

1 INTRODUCTION

Background of the Project

- 1.1 The Harbour Area Treatment Scheme (HATS, formerly known as Strategic Sewage Disposal Scheme) is to improve water quality in Victoria Harbour by intercepting and treating sewage from developments on both sides of the harbour. The HATS comprises two stages: 1 and 2.
- 1.2 Stage 1 involved the construction of a chemically enhanced primary treatment (CEPT) works at Stonecutters Island, building of a deep tunnel system to convey sewage from the Kowloon Peninsula, Tseung Kwan O, Kwai Tsing, and Hong Kong Island East to the Stonecutters Island Sewage Treatment Works (SCSTW), and the construction of a effluent outfall in the western harbour. HATS Stage 1 was fully completed and commissioned in December 2001. Since then, water quality of the harbour has generally improved as a result of interception of sewage from the Stage 1 catchment, which also has prevented about 600 tonnes of sewage solids (sludge) from entering Victoria Harbour each day.
- 1.3 Yet, sewage from the densely populated parts of Hong Kong Island (i.e., northern and western districts), which currently account for about 25% of the total sewage flow from the planned catchment of HATS, is only subjected to preliminary treatment (i.e., screening and de-gritting) before discharge into the harbour. This preliminary treated sewage, coupled with the un-disinfected effluent from the SCISTW, is a source of the current water quality problems, particularly in the western part of the harbour. Moreover, with the anticipated growth in population and business activities in the harbour area, water quality would resume a deteriorating trend in future unless the sewage from Hong Kong Island is intercepted and treated, and the overall treatment level at Stonecutters Island is raised by completing HATS Stage 2.
- 1.4 After taking into account the public's views collected through a five-month consultation in 2004, the Government announced on 22nd April 2005 to implement HATS Stage 2 in two phases, namely Stage 2A and Stage 2B.
 - Under Stage 2A, deep tunnels will be built to bring sewage from the northern and western districts of Hong Kong Island to SCISTW. Also under Stage 2A, the SCISTW will be expanded to provide both chemically enhanced primary treatment and disinfection for all sewage from the whole of the HATS catchment. The target for completing Stage2A is set at 2014.
 - Under Stage 2B, a new biological treatment plant on a site adjacent to SCISTW is proposed to treat all HATS flow. Planning for Stage 2B is in hand, with a view to completing it in time to suit actual sewage flow build up and water quality conditions.
- 1.5 Noting that the discharge of un-disinfected sewage effluent from SCISTW is contributing to unsatisfactory beach water quality at the Tsuen Wan beaches¹, the Government is now proposing to advance the provision of part of the permanent disinfection facilities under HATS Stage 2A (hereafter referred to as the "Advance Disinfection Facilities" or ADF) for completion in 2009. The Project being assessed in this EIA study is construction and operation of the proposed ADF within the existing SCISTW. The objective of the ADF is to reduce the E. coli level in the CEPT effluent at SCISTW prior to discharge.

The Assignment

- 1.6 On 22 July 2005, Maunsell Consultants Asia Ltd. was commissioned by the Drainage Services Department of the Hong Kong SAR Government to undertake the Environmental Impact Assessment (EIA) Study of the Project (hereinafter referred to as "the Assignment"). 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. This information will contribute to decisions on:

¹ Further details on the impact of un-disinfected HATS Stage1 effluent on Tsuen Wan beach water quality are provided in Section 2.1 on Project Need.

- (a) the overall acceptability of any adverse environmental consequences as a result of the Project and the associated activities of the Project;
- (b) the conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences; and
- (c) the acceptability of residual impacts after the proposed mitigation measures are implemented.

1.7 The Project is a Designated Project under Item F.1 Part I Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO), i.e. sewage treatment works with an installed capacity of more than 15,000 m³ per day, and requires an environmental permit under the EIAO for the implementation of the Project. The EIA Study Brief (No. ESB-120/2004) for an EIA study for the Project under section 5(1) of the EIAO was issued by the Environmental Protection Department (EPD) on 21 October 2004.

Objectives of the Assignment

- 1.8 The main objective of the Assignment is to satisfactorily complete the EIA Study for the Project as required by the Brief in accordance with the EIAO. The EIA Report has been prepared so as to:
- (a) demonstrate the need of the Project;
 - (b) describe the Project and associated works together with the requirements for carrying out the Project;
 - (c) identify and describe elements of community and environment to be affected by the Project and/or to cause adverse impacts to the Project, including natural and man-made environment and the associated environmental constraints;
 - (d) consider alternatives with a view to avoiding and minimizing the potential environmental impacts, in particular marine waters and the beaches along the Tsuen Wan coast, and other sensitive uses including the office buildings adjacent to the site; to compare the environmental benefits and dis-benefits of each of the different options; to provide reasons for selecting the preferred option(s) and to describe the part of environmental factors played in the selection;
 - (e) identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potential affected uses;
 - (f) demonstrate and establish the level of disinfection required in order to protect the beneficial uses of the sensitive receivers identified, including the Tsuen Wan beaches;
 - (g) identify and quantify any potential losses or damage and other potential impacts to flora, fauna and natural habitats and to propose measures to mitigate these impacts;
 - (h) propose the provision of mitigation measures so as to minimize pollution, environmental disturbance and nuisance during construction and operation of the Project;
 - (i) investigate the feasibility, practicability, effectiveness and implications of the proposed mitigation measures;
 - (j) 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;
 - (k) 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 cumulative effects and reduce them to acceptable levels;

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

Assessment Area

1.9 The Assessment Area for the EIA Study, as specified in the Brief, is presented below:

- Air quality impact assessment – area within a distance of 500m from the boundary of the Project site, and it shall be extended to include major emission sources that may have a bearing on the environmental acceptability of the Project
- Noise impact assessment – area within a distance of 300m from the fixed noise source(s). Subject to EPD agreement, the assessment area would be reduced accordingly if the first layer of noise sensitive receivers provides acoustic shielding to those receivers located further away.
- Water quality impact assessment – cover the Water Control Zones of North Western, Western Buffer, Victoria Harbour, Eastern Buffer, Junk Bay and Southern.
- Ecological impact assessment – the same as the assessment area for water quality impact assessment.
- Fisheries impact assessment – the same as the assessment area for water quality impact assessment.

Organisation of the Report

1.10 The structure of the EIA Report is set out below:

- [Section 2](#) illustrates the Project location, and provides a description of the Project highlighting the key elements and operation activities.
- [Section 3](#) identifies and assesses the potential air quality impacts associated with the construction and operation of the Project.
- [Section 4](#) identifies and assesses the potential noise impacts associated with the construction and operation of the Project.
- [Section 5](#) identifies and assesses the potential water quality impacts associated with the construction and operation of the Project.
- [Section 6](#) presents the human health risk assessment conducted for the operation of the Project.
- [Section 7](#) presents the ecological risk assessment conducted for the operation of the Project.
- [Section 8](#) identifies and assesses the potential ecological impacts associated with the construction and operation of the Project.
- [Section 9](#) identifies and assesses the potential impacts on fisheries resources associated with the operation of the Project.
- [Section 10](#) identifies and assesses the potential waste management implications associated with the construction and operation of the Project.
- [Section 11](#) presents the hazard to life assessment conducted for the operation of the Project.
- [Section 12](#) identifies and assesses the impact on human health and man-made environment associated with the operation of the Project.
- [Section 13](#) highlights the environmental monitoring and audit (EM&A) requirements for the Project. The scope and approach are presented in detail in a stand-alone EM&A Manual.
- [Section 14](#) summarises and concludes the findings of the EIA Study.
- [Section 15](#) presents the Implementation Schedules for mitigation of the various environmental issues addressed in the EIA Study.