For Discussion
On 5 June 2001

LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS

Management of Construction and Demolition Materials

INTRODUCTION

This paper sets out the measures to tackle the problem related to the management of construction and demolition (C&D) materials between mid-2002 and end-2005.

BACKGROUND

2. At the meeting on 7 November 2000, we submitted a Panel paper (No. CB(2)181/00-01(04)) and briefed Members on the problems related to the management of C&D materials generated by construction activities.

3. To recap, C&D materials are a mixture of inert materials and wastes arising from construction, excavation, renovation, demolition and roadworks. Local construction activities produce about 14 million tonnes of C&D materials a year[1]. The typical composition of these materials[2] in recent years and their reuse/recycling value are as follows –

(a) 59% are soft inert materials like soil, earth and slurry that cannot be recycled and can only be reused as fill materials in reclamation and earth filling works;

(b) 25% are hard inert materials like rocks, broken concrete and bricks. Some of them can be reused for seawalls in reclamations, while others can be recycled as aggregates for concrete

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[1] In 1999 and 2000, 13.5 and 13.8 million tonnes of C&D materials were generated respectively.

[2] The composition changes as it depends highly on the nature and scale of projects that take place in that year.

production or as granular materials for road sub-base and drainage bedding layers; and

(c) 16% are C&D wastes comprising metals, plastic, timber and packaging waste. Some of them can be recycled, if they are not contaminated. The contaminated ones are however unrecyclable and have to be disposed of at landfills.

4. At the moment, most of the inert materials are reused at reclamation projects which hitherto have been the major outlet for these materials. However, by mid-2002, most of the approved reclamation projects will no longer be able to absorb further inert C&D materials.

THE PROBLEM

5. Between mid-2002 and end-2005, we estimate that about 69 million tonnes of inert C&D materials will be produced. This could fill the Happy Valley Racecourse to a height of 91 storeys. However, there are no approved reclamation projects beyond mid-2002. If nothing were done, all these voluminous materials will have to be disposed of at landfills, thereby shortening the life of the three landfills[3] by 10 years. In other words, the landfills will be exhausted between 2006 and 2008. It is not possible to build new landfills within that timeframe. A chart showing the shortfall between the capacity to receive inert C&D materials and the projected volume of materials that would be generated between 2000 and 2010 is at the Annex.

THE STRATEGY

6. As set out in Paper No. CB(2)181/00-01(04), our strategy to manage C&D materials comprises the following action areas –

(a) *Avoiding and minimizing* C&D materials at source through better

[3] The three landfills are at Tseung Kwan O, Tuen Mun and Ta Kwu Ling. They occupy a total of 270 hectares of land, cost $6 billion to build and about $500 million each year to operate. When planned, they were expected to serve Hong Kong's waste disposal need till 2020. But with the increasing volume of wastes, we estimate that they will be exhausted by 2016.

planning, design and construction management to reduce the overall volume of C&D materials;

(b) *Sorting* C&D materials to prevent materials that could be reused or recycled from going to landfills;

(c) *Reusing* inert C&D materials in reclamation projects and earth filling works;

(d) *Recycling* hard inert C&D materials as aggregates for concrete production or as granular materials for road sub-base and drainage bedding layers;

(e) *Establishing* temporary fill banks to tie over temporary mismatch between the generation of C&D materials and the availability of reclamation works; and

(f) *Introducing Landfill Charging* to provide economic incentive for waste producers to reduce C&D wastes and to reuse/recycle inert materials.

DETAILS OF MEASURES

7. The following paragraphs set out the detailed measures that have been undertaken under each action area since November 2000, as well as measures that we would implement to address the problem related to management of C&D materials.

(a) Avoiding and Minimising C&D Materials

8. We continue to encourage the construction industry to adopt construction methods and materials that reduce C&D materials at source. In this respect, Government is taking the lead by requiring contractors of all public works projects to prepare and implement Waste Management Plans since 1 January 2001. The aim is to ensure that contractors take solid steps to avoid and minimize C&D material generation, and to reuse

and recycle C&D materials generated. A contractor's performance in implementing the Waste Management Plan will be considered in assessing its performance, thereby affecting its chance in winning other public works contracts in future.

9. To encourage the private sector to do the same, the Buildings Department has been issuing Practice Notes to advise Authorized Persons the need to minimize and manage C&D materials. In addition, the Department is developing an assessment system to evaluate green and innovative buildings. Under this system, credits would be given to measures to minimize C&D materials, such as the use of metal formwork, prefabrication construction and modular design. Suitable incentives like fast tracking plan processing and open commendation would then be given to those projects with high scores. Relevant professions and industries will be consulted before the scheme is finalized.

(b) Sorting of Mixed C&D Materials

10. Sorting enables the separation of inert C&D materials from wastes. Ideally, sorting should be carried out at source (i.e. at the construction sites) as this would prevent cross-contamination of the different types of materials and would also minimize costs. For Government demolition projects, on-site sorting has been made a mandatory requirement.

11. We are fully aware that site constraints may make on-site sorting difficult. To facilitate such work, we have put in place two temporary sorting facilities, one within the Southeast New Territories Landfill and another at Tseung Kwan O. The third temporary facility in Tuen Mun would start operation in August this year. We are planning to set up permanent sorting facilities together with C&D materials recycling facilities[4] or barging points[5]. We are also examining whether sorting

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[4] Sorting would be part of the recycling facilities to be set up at Tseung Kwan O and Tuen Mun. See para. 15 below.

[5] We plan to co-locate sorting facilities with the barging points at Chai Wan and Kwai Chung.

facilities can be set up within the other two landfills.

(c) Reusing Inert C&D Materials in Reclamation Projects

12. Reclamation is a major outlet for inert C&D materials. As mentioned in paragraph 3 above, the soft materials and the hard materials can be used in a reclamation project as fill materials and for building seawalls respectively.

13. We have reviewed all planned reclamation and earth filling projects with a commencement date before end-2005. With the support and joint effort of relevant bureaux and departments, most of the planned projects will be using inert C&D materials to meet 70% or more of their fill requirements. There is little scope to increase further because of engineering or other constraints. We estimate that these reclamation projects may absorb a total of 28.6 million tonnes of soft materials and 15.3 million tonnes of rocks.

14. A related and important supporting service is the provision of barging points. These are needed to minimize the traffic and environmental problems along urban roads caused by the long haulage of dump trucks carrying the materials to reclamation sites. We now have five temporary barging points[6] and will continue to make available sufficient barging points at different parts of the territory. In planning for these barging points, we will ensure that they are well-designed and well-managed to reduce all possible environmental or traffic nuisance to the neighbourhood.

(d) Recycling Hard Materials

15. Recycling is extremely important because it provides an alternative outlet for hard materials, which otherwise would displace soft fill materials in reclamation projects or take up precious landfill space. These hard materials have different uses. The highest quality excavated

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[6] They are at Sai Ying Pun, Quarry Bay, Shatin, Tseung Kwan O and Tuen Mun.

rocks can be processed into aggregates for concrete/asphalt production. We are making arrangements for such processing work to be carried out at the Shek O and Anderson Road quarries. We estimate that this measure could recycle approximately 10.3 million tonnes of rocks between mid-2002 and end-2005.

16. As regards other hard materials like broken concrete and lower quality rocks, it might be possible to use them for concrete production or as road sub-base and drainage bedding layers etc. We are now experimenting the technical viability of this measure through a series of performance tests. For this reason, we would be setting up temporary recycling plants at Kai Tak and Tuen Mun in late 2002/early 2003.

(e) Establishing Temporary Fill Banks

17. Even with the aforesaid measures to reuse and recycle inert C&D materials, we estimate that by end-2005 there will still be some 14.8 million tonnes of surplus materials that do not yet have any outlets. If nothing were done, these useful materials would have to be disposed of at landfills. This would no doubt shorten the life of the landfills.

18. To tackle this problem, we plan to establish temporary fill banks to stockpile the materials until new reclamation projects are available for accommodating them. Following a thorough site search exercise, we have identified Tseung Kwan O Area 137 and Tuen Mun Area 38 as fill bank sites. These sites are far away from residential/commercial developments and could stockpile approximately 16 million tonnes of materials between late 2002 and end-2005. We will minimize the traffic impact to nearby roads by transporting most of the materials by sea. We will also put in place measures to mitigate possible environmental impacts. We will explain to the relevant District Councils the need to establish fill banks and the mitigation measures that will be implemented.

(f) Introducing Landfill Charging

19. We firmly believe that landfill charging would be the most

effective measure to promote waste minimization, as it provides an economic incentive for waste producers to reduce C&D materials and to reuse/recycle the useful materials. We have been discussing a proposed scheme with the concerned sectors, including the construction industry, the property management industry and the waste haulers associations. We will produce a separate progress report on this subject for Members' reference as soon as we are in a position to do so.

POST-2005 SITUATION

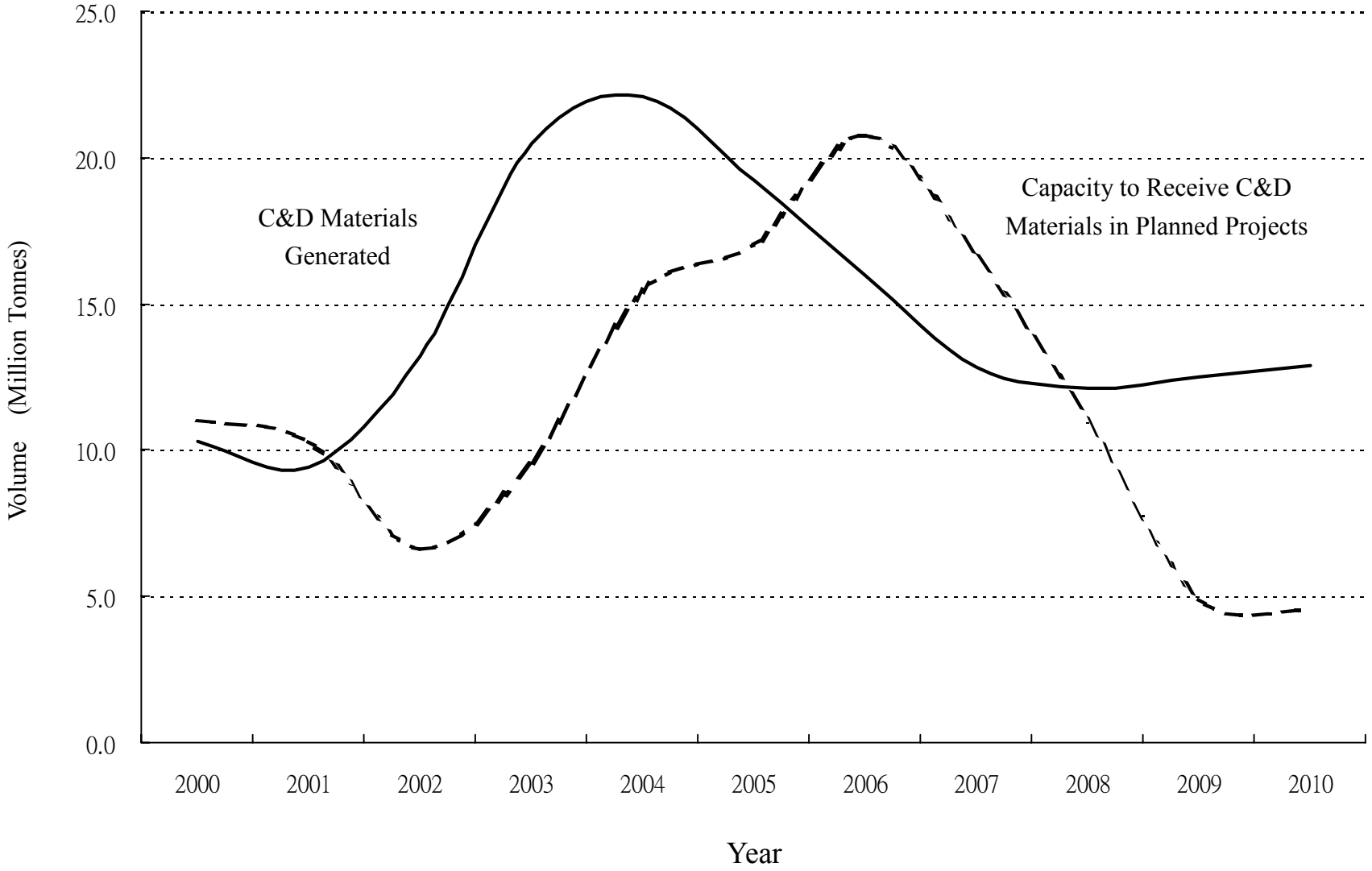
20. The situation from 2006 onwards remains very fluid at this stage because the scopes of many large-scale reclamation projects, such as Western District Development and Tung Chung & Tai Ho Development, are being reviewed. To examine the long-term arrangements to accommodate inert C&D materials in the next three decades, we have commissioned a study. The study will be completed in mid-2002. We will continue to monitor the situation closely and explore alternatives in managing C&D materials in the light of developments of the planned reclamation works and the outcome of the study.

CONCLUSION

21. Members are invited to note the measures that have been/will be taken to manage C&D materials in the coming few years. We will continue to brief Members on the progress of these measures, and look forward to Members' support as we work to implement them.

Environment and Food Bureau
May 2001

Shortfall in Capacity Between 2000 – 2010 (Best Case Scenario)



Annex