

1 INTRODUCTION

1.1 Background

- 1.1.1 In 2002, Civil Engineering and Development Department (CEDD) commissioned an integrated planning and engineering study under Agreement No. CE 87/2001 (CE) “Further Development of Tseung Kwan O – Feasibility Study” (the “TKO Study”) to formulate a comprehensive plan for further development of TKO New Town. It recommended to further develop TKO to house a total population of 450,000 besides the district’s continuous commercial and industrial developments.
- 1.1.2 At present, the Tseung Kwan O Tunnel is the main connection between Tseung Kwan O (TKO) and other areas in the territory. To cope with the anticipated transport need, the TKO Study recommended the provision of Tseung Kwan O – Lam Tin Tunnel (TKO-LT Tunnel) and Cross Bay Link (CBL) to meet the long-term traffic demand between TKO and the external areas.
- 1.1.3 The TKO-LT Tunnel, together with the proposed Trunk Road T2 in Kai Tak Development (KTD) and Central Kowloon Route (CKR), will form Route 6 in the strategic road network. Route 6 will provide an east-west express link between Kowloon and TKO areas. Upon completion, this strategic route will also provide the necessary relief to the existing heavily trafficked road network in the central and eastern Kowloon areas, and reduce the related environmental impacts on these areas.
- 1.1.4 AECOM Asia Co. Ltd. was appointed by CEDD to carry out the Assignment on Tseung Kwan O – Lam Tin Tunnel and Association Works – Investigation (hereafter referred to as “the Project”). The Project is a Designated Project under the Environmental Impact Assessment Ordinance (EIAO). An Environmental Impact Assessment (EIA) Study for the Project has been undertaken as part of the Assignment, in accordance with the EIA Study Brief (No. ESB-195/2008) and the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).

1.2 Project Scope and Location

- 1.2.1 **Figure 1.1** shows the location plan of the Project. The outlined scope of the Project is to provide a highway connecting TKO at Po Shun Road in the east and Trunk Road T2 in the west with the associated interchange. It comprises the following key elements:
- (a) a dual two-lane highway approximately 4.2 km long. About 2.6 km of the highway is in the form of tunnel;
 - (b) slip roads, depressed roads, viaducts, TKO Interchange, ventilation building, tunnel portal facilities and around 3 ha reclamation on TKO side;
 - (c) slip roads, branch tunnels, viaducts, Lam Tin Interchange, tunnel portal facilities, ventilation and administration buildings on Kowloon side; and
 - (d) the associated building, civil, structural, marine, electrical and mechanical, traffic control and surveillance system (TCSS), landscaping, and environmental protection and mitigation works.

1.3 Construction Programme

1.3.1 The Project construction works are anticipated to commence in early 2016 with completion of the Project by end of 2020. A construction programme is provided in **Appendix A**.

1.4 Purpose of the Manual

1.4.1 The purpose of this Environmental Monitoring and Audit (EM&A) Manual is to guide the set up of an EM&A programme to ensure compliance with the EIA study recommendations, to assess the effectiveness of the recommended mitigation measures and to identify any further need for additional mitigation measures or remedial action. This Manual outlines the monitoring and audit programme for the construction and operational phases of the proposed Project. It aims to provide systematic procedures for monitoring, auditing and minimising environmental impacts associated with construction works and operational activities.

1.4.2 Hong Kong environmental regulations and the Hong Kong Planning Standards and Guidelines have served as environmental standards and guidelines in the preparation of this Manual. In addition, the EM&A Manual has been prepared in accordance with the requirements stipulated in Annex 21 of the EIAO-TM.

1.4.3 This Manual contains the following information:

- responsibilities of the Contractor, the Engineer or Engineer's Representative (ER), Environmental Team (ET) and Independent Environment Checker (IEC) with respect to the environmental monitoring and audit requirements during the course of the project;
- project organisation for the project;
- the basis for, and description of the broad approach underlying the EM&A programme;
- requirements with respect to the construction programme schedule and the necessary environmental monitoring and audit programme to track the varying environmental impact;
- details of the methodologies to be adopted, including all field laboratories and analytical procedures, and details on quality assurance and quality control programme;
- the rationale on which the environmental monitoring data will be evaluated and interpreted;
- definition of Action and Limit levels;
- establishment of Event and Action plans;
- requirements for reviewing pollution sources and working procedures required in the event of non-compliance with the environmental criteria and complaints;
- requirements for presentation of environmental monitoring and audit data and appropriate reporting procedures;
- requirements for review of EIA predictions and the effectiveness of the mitigation measures / environmental management systems and the EM&A programme.

1.4.4 For the purpose of this manual, the ET leader, who shall be responsible for and in charge of the ET, shall refer to the person delegated the role of executing the EM&A requirements.

1.5 Project Organisation

1.5.1 The roles and responsibilities of the various parties involved in the EM&A process and the organisational structure of the organisations responsible for implementing the EM&A programme are outlined below. The proposed project organisation and lines of communication with respect to environmental protection works are shown in **Figure 1.2**.

The Contractor

1.5.2 The Contractor shall report to the Engineer. The duties and responsibilities of the Contractor are:

- implement the recommendations and requirements of the EIA study;
- provide assistance to ET in carrying out monitoring;
- submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event and Action Plans;
- implement measures to reduce impact where Action and Limit levels are exceeded until the events are resolved;
- implement the corrective actions instructed by the Engineer;
- accompany joint site inspection undertaken by the ET; and
- adhere to the procedures for carrying out complaint investigation.

Environmental Team (ET)

1.5.3 The ET Leader and the ET shall be employed to conduct the EM&A programme and ensure the Contractor's compliance with the project's environmental performance requirements during construction. The ET Leader shall be an independent party from the Contractor and have relevant professional qualifications, or have sufficient relevant EM&A experience subject to approval of the Engineer's Representative (ER) and the Environmental Protection Department (EPD). The ET shall be led and managed by the ET leader. The ET leader shall possess at least 10 years experience in EM&A and/or environmental management.

1.5.4 The duties and responsibilities of the ET are:

- monitor various environmental parameters as required in this EM&A Manual;
- analyse the environmental monitoring and audit data and review the success of EM&A programme to cost-effectively confirm the adequacy of mitigation measures implemented and the validity of the EIA predictions and to identify any adverse environmental impacts arising;
- carry out regular site inspection to investigate and audit the Contractors' site practice, equipment and work methodologies with respect to pollution control and environmental mitigation, and effect proactive action to pre-empt problems; carry out ad hoc site inspections if significant environmental problems are identified;
- audit and prepare monitoring and audit reports on the environmental monitoring data and site environmental conditions;
- report on the environmental monitoring and audit results to the IC(E), Contractor, the ER and EPD or its delegated representative;

- recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action Plans;
- advice to the Contractor on environmental improvement, awareness, enhancement matters, etc. on site;
- timely submission of the EM&A report to the Project Proponent and the EPD; and
- adhere to the procedures for carrying out complaint investigation in accordance with **Section 12** of this manual.

Engineer or Engineer's Representative

1.5.5 The Engineer is responsible for overseeing the construction works and for ensuring that the works undertaken by the Contractor in accordance with the specification and contractual requirements. The duties and responsibilities of the Engineer with respect to EM&A may include:

- supervise the Contractor's activities and ensure that the requirements in the EM&A Manual are fully complied with;
- inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans;
- participate in joint site inspection undertaken by the ET; and
- adhere to the procedures for carrying out complaint investigation.

Independent Environmental Checker

1.5.6 The Independent Environmental Checker (IEC) shall advise the Engineer's Representative on environmental issues related to the project. The IEC shall possess at least 10 years experience in EM&A and/or environmental management.

1.5.7 The duties and responsibilities of the IEC are:

- review the EM&A works performed by the ET (at least at monthly intervals);
- carry out random sample check and audit the monitoring activities and results (at least at monthly intervals);
- conduct random site inspection;
- review the EM&A reports submitted by the ET;
- review the effectiveness of environmental mitigation measures and project environmental performance;
- review the proposal on mitigation measures submitted by the Contractor in accordance with the Event and Action Plans; and
- adhere to the procedures for carrying out complaint investigation.

1.5.8 Sufficient and suitably qualified professional and technical staff shall be employed by the respective parties to ensure full compliance with their duties and responsibilities, as required under the EM&A programme for the duration of the Project.