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

Environmental Impact Assessment Study Brief No. ESB-168/2007

Project Title: Tsim Sha Tsui Station Northern Subway
(hereinafter referred to as "the Project")

Name of Applicant: MTR Corporation Limited
(hereinafter referred to as "the Applicant")

1. BACKGROUND

1.1 An application (No. ESB-168/2007) for an Environmental Impact Assessment (EIA) study brief under section 5(1) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by the captioned Applicant on 19 July 2007 with a Project Profile (No. PP-320/2007).

1.2 The Project comprises:

(i) An underground pedestrian subway link that connects the north end of the Tsim Sha Tui (TST) Station platform with integrated entrances in the basements of the Tung Ying Building Redevelopment, Miramar Hotel and Miramar Shopping Centre;

(ii) An underground satellite concourse underneath Nathan Road located adjacent to Tung Ying Building and the Miramar Hotel;

(iii) Two public entrances (one integral with ventilation shafts) on the western footpath of Nathan Road outside Park Lane Shopper's Boulevard; and

(iv) A new plant basement near existing Entrance A1 to house the station equipment relocated from the north end of TST Station for accommodating the Tsim Sha Tsui Station Northern Subway (TNS) connection.

The location of the Project is shown in Figure 1.

1.3 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.

1.4 The purpose of this EIA study is to provide information on the nature and extent of environmental impacts arising from the Project and related activities taking place concurrently in the vicinity of the Project. 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 implementation of the proposed mitigation measures.

2. OBJECTIVES OF THE EIA STUDY

2.1 The objectives of the EIA study are as follows:

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

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

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

(iv) to identify and quantify any potential landscape and visual impacts and to propose measures to avoid or mitigate these impacts;

(v) to propose the provision of mitigation measures to minimize pollution, environmental disturbance and nuisance during construction and operation of the Project;

(vi) to identify any negative impacts on sites of cultural heritage and to propose measures to avoid or mitigate these impacts;

(vii) 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;

(viii) 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 reduce them to acceptable levels;

(ix) 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

(x) 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

The Purpose

3.1 The purpose of this study brief is to scope the key issues of the EIA study. The Applicant has to demonstrate in the EIA report that 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.

The Scope

3.2 The scope of this EIA study shall cover the Project mentioned in Section 1.2 above. The EIA study shall address the likely key issues described below; and together with any other key issues identified during the course of the EIA study:

(i) the potential construction noise and dust impacts, water quality impact on the relevant water system(s) and waste management of the Project;

(ii) the potential landscape and visual impacts, in particular the potential impacts on the Old and Valuable Trees (OVTs) and trees of landscape value in the Project area and its vicinity, during construction and operation of the Project;

(iii) the potential impacts on the Former Kowloon British School (Declared Monument), the Grade III Whitfield Barracks, Block S4 at Kowloon Park and the old retaining wall at Haiphong Road; and

(iv) the potential cumulative environmental impacts of the Project, through interaction or in combination with other existing, committed and planned development(s) in the vicinity of the Project

3.3 Use of the Relevant Findings of Previously Approved EIA Report and Relevant Study

3.3.1 The Applicant shall review previously approved EIA study relevant to the Project and extract relevant information for the purpose of this EIA study. At least the following approved EIA study should be considered for review :

(i) Modifications to MTRC Tsim Sha Tsui Station, Mass Transit Railway Corporation Limited (EIAO Register No.: AEIAR-043/2001)

3.4 Consideration of Alternative Option(s) and Construction Method(s)

3.4.1 <u>Consideration of Alternative Alignment Option(s)</u>

The Applicant shall consider other feasible alternative alignment option(s) (including number and location of the new public entrances and ventilation

shaft), and compare the environmental benefits and dis-benefits, in terms of construction impacts, of the alignment option(s) with the proposed option described in Section 1.2.

3.4.2 Consideration of Alternative Construction Method(s)

The EIA study shall explore alternative construction method(s) for the Project, such as mined tunnelling versus cut-and-cover, and compare the environmental benefits and dis-benefits of applying different construction method(s) for different sections of the proposed subway alignment and any other alternative alignment option(s) considered under Section 3.4.1.

3.4.3 Selection of Preferred Scenario

Taking into consideration the findings in sub-Sections 3.4.1 and 3.4.2 above, the Applicant shall recommend / justify the adoption of the preferred subway alignment and construction method that will avoid or minimize adverse environmental effects arising from the Project, and adequately describe the part that the environmental factors played in arriving at the final selection.

3.5 Technical Requirements

The Applicant shall conduct the EIA study to address the environmental aspects of the activities as described in the scope set out above. The EIA study shall include the following technical requirements on specific impacts.

3.5.1 Purpose of the Project

The Applicant shall state clearly the purpose(s) and objective of the Project, in particular the specific problem(s) that the Project is intended to solve.

3.5.2 Construction Dust Impact

3.5.2.1 The Applicant shall follow the requirements of the Air Pollution Control (Construction Dust) Regulation in dust control to ensure construction dust impacts are controlled within the relevant standards as stipulated in section 1 of Annex 4 of the TM. A monitoring and audit programme during construction stage shall be initiated to verify the effectiveness of the control measures and to ensure that the construction dust levels be brought under control.

3.5.2.2 If the Applicant anticipates a significant construction dust impact that will likely cause exceedance of the recommended limits in the TM at the Air Sensitive Receivers (ASRs) despite incorporation of the dust control measures stated in 3.5.2.1 above, a quantitative assessment should be carried out to evaluate the construction dust impact at the identified ASRs. The Applicant shall follow the methodology below when carrying out the quantitative assessment. The construction dust impact assessment shall include the following:

(i) The Applicant shall follow the criteria and guidelines for evaluating and assessing construction dust impact as stated in section 1 of Annex 4 and Annex 12 of the TM, respectively.

(ii) The area for construction dust impact assessment shall generally be defined by a distance of 500 m from the boundary of the Project site, yet it may be extended depending on the circumstances and the scale of the Project.

(iii) The Applicant shall assess the air pollutant concentrations with reference to relevant sections of the Guidelines for Local-Scale Air Quality Assessment Using Models in Appendices A-1 to A-3 of this Study Brief, or any other methodology as agreed with the Director (with reference to S.4.4.2(c) of TM) prior to the commencement of the assessment.

(iv) <u>Background and Analysis of Activities</u>

(a) Provide background information relating to air quality issues relevant to the Project, e.g. description of the types of activities of the Project.

(b) Give an account, where appropriate, of the consideration / measures that had been taken into consideration in the planning of the Project to abate the construction dust impact. That is, the Applicant shall consider alternative construction method(s) / phasing programme(s) to minimize the construction dust impact.

(c) Present the background air quality levels in the assessment area for the purpose of evaluating the cumulative construction dust impacts.

(v) Identification of ASRs and Examination of Emission / Dispersion Characteristics

(a) Identify and describe representative existing and planned / committed ASRs that would likely be affected by the Project. The Applicant shall select the assessment points of the identified ASRs such that they represent the worst impact point of these ASRs. A map showing the location and a description including the name of the buildings, their uses and height of the selected assessment points shall be given. The separation distances of these ASRs from the nearest emission sources should also be given.

(b) Provide a list of air pollutant emission sources, including any nearby emission sources which are likely to have impact on the Project. Examples of construction stage emission sources include stock piling, blasting, concrete batching and vehicular movements on unpaved haul roads on site, etc.

(vi) Quantitative Assessment Methodology

(a) The Applicant shall apply the general principles enunciated in the modeling guidelines while making allowance for the specific characteristic of the Project. This specific methodology must be documented in such level of details (preferably with tables and diagrams) to allow the readers of the assessment report to grasp how the model is set up to simulate the situation at hand without referring to the model input files. Details of the calculation of the emission rates of air pollutants for input to the modeling shall be presented in the report. The Applicant must ensure consistency between the text description and the model files at every stage of submission. In case of doubt, prior agreement of the methodology between the Applicant and the Director should be sought.

(b) The Applicant shall identify the key / representative air pollutant parameters (types of pollutants and the averaging time concentration) to be evaluated and provide explanation for choosing these parameters for the assessment of the impact of the Project.

(c) The Applicant shall calculate the cumulative construction dust 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 construction dust impacts (both unmitigated and mitigated) shall be presented in the form of summary table and pollution contours, for comparison with relevant air quality standards and examination of the land use implications of these impacts. Plans of suitable scale should be used for presentation of pollution contour for determining buffer distances required.

(d) The Applicant shall propose remedies and mitigation measures where the predicted construction dust 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 resultant impacts after incorporation of the proposed mitigating measures will comply with the criteria stipulated in section 1 of Annex 4 in the TM.

(e) Input and output file(s) of the model run(s) shall be submitted to the Director in electronic format.

3.5.3 Noise Impact

3.5.3.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing both the construction and operational noise impacts as stated in the Main text, Annex 5 and Annex 13 of the TM, respectively.

3.5.3.2 The noise impact assessment shall include the following :

(i) Determination of Assessment Area

The area for the noise impact assessment shall generally include all areas within a distance of 300m from the Project as shown in Figure 1. Subject to the agreement of the Director, the assessment area could be reduced accordingly if the first layer of noise sensitive receivers (NSRs), closer than 300m from the outer Project boundary, provides acoustic shielding to those receivers at further distance behind. Similarly, subject to the agreement of the Director, the assessment area shall be expanded to include NSRs at distance greater than 300m from the boundary of the Project if they may be affected by the construction and operation of the Project.

(ii) Provision of Background Information and Existing Noise Levels

The Applicant shall provide background information relevant to the Project, e.g. relevant previous or current studies. Unless required for determining the planning standards, such as those for planning of fixed noise sources, no existing noise levels are particularly required.

(iii) Identification of Noise Sensitive Receivers

(a) 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, Outline Development Plans, Layout Plans and other relevant published land use plans. Photographs of the representative existing NSRs shall be appended to the EIA report.

(b) The Applicant shall select assessment points to represent the identified NSRs for carrying out quantitative noise assessment described below. The assessment points shall be agreed with the Director prior to the quantitative noise assessment and may be varied subject to the 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.

(iv) Provision of an Emission Inventory of the Noise Sources

The Applicant shall provide an inventory of noise sources including representative construction equipment for construction noise impact assessment and fixed plant equipment (such as ventilation systems for tunnel) for operational noise assessment. Confirmation of the validity of the inventory shall be obtained from the relevant government departments / authorities and documented in the EIA report.

(v) Construction Noise Assessment

(a) The assessment shall cover the cumulative noise impacts due to the construction works of the Project and other concurrent projects in the vicinity identified during the course of the EIA study.

(b) The Applicant shall carry out assessment of noise impact from construction (excluding percussive piling) of the Project during day time, i.e. 7 a.m. to 7 p.m., on weekdays other than general holidays in accordance with the methodology stipulated in sections 5.3. and 5.4 of Annex 13 of the TM. The criteria in Table 1B of Annex 5 of the TM shall be adopted in the assessment.

(c) To minimize the construction noise impact, alternative construction methods to replace percussive piling shall be proposed as far as practicable.

(d) If the unmitigated construction noise levels are found exceeding the relevant criteria, the Applicant shall propose practicable direct mitigation measures (including movable barriers, enclosures, quieter alternative methods, re-scheduling and restricting hours of operation of noisy task) to minimize the impact. If the mitigated noise levels still exceed the relevant criteria, the duration of the noise exceedance at the affected NSRs shall be given.

(e) The Applicant shall formulate a reasonable construction programme as far as practicable such that no work will be required

in the 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 the relevant technical memoranda issued under the NCO. Regardless of the results of the construction noise impact assessment for restricted hours, the Noise Control Authority will process the 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 the EIA report.

(vi) Fixed Noise Sources

(a) Assessment of Fixed Source Noise Levels

The Applicant shall calculate the expected noise levels at the NSRs using standard acoustics principles. Calculations for expected noise levels shall be based on assumed plant inventories and utilization schedule for the reasonable worst-case scenario. The Applicant shall calculate the noise levels taking into account correction of tonality, impulsiveness and intermittency in accordance with *Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites* issued under the NCO.

(b) Presentation of Noise Levels

The Applicant shall present the noise levels in Leq (30 min) at the NSRs at various representative floor levels (in m P.D.) on tables and plans of suitable scale. A quantitative assessment at the NSRs for the proposed fixed noise source(s) shall be carried out and compared against the criteria set out in Table 1A of Annex 5 of the TM.

(c) Proposals for Noise Mitigation Measures

The Applicant shall propose direct mitigation measures within the Project limits in situations where the predicted noise level exceeds the criteria set out in Table 1A of Annex 5 of the TM to protect the affected NSRs.

(vii) 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 mitigation measures.

3.5.4 Water Quality Impact

3.5.4.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing water pollution as stated in Annex 6 and Annex 14 of the TM respectively.

3.5.4.2 The EIA report shall cover the following:

(a) The water quality impacts of the site run-off generated during the construction stage;

(b) The water quality impacts on drainage(s) around the work site(s).

3.5.4.3 The Assessment Area shall include areas within 300m from the Project boundary, and shall cover relevant sensitive receivers that have a bearing on the environmental acceptability of the Project.

3.5.4.4 The physical, chemical and biological disruptions of the water system(s) within the study area arising during the construction of the Project shall be identified.

3.5.4.5 The water quality impact assessment shall address the following:

(i) Identification of pertinent water quality objectives and water quality criteria or standards for the water system(s);

(ii) Review the specific construction method(s) of the Project to identify and predict the likely water quality impact(s) arising from the Project;

(iii) Proposal of effective and practicable water pollution prevention and mitigation measures to be implemented during the construction stage so as to reduce storm water and non-point source pollution. Requirements to be incorporated in the Project contract document shall also be proposed. Attention shall be paid to the water quality control and mitigation measures recommended in ProPECC Note 1/94 on construction site drainage;

(iv) Evaluation of residual impact(s) (if any) on the water system(s).

3.5.5 Waste Management Implications

3.5.5.1 The Applicant shall follow the criteria and guidelines for evaluating and assessing waste management implications as stated in Annex 7 and Annex 15 of the TM, respectively.

3.5.5.2 The assessment of waste management implications shall cover the following:

(i) Analysis of Activities and Waste Generation

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.

The Applicant shall adopt 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.

(ii) Proposal for Waste Management

(a) 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 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.

(b) 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 options for each type of waste shall be described in detail. The disposal methods/options recommended for each type of waste shall take into account the result of the assessment in (c) below.

(c) 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.

3.5.6 Landscape and Visual Impact

3.5.6.1 The Applicant shall follow the criteria and guidelines as stated in Annex 10 and Annex 18 of the TM and EIAO Guidance Note No. 8/2002 on "*Preparation of Landscape and Visual Impact Assessment under the Environmental Impact Assessment Ordinance*" for evaluating and assessing landscape and visual impacts of any above ground structures, such as the two proposed public entrances (one integral with ventilation shafts).

3.5.6.2 The assessment area for the landscape impact assessment shall include areas within 100 metres from the boundary of the Project. The assessment area for the visual impact assessment shall be defined by the visual envelope of the Project. The defined visual envelope must be shown on a plan in the EIA report.

3.5.6.3 The Applicant shall review relevant Outline Zoning Plans, Outline Development Plans, Layout Plans, other relevant published land use plans,

planning briefs and studies which may identify areas of high landscape value. Any guidelines on landscape strategies, landscape framework, urban design concept, building height profiles, designated view corridors, special design areas, landmarks, open space network and landscape links that may affect the appreciation of the Project should also be reviewed. The aim is to gain an insight to the future outlook

3.5.6.4 The Applicant shall describe, appraise, analyze and evaluate the existing and planned landscape resource and character of the assessment area including, amongst others, Old and Valuable Trees (OVTs) and trees of landscape value along Nathan Road in the proximity of the Project and the two proposed public entrances, trees of landscape value at Haiphong Road in the proximity of the proposed new plant basement. Annotated oblique aerial photographs and plans of suitable scale showing the baseline landscape character areas and landscape resources and mapping of impact assessment shall be extensively used to present the findings of impact assessment. Tree survey information shall be provided, including an assessment of root and crown spread of OVTs and trees of landscape value within the assessment area. The assessment shall address 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 the potential landscape impacts including physical impacts on the OVTs and trees of landscape value, so as to illustrate the significance of such impacts arising from the Project. Clear mapping of the landscape impact is required.

3.5.6.5 The Applicant shall assess the visual impacts of the Project. Clear illustrations including mapping of visual impact is required. The assessment shall include the following:

(i) Identification and plotting of visual envelop of the Project within the assessment area;

(ii) Identification of the key groups of sensitive receivers within the visual envelope and their views at both ground level and elevated vantage points;

(iii) Description of the visual compatibility of the Project with the surrounding, and the planned setting and its obstruction and

interference with the key views of the adjacent areas; and

(iv) Description of the severity of visual impacts in terms of nature, distance and number of sensitive receivers. The visual impacts of the Project with and without mitigation measures shall also be included.

3.5.6.6 The Applicant shall evaluate the merits of preservation in totality, in parts or total destruction of existing landscape and the establishment of a new landscape character area. In addition, alternative alignment, design and construction method(s) that would avoid or reduce the identified landscape and visual impacts shall be evaluated for comparison before adopting other mitigation or compensatory measures to alleviate the impacts. The mitigation measures proposed shall not only be concerned with damage reduction but shall also include consideration of potential enhancement of existing landscape. The Applicant shall recommend mitigation measures to minimize the adverse effects identified above, including provision of a landscape design.

3.5.6.7 The mitigation measures shall include consideration of at least the following: preservation of vegetation, re-vegetation of disturbed land, avoidance and minimization of noise barriers, design of structures, provision of finishes to structures, colour scheme and texture of material used and any measures to mitigate the impact on existing land use. The relevant responsible party (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.

3.5.6.8 Annotated illustration materials such as coloured perspective drawings, plans and section/elevation diagrams, oblique aerial photographs, photographs taken at vantage points, and computer-generated photomontage shall be adopted to illustrate the landscape and visual impacts of the Project to the satisfaction of the Director. In particular, the landscape and visual impacts of the Project with and without mitigation measures shall also be properly illustrated in existing and planned setting by computer-generated photomontage so as to demonstrate the effectiveness of the proposed mitigation measures. All computer graphics shall be compatible with Microstation DGN file format. The Applicant shall record the technical details such as system set-up, software, data files and function in preparing the illustration that may need to be submitted for verification of the accuracy of the illustrations.

3.5.7 Impacts on Cultural Heritage

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

3.5.7.2 Any potential physical disturbance caused by works during construction and operation of the Project to the built heritage (Former Kowloon British School at 136 Nathan Road, the Grade III Whitfield Barracks, Block S4 at Kowloon Park, and the old retaining wall at Haiphong Road) shall be identified and avoided, if applicable. Direct and indirect impact(s) on Former Kowloon British School, the Grade III Whitfield Barracks, Block S4 at Kowloon Park, and the old retaining wall at Haiphong Road shall be assessed. Appropriate presentation method(s), such as perspective drawing(s), plan(s) and section/elevation diagram(s), photo retouching and photomontage, shall be used.

3.5.7.3 The applicant shall assess the extent that the cultural heritage resource(s) that might be affected and recommend possible alternative(s), (at least, other feasible alternative option(s) and/or construction method). Practicable monitoring and mitigation measure(s) including identification of implementation agent(s) and period(s) to avoid or minimize the impact(s) on the affected cultural heritage resource(s) shall be recommended, if applicable.

3.5.8 Summary of Environmental Outcomes

The EIA report shall contain a summary of the key environmental outcomes arising from the EIA study, including the population and environmentally sensitive receivers protected, the environmentally friendly designs recommended, the key environmental problems avoided and the environmental benefits of the environmental protection measures recommended.

3.5.9 Environmental Monitoring and Audit (EM&A) Requirements

3.5.9.1 The Applicant shall identify and justify in the EIA study whether there is any need for EM&A activities, during the construction phase of the Project, if affirmative, to define the scope of the EM&A requirements for the Project in the EIA study.

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

3.5.9.3 The Applicant shall prepare a project implementation schedule in the form of a detailed checklist 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 this 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 supply the Director with the following number of copies of the EIA report and the executive summary:

(i) 40 copies of the EIA report in English 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 5.2 (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 in English 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.

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

5.4 In addition, to facilitate the public inspection of the EIA Report via the EIAO Internet Website, the applicant shall provide electronic copies of both the EIA Report and the Executive Summary Report prepared in HyperText Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF version 4.0 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 the Executive Summary Report shall be included in the beginning of the document. Hyperlinks to all figures, drawings and tables in the EIA Report and Executive Summary shall be provided in the main text from where the respective references are made. All graphics in the report shall be in interlaced GIF format unless otherwise agreed by the Director.

5.5 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.

5.6 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.

5.7 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.

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 Section 1.2 of this EIA study brief and in Project Profile (No. PP-320/2007), 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.

-- END OF EIA STUDY BRIEF --

August 2007
Environmental Assessment Division
Environmental Protection Department

Appendix A-1

Guidelines on Choice of Models and Model Parameters in Air Quality Assessment

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

1. Introduction

1.1 To expedite the review process by the Authority and to assist project proponents or environmental consultants with the conduct of air quality modelling exercises which are frequently called for as part of environmental impact assessment studies, this paper describes the usage and requirements of a few commonly used air quality models.

2. Choice of models

2.1 The models which have been most commonly used in air quality impact assessments, due partly to their ease of use and partly to the quick turn-around time for results, are of Gaussian type and designed for use in simple terrain under uniform wind flow. There are circumstances when these models are not suitable for ambient concentration estimates and other types of models such as physical, numerical or mesoscale models will have to be used. In situations where topographic, terrain or obstruction effects are minimal between source and receptor, the following Gaussian models can be used to estimate the near-field impacts of a number of source types including dust, traffic and industrial emissions.

Models	Applications
FDM	for evaluating fugitive and open dust source impacts (point, line and area sources)
CALINE4	for evaluating mobile traffic emission impacts (line sources)
ISCST3	for evaluating industrial chimney releases as well as area and volumetric sources (point, area and volume sources); line sources can be approximated by a number of volume sources.

These frequently used models are also referred to as Schedule 1 models (see attached list).

2.2 Note that both FDM and CALINE4 have a height limit on elevated sources (20 m and 10m, respectively). Source of elevation above these limits will have to be modelled using the ISCST3 model or suitable alternative models. In using the latter, reference should be made to the 'Guidelines on the Use of Alternative Computer Models in Air Quality Assessment'.

2.3 The models can be used to estimate both short-term (hourly and daily average) and long-term (annual average) ambient concentrations of air pollutants. The model results, obtained using appropriate model parameters (refer to Section 3) and assumptions, allow direct comparison with the relevant air quality standards such as the Air Quality Objectives (AQOs) for the relevant pollutant and time averaging period.

3. Model input requirements

3.1 Meteorological Data

3.1.1 At least 1 year of recent meteorological data (including wind speed, wind direction, stability class, ambient temperature and mixing height) from a weather station either closest to or having similar characteristics as the study site should be used to determine the highest short-term (hourly, daily) and long-term (annual) impacts at identified air sensitive receivers in that period. The amount of valid data for the period should be no less than 90 percent.

3.1.2 Alternatively, the meteorological conditions as listed below can be used to examine the worst case short-term impacts:

- Day time: stability class D; wind speed 1 m/s (at 10m height); worst-case wind angle; mixing height 500 m
- Night time: stability class F; wind speed 1 m/s (at 10m height); worst case wind angle; mixing height 500 m
- This is a common practice with using the CALINE4 model due to its inability to handle lengthy data set.

3.1.3 For situations where, for example, (i) the model (such as CALINE4) does not allow easy handling of one full year of meteorological data; or (ii) model run time is a

concern, the followings can be adopted in order to determine the daily and annual average impacts:

(i) perform a frequency occurrence analysis of one year of meteorological data to determine the actual wind speed (to the nearest unit of m/s), wind direction (to the nearest 10°) and stability (classes A to F) combinations and their frequency of occurrence;
(ii) determine the short term hourly impact under all of the identified wind speed, wind direction and stability combinations; and
(iii) apply the frequency data with the short term results to determine the long term (daily / annual) impacts.

Apart from the above, any alternative approach that will capture the worst possible impact values (both short term and long term) may also be considered.

3.1.4 Note that the anemometer height (relative to a datum same for the sources and receptors) at which wind speed measurements were taken at a selected station should be correctly entered in the model. These measuring positions can vary greatly from station to station and the vertical wind profile employed in the model can be grossly distorted from the real case if incorrect anemometer height is used. This will lead to unreliable concentration estimates.

3.1.5 An additional parameter, namely, the standard deviation of wind direction, σ_θ, needs to be provided as input to the CALINE4 model. Typical values of σ_θ range from 12° for rural areas to 24° for highly urbanised areas under 'D' class stability. For semi-rural such as new development areas, 18° is more appropriate under the same stability condition. The following reference can be consulted for typical ranges of standard deviation of wind direction under different stability categories and surface roughness conditions.

Ref.(1): Guideline On Air Quality Models (Revised), EPA-450/2-78-027R, United States Environmental Protection Agency, July 1986.

3.2 Emission Sources

All the identified sources relevant to a process plant or a study site should be entered in the model and the emission estimated based on emission factors compiled in the AP-42 (Ref. 2) or other suitable references. The relevant sections of AP-42 and any parameters or assumptions used in deriving the emission rates (in units g/s, g/s/m or

g/s/m^2) as required by the model should be clearly stated for verification. The physical dimensions, location, release height and any other emission characteristics such as efflux conditions and emission pattern of the sources input to the model should also correspond to site data.

If the emission of a source varies with wind speed, the wind speed-dependent factor should be entered.

Ref.(2): Compilation of Air Pollutant Emission Factors, AP-42, 5thEdition, United States Environmental Protection Agency, January 1995.

3.3 Urban/Rural Classification

Emission sources may be located in a variety of settings. For modelling purposes these are classed as either rural or urban so as to reflect the enhanced mixing that occurs over urban areas due to the presence of buildings and urban heat effects. The selection of either rural or urban dispersion coefficients in a specific application should follow a land use classification procedure. If the land use types including industrial, commercial and residential uses account for 50% or more of an area within 3 km radius from the source, the site is classified as urban; otherwise, it is classed as rural.

3.4 Surface Roughness Height

This parameter is closely related to the land use characteristics of a study area and associated with the roughness element height. As a first approximation, the surface roughness can be estimated as 3 to 10 percent of the average height of physical structures. Typical values used for urban and new development areas are 370 cm and 100 cm, respectively.

3.5 Receptors

These include discrete receptors representing all the identified air sensitive receivers at their appropriate locations and elevations and any other discrete or grid receptors for supplementary information. A receptor grid, whether Cartesian or Polar, may be used to generate results for contour outputs.

3.6 Particle Size Classes

In evaluating the impacts of dust-emitting activities, suitable dust size categories relevant to the dust sources concerned with reasonable breakdown in TSP (< 30 μm) and RSP (< 10 μm) compositions should be used.

3.7 NO_2 to NO_x Ratio

The conversion of NO_x to NO_2 is a result of a series of complex photochemical reactions and has implications on the prediction of near field impacts of traffic emissions. Until further data are available, three approaches are currently acceptable in the determination of NO_2:

(a) - Ambient Ratio Method (ARM) - assuming 20% of NO_x to be NO_2; or
(b) - Discrete Parcel Method (DPM, available in the CALINE4 model); or
(c) - Ozone Limiting Method (OLM) - assuming the tailpipe NO_2 emission to be 7.5% of NO_x and the background ozone concentration to be in the range of 57 to 68 $\mu g/m^3$ depending on the land use type (see also EPD reference paper 'Guidelines on Assessing the 'TOTAL' Air Quality Impacts').

3.8 Odour Impact

In assessing odour impacts, a much shorter time-averaging period of 5 seconds is required due to the shorter exposure period tolerable by human receptors. Conversion of model computed hourly average results to 5-second values is therefore necessary to enable comparison against recommended standard. The hourly concentration is first converted to 3-minute average value according to a power law relationship which is stability dependent (Ref. 3) and a result of the statistical nature of atmospheric turbulence. Another conversion factor (10 for unstable conditions and 5 for neutral to stable conditions) is then applied to convert the 3-minute average to 5-second average (Ref. 4). In summary, to convert the hourly results to 5-second averages, the following factors can be applied:

Stability Category	1-hour to 5-sec Conversion Factor
A & B	45
C	27
D	9

Under 'D' class stability, the 5-second concentration is approximately 10 times the hourly average result. Note, however, that the combined use of such conversion factors together with the ISCST results may not be suitable for assessing the extreme close-up impacts of odour sources.

Ref.(3): Richard A. Duffee, Martha A. O' Brien and Ned Ostojic, 'Odor Modeling - Why and How', Recent Developments and Current Practices in Odor Regulations, Controls and Technology, Air & Waste Management Association, 1991.

Ref.(4): A.W.C. Keddie, 'Dispersion of Odours', Odour Control - A Concise Guide, Warren Spring Laboratory, 1980.

3.9 Plume Rise Options

The ISCST3 model provides by default a list of the U.S. regulatory options for concentration calculations. These are all applicable to the Hong Kong situations except for the 'Final Plume Rise' option. As the distance between sources and receptors are generally fairly close, the non-regulatory option of 'Gradual Plume Rise' should be used instead to give more accurate estimate of near-field impacts due to plume emission. However, the 'Final Plume Rise' option may still be used for assessing the impacts of distant sources.

3.10 Portal Emissions

These include traffic emissions from tunnel portals and any other similar openings and are generally modelled as volume sources according to the PIARC 91 (or more up-to-date version) recommendations (Ref. 5, section III.2). For emissions arising from underpasses or any horizontal openings of the like, these are treated as area or point sources depending on the source physical dimensions. In all these situations, the ISCST3 model or more sophisticated models will have to be used instead of the CALINE4 model. In the case of portal emissions with significant horizontal exit velocity which cannot be handled by the ISCST3 model, the impacts may be estimated by the TOP model (Ref. 6) or any other suitable models subject to prior agreement with EPD. The EPD's 'Guidelines on the Use of Alternative Computer Models in Air Quality Assessment' should also be referred to.

Ref.(5): XIXth World Road Congress Report, Permanent International Association of Road Congresses (PIARC), 1991.

Ref.(6): N. Ukegunchi, H. Okamoto and Y. Ide "Prediction of vehicular emission pollution around a tunnel mouth", Proceedings 4th International Clean Air Congress, pp. 205-207, Tokyo, 1977

3.11 Background Concentrations

Background concentrations are required to account for far-field sources which cannot be estimated by the model. These values, to be used in conjunction with model results for assessing the total impacts, should be based on long term average of monitoring data at location representative of the study site. Refer to EPD reference paper 'Guidelines on Assessing the 'TOTAL' Air Quality Impacts' for further information.

3.12 Output

The highest short-term and long-term averages of pollutant concentrations at prescribed receptor locations are output by the model and to be compared against the relevant air quality standards specified for the relevant pollutant. Contours of pollutant concentration are also required for indicating the general impacts of emissions over a study area.

Copies of model files in electronic format should also be provided for EPD's reference.

Schedule 1

Air Quality Models Generally Accepted by Hong Kong Environmental Protection Department for Regulatory Applications as at 1 July 1998*

Industrial Source Complex Dispersion Model - Short Term Version 3 (ISCST3) or the latest version developed by U.S. Environmental Protection Agency

California Line Source Dispersion Model Version 4 (CALINE4) or the latest version developed by Department of Transportation, State of California, U.S.A.

Fugitive Dust Model (FDM) or the latest version developed by U.S. Environmental Protection Agency

* EPD is continually reviewing the latest development in air quality models and will update this Schedule accordingly.

Appendix A-2

Guidelines on Assessing the 'TOTAL' Air Quality Impacts

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

1. Total Impacts - 3 Major Contributions

1.1 In evaluating the air quality impacts of a proposed project upon air sensitive receivers, contributions from three classes of emission sources depending on their distance from the site should be considered. These are:

Primary contributions:	project induced
Secondary contributions:	pollutant-emitting activities in the immediate neighbourhood
Other contributions:	pollution not accounted for by the previous two (Background contributions)

2. Nature of Emissions

2.1 Primary contributions

In most cases, the project-induced emissions are fairly well defined and quite often (but not necessarily) the major contributor to local air quality impacts. Examples include those due to traffic network, building or road construction projects.

2.2 Secondary contribution

Within the immediate neighbourhood of the project site, there are usually pollutant emitting activities contributing further to local air quality impacts. For most local scale projects, any emission sources in an area within 500m radius of the project site with notable impacts should be identified and included in an air quality assessment to cover the short-range contributions. In the exceptional cases where there is one or more significant sources nearby, the study area may have to be extended or alternative estimation approach employed to ensure these impacts are reasonably accounted for.

2.3 Background contributions

The above two types of emission contributions should account for, to a great extent, the air quality impacts upon local air sensitive receivers, which are often amenable to estimation by the 'Gaussian Dispersion' type of models. However, a background air quality level should be prescribed to indicate the baseline air quality in the region of the project site, which would account for any pollution not covered by the two preceding contributions. The emission sources contributing to the background air quality would be located further afield and not easy to identify. In addition, the transport mechanism by which pollutants are carried over long distances (ranging from 1km up to tens or hundreds of kms) is rather complex and cannot be adequately estimated by the 'Gaussian' type of models.

3. Background Air Quality - Estimation Approach

3.1 The approach

In view of the difficulties in estimating background air quality using the air quality models currently available, an alternative approach based on monitored data is suggested. The essence of this approach is to adopt the long-term (5-year) averages of the most recent monitored air quality data obtained by EPD. These background data would be reviewed yearly or biennially depending on the availability of the monitored data. The approach is a first attempt to provide a reasonable estimate of the background air quality level for use in conjunction with EIA air quality assessment to address the cumulative impacts upon a locality. This approach may be replaced or supplemented by superior modelling efforts such as that entailed in PATH (Pollutants in the Atmosphere and their Transport over Hong Kong), a comprehensive territory-wide air quality modelling system currently being developed for Hong Kong. Notwithstanding this, the present approach is based on measured data and their long term regional averages; the background values so derived should therefore be indicative of the present background air quality. In the absence of any other meaningful way to estimate a background air quality for the future, this present background estimate should also be applied to future projects as a first attempt at a comprehensive estimate until a better approach is formulated.

3.2 Categorisation

The monitored air quality data, by 'district-averaging' are further divided into three categories, viz, Urban, Industrial and Rural/New Development. The background

pollutant concentrations to be adopted for a project site would depend on the geographical constituency to which the site belongs. The categorisation of these constituencies is given in Section 3.4. The monitoring stations suggested for the 'district-averaging'(arithmetic means) to derive averages for the three background air quality categories are listed as follows:

Urban: Kwun Tong, Sham Shui Po, Tsim Sha Tsui and Central/Western Industrial: Kwun Tong, Tsuen Wan and Kwai Chung Rural/New Development: Sha Tin, Tai Po, Junk Bay, Hong Kong South and Yuen Long

The averaging would make use of data from the above stations wherever available. The majority of the monitoring stations are located some 20m above ground.

3.3 Background pollutant values

Based on the above approach, background values for the 3 categories have been obtained for a few major air pollutants as follows:

POLLUTANT	URBAN	INDUSTRIAL	RURAL/NEW DEVELOPMENT
NO_2	59	57	39
SO_2	21	26	13
O_3	62	68	57
TSP	98	96	87

All units are in micrograms per cubic metre. The above values are derived from 1992 to 1996 annual averages with the exception of ozone which represent annual average of daily hourly maximum values for year 1996.

In cases where suitable air quality monitoring data representative of the study site such as those obtained from a nearby monitoring station or on-site sampling are not available for the prescription of background air pollution levels, the above tabulated values can be adopted instead. Strictly speaking, the suggested values are only appropriate for long term assessment. However, as an interim measure and until a better approach is formulated, the same values can also be used for short term assessment. This implies that the short term background values will be somewhat under-estimated, which compensates for the fact that some of the monitoring data are inherently influenced by secondary sources because of the monitoring station location.

Indeed, if good quality on-site sampling data which cover at least one year period are available, these can be used to derive both the long term (annual) and short term (daily / hourly) background values, the latter are usually applied on an hour to hour, day to day basis.

3.4 Site categories

The categories to which the 19 geographical constituencies belong are listed as follows:

DISTRICT	AIR QUALITY CATEGORY
Islands	Rural/New Development
Southern	Rural/New Development
Eastern	Urban
Wan Chai	Urban
Central & Western	Urban
Sai Kung	Rural/New Development
Kwun Tong	Industrial
Wong Tai Sin	Urban
Kowloon City	Urban
Yau Tsim	Urban
Mong Kok	Urban
Sham Shui Po	Urban
Kwai Tsing	Industrial
Sha Tin	Rural/New Development
Tsuen Wan	Industrial
Tuen Mun	Rural/New Development
Tai Po	Rural/New Development
Yuen Long	Rural/New Development
Northern	Rural/New Development

3.5 Provisions for ‘double-counting’

The current approach is, by no means, a rigorous treatment of background air quality but aims to provide an as-realistic-as-possible approximation based on limited field data. ‘Double-counting’ of ‘secondary contributions’ may be apparent through the use of such ‘monitoring-based’ background data as some of the monitoring stations are of close proximity to existing emission sources. ‘Primary contributions’ due to a

proposed project (which is yet to be realised) will not be double-counted by such an approach. In order to avoid over-estimation of background pollutant concentrations, an adjustment to the values given in section 3.3 is possible and optional by multiplying the following factor:

(1.0 - ESecondary contributions/ETerritory)

where E stands for emission.

The significance of this factor is to eliminate the fractional contribution to background pollutant level of emissions due to 'secondary contributions' out of those from the entire territory. In most cases, this fractional contribution to background pollutant levels by the secondary contributions is minimal.

4. Conclusions

4.1 The above described approach to estimating the total air quality impacts of a proposed project, in particular the background pollutant concentrations for air quality assessment, should be adopted with immediate effect. Use of short term monitoring data to prescribe the background concentrations is no longer acceptable.

Appendix A-3

Guidelines on the Use of Alternative Computer Models in Air Quality Assessment

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

1. Background

1.1 In Hong Kong, a number of Gaussian plume models are commonly employed in regulatory applications such as application for specified process licences and environmental impact assessments (EIAs). These frequently used models (as listed in Schedule 1 attached; hereafter referred to as Schedule 1 models) have no regulatory status but form the basic set of tools for local-scale air quality assessment in Hong Kong.

1.2 However, no single model is sufficient to cover all situations encountered in regulatory applications. In order to ensure that the best model available is used for each regulatory application and that a model is not arbitrarily applied, the project proponent (and/or its environmental consultants) should assess the capabilities of various models available and adopt one that is most suitable for the project concerned.

1.3 Examples of situations where the use of an alternative model is warranted include:

(i) the complexity of the situation to be modelled far exceeds the capability of the Schedule 1 models; and
(ii) the performance of an alternative model is comparable or better than the Schedule 1 models.

1.4 This paper outlines the demonstration / submission required in order to support the use of an alternative air quality model for regulatory applications for Hong Kong.

2. Required Demonstration / Submission

2.1 Any model that is proposed for air quality applications and not listed amongst the Schedule 1 models will be considered by EPD on a case-by-case basis. In such cases, the proponent will have to provide the followings for EPD's review:

(i) Technical details of the proposed model; and

(ii) Performance evaluation of the proposed model

Based on the above information, EPD will determine the acceptability of the proposed model for a specific or general applications. The onus of providing adequate supporting materials rests entirely with the proponent.

2.2 To provide technical details of the proposed model, the proponent should submit documents containing at least the following information:

(i) mathematical formulation and data requirements of the model;
(ii) any previous performance evaluation of the model; and
(iii) a complete set of model input and output file(s) in commonly used electronic format.

2.3 On performance evaluation, the required approach and extent of demonstration varies depending on whether a Schedule 1 model is already available and suitable in simulating the situation under consideration. In cases where no Schedule 1 model is found applicable, the proponent must demonstrate that the proposed model passes the screening test as set out in USEPA Document "Protocol for Determining the Best Performing Model"

2.4 For cases where a Schedule 1 model is applicable to the project under consideration but an alternative model is proposed for use instead, the proponent must demonstrate either that

(i) the highest and second highest concentrations predicted by the proposed model are within 2 percent of the estimates obtained from an applicable Schedule 1 model (with appropriate options chosen) for all receptors for the project under consideration; or
(ii) the proposed model has superior performance against an applicable Schedule 1 model based on the evaluation procedure set out in USEPA Document "Protocol for Determining the Best Performing Model"

2.5 Should EPD find the information on technical details alone sufficient to indicate the acceptability of the proposed model, information on further performance evaluation as specified in Sections 2.3 and 2.4 above would not be necessary.

2.6 If the proposed model is an older version of one of the Schedule 1 models or was previously included in Schedule 1, the technical documents mentioned in Section 2.2

are normally not required. However, a performance demonstration of equivalence as stated in Section 2.4 (i) would become necessary.

2.7 If EPD is already in possession of some of the documents that describe the technical details of the proposed model, submission of the same by the proponent is not necessary. The proponent may check with EPD to avoid sending in duplicate information.

Schedule 1

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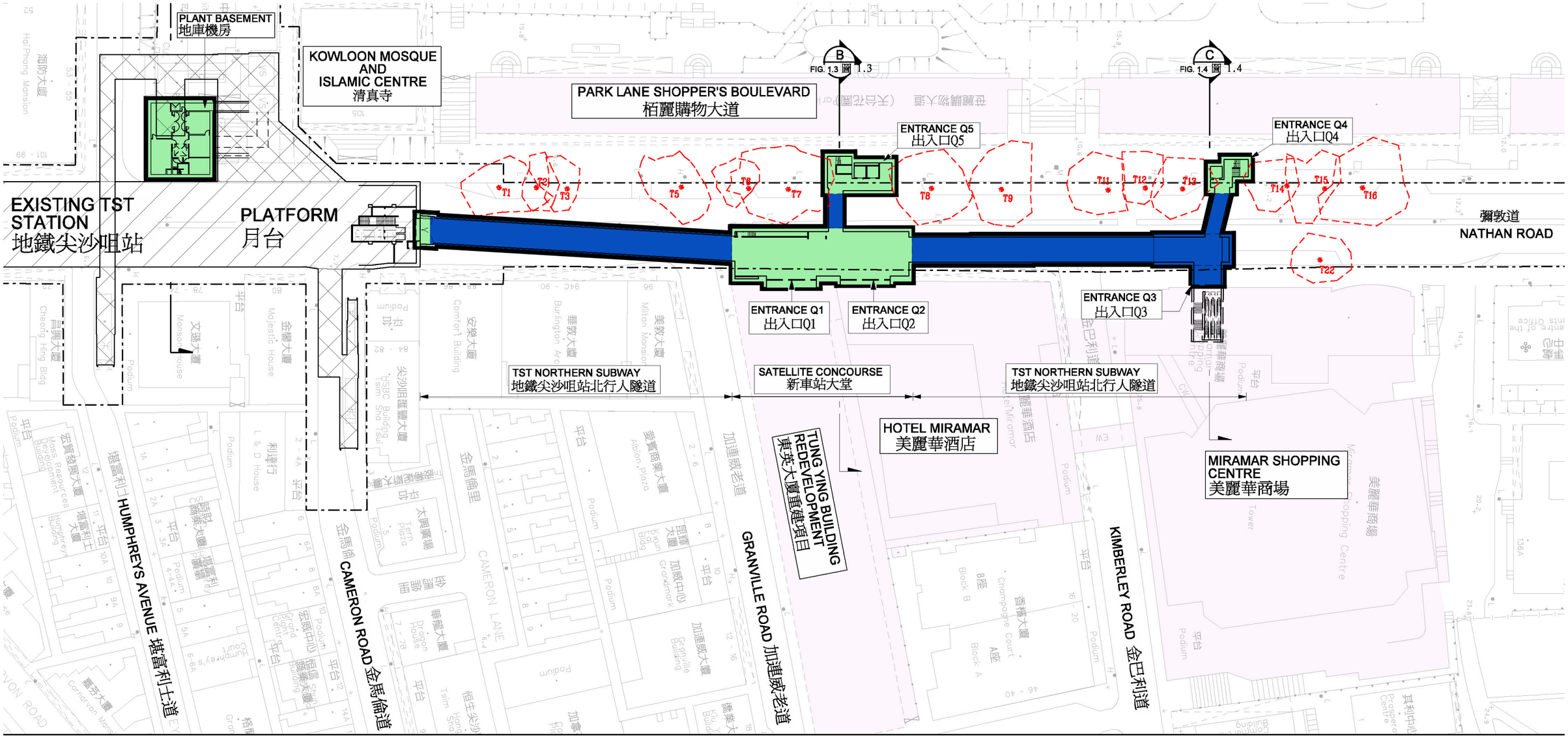
Fugitive Dust Model (FDM) or the latest version developed by U.S. Environmental Protection Agency

Ref. (1): William M. Cox, "Protocol for Determining the Best Performing Model" Publication No. EPA-454/R-92-025; U.S. Environmental Protection Agency, Research Triangle Park, NC.

* EPD is continually reviewing the latest development in air quality models and will update this Schedule accordingly.



LEGEND:
圖例:

- OPEN CUT EXCAVATION 明挖方式
- UNDERGROUND EXCAVATION BY TUNNELING METHOD 使用隧道工程方法的地下挖掘
- OVT 古樹名木
- RAILWAY AREA PLAN BOUNDARY 地鐵範圍圖則界線

Project Title : Tsim Sha Tsui Station Northern Subway
工程名稱 : 地鐵尖沙咀站北行人隧道
EIA Study Brief No. : ESB-168/2007
環評研究概要編號 : ESB-168/2007

Figure 1 : Location Plan
圖 1 : 位置圖

(Reproduced from Figure 1.1 of Project Profile No. PP-320/2007)