

1 Introduction

1.1 Project Background

Currently, about 6 million tonnes of waste are disposed each year at the three strategic landfills in Hong Kong, including the West New Territories (WENT) Landfill, the South East New Territories (SENT) Landfill, and the North East New Territories (NENT) Landfill.

At time of commissioning, the three landfills with a total capacity in the order of 140 Mm³ were expected to be able to meet the waste disposal needs of Hong Kong until 2020 or beyond. The actual waste disposal rate at the landfills has been, however, higher than expected. It is thus projected that the three existing landfills would last only until early-to-mid next decade.

To tackle the problem, further efforts have been taken to reduce and recycle waste. Also, the HKSAR Government has planned to develop Integrated Waste Management Facilities (IWMF) to substantially reduce the volume of waste requiring landfill disposal. Yet these measures could not obviate totally the need for new landfill capacity in Hong Kong, especially as the implementation of IWMF will take time and as its residues will still need to be disposed.

The Environmental Protection Department (EPD) of the HKSAR Government therefore commissioned a Study in Year 2000 on the Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites. Amongst the potential sites recommended in this territory-wide study is an extension of the existing NENT Landfill, with a target capacity of about 19 Mm³. As shown in the attached **Drawing No. 24315/01/001**, the proposed Extension, of about 70 ha, is located immediately east of the existing NENT Landfill. A large proportion of the Extension area is in fact the borrow/stockpiling area of the existing landfill. **Drawing No. 24315/01/005** depicts the general topography at/around the Extension site, showing that it is generally in the form of a bowl bounded by Robin's Nest and Wo Keng Shan.

In February 2005, EPD appointed Ove Arup & Partners Hong Kong Ltd. to undertake a detailed feasibility study for the NENT Landfill Extension (hereafter referred to "the Project"), with the following key tasks: formulation and evaluation of layout options for the landfill extension; EIA study; and conceptual design of landfill facilities.

1.2 Purpose and Scope of the EIA Study

The purpose of this EIA Study is to provide information on the nature and extent of environmental impacts arising from the construction, operation, restoration and aftercare stages of the NENT Landfill Extension, and to contribute to decisions on the overall acceptability of the Project, after the implementation of environmental mitigation measures.

The NENT Landfill Extension is a Designated Project under Schedule 2, G.1, of the EIAO : "A landfill for waste as defined in the Waste Disposal Ordinance (Cap. 354)". The EIA study, undertaken under the NENT Landfill Extension Feasibility Study, has therefore been carried out in strict accordance with the EIAO, including the requirements stipulated in EIA Study Brief No. ESB-114/2004 issued under the EIAO.

Drawing No. 24315/01/001 shows the location of the Project site.

1.3 EIA Study Area

The EIA study areas for the impact assessments on air quality, noise, water quality, landfill gas, ecology, landscape & visual and cultural heritage as defined in accordance with the requirements in the EIA Study Brief and are presented in Table 1.1 below.

Table 1.1: Study areas for various assessments

Aspect	Study Area	Remarks
Air Quality	within 500m from the Project Boundary	According to the study brief requirements with additional ASRs selected between 500 to 2000m.
Noise	within 300m from the Project Boundary	According to the study brief requirements with additional NSRs selected between 300 to 1800m.
Water Quality and Aquatic Ecology	within 500m from the Project Boundary	According to the study brief requirements, with additional WSRs such as nearby watercourses, the associated water systems and the coastal water of Deep Bay and Starling Inlet.
Landfill gas	within 250m from the Project Boundary	According to the study brief requirements
Landscape	within 500m from the Project Boundary	According to the study brief requirements
Visual	visual envelope	According to the study brief requirements
Cultural Heritage	within 50m from the Project Boundary	According to the study brief requirements
Terrestrial Ecology	within 500m from the Project Boundary	According to the study brief requirements.

1.4 The Approach

The EIA study has been prepared in accordance with the guidelines provided in Annex 11 of the TM-EIAO for the report contents and Annexes 12 to 19 for the impact assessments of various environmental issues. The general approaches and methodologies adopted for this EIA study are described below.

1.4.1 Description of the Environment

The characteristics of the existing environment were reviewed for identification and prediction of environmental impacts. Baseline surveys were conducted to determine the existing environmental conditions on the Project site and in any environs likely to be affected by the Project. The baseline conditions of the key issues as identified in the EIA Study Brief including air quality, noise, water quality, landscape & visual, cultural heritage and ecology are described in the assessment.

1.4.2 Impact Prediction

The EIA Study was undertaken in accordance with the guidelines on assessment methodologies given in Annexes 12 to 19 of the TM-EIAO. Quantitative predicting tools were employed for assessing the environmental impacts in respect of construction dust, operational air quality, construction noise, operational noise and water quality. The predictions were conducted based on well-recognized methods such as Arup plant noise impact analysis for construction activities, CRTN for evaluating operational road traffic noise impact, ISCST3 for evaluating fugitive and odorous source impacts, and hydrogeological model for evaluating the change of groundwater flow regime.

The applied methodologies for the Project had previously been adopted in other EIA studies. They have been generally accepted for use in predicting environmental impacts and for comparison of assessment results with the TM-EIAO requirements. Limitations are however envisaged of these methodologies. The accuracy of the prediction result will be affected by the degree of uncertainty in input data such as construction plant, air emission inventories and predicted traffic flow. Quantitative uncertainties in the prediction have been considered when drawing conclusion from the assessment results. In carrying out the prediction, realistic worst-case assumptions have been made in order to provide a conservative assessment of environmental impacts.

1.4.3 Impact Evaluation

The predicted changes and effects as a result of the Project were evaluated with respect to the criteria described in Annexes 4 to 10 of the TM-EIAO, and were in quantitative terms as far as practicable.

1.4.4 Impact Mitigation

Mitigation measures have been identified and evaluated to avoid, minimize or remedy the impacts. Priority was given to avoidance of impacts as a primary means of mitigation. The effectiveness of mitigation measures was assessed and the residual environmental impacts identified. Evaluation of impact was made with respect to the criteria described in Annexes 4 to 10 of the TM-EIAO, in quantitative terms as far as practicable.

1.5 Structure of the EIA Report

The structure of this EIA Report is outlined below for ease of reference:

<u>Chapter</u>	<u>Title</u>	<u>Aims</u>
1	Introduction	To provide project background, purpose and scope of the EIA Study and to define the EIA study area.
2	Description of the Project	To describe the project requirements, consideration of alternative and major activities in the Project.
3	Air Quality Impact	To assess the potential air quality impact of the Project and suggest mitigation measures.
4	Noise Impact	To assess the potential noise impact of the Project and suggest mitigation measures.
5	Water Quality Impact	To assess the potential water quality impact of the Project and suggest mitigation measures.
6	Waste Management Implications	To assess the potential waste management implications of the Project and suggest mitigation measures.
7	Landfill Gas Hazards	To assess the potential hazards arising from landfill gas migration and suggest precautionary measures.
8	Landscape and Visual Impact	To assess the potential landscape and visual impacts of the Project and suggest mitigation measures.
9	Impact on Cultural Heritage	To assess the potential impacts of the Project on cultural heritage and suggest mitigation measures.
10	Ecological Impact	To assess the potential ecological impacts of the Project and suggest mitigation measures.
11	Summary of Environmental Outcome	To summarise the key environmental outcomes arising from the EIA Study.
12	Environmental Monitoring and Audit Requirements	To define the scope of the EM&A requirements for the Project.
13	3-Dimensional EIA	To describe the 3-Dimensional EIA for this Study.
14	Conclusion	To conclude the assessment results of the EIA Study.