Report No. 44 of the Director of Audit — Chapter 5

REPROVISIONING OF PUBLIC PIERS

Summary

1. The Civil Engineering and Development Department (CEDD) is responsible for constructing and maintaining public marine facilities. It is presently maintaining 137 piers (including 62 public piers, 48 government piers and 27 ferry piers) and 166 landings. Most of the piers are built in the form of a reinforced concrete structure. The steel reinforcement embedded in the concrete is vulnerable to corrosion due to the ingression of moisture and chloride from seawater salts.

Durability of reinforced concrete piers

2. ***Poor durability of reinforced concrete piers.*** In 1995, the CEDD commissioned a consultancy study to examine the conditions of 93 reinforced concrete piers. The study found that most of the piers were rapidly deteriorating due to the corrosion of steel reinforcement with cracking and spalling of the concrete cover. Not only the old piers, but also many relatively young piers were in a poor condition. 86 piers were identified to be in need of structural repairs. Of the 86 piers, reconstruction was recommended for 16 which had deteriorated beyond economic repair. Audit noted that, as at December 2004, 5 of the 16 piers were still in use. *The Audit Commission (Audit) has recommended that the Director of Civil Engineering and Development should closely monitor the conditions of reinforced concrete piers and continue to explore means for prolonging their durability.*

3. ***New marine concrete specification.*** The consultancy study concluded that the then specification for reinforced concrete for the piers was not adequate for resisting chloride ingression in the local marine environment, and proposed a new marine concrete specification. In July 1998, the CEDD adopted the new specification for pier construction and maintenance works. Audit considers that the new specification would be useful to other works departments. *Audit has recommended that the Director of Civil Engineering and Development should, in consultation with the Secretary for the Environment, Transport and Works, inform other works departments of the findings of the consultancy study and promulgate the new marine concrete specification.*

Planning for reconstruction of deteriorated piers

4. ***Justifications for reconstruction.*** In 1996, after the consultancy study, the CEDD rolled out a reconstruction programme for replacing deteriorated piers. As of December 2004, 14 piers (12 public piers and 2 government piers) with approved project estimates totalling more than $350 million had been included in the programme. The CEDD adopted a strategy of replacing the deteriorated pier on a one-for-one basis. The justifications for reconstruction were based mainly on maintenance and safety considerations, but were not made on the basis of utilisation. At the project planning stage, the CEDD had not conducted field surveys to assess the usage of the piers. Audit considers that the CEDD needs to adopt stringent criteria for justifying the reconstruction of the piers as if it is building new ones. *Audit has recommended that the Director of Civil Engineering and Development should critically examine the need for reconstruction having regard to the actual and forecast utilisation of the pier.*

5. ***Lack of a managing department for public piers.*** For the reconstruction of the two government piers, the managing departments, namely the Hong Kong Police Force and the Correctional Services Department were the client departments of the projects. They were involved in establishing the justifications and defining the scope for reconstruction. Unlike the two government piers, there is no designated managing department for the public piers. As such, for the 12 public piers in the reconstruction programme, the CEDD has taken up the dual role as both the client department and the works agent. This could partly explain why the justifications submitted by the CEDD for reconstructing the piers were based mainly on maintenance and safety considerations. Audit considers that this arrangement could undermine the necessary checks and balances between the works agent and the client department. *Audit has recommended that the Director of Civil Engineering and Development should consider conducting a review on the management of public piers with a view to identifying a managing department.*

Concerns over reconstruction of Sham Chung Public Pier

6. Sham Chung and Lai Chi Chong are two sparsely populated rural communities with no vehicular access. A kaito service to Ma Liu Shui operates at the public piers there. During inspections, the CEDD identified severe deterioration at these piers and included them in the reconstruction programme. In November 2003 and February 2004, some newspaper reports raised concerns over the CEDD's plan for reconstructing the Sham Chung Public Pier, and questioned the rationale for doing so in a place with only very few residents. There were also complaints and objections from the public over the project. From January to April 2004, the CEDD conducted field surveys which indicated that the utilisation rates of the Sham Chung and Lai Chi Chong public piers were low.

7. In June 2004, the CEDD suspended the reconstruction of these two piers pending another review. In September 2004, the CEDD completed the review of the design of the Sham Chung and Lai Chi Chong public piers, and submitted a revised design to the Economic Development and Labour Bureau (EDLB) for consideration. In its submission, the CEDD said that it had reduced the size of the two replacement piers and dispensed with the roof covers. The revised design would reduce the total construction cost from $55.7 million by $23 million to $32.7 million. According to the proposed timetable submitted to the EDLB, funds for the reconstruction works would be sought from the Finance Committee of the Legislative Council in December 2005. *Audit has recommended that the Director of Civil Engineering and Development should: (a) critically assess the need for reconstructing a deteriorated public pier, taking into account the utilisation of the pier and the population to be served; and (b) provide, in the papers seeking funding approval for reconstructing the Sham Chung and Lai Chi Chong public piers, full justifications for reconstructing the piers so that the Finance Committee can make an informed decision.*

Reconstruction of Wu Kai Sha, Peng Chau and Kadoorie public piers

8. ***Wu Kai Sha Public Pier.*** This pier is situated in the Ma On Shan new town where road access was not available until the 1980s. In 1983, the kaito service operating at the pier ceased. In February 2001, at the design stage of the reconstruction project, the CEDD realised that the utilisation of the pier was low, and local villagers would no longer use it because land transport was well developed. The CEDD sought the views of two government user departments to help justify the reconstruction works. Both departments did not consider the use of the pier essential to their services. However, in the paper seeking funding approval, the CEDD did not mention the low utilisation of the pier. The reconstruction works commenced in November 2002 and were expected to be completed in early 2005 at an estimated cost of $15 million. *Audit has recommended that the Director of Civil Engineering and Development should critically assess the need for reconstructing a deteriorated pier, taking into account the utilisation of the pier and the availability of land transport.*

9. ***Peng Chau Public Pier.*** Peng Chau is a small island with three piers and nine landings. Ferry service to and from Central (Route A) operates at the ferry pier. Ferry service to and from Hei Ling Chau (Route B) operates at the landing next to the ferry pier. Kaito service to and from Discovery Bay (Route C) operates at the public pier. In January 2004, the reconstruction of the Peng Chau Public Pier was completed at the cost of $22 million. Maintenance considerations and the need to accommodate ferry services were the main justifications for reconstructing the public pier. In seeking funding approval, the CEDD inadvertently mentioned that both Route B and Route C ferry services were operating at the public pier. Audit noted that during reconstruction of the public pier, Route C ferry service was relocated to a nearby landing. Audit considers that the nine landings at Peng Chau should have provided sufficient landing facilities. Audit has reservations about the need for reconstructing the Peng Chau Public Pier. *Audit has recommended that the Director of Civil Engineering and Development should critically assess the need for reconstructing a deteriorated pier, taking into account the availability of other landing facilities in the area.*

10. ***Kadoorie Public Pier.*** The Kadoorie Public Pier is situated in Castle Peak Bay, Tuen Mun. It is mainly used for the kaito service to Ma Wan Chung of Tung Chung. Demand for the kaito service has been hard hit by the availability of land transport to North Lantau since 1997. In October 1999, the CEDD proposed to reconstruct the pier as it was in a deteriorated condition. In December 2002, the reconstruction works were completed at the cost of $7.5 million. In November 2004, Audit noted from the operator's web site that the kaito service has moved to operate at another calling point at Tuen Mun. The Kadoorie Public Pier was not used as a calling point for the kaito service. Audit also noted that there were two landings near the Kadoorie Public Pier which could be used for the kaito service. Audit has reservations about the need for reconstructing the Kadoorie Public Pier. *Audit has recommended that the Director of Civil Engineering and Development should critically assess the need for reconstructing a deteriorated pier, taking into account the operating status and patronage of ferry or kaito services using the pier, and the availability of alternative landing facilities nearby*.

Design of replacement piers

11. ***Improvements provided to replacement piers.*** In recent years, the CEDD began to put emphasis on the aesthetics aspects and facilities in pier design. In 12 projects, the replacement piers were larger than the old ones, and additional berths were provided for 6 piers. Roof and lighting were also provided as a general provision. The utilisation of a pier is a key parameter in the design of replacement piers. However, in designing the replacement piers, the CEDD had not conducted any field surveys to assess the actual utilisation. There is room for economy in the design of replacement piers. *Audit has recommended that the Director of Civil Engineering and Development should achieve an optimal design commensurate with the utilisation of the pier in the design of replacement piers*.

12. ***Structural form of piers.*** Most piers are built as an open structure using reinforced concrete. The steel reinforcement embedded in the concrete is vulnerable to corrosion. Piers can also be built by precast concrete blocks (with no steel reinforcement) as a solid structure. Solid piers do not have corrosion problem and are less expensive than reinforced concrete piers in both construction and maintenance. In the pier reconstruction projects, the CEDD only adopted the solid pier design in one replacement pier. *Audit has recommended that the Director of Civil Engineering and Development should consider the wider use of the solid structure in future pier reconstruction projects*.

Response from the Administration

13. The Administration has accepted the audit recommendations.

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