

# Report No. 46 of the Director of Audit — Chapter 3

## MAINTENANCE OF PUBLIC MARINE FACILITIES

### Summary

1. The Civil Engineering and Development Department (CEDD) is responsible for constructing and maintaining public marine facilities such as piers and landings. The CEDD maintains 65 public piers, 49 government piers, 30 ferry piers and 189 landings. It employs term contractors for carrying out maintenance works and at times awards separate contracts for major improvement works of a non-recurrent nature.

#### Monitoring of maintenance cost

2. *Need to compile management reports.* The CEDD's total annual maintenance cost of public marine facilities increased from \$12.2 million in 1995-96 to \$108.5 million in 2004-05 (an increase of 789%). In view of the large maintenance expenditure, the Audit Commission (Audit) considers that the CEDD needs to compile comprehensive management reports for cost monitoring. *Audit has recommended that the Director of Civil Engineering and Development should compile comprehensive management reports to facilitate the monitoring of the maintenance cost of public marine facilities.*

3. *Need to monitor implementation of new information system.* Audit's examination revealed that the CEDD basically maintained the information related to maintenance of marine facilities in manual form. In 2001, the CEDD commenced to develop a Port Maintenance Information System (PMIS), targeted for completion in March 2004. Due to a change in the arrangements for procuring information technology services in 2003, the system was only launched in February 2006. *Audit has recommended that the Director of Civil Engineering and Development should closely monitor the implementation of the PMIS.*

4. *Room for improvement in the inventory of landing facilities.* Audit's examination revealed that the CEDD's inventory of landing facilities had inadequacies, namely the inventory was not promptly updated, was not complete and contained improper classifications. Audit also noted that the CEDD did not include information about the location and facilities of public piers and landings in its website. *Audit has recommended that the Director of Civil Engineering and Development should take action to ensure that the*

*inventory of public marine facilities is complete and up-to-date, and include an updated list of public piers and landings in the CEDD's website for public information.*

### **Monitoring of pier maintenance**

5. ***Need to promptly update the priority list.*** As part of its preventive maintenance strategy, the CEDD carries out periodic visual inspections of piers. After each visual inspection, the CEDD calculates a deterioration index for the pier inspected, indicating the degree of deterioration. Based on the deterioration indices of the piers, the CEDD draws up a priority list for selecting piers for detailed investigations. The findings of the detailed investigations form the basis for planning future repairs. Audit's examination revealed that the priority list was not promptly updated after structural repair works and after the decommissioning of piers. *Audit has recommended that the Director of Civil Engineering and Development should promptly update the priority list after structural repair works and when a pier is no longer maintained by the CEDD.*

6. ***Need for separate maintenance strategies for solid piers and prestressed concrete piers.*** Audit's examination revealed that, comparing with reinforced concrete piers, the risk of corrosion of solid piers was low because they had no steel reinforcement. Audit also noted that the steel reinforcement of piers constructed using the prestressing technique was highly susceptible to corrosion. *Audit has recommended that the Director of Civil Engineering and Development should adopt different maintenance strategies for reinforced concrete piers, prestressed concrete piers and solid piers.*

7. ***Areas for improvement in conducting detailed investigations.*** Between 2003 and 2005, the CEDD conducted 24 detailed investigations. Audit's examination revealed that the CEDD did not conduct detailed investigations according to the ranking of the piers in the priority list, and did not update the pier deterioration index after a detailed investigation. *Audit has recommended that the Director of Civil Engineering and Development should improve the arrangements for conducting detailed investigations by making reference to the deterioration indices as far as possible, and by updating promptly the deterioration index after the completion of a detailed investigation.*

8. ***Need to take into account utilisation and future use.*** Due to the development of land transport, the demand for waterborne transport is diminishing. Audit's examination revealed that the utilisation of some piers would be affected by planned future developments. *Audit has recommended that the Director of Civil Engineering and Development should consult the managing department concerned before carrying out major maintenance works of a pier, particularly if there are indications that its utilisation is low or its future use is in doubt.*

## **Implementation of improvement works projects**

9. ***Need to invite separate tenders for improvement works projects.*** As laid down in the CEDD's Project Administration Handbook, new works projects funded by non-recurrent votes are normally subject to separate tender procedures, although maintenance term contractors may be used under certain conditions specified in the Handbook. Audit's examination revealed that, of the 40 improvement works projects on public marine facilities carried out by the CEDD in the past ten years, 31 (78%) were under term contracts. Audit also noted that the actual expenditures incurred under its three term contracts exceeded the estimated values by 73% to 117%. *Audit has recommended that the Director of Civil Engineering and Development should consider inviting separate tenders (instead of using term contractors) for improvement works projects funded by the non-recurrent vote, in particular: (a) projects involving large-scale construction works with a well-defined scope and a detailed design; (b) projects with works items of significant value that do not have scheduled rates in the term contracts; and (c) projects of a specialised nature.*

10. ***Need for contractors to provide required number of quotations.*** As laid down in the CEDD's term contracts, for the supply of materials based on the net invoice prices, the contractors had to submit quotations of at least five suppliers to the CEDD for assessment. Audit's examination of the 23 works orders for the supply of plastic fenders (based on the net invoice prices) between January 2002 and September 2004 under the three term contracts revealed that, in all 23 cases, there were less than five quotations submitted to the CEDD. *Audit has recommended that the Director of Civil Engineering and Development should take action to ensure that the required number of quotations is submitted by term contractors for procuring net-invoice-price items.*

11. ***Need to vigilantly examine unit cost of plastic fenders.*** Audit's examination of the 23 works orders for the supply of plastic fenders revealed that there were wide variations in the unit costs, ranging from \$19,483 per cubic metre to \$34,382 per cubic metre. Audit noted that the CEDD assessed the quotations based on the total invoice costs and did not compare the unit costs with those under previous works orders or under other contracts. *Audit has recommended that the Director of Civil Engineering and Development should, when assessing the quotations submitted by a term contractor for procuring a net-invoice-price item, calculate its unit cost so that a cost comparison with similar items supplied under other works orders or other contracts can be made.*

12. ***Need for a cost-effective fender upgrading programme.*** In view of the high installation cost of plastic and rubber fenders, Audit considers that the CEDD should take into account the utilisation and future use of the landing facilities (by consulting the managing departments) in formulating the fender upgrading programme. For landing facilities with low utilisation, or if the future use of the landing facilities is dependent on

future development, they should be given a low priority. *Audit has recommended that the Director of Civil Engineering and Development should adopt a cost-effective approach to formulating the fender upgrading programme by taking into account the future use of the landing facilities.*

13. ***Need to review the performance and durability of new fenders.*** The use of plastic and rubber fenders was new in Hong Kong and there was not much data about their performance and durability in the local environment. Audit's inspections revealed that there were damages to some rubber fenders and plastic fenders at some piers. Audit also noted that some ferry operators covered the new fenders installed with rubber tyres. *Audit has recommended that the Director of Civil Engineering and Development should, in consultation with the Commissioner for Transport, and taking into account the views of the ferry operators, closely monitor the long-term performance of the new fenders installed at ferry piers.*

#### **Maintenance responsibilities of other government departments**

14. ***Benefits of CEDD taking over HAD's maintenance responsibility.*** The HAD is responsible for maintaining 46 small public piers in the New Territories. Audit notes that the CEDD is the maintenance authority of public marine facilities and possesses the technical expertise and experience in the maintenance of piers. Audit considers that the pooling of the maintenance responsibilities under the CEDD would have the benefits of economies of scale. *Audit has recommended that the Director of Civil Engineering and Development should, in collaboration with the Director of Home Affairs, explore whether there are merits for the CEDD taking over the maintenance responsibilities for HAD piers.*

#### **Response from the Administration**

15. The Administration has accepted the audit recommendations.

April 2006