1. INTRODUCTION

1.1 Preamble

The existing Kowloon-Canton Railway Corporation (KCRC) East Rail is one of the most heavily used railways in the world with over 500 train trips every day. Projected growth requires that the railway be expanded by constructing extensions to the East Rail network from Tai Wai to Ma On Shan (the "MOS Extension") and from Hung Hom to Tsim Sha Tsui (the "TST Extension").

The MOS Extension (in its current form) was first developed as part of the first Railway Development Study (RDS-1) and for which an environmental feasibility study (EFS) was subsequently undertaken by ERM. The aim of the EFS was to investigate the suitability of the proposed project in terms of its environmental acceptability and, where necessary, provide recommendations to control any identified adverse impacts.

The EFS concluded that, whilst varying levels of construction impacts were predicted, no insurmountable environmental problems were evident at any of the locations considered in the assessment. Additionally, no adverse operational impacts were predicted, provided that the measures recommended in the assessment were incorporated in the railway design.

In December 1997, KCRC was invited by Government to submit a proposal for the construction and operation of the MOS Extension. ERM was commissioned to undertake the Preliminary Environmental Review (PER) which was completed in July 1998. The EFS provided a useful background for the PER Study and enabled the early delineation of the scope and content of individual disciplines to be more easily defined.

As part of the PER, a Project Profile was produced which, as required by the Environmental Impact Assessment Ordinance (EIAO), detailed the scope of the environmental issues associated with the construction and operation of the MOS Extension. This Project Profile (No. PP-024/1998) was submitted to the EPD by the KCRC on 15 October 1998 in order to obtain an EIA Study Brief under section 5(1) of the EIAO. The details contained in the Project Profile were considered by the Director of Environmental Protection and used as the basis for determining and specifying the scope, purpose and objectives of the EIA Study.

The MOS Study Brief, (No. ESB-015/1998) was issued by the EPD on the 18 November 1998. The Study Brief, which is valid for 24 months from the date of issue, sets out the objectives and detailed requirements of the EIA Study, and also the EIA reporting requirements. A copy of the Study Brief is included in Annex A of this report.

The Study Team appointed by KCRC to undertake the EIA for the MOS Extension consisted of ERM Hong Kong, in association with the following specialist subconsultants:

- Urbis Ltd for the Landscape and Visual Impact assessment;
- Wilson Ihrig & Associates for specialist railway acoustic and vibration input; and,

- the Museum of London Archaeological Services (MoLAS), Professor Siu Kwok-Kin and Mr Stephen Ng for the Cultural Heritage Study.

The aim of the EIA study is to provide information on the type and magnitude of impacts associated with the construction and operation of the MOS Extension in order to ensure that the KCRC, Government and the general public are fully aware of:

- the overall acceptability of any adverse environmental consequences that are likely to arise as a result of the proposed railway;
- the conditions and requirements for the detailed design, construction and operation of the proposed railway; and
- the likely acceptability of residual impacts after the proposed mitigation measures are implemented.

1.2 Objectives of the Environmental Impact Assessment

The objectives of the EIA are to:

- describe the proposed project and associated works together with the requirements for carrying out the proposed project;
- identify and describe the elements of the existing and planned community and environment likely to be affected by the proposed project, including both the natural and man-made environment;
- identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potentially affected users;
- identify and predict any potential losses or damage to flora, fauna and wildlife habitats;
- identify any potential landscape and visual impacts and propose measures to mitigate these impacts;
- identify any potential impacts to the historical, archaeological and cultural resources within the study area and propose measures to mitigate these impacts;
- propose the provision of infrastructure or mitigation measures so as to minimise pollution, environmental disturbance and nuisance during the construction and operation of the proposed project;
- identify, predict and evaluate the residual (ie after practicable mitigation) environmental impacts and cumulative effects expected to arise during the construction and operational phases of the proposed project in relation to the sensitive receivers and potential affected uses;
- identify, assess and specify methods, measures and standards to be included in the detailed design, construction and operation of the proposed project which are necessary to mitigate these impacts and reduce them to acceptable levels;

- investigate the extent of side-effects of proposed mitigation measures that may lead to other forms of impacts;
- identify constraints associated with the mitigated measures recommended in the study; and
- design and specify the environmental monitoring and audit (EM&A) requirements necessary to ensure the implementation and the effectiveness of the environmental protection and pollution control measures adopted.

The MOS Extension EIA Study Brief (attached in *Annex A* of the *EIA Report*) sets out the detailed requirements, objectives and scope of the EIA Study. The Study Brief required that the EIA Study addressed the following disciplines:

- Noise Impacts;
- Air Quality Impacts;
- Water Quality Impacts;
- Waste Management Impacts (including Land Contamination);
- Ecological Impacts;
- Landscape and Visual Impacts;
- Heritage Impacts;
- Hazard Assessment; and
- On-going Environmental Management

The scope and depth of the required assessments for each of these disciplines was defined in the MOS Extension Study Brief, and varied considerably. Details of the actual scope of the assessment for each of the components of the project are detailed within the technical assessment chapters.

This EIA Report has been produced in accordance with the requirements of the MOS Extension EIA Study Brief and the guidelines of the *Technical Memorandum on Environmental Impact Assessment Process* (EIAO TM). This report will provide essential information to ultimately enable the KCRC to apply for an Environmental Permit.

1.3 The EIA Ordinance

On 1st April 1998, the *Environmental Impact Assessment (EIA) Ordinance* was implemented by the Hong Kong Government. Under the requirements of the Ordinance, all designated projects require an Environmental Permit before they can commence. The types of projects which are considered as being designated, and thus requiring an Environmental Permit are listed in Schedules 1 and 2 of the Ordinance. Schedule 2, Part 1A of the Ordinance relates to 'Roads, Railways and Depots'. It defines both 'a railway and its associated stations' and 'a railway siding, depot, maintenance workshop,

marshalling yard or goods yard' as being designated projects. Therefore, the MOS Extension to East Rail is a *designated project* governed by the requirements of the Ordinance and requiring an Environmental Permit. Consequently, construction works cannot start until an Environmental Permit is issued.

The current programme for the MOS Extension envisages that construction will commence in February 2000. In order to meet this target date, the EIA must be completed and an environmental permit application lodged with the EPD by no later than the middle of August 1999.

Upon completion of this EIA, the applicant can apply for an environmental permit. Given that the form of the application and supporting information is acceptable, the following are the statutory time periods which are allowed for the review of the application and the issue of the Environmental Permit. The overall determination period for the application is a maximum of 150 days, during which the following procedures will be undertaken:

- Upon receipt of the completed EIA Study, the EPD is required to review the EIA Report within ***sixty (60) days***, to determine whether it meets the requirements of the Study Brief and the Technical memorandum. If the EIA Report meets the requirements, the EPD shall advise the applicant regarding the requirements for public inspection of the Report, and also whether a submission to the Advisory Council on the Environment (ACE) or its subcommittee is required.
- The EIA Report is then presented for public inspection (with comments required within thirty (30) days) and, if required, is forwarded to the ACE (with comments required within ***sixty (60) days***). These consultations may be undertaken concurrently. (As required by the MOS Extension Study Brief, the EIA Report and Executive Summary Report must be up-loaded onto the EPD's EIAO Internet Website to aid public inspection of the Report).
- Within ***thirty (30) days*** of the expiry of the public inspection period, or the receipt of comments from the ACE, (or from the receipt of further information, which must be requested by the EPD within 14 days of the inspection period or the receipt of comments from ACE). The EPD must determine the approval of the EIA Report. If no response is received within the 30-day period, the EIA Report is taken to be approved without conditions.

1.4 Structure of the Environmental Impact Assessment Report

This EIA Report has been split into three separate volumes:

- Tai Wai to Ma On Shan Extension EIA: *Volume 1 - EIA Main Report*;
- Tai Wai to Ma On Shan Extension EIA: *Volume 2 - Technical Annexes*; and
- Tai Wai to Ma On Shan Extension EIA: *Volume 3 - Landscape Design Strategy Report.*

After this introductory section, the remainder of this volume of the EIA, is arranged as follows:

- *Section 2* provides an up-to-date description of the project;
- *Section 3* presents the findings of the Air Quality assessment;
- *Section 4* presents the findings of the Construction and Operational Noise assessment;
- *Section 5* presents the findings of the Water Quality assessment;
- *Section 6* presents the findings of the Waste assessment;
- *Section 7*, in accordance with the requirements of the MOS Extension Study Brief, provides a description of the existing ecological conditions within 500m from either side and along the full length of the MOS Extension alignment;
- *Section 8* presents the findings of the Landscape and Visual assessment;
- *Section 9* presents the findings of the Historic and Cultural Resources assessment;
- *Section 10* presents the findings of the Land Contamination assessment;
- *Section 11* presents the findings of the Hazard assessment;
- *Section 12* outlines the On-going Environmental Management and Environmental Monitoring and Audit Requirements;
- *Section 13* presents the Conclusions and Recommendations of the EIA Study.

ANNEXES:

Annex A - MOS Extension EIA Study Brief

Annex B - Implementation Schedule

Annex C - Contamination Assessment Plan (CAP)