Annex B

EIA report on
"West New Territories Landfill Extensions"

A summary of issues discussed by the EIA Subcommittee
at the meeting on 19 October 2009

The Environmental Impact Assessment (EIA) Subcommittee discussed the EIA report on "West New Territories (WENT) Landfill Extensions" at its meeting on 19 October 2009. The issues discussed are summarized below.

Ecological impact

2. On the possibility of establishing a larger compensatory freshwater pond for the Little Grebes instead of having a total of 5 ha of little ponds, the project proponent explained that due to the moderate gradient of the terrain of the restored landfills, it was technically more feasible to construct several small ponds than one large pond. With reference to literature review on local and overseas examples, it was found that Little Grebes would nest in ponds of size as small as 0.24 ha. Small ponds could be as attractive as large ponds for Little Grebes. With mitigation measures such as planting, the nesting distance of Little Grebes would be significantly reduced. The provision of ponds of 5 ha in total, each with at least 0.5 ha in size, would be sufficient as compensation for the loss of 5 ha of water bodies in terms of both area and function.

3. On the possibility of increasing the number of freshwater ponds to accommodate more Little Grebes in future, the project proponent indicated that there should be room for increasing the number of freshwater ponds if necessary. On the timing of establishing the freshwater ponds, the project proponent explained that 3 ha of the ponds would be created in advance on the existing landfill after its restoration and the remaining 2 ha would be provided at the landfill extension site after its restoration. They undertook to conduct a study in the stage of detailed design of the project to assess the possibility of increasing the number of ponds, enlarging their size and further advancing the timing of establishing the ponds with a view to enhancing the Little Grebe habitats as far as practicable.

4. On the monitoring of Little Grebes during the transitional period between commencement of the project and completion of the freshwater ponds, the

project proponent confirmed that the breeding activities of the Little Grebes would be closely monitored throughout the construction phase of the project, though the ash lagoons where the Little Grebes located would only be affected in the last phase of the project.

5. Some Members noted that the EIA report proposed compensatory woodland planting of 21 ha for the loss of 3.76 ha of natural woodland. On the possibility of double-counting the compensatory woodland planting with compensatory planting originally planned for restoration of the existing landfill, the project proponent explained that restoration work in the existing landfill would not involve compensatory woodland planting but only general restoration with capping liners, soil cover and planting of shrubs and trees on top. Hence there would not be any double-counting of compensatory woodland planting.

6. On the choice of species for compensatory woodland planting, the project proponent explained that the existing species of vegetation affected included both exotic and native species. Both types of species were recommended in the preliminary compensatory planting proposal. Exotic species, which were more suitable for soil with higher acidity, would be planted at an earlier stage and native species would be planted at a later stage.

7. On the selection criteria of compensatory woodland planting, the project proponent explained that a number of factors had to be taken into account in the selection of plant species, including the ability of the species to be established in the new environment, the size of the crown, the ecological nature of the trees such as whether the trees were aggressive. Trees with larger crown for amenity and carbon dioxide (CO_2) absorbing purposes, such as *Acacia* (相思樹), *Cinnamomum spp.* (樟屬) and *Ficus spp.* (榕屬), were recommended. The existing trees in the project site such as *Melaleuca quinquenervia* (白千層) with smaller crowns and *Leucaena leucocephala* (銀合歡) which were more aggressive species were not recommended.

8. On successful experience of transplanting the Pitcher Plant, the project proponent explained that there was successful experience by the University of Hong Kong in adopting nodal cutting method which was recommended for the current project. Reference would also be made to previous experience which was not very successful such as the transplantation of Pitcher Plant from Penny's Bay to Tai Tam. Various factors, such as planting season, site selection, propagation and transplanting practices, would be taken into account in the transplantation. To ensure high success rate, they would work closely with relevant experts to try out the nodal cutting

method at an early stage before commencement of the project.

9. Agriculture, Fisheries and Conservation Department (AFCD) advised that for the transplantation of Pitcher Plant from Penny's Bay to Tai Tam, an initial survival rate of less than 50% was recorded. However, it was found in a recent site visit that the survived individual transplanted Pitcher Plant had dispersed into adjacent shrubland above the high watermark of the valleys.

Landscape and visual impact

10. Some Members noted that there would be compensatory planting of about 107,000 tree seedlings for the loss of about 6,000 trees. On the CO_2 absorption capability of the tree seedlings as compared with the loss of trees, the project proponent explained that the CO_2 absorption capability of a tree depended very much on the size of its crown which in turn depended on the size of its trunk. The larger the size of the trunk, the higher the CO_2 absorption capability. The aggregate trunk diameter of the 107,000 compensatory tree seedlings would be equivalent to that of 6,000 affected full grown trees and thus the CO_2 absorption capability would be comparable. Moreover, the CO_2 absorption capability of these tree seedlings would continue to increase as they grew up and the carbon absorption capability of trees varied with species.

11. On the surviving ability of young tree seedlings with trunk diameter of about 35 mm in the unfavourable environment of landfills, the project proponent explained that advice of the AFCD had been sought on this aspect. The depth of the soil for the tree seedlings would be at least 1 m. Experience in other projects showed that the surviving rate was very high. Based on surveys on the 6,000 affected trees, the number of large trees (trunk diameter more than 700 mm) was only 8 and the number of medium-sized trees (trunk diameter between 500 mm and 700 mm) was 23. Effort would be made to transplant these some 30 trees as far as possible, in particular the large ones.

Landfill Gas

12. On the beneficial use of landfill gas (LFG) generated from the landfill extension site, the project proponent explained that 60% of LFG from the existing landfill was utilized while 40% was flared. They were liaising closely with the utility companies, such as the Hong Kong and China Gas Company Ltd. (Towngas), to establish a LFG utilization scheme for both the existing WENT Landfill and its

Extension with a view to fully utilizing the LFG. For the North East New Territories (NENT) Landfill, all LFG was piped by the Towngas to the Tai Po Plant and flaring was only necessary in emergency cases. As regards the South East New Territories (SENT) Landfill, they were in the final stage of discussion on the LFG utilization scheme. With confirmation of the scheme for SENT Landfill, effort would be made to kick-start the discussion of the scheme for the existing WENT Landfill and its Extension. The methodology to be employed for the ultilisation of LFG had to be worked out having regard to the situation of different landfills. It should be noted that air quality impact assessment in the current EIA was based on the worst-case scenario with no beneficial use of the LFG. With the setting up of the LFG utilization scheme, the Respirable Suspended Particulates contributed by the project would be reduced. On the choice of partner for the LFG utilization schemes, they had approached various utility companies and so far Towngas was the only one which showed the greatest interest in the schemes.

13. On the usage of the 60% of LFG at the existing WENT Landfill, the project proponent explained that part of the LFG was converted to electricity for on-site use and part of it was used as fuel for the ammonia stripping plant of the leachate treatment system. If the LFG utilization scheme was established, the stripping plant could be upgraded to achieve a higher efficiency. The LFG extraction system could also operate at its full capacity to extract more LFG for beneficial use.

14. On measures to reduce emission of methane from the 40% of LFG being flared from the existing landfill, the project proponent explained that the flaring system operated at a very high temperature and the methane in LFG would be converted to water vapour and CO_2 and thus the effect of greenhouse gas caused by methane would be substantially reduced.

Odour impact

15. Regarding the number of odour complaints arising from the existing WENT Landfill, the project proponent indicated that four complaints were received in 2008 and 10 were received in 2009 and most of them were from villagers nearby. It should be noted that two tipping faces would be used under normal operation. The EIA recommended that in certain areas which were close to the sensitive receivers, only one tipping face with confined surface area would be used. This would minimize the odour impact on nearby villagers.

16. On the disposal of sewage sludge which was a significant source of

odour, the project proponent explained that the Sludge Treatment Facilities would be up and running by the completion of the project. Thus, sewage sludge would be treated by the Sludge Treatment Facilities and would not be disposed of at the landfill. This would help reduce odour emission to a great extent.

17. On new odour control measures to be implemented in the landfill extension site, the project proponent explained that three new measures would be implemented to step up odour control. Firstly, the EIA report recommended installation of ventilated cover with deodorizer for the leachate treatment plant. Secondly, sewage sludge would be treated by the Sludge Treatment Facilities instead of being disposed of at the landfill. Thirdly, the cover of tipping faces would be much improved. At the end of each working day, the active tipping faces would be covered with soil immediately. The only major odour source would be the active tipping faces at day time and tipping arrangement would be well controlled to minimize odour emission. With these three measures, the odour impact would be much less than that of the existing landfill.

18. On the difference of tipping arrangement between the existing landfill site and the landfill extension site, the project proponent explained that the tipping face of the existing landfill was covered by waste on a daily basis whereas the tipping face of the landfill extension site would be covered with soil of 150 mm and the non-active tipping phase would be covered with soil of 300 mm to 600 mm or an impermeable liner on top which could prevent odour emission and also enhance LFG extraction.

19. On the contingency plan in the case of odour exceedance, the project proponent explained that with a comprehensive package of mitigation measures implemented, it would be very unlikely that odour emissions would exceed the criterion of 5 odour units (OU). In the assessment of the worst-case scenario in the EIA, the highest odour level recorded was only of 4.4 OU under the worst-case scenario with active tipping face closest to the air sensitive receivers operating under the most unfavourable wind direction. In the unlikely event of exceedance, tipping in an area closest to air sensitive receivers would be avoided under unfavourable wind conditions to ensure no odour exceedance.

20. On the use of deodorizing agents as a contingency measure for odour exceedance as in the case of SENT Landfill, the project proponent explained that the use of fixed or mobile deodorizers had not been taken into account in the assessment of the current project. Nonetheless, deodorizers would be made available for

contingency use when needed.

21. On the assessment of cumulative impacts of odour, the project proponent explained that the assessment had included the odour impacts from the Sludge Treatment Facilities, existing landfill site and landfill extension site. The odour assessment data shown in the EIA report were cumulative total and no exceedance was predicted.

Air quality impact

22. On the comparison of on-site monitoring data collected from the existing landfill against the background data obtained from the Yuen Long Air Quality Monitoring Station, the project proponent explained that according to the on-site monitoring data, the average 24-hour Total Suspended Particulates (TSP) concentration at the WENT Landfill from 1996 to 2006 ranged from 87 to 94 $\mu g/m^3$, which was lower than the five-year annual average background level of Yuen Long (103 $\mu g/m^3$). Nonetheless, data of an EPD air quality monitoring station was more comprehensive and should be used for EIA study.

23. Some Members noted that EPD air quality monitoring station was not available in Tuen Mun. Assessment of air quality impact for projects in Tuen Mun had to be based on the background data taken from the Yuen Long Air Quality Monitoring Station. In view of the large-scale construction projects in Tuen Mun, it was suggested that EPD should set up an air quality monitoring station in Tuen Mun for reflection of more relevant and comprehensive data.

Cultural heritage

24. On the schedule of the full scale rescue excavation of Tsang Tsui Archaeological Site, the project proponent explained that construction works at the archaeological site would at a very late stage in around 2022. There would be sufficient time for planning the rescue excavation. The rescue works would not commence until the land acquisition process completed.

25. On the resumption of the nine graves identified in the construction site, the project proponent explained that only two of the graves were historic clan graves. They would try to identify the descendents and resume the graves according to the standard procedures. The graves were found to belong to descendents in Yuen Long district. Assistance had been sought from the Yuen Long District Lands Office in

locating the relevant descendants. In the course of site surveys, no rock with geological value was found in the site.

Conclusion

26. After discussion, Members agreed to recommend to the full Council that the EIA report could be endorsed with some proposed conditions. The meeting also agreed that there was no need to invite the project proponent to attend the full Council meeting.