

For discussion
on 27 October 2008

Legislative Council Panel on Environmental Affairs

Possible Environmental Impacts associated with the Proposed Extension of South East New Territories Landfill to the Clear Water Bay Country Park

PURPOSE

This paper presents the possible environmental impacts associated with the proposed extension of the South East New Territories (SENT) Landfill (the Extension) to the Clear Water Bay Country Park (CWBCP).

BACKGROUND

2. To address our serious and imminent waste problem in a holistic manner, the Administration published “A Policy Framework for the Management of Municipal Solid Waste (2005-2014)” (Policy Framework) in December 2005, which sets out a comprehensive waste management strategy for the next ten years with clear targets and timetables. The strategy adopts a three-tiered waste management hierarchy with avoidance and minimization as top priorities, followed by reuse, recovery and recycling, with bulk waste reduction and landfill disposal at the bottom of the hierarchy. A number of encompassing initiatives under this hierarchy are being launched for achieving the waste reduction and recycling targets as set out in the Policy Framework. The progress of the key initiatives has been regularly reported to this Panel and the last progress report was submitted to this Panel in February 2008 (Paper No. CB(I) 844/07-08(03)).

3. At present, Hong Kong relies on three strategic landfills to dispose of solid waste. In 2007, about 5.1 million tonnes (or about 14,000 tonnes per day) of solid waste were disposed of in the three landfills. The Environmental Protection Department (EPD) estimates that, even with effective reduction and recycling measures as well as modern waste incineration achieving bulk waste reduction as stated in the Policy Framework, the three landfills will be filled up progressively in the next

decade, with SENT Landfill full by around 2012/13, North East New Territories (NENT) Landfill and West New Territories (WENT) Landfill by 2015/16. According to the current programme, the first Integrated Waste Management Facilities (IWMF), which will substantially reduce the volume of waste requiring disposal at the landfills, can only be commissioned in mid 2010s. Therefore, the extension of all three landfills will be required in the early 2010s to mid 2010s to provide the necessary landfill capacity to serve as the final repositories for non-recyclable waste and residual waste after treatment. In this connection, we have already completed the feasibility and environmental impact assessment studies for the extension of the NENT Landfill and SENT Landfill, while those for the WENT Landfill are still in progress.

PROPOSED EXTENSION OF THE SENT LANDFILL

4. The EPD has studied five options to extend the SENT Landfill with a view to reducing the environmental impacts as much as possible and at the same time providing the necessary filling capacity. Three of the options do not encroach upon the CWBCP and the other two options have an encroachment of three hectares and five hectares respectively. After evaluating the merits and drawbacks of each option, EPD recommends the option with an encroachment of five hectares upon the CWBCP due to the following considerations -

- (a) the Environmental Impact Assessment (EIA) concluded that the recommended option would have no adverse residual ecological impact with the implementation of the recommended mitigation measures; and
- (b) in terms of provision of landfill capacity to meet the demand, this option will provide the highest capacity of 17 million cubic metres which will extend the life of the SENT Landfill by six years to tie in with the commissioning of the IWMF in mid 2010s and the development of the longer term waste transfer and handling facilities in the south-east region of the territory in late 2010s.

5. Under this option, the SENT Landfill Extension will occupy a narrow strip of the CWBCP. The location of the existing SENT Landfill and the proposed extension is shown in the map at **Annex A**. The EPD had consulted the Country and Marine Parks Board (the CMPB) and its Country

Parks Committee several times from December 2005 to May 2007 on this option. At its meeting on 22 May 2007, the CMPB agreed to this option, subject to EPD presenting the results of the EIA and demonstrating its commitment to press ahead with a series of waste management strategies including the commissioning of the IWMF by 2014.

ENVIRONMENTAL IMPACT ASSESSMENT

6. An EIA was conducted to assess the impact of the SENT Landfill Extension. The EIA assessed the potential impacts on air quality (including odour), ecology, noise, water quality, waste management, landfill gas hazard as well as visual and landscape aspects due to the proposed Extension. The assessment concluded that, with the implementation of recommended mitigation measures, the anticipated environmental impacts were acceptable and would meet the relevant requirements under the Environmental Impact Assessment Ordinance (EIAO). The findings and recommendations of the EIA are described in more detail in the attached EIA Report – Executive Summary at **Annex B**. Among the issues assessed, odour and ecological impacts were the two key issues which attracted significant attention. The key findings of these two issues are summarized below.

Odour Impact

7. The design of the Extension incorporated a stringent odour management and control system. New and improved odour management and control requirements would be included in the future contract of the Extension. These include enclosing all the leachate storage and treatment tanks (except for the biological treatment tank to avoid overheating and killing of the micro-organisms for the biological process), covering the areas not in use with impermeable liner, enclosing the weighbridge area and provision of full body washing facility for refuse collection vehicles. In addition, no sewage sludge would be accepted for disposal at the Extension.

8. With the implementation of the above odour management and control measures, the predicted odour concentrations at the representative air sensitive receivers (ASRs) in the surrounding areas and the residential developments in Tseung Kwan O Town area would meet the required odour criterion which is 5 odour units over 5-second intervals. Residual impacts (i.e. slight exceedances of the 5-second odour criterion) were predicted in a small area zoned for industrial development in Tseung Kwan O Area 137

and Tseung Kwan O Industrial Estate adjacent to the Extension site boundary. The frequency of the exceedance at this small area would be reduced through rephasing the waste tipping activity during the hot and wet months between July and November so that there will be no waste tipping at the northern portion of the Extension that is closer to the ASRs. With the implementation of the recommended mitigation measures, it is expected that the number of exceedances at the small area would be diminished to zero as the separation distances and heights between the active tipping face and the ASRs increase over the operation period.

9. The residual impacts were considered acceptable taking into account (i) the nature of the small area affected; (ii) the small number of people affected; and (iii) the transient nature, low frequency and magnitude of the exceedances.

10. To the users of CWBCP, the Extension site would be further away than the existing SENT Landfill and separated from the hiking trail by a mountain ridge. However, the Extension might be seen by users at some parts of the hiking trail. Mitigation measures such as advance tree planting would be taken to screen off the visual impact and further minimize the potential odour transmission to CWBCP.

Ecological Impact

11. The terrestrial and aquatic ecological resources recorded within the Study Area (i.e. the Extension site itself plus an area 500 metres outside the Extension site boundary) included plantation, shrubland, grassland, developed area, seasonal stream and sub-tidal habitats, as well as associated wildlife. Of these habitats, shrubland had a moderate ecological value while other habitats were of low or low to moderate ecological value. The ecological value of the developed area was negligible. The majority of the proposed Extension would be located in developed areas including the existing SENT Landfill and the fill bank in Tseung Kwan O Area 137. The proposed Extension would encroach into a small strip (approximately 5 hectares) of the CWBCP, which comprises shrubland and grassland habitats of low to moderate ecological value. The potential impacts on the natural habitats within the CWBCP were considered to be low to moderate. With the implementation of the recommended mitigation measures, no adverse residual impact was expected. As far as wildlife is concerned, a survey conducted under the EIA recorded 11 wildlife species of conservation

interest (including birds, butterflies, bat and reptile ^{Note 1}) within the Study Area. As these species were highly mobile and there was a large extent of similar habitat in the vicinity of the proposed Extension, the impacts on wildlife were considered to be minimal.

12. The EIA Report was submitted to the EIA Authority under the EIAO in December 2007. Public inspection of the EIA Report took place between the period 26 February 2008 to 26 March 2008 before the consideration of the report by the EIA Subcommittee of the Advisory Council on the Environment (ACE) at its meeting on 17 March 2008. The key issues discussed at the meeting were odour impact, ecological impact and traffic impact assessments and efficient use of the landfill extension site. The EIA Report was further considered and discussed by the ACE at its meeting on 14 April 2008. With respect to the statutory role of the ACE under the EIAO, the ACE endorsed the EIA Report with the following conditions -

- (a) a community liaison group comprising representatives of potential sensitive receivers should be set up to deal with and manage the potential odour problem;
- (b) no sewage sludge would be disposed of at the SENT Landfill Extension; and
- (c) a coherent restoration and ecological enhancement plan for the SENT Landfill Extension site should be submitted to the Agriculture, Fisheries and Conservation Department (AFCD) for vetting and endorsement.

13. Taking into account the ACE's recommendations and the public comments received, the EIA Authority approved the EIA Report on 6 May 2008 and granted the Environmental Permit for the SENT Landfill Extension

Note 1

Species of Conservation Interest

Mammals	Japanese Pipistrelle (普通伏蝠)#, <i>Pipistrellus abramus</i> ; Brown Noctule Bat (褐山蝠), <i>Nyctalus noctula</i>
Birds	Brown Hawk Owl (鷹鴞)#, <i>Ninox scutulata</i> ; Greater Coucal (褐翅鴉鵂)#, <i>Centropus sinensis</i> ; Common Buzzard (普通鵟)#, <i>Buteo buteo</i> ; Black Kite (麻鷹), <i>Milvus lineatus</i>
Butterflies	White-edged Blue Baron (尖翅翠蛺蝶)#, <i>Euthalia phemius</i> ; Indian Fritillary (斐豹蛺蝶)#, <i>Argyreus hyperbius</i> ; Swallowtail (柑橘鳳蝶)#, <i>Papilio xuthus</i> ; Toothed Sunbeam (尖翅銀灰蝶)#, <i>Caretis dentate</i>
Reptiles	Common Rat Snake (水律)#, <i>Ptyas mucosus</i> .

The species that is found at the shrubland within the encroached area of CWBCP is denoted as #.

on 5 August 2008.

14. The approved EIA Report set out the mitigation measures that were proposed in accordance with the principle of avoidance, minimization and compensation as set out in the Technical Memorandum of the EIAO. The mitigation measures included the adoption of surface water, groundwater, leachate and landfill gas management systems, good construction practices and provision of off-site screen planting near the country park hiking trail. Some 18 hectares of mixed woodland planting would be provided in the Extension site, including a compensation for the loss of six hectares of shrubland due to the Extension. In addition, a mosaic of grassland and shrubland will be provided in the remaining areas of the Extension site. These measures would reduce potential disturbances to the surrounding environment and would also help provide a habitat of higher ecological value than that of the existing site.

PROGRESSIVE RESTORATION AND ECOLOGICAL ENHANCEMENT

15. In order to minimize the landscape and visual impacts due to the Extension and to enhance the ecological and landscape values of the area, a progressive restoration approach would be adopted.

16. As mentioned in paragraph 14 above, planting in the form of a mixture of woodland, grassland and shrubland was recommended to diversify the habitats to support the wildlife, in particular butterflies, birds and herpetofauna, and to blend into the existing undisturbed areas in the vicinity. Indigenous plant species with a shallow root system, softwood in nature and adaptive to sea shore habitat were recommended to be used in the restoration plan. These species included *Gordonia axillaris* (大頭茶), *Phyllanthus emblica* (餘甘子), *Celtis sinensis* (朴樹) and *Macaranga tanarius* (血桐), which had been well established in coastal areas with exposure to strong wind and salt spray, and with a sandy soil base. Food plants of butterfly species (in particular for butterfly species of conservation interest recorded within CWBCP) such as *Ischaemum aristatum* (鴨嘴草), *Microstegium ciliatum* (剛莠竹), *Miscanthus floridulus* (五節芒), *Ficus superba* (筆管榕), *Phoenix hanceana* (刺葵) and *Zanthoxylum nitidum* (兩面針) were also recommended to enhance the butterfly population in the area. The progressive restoration and ecological enhancement plan would

therefore enhance the ecological value of the restored Extension site.

17. The Extension and the encroachment area after restoration will achieve a higher amenity value and thus could be returned to country park use or put to other passive recreation uses for the enjoyment of the public.

ENVIRONMENTAL MONITORING AND AUDIT

18. The EIA Report includes an Environmental Monitoring and Audit (EM&A) Manual which recommends an EM&A programme during the construction, operation, restoration and aftercare phases of the Extension.

PUBLIC CONSULTATION

19. During the EIA process of the SENT Landfill Extension project, EPD has adopted a “Continuous Public Involvement” approach. Close liaison with Sai Kung District Council members, community organisations and rural committee/village representatives have been maintained and their suggestions have been incorporated into the scope of the assessment. The ACE was also consulted on the EIA report of SENT Landfill Extension and endorsed the report in April 2008. The Sai Kung District Council (SKDC) was consulted on several occasions from December 2005 to September 2008. The SKDC has expressed grave concern on the possible odour, traffic and environmental problems associated with the proposed Landfill Extension, and set up a dedicated committee to follow up on the odour issues arising from the SENT Landfill. The CMPB has been consulted on the proposed encroachment of five hectares of land within the Country Park. At the meeting of 11 September 2008, the CMPB advised that the area affected by the SENT Landfill Extension should be excised from the CWBCP under section 15(1) of the Country Parks Ordinance.

ADVICE SOUGHT

20. Members are invited to note the contents of this paper.

Environmental Protection Department
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