4.3.2 The assessment area for the air quality impact assessment shall be defined by a distance of 500 metres from the boundary of the Project 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 assessment area as well as areas where air quality may be potentially affected by the Project. The sensitive receivers shall include those at the planned residential developments (e.g. planned residential developments at Cheung Yip Street, Kai Hing Road and Shing Fung Road), commercial developments at the south apron, Hong Kong Children's Hospital, as well as areas where air quality may be potentially affected by the Project. 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 the assessment.

3.4.3.3 The air quality impact assessment shall follow the detailed technical requirements given in **Appendix A**.

3.4.4 **Hazard to Life**

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

3.4.4.2 The Applicant shall conduct a review of the risks from Kerry Dangerous Goods Warehouse (KDGW) and the LPG Filling Station at Cheung Yip Street to the Project and assess if risk to life is a key issue with respect to Risk Guidelines given in Annex 4

of the TM. Hazard assessment including a Quantitative Risk Assessment (QRA) for the said LPG Filling Station and KDGW 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 TM. If a QRA for the LPG Filling Station and KDGW is required, the detailed technical requirements shall follow **Appendix B**.

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 noise impact assessment shall generally include areas within 300 metres from the boundary of the Project site. Subject to agreement of the Director, the assessment area can be reduced accordingly if the first layer of noise sensitive receivers (NSRs), less than 300 metres from the outer Project limit, provides acoustic shielding to those receivers at distances further away from the Project. The assessment area shall be expanded to include NSRs at a distance over 300 metres from the Project, associated works and along the flight paths of the helicopter where appropriate, if those NSRs area affected by the construction and operation of the Project. The assessment shall include the NSRs at the planned residential developments (e.g. planned residential developments at Cheung Yip Street, Kai Hing Road and Shing Fung Road) as well as areas where NSRs may be potentially affected by the Project.

3.4.5.3 The noise impact assessment shall follow the detailed technical requirements given in **Appendix C**.

3.4.6 Waste Management Implications

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 respectively.

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

3.4.7 Visual Impact

3.4.7.1 The Applicant shall follow the criteria and guidelines as stated in Annexes 10 and 18 of the TM respectively, and the EIAO Guidance Note No. 8/2010 on "Preparation of Landscape and Visual Impact Assessment under the Environmental Impact Assessment Ordinance" for evaluating and assessing the visual impacts from lighting during night time operation of the Project.

3.4.7.2 The assessment area for the visual impact assessment shall be defined by the visual envelop of the Project.

3.4.7.3 The visual impact assessment shall follow the detailed technical requirements given in **Appendix E**.

3.4.8 Water Quality Impact

3.4.8.1 The Applicant shall provide a general description of any effluent discharge from the Project. The Applicant shall also demonstrate that there would be no adverse impact due to the effluent discharges and propose mitigation measures, if required.

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 F**) 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 Options and Mitigation Measures

The EIA report shall contain a summary of alternative development options and mitigation measures considered during the course of EIA study, including siting, size, design, construction methods, sequence of construction works and access arrangements 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 development options, and/or 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 G** 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 the Applicant for this EIA study brief during the course of EIA study, the Applicant must notify the Director immediately.
- 6.2 If there is any key change in the scope of the Project mentioned in section 1.2 of this EIA study brief and in Project Profile (No. PP-574/2019), 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.

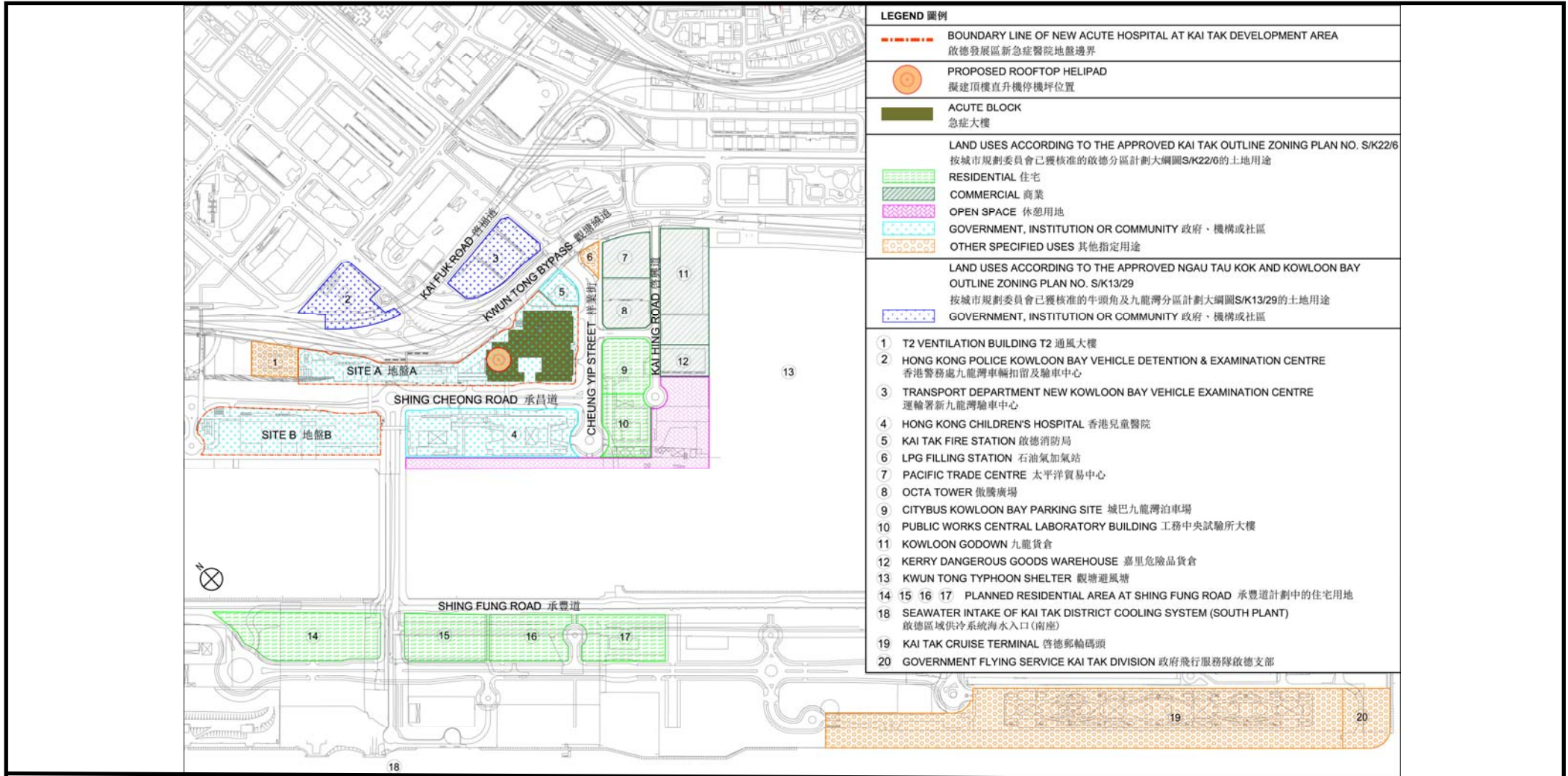
7. LIST OF APPENDICES

- 7.1 This EIA study brief includes the following appendices:

Appendix A – Requirements for Air Quality Impact Assessment
Appendix B – Requirements for Hazard to Life Assessment
Appendix C – Requirements for Noise Impact Assessment
Appendix D – Requirements for Assessment of Waste Management Implications
Appendix E – Requirements for Visual Impact Assessment
Appendix F – Implementation Schedule
Appendix G – Requirements for EIA Report Documents

-- END of EIA STUDY BRIEF --

February 2019
Environmental Assessment Division
Environmental Protection Department



Project Title – A Rooftop Helipad at New Acute Hospital at Kai Tak Development Area
工程名稱 啟德發展區新急症醫院天台直升機坪

EIA Study Brief No.: ESB-311/2019
環評研究概要號碼: ESB-311/2019

(This figure is prepared based on Figure 1 of Project Profile No.: PP-574/2019)
(本圖是根據工程項目簡介編號 PP-574/2019圖 1 編制)

Figure 1 – Location Plan of the Project
圖1 – 項目位置圖



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 both construction and operation stages.
- (ii) Provision of an account, where appropriate, of the factors/measures that have been taken into consideration in the planning of the Project to avoid and minimize the air pollution impact. The Applicant shall consider alternative construction methods, means of transportation for construction materials and their routings, phasing programmes and alternative modes of operation to minimize 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 cumulative air quality impacts during construction and operational stages of the Project. If PATH 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, committed and planned ASRs that would likely be affected by the Project, including those earmarked on the relevant Outline Zoning Plans, Development Permission Area Plans, Outline Development Plans and Layout Plans and other relevant published land use plans, including plans and drawings published by the Lands Department and any land use and development applications approved by the Town Planning Board. 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 during both the construction and operational stages shall also be given.
- (ii) Provision of a list of air pollution emission sources, including any nearby emission sources which are likely to have impact related to the Project based on the analysis of the construction and operation activities in section 1 above. Examples of construction stage emission sources include stock piling, blasting, material handling and vehicular movements on unpaved haul roads on site, etc. Examples of operational stage emission sources include exhaust emissions from vehicles, etc. Confirmation regarding the validity of assumptions and the magnitude of the activities (e.g. volume of construction material to be handled, traffic mix and volume on a road etc.) shall be obtained from the relevant government departments / authorities and documented in the EIA report.

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- (iii) Identification of chimneys and obtainment of relevant chimney emission data in the assessment area, where appropriate, by carrying out a survey for assessing the cumulative air quality impact of air pollutants through chimneys. The Applicant shall ensure and confirm the validity of the emission data used in their assessment. 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 at the existing, committed and planned ASRs within the assessment area shall be assessed, based on the best information available at the time of assessment.

3. Construction Phase Air Quality Impact

- (i) The Applicant shall follow the requirements stipulated under the Air Pollution Control (Construction Dust) Regulation to ensure that construction dust impacts are controlled within the relevant standards as stipulated in section 1 of Annex 4 of the TM.
- (ii) If the Applicant anticipates that the Project will give rise to significant construction dust impacts likely to exceed recommended limits in the TM at the ASRs identified within the assessment area and the proposed development site as defined in section 3.4.3.2 of this EIA study brief despite the incorporation of the dust control measures proposed, a quantitative assessment shall be carried out to evaluate the construction dust 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 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 pollutant impacts at the identified ASRs in particular the potential air quality impacts due to the operation of the Project on the nearby air sensitive receivers such as any fresh air intakes of the nearby hospitals and residential developments. 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) 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 A-1** while making allowance for the specific characteristic of the Project. This specific methodology

must be documented in such level of details, preferably associated 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) 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 cumulative air quality impact at the identified ASRs and compare these results against the criteria set out in Section 1 of Annex 4 in the TM. The predicted cumulative air quality impacts (both unmitigated and mitigated) shall be presented in the form of summary table(s) and pollution contours, to be evaluated against the relevant air quality standards and on any 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, i.e. comparison between with and without noise remedies scenario, due to these technical noise 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 reference.

6. Mitigation Measures for Air Quality Impact

Consideration for Mitigation Measures

- (i) 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.

Evaluation of Residual Air Quality Impact

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

7. Submission of Emission Calculation Details and Model Files

Input and output file(s) of model run(s) including those files for generating the pollution contours and emission 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;
- (iii) Guidelines on the Use of Alternative Computer Models in Air Quality Assessment;
- (iv) Guidelines on the Estimation of PM_{2.5} 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 Hazard to Life Assessment**

1. The Applicant shall carry out hazard assessment to evaluate the risk from the Kerry Dangerous Goods Warehouse (KDGW) and the LPG Filling Station at Cheung Yip Street to the Project during construction and operation stages of the Project. The hazard assessment shall include:
 - (i) identify hazardous scenarios associated with the said LPG Filling Station and KDGW and then determine a set of relevant scenarios to be included in a Quantitative Risk Assessment (QRA);
 - (ii) execute a QRA of the set of hazardous scenarios determined in (i), expressing population risks in both individual and societal terms;
 - (iii) compare individual and societal risks with the criteria for evaluating hazard to life stipulated in Annex 4 of the TM; and
 - (iv) identify and assess practicable and cost-effective risk mitigation measures.
2. The hazard assessment methodology shall be consistent with previous studies having similar issues and be agreed with the Director (e.g. Kai Tak Development, AEIAR-130/2009).

Appendix C

Requirements for Noise Impact Assessment

The noise impact assessment shall include the following:

1. Provision of Background Information and Existing Noise Levels

- 1.1 The Applicant shall provide background information relevant to the Project, e.g. relevant previous or current studies. Unless required for determining the planning standards, no existing noise levels are particularly required.

2. Identification of Noise Sensitive Receivers

- 2.1 The Applicant shall refer to Annex 13 of the TM when identifying the NSRs. The NSRs shall include existing NSRs and planned/committed noise sensitive developments and uses 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. Photographs of existing NSRs shall be appended to the EIA report.
- 2.2 The Applicant shall select assessment points to represent identified NSRs for carrying out quantitative noise assessment described below. The assessment points shall be agreed by the Director prior to the quantitative noise assessment and may be varied subject to the best and latest information available during the course of the EIA study. 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. For planned noise sensitive land uses without committed site layouts, the Applicant should use the relevant planning parameters to work out representative site layouts for operational noise assessment purpose. However, such assumptions together with any constraints identified, such as setback of building, building orientation, extended podium, shall be agreed by the relevant responsible parties including the Planning Department and the Lands Department in accordance with section 6.3 of Annex 13 of the TM.

3. Provision of an Emission Inventory of the Noise Sources

- 3.1 The Applicant shall provide an inventory of noise sources including representative construction equipment for construction noise impact assessment, types and models of helicopter, their noise emission levels, flight frequency and flight paths for operation noise impact assessment. Confirmation of the validity of the inventory shall be obtained from the relevant government departments/authorities and documented in the EIA report.

4. Construction Noise Impact Assessment

4.1 Construction Noise Impact Assessment Methodology

- 4.1.1 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.

4.2 Identification of Construction Noise Impact

4.2.1 Identification of Assessment Area

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

4.3 Prediction and Evaluation of Construction Noise Impact

4.3.1 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.

4.3.2 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.

4.3.3 Prediction of Noise Impact

- (a) The Applicant shall present the predicted noise levels in Leq (30 mins) dB(A) at the selected assessment points 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 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.

4.4 Mitigation of Construction Noise Impact

4.4.1 Direct Mitigation Measures

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

protection for the NSRs as far as possible should be clearly substantiated and documented in the EIA report. If the mitigated noise levels still exceed the relevant criteria, the duration of the noise exceedance shall be given.

5. Operational Noise Impact Assessment

5.1 Helicopter Noise

5.1.1 The Applicant shall carry out assessment of noise impact from the operation of the Project, which should be taken into consideration of relevant factors such as effect of wind direction, against the criteria set in Table 1A of Annex 5 of the TM. The impact shall cover helicopter operation in connection with the Project including its approaching to, landing on and departure from the Project. Where applicable, noise contours should be provided to facilitate appreciation of the extent for the potential noise impacts. The Applicant shall evaluate the reasonable worst-case scenarios in terms of helicopter types, flight paths, flight frequency and flight hours. For noise matters not fully listed in Table 1A of Annex 5 of the TM, the criteria and assessment methodology shall be considered in accordance with section 4.4.2(c) of the TM and documented in the EIA report.

5.1.2 The Applicant shall propose direct mitigation measures in all situations where the noise level exceedances are predicted following the principle of section 6 of Annex 13 of the TM. If noise level exceedances are still predicted upon exhaust of direct mitigation measures, the Applicant shall consider practicable administrative measures such as heli-service diversion, prioritizing the use of better performing helicopters, helicopter replacement plan to help improve the noise situation. 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.

6. Assessment of Side Effects and Constraints

The Applicant shall identify, assess and propose means to minimize any side effects and to resolve any potential constraints due to the inclusion of any recommended direct technical remedies.

7. Evaluation of Constraints and Planned Noise Sensitive Developments/Land Uses

For planned noise sensitive use which will still be affected even with practicable direct technical remedies in place, the Applicant shall propose, evaluate and confirm the practicability of additional measures within the planned noise sensitive uses will be designed for the information of relevant parties. 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.

Appendix D**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 waste arising as a result of the construction and operation activities of the Project, based on the sequence and duration of these activities, e.g. construction and demolition (C&D) materials and other wastes which would be generated during construction and operational stages.
- (ii) The Applicant shall adopt appropriate design, general layout, construction methods and programme to minimize the generation of public fill/inert C&D materials and maximize the use of public fill/inert C&D materials for other construction works.

2. Proposal for Waste Management

- (i) Prior to considering the disposal options for various types of wastes, opportunities for reducing waste generation, on-site or off-site re-use and recycling shall be fully evaluated. Measures that can be taken in 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 waste shall be described in detail. The disposal methods/options recommended for each type of wastes shall take into account the result of the assessment in sub-section (iv) below.
- (iii) The EIA report shall also state clearly the transportation routings and the frequency of the trucks/vessels involved, any barging point or conveyor system to be used, the stockpiling areas and the disposal outlets for the waste identified.
- (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.

Appendix E**Requirements for Visual Impact Assessment**

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 visually sensitive areas/receivers. Any guidelines on visual impacts from the helipad and associated structures and lighting during operation of the Project shall also be reviewed. The aim is to gain an insight to the area affected so as to assess whether the Project will cause adverse visual impact from the helipad and associated structures and lighting during operation and appropriate follow-up actions shall be recommended.
2. The Applicant shall assess the visual impact from the helipad and associated structures and lighting during operation of the proposed Project. Clear illustrations including mapping of visual impact from lighting during night time operation 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; and
 - (iii) identification and evaluation of the impact from the helipad and associated structures and lighting during night time operation of the Project. The assessment shall include the following tasks:
 - (a) identification and description of any uncomfortable eye feeling caused by light interference from direct man-made light sources generated from lighting during night time operation of the Project;
 - (b) recommendations for possible alternatives, such as design, orientation, spotting angle, intensity and operation mode and practicable mitigation measures to avoid or minimize the adverse impact arising from the helipad and associated structures and lighting during night time operation of the Project; and
 - (c) Examination of the implications of the helipad and associated structures in relation to preservation of views to the ridgelines.
3. 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.
4. Annotated illustrations such as coloured perspective drawings, plans and section/elevation diagrams, oblique aerial photographs, photographs taken at vantage points, and computer-generated photomontage shall be adopted to fully illustrate the significance of the visual impact from the helipad and associated structures and lighting during night time operation of the Project. 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 F

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 G**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) and in Portable Document Format (PDF), unless otherwise agreed by the Director. For both of the HTML and PDF versions, a content page capable of providing hyperlink to each section and sub-section of the EIA report and executive summary shall be included in the beginning of the document. Hyperlinks to figures, drawings and tables in the EIA report and executive summary shall be provided in the main text from where respective references are made. The EIA report, including drawings, tables, figures and appendices shall be viewable by common web-browsers including Internet Explorer 8, Firefox 23, Chrome and Safari 8 or later versions as agreed by the Director, and support languages including Traditional Chinese, Simplified Chinese and English.
3. The electronic copies of the EIA report and the executive summary shall be submitted to the Director at the time of application for approval of the EIA report.
4. When the EIA report and the executive summary are made available for public inspection under section 7(1) of the EIAO, the content of the electronic copies of the EIA report and the executive summary must be the same as the hard copies and the Director shall be provided with the most updated electronic copies.
5. To promote environmentally friendly and efficient dissemination of information, both hardcopies and electronic copies of future EM&A reports recommended by the EIA study shall be required and their format shall be agreed by the Director.