

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **HEAD 705 – CIVIL ENGINEERING**

#### **Environmental Protection – Refuse Disposal**

#### **168DR – Refurbishment and Modification of Island East Transfer Station**

Members are invited to recommend to the Finance Committee the upgrading of **168DR** to Category A at an estimated cost of \$56.5 million in money-of-the-day prices for the refurbishment and modification of the Island East Transfer Station associated with the continuation of its operation upon the expiry of the existing contract.

### **PROBLEM**

The operation of the Island East Transfer Station (IETS) under the existing contract will expire on 15 November 2007. We need to continue the operation of the IETS for bulk transfer of waste from the Hong Kong Island to the West New Territories (WENT) Landfill for final disposal.

### **PROPOSAL**

2. The Director of Environmental Protection, with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade **168DR** to Category A at an estimated cost of \$56.5 million in money-of-the-day (MOD) prices for the refurbishment and modification of the IETS associated with the continuation of the IETS operation upon the expiry of the existing contract.

**/PROJECT.....**

## PROJECT SCOPE AND NATURE

3. The scope of the project comprises –
  - (a) design and construction for the refurbishment and modification of the waste transfer station –
    - (i) civil engineering and building works for improvement of site boundary walls and site entrance;
    - (ii) landscaping works;
    - (iii) modification to electrical and mechanical equipment;
    - (iv) replacement of mechanical compactor; and
  - (b) design and construction of a pilot waste recycling facility.

— The proposed works will be carried out at the IETS. A location plan is at Enclosure.

4. We plan to commence the proposed works in November 2007 for completion in December 2008.

## JUSTIFICATION

5. At present, about 863 tonnes per day of refuse collected from the Eastern and Wan Chai District areas are delivered to the IETS for compaction and containerisation, followed by marine transfer to the WENT Landfill for disposal. The operation of the IETS during the past 14 years has enabled bulk transfer of refuse in an environmentally acceptable manner and greatly reduced the corresponding potential traffic and environmental nuisances caused to the public. As the existing contract for the operation of the IETS will end on 15 November 2007, we had completed a review on the extension of IETS operation in January 2005. The review concluded that continual operation of the IETS was necessary and crucial for efficient transfer of refuse originating from the Hong Kong Island to the disposal facilities. It was also considered that opportunity should be taken to develop a pilot waste recycling facility at the IETS to recover recyclable materials as well as to obtain local data and experience for progressive development of centralised waste recycling facilities in Hong Kong.

6. We commissioned a study in January 2006 to examine the feasibility and requirements for continuing the waste transfer service and the development of a pilot recycling facility at the IETS. We identified that some refurbishment and modification works are required to enhance the operational efficiency and environmental performance of the waste transfer service. These include upgrading of the site boundary walls and site entrance to improve traffic flow and safety, additional landscaping work and modification of electrical and mechanical equipment to improve environmental performance. We also identified that some existing mechanical compactors are becoming worn out which would increase the risk of breaking down in the coming years. To ensure uninterrupted waste transfer operation, we propose that provision be made for the replacement of one compactor as and when necessary during the IETS follow-on operation period.

7. We also propose that a pilot waste recycling facility of about 30 tonnes per day capacity be incorporated in the IETS to recover recyclable materials from mixed waste received. This pilot facility could share use the existing IETS reception and transportation facilities as well as the pollution control equipment.

8. The pilot waste recycling facility would be housed inside a building equipped with necessary pollution and odour control provisions at the existing open storage area of the IETS site. It would employ biological and mechanical technologies to stabilise the mixed waste and to recover useful materials, such as metals and plastics, which could be delivered to the recycling industries for recycling. The residual waste from the pilot facility would be of smaller volume, and would be further compacted and delivered to the landfill for disposal. Apart from the reduction in volume, considerably less green house gases would be produced at the landfill when compared with that generated by untreated raw waste. The performance of the pilot facility will be closely monitored. If it is considered necessary and appropriate to increase the recycling capacity, we will require the contractor to extend the pilot facility by installation of additional recycling modules. Provision for such possible extension up to a maximum of 30 tonnes per day capacity has been allowed for in the layout of the pilot facility and it will also be specified in the contract so that there would be sufficient design allowance and flexibility for extension without any need for major modification of the IETS.

## **FINANCIAL IMPLICATIONS**

9. We estimate the capital cost of the project to be \$56.5 million in MOD prices (see paragraph 10 below), made up as follows –

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	<b>\$ million</b>	
(a) Design and construction for the refurbishment and modification of waste transfer station	11.0	
(i) civil engineering and building works	2.0	
(ii) landscaping works	0.5	
(iii) electrical and mechanical equipment	1.0	
(iv) provision for replacement of mechanical compactor	7.5	
(b) Design and construction of a pilot waste recycling facility	40.0	
(c) Independent assessor's fees	1.0	
(d) Contingencies	3.8	
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Sub-total	55.8	(in September 2006 prices)
(e) Provision for price adjustment	0.7	
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Total	56.5	(in MOD prices)
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10. Subject to approval, we will phase the expenditure as follows –

<b>Year</b>	<b>\$ million (Sept 2006)</b>	<b>Price adjustment Factor</b>	<b>\$ million (MOD)</b>
2008 – 2009	21.0	1.00649	21.1
2009 – 2010	29.8	1.01656	30.3
2010 – 2011	5.0	1.02672	5.1
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	55.8		56.5
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11. We have derived the MOD estimates on the basis of the Government's latest forecast of trend rate of change in prices of public sector building and construction output for the period 2008 to 2011. We intend to implement the proposed works and the follow-on operation of the IETS under a Design-Build-and-Operate contract arrangement. The contractual operation period will be 4.5 years with an option to extend up to 8 years. We will review and determine the longer term requirements of the IETS prior to the end of the 4.5 year contractual operation period<sup>1</sup>.

12. The annual recurrent expenditure mainly on the operating cost of the waste transfer operation including the proposed pilot waste recycling facility is estimated at \$73 million per year.

13. The contract management, supervision and environmental monitoring during the operation stage will be undertaken by the existing EPD staff currently overseeing the contract of IETS. No additional staff and other recurrent costs will be required.

## **PUBLIC CONSULTATION**

14. We consulted the Environment and Hygiene Committee of the Eastern District Council on 16 November 2006 and 11 January 2007. Members expressed their support for the project on 11 January 2007.

15. On 26 February 2007, we consulted the Legislative Council Panel on Environmental Affairs on the proposed refurbishment and modification of IETS. Members supported the project and requested for supplementary information on overseas experience in the operation of waste recycling facilities, a comprehensive waste recycling plan and the potential for extension of the pilot facility. We have provided the information to Panel Members in an information paper circulated on 2 April 2007 and included the relevant information in this paper.

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<sup>1</sup> The 4.5 years operation period is to tie in with the expiry of the Island West Transfer Station such that the Government may have the flexibility to consider the contracts of the two transfer stations on Hong Kong Island together.

## ENVIRONMENTAL IMPLICATIONS

16. The existing IETS, which commenced operation before April 1998, is an exempted project under the Environmental Impact Assessment Ordinance (Cap. 499). For the proposed refurbishment and modification works which include the pilot waste recycling facility, we completed an Environmental Review (ER) in February 2007. The ER concluded that the proposed works, with implementation of appropriate design and mitigation measures, would unlikely result in adverse environmental impacts.

17. Under this project, we will implement additional landscaping works and modify the electrical and mechanical equipment to further enhance the environmental performance of the IETS. We will increase the frequency of site cleansing and also the frequency of environmental monitoring and audit to ensure the environmental performance of IETS is in full compliance with the contract and statutory requirements. During the design and construction stage, we will require the contractor to appoint an independent assessor to ensure that the environmental performance of the works comply with the contract requirements. Throughout the contract period, we will withhold payment to the contractor if there is any non-compliance with the environmental performance requirements.

18. We have considered measures such as to keep the level of the foundation as shallow as possible so as to minimise the amount of excavation materials in the planning and design stages to reduce the generation of construction and demolition (C&D) materials where possible. In addition, we will require the contractor to reuse inert C&D materials (e.g. excavated materials reused as backfill) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of C&D materials to public fill reception facilities. We will encourage the contractor to maximise the use of recycled or recyclable C&D materials, as well as the use of non-timber formwork to further minimise the generation of construction waste.

19. We will also require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. We will ensure that the day-to-day operations on site comply with the approved WMP. We will control the disposal of public fill, C&D materials and C&D waste to public fill reception facilities, sorting facilities and landfills respectively through a trip-ticket system. We will require the contractor to separate public fill from C&D waste for disposal at appropriate facilities. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

20. We estimate that the project will generate about 1 570 tonnes of Construction and Demolition (C&D) materials. Of these, we will reuse about 900 tonnes (57%) on site, deliver 450 tonnes (29%) to public fill reception facilities<sup>2</sup> for subsequent reuse, and 160 tonnes (10%) to sorting facilities in order to retrieve the inert portion for use as public fill. In addition, we will dispose of 40 tonnes (3%) at landfills and will recover around 20 tonnes (1%) of metals with estimated value of \$40,000 for sale to recyclers. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites, together with the cost for handling the materials at sorting facilities is estimated to be \$33,150 for this project ( based on a unit cost of \$27/tonne for disposal at public fill reception facilities, \$100/tonne at sorting facilities and \$125/tonne<sup>3</sup> at landfills).

## LAND ACQUISITION

21. The project does not require any land acquisition.

## BACKGROUND

22. There are six refuse transfer stations<sup>4</sup> (RTSs) and seven small refuse transfer facilities serving outlying islands in Hong Kong. Municipal solid waste (MSW) is collected and delivered to the RTSs by refuse collection vehicles (RCVs), where waste is compacted and containerized and then transferred to landfills by either marine or land transport<sup>5</sup>. Transportation of waste in bulk to from RTSs to remote landfills greatly reduces the traffic and environmental nuisances associated with RCVs moving on the road as well as the transportation cost. The existing IETS is one of the two RTSs serving Hong Kong Island<sup>6</sup>.

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<sup>2</sup> Sorting facilities and public fill reception facilities are specified in Schedule 3 and Schedule 4 respectively of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of public fill in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

<sup>3</sup> This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m<sup>3</sup>), nor the cost to provide new landfills, (which is likely to be more expensive) when the existing ones are filled.

<sup>4</sup> The Kowloon Bay Transfer Station was converted into a recycling centre in 2005.

<sup>5</sup> The majority of MSW were collected by the Food and Environmental Hygiene Department (FEHD) or their contractors and delivered to the RTSs. Some of the MSW collected by private waste collectors were also delivered to RTSs. In 2005, The average daily waste handled by RTSs was 5 400 tonnes and more than 92% were collected by FEHD and their contractors.

<sup>6</sup> The other RTS serving Hong Kong Island is the Island West Transfer Station (IWTS). In 2005, 1 896 tonnes per day of waste were generated from Hong Kong Island. Out of which 1 189 tonnes were publicly collected waste and 707 tonnes were privately collected waste and they were delivered to IETS, IWTS and South East New Territories (SENT) Landfill. The publicly collected waste and private collected waste delivered to IETS were 776 and 87 tonnes respectively.

23. We included **168DR** in Category B in October 2006.

24. The proposed works will not involve any tree removal.

25. We estimate that the proposed project will create 63 jobs (57 labourers and another six professional/technical staff) providing a total employment of 730 man-months during the design and construction stage, and will continue to provide 78 existing jobs (65 professional/technical staff and 13 labourers) plus three additional jobs (three labourers) during the operation stage.

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Environment, Transport and Works Bureau  
April 2007



