

**For discussion
on 20 December 2002**

**LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS**

Management of Construction and Demolition Materials

Purpose

This paper reports the progress in implementing the measures to tackle the problem of construction and demolition (C&D) materials.

Background

2. At the meeting on 5 June 2001, we briefed Members of the problem of C&D materials through Paper CB(1)141/00-01(3). To recap, C&D materials are a mixture of inert materials and waste arising from construction, excavation, renovation, demolition, and roadworks. Local construction activities produce about 14 million tonnes of C&D materials a year and their composition and reuse value are as follows :

- (a) about 59% are soft inert materials (like soil, earth and slurry) – these can only be reused as fill materials in reclamation and earth filling works;
- (b) about 25% are hard inert materials (like rocks and broken concrete) - some can be reused in reclamations while others can be recycled as aggregates for concrete production or as granular materials for road sub-base and drainage bedding layers; and
- (c) the remaining 16% are C&D waste (like metals, plastic, timber and packaging waste) - some can be recycled if they are not contaminated while the contaminated ones can only be disposed of in landfills.

3. Most of the inert materials were reused at reclamation projects. We did not have a problem in dealing with C&D materials before 2002 as we always had reclamation projects to absorb them. However, we informed Members in June last year that there would be a problem between mid-2002 and end-2005 because there would not be reclamation projects from mid-2002 onwards to absorb the estimated 69 million tonnes of inert materials to be generated over this period. If nothing was done, all these materials would have to be disposed of at landfills, thereby shortening the life of the three landfills by 10 years. We also informed Members of the measures that would be taken to address the problem.

4. Due to unforeseen changes in the past 18 months including deferral of some planned reclamation projects (e.g. Tung Chung and Tai Ho Development, Sham Tseng Development and Wanchai Development) and generation of additional C&D materials from other projects (e.g. Route 9, Spur Line), the size of the problem has increased. Our latest estimate is that some 73.1 million tonnes of inert C&D materials would be generated by end-2005. These materials could fill the Happy Valley Racecourse to a height of 96 storeys.

Measures Taken To Tackle the Problem

5. The following paragraphs set out the measures that we have taken to manage C&D materials :

(a) Avoiding and Minimizing C&D Materials

6. Government has been taking the lead to encourage the construction industry to adopt construction methods and materials that reduce C&D materials at source. Since 1 January 2001, all contractors of Government works projects have been required to prepare and implement Waste Management Plans. Under these Plans, the contractors are required to ensure that reuseable/recyclable materials are properly recovered and delivered to designated outlets, recycling facilities or recyclers. In addition, since August 2002, works departments have been further required to adopt measures to minimize generation and maximize reuse/recycling of

inert materials through appropriate design/construction methods at the design and planning stage of projects.

7. To further improve the effectiveness of Waste Management Plans in Government works projects, we intend to tighten up the specification for contractors to draw up their Waste Management Plans. We are also considering to include the contractors' waste management performance into the Pay for Safety Scheme to provide a financial incentive for contractors to ensure satisfactory implementation of Waste Management Plans. We aim to implement these new requirements in early 2003.

(b) Sorting of Mixed C&D Waste

8. Sorting helps separate inert materials from mixed waste for gainful use. Source separation (i.e. at construction sites) would be most desirable as it would prevent cross-contamination of different types of materials and minimize costs. On-site sorting is already a mandatory requirement for Government demolition projects. We will extend this mandatory requirement to all Government works projects in 2003.

9. To assist construction sites which have physical constraints in carrying out on-site sorting, we are examining the feasibility of setting up sorting facilities.

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

10. Reclamation projects remain the single most important outlet for inert C&D materials. We have been closely monitoring the planning and progress of reclamation/earth filling projects to ensure that they use as much inert materials as possible. Unfortunately, due to the delay and cancellation of some of the planned reclamation projects, we now estimate that by end-2005, they may only absorb 34.6 million tonnes of C&D materials (comprising 25.1 million tonnes of soft materials and 9.5 million tonnes of rocks). This is much less than the 43.9 million tonnes of C&D materials (comprising 28.6 million tonnes of soft materials and 15.3 million tonnes of rocks) estimated in June 2001.

(d) Processing/Recycling Hard Materials

11. Recycling provides an alternative outlet for hard materials, which otherwise would displace soft fill materials in reclamation projects or take up precious landfill space. Hard inert materials have different uses. The highest quality excavated rocks can be processed into aggregates for concrete/asphalt production. We have made arrangements with the Lam Tei, Shek O and Anderson Road quarries to process 14 million tonnes of rocks from Government works projects before end-2005. This is higher than the 10.3 million tonnes planned in June 2001. We will continue to make arrangements to ensure that good quality rocks are reused in a proper manner.

12. As for the lower quality hard materials, such as broken concrete and low grade rocks, most can be processed into recycled aggregates for use as road sub-base and drainage bedding layers. As these materials normally accounted for some 20% of the C&D materials generated in past years, we considered it desirable to set up recycling plants to do the processing work. The first temporary recycling plant was thus commissioned in Tuen Mun 38 in July this year. The plant would operate till October 2004. The annual operating cost is \$12 million.

13. However, the supply of suitable hard materials for recycling has been unsteady because of the varying nature of materials generated by construction activities. Notwithstanding our efforts to divert all the hard materials from Government works projects to the facility, the supply of suitable hard materials was still much lower than expected. Contrary to the normal trend of some 20%, we observed that less than 10% of the materials received in the past few months were suitable for recycling. As a result, only 43,600 tonnes of recycled aggregates have been produced for use in Government works so far. In view of the shortage in the supply of hard materials, we have put on hold our original plan to set up a second recycling plant in Kai Tak. We will closely monitor the situation and will put in place the second plant if the need arises.

14. We are committed to promote the use of recycled aggregates in

Government projects so as to set an example for others to follow. So far, we have identified some 100 public works projects that can consume a total of about 250,000 tonnes of recycled aggregates annually. Although the production of recycled aggregates is currently insufficient to meet the demand because of the inadequate supply of suitable hard materials, we will continue to identify suitable outlets to prepare for possible increase in the supply of hard materials in future. For example, Housing Department is testing how recycled aggregates can be used to replace virgin aggregates in public housing estates, while the Correctional Services Department is exploring the feasibility of mass production of concrete paving blocks using such recycled aggregates.

(e) Establishing Temporary Fill Banks

15. With the above measures, we estimate that the amount of inert C&D materials would be reduced from 73.1 million tonnes to 24.5 million tonnes. To handle these materials, we informed Members in June 2001 that two temporary fill banks would be set up to stockpile them until new reclamation projects became available. We already commissioned the first fill bank at Tseung Kwan O in October this year and will set up another one in Tuen Mun in April next year. The two fill banks could stockpile about 18 million tonnes of materials, and will likely be filled by end-2004.

(f) Introducing Landfill Charging

16. Landfill charging is an essential component of our strategy in handling C&D materials as it provides an economic incentive for developers and construction contractors to reduce C&D waste and to carry out sorting to facilitate reuse and recycling. In May and June this year, we consulted Members on our proposal to levy a landfill charge on C&D waste in the first phase. We are working on the associated arrangements and will put forward our legislative proposal to Members in the coming months.

(g) Other Measures

17. With all the above measures in place, we expect that we will still

have 6.5 million tonnes of inert C&D materials with no outlets by 2005. We are exploring all possible avenues to reuse inert C&D materials, and are now actively examining the feasibility of reusing these inert materials in reclamation projects outside Hong Kong.

The Problem Arising from the Completion of Reclamation Projects in the vicinity of SENT Landfill

18. The South East New Territories (SENT) Landfill at Tseung Kwan O has been receiving most of the C&D waste as it is most convenient for waste haulers. Since there have always been reclamation projects in the vicinity of SENT Landfill since its commissioning, we never had difficulties in ensuring that only waste went to SENT Landfill and inert materials went to the reclamation sites. However, the situation changed following the completion of the reclamation projects in Tseung Kwan O in February this year.

19. Although there were reclamation sites in other districts in the territory (e.g. Tuen Mun), some truck drivers/contractors did not want to travel the long journey to those reclamation sites. Instead, they mixed inert materials with waste and delivered the mixed waste to the SENT Landfill direct. Government currently does not have the legal authority to refuse delivery of mixed waste to landfills, irrespective of the amount of inert materials therein. Although we had repeatedly reminded waste haulers and the construction industry not to deliver inert materials to SENT Landfill, the situation persisted and SENT Landfill had to accept the mixed waste delivered to it. We have not detected similar incidents at the other two landfills.

20. Since the opening of the Tseung Kwan O Fill Bank in October 2002, the amount of mixed waste disposed of at SENT Landfill has substantially reduced and has returned to the normal level. However, we believe the problem would reappear after the Fill Bank has been filled up by end-2004. To prevent this problem from happening again, we are preparing legislative proposals to provide EPD the legal authority to refuse delivery of mixed waste with large amount of inert C&D materials to landfills. We will submit these together with the legislative proposals on

landfill charging to this Council for Members' consideration.

21. As a result of the aforesaid problem between February and October 2002, SENT Landfill received an additional 1.4 million tonnes of mixed waste, part of which were inert materials that should have gone to reclamation sites. For this reason, we are reviewing the estimates for Head 44 Sub-head 297 Fees for Operating Waste Facilities for 2002-2003. If it is confirmed that a supplementary provision is required, we will make a submission to the Finance Committee in early 2003.

The Situation after End-2004

22. As mentioned in paragraph 17, our current estimate is that there will be 6.5 million tonnes of inert materials with no outlets in 2005. The situation after end-2004 remains very fluid at this stage because the scope of many reclamation projects is being reviewed. At the same time, changes to other project proposals may also lead to changes in the amount of C&D materials generated. We are closely monitoring the situation, and will reassess the impact of these changes to the problem of C&D materials.

23. We have initiated a study to examine the long-term arrangements to accommodate inert C&D materials in the next three decades. The study will be completed in 2003. We will report the findings of the study to Members in due course.

Conclusion

24. Members are invited to note the problems encountered in managing C&D materials, as well as the measures taken to tackle them.

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