

# **South-East New Territories Landfill Extension**

## **Project Profile**

**1. PURPOSE OF PROJECT PROFILE**

This project profile sets out the scope of the environmental issues associated with a proposed extension of the existing South-East New Territories (SENT) Landfill at Tseung Kwan O (TKO) for the application of an Environmental Impact Assessment (EIA) study brief. This extension is regarded as a designated project under G.1 Schedule 2 of the EIA Ordinance.

**2. BASIC INFORMATION**

2.1 Project Title

South-East New Territories Landfill Extension

2.2 Purpose and Nature of the Project

In order to maintain the continuity of landfill capacity for the cost-effective and environmentally satisfactory disposal of wastes, the Director of Environmental Protection commissioned a study in February 2000 on “Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites”. Completed in the early 2003, the study proposed a Strategic Plan for the development of landfill extensions and new sites for the disposal of solid wastes in the next 50 years. The SENT Landfill Extension forms an integral part in the Strategic Plan in maintaining the continuity of landfill capacity in the South-East New Territories. The project is to develop the SENT Landfill Extension adjoining to the existing landfill in the north. The SENT Landfill Extension is planned to commence operation in 2008/09 with an estimated capacity of 15 million cubic meters.

2.3 Name of Project Proponent

Waste Facilities Business Unit of the Environmental Protection Department (EPD)

2.4 Location and Scale of Project

The landfill extension site will occupy an area of about 15 hectares on the north-eastern part of TKO Area 137 to form a logical extension of the existing SENT Landfill. The site will encroach upon an area of about three hectares into the Clearwater Bay Country Park in the east and adjoin to the existing SENT Landfill in the north. The Extension can provide an estimated 15 million cubic metres of additional landfill capacity (see **Figure 1**). The actual landform and capacity will depend on the final design of the landfill extension.

2.5 History of Site

The extension site is in the north-eastern part of TKO Area 137, which was formed by reclamation. TKO Area 137 is currently designated under the Outline Zoning Plan for Other Specified Uses (Deep Waterfront Industry). There are currently other land-use proposals for TKO Area 137, including potentially hazardous installation (PHI) uses in the southern part, and green industries such as recycling parks and sorting facilities, renewable energy facilities etc. in the northern part of the Area. Approval is being sought to reserve the required land at TKO Area 137 for the SENT Landfill extension.

2.6 Number and Types of Designated Projects to be covered by the Project Profile

There is only one designated project under this project profile, and it is a landfill for waste as defined in the Waste Disposal Ordinance.

2.7 Name and Telephone Number of Contact Person(s)

Mr. Wessex W F Lau	Tel: 2872 1753
Mr. Peter W S Tang	Tel: 2872 1761

**3. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME**

3.1 Project Implementation

3.1.1 The EIA study for this designated project will be carried out by consultants

to be employed by the project proponent.

3.1.2 The project is planned to be implemented through a design, build and operate (DBO) contract. The contractor to be employed for the project will be responsible for:

- (i) detailed design of landfill
- (ii) site formation, drainage diversion and preparation
- (iii) installation of liner system
- (iv) relocation of existing landfill infrastructures including the leachate treatment plant, landfill gas management plant, power generator, workshops and merging the existing landfill and its extension
- (v) provision of leachate collection, treatment and disposal system
- (vi) provision of landfill gas collection and management system
- (vii) operation and environmental monitoring of the landfill
- (viii) restoration and aftercare

3.1.3 Project Programme

The project programme is scheduled as follows:

- |       |  |            |
|-------|--|------------|
| (i)   | Commence Feasibility/ EIA Study                                | Nov 2004   |
| (ii)  | Complete Feasibility/EIA Study                                 | April 2006 |
| (iii) | Commence Town Planning Ordinance Procedures                    | Nov 2004   |
| (iv)  | Tenders Initiation/Negotiation                                 | Early 2007 |
| (v)   | Award SENT Landfill Extension Contract                         | Mid 2007   |
| (vi)  | Commence Landfilling Operation at SENT Landfill Extension Site | 2008/09    |

The SENT Landfill Extension site at TKO Area 137 is currently occupied by a temporary fill bank. The implementation programme and commissioning date of the SENT Landfill Extension project will depend on the timely availability of the site.

#### **4. POSSIBLE IMPACTS ON THE ENVIRONMENT**

Possible impacts on the environment during the construction, operation and aftercare phases of the SENT Landfill Extension have been broadly assessed and are outlined below.

#### 4.1 Air Quality

The SENT Landfill extension has the potential to cause the following air quality impacts:

- dust arising from the construction, operation and aftercare activities and exhaust emissions generated from on-site plants;
- gaseous emission from point and non-point source emissions as well as gas flaring and on site utilization during operation and aftercare phases;
- odour arising from the operation of the landfill extension site; and
- odour and exhaust emissions generated from vehicles transporting waste to the extension site during the construction and operation phases.

#### 4.2 Noise

The SENT Landfill extension has the potential to cause the following noise impacts:

- noise generated from mobile plants engaged in earthworks and during landfill operation; and
- traffic noise generated from the waste collection vehicles entering and leaving the SENT Landfill Extension site.

#### 4.3 Water Quality

The SENT Landfill extension has the potential to cause the following water quality impacts:

- sediment-laden run-off escaping from the site during construction phase;
- effluent from the leachate treatment plant during operation and aftercare phases; and
- accidental leachate break-out into surface water drainage during operation and aftercare phases.

Uncontaminated surface runoff discharges are not considered to be a potential source of impact.

#### 4.4 Waste Management/Disposal Impacts

There is no significant import to site or export from site of materials. To construct the landfill bowl, a small amount of material would need to be excavated. The majority of this material would be utilized in-situ in the development of the SENT landfill.

#### 4.5 Landfill Gas, Other Hazardous Materials and PHI

The extension site will generate significant amount of landfill gas during the operation and aftercare phases hence the landfill will be designed as a containment landfill with an efficient landfill gas collection system to eliminate off-site migration. The EIA study will review the existence of sensitive receivers including those being planned within 250m of the extension site.

Some chemicals and hazardous materials may be stored, handled and transported to/from the site (e.g. chemicals for wastewater/leachate treatment, waste oils, and fuels). Details on the quantities and characteristics of these chemicals and hazardous materials, and the required handling procedures would be reviewed and developed in the EIA study.

The Landfill Extension will be located close to the area planned for PHI uses in TKO Area 137. The EIA study will review the potential hazard on the SENT Landfill extension and the applicability of worker density restriction on to the extension site.

#### 4.6 Ecology

The extension site will largely be within the TKO Area 137 formed by reclamation and an approximate 3 hectare encroachment upon the edge of the 615 hectares of Clearwater Bay Country Park. There were no recognized sites of conservation importance and ecological important habitats within this part of site area in accordance to the findings in the Supplementary EIA carried out for the existing SENT Landfill. However, a small amount of trees may be removed for the installation of the landfill liner system on the slope surface. The EIA study will incorporate a tree

survey and a review of the ecological importance of the proposed site and surrounding areas.

#### 4.7 Landscape and Visual

The SENT Landfill Extension site would be visible from part of TKO industrial estate, some future developments in TKO Area 137, trail walkers of Clearwater Bay Country Park and part of Hong Kong Island, e.g. the north facing residents of the Island Resort and Fullview Garden at Siu San Wan. The visual and landscape impact as a result of the SENT Landfill Extension on the above receivers would be fully assessed in the EIA study.

#### 4.8 Fisheries

As the site lies totally inland, there will be no impacts to marine fisheries. In addition, there is no freshwater fish-farming in the vicinity that would be disturbed by the project.

#### 4.9 Cultural Heritage

The proposed SENT Landfill Extension site is mostly on reclaimed land with a narrow strip of cliff at the edge of a country park. The existence of items of archaeological significance is unlikely.

### **5. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT**

5.1 TKO Area 137 was designated “OU” (Other Specified Uses) annotated “Deep Waterfront Industry” on the Tseung Kwan O Outline Zoning Plan No.S/TKO/14. The current land-use proposals for the TKO Area 137 includes PHI in the southern part, and green industries such as recycling parks and sorting facilities, renewable energy facilities in the northern part. The SENT Landfill Extension is compatible with the proposed land-uses. The extension site is located south of the existing SENT Landfill. To the west and south is the temporary fill bank for public fill material and to the east is the Clearwater Bay Country Park.

The potential environmental sensitive receivers nearby the landfill

extension include, inter alias:

- (i) North facing residents in the Island Resort and Fullview Garden in Siu San Wan;
- (ii) Trail walkers of Clearwater Bay Country Park;
- (iii) Occupants at TKO Industrial Estate.
- (iv) TVB City in TKO Industrial Estate; and
- (v) Planned developments at TKO Areas 85 and 86.

5.2 The existing SENT Landfill located adjacent to the extension site was commissioned in 1994 and receives waste delivered by road. This landfill occupies about 100 ha. Currently, the SENT Landfill is receiving around 1800 loads (~8,000 tonnes) of waste via Wan Po Road everyday.

## **6. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS**

### **6.1 Air Quality**

The extension site will generate significant amount of landfill gas during the operation and aftercare phases and the landfill would be designed as a containment landfill. In addition, a comprehensive landfill gas management (collection and treatment) system similar to the one installed at the existing SENT Landfill would be installed. With generic good landfill design and operational practice, it is unlikely that any construction, operation or aftercare activities would have a significant air quality impact.

Moreover, the adoption of the following good site practice could reduce dust and odour:

- paving and subsequent regular sweeping of long term haul roads within the site
- regular watering of unpaved roads
- vehicle washing before leaving site
- immediate cover to odorous waste (e.g. sludge) after disposal
- daily covering of the current tipping face with inert material (e.g. selected construction & demolition materials, tarpaulin covers, foam spray etc.)



- interim cover of any operational areas which are not currently in use
- proper operation and maintenance of leachate collection and management system
- proper operation and maintenance of landfill gas collection and combustion facilities

## 6.2 Noise

The topography of the landfill site will provide natural acoustic shielding, nevertheless, good site practice will be incorporated as contract requirement. This would include using only powered mechanical equipment with built-in acoustic shielding and not using percussive piling. Where necessary, temporary noise barriers or earth bunds could be constructed.

During operation, it is likely that the most significant noise source would be from waste delivery vehicular traffic on the internal haul roads and the access road. Minor sources would be from on-site plant such as leachate treatment works, pumps, generators and the flare. Appropriate mitigated measures would be carefully assessed and developed in the EIA study. The traffic noise impact arising from waste delivery on Wan Po Road will also be assessed under the EIA study.

## 6.3 Water Quality

### Leachate and other wastewater

All water that passed through areas containing waste would be classified as leachate, and will therefore be treated before discharge off site. The total quantity of leachate might increase as leachate would arise from both the extension site and from the existing SENT Landfill. The overall quantities of leachate generated from the extension site and the existing SENT Landfill can be minimized by:

- minimizing the active tipping face especially during wet season
- ensuring that capping of the completed area is carried out to a high standard and in the shortest possible time
- increase leachate recirculation within the existing SENT Landfill following capping to increase leachate retention time and hence smooth out any temporary peak in leachate generation

The leachate generated from both the extension site and from the existing SENT Landfill will be treated together. Increased leachate treatment capacity will be provided to cope with the increased leachate flow.

Similar to arrangement at the existing landfill, wastewater generated from the workforce during the construction and operation of the landfill extension will be collected and discharged to the on-site Leachate Treatment Works for treatment prior to disposal.

#### Surface Water

Surface water generated during construction and operation of the extension site forms another source of liquid discharged; it may contain elevated concentrations of suspended solids. Treatment of surface water may be carried out using settlement tanks to remove suspended solids.

The EIA study would assess the potential impact of the existing drainage system due to the development of the extension site and recommend mitigation measures to control surface run-off. Reference would be made to DSD Technical Circular 14/2000 and ProPECC Note 1/94 in managing the surface runoff during construction period.

The quality of the discharge would be regulated by means of a Discharge Consent issued in accordance with the WPCO TM for discharge.

#### 6.4 Ecology

The construction of the Landfill Extension will remove a small amount of trees. A tree-planting programme will be planned and implemented as part of the landfill restoration works when the deposited waste reaches the designed slope profile. The area and the density of the tree planting will be at least comparable to or more than the existing condition under normal circumstance. This will compensate the loss of trees as a result of the Landfill Extension project.

## 6.5 Waste Management

Waste generated during the construction and operational phases of the landfill extension would be reduced and properly disposed of through proper waste management practices on site including:

- compilation of waste management plan,
- waste segregation and storage by category on site,
- avoidance/minimization,
- reuse and recycling of construction material,
- monitoring and record the proper disposal of waste generated,

All waste materials would be stored, handled and transported in compliance with the Waste Disposal Ordinance (Cap 354) and subsidiary regulations such as the Waste Disposal (Chemical Waste) (General) Regulations.

## 6.6 Cultural Heritage

In view of the topography of the Landfill Extension site, the existence of items of archaeological significance is unlikely but opportunities to maximize the preservation of features of archaeological importance, if identified in the EIA study, would be pursued.

## 6.7 Landscape & Visual

The proposed extension site would merge with the existing SENT Landfill. After restoration of the landfills, they should blend in with the surrounding natural landscape and country park. During aftercare phase, the landfill will become a richly vegetated upland landform and any residual visual impacts will be restored for the most visual sensitive receivers. Hiking trails and panoramic lookout points with viewing pavilions will be provided, if the restored landfill is to be made available for recreational and similar uses.

## 7. PUBLIC CONSULTATION

As mentioned in paragraph 2.2 above, the SENT Landfill Extension forms an integral part in the Strategic Plan as mentioned in the study Extension of

Existing Landfills and Identification of Potential New Disposal Sites. The Advisory Council on the Environment was consulted of the Strategic Plan on 23<sup>rd</sup> December 2003. As regards the SENT Landfill Extension, consultation with the Sai Kung District Council has been started and will be maintained throughout the course and at the end of the EIA study.

## **8. HISTORY OF SIMILAR PROJECTS**

The project is similar to the development of the three existing landfills in Hong Kong.

## **9. USE OF PREVIOUSLY APPROVED EIA REPORTS**

Environmental Impact Assessment, Initial Assessment Report – Scott Wilson Kirkpatrick (July 1990)

SENT Landfill Supplementary Environmental Impact Assessment – Acer Environmental (July 1994)

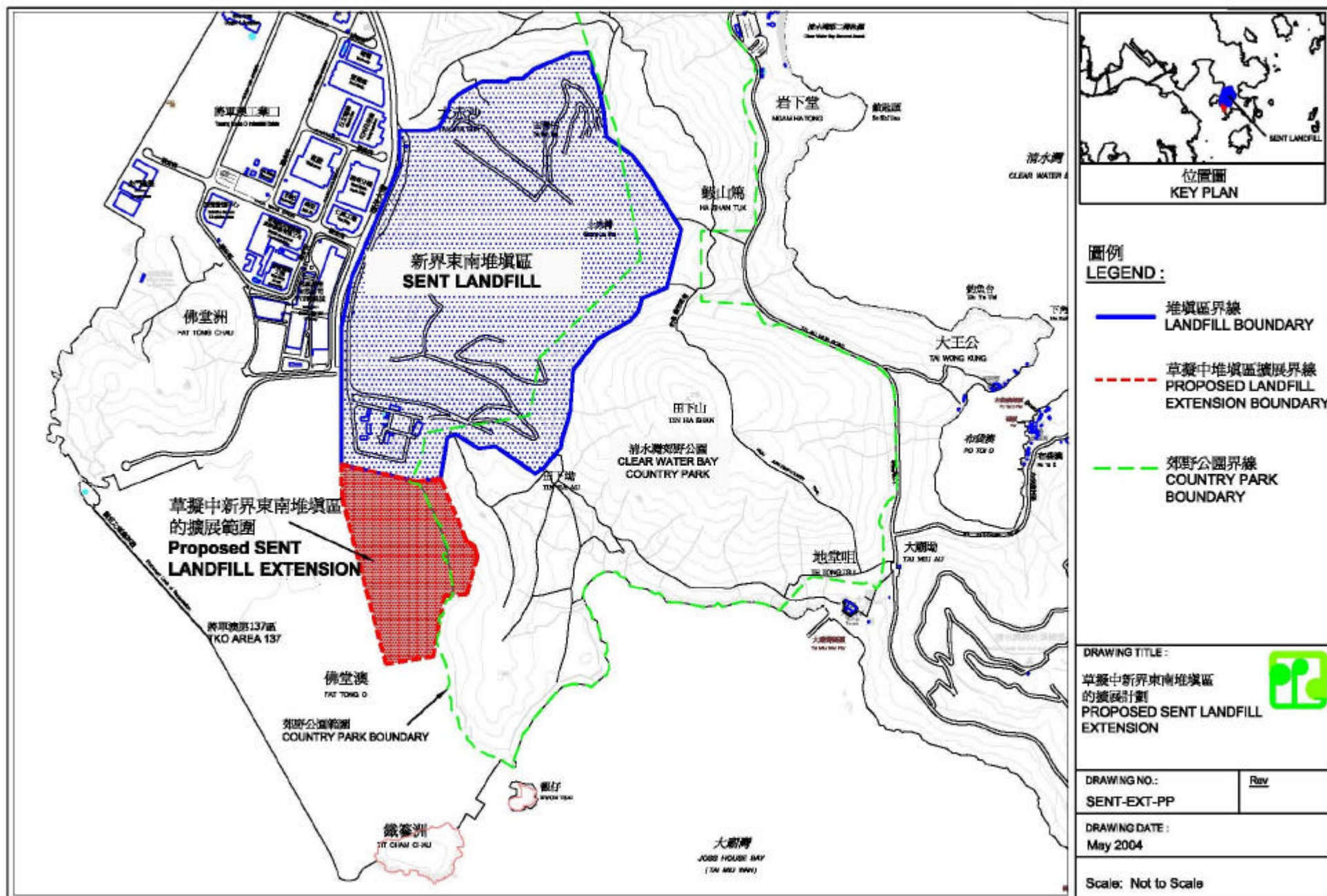
SENT Landfill Extension Preliminary Environmental Review – Facilities Management Group, EPD (September 2003)

Environmental and Traffic Impact Assessment Study for Fill Bank at Tseung Kwan O Area 137, Environmental Impact Assessment Report - CH2M HILL (China) Limited in association with MVA Hong Kong Limited and ACL Asia Limited. CED (March 2002)

*Waste Facilities Business Unit*

*Environmental Protection Department*

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草擬中新界東南堆填區的擴展計劃  
PROPOSED SENT LANDFILL EXTENSION