

**Subcommittee on Country Parks (Designation)  
(Consolidation) (Amendment) Order 2010  
Follow-up actions arising from the discussion at the meeting  
on 13 July 2010**

At the meeting on 13 July 2010, the Administration was requested to provide response to the views and concerns expressed by members and deputations in the submissions as follows:

**Environmental nuisances in Tseung Kwan O**

2. While the operation of the SENT Landfill is compatible with international standards, the Environmental Protection Department (EPD) understands that Tseung Kwan O residents are concerned about the odour nuisance and have implemented additional odour management and control measures at the SENT Landfill to further minimise the potential odour impacts arising from the operation of the landfill and the refuse collection vehicles. In the past three years, the odour control measures implemented so far to minimise the possible odour emission from waste reception and landfilling included covering the tipping face with a thicker layer of soil at the end of the daily waste reception process during the rainy season; covering the non-active tipping areas with temporary impermeable liner; setting up fixed de-odourisers at the boundary and entrance/exit of the landfill; providing additional mobile de-odourisers at the tipping area; putting a movable cover on the special waste trench; and installing additional landfill gas extraction wells and mobile landfill gas flaring units. The EPD will continue to implement these measures.

3. To address the concerns on the odour nuisance caused by the refuse collection vehicles, the EPD will upgrade the existing wheel washing facility in the landfill to a full-body vehicle washing facility as one of the enhanced odour control measures, to ensure that the entire body of every refuse collection vehicle is washed before leaving the landfill. Moreover, the District Officer of Sai Kung has established an inter-departmental working group comprising representatives from the Sai Kung District Office, EPD, Drainage Services Department, Food and Environmental Hygiene Department (FEHD), District Lands Office, Housing Department, Highways Department and the Hong Kong Police Force. It aims to investigate and follow up on potential sources of odour in the Tseung Kwan O area, including the Wan Po Road, under the

purview of various departments. The working group has held a number of meetings, conducted joint inspections in Tseung Kwan O and stepped up cleaning of the sites where odour may be emitted. We will continue our work on this front.

4. As regards the noise concern, we understand the developer of the LOHAS Park has considered this issue in the design of the development during its application to the Town Planning Board in 1999 for developing the site and implemented various measures to mitigate the noise impacts, including adjusting the orientation of the buildings, making use of the design of the podium to minimise noise impact on flats facing the Wan Po Road, adopting low noise road surface for the section of Wan Po Road along the development, etc. In addition to the SENT Landfill, there are other facilities and developments such as the public fill reception facility and sorting facility in Tseung Kwan O Area 137, the Tseung Kwan O Industrial Estate and other industrial developments using Wan Po Road. According to our observation, the operation of the SENT Landfill has not caused any traffic congestion to Wan Po Road. Nevertheless, we will continue to monitor the situation to ensure no traffic problem caused by the operation of the landfill.

5. As regards the SENT Landfill extension, a traffic impact assessment was completed in 2008. The assessment concluded that the number of vehicles going to the extension will be similar to the current traffic flow to the existing SENT Landfill. Hence, the traffic flow would be the same when the existing SENT Landfill is closed and the extension commences its operation. Thus, no adverse traffic impact due the extension is expected. However, due to the planned developments in the Tseung Kwan O area, such as the LOHAS Park, , the design traffic flow at some junctions along Wan Po Road will operate unsatisfactorily, even without the traffic from the extension site. For two junctions along the Wan Po Road at which the unsatisfactory traffic situation could be contributed by the extension scheme, the EPD will carry out some improvement works in order to alleviate the problem before commissioning of the SENT Landfill extension.

6. At the Sai Kung District Council (SKDC) meeting held on 18 July 2008, members pointed out that although the SENT Landfill has implemented many enhanced odour control measures, the odour problems have persisted in the Tseung Kwan O town area. The odour could be coming from other

sources, such as the storm water drainage system and sewerage system, refuse collection vehicles and waste skips on streets, dripping leachate from refuse collection vehicles on roads, etc. After discussion, the SKDC decided to set up a dedicated working group to investigate odour complaints and identify odour sources in the area through an independent odour study by consultants together with academics from the University of Hong Kong and the Hong Kong Polytechnic University. The study commenced in May 2009 and the EPD has been supporting the SKDC in the study by providing technical inputs to SKDC.

7. The inter-departmental working group established by the District Officer of Sai Kung as mentioned in paragraph 3 above has also been helping to investigate on other potential sources of odour in the Tseung Kwan O area. For the potential sources already identified, corresponding actions, such as cleaning of storm water and sewerage systems, cleaning of the roads affected by dripping leachate, maintaining cleanliness of refuse collection vehicles, etc. have been taken by the responsible departments. As many of the refuse collection vehicles using the SENT Landfill are private ones, we will continue to urge them to keep their vehicles clean so as not to cause any nuisance and if this fails, the Government would consider undertaking enforcement action. In response to the request of the SKDC members, we have introduced a new technology of electronic odour detection system (i.e. E-nose) and installed two sets of such system at Ocean Shores and SENT Landfill as a trial scheme to help identify the nature and sources of odour reported in the Tseung Kwan O town area. The results of the odour study as well as those from the E-nose monitoring will also be used to help formulate the strategy and drawing up mitigation measures to combat the odour problem.

### **Environmental concerns on refuse collection vehicles in Hong Kong**

8. The refuse collection vehicles commonly used in Japan is of compaction and enclosed type with the rear part of the vehicle covered by a “tailgate cover” (Figure 1) so as to minimise potential environmental impacts. They are generally small vehicles as they need to go into very narrow streets in the residential and shopping areas (including pedestrian precincts). In Hong Kong, the FEHD has adopted a compaction and enclosed type design to all its in-house or contractor refuse collection vehicles. The departmental vehicles are either equipped with tailgate covers and/or compaction plates to form an

enclosed vehicle body (Figures 2 and 3) whereas the contractor vehicles largely use the compaction plates to form the enclosed vehicle body. At present, over 70% of FEHD's vehicles are of fully enclosed type fitted with tailgate covers. The remaining vehicles (without tailgate covers) will be gradually replaced with new ones fitted with tail covers in the coming two years. As for the contractor vehicles, there is currently no programme for specifying in FEHD's contracts that all the vehicles should be of the fully enclosed type and with tailgate covers. The majority of private refuse collection vehicles are compaction type with the compaction plate being used to form the enclosed vehicle body (Figure 4).



Figure 1 - Type of refuse collection vehicles commonly used in Japan



Figure 2 - Enclosed type of refuse collection vehicle (with tailgate cover) used by FEHD



Figure 3 - Enclosed type of refuse collection vehicle (without tailgate cover) used by FEHD



Figure 4 - Private refuse collection vehicle

9. We are concerned about the operation and cleanliness of the refuse collection vehicles using the SENT Landfill, especially those operated by private waste collectors which constitute about 50% of all refuse collection vehicles delivering municipal solid waste to the landfill. We will continue to

urge the trade to keep their vehicles clean and properly maintained through our regular Landfill Users Liaison Meetings and other working meetings with the trade. At meetings of the inter-departmental working group mentioned in paragraph 3 above, the EPD also refers the complaints about refuse collection vehicles received (including concerns about nuisance arising from the parking of loaded refuse collection vehicles along the LOHAS Park) to the relevant departments and EPD groups for follow-up actions. Moreover, the EPD distributes leaflets to refuse collection vehicle drivers on a monthly basis through the landfill contractors to remind them of good operational practice for their vehicles and to ensure their vehicles are clean so as not to cause any nuisance. We will review these guidelines for enhancement and explore promulgating them to the users of the waste collection service provided by these private refuse collection vehicles. These users, for example, property management companies or commercial establishments are encouraged to include some best practices for maintaining and operating the refuse collection vehicles into their waste collection service contracts. While private waste collectors may choose the type of vehicles and the way to operate and maintain their vehicles, under the Public Health and Municipal Services Ordinance, the FEHD may, with sufficient evidence, institute prosecutions against people concerned in case of refuse collection vehicles causing sanitary nuisances. The FEHD will step up enforcement action whenever situation warrants.

10. Regarding the introduction of statutory requirement for the waste transportation trade to adopt the use of compaction and fully enclosed type of refuse collection vehicles, the Administration considers that this is a longer term measure. Before its introduction, the Administration would need to go through a thorough consultation with the trade as it would impose territory-wide implications to all operators ranging from large waste collection companies to small companies or individual drivers operating his/her own refuse collection vehicles.

### **Justifications and public consultation for extension of SENT Landfill**

11. Hong Kong has an imminent waste problem. To address the serious and imminent problem of managing waste in Hong Kong, the Administration has published a Policy Framework for the Management of Municipal Solid Waste (2005-2014) (the Policy Framework) in December 2005, which set out a comprehensive waste management strategy for the next ten years. The Policy

Framework encompasses initiatives on waste avoidance and reduction at source, waste recovery and recycling and bulk reduction of waste. It also proposes to develop new Integrated Waste Management Facilities (IWMF), by using advanced thermal and incineration technologies, to effectively reduce the volume of waste requiring disposal. Reduction of waste generation and waste recycling has been and will always be our primary objectives and accorded top priority. However, even with all the waste reduction and recycling initiatives as well as the development of the IWMF as a priority project for commissioning by mid 2010s, the three landfills would be full or nearly full by that time.

12. The public generally have a misconception that Hong Kong needs only either landfills or waste incineration/IWMF to handle our waste. It should be noted that developed countries and cities including those which already have advanced incinerators still need landfills as the final repositories for non-combustible waste as well as waste residues after incineration or other treatment. In terms of provision of landfill capacity to meet the demand, the SENT Landfill extension could provide 17 million cubic metres for extending the life of the landfill by approximately six years to tie in with the commissioning of succession waste management facilities for handling construction waste and municipal solid waste in the southeast region of the territory. Hence, to address our imminent problem in waste treatment and disposal and to ensure sufficient landfill capacity for future need, the Administration needs to extend the existing landfills to serve as the final repositories for residual waste and waste that cannot be further treated or recycled. Waste reduction and recycling, IWMF, landfill extension and other waste management facilities are all essential integral components of Hong Kong's overall waste management strategy.

13. The estimation of territory-wide demand of around 200 million tonnes of landfill space required from 2006 to 2025, which was made before the mid-2000s when waste reduction measures were not fully in place, is now outdated. With the Policy Framework promulgated in 2005, the construction waste disposal charging scheme implemented in 2006 and change in the overall economic climate, the annual waste disposal quantity has been exhibiting a gradually declining trend since mid-2000s.

14. Despite that the waste disposal quantity has been decreasing in recent

years, the trend is unlikely to last indefinitely. For instance, the quantity of construction waste disposal has levelled off at 3,000 tonnes per day since 2008 but it will likely rebound due to the increase of infrastructural works in the coming years. The continuous expansion of the source separation of municipal solid waste and the introduction of the voluntary producer responsibility schemes help improve the waste recovery in Hong Kong. In 2009, the domestic waste recovery rate was 35% which has more than doubled the figure of 16% in 2005. As for commercial and industrial waste, the recovery rate has been maintained at a relatively high level of some 60% over the years. Overall, we achieved an MSW recovery rate of 49% in 2009. While the Administration will continue implementing the source separation initiative, it is anticipated that further substantial improvement of the recovery rate will become more challenging. In the long term, waste disposal quantity is likely to follow the trend of population and economic growth, both of which are believed to be rising steadily in the coming 15 years. Hence, for planning purpose, we have allowed for some degree of waste growth rather than taking a risky no-change scenario. For the same purpose on waste treatment facilities, we have to accommodate a possible slippage in the IWWMF project being developed as set out in the Policy Framework and to take into account the weight reduction efficiency of IWWMF of generally around 80%, with 20% of waste residues requiring disposal at landfill.

15. Based on the above and other relevant considerations, our current forecast is that the three existing landfills will be exhausted one by one from mid to late 2010s, starting with the SENT Landfill to be exhausted in 2013/14 due to its regional demand and limited remaining capacity. To address our imminent problem in waste treatment and disposal and to ensure sufficient landfill capacity for future need, we need to extend the existing landfills to serve as the final repositories for residual waste and waste that cannot be recycled or treated further.

16. The EPD completed the EIA on the SENT Landfill extension in 2008. The EIA studied in detail the potential environmental impacts of the extension scheme, covering air quality (including odour), ecology, noise, waste management, water quality, landfill gas as well as landscape and visual impacts, and recommended effective mitigation measures. The EIA also studied the five alternative options for the extension. The assessment of the options was presented and discussed at the meetings of SKDC and the Legislative Council

Panel on Environmental Affairs on 4 March 2008 and 27 October 2008 respectively. The study on air quality (including odour), noise and visual impacts covered the Tseung Kwan O area (including the LOHAS Park) and the Siu Sai Wan area on Hong Kong Island. According to the EIA report, with the implementation of the recommended mitigation measures, the anticipated environmental impacts are acceptable and will meet the relevant requirements under the Environmental Impact Assessment Ordinance (EIAO) and its Technical Memorandum. As part of the public consultation of the statutory EIA process, the EIA report was available on the EIAO Register and EIAO website for public inspection for a period of 30 days, i.e. from 26 February to 26 March 2008. Written comments on the EIA report could be forwarded to the EIAO Authority before the public inspection period expired. Having taken into account views expressed by the public, the EIA report was accepted by the Advisory Council on the Environment in April 2008 and was approved by the EIAO Authority in May 2008.

17. The EPD adopts a “Continuous Public Involvement” approach and started the public consultation with the SKDC in early 2004 when the extension project was in its inception and feasibility exploration stage. Since then, EPD has reported regularly the enhanced odour management measures for the existing SENT Landfill and the progress of the extension project to the SKDC. Close liaison with the SKDC members, community organizations and rural committee/village representatives have been maintained and their suggestions have been incorporated into the scope of the assessment.

18. To enhance public understanding on the operation of the SENT Landfill and its extension scheme, as well as to promote waste management strategy in Hong Kong, an outreach programme for Tseung Kwan O District has been in operation since 2008. Representatives from 48 educational institutions and 42 residential complexes including owners’ committees and estate management companies in the Tseung Kwan O District have been invited to visit the SENT Landfill and to understand its operation and environmental management. Since the commencement of the outreach programme, about 2,500 Tseung Kwan O residents and students, teachers and principals of Tseung Kwan O educational institutions have seen the landfilling operation and observed the performance of the odour management measure at the SENT Landfill. In addition, the EPD will set up a community liaison group involving representatives of potential sensitive receivers before commencement



of the extension scheme.

19. We hope to complete the planning work in time so that the proposed extension can be commissioned immediately after the exhaustion of the SENT Landfill in around 2013/14. Apart from the proposed extension, the Administration has no plan to further expand the area of the SENT Landfill.

### **Alternative ways to handle municipal solid waste**

20. We are working on various fronts to reduce the need for disposing of MSW at landfills. These include measures for reduction of waste generation; promotion of waste recycling; development of the Organic Waste Treatment Facilities (OWTF) for food waste treatment; as well as development of the IWTF to reduce the bulk size of MSW requiring landfill disposal.

(a) **Waste reduction and recovery** - The Government has set out a series of initiatives on waste reduction and recycling in the Policy Framework. They include (i) programmes on source separation of waste to encourage the public to separate waste at source so as to increase the amount of local recyclables for collection; (ii) promotion of technology upgrading of the local recycling industry through the Innovation and Technology Fund, the Environment and Conservation Fund and various funds for small and medium enterprises; (iii) promotion of green procurement among government departments to boost the demand for green products as an outlet for recycled/green products and materials; (iv) implementation of producer responsibility schemes to encourage the public and the industry to engage more actively in waste recovery; (v) provision of more suitable sites for lease to the recycling industry under short-term tenancy; (vi) development of the EcoPark to provide long-term land for the recycling industry at affordable rent so as to facilitate and encourage investment by the industry; and (vii) publicity and public education to promote community participation in waste reduction and recycling.

(b) **OWTF** - the first phase of OWTF in Siu Ho Wan of Lantau Island could handle about 200 tonnes of source-separated food waste from the commercial and industrial sectors each day, and is planned for commissioning in 2013/14. We also plan to develop the second phase of OWTF in Sha Ling of the North District with a treatment capacity of some

300 tonnes per day. For details, please refer to [Annex 1](#).

- (c) *IWMF* - we would adopt advance incineration with energy recovery as the core technology to substantially reduce the volume of waste requiring landfill disposal. The first phase IWMF would have a treatment capacity of 3000 tonnes per day and we have identified two potential sites (at Tsang Tsui, Tuen Mun and Shek Kwu Chau respectively) for its development. We plan to complete the engineering and environmental impact assessment (EIA) studies for these two potential sites and decide on the final site by end 2010 with a view to commissioning the works in the mid-2010's.

21. As regards the proposal from the Green Island Cement Co Ltd (GIC) that the Government could adopt their eco-co-combustion system to be developed at their Tuen Mun site to treat 4800 tonnes of MSW each day, we have reviewed their eco-co-combustion system proposal under the engineering and EIA studies for the IWMF. The review indicated that the proposed eco-co-combustion technology has not been used for MSW treatment anywhere over the world. Although a pilot plant trial at a scale of several tonnes per day had been conducted for about 2 months at GIC's site in Tuen Mun, it would be risky to simply scale up the pilot plant's results to ascertain if such technology is suitable for substantial MSW treatment. Moreover, as the eco-co-combustion proposal hinges on the use of MSW as fuel for cement production, there would be potential market risk associated with changes in cement production demand. Given the technology and market risks concerned, we do not recommend the IWMF to adopt the proposed eco-co-combustion technology. This recommendation was endorsed by the Advisory Council on the Environment at its meeting in December 2009.

### **Selection of Site with encroachment into the Clear Water Bay Country Park**

22. In the feasibility study for the SENT Landfill extension, the Administration has studied five options for extension with various site areas [the layout plans of these five options are attached as [Annex 2](#)]. In evaluating the feasibility and practicability of the options, the following criteria were considered: available landfill capacity, efficient use of land, cost effectiveness, need of encroachment into the Clear Water Bay Country Park (CWBCP), environmental impacts and engineering considerations.

23. Among the five options, the selected option, which occupies 30 hectares of piggy-backing over the existing SENT Landfill, 15 hectares of the adjoining Tseung Kwan O Area 137, and an encroachment of about 5 hectares of land of the CWBCP, is the only option to provide the highest void capacity for meeting the future need (as explained in paragraph 12 above) and will deliver the greatest void capacity per unit site area, i.e. the most efficient use of land. It is also confirmed by the EIA study that, with the implementation of the recommended mitigation measures, the anticipated environmental and ecological impacts were acceptable and would meet the relevant requirements under the EIAO.

24. In addition, an option to increase the land-take within Tseung Kwan O Area 137 for the SENT Landfill extension has been investigated. To develop an extension with a capacity equivalent to that provided by the proposed option will require an increase of land-take within Tseung Kwan O Area 137 (a plain area) from 15 hectares to about 34 hectares. This option is considered not possible due to the strong demand for land in Tseung Kwan O Area 137.

25. The Administration attaches great importance to protecting the country parks and endeavours to maintain the integrity of country parks. In principle, country parks should not be used for landfill purpose and the option of encroaching into country park area should only be considered when there is no better alternative. In this context, in considering whether to extend the SENT landfill into the CWBCP, the Administration has fully studied the case and all alternatives, and the Administration is of the view that if the SENT Landfill is not extended, the resulting environmental impact would be very substantial. After thorough deliberations, it was concluded that there would be no better alternative for solving the imminent waste problem. The proposed option of including 5 hectares of CWBCP land into the extension of 50 hectares of the SENT Landfill was hence pursued in the light of public interest.

26. The Country and Marine Parks Board (the Board) was first consulted in December 2005. EPD has explained the need of extension of the SENT Landfill and presented all options of the extension to the Board. The Board was of the view that country park land, in principle, should not be used for landfill purpose and that the option of encroaching into country park area should only be considered when there is no better alternative. The Board,

after considering all the available factors and the representatives from the Government, has recommended to excise the proposed encroached area from the CWBCP.

27. The Agriculture, Fisheries and Conservation Department reviews the Country Parks Ordinance (Cap. 208) regularly. The Government would continue to exercise due efforts and diligence to protect the country parks and ensure that their conservation and amenity values would not be compromised.

### **Compensation for excision of Country Park area**

28. There is no existing policy for compensating for the loss of country park land. Designation of a site as a country park is based on the merits of the site and is assessed according to a set of well established criteria which the Government is committed to nature conservation and will continue to look for suitable sites for designation as country parks. In fact, the area covered by country parks in Hong Kong has increased significantly over the decades. Over the past 30 years or so, the coverage of country parks and special areas has increased almost 10 times from some 4 500 hectares in 1977 to some 44 000 hectares in 2010, accounting for some 40% of Hong Kong's land area.

29. The Government has considered two potential sites, Razor Hill and Siu Chik Sha, both are at the vicinity of the CWBCP, for extending the CWBCP. Given their low accessibility and low amenity in ecological values, they are not considered to be suitable for the designation. Nevertheless the Government would continue to look for suitable sites for designation. In addition, the Government welcomes suggestions for country park designation from the community, including the Green Groups, and would assess their suitability against the set of established criteria, namely, landscape quality, recreation potential, conservation value, size, land status, effectiveness of management etc.

### **Restoration of SENT Landfill extension**

30. The operation and progressive restoration of the SENT Landfill extension will be carried out concurrently. 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.

31. According to the approved EIA report of the SENT Landfill extension, some 18 hectares of mixed woodland planting would be provided in the SENT Landfill extension site to compensate for the loss of shrubland. In addition, a mosaic of grassland and shrubland will be provided in the remaining areas of the extension site. Planting in the form of a mixture of woodland, grassland and shrubland was recommended to diversify the habitats to support the wildlife, and to blend into the natural areas in the vicinity. Native plant species which can survive similarly harsh environment, such as *Gordonia axillaris*, *Phyllanthus emblica*, *Celtis sinensis* and *Macaranga tanarius*, were selected for planting. Butterfly food plants such as *Ischaemum aristatum*, *Microstegium ciliatum*, *Miscanthus floridulus*, *Ficus superba*, *Phoenix hanceana* and *Zanthoxylum nitidum* would also be planted to enhance the population of butterflies (especially species of conservation interest) in the area.

32. As required by the Environmental Permit issued for the SENT Landfill extension scheme, a coherent restoration and ecological enhancement plan will be submitted within six months after the commencement of construction of the extension to relevant department for approval. The EPD will also regularly update the Board on the restoration works on the extension near the CWBCP.

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

**Environmental Protection Department**  
**July 2010**

## **The Development of Organic Waste Treatment Facilities in Hong Kong**

### **Purpose**

At the Subcommittee on Country Parks (Designation) (Consolidation) (Amendment) Order 2010 (the Subcommittee) meeting held on 22 June 2010, Members requested the Government to, amongst others, brief them on the proposed development of the Organic Waste Treatment Facilities (OWTF). This paper briefs Members on the development of the OWTF in Hong Kong.

### **Background**

2. Food waste has been a main constituent of the municipal solid waste (MSW) in Hong Kong. Of the some 8,900 tonnes of MSW landfilled on average each day in 2009, some 3,280 tonnes were food waste. Of these, 964 tonnes were generated by the commercial and industrial (C&I) sector, such as restaurants, hotels, food processing premises and small eateries.

### **Food Waste Management**

3. In order to tackle the food waste problem, the Government has launched various initiatives to enhance the awareness of the public and the C&I sector about food waste avoidance and reduction through education and publicity. Moreover, the Government has commissioned a Pilot Food Waste Treatment Facility in 2008 to acquire local information and experience on food waste recycling. Building on the experience of the Pilot Facility, the Government is planning for the development of modern OWTF for the treatment of source-separated food waste generated from the C&I sector.

4. The first phase of the OWTF proposed to be built in Siu Ho Wan will have a capacity of treating some 200 tonnes of source separated food waste from the C&I sector each day. For the second phase of the OWTF proposed to be

developed in Sha Ling, we are planning to build it with a capacity of some 300 tonnes so that for the two phases together, the OWTF could treat some 500 tonnes of source separated food waste from the C&I sectors each day.

5. In order to enlist the support of the C&I sector in food waste reduction and treatment, the Government has implemented a Food Waste Recycling Partnership Scheme to promote good food waste management practices. Under this Partnership Scheme<sup>1</sup>, we are conducting educational programmes to help train their management and frontline staff on good food waste reduction and management practices. We will also produce a Code of Practice on the management of food waste with these partners to provide useful guides on food waste avoidance, reduction and source separation for recycling. In addition, sharing sessions and related seminars would be held with the partners to help consolidate the experience gained on the avoidance and proper treatment of food waste. We envisage that through the successful implementation of the Partnership Scheme, we would be able to reduce food waste generation by the C&I sector by some 100 tonnes each day.

6. Separately, we are also promoting the wider use of on-site food waste treatment equipment to deal with food waste generated in the shopping centres and restaurants and eateries. Currently, there are different types of food waste treatment equipment with various sizes available in the market for food waste reduction or conversion into soil conditioner. Some food waste generators such as produce market, shopping mall and hotel have installed such facilities of different scales. The Government supports the installation of these equipment by the C&I sector to reduce food waste disposal. The Environmental Protection Department is prepared to provide technical advice to the C&I sector interested in using such equipment on areas such as means of source separation of food waste and the requirements of relevant environmental legislation so as to promote the wider use of these equipment. With the efforts made on this front, we believe that a considerable portion of food waste could be treated daily by the C&I sector.

---

<sup>1</sup> The Partnership Scheme has been joined by the major food and property management associations such as the Hong Kong Federation of Restaurant and Related Trades, the Hong Kong Hotels Association, the Hong Kong Food Council, the Hong Kong Association of Property Management, etc,

7. As the bulk of the food waste in the C&I sector is generated at the point of consumption by customers, we would continue to carry out, either through the Government or non government organizations, public education programmes to encourage food waste reduction. For example, the Environment Bureau and Education Bureau had invited all schools to sign a Green Lunch Charter this year to encourage schools to adopt central portioning so as to reduce food waste. The Government has also made use of the Environment and Conservation Fund (ECF) to support public education and promotion programmes such as the “Save Food Day” to promote good eating culture and habit.

8. The international experience is that source separation is a pre-requisite for effective recycling of food waste. Owing to the reasons such as difficulties in keeping adequate containers for source separated food waste at extremely space limited small eateries, inevitable food waste remains attached to packages, etc, not all the food waste generated by the C&I sector could be source separated and collected for central or on-site processing. However, with the two phases of OWTF and the educational measures highlighted above, we would be able to reduce and recycle a substantial portion of the food waste so generated by the C&I sector.

### **Technology for the first phase of the OWTF Development**

9. The proposed first phase of the OWTF development will be a waste-to-energy facility adopting anaerobic digestion and composting technologies to recycle the food waste into useful biogas and compost products. We estimate that this development could produce about 20 tonnes of compost per day that could be used for organic farming and landscape work. As regards the biogas produced from the development, it will be used as renewable energy for electricity generation for on-site use and export to the power grid. We estimate that the development could supply about 14 GWhr of electricity (enough for use by 2,000 households in Hong Kong) annually. This renewable energy production will contribute to reduction of Green House Gas emission via reduction in use of fossil fuel for electricity generation. In addition, the first phase of the OWTF would avoid landfilling of some 200 tonnes of food waste each day, hence contribute to extending the useful life of landfills in Hong Kong.



10. The Environmental Impact Assessment study for this development was approved in February 2010 and the tender preparatory work is under way. Following tendering and construction, we envisage that this facility would be commissioned by 2014.

### **Domestic Food Waste**

11. The amount of domestic food waste disposal in the recent two years has decreased slightly. We would continue with our education and publicity effort to encourage further household food waste reduction. Collection of food waste from domestic households for treatment is difficult at this stage. It is because the majority of households in Hong Kong are resided in multi-storey premises of very limited space. There is very little space available for dedicated food waste containers at the household level. Besides, very substantial and frequent food waste collection effort would be required to get the source separated food waste from the households in the multi-storey premises. This difficulty is further aggravated by the hot and humid weather of Hong Kong that could easily cause potential hygiene and odour nuisance problems of the food waste. In view of the above difficulties, OTWF would first target at source separated food waste from the C&I establishments, and this is in line with the international norm.

### **Way Forward**

12. We will continue our education, promotion and partnership programmes to encourage the public and the C&I establishments to cultivate good environmental habits for food waste reduction and facilitation of food waste recycling. We will develop the OWTF to recycle food waste into useful products. We will keep close monitor of the food waste situation and review the need for further phases of OWTF when appropriate.

**Environmental Protection Department**  
**July 2010**

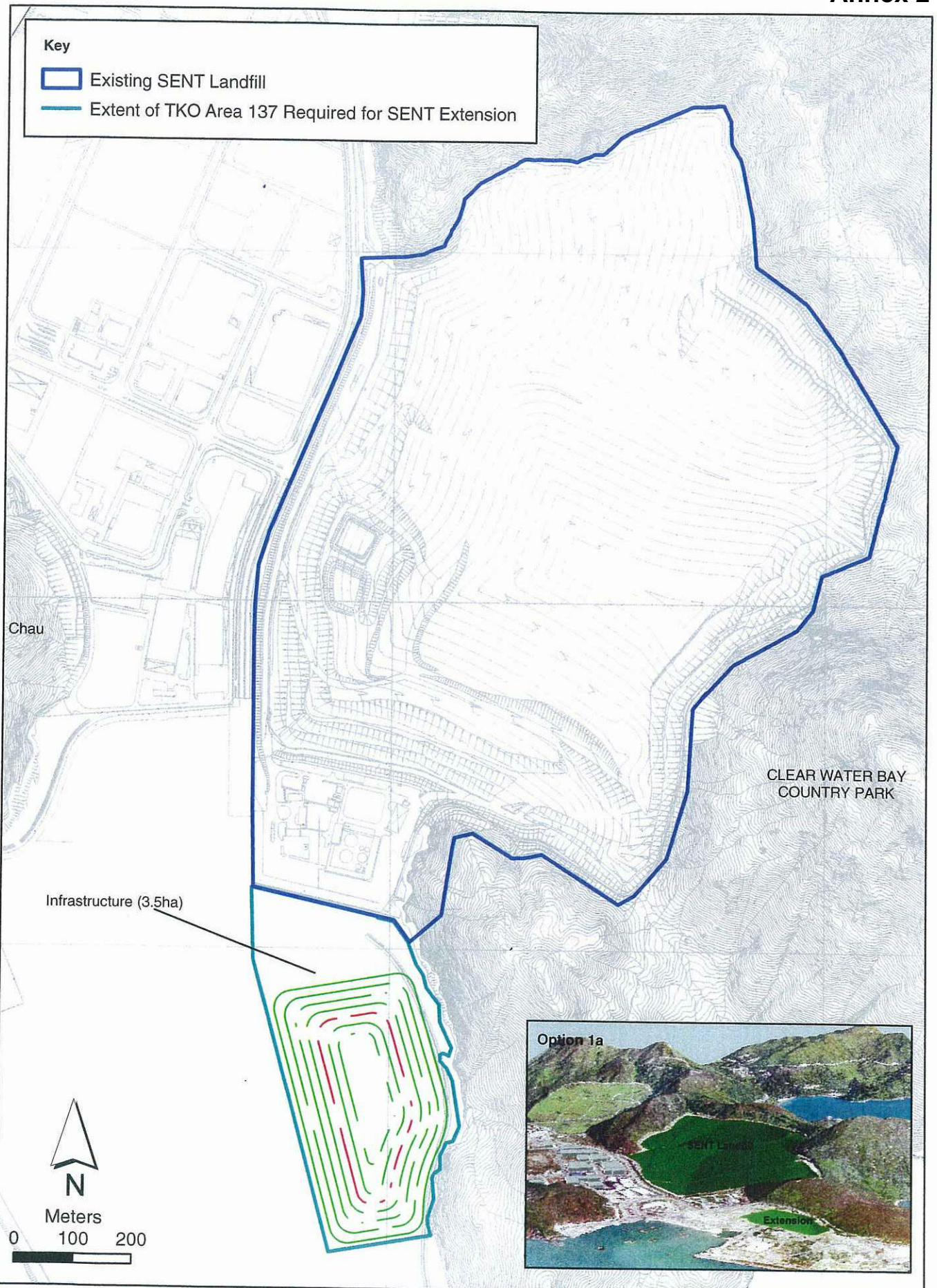


FIGURE 2.1a

Option 1a

File: 0036286\_Option1a\_1.mxd  
Date: 09/01/2007

Environmental  
Resources  
Management





Key

- Existing SENT Landfill
- Extent of TKO Area 137 Required for SENT Extension



FIGURE 2.1b

Option 1b

File: 0036286\_Option1b.mxd  
Date: 09/01/2007

Environmental  
Resources  
Management





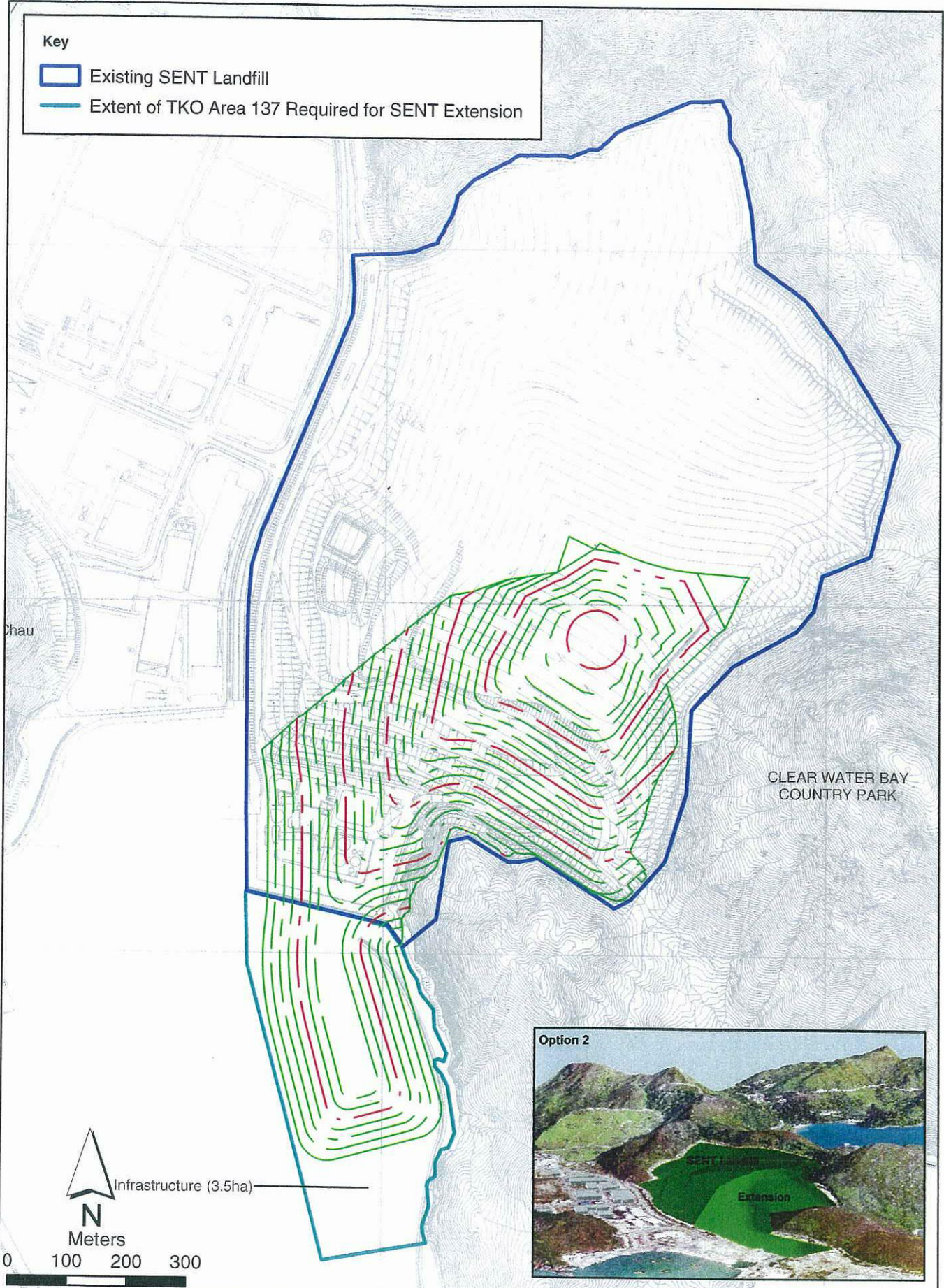
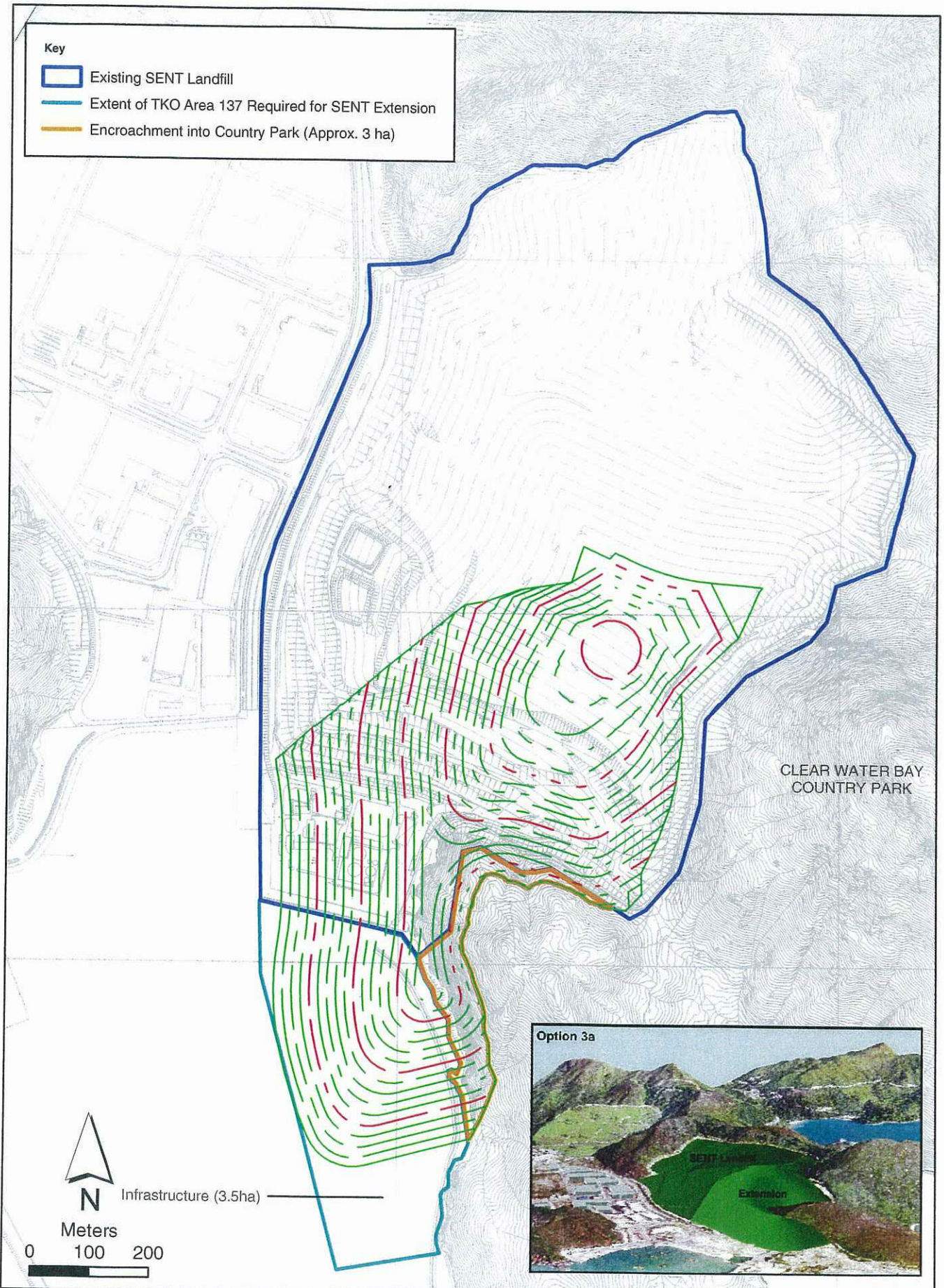


FIGURE 2.1c

Option 2

File: 0036286\_Option2\_1.mxd  
Date: 09/01/2007





**Key**

- Existing SENT Landfill
- Extent of TKO Area 137 Required for SENT Extension
- Encroachment into Country Park (Approx. 3 ha)

CLEAR WATER BAY COUNTRY PARK



Infrastructure (3.5ha)

Meters

0 100 200



FIGURE 2.1d

Option 3a

Environmental Resources Management



File: 0036286\_Option3a\_2.mxd  
Date: 04/12/2007



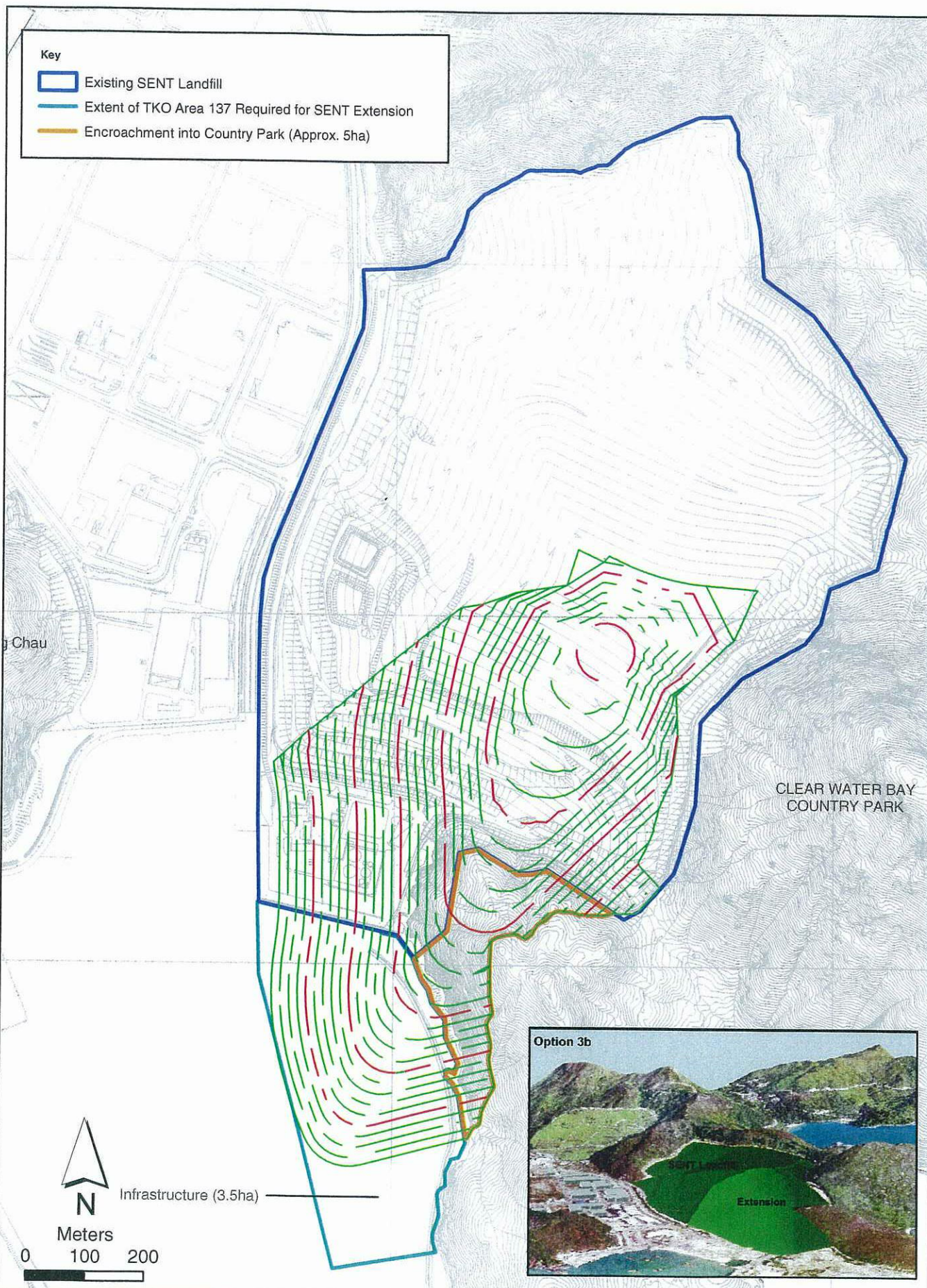


FIGURE 2.1e

Option 3b

File: 0036286\_Option3b\_2.mxd  
Date: 09/01/2007

