LC Paper No. CB(2)1232/99-00(03)
For Discussion
On 2 March 2000

LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS

Managing Construction and Demolition Material Disposal
-Update-

INTRODUCTION

Members were last briefed on measures to manage the disposal of Construction and Demolition (C&D) material on 23 July 1999. This paper briefs Members on the progress made since then.

SURVEY ON C&D MATERIAL DISPOSAL

2. Between 22 September 1999 and 12 January 2000, the Civil Engineering Department (CED) and the Environmental Protection Department (EPD) conducted a joint survey on the C&D material[1] disposed at the landfills and the public filling areas[2]. The survey was designed to establish the source, the nature and the proportion of C&D material produced. A brief description of the survey and a summary of the results are at Annexes A and B respectively.

Annexes A and B

3. During the survey period, on average 29,700 cubic metres per day (m^3pd) of C&D material were produced, of which 21,900 m^3 were reused as public fill in reclamations. Preliminary results indicate that the public sector[3] and the private sector produced about 47% and 53% of C&D material respectively. Civil engineering projects produced about 16,320 m^3pd, 55% of the total C&D material produced, of which about 95% was reused as public fill. Building construction produced about

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1 C&D material is a mixture of inert and organic material arising from site clearance, excavation, construction, refurbishment, renovation, demolition and road works. The inert material, called public fill, is suitable for reuse in reclamation and site formation works. Some of it can also be used for recycling into material for construction. Ideally, only the organic material called construction and demolition waste (C&D waste) should be disposed of at landfills.

2 A public filling area is a designated part of a development project that accepts public fill as filling material for reclamation purpose. Disposal of public fill in a public filling area requires a licence issued free of charge by the Director of Civil Engineering.

3 For the purpose of this survey. C&D material arising from KCRC and MTRC sites was classified as material produced by the public sector.

13,380 m^3pd, 45% of the total C&D material, of which 52% was mixed C&D waste disposed at landfills. We will further assess the survey data to help formulate appropriate measures to reduce the amount of C&D material disposed at the landfills.

PUBLIC FILLING PROGRAMME

4. Despite the continued economic slowdown in 1999, the construction industry produced 7.52 million cubic metre (Mm^3) of C&D material, a 13% increase over 1998. About 5.9 Mm^3, 79% of the total C&D material produced, was reused in reclamations. At present, there are three reclamation projects receiving public fill: Tung Chung Development Phase 3A, Tseung Kwan O Area 137 Stage 2 and Pak Shek Kok Phase 2. Annexes C & D list the available public filling capacity of approved and planned reclamation projects. We expect the approved projects will provide sufficient public filling capacity till mid-2001. However, to maintain adequate public filling outlet after mid-2001, we need to advance some planned projects.

Annexes C and D

5. We briefed Members of the Planning, Lands and Works (PLW) Panel on 23 January 2000 on a proposal to advance the Tuen Mun Area 38 Stage 2 Reclamation Project. A copy of the submission to the PLW Panel is at Annex E. We would welcome Members comments. We intend to submit a funding application to the Public Works Subcommittee (PWSC) on 3 May 2000.

Annex E

6. If the proposed Tuen Mun Area 38 Stage 2, the Penny's Bay Stage 2 and other smaller reclamations proceed as planned, there should be sufficient public filling capacity up till 2003. We are examining the feasibility of advancing the public consultation process and statutory procedures of the Tung Chung and Tai Ho Development Phase 3 and 4 to allow early commencement of the project. This will allow a longer reclamation period in which to receive more public fill after 2003.

PUBLIC FILLING BARGING POINTS and C&D MATERIAL SORTING FACILITIES

7. Since the last briefing, we have established in December 1999 three temporary barging points at Sai Ying Pun, Quarry Bay and Tseung Kwan O Area 137 to provide convenient outlets for public fill and to minimise its disposal at the landfills. Another temporary barging point at Tuen Mun Area 38 will be

commissioned in May this year. Environmental, traffic and marine traffic impacts assessments for proposed long-term barging points at Chaiwan and Apleichau were completed and we will consult the Eastern and Southern District Councils shortly. A temporary C&D material sorting facility at Tseung Kwan O will be commissioned in July 2000. We have started a study to examine the feasibility of establishing a long-term barging point and a sorting facility at Kwai Chung.

MEASURES TO REDUCE C&D MATERIAL

8. The following highlights the progress on specific measures to minimise disposal of public fill at landfills -

(a) Review of Building Regulations

The Buildings Department (BD) has established a Working Group on Building Efficiency and Waste Minimisation with membership from professional organisations, government, developers and the construction industry. The Working Group will review building regulations and construction practices to identify opportunities to reduce C&D waste and protect the environment. A separate paper submitted by BD reporting on the discussion of the Working Group is circulated to Members together with this paper for discussion.

(b) Measures to reduce C&DM undertaken by the Housing Authority

A separate paper prepared by Housing Department listing the initiatives and measures taken by the Housing Authority (HA) to reduce C&D material is circulated to Members together with this paper for information.

(c) Waste Management Plans (WMP)

With effect from 1 December 1999, information on C&D material management was incorporated into the 'Environmental Implications' section of PWSC submissions. To fulfil this requirement, project proponents are required to minimise the generation and maximise the reuse of C&D material at the planning and design stages. At the construction

stage of all designated projects requiring environmental permits, contractors will be required to submit for approval a WMP giving details on measures to be taken including on-site sorting and separation, use of non-timber material, reuse and recycling, and disposals records of C&D material. The Housing Department and the Architectural Services Department will include a mandatory WMP requirement in their construction contracts starting this year. WB is also examining how best to include WMP requirements in non-designated projects.

(d) Opportunities for recycling and reuse

Annex F

Annex F lists the opportunities for recycling and reuse of inert C&D material identified by CED. CED will shortly consult the Waste Reduction Committee Task Force for Construction Industry, the Building Contractors' Committee and the Construction Advisory Board. Works Bureau (WB) and Highways Department (HyD) are examining the feasibility of selecting projects to use suitable recycled aggregates produced by the Tseung Kwan O Are 137 temporary C&D material sorting facility later this year, with the aim of testing their performance. Working groups led by Housing Department, Architectural Services Department and CED are separately reviewing the general specifications to allow greater use of recycled aggregates in housing, building and civil engineering construction contracts respectively. The Standing Committee on Concrete Technology (SCCT) is also studying the possibility of using recycled aggregates in low-strength concrete. It is beneficial to have the subject examined from different aspects of construction to maximise the recycling potential for C&D material. EFB is overseeing and co-ordinating the individual efforts.

(e) Landfill Charging

A sizeable portion of the 7,800 m^3pd of C&D waste disposed of in landfills are either avoidable or reusable. There is, however, little economic incentive for waste producers to reduce or sort the material for better use because disposal is subsidised by the public. To overcome this, Government intends to introduce landfill charges. Whilst there is a considerable degree of support for charges, there are still some who oppose such a measure. We are re-examining the detailed arrangements in an attempt to satisfy as many as possible of the concerns that have been

expressed.

(f) Landfill Extension Study

Members are aware that given the current trend of growth in the amount of waste produced, the existing landfills will be filled up within 15 years, even with the successful implementation of the various waste reduction and recycling measures. There is an urgent need to identify long term disposal options for C&D and other wastes.

In February 2000, EPD commissioned a 15-month consultancy study to -

(i) determine the long term need for additional landfilling capacity and waste disposal facilities;

(ii) recommend on how the use of available landfill void space can be optimised;

(iii) examine the feasibility of developing new waste disposal facilities.

Annex G 9. Annex G summarises the progress on other measures

10. The Waste Reduction Committee Task Force for Construction Industry has expanded its membership to include representatives from the Kowloon Canton Railway Corporation, the Mass Transit Railway Corporation and the Land Development Corporation. The Task Force has drawn up action plans covering the use of public fill, the review of techniques, specifications and standards and the Annex H development of education and training. Extracts of the action plans are at Annex H.

Environment and Food Bureau,
Planning and Lands Bureau, and
Works Bureau
March 2000

Annex A

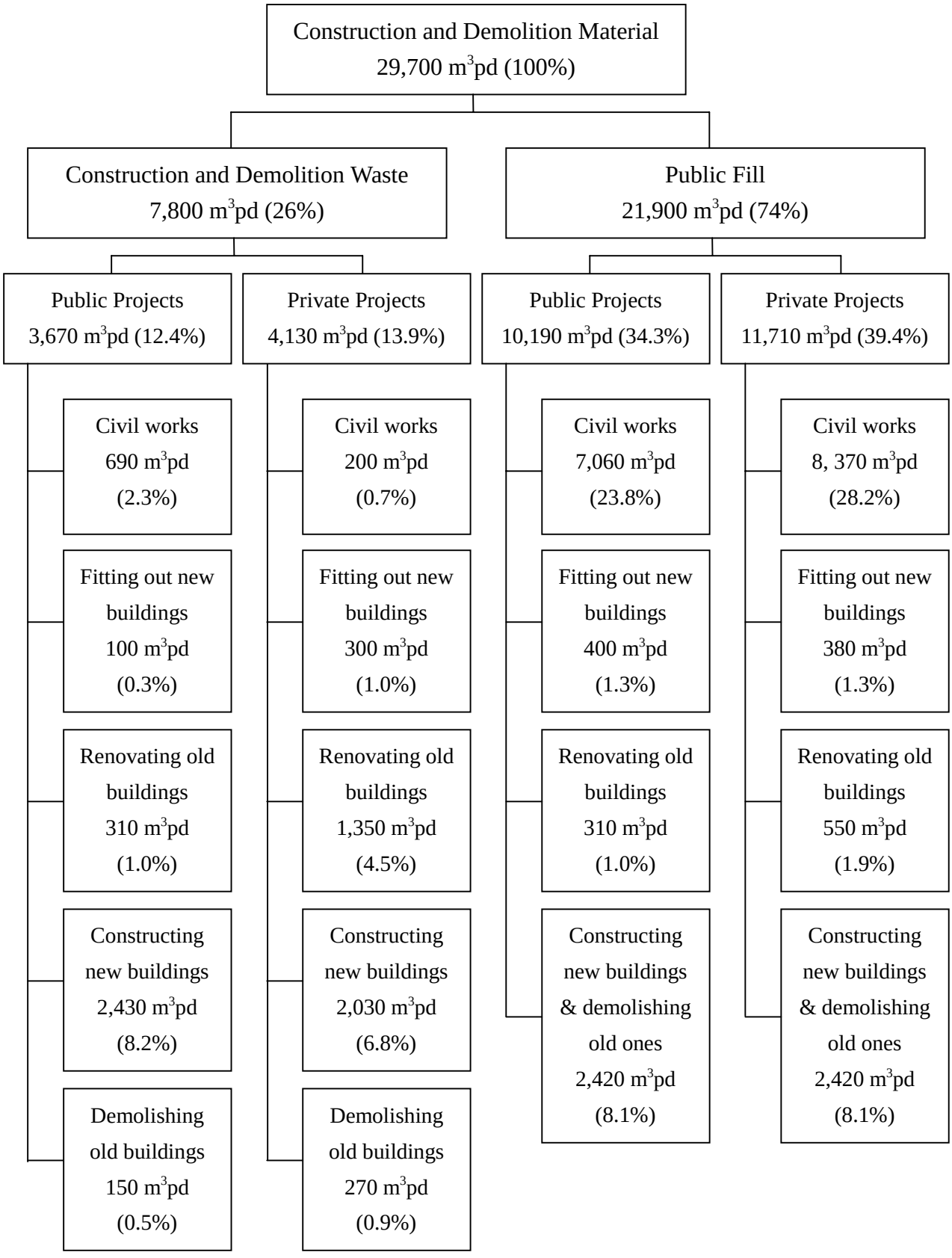
Joint survey by Civil Engineering Department and Environmental Protection Department On the Source, Nature and Proportion of Construction and Demolition Material Delivered to Public Filling Areas and Landfills

The survey was designed to be simple so that the drivers would have sufficient knowledge to quickly answer the questions. The survey was conducted at the gates and drivers were asked –

- Whether it came from a civil engineering or a building construction project?
- Whether it came from a private sector project or a public sector project?
- If it came from a building construction project, the driver was further asked:
    - Whether it came from a source that is mainly fitting-out of new buildings? Or
    - Whether it came from a source that is mainly renovating old buildings? Or
    - Whether it came from a source that is mainly constructing new buildings? Or
    - Whether it came from a source that is mainly demolishing old buildings?

Annex B

Summary of Survey Results on C&D Material Generation



Notes: *Figures quoted are averaged volume per day rounded up to the nearest 10 and percentages of the total C&D material received rounded up to the nearest 0.1. Due to rounding-off, the figures may not add up. Quantities of C&D wastes delivered to the landfills were measured in tonnes and were to cubic metres using a 1:1 factor.*

Approved Reclamation Projects and their Public Filling Capacity
已核准填海工程及其公眾填土容量

公眾填土工程項目 Public Filling Programme Items	2000 年 2 月 1 日預計公眾填土容量 (立方米) Estimated Available Public Filling capacity[1] as at 1 February 2000 (cubic metre)		預計停止接收公眾填土日期 Expected Closure Date	預計接收公眾填土日期 Expected Period for Accepting Public Fill
	填海容量 Reclamation Volume	預載容量 Surcharging Volume		
將軍澳第 137 區填海工程第二期 Tseung Kwan O Area 137 Reclamation Stage II	143 萬 1.43 M	--	2001 年 6 月 June 2001[2]	
東涌發展第三期甲填海工程 Tung Chung Development Phase 3A Reclamation	158 萬 1.58 M	109 萬 1.09 M	2000 年 8 月 August 2000	
白石角填海工程第三期第一階段 Pak Shek Kok Reclamation Stage III	89 萬 0.89 M	--	2000 年 8 月 August 2000	
佐敦道填海工程三期 Jordan Road Reclamation Phase III	35 萬 0.35 M	--	--	2000 年 5 月至 2001 年 4 月 May 2000 to April 2001
白石角填海工程二期餘下工程 Reclamation Stage II Remaining Works	195 萬 1.95 M	--	--	2000 年 8 月至 2001 年 12 月 August 2000 to December 2001
竹篙灣填海工程第一期 Penny's Bay Reclamation Stage I	200 萬 2.00 M	--	--	2001 年 3 月至 2002 年 6 月 March 2001 to June 2002
將軍澳市中心填海工程第三階段第二期 Tseung Kwan O Town Centre Reclamation Phase III Stage II	161 萬 1.61 M	60 萬 0.60 M		2000 年 11 月至 2001 年 6 月 November 2000 to June 2001

[1] Public fill is sometimes stockpiled as surcharging material on newly reclaimed land to accelerate the settlement process. After it has achieved the required settlement, the public fill will be removed and deposited in other reclamations. Since the material will eventually be used in future reclamation projects, the capacity was not considered as available capacity but used to smooth out fluctuations in the amount of public fill produced.
有時公眾填料會被貯存在新填海區的土地上作為預載的用途，以加速其沉降。一旦達致所需的沉降水平，公眾填料會被運往其它填海區作為填料。由於用作預載的公眾填料最終仍需卸置在其後的填海工程上，因此其容量不能列為真正的公眾填料容量，只能用作紓緩因公眾填料供應的波動所引發的需求。

[2] Public filling operation will be temporarily suspended between mid-May 2000 and end-November 2000 for seabed preparation.
為進行海床預備工作，公眾填土運作將於 2000 年 5 月中至 2000 年 11 月底期間暫停。

Annex D
附件 D

Planned Reclamation Projects and their Public Filling Capacity

計劃中填海工程及其公眾填土容量

計劃中公眾填土工程項目 Planned Public Filling Programme Items	2000 年 2 月 1 日 預計公眾填土容量(立方米) Estimated Available Public Filling capacity[1] as at 1 February 2000 (cubic metre)		預計接收公眾填土日期 Expected Period for Accepting Public Fill
	填海容量 Reclamation Volume	預載容量 Surcharging Volume	
北青衣填海工程 North Tsing Yi Reclamation	50 萬 0.50 M	--	2001 年 10 月至 2003 年 12 月 October 2001 to December 2003
屯門第 38 區填海工程第二期 Tuen Mun Area 38 Reclamation Stage II	370 萬 3.70 M	75 萬 0.75 M	2001 年 7 月至 2003 年 10 月 July 2001 to October 2003
竹篙灣填海工程第二期[2] Penny's Bay Reclamation Stage II	800 萬 8.0 M		2002 年 7 月至 2005 年 12 月 July 2002 to December 2005

[1] Public fill is sometimes stockpiled as surcharging material on newly reclaimed land to accelerate the settlement process. After it has achieved the required settlement, the public fill will be removed and deposited in other reclamations. Since the material will eventually be used in future reclamation projects, the capacity was not considered as available capacity but used to smooth out fluctuation in the amount of public fill produced.
有時公眾填料會被貯存在新填海區的土地上作為預載的用途，以加速其沉降。一旦達致所需的沉降水平，公眾填料會被運往其它填海區作為填料。由於用作預載的公眾填料最終仍需卸置在其後的填海工程上，因此其容量不能列為真正的公眾填料容量，只能用作紓緩因公眾填料供應的波動所引發的需求。

[2] The preliminary design could not provide the required breakdown.
初步設計未能提供有關資料。

For Discussion
On 13 January 2000

LEGISLATIVE COUNCIL
PANEL ON PLANNING, LANDS AND WORKS

Reclamation at Tuen Mun Area 38, Stage 2

PURPOSE

1. This paper briefs Members on the proposed reclamation at Tuen Mun Area 38 and explains the need to advance the reclamation work to provide an outlet for public fill.

BACKGROUND

2. In 1989, the Port and Airport Development Strategy identified Tuen Mun Area 38 as suitable for special industries. The Expanded Development Study of Tuen Mun Area 38, completed in October 1990, confirmed the feasibility of developing Tuen Mun Area 38 into a Special Industries Area (SIA). We completed an Environmental Impact Assessment (EIA) Study in December 1994. The studies confirmed that the proposed SIA Development in Tuen Mun Area 38 was both feasible and viable in terms of land use planning, traffic and transport, engineering, environmental impact and marine operation aspects.

3. The Tuen Mun Area 38 SIA project comprises reclamation of 61 hectares of land and provision of supporting infrastructure to develop land for special industries[4]. The

[4] Special industries are defined as industries that are capital intensive, land extensive and therefore unable to be accommodated in flatted factories, may require additional attention to environmental effects, may require a heavy consumption of water, generally require direct access to port facilities and preferably deep water on account of the bulk and/or unpredictable nature of raw materials handled, and may require bulk storage or warehousing facilities on site, including in some cases, goods requiring extra care or treatment in handling.

reclamation is planned to be carried out in two stages. The Stage 1 reclamation of about 28 hectares, which commenced in September 1995, is expected to complete by late January 2000. In January 1997, we submitted a paper to PWSC to seek endorsement for funds to commence the Stage 2 reclamation. A copy of the PWSC Paper PWSC(96-97)87 is at Annex A. At the meeting, some Members queried the land demand from special industries and the paper was withdrawn so that the Industry Department could provide an updated assessment on the demand for SIA for further consideration by the Subcommittee. However, this was overtaken by events when it was decided that the site should be earmarked for the development of the 4th industrial estate.

Annex A

4. In 1996, the Director of Audit conducted an audit investigation on the disposal of construction and demolition (C&D) material[5]. He concluded, among others, that the Government had not provided sufficient outlets for reuse of inert C&D material (known as public fill) for reclamation purpose resulting in considerable additional disposal costs to the Government and early depletion of the landfill capacity. He recommended that expeditious action should be taken so that the availability of public filling outlets can be maintained. In 1997, the Public Accounts Committee discussed and supported this recommendation.

PROPOSAL

5. We now propose to upgrade part of 321CL, entitled "Reclamation and servicing of Tuen Mun Area 38 for special industries – stage 2 reclamation" to Category A to cover:-

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[5] C&DM is a mixture of inert and organic material arising from site clearance, excavation, construction, refurbishment, renovation, demolition and road works. The inert material, called public fill, is suitable for reuse in reclamation and site formation works. Some of it can also be used for recycling into material for construction. Ideally, only the organic material called construction and demolition waste (C&D waste) should be disposed of at landfills.

(a) stage 2 reclamation of 33 hectares of land in the eastern half of the SIA; and

(b) construction of 550 metres long permanent seawall.

Encl. A Encl. B Details of the proposed works are shown in a plan at Enclosure A and an aerial photograph showing the latest site condition is at Enclosure B

JUSTIFICATION

6. It is the Government's policy to maximise the reuse of public fill in land formation and reclamation so as to minimise its disposal at the landfills. Despite the economic downturn, the construction industry produced 13% more C&D material in 1999 compared to 1998. In 1999, 5.9 million cubic metres (Mm^3) of public fill and 1.6 Mm^3 of C&D waste were disposed at public filling areas[6] and landfills respectively.

Annexes B & C

7. At present, there are three public filling areas operating in the territory, located at Tung Chung Development Phase 3A, TKO Area 137 and Pak Shek Kok in Sha Tin. Annexes B and C summarise the public filling capacities of approved and planned reclamation projects respectively. Because of uncertainty associated with other planned reclamation projects, there would be an acute shortfall of public filling capacity by mid-2001. We propose to use the Stage 2 Reclamation in Tuen Mun Area 38 as a public filling area to provide about 3.7 million cubic metres of public filling capacity.

8. The Waste Reduction Committee's Task Force for the Construction

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[6] A public filling area is a designated part of a development project that accepts public fill as filling material for reclamation purpose. Disposal of public fill in a public filling area requires a licence issued free of charge by the Director of Civil Engineering.

Industry also recommended the early start of the reclamation to provide an outlet for public fill. If the Stage 2 Reclamation does not proceed, by 2001 the available public filling capacity will not be able to handle the territory's total demand[7]. If all the 3.7 Mm^3 of public fill were disposed in landfills, it would cost the taxpayers about $ 833 million[8] and reduce the life of the landfills by about 7 months.

9. From a district planning perspective, the site would have to be reclaimed at some stage in future. An extract from the approved Tuen Mun Outine Zoning Plan is at Enclosure C. An early reclamation could allow more time for the formed site to consolidate thereby reducing the residual settlement encountered in future development. Even if HKIEC decided not to proceed with the 4th industrial estate at Tuen Mun Area 38, the land remains zoned as SIA use.

Encl. C

10. If the proposed Stage 2 Reclamation could proceed as we now propose, the time allowed for public filling will be about 28 months and the public filling capacity can be increased from 1.2 million cubic metres to 3.7 million cubic metres due to the longer filling period. Public fill collected from other parts of the territory will also be barged in for reclamation to meet the construction programme without adversely impacting upon the surrounding road network.

Fourth Industrial Estate

11. In 1997, the Chief Executive announced in the Policy Address that a site for a fourth industrial estate had been identified in Tuen Mun. The development project was

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7 The available public filling capacity for any one year depends on the programme of reclamation projects upgraded to Category A of the Public Works Programme. It is estimated that the amount of C&D material produced in 2001 is about 6.1 Mm^3. About 5 Mm^3 (i.e. 82%) are public fill suitable for reuse in reclamation against an available public filling capacity of only about 3 Mm^3.

8 The estimate was based on one cubic metre of public fill weighs about 1.8 tonne and a unit rate of $125/tonnes which include the capital and operation cost for disposing waste at landfills.

expected to be completed by 2004 when the existing land bank of the Hong Kong Industrial Estates Corporation (HKIEC) was expected be exhausted. The tentative programme for the Tuen Mun Area 38 Stage 2 Reclamation project was to commence in late 2001 to provide the remaining 33 hectares of land in addition to those reclaimed under Stage 1 for the development of the proposed 4th Industrial Estate. The HKIEC is currently conducting a consultancy study on the role and operation of its industrial estates. The study is expected to be completed in early 2000.

12. In the past the HKIEC has undertaken the site formation works for its industrial estates. Although HKIEC could proceed with the reclamation works as scheduled in late 2001, this would allow only 9 months for receiving public fill because of the need to match the reclamation programme with the land disposal programme. This would involve extensive use of marine sand in lieu of public fill in both the reclamation and surcharge mound. This would not only substantially reduce the use of public fill, but also create a disposal problem at the end of the construction for the marine sand used to build the surcharge mound.

COST

13. The estimated cost of the proposed works using public fill is about $379 million at December 1998 prices. This may be compared with the estimated cost of completing the project using marine sand and a portion of public fill, i.e. $ 404 million at December 1998 prices. We will submit a paper for the consideration of PWSC on 17 May 2000.

PROGRAMME

14. Subject to funding approval, we propose to commence the Stage 2 Reclamation contract in October 2000. The Stage 2 Reclamation contract is estimated to complete in mid 2004. This would allow sufficient time for completion of the infrastructure works to be undertaken by HKIEC, if that proves necessary.

PUBLIC CONSULTATION

15. We gazetted the proposed reclamation on 19 February 1993 under the Foreshore and Seabed (Reclamations) Ordinance. We received three objections to the proposal. After discussing their concerns, two objectors withdrew their objections. One objector did not withdraw his objection. The then Governor-in-Council overruled this objection and authorised the reclamation on 10 June 1994.

16. We consulted the Environmental Improvement and District Development Committee of the Tuen Mun District Board on the Stage 2 SIA reclamation and associated infrastructure on 6 September 1996. The Committee raised no objection to the proposed works.

ENVIRONMENTAL IMPLICATIONS

17. We completed an Environmental Impact Assessment (EIA) in 1994 and concluded that the proposed reclamation works would have no adverse long-term impact on the environment. The Advisory Council on the Environment (ACE) also endorsed the EIA

report on 20 February 1995. We would adopt a reclamation design that will cause minimal disturbance to the seabed to reduce water quality impacts. For short-term impact during construction, we will control noise, dust, water quality and site run-off nuisance within established standards and guidelines through the implementation of pollution control measures in the works contracts.

Planning and Lands Bureau and
Environment and Food Bureau
January 2000

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Annex C
附件 C

Planned Reclamation Projects and their Public Filling Capacity

計劃中填海工程及其公眾填土容量

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1 Public fill is sometimes stockpiled as surcharging on newly reclaimed land to accelerate the settlement process. After it has achieved the required settlement, the public fill will be removed and deposited in other reclamation. Since the material will eventually be used in future reclamation projects, the capacity was not considered as available capacity but use to smooth out fluctuation in the amount of public fill produced.
有時公眾填料會被貯存在新填海區的土地上作為預載的用途，以加速其沉降。一旦達致所需的沉降水平，公眾填料會被運往其它填海區作為填料。由於用作預載的公眾填料最終仍需卸置在其後的填海工程上，因此其容量不能列為真正的公眾填料容量，只能用作紓緩因公眾填料供應的波動所引發的需求。

2 The Public Works Sub-committee has endorsed the proposed reclamation project on 5 January 2000 and the Finance Committee will discuss the funding application on 21 Jnauary 2000.
工務小組委員會於 2000 年 1 月 5 日的會議上已通過建議批准該項填海計劃，而財務委員會將於 2000 年 1 月 21 日的會議上討論有關的撥款申請。

3 The preliminary design could not provide the required breakdown.
初步設計未能提供有關資料。

Annex F

Opportunities for Greater use of Recycled Inert Construction and Demolition Material

Opportunities	Planned Action
As hardcore, fine fill material and sub-base material	We are reviewing the general specifications to see if recycled aggregates are suitable to be used for these works. We are examining the feasibility of conducting pilot projects to assess the actual performance. We will consider how best to promote the use of recycled aggregate and to facilitate construction industry's participation.
Recycling reclaimed bituminous material	Highways Department is examining the feasibility to recycle reclaimed bituminous material as sub-base material in roadworks and in constructing flexible pavements.
As granular bedding and filter material	Further studies would be required to examine the techniques to produce filter grade recycled aggregate.
As Coarse aggregate in low strength non-structural concrete	We are reviewing the specifications to allow the use of recycled aggregate in low strength non-structural concrete. Further assessment and monitoring would be required to monitor the durability and performance of the concrete. We will also consider how to facilitate the participation of ready mix concrete manufacturers.

Progress on Specific Measures to Reduce C&D Material

Actions and Measures	Progress
Avoid or Reduce C&D material generation	
• Works Bureau (WB) and the Fill Management Committee (FMC) will endeavour to ensure that public works projects achieve a balance of cut and fill as far as possible and maximise the reuse of excavated material.	Project proponents are required to examine means to minimise C&D material produced at the planning and design stage as part of the Environmental Impact Assessment process and to report the same in the Environmental Implications section of their PWSC paper.
• Buildings Department (BD) will issue a Practice Note for Authorised Persons and Registered Structural Engineers on minimising construction and demolition waste in private construction projects after consulting the Building Sub-committee of the Land and Building Advisory Committee in July 1999.	A circular letter on Management of Construction and Demolition Waste was issue to all authorized persons and registered structural engineers on 12 August 1999.
• BD will set up a Working Group to examine the feasibility of the "Empty Shell" approach (or some mixed approach) including the administrative, financial, statutory, technical and social implications. The Working Group will recommend a suitable way to achieve both objectives of reducing C&D waste and ensuring fitness for occupation.	Working Group was established. A paper reporting on the progress was separately circulated to Members of LegCo Panel on Environmental Affairs.
• The Waste Reduction Committee and its Construction Industry Task Force are reviewing existing practices, standards, specifications, statutory requirements, etc. to identify opportunities for avoidance and minimisation of C&D material.	A preliminary Action Plan was prepared. Further consultation to finalise the implementation time frame.
Recycling and Reuse of C&D material	
• A temporary sorting facility is in operation in the South East New Territory Landfill (SENT) until 2001 to recover inert material from C&D material received before the waste is disposed in the landfill. We plan to establish two	Planning for these facilities are on schedule. We are studying the feasibility of establishing another C&D material sorting facility in western

Actions and Measures	Progress
C&D material sorting facilities, one each at Tseung Kwan O and Chai Wan by mid 2000 and 2002 respectively. These facilities will be able to handle about 2000 tonnes of mixed C&D waste per day. This would separate the C&D waste from inert material before disposal at landfills. Sites for more sorting facilities to provide reasonable access across the territory are being sought.	New Territories.
• We are reviewing the programme of planned reclamation and site formation projects to identify opportunities for early commencement so as to maximise the reuse of public fill.	A working group with membership from CED, Territory Development Department and Planning Department was formed under the Public Filling Subcommittee to regularly review the progress of the planned projects
• We have and will continue to stockpile public fill, where it is practicable, on newly reclaimed land as temporary buffer storage. We are considering the economic viability of setting up a 'fill bank' and searching for possible sites for this.	A temporary buffer storage was established useing land formed under the Tseung Kwan O Area 137 Stage 1 reclamation. We will continue to search for other suitable sites for buffer storage.
• WB to issue a guideline on construction site waste management. Existing material specifications to be reviewed for opportunities for wider use of recycled C&D material.	The guidelines are being finalised. The review on material general specifications is scheduled to be completed by June 2000 and the recommendations finalised by August 2000
Management of C&D material Disposal	
• To extend the public works contracts' "Trip Ticket System[1]" to all construction sites to better manage the disposal of C&D material to landfills, public filling areas and other legal outlets	The Housing Department has adopted the system and the KCRC and MTRC have indicated that they will consider introducing similar systems in future projects. The Land Development Corporation is also studying the feasibility.

Actions and Measures	Progress
Institutional Changes	
• It is intended that, upon the establishment of the Environment and Food Bureau on 1 January 2000, responsibilities for C&D material management and landfill management will be consolidated.	The existing Public Filling Subcommittee will be upgraded to become the Public Fill Committee (PFC). The PFC will report to the Secretary for Environment and Food on issues of managing and recycling of C&D material, and the use of land-based fill material for site formation. PFC will work with the Marine Fill Committee (reorganised from the existing Fill Management Committee) to control the use of marine sand for reclamation.

[1] Unless exempted by WB, the Trip Ticket System requires proponent of public works projects to identify in the planning stage, designated outlets for public fill and C&D waste it produce and to maintain records for the proper disposal during construction.

Preliminary Action Plan of the Waste Reduction Committee Task Force for Construction Industry

Public Fill Working Group

The government should be urged to expedite planned reclamation projects including Tuen Mun Area 38 Phase 2, Penny's Bay Reclamation, Tung Chung Reclamation and maximise the use of public fill in these works. While we will monitor the situation, the WRC may need to follow up with the Administration on the progress of some of these projects, such as Tuen Mun Area 38 Phase 2 and Green Island Reclamation. The Secretariat of the Fill Management Committee would be requested to review and enhance their current information on fill material presented in their database.

Techniques, Specification & Standard Working Group

This working group will liaise with other working groups established by various government departments on reviewing :

- the use of recycled aggregate and asphalt,
- the specifications for civil engineering works,
- the specifications of building works,
- the Building Regulations
- the handbook on C&D material management

Planning/Design/Research

- Material and Techniques : Explore materials and techniques to replace traditional labour intensive site trades, which generate waste. The use of proprietary sprayed plasters and "dry" construction to be extended.
- Flat Finishes and Fittings : Review the regulations on construction works to emphasis waste reduction. A relaxation of regulations may encourage developers to provide a "basic shell" with residents providing their own fitting out to their choice. Proposals for greater choice to be considered. The working group under Building Department (BD) is now examining this.

Construction

- Holding Area for Sorting C&D Material : Government to consider holding area to receive C&D materials from all contractors (at a chargeable rate) and employ re-cycling contractors for sorting.
- Use of Recyclable Material/Recycled Material : The use of recycled aggregate will be examined by the Standing Committee on Concrete Technology (SCCT). Planning and trials should commence now so that measures are in place before sources of aggregate dry-up. Consideration should be given to stockpiling and on-site crushing as an aggregate source. Consideration could be given to the mandatory use of crushed concrete in public works contracts initially for filling and sub-base works.
- Use of Pulverized Fly Ash: Alternative specification to allow optional use of Pulverized Fly Ash given uncertain availability. Subject is being examined by SCCT.

- Recycling and Exchange of Materials : Extending data on fill materials to smaller projects to encourage exchange of materials between site formation and building contractors, possibly by increased "networking". Public works contracts should be examined initially.
- Waste Management Plan : Specification requirement for contractors to submit waste management plan to be pursued for all public works contracts.

Education Working Group

Training for operatives

- EPD to provide seminar to the students of Construction Industry Training Authority (CITA).
- EPD to prepare training materials to CITA's instructors.
- EPD to work out with CITA to organise seminars to the students on a periodic basis.
- HKCA, being a member of CITA's syllabus review panel, should influence CITA to incorporate waste minimisation concepts in CITA's courses.
- Consideration should be given to have awareness on C&D waste minimisation issues incorporated in the "Green Card" program for construction site workers.

Training for professionals

- To set up a web-site so that related professional can exchange relevant information on waste minimization in the construction industry. EPD should strengthen their web-site for such purpose.
- To offer incentive schemes such as green building/Wastewise award to professional and contractors.
- To hold a forum in the autumn of 2000 with participation from all concerned parties, including developers, contractors and other professionals. Overseas experts in the field would be invited to share their experience.

Training for developers and contractors

- To promote the awareness of key developers and contractors on the waste management issues. The persuasion from government figures at high levels is considered essential. EPD should directly liaise with developers and contractors.
- Mandatory good waste management practices in contract documents, especially in government projects are considered essential to developers/contractors to implement waste minimisation. The Housing Authority, ArchSD and other departments should take the lead in this regard.
- REDA and HKCA should explore more channels for promoting waste reduction to their members.