

1 INTRODUCTION

1.1 BACKGROUND OF THE PROJECT

- 1.1.1 In December 1994, the Environmental Protection Department (EPD) completed the Outlying Islands Sewerage Master Plan (OISMP) Study (EPD, 1994). The areas studied in the OISMP include Lantau Island, Lamma Island, Cheung Chau, Peng Chau and some other smaller islands at western and southern Hong Kong. Recommendations on the improvements and extensions to the existing sewerage infrastructures were made.
- 1.1.2 The OISMP identified the need for improvement of the water quality of marine waters close to Peng Chau. Further to the OISMP, the Drainage Services Department (DSD) completed the Preliminary Project Feasibility Study (PPFS) for Package K – Peng Chau Sewage Treatment Works Upgrade. The study concluded that the existing capacity of the Peng Chau Sewage Treatment Works (STW) is inadequate to meet the increase in flow due to the proposed developments at Peng Chau. An upgrading and expanding of the existing Peng Chau STW with an oceanic submarine outfall is therefore required. The study also recommended to include Package K in the Outlying Islands Sewerage Stage 1 Phase 2 Works.
- 1.1.3 In August 2002, the Drainage Services Department (DSD) of the Hong Kong SAR commissioned CDM International Inc. (CDM) under Agreement No. CE83/2001 (DS) to carry out investigations, environmental impact assessments (EIA), design, tender, construction supervision and commissioning of Package K – Peng Chau Sewage Treatment Works Upgrade (hereinafter called the Project) (**Figure 1-1**).
- 1.1.4 The submarine sewage outfall of this Project is a “designated project” category F.6 under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499), and an environmental permit is required for the Project. An EIA report in accordance with the requirements under the EIA Ordinance and the EIA Study Brief is prepared.

1.2 PURPOSE OF THE EIA STUDY

- 1.2.1 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 related activities that take place concurrently. The acceptance of the EIA Study is based on the following:
- (a) The overall acceptability of any adverse environmental consequences that are likely to rise as a result of the Project.
 - (b) The conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences wherever practicable.
 - (c) The acceptability of residual impacts after the proposed mitigation measures are implemented.

1.3 OBJECTIVES OF EIA STUDY

1.3.1 The overall objectives of the EIA Study for the Project are:

- (a) To describe the Project and associated works together with the requirements for carrying out the Project.
- (b) To consider alternatives including the location of the submarine outfall and emergency overflow, with a view to avoid and minimize the potential environmental impacts including impacts on coral communities; to compare environmental benefits and dis-benefits of each of the different options; to provide reasons for selecting the preferred option and to describe the part of environment.
- (c) To identify and describe elements of community and environment likely to be affected by the Project and/or likely to cause adverse impacts to the Project; including natural and man-made environment and the associated environmental constraints.
- (d) To identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potential affected uses.
- (e) To identify and quantify any potential impact from point and non-point pollution sources on the identified water systems and sensitive receivers during the construction and operation stages.
- (f) To identify and quantify any potential impact to marine ecology, including the coral communities, and to propose measures to mitigate these impacts.
- (g) To propose the provision of mitigation measures so as to minimize pollution, environmental disturbance and nuisance during construction and operation of the Project.
- (h) To investigate the feasibility, effectiveness and implications of the proposed mitigation measures.
- (i) To identify, predict and evaluate the residual environmental impacts (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.
- (j) 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 the identified environmental impacts and cumulative effects and reduce them to acceptable levels.
- (k) 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.

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

1.4 KEY ENVIRONMENTAL ISSUES

1.4.1 The construction and operation of the Project may impose the following environmental issues:

- (a) The potential water quality impact and ecological impact, in particular the coral communities at the coast of Tai Lei Island during construction of submarine outfall and upgrading of the STW;
- (b) The potential water quality impact and ecological impact, in particular the coral communities at the coast of Tai Lei Island due to outfall discharges; the discharge of untreated or partially treated sewage during emergency discharge arising from the operation of the STW;
- (c) The potential odour and noise impacts associated with the construction, operation and demolition works of the sewage treatment works to the sensitive receivers; and
- (d) The marine archaeological value of the area that may be affected by the Project.

1.5 ASSESSMENT APPROACH

1.5.1 The assessment was conducted in accordance with the requirement of the EIA Study Brief No. ESB-093/2001 (**Appendix 1A**) and the general principles and guidelines of the Technical Memorandum on Environmental Impact Assessment Process (TMEIAP).

1.6 REPORT STRUCTURE

1.6.1 The backgrounds of this Project are provided in Section 1. Project description, selections of treatment process and outfall location are presented in Section 2. For each of the environmental parameters that have been identified, assessment results and mitigation measures are presented in the following sections.

Section 3 – Air Quality Impact

Section 4 - Noise Impact

Section 5 – Water Quality Impact

Section 6 – Sediment Contamination

Section 7- Waste Management Implication

Section 8 – Marine Ecology

Section 9 – Cultural Heritage

- 1.6.2 An outline of the requirements for Environmental Monitoring & Audit (EM&A) programme is shown in Section 10. Detailed EM&A programme is provided in a separate EM&A Manual. Section 11 describes the implementation schedule of the recommended mitigation measures and Section 12 concludes the assessment findings and results. The references cited are provided in Section 13.

