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ACE-EIA Paper 6/2007
For Advice

Environmental Impact Assessment Ordinance (Cap.499)
Environmental Impact Assessment Report
North East New Territories (NENT) Landfill Extension

Purpose

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report for the North East New Territories (NENT) Landfill Extension (hereafter known as the Project), submitted under section 6(2) of the Environmental Impact Assessment Ordinance (EIAO) with the application no. EIA-133/2007. The Environmental Infrastructure Division of the Environmental Protection Department (the applicant) and their consultants will make a presentation. Comments from the public and the Advisory Council on the Environment will be taken into account by the Director of Environmental Protection when she makes the decision on the approval of the EIA report under the EIAO.

Advice Sought

2. Members' views are sought on the findings and recommendations of the EIA report.

Need for the Project

3. Currently, about 6 million tonnes of waste are disposed of 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.

4. At the time of commissioning, the three landfills with a total capacity in the order of 140 million cubic metres (Mm^3) 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.

5. To tackle the problem, further efforts have been taken to reduce and recycle waste. Also, the Hong Kong Special Administrative Region (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 its residues will still need to be disposed of.

6. The Environmental Infrastructure Division of Environmental Protection Department of the HKSAR Government therefore commissioned a Study in 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 Mm^3.

Description of the Project

7. The Project involves developing an extension site for the existing NENT Landfill. It will have an area of about 70 hectares and a filling capacity of about 19 Mm^3 located immediately east of the existing NENT Landfill. A large proportion of the extension, about 42 hectares, is in fact the borrow/stockpiling area and haul road of the existing landfill development. Location of the Project is shown in **Figure 1**. The Project will involve the following works :

(i) Site formation and preparation;
(ii) Installation of a liner system to separate rubbish and leachate from groundwater;
(iii) Installation of leachate collection, treatment and disposal facilities;
(iv) Installation of gas collection, utilization and management facilities;
(v) Utilities provisions and drainage diversion;
(vi) Operation of the landfill;
(vii) Restoration and aftercare in subsequent stages; and
(viii) Measures to mitigate environmental impacts as well as environmental monitoring and auditing to be implemented.

8. The Project is classified as a designated project under Schedule 2, G.1, of the EIAO: *"A landfill for waste as defined in the Waste Disposal Ordinance (Cap. 354)*".

Consideration of Alternative Layout for Avoidance of Environmental Impacts

9. During the EIA study, four broad layout options were considered, with environmental factors taken into consideration for recommending the preferred option.

10. Through the option selection, the recommended layout of the Project will completely avoid encroachment onto nearby ecologically sensitive Lin Ma Hang Stream and its catchment and therefore direct and indirect impact on the stream habitat and water quality is not anticipated. The recommended layout of the Project will also avoid impact on the key features of the adjacent Tong To Shan Archaeological Site.

Specific Environmental Aspects to Highlight

Ecological Impact

11. A small number of species of conservation importance including 1 mature individual and 3 seedlings of *Aquilaria sinensis*, 1 mature individual of *Endospermum chinense*, 2 individuals of *Rhododendron simsii* and about 10 individuals of *Arundian graminifolia* located within the Project area will be transplanted before works commence. The Project will result in the loss of about 4.01 ha of native woodland, 4.76 ha of plantation woodland, 47.64 ha of grassland with low shrub. As the affected woodland and grassland are largely disturbed by the activities of the existing landfill, the overall ecological impact is ranked as minor to moderate. The habitat loss will be mitigated by compensatory planting of 26.83 ha of woodland, 19 ha of shrubland and 17.55 ha of grassland to be implemented in phases following capping of the extension landfill. To further minimize the impact, the project proponent will liaise with the contractor of the existing NENT Landfill on the possibility of including advanced compensatory planting of 4 ha of woodland in the restoration phase of the existing landfill. A 10-year ecological monitoring will be implemented to ensure the survival and establishment of the compensatory planting.

12. With the ecological mitigation measures in place, the anticipated residual ecological impact is considered insignificant and meeting the requirements under the Technical Memorandum on Environmental Impact Assessment Process (TM). Agriculture, Fisheries and Conservation Department has reviewed the EIA report and indicated that the ecological assessment of the report met the requirements of the EIA study brief and the TM.

Landfill Gas

13. The decomposition of wastes deposited in a landfill will generate landfill gas (LFG), which can present potential hazards if it is not adequately controlled. The EIA has included a qualitative risk assessment of LFG hazards at the receivers. The overall risk to receivers within the Project area was categorized to be 'High' and receivers outside the Project area was categorized as 'Medium'. The sensitive receivers falling within the 250 m consultation zone from the boundary of the Project area will be prone to LFG potential risk. The EIA study has recommended a package of protective and precautionary measures including engineering design and monitoring program to reduce the risk. With these measures in place, unacceptable LFG hazards at receivers is not anticipated.

Water Quality Impact

14. Given that the recommended layout of the Project will completely avoid the catchment of the Lin Ma Hang Stream, impact on water quality of the stream is not expected. During the operation of the Project, the tipping face will remain substantially exposed. All contaminated run-off due to contact with the waste will be collected and treated together with the landfill leachate at the on-site leachate treatment plant prior to being conveyed to the Shek Wu Hui Sewerage Treatment Works. Groundwater will be protected by an impermeable barrier fully lined within the landfill area. As precautionary measure, a contingency plan on leachate seepage has also been proposed, including active pumping of leachate and groundwater to the on-site leachate treatment plant hence no residual groundwater impact is predicted. With the above measures in place, the Project is not expected to result in adverse water quality impact exceeding the water quality objectives of the TM to the nearby Ping Yuen River catchment.

Odour Impact

15. The EIA has assessed the odour impact from the active tipping surface of the landfill and the lagoons of the on-site leachate treatment plant and has recommended mitigation measures such as limiting the tipping surface area to 30 m x 40 m and installation of ventilated cover with de-odourizer to the lagoons. The odour assessment results show that with the measures in place, the residual impact on nearby dwellings during the operation period of the Project will comply with the criteria of 5 odour units in the TM, with the exception of a currently derelict and vacant 3-storey village house at Tong To Shan Tsuen at which an odour level of 7.4 odour units was predicted to occur on an average 8 hours a year. The residual impact at Tong To Shan

Tsuen is considered to be very limited and transient in nature and can be further mitigated with good site practices (including application of thicker daily cover, progressive restoration for inactive tipping face). Periodic odour patrol should be carried out during active tipping period. The Project is not expected to result in adverse health effect to the residents of the affected village house at Tong To Shan Tsuen.

Other Environmental Impacts

16. The EIA report also assessed the impacts of noise, waste management, cultural heritage and visual and landscape, and recommended mitigation and monitoring measures to minimize the associated impacts. The assessments concluded that, with appropriate mitigation measures in place, the anticipated environmental impacts are considered acceptable in meeting relevant requirements under the TM.

Environmental Monitoring and Audit

17. The EIA report includes an Environmental Monitoring and Audit (EM&A) Manual which recommends an EM&A programme during both the construction and operation phases of the Project.

Public Consultation

18. The applicant has applied the Continuous Public Involvement process and consulted some green groups and professional institutions, the Sha Tau Kok Rural Committee, Ta Kwu Ling Rural Committee, North District Council and village representatives to seek their comments on the Project during the preparation of the EIA report.

19. The applicant has also made the EIA report, EM&A Manual and Executive Summary available for the public to comment under the EIAO staring from 25 June 2007 for 30 days. Members will be briefed on any comments received from the public at the meeting.

June 2007
Environmental Assessment Division
Environmental Protection Department

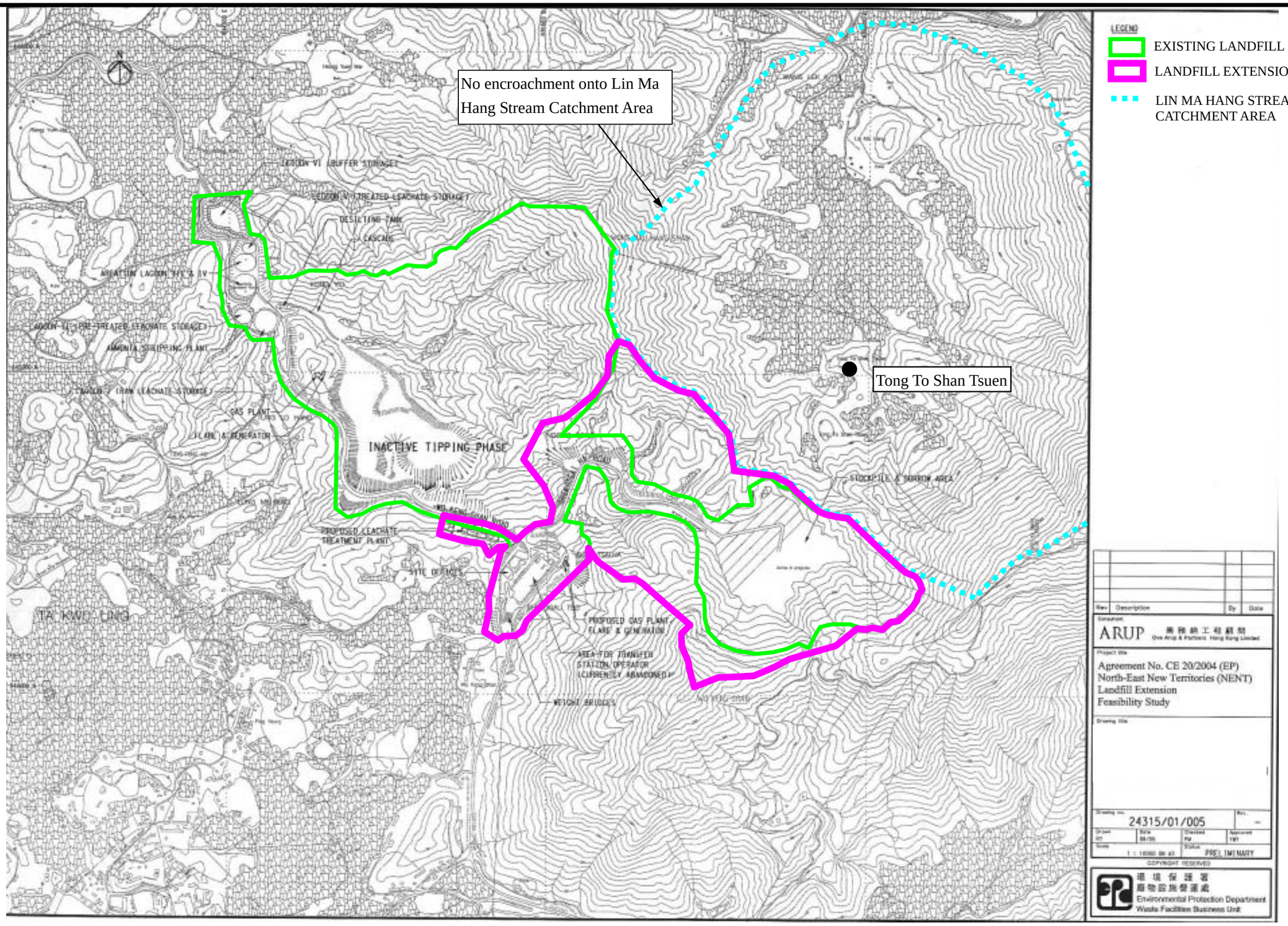

Figure 1 NENT Landfill Extension Layout Plan (Extracted from Drawing no. 24315/01/005 of the EIA report)

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