

**For discussion
on 26 April 2004**

**LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS**

**Measures to Prevent and Minimize Production of Construction and
Demolition Materials by Private Construction Works**

Purpose

This paper informs Members of the measures to prevent and minimize production of construction and demolition (C&D) materials by private construction works.

Background

2. C&D materials are a mixture of inert materials and waste arising from construction, excavation, renovation, demolition, and roadworks¹. There has been an increasing trend in the quantity of C&D materials generated from local construction activities. In 1990, only 6.3 million tonnes of C&D materials were produced. In 1995, the amount reached 11.7 million tonnes and, in 2003, the amount reached almost 19 million tonnes. This is equivalent to filling up the Happy Valley Racecourse to a height of 26 storeys.

3. Over the past years, Government has been working closely with the construction industry to reduce the generation of C&D materials. However, there were still about 19 million tonnes of C&D materials generated in 2003, of which 2.5 million tonnes (13%) were disposed of at landfills. Before, we had been relying on reclamation projects to absorb the inert materials so as to divert them from landfills. However, as many

¹ The useful inert materials comprising rocks, concrete, asphalt, rubbles, bricks, stones and earth are suitable for reuse in reclamation and site formation projects. Some of them can also be recycled for use in construction works. C&D waste comprises bamboo, plastic, timber and packaging waste, and is often mixed and contaminated. It is therefore not suitable for reuse or recycling and has to be disposed of at landfills.

planned reclamation projects were cancelled or deferred, such arrangements for handling the C&D materials are no longer sustainable. As the waste volume continues to grow, the landfills are filling up much faster than expected and are projected to last 7 to 11 years. They may be filled up much earlier, probably in 4 to 6 years, if we fail to prevent C&D materials from being disposed of there. To tackle the imminent waste problem, it is imperative to prevent and minimize production of C&D materials at source.

Waste prevention/reduction measures for construction works

4. Opportunities to prevent generation of C&D materials can be identified at different stages of construction works, including the planning, design and construction stages. Proper planning for waste reduction should be carried out before site operation. This can be done by preparing a waste management plan to identify key waste types, set out waste reduction programmes and targets, and arrange on-site sorting and proper waste disposal.

5. The adoption of appropriate construction designs also plays an important role in waste prevention. For instance, modular building designs and standardized cell layout enhance precasting of building components, e.g. facades, staircases, etc. Off-site prefabrication can reduce cut-off wastage and the use of moulds on-site. Also, flexible construction designs allowing opportunities for future adaptation of buildings could avoid generating C&D waste. For foundation works and earth projects, design for reusing excavated spoils as back-fill material to balance cut and fill could reduce the generation of excavated spoils.

6. Waste prevention considerations should also be given to construction and site management. For instance, metal formwork and scaffolding are more durable and reliable, and can be reused for many more times than the convention ones (e.g. bamboo), thus reducing waste generation. They can also be recycled at the end of their operational life. Moreover, reuse and recycling could divert C&D materials from waste stream back to the construction cycle, e.g. through balancing cut and fill, reusing items such as hoardings, formwork, scaffoldings and recyclable materials like metals, concrete and asphalt.

7. When the production of C&D materials cannot be prevented, measures should be taken to minimize waste generation. For instance, when building demolition could not be avoided, it should be designed in a way to maximize recovery of reusable and recyclable materials. The adoption of a “selective demolition methodology” can facilitate recycling of C&D materials for beneficial uses as it involves demolition and removal of waste of the same category one at a time to avoid mixing of recyclable materials with non-recyclable materials and inert with non-inert materials.

8. Government has been taking the lead on the above measures. Currently, all contractors of Government works projects are required to prepare and implement waste management plans in accordance with our specifications. In particular, they need to carry out on-site sorting and implement a trip-ticket system to ensure that different types of C&D materials go to the appropriate reception sites. We have also included environmental performance in the “Pay for Safety and Environment Scheme” so as to provide the contractors with the financial incentive to implement waste management plans and other environmental improvement measures satisfactorily.

Measures to prevent/minimize C&D materials by private construction works

9. At present, about half of the C&D materials are generated by private construction works². It is imperative to have the support and cooperation of the construction industry, particularly private developers and construction contractors, to carry out measures to prevent and minimize production of C&D materials.

10. Government has been encouraging and providing advice and assistance for the private sector to adopt measures to prevent and minimize C&D materials. For instance, the Environmental Protection Department (EPD) launched a web site to promote C&D material minimization to the industry. Together with the Hong Kong Construction Association and the Real Estate Developers Association, EPD has produced a set of publicity materials including a leaflet, posters and video for promoting waste reduction in the construction industry. The publicity package has been

² This is based on a survey carried out jointly by the Environmental Protection Department and the Civil Engineering Department in 1999-2000.

used for reaching out to various professional institutions and the construction industry. Moreover, the Buildings Department has issued a Practice Note for authorized persons and registered structural engineers, providing guidelines for waste minimization in the planning, design and construction for private developments. The Practice Note also recommends the authorized persons/structural engineers to advise their clients to require the contractors to submit a waste management plan, which is a useful tool to ensure that measures are taken during the construction stage to reduce C&D materials. The relevant departments are ready to offer them advice prior to the acceptance of the waste management plan and on the management and beneficial reuse of C&D materials.

11. For building demolition works in particular, if such is unavoidable, Government has been persuading the private developers and their contractors to plan the whole process in a thorough manner, with an aim to minimizing the amount of C&D materials requiring disposal. In this regard, there have been some encouraging developments. The Civil Engineering Department (CED) had sought the cooperation of a private sector construction company to adopt selective demolition in demolishing two defunct industrial buildings in Quarry Bay. The recyclable demolished materials were delivered to CED's barging point for transportation to the Tuen Mun recycling facility for recycling. If selective demolition had not been adopted for the project, it is estimated that about 100,000 tonnes of C&D materials would have been generated and disposed of at landfills. With selective demolition, however, only 20,000 tonnes of non-inert materials were disposed of at landfills. The 80,000 tonnes of inert materials, which otherwise would also have been disposed of at landfills, were processed into recycled aggregates (24,000 tonnes) and delivered to fill banks as filling materials for future reclamation (56,000 tonnes).

12. Moreover, the Urban Renewal Authority has also agreed to adopt selective demolition for its re-development projects as far as possible.

13. Separately, as waste management is high on Government's agenda, we have formed a Waste Sub-committee under the Advisory Council on the Environment to advise Government on possible waste reduction policies and programmes, as well as measures to handle different types of waste, including C&D waste. To dedicate special effort in encouraging and facilitating the construction industry to adopt environmental improvement

measures, a Working Group on Construction Waste has been formed under the Provisional Construction Industry Coordination Board³. The Working Group, with representatives from the industry and Government, will, among other things, pursue industry good practices and construction methods/techniques that will lead to waste reduction.

Construction Waste Disposal Charging Scheme

14. Despite our efforts mentioned in paragraphs 9-13 above, the construction industry has yet to widely adopt measures to prevent and reduce C&D materials. We consider it necessary to introduce a construction waste disposal charging scheme to provide economic incentive for the private developers and construction contractors to step up their efforts in preventing and recovering C&D materials through proper planning and implementation of appropriate measures. We estimate that the charging scheme would bring about a reduction of at least 20%⁴ of mixed C&D waste disposed of at landfills through sorting and other measures.

15. In line with the Polluter Pays Principle, we propose to charge the disposal of construction waste at landfills, sorting facilities and public fill reception facilities. The charges will be set at \$125 per tonne for landfills, about \$100 per tonne for sorting facilities and \$27 per tonne for public fill reception facilities.

16. At present, there are no sorting facilities. With the implementation of charging scheme, there would be a need for sorting facilities, particularly from small construction sites, so as to reduce the landfill charge payable. We plan to make available two sorting facilities in Tuen Mun and in Tseung Kwan O respectively to assist the construction industry to reduce waste and recycle C&D materials. Also, the proposed sorting charges will be maintained at a good relativity to the landfill charge, thereby providing a financial incentive for waste producers/haulers to go

³ The Provisional Construction Industry Coordinating Board serves as a forum for stakeholders to deliberate and forge consensus on strategic matters as well as to communicate their needs and aspirations to Government. One of its major tasks is to promote sharing of knowledge in industry good practices, innovative construction technologies and sound management techniques, including those relating to environmental improvements.

⁴ Overseas experiences show that imposing a landfill charge will bring about a 20 – 40% decrease in the amount of waste delivered to landfills.

for sorting.

17. At the meeting on 24 November 2003, we informed Members of our proposal to introduce the Waste Disposal (Amendment) (No.2) Bill 2003 into the Legislative Council (LegCo), with a view to effecting the construction waste disposal charging scheme through Paper CB(1) 385/03-04(04). Members supported the charging scheme in principle and agreed that it should be implemented as soon as possible. Subsequently, we introduced the Bill into LegCo in December 2003. LegCo has formed a Bills Committee, which had its first meeting on 14 April, to scrutinize the Bill. Subject to the passage of the Bill, we aim to implement the charging scheme in 2005.

Conclusion

18. Members are invited to note the measures to prevent and minimize production of C&D materials by private construction works.

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